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Climate finance landscape in Nigeria: Options for resource mobilization

Veronica B. Edeminam¹, Anthony M. Akpasoh²¹*Doctoral Researcher, Department of Economics, Nile University of Nigeria, Abuja, Nigeria.*²*Chief Operations Officer, Tonipash Energy, Port Harcourt, Nigeria*

Abstract

The recently launched Nigeria's energy transition bold and ambitious plan indicates that Nigeria needs a minimum investment of \$10 billion annually until 2060 to achieve SDG7 goal by 2030 and achieve its net-zero target by 2060. With the multiplicity of other macroeconomic issues Nigeria is grappling with such as high debt burden, high borrowing costs from external sources, COVID-19 pandemic, and adverse effects of other external shocks, there is a need to understand the climate finance landscape in Nigeria. This paper provides an expository outlook into the climate finance options that Nigeria can take advantage of to mobilise resources domestically for climate action, without overbearing dependence on international loans and grants. Some of the options for domestic climate finance mobilization are green bonds such as sukuk green bonds and diaspora green bonds, emission trading, carbon taxes, budgetary allocations, tax exemptions and import waivers, among others. Reviewing the successes of other countries in sourcing climate finance through these instruments, Nigeria can leverage on the learnings from these countries to set up a more resilient framework for domestic climate finance mobilization to meet the climate change goals.

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Keywords

Climate change; Climate finance; Resource mobilisation.

1. Introduction

Climate change has been one of the topical issues of the 21st century. The first Earth Summit was held at Stockholm, Sweden in 1972, and since then, there has been a series of events held to discuss the adverse effects of climate change and strategies to combat the effects of climate change (United Nations, 2021). Climate change according to the United Nations (2022) refers to long-lasting shifts in weather patterns and temperatures. Climate change according to reports and evidence has led to the depletion of the Ozone layer, rise in sea levels, hotter temperatures, desertification, loss of biodiversity, flooding, melting polar ice, and catastrophic storms. Several frameworks such as Sustainable Goals, 2015 Paris Agreement, and the UN Framework Convention on Climate Change, are some of the international frameworks set up for climate change adaptation, mitigation, and resilience (United Nations, 2022). Most countries in the world have committed to these international frameworks.

Central to the achievement of the international frameworks and the National commitments to climate change is finance. Finances deployed in support of climate resilient projects and low carbon projects that assist in climate change mitigation and adaptation is called climate finance (Bhattacharyya, 2021). Climate finance is needed for the

public and private investments to combat the effects of climate change and transition to a green economy. While developed countries in 2009 at Copenhagen pledged to provide \$100 billion annually to developing countries for climate change adaptation by 2020, available data have shown that the target has not been met (United Nations, 2022).

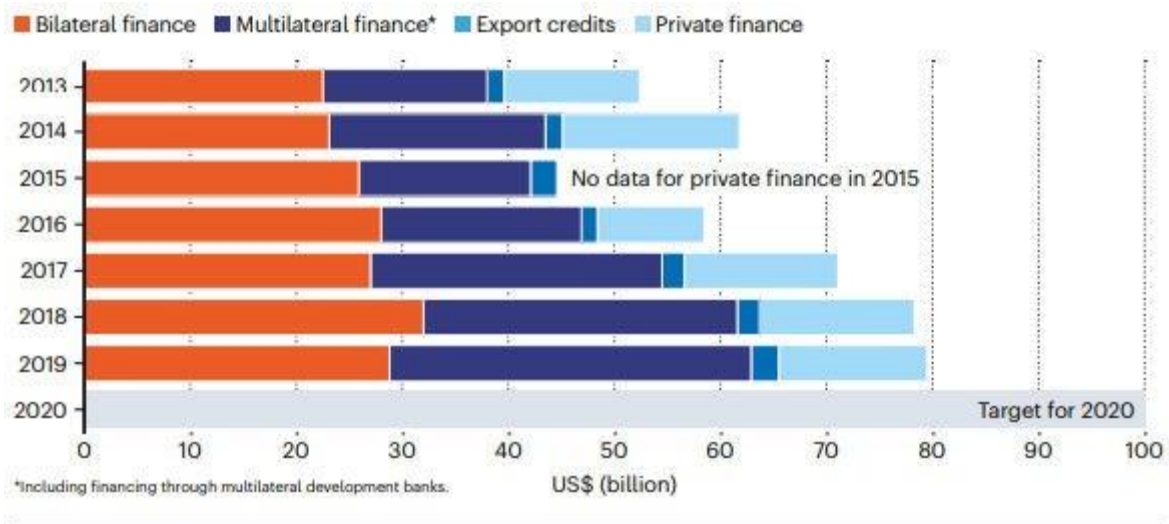


Figure 1: Total contributions from developed countries to developing countries for Climate Finance. Source: Timperley (2021)

According to Timperley (2021), developed countries never agreed on how to measure fulfillment of countries' pledges. Also, there was no formal agreement on what each developed country should pay (Timperley, 2021). The COVID-19 pandemic also worsened the possibility for developed countries to fulfill their annual \$100 billion climate finance pledge to developing countries (Schalatek, 2021).

For most developing countries on the other hand, the commitment to the Paris Agreement which is to reduce Greenhouse Gas (GHG) emissions and adapt to climate change is highly dependent on the \$100 billion annual funds from developed countries and other forms of international support. The scale of damage caused by climate change has shown that the investment required for climate change adaptation and mitigation is way above the \$100 billion dollar pledge annually. Thus, developing countries who are most vulnerable to the effects of climate change need to develop domestic climate finance revenue sources that are affordable and reliable for climate change mitigation and adaptation investments (Banga, 2018).

Jha (2014) explained that low carbon strategies and environmental policies of the government can be separated into public climate finance and private climate finance. Budgetary support, subsidies, taxes, and other market mechanisms make up public climate finance (Jha, 2014). Private climate finance on the other hand is made of debt instruments, equity finance, Clean Development Mechanism (CDM) finance, and partial risk guarantee facilities (Jha, 2014). Climate finance can also be sourced domestically through public and private climate finance mechanisms or sourced externally from multilateral and bilateral institutions. Some developing countries like India have developed a robust domestic portfolio of climate finance such as CDM Finance, issuance of debt instruments, private equity investments, subsidies, and taxes on fossil fuels. According to (Steckel et al, 2016) domestic revenues from emission pricing schemes invested into a country's sustainable goals could advance a country's sustainable goals faster and ensure ownership of climate policies and practices by the country.

In addition to Nigeria's commitment to the 2015 Paris Agreement, the 2021 Climate Change Act was signed into law. This act provides a framework for Nigeria to achieve low GHG emissions and mainstream climate actions into national programmes (Agbeyi, Alabi, and El-Rufai, 2022). Climate finance is very important for the successful implementation of the 2021 Climate Change Act. The objective of this study is to understand the evolution of climate finance in Nigeria, and explore the climate finance options that the country can undertake to achieve the ambitious plans of the 2021 Climate Change Act and the 2015 Paris Agreement. Beyond its analytical contribution, this research intends to add to the literature of climate finance as it relates to Nigeria.

Research about climate change mitigation and adaptation strategies are pervasive, however there is scarcity of research around climate finance in Nigeria. This research will contribute to climate finance literature as it will examine the evolution of climate finance in Nigeria and explore options for domestic climate finance mobilisation in Nigeria.

2. Literature Review

Nigeria is within the top 10 of the world’s most climate vulnerable countries (Climate scorecard, 2018). This is despite being a very minuscule contributor to GHG emissions. Nigeria with a population growth rate of 2.5% is projected to have a population of 400 million by 2050 (Statista, 2022). Population growth is considered one of the major contributors to climate change because more people means more demand for fossil fuel related products (LeDoux, 2009). The ambitious plans and strategies contained in the 2021 Climate Change Act and the 2015 Paris Agreement to which Nigeria is a signatory depend on climate finance mobilisation.

There is a general consensus that countries need to develop domestic climate finance strategies for climate change mitigation and adaptation. Banga (2018), stated that green bonds are innovative financial instruments that provide an opportunity into new pools of private capital to finance renewable projects. Banga (2018) defined green bonds as a fixed-income financial instrument for generating funds to finance or refinance renewable projects. Since the issuance of the first green bonds by the European Investment Bank in 2007, the green bond market has developed rapidly (Chen and Zhao, 2021). Green bonds have been used in different countries and have produced positive results. Global green bonds issuance has exceeded \$1 trillion by the end of 2020, and developed countries such as France, USA, and Germany are the leading countries in the issuance of green bonds (Bhattacharyya, 2021).

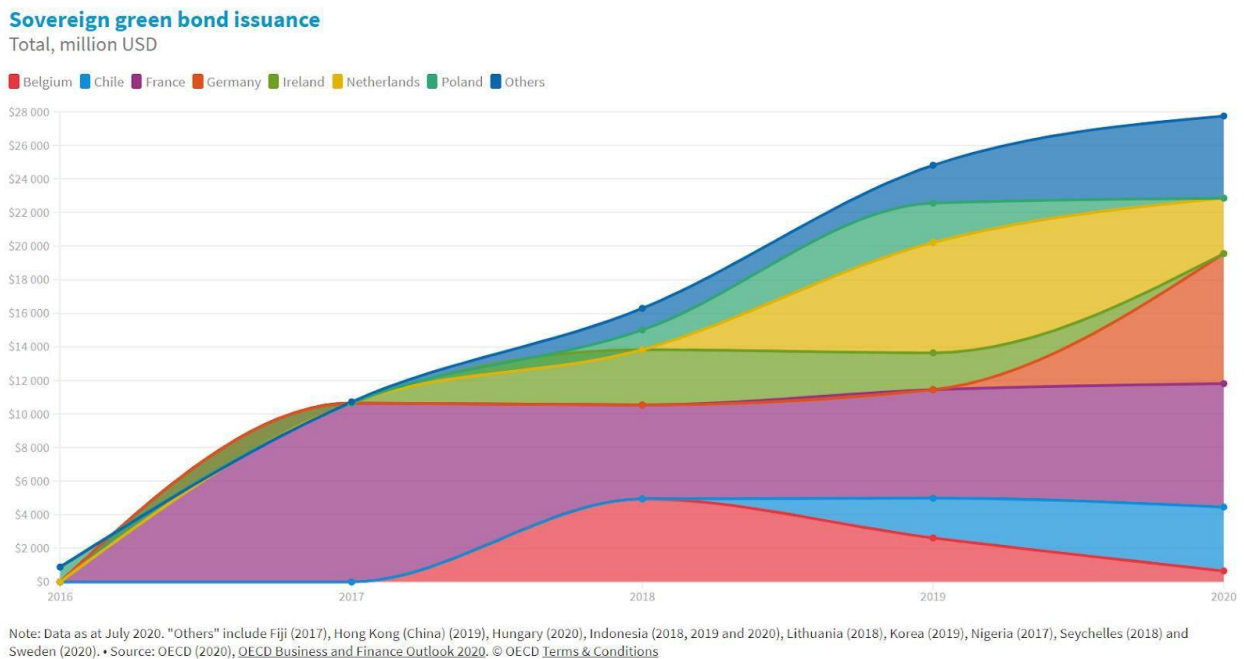


Figure 2: Sovereign green bonds issuance. Source: OECD (2020)

In China, since the issuance of green bonds in 2015, green bonds market has grown rapidly with good credit, strong liquidity, and massive participation from the public (Chen and Zhao, 2021). Green bonds were first issued in South Africa in 2021 for resource mobilisation towards the achievement of climate change objectives (Maylie, 2022). Progress has been made on the standardization issues for green bonds through the establishment of the Green bonds principles, and the Climate bond standards (OECD, 2015).

Another viable source of climate finance is emission trading, also known as carbon trading in some literatures. Carbon trading is a complex system of trading carbon credits between an entity which has not reached its carbon emission

limit and another entity that has exceeded its carbon emission limit (Reyes and Gilbertson, 2009). Carbon trading according to Reyes and Gilbertson (2009) takes two forms; cap & trade, and offsetting. The cap and trade scheme requires that governments give out carbon permits to industries setting a limit of GHG which industries can emit. One entity can trade these permits or its quota with another entity that exceeds its carbon emission limit (Reyes and Gilbertson, 2009). On a broader level, the forces of demand and supply will adjust prices of carbon credits which should reduce emissions eventually. The offsetting scheme requires that instead of big companies or industries cutting emissions at source, they can finance energy-saving projects outside the capped area (Reyes and Gilbertson, 2009). The company or industry is given carbon credits based on the value of energy-saving projects it has invested in, and the emissions reduced outside the capped area in another country (Reyes and Gilbertson, 2009). The idea of emission trading is that the cap will be reduced gradually over the years.

The European Union Carbon Trading Scheme (EU ETS) is the world's largest carbon trading scheme (Gilbertson and Reyes, 2009). The EU ETS is also the longest established cap and trade carbon market (Gilbertson and Reyes, 2009). The UN-administered Clean Development Mechanism (CDM) is the largest scheme (Gilbertson and Reyes, 2009). Successes have been reported from the carbon trading market in China and some other countries such as India have created a domestic carbon credit trading market recently (Kumar, 2022). Despite reported successes with carbon credit trading, there are some concerns that a serious issue such as climate change should not be subjected to price signals from the market which can be influenced by big market players (Gilbertson and Reyes, 2009). There is also the issue of climate justice, where countries who contribute insignificantly to GHG emissions suffer most from the effects of climate change. From this perspective, carbon credit trading may not be very effective to curb the effects of climate change.

Carbon taxes are one of the fiscal instruments to reduce GHG emissions (Poterba, 1991). Carbon taxes are taxes levied in proportion to the carbon dioxide emissions which result from combustion of carbon based fuels and is a viable source of climate finance (Poterba, 1991). Carbon taxes are instituted to change the behaviour of consumers. By making carbon products more expensive, households will look for alternatives that are cheaper, so they can avoid paying the taxes. Carbon taxes can be used to reduce emissions with the lowest possible costs because it encourages businesses to seek more efficient ways to do business (Ragan, 2018). A well designed carbon tax according to Marron and Toder (2014) can reduce climate change risks, encourage low-carbon technologies innovation, raise revenue, and minimize the cost of emissions reduction.

Developed countries such as Denmark, Finland, Sweden, Netherlands are among the first adopters of carbon tax as a source of climate finance and an instrument to reduce emissions (Lin and Li, 2011). Lin and Li (2011) investigated the effect of carbon taxes on mitigating CO₂ emissions in Denmark, Sweden, Netherlands, and Norway using the method of Difference-in-Difference (DID). The results showed that the effects of carbon tax in Denmark, Netherlands, and Sweden are negative but not statistically significant because of tax exemption policies on certain energy intensive industries (Lin and Li, 2011). In Norway, carbon tax has not realized its mitigation effect because of the rapid increase of CO₂ emissions in oil drilling and natural gas exploitation sectors (Lin and Li, 2011). The results also showed that carbon tax showed a negative and significant effect on the growth of Finland's CO₂ emissions (Lin and Li, 2011).

Anderrson (2019) examined more specifically, the impact of carbon taxes on CO₂ emissions from transport. The result revealed that after implementation of carbon taxes in Sweden, CO₂ emissions from transport declined by almost 11% (Anderrson, 2019). Floros and Vlachou (2005) investigated the impact of carbon tax on energy-related CO₂ emissions using time series data from 1982-1998. The model was analysed using a two-stage translog cost function and the results showed that a carbon tax of \$50 per ton results in a significant reduction in direct and indirect CO₂ emissions from their 1998 level (Floros and Vlachou, 2005).

Other sources of climate finance are international climate finance donations, notably the \$100 billion climate finance commitment to be provided by developed countries to developing countries for climate change adaptation and mitigation. Available data has shown that the donations which sometimes come in the form of loans from developed countries are skewed in favour of climate change mitigation projects because success is clear and measurable (Timperley, 2021). Success of climate change mitigation projects can be measured by captured carbon emissions or

avoided carbon emissions, meanwhile success of climate change adaptation projects is not easily measurable because the risks and vulnerabilities change, thus adaptation changes (Timperley, 2021).

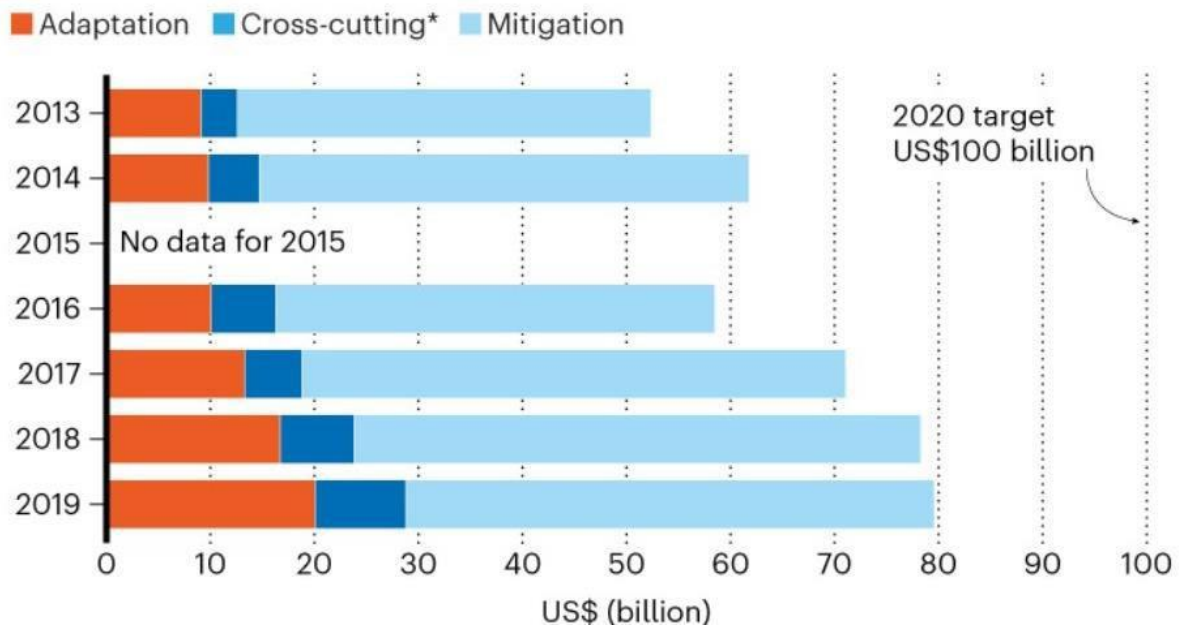


Figure 3: Climate change mitigation and adaptation projects funded by contributions from developed countries. Source: Timperley (2021).

Apart from taxes, there are other fiscal policy instruments for climate finance such as subsidies for clean energy investments, and import waivers for clean solutions investment. Clean energy subsidies serve environmental goals and also promote innovation, create jobs, and enhance economic growth (Espa and Rolland, 2015). In the USA, there is a recent waiver of duties on imports of solar modules for 2 years to increase access to a sufficient supply of the components (Mishra, 2022). Other African countries like Burundi, Rwanda, Kenya, Tanzania, and Uganda have implemented import waivers for renewable energy products including accessories and deep cycle batteries (Ebii, 2019). According to Ebii (2019), Kenya implemented import waivers on solar-PV systems which has made them increasingly affordable especially for rural communities. Duty remission is also granted for importation of raw materials used in the production of solar equipment to boost competitiveness of locally produced solar products (Ebii, 2019).

Most importantly, governments commitment to climate change mitigation and adaptation can be shown in budgetary allocations for climate action. This form of domestic resource mobilisation for climate action will make the country own the solutions.

Theoretical Framework

Some economic theories underpin government behaviour in sourcing for finance to fund its economic objectives. The classical theory propounded by Adam Smith explains that the public spending is unproductive, thus public authorities should not intervene in the economy to correct economic imbalances (Tsoulfidis, 2007). Economic imbalances only last for the short run and the invisible hand of the economy will correct all imbalances in the long run (Tsoulfidis, 2007). The Classical theory supports private sector led interventions to invest in climate change adaptation and mitigation projects. The Keynesian theory on the other hand proposes that during economic imbalances, the government should intervene to balance the economy. Government intervention is very useful in periods of economic recessions, and to fund social expenditures that are beneficial for the people but are very capital intensive (International Monetary Fund, 2017). The social nature of these investments make the projects less preferred by private investors. The Keynesian theory government intervention in providing climate finance for climate mitigation

and more especially, climate adaptation investments. The success of climate adaptation investments, unlike climate mitigation investments, are difficult to measure and define because of evolving climate vulnerabilities (Timperley, 2021). Climate adaptation investments are often seen as social investments, and require more government intervention, because private investors and donors often prefer to fund mitigation projects because of the ease in measuring the success (Timperley, 2021).

3. Evolution of Climate Finance in Nigeria

One of the goals of the COP 26 at Glasgow was for countries to mobilize finance to deliver on their net-zero targets by mid-century (Abgeyi, Alabi, and El-Rufai, 2022). Developing countries such as Nigeria cannot solely depend on finance from developed countries to combat climate change. Taking a cue from ODI finance for development, various studies have shown insignificant impact of grants or donor funds on the development of developing countries. One of the reasons is the conditionalities attached to such grants where most of the grant resources are recycled back to the developed countries through procurement contracts.

Barely a week after the COP 26 conference, the Climate Change Act 2021 was signed into law (Agbeyi, Alabi, and El-Rufai, 2022). The act provides a framework to mainstream climate change actions into national plans and programmes (Agbeyi, Alabi, and El-Rufai, 2022). The 2021 Climate Change Act provides for the establishment of a Climate Change Fund which will manage all amounts paid by way of donations to climate change cause, fees, subventions, grants, appropriations from the National Assembly, carbon taxes, fines and charges to private and public entities, funding from international organizations, etc (Agbeyi, Alabi, and El-Rufai, 2022). The sources of climate finance available for Nigeria to explore in achieving the energy transition plan are;

3.1. Green bonds

Green bonds are financing instruments that exclusively direct financing to positive climate projects, and projects with environmental outcomes across energy, transportation, agriculture, construction, etc (Toure and Deneke, 2022). Green bonds are the most popular form of climate finance in the capital market because renewable energy infrastructure is characterized by high up-front capital costs and long-dated income streams sometimes affected by inflation (Bhattacharyya, 2021). Green bonds are gaining popularity because of the understanding about the potential links between climate change and financial stability (Banga, 2018). The 2015 Paris Agreement has made companies more environmentally conscious and more willing to align their objectives with climate objectives by investing in green bonds. Sukuk bonds for infrastructure financing in Nigeria have achieved considerable success (Oliisah, 2022). Leveraging on the success of Sukuk bonds in Nigeria, green Sukuk bonds can be issued to finance climate change adaptation and mitigation plans. Sukuk bonds are Islamic financial instruments issued in compliance with Shariah principles to finance projects with environmentally positive impacts (Bhattacharyya, 2021). Diaspora green bonds can also be issued, where Nigerians in diaspora can contribute to climate change mitigation and adaptation in Nigeria. Nigeria's first ever diaspora bond issued in 2017 raised \$300 million and was oversubscribed by 130% (NIPC, 2017). The potential for Diaspora green bonds is significant because they offer an opportunity for Nigerians in diaspora to help Nigeria while providing an investment opportunity (Ketkar and Ratha, 2010). In issuing green bonds, there should be transparency in determining what investments count as "green", and how the proceeds are managed (OECD, 2015).

3.2. Emission trading

Emission trading is the buying and selling of carbon credits in the carbon market. The prices of carbon units are determined by the market forces of demand and supply. According to the International Energy Agency (2020), carbon pricing is a cost-effective, valuable tool to promote clean energy transitions because it stimulates investments in low-carbon technological innovations, and creates synergy between energy and climate policies. If emission trading schemes are well designed, they can bring environmental and social benefits to the country (International Energy Agency, 2020). However, designing an emission trading scheme in Nigeria would require clearly defining the intended role of the emissions trading system. The role will facilitate the participation of market players, and choice of the type of cap (International Energy Agency, 2020). Other factors to consider when implementing emission trading

is the presence of a well-established carbon trading market like the stock exchange, market stability, and setting the scope of the emission trading scheme (i.e. the GHGs to be regulated, geographic area, and sectors) (Guigon, 2016). Continuous engagement with stakeholders for understanding and avoidance of policy misalignment is also very important (Guigon, 2016).

3.3. Carbon taxes

Since the imposition of carbon taxes by Finland in 1991, a lot of other countries have imposed carbon taxes as one of the ways to generate climate finance. Carbon taxes are another cost-effective way to achieve climate change mitigation objectives because of its versatility and flexibility (International Energy Agency, 2020). In India, coal is taxed per tonne to invest in clean energy research and development (Jha, 2014). If carbon taxes are well implemented, it could have short term effect (changing consumer behaviour to choose greener alternatives), medium term effect (economic agents will decommission high-carbon assets), and long-term effect (investment in environmentally friendly infrastructure) (International Energy Agency, 2020). In setting carbon taxes, the important factors to consider are the tax rate, the use of the tax revenue, the tax collection process, and the tax base (which are the people to be taxed) (Marron and Toder, 2014). Another issue to be considered is what forms of GHG should be taxed, CO₂, methane, nitrous oxide. In Nigeria, the carbon tax act came into force on 1 June, 2019 (PKF Nigeria, 2022). The phase one of the Carbon tax act targets only direct emitters of GHG. In the future, carbon taxes might be charged on indirect emissions such as purchase of energy consumed.

3.4. Fiscal policy

Subsidies, tax exemptions, budgetary allocations, and reduction in import duties are some of the other fiscal instruments that can be used to achieve climate change objectives. 2.75 million Nigerians will have access to stand-alone solar products by 2025 if VAT and import duty exemptions on stand-alone solar products are effective (Africa Clean Energy Technical Assistance Facility, 2021). The fiscal environment can also promote public-private partnerships to mobilise domestic resources for climate change mitigation investment.

4. Summary, Conclusions, and Recommendations

The Nigeria energy sustainable plans are ambitious and bold and cannot rest only on the oars of international finance. There has to be deliberate efforts to mobilise domestic climate finance resources to meet the SDG 7 goal by 2030 and the net-zero goal by 2060. The emphasis on domestic climate finance mobilisation is because exchange rate depreciation increases the nominal value of external debt thus increasing debt burden.

One of the most widely used instruments for raising climate finance is green bonds. Green bonds issuance is a low hanging fruit and Nigeria can leverage on established international green bonds standards and principles to issue her own green bonds. Some of the standards and principles are: Green Bonds Principles (GBP - a self-regulatory initiative designed to promote transparency and disclosure in the market), and the Climate Bond Standards (OECD, 2015). For increased diversity, sukuk green bonds and diaspora green bonds can be issued. The development of the emission trading system depends on a lot of factors such as defining the scope of the emission trading system, distributing emission allowances to regulated entities, setting a cap, and addressing market volatility issues (Guigon, 2016). The emission trading system works with the forces of demand and supply for carbon credit, thus it should be properly analysed before undertaken.

Carbon taxes is another low hanging fruit that can be explored for mobilising domestic climate finance resources because of its cost-effectiveness. However, factors such as tax base, tax rate, which GHGs to tax, and the tax collection process should be considered in setting carbon taxes. Other fiscal instruments such as budgetary allocation, subsidies, tax exemptions, import duties reduction, are very vital instruments in mobilising domestic climate finance resources.

The climate change issue to be addressed should determine the kind of funds to be mobilised. For example, green bonds can be issued for climate mitigation projects, while climate adaptation projects can be funded through fiscal measures such as subsidies, and carbon taxes. Developing instruments for domestic climate finance mobilization will

also deepen the capital market by increasing the range of financial instruments that private and institutional investors can access. For more sustainable gains, international donations should take the form of Foreign Direct Investments instead of cash donations because of the direct and indirect positive impacts of foreign direct investment in the economy.

Investments in data management systems so that the contributions of the climate finance investment to reducing GHG emissions and also adaptation are adequately measured and reported. The availability of data for Nigeria to effectively measure its contribution to climate change adaptation and mitigation. Structural improvements like creating a dedicated climate change finance unit at Debt Management Office to be responsible for all climate change financing matters in the international and domestic fora, would yield positive results.

An empirical research into the effect of the different sources of climate finance on reducing GHG emissions for developed countries can be explored for further studies.

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