

# **Modelling the interactive effects of energy use and financial development on CO<sub>2</sub> emissions: A clarion call for re-energised sustainable financing?**

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Mahe Shehu<sup>1</sup>, Nasir Aminu and Clifton Nick

## **Abstract**

Despite the evidence of deteriorating environmental quality, the economic growth in Sub-Saharan Africa depends on investing in the energy industry to accommodate the rising power demand. Specifically, the economies of Ghana, Nigeria, and South Africa have made significant progress in strengthening their macroeconomic policies since the turn of the century. However, their policymakers have maintained dependence on traditional energy sources as they continue to increase output. Using a market - induced energy demand perspective, we examine the factors that drive CO<sub>2</sub> emissions, from three Sub-Saharan African countries – Ghana, Nigeria, and South Africa. We explored the interaction effect of energy use and financial development on CO<sub>2</sub> emissions using quarterly data from 1980Q1 to 2017Q1. We employed a fully modified ordinary least square model (FMOLS) to estimate the CO<sub>2</sub> emission from the pooled countries. We tested the interaction effect with (and without) financial sector credit and energy consumption. Private sector finance sources like foreign direct investment and other forms of credit correlate with the higher use of fossil fuels. Our result shows that fossil fuel consumption in industrial activities increases CO<sub>2</sub> emission by about 2.5 times. The results confirm that the financial sector intermediating structure plays a significant role in driving sustainable development and environmental goals. Thus, this study supports the need for financial system regulators to develop the principles of sustainable financing. Re-energising environment-related policy frameworks can counteract the import of pollution-intensive industry to achieve a non-declining trajectory in environmental quality over time in the continent.

**Keywords:** Energy use, financial development, CO<sub>2</sub> emissions, FMOLS, S.S.A.

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<sup>1</sup> Corresponding Author: Cardiff School of Management, Cardiff Metropolitan University. 200 Western Avenue, Llandaff Campus, Cardiff, United Kingdom. CF5 2YB.  
Email: Shmahe@cardiffmet.ac.uk

