Title: Exploring the relevance of investing in technological innovation programs for tackling natural resource consumption-related environmental challenges in developing countries

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Abstract: Promoting green growth, especially across underdeveloped countries, is a well-acknowledged agenda that has prime relevance for making the global economic growth processes more ecologically sustainable over time. Hence, taking this critically important issue into cognizance, this current study considers a sample of 80 underdeveloped nations from different regional locations for retrospecting how technological financial provisions, natural resource dependency, urbanization, international trade, foreign direct investment, and corruption control have affected their annual carbon emission growth figures during the 2000-2021 time frame. In a nutshell, the analytical findings for the concerned underdeveloped countries as a whole show that scaling financial grant provisions for investing in technological innovation programs helps to reduce environmental challenges by independently plunging the yearly emission growth rates, while jointly mitigating the emission growth figures further alongside more consumption of natural resources. Besides, the results also confirm the emission growth rate-surging impacts exerted by rising levels of natural resource dependency and international trade openness. By contrast, controlling the spread of corruption is identified as an effective emission growth rate-inhibiting mechanism while urbanization and influx of foreign direct investment are found to not bother the annual carbon emission growth figures of the concerned underdeveloped nations. More importantly, these abovementioned findings are observed to be heterogeneous for underdeveloped countries having different national income levels, regional locations, pollution intensities, natural resource dependency levels, and technological innovation-related financial provisions. Therefore, in light of the analytical findings, it is recommended that the underdeveloped nations boost the output productivity and carbon-intensity levels of their respective natural resource industries, scale funding levels for technological innovation programs, promote clean energy consumption while raising energy efficiency levels across urban areas, make trade baskets less embodied with carbon, attract clean foreign direct investment, and enforce stringent corruption controlling laws.

Keywords: Natural resources, Technological innovation financing, Environmental challenges, Sustainable environment, Carbon dioxide

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