

THE IMPACT OF FOREIGN DIRECT INVESTMENT ON RENEWABLE ENERGY CONSUMPTION IN NIGERIA

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Overview

Foreign direct investment (FDI) is an integral part of an open and effective international economic system and a major catalyst to development. Given the appropriate host-country policies and a basic level of development, a preponderance of studies show that FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhances enterprise development.¹ Foreign investment inflow, particularly foreign direct investment (FDI) is perceived to have an impact on the host country through various direct and indirect channels. Policymakers believe that FDI produces positive effects on host economies.² Some of these benefits are in the form of externalities and the adoption of foreign technology. Externalities here can be either positive or negative. The positive externalities are due to the FDI having the potential of transferring superior technologies from developed to developing economies; oftentimes it is called the FDI “pollution halo effect”.³ Conversely, the negative externalities occur when the the tight environmental protection policies of developed countries bring about the transfer of high-pollution enterprises to developing countries who in order to attract FDI and develop the economy ignore the issue of energy efficiency and environmental protection.⁴ This is called the FDI “pollution haven effect”. The positive externalities lead to an energy consumption reducing effect with respect to non-renewable sources of energy and an energy consumption increasing effect with respect to renewable energy sources.³

The empirical literature on FDI and Renewable Energy Consumption (REC) in Nigeria is nascent. REC has not been adequately taken care of in energy studies in Nigeria and interactions between FDI and REC in Nigeria have not been sufficiently studied. Most studies are on FDI and Energy Consumption (EC) or FDI and Economic Growth. Thus, carrying out a multivariate analysis on the impact of FDI on REC justifies the need for this research work. Specifically for Nigeria, the obvious need for renewables and Nigeria’s aim of increasing renewable electricity from 13 percent of total electricity generation in 2015 to 23 percent in 2025 and 36 percent by 2030;⁵ as well as the huge cost of renewable energy technologies which the nature and structure of Nigeria’s domestic investment is not mature enough to pull off without the support of international partners are the reasons that necessitate this study.

Considering the unique behaviors in trends of FDI and REC and Nigeria’s need to increase its share of renewable energy consumption, it is thus not only important to define the relationship that exists between FDI and REC; but also important that the long-run and short-run impact be analyzed. Does FDI truly impact on Renewable Energy Consumption in Nigeria and to what extent? Is there a long-run equilibrium relationship between FDI and Renewable Energy Consumption in Nigeria? This paper adopts appropriate methodology to answer these questions and gives policy recommendations based on findings.

Methods

Multivariate regression analysis using ARDL Bounds approach to co-integration. Choice of variables for the model was guided by the International Production Theory and the Environmental Kuznet’s Theory. Thus Renewable Energy Consumption was regressed on Foreign Direct Investment, Real Gross Domestic Product (RGDP), CO₂ Emissions and Trade Openness (TO).

Results

Empirical analysis shows that FDI impacts on REC only in the short-run. FDI was found to be negative but significant. This implies a poor short-run diffusion of clean energy technologies and thus Nigeria’s data validates the pollution haven hypothesis. This is in tandem with empirical research where a study finds a significant but negative relationship between FDI and REC for developing countries.⁶ The 3-year period lag of RGDP was found to have a positive significant effect on REC. This conforms to apriori expectations. This implies that past values of income affects REC. CO₂ emissions and its previous year value are found to be significant and positive. This does not

conform to apriori expectation. This might be due to a combination of clean and fossil – based technologies in the push for industrialization, given that the latter is relatively cheap. This refutes the pollution haven hypothesis where an increase in CO₂ emissions connotes a decrease in REC. The net effect trade openness (TO) was also found to be negative and significant. This does not conform to apriori expectation. This implies that if factors affecting trade liberalization are improved upon, REC might further decrease unless stringent environmental regulations are simultaneously put in place which will validate the pollution haven hypothesis for Nigeria. In contrast, for the long-run FDI does not impact on REC. However, GDP and TO are significant drivers which is in tandem with apriori expectation. CO₂ emissions was found to be insignificant.

Conclusions

This paper examines the impact of Foreign Direct Investment on Renewable Energy Consumption in Nigeria, within the study period 1981-2014. Although there are some works that discuss remotely related topics; thematically, this research work offers an original contribution to empirically examining the resultant effect of FDI on REC using the ARDL Bounds estimation approach in Nigeria. The researchers conclude that while income and trade openness are key long run drivers of renewable energy consumption in Nigeria, FDI and CO₂ emissions are not. In the short run however, RGDP and FDI reduce the level of REC but does not conform to apriori expectations, indicating that they do not positively drive REC. This validates the pollution haven hypothesis. The negative significance of FDI in the short-run implies a poor short-run diffusion of clean energy technologies. The Nigerian government can enforce environmental regulations and incentives that drive foreign investors to use clean technologies instead of fossil based technologies. While the insignificance of FDI in the long-run implies that the country's proceeds from FDI has not been channeled into sustainable development initiatives. The Nigerian government should make policies and give incentives that encourage inflows of FDI geared towards renewables.

References

- OECD. (2002). Foreign Direct Investment for Development. Maximising Benefits, Minimising Costs.
- Olokoyo, F.O. (2012). Foreign Direct Investment and Economic Growth: A Case Study of Nigeria. *BVIMSR'S Journal of Management Research*, 4(1-30).
- Doytcha, N. and Narayan, S. (2016). Does FDI Influence Renewable Energy Consumption? An Analysis of Sectoral FDI Impact on Renewable and Non-renewable Industrial Energy Consumption. *Energy Economics*, 54, 291-301.
- Wang, S. (2017). Impact of FDI on Energy Efficiency: An Analysis of the Regional Discrepancies in China. *Natural Hazards*, 85, 1209–1222.
- ECN. (2012). *Energy Commission of Nigeria: Renewable Energy Master Plan*.
- Hagert, M. and Marton, C. (2017). The Effects of FDI on Renewable Energy Consumption - A Study of the Effects of Foreign Investments in Middle-Income Countries. *BSc Thesis*. Lund University, School of Economics and Management.