

Green Fiscal Policy Mechanisms for a Low-Carbon Ecosystem: A Developing Country Assessment

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Abstract Due to the obvious intensity of carbon footprint in developing nations' vicinity, the United Nations has developed a guidebook that focuses on carbon taxes as one of the solutions to industrial contamination in emerging regions. Green fiscal policy is a major topic of discussion in the public debate over climate change around the universe. This study investigates the influence of fiscal policy measures in reducing carbon emissions in the ecosystem. The analysis spans the years 2000 to 2020 and makes use of World Bank Development Indicators data on CO₂ emissions in million metric tons. The data on tax income are taken from the Federal Inland Revenue Service in billions of Naira, while the data on government investment and debt are derived from the Central Bank of Nigeria Statistical Bulletin. After establishing the adequacy and appropriateness of the datasets and model, the study employs econometric tool of multiple regression approach to examine the effect of fiscal tools on climate change improvement. The results suggest that government funding has a negative intangible impact on climate change mitigation. Further findings reveal that tax income collection is positively irrelevant, however debt has a positive influence on CO₂ emissions reduction. The study strongly suggests government drive for green fiscal policy which should incorporate efficient and cost-effective green-financing options, carbon taxation, environmentally friendly government budgets and investments.

Keywords Green Fiscal Policy, Carbon Taxation,

Green-Financing, Ecofriendly Budget, CO₂

JEL Classification Codes: E62, H21, H61, Q50

1. Introduction

Global warming is a worldwide phenomenon, although its severity is felt most acutely in underdeveloped countries. However, it has been observed that the concentration of CO₂ (Carbon dioxide) and other greenhouse gases contributes to global warming [1]. Carbon pollution is an atmospheric component that depletes the ozone layer. The ozone layer naturally prevents the adverse effect of glasshouse gases, but its exhaustion allows the sun rays to hurt the ecosystem and its inhabitants. According to scientists, global warming will continue until the entire globe addresses the issue of CO₂ in the atmosphere by forcing it out through green technology. Second, by minimizing the use of fossil fuels and coal energy, all nations and regions should adopt renewable energy sources that are less detrimental to the environment. Air degradation is a severe problem which arises, as a result of technological and industrial breakthroughs that presently have devastating consequences on the environment and pose life-threatening hazards [2-3]. Considering the major causes of environmental and air pollutions, [4] stated that commercial automobiles account for the majority of

overall Greenhouse gases from road travel, and opine that the use of entirely new vehicles will help to reduce pollutions emanating from passenger vehicles.

Nonetheless, experts and policymakers are working hard to find a long-term solution to this problem. One strategy to handle the current problem is to scrutinize the efficacy of fiscal course of action tools in affecting the decrease of greenhouse gas emissions at the moment. Fiscal policy, via state spending, taxing, and income, is an essential feature of the consumption side of the economy across the planet [5]. Fiscal policy tools such as taxation and federal spending are both explicitly and implicitly related to environmental integrity, collective power usage, manufacturing, farming, functionality levels, and socioeconomic strength [6]. As a function, the fiscal policy tool of taxation may boost the efficacy of energies, and tax credits have a good and considerable impact on environmental sustainability [7-8].

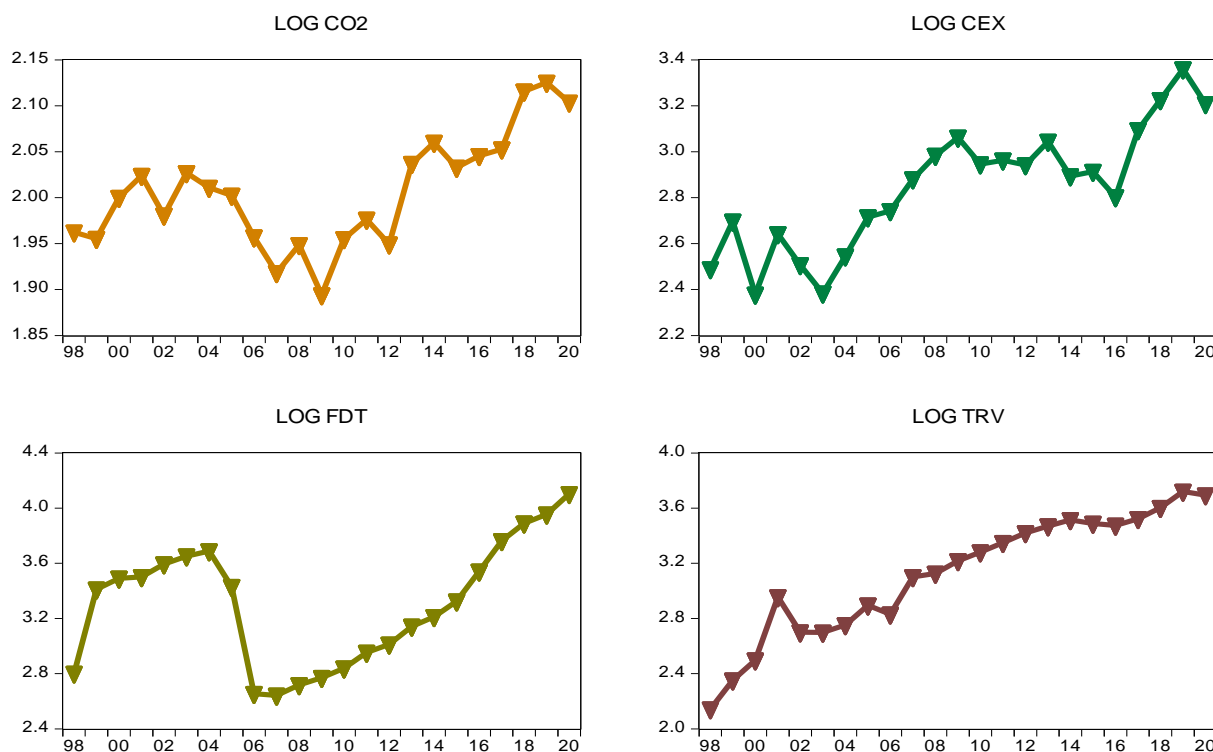
As part of fiscal strategy, income and spending fiscal allocation to all government strata aids in improving air quality [9-10]. According to [11], fiscal plan accelerates federal revenue by imposing environmental levies on the power, transport, and manufacturing companies. Fiscal control is a key legislative instrument for regulating and directing the economic activity, as well as establishing a best and most innovative drive for low-carbon outlay [12]. Ajanovic and Haas [4] contend that, CO₂ threat may also be handled fiscally by imposing a fuel tax in addition to a car registration fee and a Value Added Tax. This economic policy will provide car users with information on the sort of vehicle to purchase and how frequently a vehicle may be changed.

Fiscal policy tools include government expenditure, tax collection and loan sourcing from both local and foreign sources. The government spends for public goods and services which comprise cleaning the environment to prevent air and water pollution. Taxes are important stream of revenue for macroeconomic management and designing; even financial strategies are based on predicted tax collections, and tax plans are a vital feature of every state's financial strategy [13]. Every country needs to generate tax income to fund major government investments in order to

preserve its international competitiveness in the global market [13]. As part of fiscal strategy, if the tax earnings are not sufficient, the government is at liberty to source for fund from both domestic and international avenues. The fund is required for environmental management to guarantee safety of humans and other living things in the biodiversity. In a nutshell, fiscal policy is important in the context of its structural adjustment since it supports the economy [14]. Fiscal policy is critical in reducing Carbon footprints, which are the most severe air pollution toxins caused by budget constraint and fast industrialization [15]. The role of fiscal strategies in the global effort to conserve the environment is very imperative.

In Nigeria, the issue of air pollution is being exacerbated by the severe emission of CO₂ radiations from both factories and local oil refining, which emit a large amount of greenhouse gases into the atmosphere and contaminates the rivers and the whole environment. From 2016 to 2019, the level of CO₂ in the Nigerian environment increased from 111.07mt to 133.46mt in metric tonnes (see Figure 1). Due to the increased worldwide awareness and outcry from many environmental protection agents, including the United Nations Environmental Program (UNEP), there are currently more preventive measures and alerts in place as shown in 2020, and the level has been dropped to 126.92. The graphical representation of the Nigerian CO₂ level from 1998 to 2020 is shown in Figure 1. The government prevailing fiscal tools applied in Nigeria is statistically highlighted in Figure 1.

Prior research suggests that a nations' economic fiscal stimulus is critical in reducing Greenhouse gasses as an environmental hazard [12], [15-17]. Fiscal measures are yet to be proven as a useful approach in decreasing carbon emissions in various parts of the world. As a result, the purpose of this research is to assess the efficacy of Nigeria's fiscal measures in lowering air pollution and other toxins in the country's ecosystem. Taxation, debt, and expenditure are the three primary fiscal mechanisms used by the government to regulate the nation's economic system. These three instruments have been used in this study to confirm the viability of fiscal solutions for environmental cleanup.



Data sources: World Bank Development Indicators and Central Bank of Nigeria Statistical Bulletin

Figure 1. Trend of CO₂ data and other study statistics

2. Literature Review

Green fiscal measures are ecofriendly economic and budgetary systems which consider the safety, conservation and serenity of the ecosystem and its inhabitants. The notion of green fiscal mechanism has been pursued and championed by scholars [12], [15-17] in the recent times. Green fiscal policies should take into account cost-effectiveness, environmental needs, suitability and adherence motivations, the capacity to deal with ambiguity and furnish investors with a transparent and reliable pricing mechanism, equity consequences, and organizational and legal capability [18]. According to [19], the implementation of a green fiscal strategy will result in commodities such as coal being subject to tax at more than 150 percent of their present product price due to the severe carbon production, thereby ramping up the switchover to renewable sources of energy. UNEP [20] disclose that, decreasing harmful emissions, numerous toxic waste in the environment and their health consequences will lead to the achievement of many SDGs and their associated objectives. This is backed up by the move in 2017, when the United Nations Environment Assembly (UNEA-3) asked the UNEP and the World WHO (World Health Organization) to take action on incorporated environmental and health concerns related to multiple SDGs.

Reducing and managing harmful emissions and its accompanying related diseases is a crucial green building issue, and it is inextricably linked to attaining the global

2030 expansion sustaining strategic Plan. To address and improve the air quality, a complete set of policies and initiatives will be required. Fiscal measures, such as taxes and subsidies, can assist reduce emission of harmful gases and expedite attempts toward a pollution-free globe [21]. Taxes and levies on polluters and chemicals, as well as targeted subsidies, can provide motivations to inhibit hazardous operations or the use of harmful goods while encouraging the cost-effective adoption of less toxic substitutes [20], [22]. Most governments have implemented economic policies aimed against certain contaminants. Fiscal policies give an economic incentive to minimize pollutants by imposing an explicit state charge on contamination that is noticeable to economic players, notably polluters, rendering them one of the most successful and premium measures to avoiding and decreasing pollutants [20]. However, the uniqueness of a country's economic climate is a crucial determinant element in implementing green fiscal policies that are best appropriate for the economy.

Green-finance ideas to finance low-carbon infrastructure and other climatic remedies were appealed for during the 2015 Paris Climate Summit [23]. Recently a consortium of economic experts and erstwhile Federal Reserve Board and Council of Economic Advisers Chairs released a declaration urging for prompt effective governance to combat planet's warming catastrophe through a carbon taxes [23]. Carbon taxes place a premium on carbon dioxide emissions, incentivizing firms to move with low -

carbon technologies or convert to more ecofriendly suitable techniques [24]. Other researchers concur that, in addition to carbon pricing, green bond investment should be implemented as a fiscal strategy to establish a low-carbon economy [25].

Halkos and Paizanos [26] assessed the impact of economic program on Pollutant emanations using for a period from 1973 to 2013. The study generated impulsive reactions to linear permutations of financial disruptions, equivalent to eventualities of shortfall spending and tax reductions. The research segregated Greenhouse gasses from manufacturing and utilization in a bid to reconnoiter possible variations in the consequence of financial regulation depending on the polluting industries. According to the results, adopting stimulative fiscal spending lowered pollution from both origins of the contaminant, but austerity tax reductions boosted the usage of Carbon footprints. Maneerat and Fazal [13] employed the extended technique of moments to examine the relationship between tax income, state spending, financial intermediation, carbon emissions, exporting, and the infrastructure prosperity of emerging nations from 2008 to 2019. The findings found that all indicators, including tax income, government spending, liberalization, carbon emissions, and exporting, had a good association with developing-country industrial prosperity.

From 1992 through 2014, [27] examined the link between fiscal policy, energy, and Pollutant emissions in Thailand. The analysis found that fiscal policy efforts had a long-term association with environmental quality using the ordinary least squares method, inferring that proper fiscal policy implementation results in the restoration of environmental integrity. The research by [28] attempted to design a fiscal tool to assist the commercialization of hybrid vehicles in Indonesia. It concentrated on three types of fiscal devices: the cut of the Luxury Products Taxes, the lowering of Customs Duty/exemptions, and the decrease of VAT. The research included an effect evaluation on primary energy consumption and CO₂ discharges, an economic benefit calculation using Transmitter and Receiver Table Estimate, and a cost-benefit breakdown. The test's findings suggested that providing numerous possibilities on financial measures on gasoline engines to both the automobile business and commerce was financially viable.

Khan, Teng, and Khan [29] investigated the influence of fiscal and monetary advancement on Carbon dioxide emission in Pakistan using a revolutionary dynamical replicated Autoregressive distributed lag model with yearly time - series from 1982 to 2018. The findings of a growing range simulating ARDL revealed that stock exchange expansion, Foreign Direct Investment (FDI), industrial progress, and oil demand all had a good influence on CO₂ emissions in Pakistan, however household debt had a deleterious impact on Air quality both in the near and distant future. Muhafidin [17] investigated the impact of monetary and fiscal policy on

environmental concerns between 1973 and 2018. The findings of ARDL bound assessment in Indonesia demonstrated a substantial link between tax stimulus, financial regulation, wealth creation, and Carbon intensity.

Ullah, Majeed, and Chishti [30] calculated the contrasting sound paraphernalia of financial procedure contrivances on air sustainability in the 10 leading Asian biggest polluters between 1981 and 2018. A real appreciation in public expenditure, as per analysis, would damage atmospheric performance in Malaysia, the United Arab Emirates, Thailand, Indonesia, Turkey, Iran, India, and China while boosting it in Japan. On the other hand, the study discovered minimized spending culture would recover ecological integrity in selected nations while deteriorating it only in Japan. Conversely, expanding government wealth tax receipts increased government spending, which increased carbon output in Malaysia, the United Arab Emirates, Thailand, Indonesia, Turkey, Iran, India, and China while decreasing in Japan. Disruption of public income had a deleterious impact on carbon secretions depressing in the selected geographical areas. Nevertheless, in most Asian economies, short-run asymmetric impacts translated into long-run consequences.

Yilanci and Pata [31] used a bootstrap causation assessment in the occurrence field to inspect the influence of financial strategy and fiscal progress on CO₂ emissions. The study intended to evaluate the rationality of the eco-friendly Kuznets curvature hypothesis and whether financial rule influenced the surroundings by analyzing a lengthy stretch sequences of data for G7 nations covering 1875-2016. The conclusions of causation from regime spending to CO₂ giving off changed throughout the period. With the exception of Canada, the causation from cost-effective development to CO₂ emissions followed a steady route and did not alter with time. The ecofriendly Kuznets curvature proposition was not true in the G7 states because causal links did not track a steady stroke. It also failed to point out a reversed U-shaped correlation between fiscal advance and ecological toxic waste. The results implied that environmental issues were not automatically fixed and that pecuniary dogma could help to mitigate weather modification at diverse moments.

Akbar *et al.* [1] used Dynamical multiple linear regression and completely adjusted regression analysis to estimate the effect of fiscal policy tools, sustainable growth, and FDI on sector specific emission levels in BRI (Belt and Road Initiative) nations from 2000 to 2018. They discovered a substantial link between fiscal policy devices, per capita GDP, FDI, and Carbon intensity in the manufacturing, electricity, and transport industries. Additionally, it was demonstrated that public expenditure was a more dependable method for reducing Carbon footprints in the BRI continent's industrial and transportation sectors. Abbass *et al.* [15] investigated the influence of financial regulation on biodiversity loss in Pakistan from 1976 to 2018. The findings showed that capital investment in the government entities, such as

healthcare and education, had a decreasing influence on Pollutant emissions, but public money generated through taxes promoted productivity expansion but at the expense of environmental damage.

Mughal *et al.* [6] investigated the properties of financial and fiscal guidelines on air sustainability in Association of South-East Asian Nations (ASEAN) between 1990 and 2019. The panel and longitudinal data, a Nonlinear Autoregressive Distributed Lag (NARDL) technique was used in the inquiry to investigate long - term and short estimations at the regional and national levels. Active fiscal strategy had a beneficial and considerable influence on Pollutant emissions, but recessionary fiscal and monetary policies had an inconsequential impact on Air quality in the near term. The lengthy parameter indicated that ASEAN's expansionary fiscal strategy reduced Greenhouse gasses. In the age of globalization, [12] evaluated the relationship between fiscal policy, overseas investment, economic deepening, trade openness, urban population, gross capital creation, labor force, and Carbon intensity. The analysis relied on a panel data collection encompassing 105 nations from 1990 to 2016. The quantitative results were calculated using multilevel regression dynamic panel methods such as completely adapted least squares and stochastic frontier extrapolation. The ensuing studies revealed that fiscal policies and internationalization exacerbated air degradation dramatically.

From 1990 to 2019, [32] examined the impact of fiscal and monetary policy on Carbon dioxide emission in Gulf Cooperation Council economic systems. Emissions of CO₂ were divided into two categories: geographical and consumption-related. The data demonstrated that public spending had lengthy beneficial consequences on both territorial and consumption-related emissions in the area, as well as relatively brief beneficial outcomes on geographical pollutants. Furthermore, fiscal policy had major impacts in Economies for both near and long - term, as did financial system in the near term.

3. Materials and Methods

The study investigates the role of green fiscal measures in the transition to a low-carbon economy. The investigation spans the years 2000 through 2020. There are two kinds of data obtained for this investigation, both of which are secondary in nature. From the response perspective, data on carbon emissions in million tonnes (Mt) is gathered from the World Bank Development Indicators. In terms of predictor variables, total government tax earnings are acquired from the Federal Inland Revenue Service (FIRS) Nigeria. While the Central Bank of Nigeria's Statistical Bulletin contains information on government capital outlays and foreign loans. Several statistical methods are employed to ensure that the datasets and model application are suitable. The unit roots comprise both group and individual unit root assessments (as stated

in Tables 2 & 3). Table 4 displays the results of further preliminary analytical testing. To validate the link between research variables, we employed a correlation matrix as a test of relationship (see Table 5).

The model provided for this investigation is highlighted below:

$$Y = \beta_0 + \beta X_1 + \beta X_2 + \dots + \mu_{it}$$

Where,

Y = Carbon pollutants (CO₂) reduction;

X = Green fiscal strategies

β = Coefficient

μ_{it} = Error term

The above model can be explicitly applied to this study as:

$$\text{LOGCO}_2 = \beta_0 + \beta_1 \text{LOGCEX} + \beta_2 \text{LOGFDT} + \beta_3 \text{LOGTRV} + \mu_{it}$$

Where:

LOG = Logarithm form of variables;

CO₂ = Carbon dioxide emissions;

CEX = Government capital outlays;

FDT = Foreign borrowing;

TRV = Total tax earnings of the government

β_0 = Coefficient of the parameter estimate

β_1 - β_3 = intercept

μ_{it} = Error term

On the a priori, we anticipate; $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$.

4. Results and Discussion

In this section, the results of this study have been discussed extensively as well as their necessary applications to enable ecofriendly economic strategies.

Table 1. Summary statistics

	CO ₂	CEX	FDT	TRV
Mean	2.01	2.84	3.31	3.12
Median	2.00	2.89	3.41	3.22
Maximum	2.13	3.36	4.10	3.72
Minimum	1.89	2.38	2.64	2.14
Std. Dev.	0.06	0.27	0.44	0.45
Skewness	0.29	-0.10	-0.02	-0.56
Kurtosis	2.42	2.23	1.85	2.29
Jarque-Bera	0.64	0.61	1.28	1.67
Probability	0.72	0.74	0.53	0.43
Sum	46.13	65.42	76.09	71.81
Sum Sq. Dev.	0.08	1.60	4.33	4.39
Observations	23	23	23	23

Authors' calculation, 2022

The summary statistics in Table put the nature and acceptability of the dataset to the test. The goal of this assessment is to guarantee that the datasets are distributed correctly in order to avoid aberrant statistical occurrences and misleading outcomes. The Jarque-Bera (JB) p-value is a basic piece of information that may aid in the evaluation. When the level of significance is greater than 5%, the datasets are considered typical and reliable; when it is less than 5%, the converse is true. As a result, the JB p-values in this study for CO₂, CEX, FDT, and TRV are 0.72>0.05, 0.74>0.05, 0.53>0.05, and 0.43>0.05, respectively. As a consequence, the JB p-values for the datasets are above the

materiality level. That is, the study makes use of appropriately allocated datasets.

Table 2 shows the group unit root result, which demonstrates that the complete research data are stable at first difference or order 1. All of the results from (Levin, Lin, and Chut; Pesaran and Shin, ADF – Fisher Chi-Square, and PP-Fisher Chi-Square) demonstrate that the datasets are stationary at first difference. Table 3 provides additional confirmation, where the research variable is tested and verified to be stationary at order 1. The findings suggest that our regression result is not fictitious and can be relied on in policymaking scenarios.

Table 2. Group unit root test: Summary

Series: LOG_CO₂, LOG_CEX, LOG_FDT, LOG_TRV

Sample: 1998 2020

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.98	0.00	4	84
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.42	0.00	4	84
ADF - Fisher Chi-square	65.05	0.00	4	84
PP - Fisher Chi-square	68.69	0.00	4	84

** Probabilities for Fisher tests are computed using an asymptotic Chi-square

Distribution. All other tests assume asymptotic normality.

Authors' calculation, 2022

Table 3. Individual unit root test

Variable	ADF	PP	ADF Critical value @ 5%	PP Critical value @ 5%	ADF P-value	PP P-value	ADF & PP Order of Co-integration
LOGCO ₂	-5.54	-5.55	-3.01	-3.01	0.00	0.00	I(1)
LOGCEX	-6.45	-6.45	-3.01	-3.01	0.00	0.00	I(1)
LOGFDT	-3.69	-3.69	-3.01	-3.01	0.01	0.01	I(1)
LOGTRV	-5.85	-6.71	-3.01	-3.01	0.00	0.00	I(1)

Authors' calculation, 2022

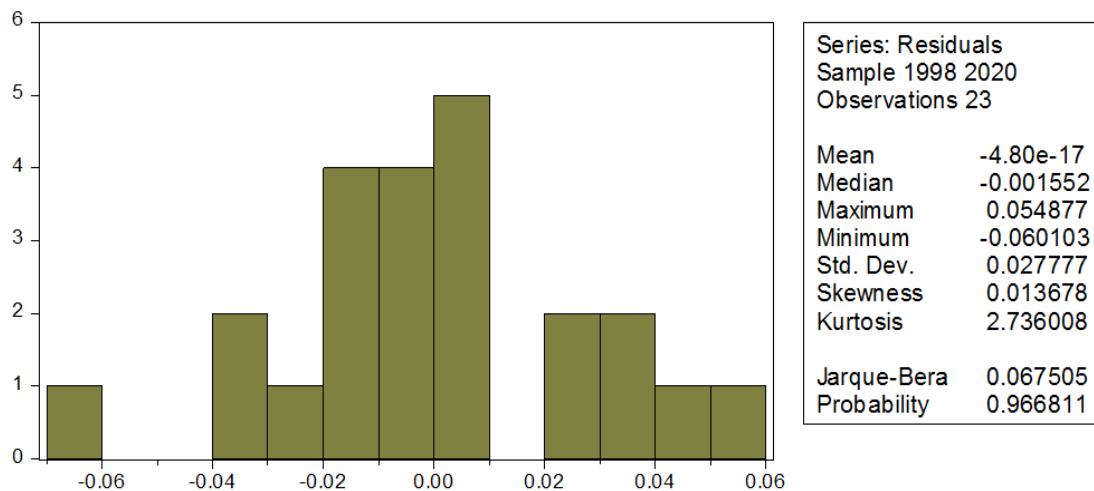


Figure 2. Normality confirmation

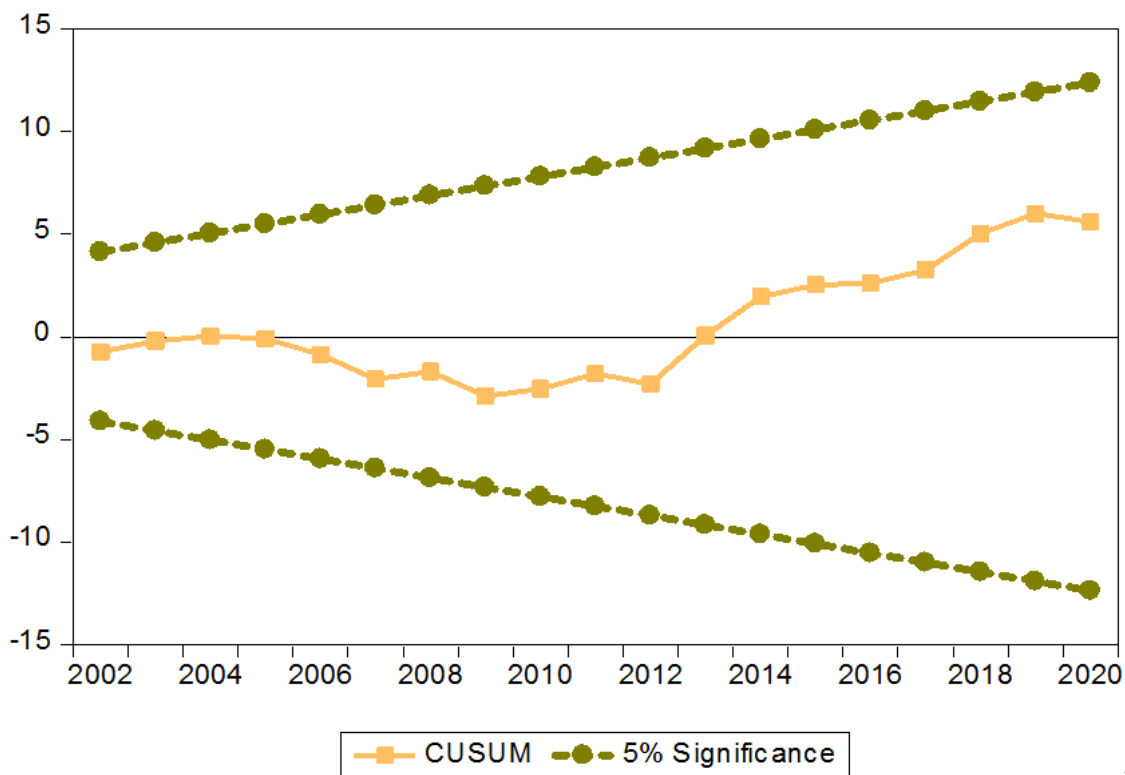


Figure 3. Robustness test

The regularity of the framework and the overall datasets was also verified using histogram normality, as shown in Figure 2. With a Jarque-Bera p-value of $0.96 > 0.05$, it demonstrates that the entire dataset is appropriately allocated and the research model is well represented. Figure 3 confirms the model's robustness and stability by showing that the orange dotted line is within the confines of the 5% significance level. The appearance of the orange dotted line between the two green dotted lines without crossing the borders indicates that this study's model is stable and resilient.

Table 4. Diagnostic test

Type	P-value	Predictor Variables	Variance Inflation Factor (VIF)
Ramsey RESET Test	0.08	LOGCEX	4.01
Breusch-Godfrey Serial Correlation LM Test	0.89	LOGFDT	1.10
Heteroskedasticity Test: Pagan-Godfrey	0.21	LOGTRV	4.20

Authors' calculation, 2022

The results of further initial tests for errors and multi-collinearity are displayed in Table 4. From the outcome in Table 4, the p-values are above 5% threshold and the VIF is below the value of 10 and not above the value of 4 [33-34]. Therefore, we conclude that there is no multi-collinearity, instability of regression model, Heteroskedasticity and serial correlation.

Table 5 shows the outcome of the sort of link that exists among all parameters used in this study. Table 5 shows that government spending has a 37% association with the degree of carbon emission in the environment. This finding suggests that government spending has a poor relationship with greenhouse gas emissions. That is, government expenditure in mitigating CO₂ pollution in the environment is too intangible. There is a modest link between CO₂ emissions and tax revenue. As a consequence, the present

taxation structure appears to be minimal in mitigating CO₂ radiations in the country. Foreign debt initiative, on the other hand, has a very significant association with CO₂ discharge control. This result is consistent with green finance programs, but it must be managed with prudence in order to minimize debt overhang. According to Table 5, foreign debt has a very poor relationship with capital investment in Nigeria. This finding indicates that green technology, which is a capital-intensive endeavor, is not receiving enough assistance from international creditors. Taxation, once again, is at odds with foreign borrowing while having a high correlation with capital investments. As a result, it has been demonstrated that government investment is more dependent on tax income rather than foreign debt.

Table 5. Correlation Analysis

Sample: 1998 2020
 Included observations: 23

Correlation

t-Statistic

Probability	LOG_CO ₂	LOG_CEX	LOG_FDT	LOG_TRV
LOG_CO ₂	1.00			
LOG_CEX	0.37	1.00		
	1.83	----		
	0.08	----		
LOG_FDT	0.83	0.11	1.00	
	6.78	0.52	----	
	0.00	0.61	----	
LOG_TRV	0.52	0.86	0.24	1.00
	2.77	7.76	1.13	----
	0.01	0.00	0.27	----

Authors' calculation, 2022

Table 6. Regression result

Dependent Variable: LOG_CO₂
 Method: Least Squares
 Sample: 1998 2020
 Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_CEX	-0.00	0.05	-0.08	0.94
LOG_FDT	0.10	0.02	6.84	0.00
LOG_TRV	0.05	0.03	1.66	0.11
C	1.52	0.09	17.37	0.00
R-squared	0.79	Mean dependent var		2.01
Adjusted R-squared	0.76	S.D. dependent var		0.06
S.E. of regression	0.03	Akaike info criterion		-4.03
Sum squared resid	0.02	Schwarz criterion		-3.83
Log likelihood	50.29	Hannan-Quinn criter.		-3.98
F-statistic	24.51	Durbin-Watson stat		2.00
Prob(F-statistic)	0.00			

Authors' calculation, 2022

The primary goal of this research is to determine the influence of fiscal policy initiatives on pollution reduction in Nigeria. Several papers analyzed in this study have advocated for green fiscal policy as the best strategy to reduce pollution and restore green vegetation in the global ecosystem. Green fiscal policy comprises the imposition of high carbon taxes and other associated tariffs, which will compel industries to shift to more ecologically friendly renewable energies [19]. One item stands out from the effect consequence of this investigation, as seen in Table 6. The fiscal policy instruments used in this study yielded disparate results. To begin with, government investment has a negligible negative impact on environmental degradation. As a result, the government appears to be underinvesting in pollution management as a priority. Second, while tax revenue collection has a favorable influence, it is insufficient to reduce CO₂ emissions. This means that carbon taxes should be implemented as part of a green fiscal policy program. Finally, it is worth noting that government foreign loans or borrowing have a large and favorable impact on CO₂ emissions reduction. This research has validated the green-finance innovation presented by [23]. Nigeria's position, on the other hand, is unique due to the country's enormous amount of debt. As a result, green fiscal policy in support of green-finance initiatives should focus increasingly on green bonds [25] and other interest-free green-funding sources from global financing agents that advocate for a clean ecosystem.

5. Conclusions and Policy Implications

Contamination of Nigerian biodiversity is one policy problem that necessitates a variety of corrective solutions. Fossil fuel consumption is another important byproduct of power generation use [35] predominant in the region. According to researches, the Nigerian economy increases with the production of carbon emissions, but at the cost of human lives [36]. Due to the necessity to uncover feasible solutions to the ecological concerns confronting the nation, the current study assesses the impact of fiscal measures in decarbonizing the country's ecosystem. The analysis spans the years 1998 to 2020 and examines the country's three primary fiscal policies (taxation, debt, and government investments). According to the findings in Table 6, government spending in this study is unfavorably inconsequential. The policy conclusion is that government fiscal investment in the environment is not resolving CO₂ problems and will necessitate budget changes to increase expenditure in pollution prevention. Second, the results reveal that even government tax revenues do not offer the essential assistance for environmental remediation.

As a result, the government will need to seek methods to quickly increase tax collection which should include introduction of other forms of environmental taxes obtainable in other regions of the world. According to [37], government spending on public welfare is proportional to

government revenue. If the government earns a lot of money, the amount of investment in social welfare will be quite visible. However, according to this analysis, government borrowing has a demonstrable and favorable impact in lowering emissions. The policy concern is that if the government borrows to remedy a crisis, the borrowing should not become routine, such that the country's debt profile keeps rising and not decreasing. Following the result of this investigation, its application will be highly relevant in tax policies, budgeting concerns, and debt management issues. The main point is to allow green economic strategies to thrive in this current era of climate change. Thus, the current and future administrations may be expected to use the findings of this study to enhance the country's budgetary system and tax policies in accordance with the demands of green fiscal strategies that are now being implemented in the majority of the world's developed countries.

However, the study proposes green-finance inventiveness [23] where obtainable. Ksonzhyk *et al.* [38] establish that solar energy is critical for governments in order to implement green fiscal policies. There is need for carbon taxation to increase tax revenue collection as a budgetary instrument that would enable the government to address all environmental concerns. The report also suggests that the government budget be improved in favor of the environment, but on a more rational ground, the government should minimize indebtedness as much as practicable. Finally, green fiscal measures are proposed in this study and they should incorporate strategies to obtain green-financing of carbon reduction infrastructures. According to [39], green fiscal systems have the ability to generate money for the government. That is, a fiscal policy reform that includes relevant environmental taxes is critical in reducing the country's carbon intensity. Green fiscal mechanism will also direct financial planning towards environmental protection, via investments in green technology and fiscal partnership with environmental specialists that will provide critical inputs to restore the country's natural green surroundings.

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