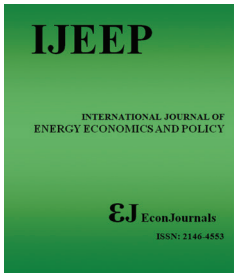

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The Effect of Foreign Direct Investment on the Nexus between Green Levies and Green Energy Technologies

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ABSTRACT

Exploring the role of foreign direct investment (FORGDIR) in promoting the influence of green levies (GRENLEV) on green energy technologies (GETs) is pivotal for achieving sustainable development goals. This study therefore, explores the influence of FORGDIR on the nexus between green levies (GRENLEV) and green energy technologies (GETs). We employed quantitative research paradigm as we extracted data from the quantitative method. Data was extracted from the World Bank Database and "Organisation for Economic Co-operation and Development" (OECD) for 20 years from 2003 to 2022 relating to Nigeria. After controlling for climate change and greenhouse emanations, the study found that GRENLEV is positive and significantly related to GETs. It was also revealed that FORGDIR is negative and significantly GETs. It was finally documented that the interaction between FORGDIR and GRENLEV (GREENT*FDI) is negative and significantly related to GETs, implying that FORGDIR reverses the positive effect of GRENLEV on GETs. Thus, it requires a careful policy design and regulatory frameworks that align FORGDIR with green objectives which in return stimulate sustainable investment in GETs. Therefore, this study can provide a useful information for the policymakers and regulators in providing strategies for green growth and sustainable development goals.

Keywords: Green Levies, Green Energy Technologies, Foreign Direct Investment, Climate Change
JEL Classifications: P33, Q51, Q54, Q56

1. INTRODUCTION

The global community endeavors to adapt towards sustainable energy and green objectives under the Sustainable Development Goals (SDGs) plat form. To successfully ensure the realization of goals number seven and thirteen; clean/affordable energy and climate action by 2030 respectively, green energy technologies (GETs) has become necessary and desirable especially in view of the fact that it contributes immensely in addressing climate change through ensuring affordability to clean energy which is the central focus of these goals (Babatunde et al., 2023). GETs viz; solar, wind, bioenergy among others, have a strong potentiality for sustainable energy. These technologies are cleaner and more sustainable than fossil fuels, particularly in view of their small carbon emission and usually unrestricted accessibility (Aydin and Bozatli, 2023).

Furthermore, GETs brings about small carbon damages relative to fossil fuels and hence, it contributes immensely in tackling the menace of climate change.it also helps in minimizing greenhouse gas externalities and reducing global warming. Green taxes are crucial in realizing sustainable energy and climate change objectives (Dogan et al., 2023). The most efficient and vital government policy instrument to accomplish this objective is

green taxes (Wang et al., 2023). It should be noted at this point that green taxes do not only assist in minimizing ecosystem damage but also encourage businessmen to acquire new technologies and therefore, trigger the evolution of green creativity.

Moreover, green taxes serve as an accelerator in the long term by making corporate entities to apprehend that green taxes is more beneficial as an alternative for incurring this cost (Javed et al., 2023; Emmanuel et al., 2024). Especially due to the punditry status of environmental taxes, it is theoretically anticipated that conventional energy technologies will attempt to develop green energy in the long term and that countries with high energy usage could prefer to explore GETs (Bashir et al., 2022). Based on the foregoing, it is expected that green taxes can affect GETs in emerging market.

Therefore, the need for interaction or collaboration among key stakeholders is pertinent to achieving clean and affordable energy GETs. This effort may also requires the involvement of stakeholders through the means of bilateral and/or multilateral trade agreements (Wang et al., 2023). This could have the tendency of creating enabling environment for Foreign Direct investment (FORGDIR) especially among the emerging market economies. It was argued by Javed et al. (2023) that the pooling of resources among countries in the emerging markets by way of FORGDIR could assist tremendously in determining the effect of green taxes on GETs in emerging markets. Based on the earlier argument, it is anticipated that FORGDIR could have an enhancing moderating effect on the link between green taxes and GETs in emerging markets.

From the practical point of view, statistical evidence on energy consumption have been gathered from the office of the National Bureau of Statistics (NBS-Nigeria) in 2023. The reports showed that the problems of poor energy supply has affected more than One Hundred Million (100,000,000) Nigerian Households despite huge financial investment on the energy sector that has gulped huge trillions of Naira over the years. This scenario underlines the challenging and poor state of energy infrastructure in emerging economies like Nigeria. Hence, the need to explore GETs has become imperative not only to bridge the gap in practice but also to ensure the attainment of clean and affordable energy (SDGs number seven and thirteen) by the year 2030.

Theoretically, there is scarcity of empirical evidence in the extant literature especially on the nexus between green taxes and RETs. The most recent evidence is the work of (Aydin and Bozatli, 2023; Bala and Khatoon, 2024; Javed et al., 2023) who investigated the effect of green taxes on GETs. They established that green taxes have significant effect on GETs in African and the OECD countries. Numerous studies have been done by prominent scholars on the nexus between green taxes and GETs. These comprise the work of (Bashir et al., 2022; Dogan et al., 2023; Fang et al., 2022; Javed et al., 2023; Nchofoung et al., 2023; Shayanmehr et al., 2023). Although, the aforementioned studies have been conducted in developed economies and based on a direct relationship between ecological taxes and GETs. It can be deduced at this juncture that the previous studies have failed to employ compounding variable like FORGDIR as a moderator on the link between green taxes and RETs in the context of emerging economies. The aforementioned scrutiny have clearly explored environmental and variable inclusion gaps from the previous studies.

To the best of the researchers' available information, this study is among the very few if not the first that attempted to fill the voids in literature by examining the moderating effect of FORGDIR on the link between green taxes and RETs in emerging markets.

Based on the aforementioned practical and theoretical problems, it has become necessary and desirable to formulate research questions which are expected to provide guidance, direction and precision in conducting the study. Thus, what is the moderating effect of FORGDIR on the link between green taxes and RETs of emerging markets? Consistent with the earlier assertion, the main aim of this study is to examine the effect of FORGDIR on the link between green taxes and RETs in emerging markets. The study will open a new vistas for understanding the interaction effect of foreign direct investment on the link between green taxes and GETs in emerging markets. Thus, policymakers can initiate or implement good policy actions on the moderating effects of foreign direct investment on the nexus between green taxes and RETs. Indeed, this study will establish more empirical evidence concerning the link between green taxes and RETs and will offer apprehension into green sustainability. Finally, it is expected to prove that green taxes are vital instrument to guide future researchers in the area of GETs.

The remaining segment of this research work is organized as follows: Section two highlights the empirical studies on the moderating effect of foreign direct investment on the link between green taxes and GETs in emerging markets. Section three covers the methodology, employed in conducting the study. Section four deals with results and discussion of findings. Finally, section six deals with the conclusion drawn on findings as well as the policy recommendations.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

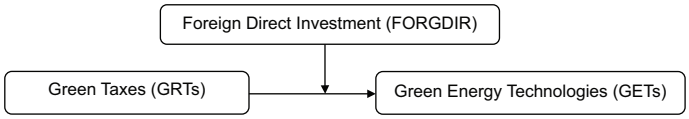
2.1. Conceptual Framework

This section deals with the discussion on the concept of Foreign Direct Investment (FORGDIR); the moderating variable of the study. It also discusses the concept of Green Taxes (GRTs); which is the explanatory variable as well as the concept of GETs; which is the criterion or outcome variable of the study. Thus, the earlier discussion can be clearly depicted in a hypothetical diagram as follow in Figure 1.

2.2. Green Energy Technologies

Renewable energy is force or power generated from non-artificial means that are refilled at a bigger amount than they are utilized (Dogan et al., 2023). Sunlight and wind, for instance, are such resources that are permanently being reproduced (Wang et al., 2023). Energy assets can be largely grouped into three categories viz; renewable, fossil, and nuclear (Javed et al., 2023). Resources

Figure 1: Conceptualization of variables



Source: Researchers' Compilation (2023)

are recognized as renewable or nonrenewable in that a renewable energy can refill itself at the level it is consumed, while a nonrenewable energy has a restricted production. Green energies comprises of timber, wind, and solar while nonrenewable energies consists of coal and natural gas (Fang et al., 2022). GETs therefore, comprises of solar resources, wind resources, hydro resources, tidal resources, geothermal resources and biomass resources (Shayanmehr et al., 2023).

2.3. Green Taxes

The concept of green taxes, also regarded as environmental tax or ecotax is a tax charged on activities which are identified to be degrading to the environment and is designed to support ecosystem friendly programs by way of financial motivations Bilan et al. (2022). Based on green taxes, the government earmarks a price that polluters must remit for every ton of greenhouse gas releases. Green taxes on the other spectrum, is a form of Carbon taxes, which ensure precision pertaining the amounts of compliance and sets constant prices, but the succeeding GHG minimizations are not planned and are determined by market forces (Dogan et al., 2023).

2.4. Foreign Direct Investment (FORGDIR)

Foreign direct investment (FORGDIR) is the method in which citizens of one country (the source country) acquire ownership of properties for controlling the production, distribution and other activities of a firm in another country known as the host country (Wang et al., 2023). Again, Foreign direct investments (FORGDIR) are the visible investments and acquisitions made by a corporate entity in an oversee country, usually by opening plants and acquiring buildings, machines, factories, and other equipment in the oversee country (Aydin and Bozatli, 2023). FORGDIR is a type of cross-border investment in where an investor living in one country set up a lasting interest in and a reasonable extent of impact over an enterprise citizen in another country (Caetano et al., 2022; Kovalova and Vartiak, 2024). In another perspective, FORGDIR are the physical investments and purchases made by a company in a foreign country, typically by opening plants and buying buildings, machines, factories, and other equipment in the foreign country (Appiah-Otoo et al., 2023). These classes of investments find a far large extent of support, as they are usually perceived long-term investments and helps boost the oversee country's economy (Javed et al., 2023).

2.5. Review of Empirical Studies

Aydin and Bozatli (2023) investigated the effects of green taxes on the top 10 renewable energy-consuming OECD countries for the period of 1994-2019 using panel ARDL and NARDL techniques of analysis. Based on the findings, it was found that green tax stimulates GETs usage in the long term. Furthermore, the non-linear panel ARDL outcome revealed that adverse effect in green taxes influence GETs usage strongly in the long term. However, greater emphasis was placed on the top ten (10) European countries. The outcome thus, may not applicable in emerging market economies albeit high level of economic disparities.

A recent empirical study by Nchofoung et al. (2023) examined the effect of green taxes on the implementation of GETs for 49 global samples between the 1996 and 2017 durations. The findings revealed that environmental tax increase the consumption of renewable energy. Despite its recency, the data-set for the study was restricted to 2017 revealing a period gap of over 5 years. Thus, more reliable empirical evidence could have been established. Again, Chien et al. (2023) explored the role of governance and environmental taxes in the energy transition in China economy for the period of 1999–2019. The findings revealed that environmental levies have a negative influence on energy transition among all quantiles. In another perspective, Javed et al. (2023) explored the influence of green technology, green taxes and GETs on ecosystem pollution in Italy. The study was conducted for the duration of 26 years spanning from 1994 to 2019. The dynamic simulated ARDL (DYARDL) technique was employed to analyze the short and long-term relationships between the parameters. The study also uses the frequency domain causality (FDC) test to examine the pattern of causality. The findings from the study revealed the occurrence of a long-run relationship between the variables. Indeed, total output and Gross Domestic Product (GDP) jointly have a positive significant impact on environmental pollution. The result from the FDC test also proved that green technology innovation, green taxes, GETs, total revenue and GDP granger cause environmental footprint. However, the study was conducted in Italy and thus, subjected to the prevailing macroeconomic and GETs architecture in Italy which appears to be clearly distinct from that of emerging economies like Nigeria.

In the Chinese economy, Wang et al. (2023) the influence of green levies, geopolitical risk and green finance on GETs employing data from 2012 to 2021 from fifty energy quoted companies in China. The data were tested using quantile regression and dynamic analysis as the techniques for data analysis. The findings showed that green taxes and green financing significantly impact on GETs. However, geopolitical risk significantly impedes such projects. Similarly, IRE significantly increases the electricity output of Chinese energy firms. Even though, the variations in green energy policies between China and Nigeria is quite obvious and thus, can affect the external validity of the results. Shayanmehr et al. (2023) investigated the impact of green tax on ecological footprint. Indeed, the study examines the impact of environmental tax and green energy on different levels of EFP using the method of moment quantile regression (MMQR) to analyze the reliability of the MMQR outcomes. The empirical findings revealed that green taxes and green energy strongly and significantly minimize the environmental footprint. Although, using environmental footprint as the outcome variable instead of GETs has been the major paucity of the study. Hence, unique and reciprocal empirical results could have been established especially from the Nigerian context.

Bilan et al. (2022) explore the causal linkages between green taxation (transport and energy taxes) and biofuel manufacturing and utilization. The causal relationships were tested by the

techniques of panel regression modeling with a time lag from 0 to 4 years. A sample of nine European economies (Austria, France, Germany, Hungary, Italy, Netherlands, Poland, Spain, and U.K.) was captured for the analysis. The study period ranges from 2010 to 2020. The results from the study showed the occurrence of a significant influence of green taxation on the levels of biofuel manufacturing and utilization. Nevertheless, the study was a direct relationship that places little or no attention to the moderation role of FORGDIR. Hence, more reliable and unique empirical could have been documented. Similarly, Dogan et al. (2023) explored the influence of energy taxes and green taxes in furtherance to that of economic and environmental parameters in GETs expansion for the panel of EU nations. The study employed reliable and robust econometric techniques to the data-set from 1995 to 2019. The findings revealed that green taxes and energy taxes have a negative influence on GETs in the EU economies. Even though, variations in macroeconomic and GETs architecture are quite obvious between EU countries and emerging African countries like Nigeria.

In their empirical study, Fang et al. (2022) examines the impact of green taxes on GETs utilization. Employing a data-set from 1998 to 2019 for fifteen representative countries, the findings revealed that green tax has negative significant impact on GETs utilization in the short-period. In the long-term, green tax has positive significant impact on GETs utilization amongst the selected countries. Bashir et al. (2022) examined the nexus between environmental taxes and RETs using a data-set spanning from 1996 to 2018 for twenty-nine (29) OECD nations. The findings from the quantile regression method revealed that environmental taxes have positive significant impact on GETs amongst the selected countries in OECD. Furthermore, Aydin and Bozatli (2023) examined the influence of green taxes, economic growth, financial development, and green innovation in the top 10 renewable energy-consumed OECD countries in 1994-2019 with panel ARDL and NARDL methods. The result showed that green taxes significantly influence renewable energy utilization in the long term. Although, larger evidence is required to buttress the asymmetric influences of green taxes. Finally and most importantly, and with clear reference to the aforementioned review of extant literatures, the following hypotheses were formulated in commensurate with the research objectives:

Similarly, Wei et al. (2022) argued that FORGDIR is a significant determinants of GETs. Thus, FORGDIR is expected to play a significant role in promoting sustainable investment in GETs supplemented by green taxes. Li et al. (2022) explored how FORGDIR GETs can support emerging economies in achieving green growth. They documented that FORGDIR contribute to green growth accomplishments of emerging economies Therefore, external investors are to stimulate international connections that could promote sustainable businesses, industrialization and placement greener solutions. In view of the foregoing arguments, we hypothesized that

H_1: Green taxes have substantial influence on GETs of emerging markets

H_2: FORGDIR has a substantial influence on green taxes

H_3: FORGDIR has a substantial moderating influence on the link between green taxes and GETs of emerging markets.

3. METHODOLOGY

We employed quantitative research paradigm since we extracted data from the quantitative method. The criterion variable in this study green energy technologies (GETs). GETs are energy sources from the natural resource. The predictor is the green levies (GREENLEV). GREENLEV are taxes or levies are taxes imposed on any activity or merchandises that might cause ecological harm. They include carbon resource, pollution and transportation taxes. Table 1 delivers information of the criterion and predictor variables and together with their measurements. Data was extracted from the World Bank Database and "Organisation for Economic Co-operation and Development" (OECD) for 20 years from 2003 to 2022 relating to Nigeria.

4. FINDINGS AND INTERPRETATIONS

4.1. Unit Root Test (URT) Analysis and Estimation Model Selection

The outcomes of the URT analysis, are accessible in Table 2. The table designates that green energy (GETs), green taxes (GRENLEV), outside direct investment (FORGDIR), greenhouse emanations (GRENEMIS) and climate change (CLIMATEG) are all stationary at level (I[0]) and at first difference (I[1]) respectively. In view of the foregoing, we can employed Ordinary Least Square Regression (OLS) as our estimation model. However, to control for potential heterogeinity and serial correlation in the dataset, we employed a Newey-West standard errors model. NWSE are more effective than the conventional standard errors in the existence of serial correction and heteroscedasticity. Similarly, NWSE integrate information about the basic dataset structure, providing for more detailed regression estimation confidents and their connected standard errors (Shayanmehr et al., 2023; Tripathy, 2011).

Table 1: Measurement of variable

Variable	Acronym	Measurement	Basis
Criterion variable:			
Green energy technologies	GETs	Proportion of combined absolute green energy technologies	World Bank
Predictors:			
Aggregate green levies	GRENLEV	Cumulative green taxes takings from, pollution energy, and transportation" as % of GDP)	OECD
Greenhouse emission	GRENEMIS	Calculated in tonnes of CO_2-equivalent as % of GDP	OECD
Climate change	CLIMATEG	Total transport taxes as % of GDP	OECD-Data
Foreign investments	FORGDIR	net influxes of foreign investment as % of GDP	World Bank

Source: Compile by authors. GETs: Green energy technologies, GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations, CLIMATEG: Climate change

4.2. Descriptive Statistics

Table 3 portrays the descriptive statistics of the dataset. It is observed from the table that green energy technologies (GETs) had a mean score of 82.652% with a bottom and uppermost values of 73.020% and 88.100% respectively. The collective green levies' structure (GRENLEV) had an average value of 0.017% from the total GDP. This proportion is supplemented by a minimum and a maximum score of 0.009% and 0.025% consistently. For the moderating variable, it is observed that FORGDIR had an average score of 0.941% with a smallest and highest value of −0.040*% and 2.900*% consistently. For the control variable, greenhouse emanation (GRENEMIS) had a middling value of 74.839% with minimum and maximum scores of 70.920% and 82.690%. Finally, climate change (CLIMATEG) had a moderate score of 0.755% with a least and extreme scores of 0.111% and 2.000 % respectively.

4.3. Correlation

Table 4 displays the correlation results of the study. The Table showed that a constructive association between, GRENLEV, CLIMATEG and GETs, While FORGDIR and GRENEMIS had inverse correlations with GETs. However, the correlations amongst the autonomous variables are within the normal threshold and therefore not too associated. Consequently, it advocates that the model might not be linked with multicolinerity problem.

4.4. Regression Results

Tables 5 and 6 depicts the regression outcomes of both direct moderation model. Table 5 revealed that green levies (GRENLEV) is positive and significantly related to green energy technologies (GETs). This infers that a rise in GRENLEV will lead to a supplementary rise in GETs. A possible explanation for this is that GRENLEV can be utilized to subsidize GETs research and development projects. Policymakers can apportion these funds to support the development of GETs via grants incentives and subsidies. This supports can make GETs more affordable and accessible and thus promote the growth and adoption of GETs. This finding support the study hypothesis (H_1) which presumed that *Green taxes have substantial influence on GETs of emerging markets.* This result is consistent with the findings of (Bashir et al., 2022) and Bala and Khatoon (2024) who documented a positive significant influence between GRENLEV and GETs.

Table 5 also revealed that external direct investment (FORGDIR) is negative and significantly related to green energy technologies (GETs). This infers that a rise in FORGDIR will lead to a proportional decline in GETs. A possible explanation for this is that investing in GETs especially in developing countries might be assumed be chancier compared to usual fuel fossil projects. Therefore, the long run effect of GETs investments, uncertainty

Table 2: Unit root test (URT)

Variables*	Level* t-values	P-values	1st difference* t-values	P-values	Order*
GETs	−2.624*	0.097	−5.006***	0.000	I (0)
GRENLEV	−2.627*	0.098	−4.052***	0.004	I (0)
FORGDIR	−3.540*	0.0498	−6.201***	0.000	I (0)
GRENEMIS	−5.510***	0.000	−6.184***	0.000	I (0)
CLIMATEG	−4.985**	0.000	−5.966***	0.000	I (0)

1%, 5%, and 10% presented as (***), (**), and (*), correspondingly indicates the significance levels. GETs: Green energy technologies, GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations, CLIMATEG: Climate change

Table 3: Descriptive statistics

Variable	Obsv.	Mean	Stdd. Devia.	Minm.	Maxm.
GETs	30	82.652	4.081	73.020	88.100
GRENLEV	30	0.017	0.005	0.009	0.025
FORGDIR	30	0.941	0.886	−0.040	2.900
GRENEMIS	30	74.839	3.116	70.920	82.690
CLIMATEG	30	0.755	0.733	0.111	2.000

GETs: Green energy technologies, GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations, CLIMATEG: Climate change

Table 4: Correlation

Variable	GETs	GRENLEV	FORGDIR	GRENEMIS	CLIMATEG
GETs	1.000				
GRENLEV	0.6750***	1.000			
	0.000				
FORGDIR	−0.6257***	−0.5830***	1.000		
	0.001	0.003			
GRENEMIS	−0.7000***	−0.3910***	0.363*	0.197	
	0.000	0.033	0.081	0.297	
CLIMATEG	0.055	0.063	0.084	-0.055	1.000
	0.773	0.741	0.695	0.773	

GETs: Green energy technologies, GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations
CLIMATEG: Climate change, 1%, 5%, and 10% presented as (***), (**), and (*), correspondingly indicates the significance levels

Table 5: Regression (with Newey-West standard errors, direct model)

Variables	Newey-West			
	Coef.	Std. Err.	T	P>t
GRENLEV	0.053	0.024	2.160**	0.044
FORGDIR	−0.072	0.030	−2.390**	0.026
GRENEMIS	−0.007	0.002	−3.640***	0.002
CLIMATEG	0.006	0.009	0.650	0.522
_Cons	5.159	0.156	33.130**	0.000
F-Stat.	11.930			
F-Sig.	0.000			
Hettest	0.488			
VIF (Mean)	1.390			
Linktest.	0.167			

GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations
CLIMATEG: Climate change, 1%, 5%, and 10% presented as (***), (**), and (*), correspondingly indicates the significance levels

Table 6: Regression (with Newey-West standard errors, moderation model)

Variable	Newey-West			
	Coef.	Std. Err.	t	P>t
GRENLEV	11.111	3.101	3.580***	0.002
FORGDIR	−4.206	1.830	−2.300**	0.034
GREENT*FDI	−370.512	115.999	−3.190***	0.005
GRENEMIS	−0.661	0.131	−5.060***	0.000
CLIMATEG	−0.080	0.842	−0.090	0.926
_Cons	184.748	16.739	11.040***	0.000
F-Stat.	19.400			
F-Sig.	0.000			
Hettest	0.599			
VIF (Mean)	1.390			
Linktest.	0.464			

GRENLEV: Green levies, FORGDIR: Outside direct investment, GRENEMIS: Greenhouse emanations

CLIMATEG: Climate change, 1%, 5%, and 10% presented as (***), (**), and (*), correspondingly indicates the significance levels

regulations and technological issues can discourage external investors who pursue predictable and stable returns on their investment. This finding is contrary to the study hypothesis (H_2) which presumed that FORGDIR *has a substantial influence on green taxes*

However, Table 6 depicts the moderation model that analyses the influence of foreign direct investment on the nexus between green levies and green energy. It is observed from the Table that in the interaction between FORGDIR and GRENLEV (GREENT*FDI) is negative and significantly related to GETs. This implies that FORGDIR reverses the positive effect of GRENLEV on GETs. This suggest that there may be some complexities and challenges associated with trading off green sustainability and foreign investors' attraction. Therefore, it requires a careful policy design and regulatory frameworks that align FORGDIR with green objectives which in return stimulate sustainable investment in GETs.

5. CONCLUSION

This study explores the influence of foreign direct investment (FORGDIR) on the nexus between green levies (GRENLEV) and green energy technologies (GETs). It was concluded that GRENLEV can be utilized to subsidize GETs research and development projects. Thus, Nigerian government can apportion these funds to support the development of GETs via grants incentives and subsidies. It was also concluded that investing in GETs especially in developing countries might be assumed be chancier compared to usual fuel fossil projects. Consequently, the long run effect of GETs investments, uncertainty regulations and technological issues can discourage external investors who pursue predictable and stable returns on their investment. Thus, it was established that there may be some complexities and challenges associated with trading off green sustainability and foreign investors' attraction.

Therefore, it requires a careful policy design and regulatory frameworks that align FORGDIR with green objectives which in return stimulate sustainable investment in GETs. Though FORGDIR might bring valuable resource and technology to facilitate the progress of GETs of a nation, its causality with GRENLEV can be associated with challenges might deter the transition of greener system. Therefore, this study can provide a useful information for the policymakers and regulators in providing strategies for green growth and sustainable development goals.

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