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Subsidy Reform and Private Investment in Nigeria's Renewable Energy Sector: A Post-Petroleum Economic Perspective

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Abstract

The decision of Nigeria in 2023 to end long-standing fossil fuel subsidies brought the country to a critical juncture in its energy history. Although this reform is generally viewed as a fiscal requirement meant to restore economic efficiency in the market and reduce public debt, the subsequent impact on private investment in renewable energy has been little studied. The current policy discourse takes for granted that the removal of subsidies will automatically steer capital towards cleaner sources of energy, however, it is not clear empirically how such changes influence investor confidence, capital deployment, and project tenability. Filling this gap is the objective of this study, which carries out a systematic review of peer reviewed-journal articles, policy briefs and institutional reports from 2019 up till 2025 using a country-specific lens to monitor the situation from Nigeria. The results suggest that the impact of subsidy reform in private renewable investment is mixed and depends greatly on supportive factors like regulatory consistency, fiscal recycling strategy and risk mitigation tools. Although the phase-out of subsidies is making the market place a level playing field for renewables (i.e. eliminating the distortions of fossil fuel prices), this is also creating uncertainty in the absence of credible policy frameworks and investment triggers. It highlights the need for an integrated policy-finance ecosystem to ensure that reforms result in durable investment. It ends with specific policy recommendations to steer Nigeria's energy transition towards its fiscal ends and the Sustainable Development Goals (SDG 7 and SDG 13).

Keywords: Energy transition, Nigeria, Post-petroleum economy, Private investment, Renewable energy, Subsidy reform.

1. Introduction

Nigeria's energy scene has been dominated for decades by a fossil fuel subsidy regime, which, although politically convenient, has come with heavy fiscal burdens and has discouraged transition to cleaner energy sources. For many years, fuel subsidies have captured large shares of national revenue—up to ₦4.39 trillion in just 2022—crowding out investments in vital infrastructure, like renewables (Akinyemi et al., 2021; Okonkwo & Yusuf, 2023). These subventions have not only engendered economic inefficiencies and rent-seeking tendencies but also impaired the allocative efficiency in the energy market, by artificially affecting prices, thereby under-stimulating the interest to develop alternative energy sources (Oyewo et al., 2021).

With the acceleration of fuel subsidies in 2023 as part of wider economic reform, Nigeria found itself at a crossroads in its energy transition. Subsidy elimination was designed to release fiscal space and decrease the country's unsustainable debt service-to-revenue ratio and to encourage a more market-based energy economy (World Bank, 2024). But the sustainability of this transition in the long term will be strongly dependent on not just if the policy shift results in significant increase in private sector investment in renewable energy—an area with potential for addressing Nigeria's perennial power shortages, mitigating greenhouse gas emissions, and generating green jobs (IRENA, 2023; Abdullahi & Bello, 2020). Renewable energy is a source of energy that is utilized in a given area continuously without any time lag.

The shift to renewables in a post-subsidy world may not just be an environmental imperative, but a strategic economic one too. Nigeria has a less than 60% electrification rate and rural areas have little access to power (Eze, 2022). "Conventional generation capacities thermal and gas-based are not available and are also polluting in nature. But renewable options, especially those that are decentralized, such as solar mini-grids and standalone systems, provide a scalable and cost-effective alternative, which are also climate-resilient. However, renewable energy growth will depend to a great extent on the mobilisation of private capital, as public financing will not be

able to close the estimated USD10 billion investment gap in the sector over the next decade (GIZ, 2021; UNEP FI, 2021).

However, there is little empirical knowledge of the impact of subsidy reform on private investment in Nigerian renewable energy, in spite of the change in policy. This gap in understanding is especially pronounced with regard to inv estors' risk perceptions, regulatory commitment and policy consistency in a post subsidy - withdrawal world. Previous research has either examined macroeconomic impacts of subsidy withdrawal (Akinyemi et al., 2021) or generic constraints to renewable energy penetration (Adedeji and Ajayi, 2024) but has not combined both dimensions to understand how fiscal shifts change the investment environment. Further complicating matters are erratic policy signals, and immature financial tools that undermine investor participation in Nigeria's clean energy industry (Oyebanji et al., 2023).

Thus, this study addresses this important gap by seeking to review, based on literature, the following cognitive aims:

The first is to evaluate the linkages between the subsidy reforms and private investment in Nigeria's renewable energy sector. Second, to examine the barriers and drivers of private-sector involvement in a post-subsidy situation. Third, to offer actionable and implementable policy recommendations that would facilitate a just, inclusive, and investment-ready energy transition.

Given its ability to synthesize a variety of evidence, to highlight theoretical and empirical absences and to weave a comprehensive story around changing policy-investment dynamics, a literature-based approach is particularly appropriate for this kind of inquiry. This will help to accommodate cross-disciplinary perspectives from energy economics, institutional theory, public finance and climate policy – subject areas that are key to the intricate interconnection between reform, investment and sustainability within the Nigerian context (Eboh & Nwafor, 2020; IRENA, 2023).

Situating the study within a wider discourse on post-petroleum economic development, the review not only situates Nigeria's energy subsidy reform, but also contributes to global discussions on the socially just transition to a low carbon energy future in the emerging market context. The study presents a firm basis for developing need-based interventions consistent with the Sustainable Development Goals (SDG 7- affordable and clean energy, SDG 13- climate action), and Nigeria's long-term development plan.

2. Conceptual and Theoretical Review

2.1. Conceptual Lens

The theoretical basis of this research is twofold - the Post-Petroleum Economic Framework and the Energy Transition Justice Model. These frameworks provide a detailed view of the complex relationship between fiscal reformation, investment trend and just energy transition in Nigeria's resource-based economies.

2.1.1. World of Post-Petroleum Economy

To analyze the transition of Nigeria from oil-based economy to an investment-driven diversified renewable based energy system, this chapter offer the Post-Petroleum Economic Paradigm as an instrument of strategic analysis. The two key pillars it this framework is a new fiscal course and clean energy investment motivations. The latter comprises the re-channeling of public expenditure resources from inefficient and regressive fossil fuel subsidies to pro-development sectors (renewable energy, education, infrastructure) (Eboh & Nwafor, 2020; Akinyemi et al., 2021). In the case of Nigeria, the 2023 implementation of subsidy reform is a unique moment in budgetary history that can either leapfrog the country into sustainable development or deepen its social inequality and investment insecurity, depending on which policies follow (World Bank, 2024).

The fiscal room generated through subsidies removal which was put at over ₦4 trillion annually can be reallocated to targeted investment incentives for the private sector in the clean energy room (Oyewo et al., 2021). These incentives could take the form of feed-in tariffs, tax incentives, soft financing, and sovereign guarantees-mechanisms that have been effective in stimulating private investment in renewable energy in similar settings such as Kenya, Morocco and India (IRENA, 2023; Adedeji & Ajayi, 2024). But with no evidence of co-ordinated and transparent mechanism to channel these fiscal increases, the subsidy removal may exacerbate more investor lack of confidence and the incidence of energy poverty (Okonkwo & Yusuf, 2023).

The Conceptual Framework In addition, the model highlights the centrality's of institutional capacity building, regulatory predictability and macroeconomic stability in guaranteeing the attractiveness of Nigeria's energy sector to both local and foreign investors (Eze, 2022). The interaction between fiscal adjustment and investment incentives is not only technocratic, it is politically economic, rooted in the legacy of rent seeking, policy reversals and governance opacity that needs to be addressed if reforms are to be credible (Oyebanji et al., 2023).

2.1.2. Energy Transition Justice Model

As the energy transition justice model 8 shows, the transition to renewable clean energy has evolved from traditional and industrial revolutions to the current fashionable-big business and technical revolutions.

Complimenting the economy of reform is the Energy Transition Justice Model, which considers the social and distributive justice implications of Nigeria's post-subsidy energy reform. It is, at root, proposed that any transition in energy (including one that would be brought about by the phased neutralisation of pervasive public subsidies) will, for reasons of equity and justice, demand a just and inclusive burden-sharing, active participation of populations, and diversity in terms of their income level, sex, ethnicity, and local residence (Jenkins et al., 2020; UNEP FI, 2021). For instance, in Nigeria, fuel subsidies have traditionally acted as a de facto safety net for low and middle income households, even though their aggregate macroeconomic impact is regressive (GIZ, 2021). The rapid abnormal suspension of this life wire without compensatory safety net systems put the poor at risk of being subjected to unjust suffering even further by perpetuating social discontent and political blow-back (Okonkwo & Yusuf, 2023).

The justice model obliges us to judge the products of reform, not only for their fiscal efficiency or the size of the investment they represent, but also for their equitability as regards access toenergy, their affordability and the

capacity to sustain them across generations (IRENA, 2023; World Bank, 2024). This could involve reinvesting a portion of the fiscal savings in off grid renewables for underserved rural communities, scaling decentralised energy technologies and developing social entrepreneurship in the clean energy sector. Regardless, practices such as lifeline tariffs, inclusive stakeholder engagement, and transparent reinvestment of proceeds will be important for making Nigeria's subsidy reform a supportive—rather than undermining—force for an equitable energy transition (Abdullahi & Bello, 2020; Oyewo et al., 2021).

Finally, the justice approach highlights the importance of procedural justice: system-wide procedures for both reallocating subsidies and granting RE incentives need to be participatory and evidence-based. This reduces elite capture and legitimacy in transition (Jenkins et al., 2020; Eze, 2022).

Collectively, these two concepts account for much of the framework of this study: Post-Petroleum Economic Framework and Energy Transition Justice Model. The former is essential to help us understand the re-alignment of macro fiscal and investment priorities that are needed to build an energy economy based on sustainability; the latter ensures that any shift occurs in a socially inclusive, politically feasible and ecologically sensitive manner.

2.2. Theoretical Framework

A rational and comprehensive theoretical perspective to investigate the dynamics of subsidy reform and private investment in the renewable energy (RE) sector in Nigeria is essential because the impact depends on several levels of the economic, political and institutional framework influencing investor decisions. The paper is informed by three interconnected theoretical frameworks: Investment Climate Theory, Public Choice Theory and Institutional Theory in order to critically analyse the impacts of fiscal and regulatory shifts on the evolution of investment in a post-subsidy, renewable-based economy.

Investment Climate Theory provides a grounding framework for understanding how macroeconomic stability, policy consistency, and institutional transparency influences investor confidence in countries with histories of volatile markets and lax enforcement mechanisms, such as emerging markets. The theory argues that the attractiveness of any investment place is a combination of the predictability, conduciveness of the business environment, the availability of infrastructure and the credibility of government commitments (OIET, Kinda, 2010; Eifert et al., 2015). FOR EXAMPLE Nigeria The sudden withdrawal of the fuel subsidies in 2024 in Nigeria changed the financial dynamics, so this may be achieving better budgetary & economic health, at the same time creating much volatility to pricing structures and energy costs for comparison purposes. This uncertainty also has the potential to amplify the perceived risks of investing unless it is accompanied by clear post-reform policies which increase the attractiveness and reduce the risks for the general investment in renewables (Oyewo et al., 2021; Abdullahi & Bello, 2020). Information coming out of a number of transitional economies shows that reforms of subsidies not harmonized with clear policy directions and risk mitigation instruments may trigger some kind of investment inertia, rather than acceleration (IRENA, 2023; Adedeji and Ajayi, 2024).

Public Choice Theory adds value to this analysis because it incorporates the political economy aspects of subsidy reform such as the influence of vested interests, populism and rent-seeking behavior on energy policy outcomes. It has been posited that public policy choices — including that of fuel subsidies — are the result of the strategic game !4 played by political agents motivated by the accrual of votes, command of economic rents, or protection of elite benefits (Tullock, 2005, Acemoglu and Robinson, 2012). In Nigerian, decade's long practice of subsidy regulation has not only created fiscal inefficiencies but has also created strong vested interest that have hobbled reform efforts as they benefit from subsidy leakages, economically and politically (Akinyemi et al., 2021; Okonkwo & Yusuf, 2023). Accordingly, even benevolent subsidy removal measures may encounter operational difficulties, popular opinion resistance and policy flip-flops, which will all erode savers' confidence in the market. Consequently, the robustness and legitimacy of reform results also lie in political will and stakeholder support without which a consistent long-term investment in renewable will not be sustainable (GIZ, 2021; World Bank, 2024).

Institutional Theory supplements these views by stressing the role of governance mechanisms, the enforcement of rules, and the coherence of our institutions in determining market actions. This theory contends that irrespective of policy content, institutional quality; including regulatory bodies, courts, and bureaucratic agencies that in turn will account for the effectiveness of policy implementation and the trustworthiness of the quality of the environment where investment will be conducted (North, 1990; Scott, 2014). In Nigeria, low public sector capacity, fragmented regulatory responsibilities, and lack of clarity and consistency in energy policies have consistently undercut private sector involvement in renewable energy development (Eze, 2022; Oyebanji et al., 2023). For example, the overlapping regulatory roles played by the NERC and REA, as well as federal ministries, results in a lack of clarity when it comes to licensing, tariffs, and procurement – which tends to discourage long-term capital investment. In addition, institutional opacity results in the late approval, non-transparent public- and private partnership architecture, weak contract implementation, increased cost of transaction and it undermines both local and Foreign Domestic Investors (UNEP FI, 2021; Jenkins et al., 2020).

When combined, these theories offer a strong, explanatory framework to understand the post-subsidy investment landscape in Nigeria's renewable energy market. Whereas Investment Climate Theory emphasizes the economic and regulatory incentives needed to attract capital, Public Choice Theory embeds the politics around subsidy reform into the larger story of political opposition and elite negotiations. 5Institutional Theory, in contrast, focuses on the systemic governance changes required to translate fiscal policy shifts into investable actions. The combination of these theoretical perspectives is particularly applicable to energy transition routes which are not only economically feasible but also politically viable and institutionally legitimized. Therefore, this study is grounded in them Institutional Theory, which provides the broadest theory that explains how the quality of governance, the design of policy, and the execution of regulation jointly indetimension the success or failure of private investment in the post-petroleum energy transition in Nigeria.

2.3. Conceptual Framework

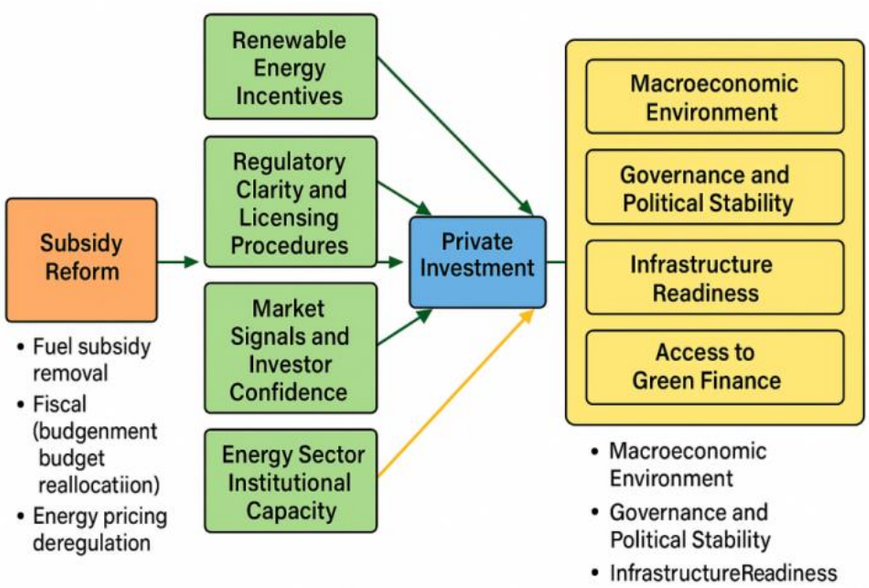

Figure 1. Conceptual Framework Diagram.

The conceptual framework for this study provides a visual and theoretical representation of how subsidy reform influences private investment in Nigeria's renewable energy sector, particularly within a post-petroleum economic paradigm. t the heart of this model is the exogenous variable - subsidy reform, which includes fuel subsidy elimination, fiscal reorientation due to budgetary redistribution, and deregulation of energy pricing. Such policy changes are economically required but cannot in isolation lead to the type of investment occurred if not combined with some facilitating instruments and influenced by certain external factors.

The mediating variables are mechanisms by which the subsidy reform influence investment outcomes is channeled. These could be the modalities for the provision of renewable energy incentives like feed-in tariffs, tax holidays, concessional grants, among others that would help address market failure and create a fair playing field for renewable energy investors. Another important path is regulatory clarity and the licensing process, as murky policies and long permitting schedules can scare investors away. If subsidy reforms such as these are linked to clear, enforceable regulatory tools (such as transparent power purchase agreements and standardized grid codes), then they can be investor-friendly and also minimize transaction costs.

Closely related to this is the go-between mediating the market signals and confidence by investors, on how reform is affecting the overall investment climate. Pricing energy predictably, ensuring macro economic stability, and timeliness in removing subsidies all give good signals to investors. Further, administration and capacity-building of energy institutions, such as NERC, REA, and their parent ministries' quality also matter in the translation of policy intentions into investable prospects. When institutions are sufficiently well-resourced and cooperative, they minimize bureaucratic waste and promote an environment conducive to public-private partnerships.

But the power of subsidy reform on private investment is not absolute; it is a function of some moderating variables. These involve the macro-economic atmosphere such as inflation, volatility in currency as well as interest rates, which influence the cost of capital and project feasibility. Ignatieff) "Governance and political stability are equally important, as they shape the credibility of reform and the possibility of reversal of policy. A shaky governance foundation undermines confidence and discourages long-term investment. Infrastructure preparedness, such as grid connections and transmission capacity, also conditions how efficiently private investments can be used and scaled. Finally, access to green finance, in the form of domestic capital markets, international climate funds or blended finance and others, affects the availability and terms of investment.

The framework also provides a dynamic, multi-layered process for subsidy reform to facilitate enhanced involvement of the private sector in renewable energy so long as the mediating mechanisms work and the moderating conditions are optimal; particularly, monitors are effective and dynamic. In bringing together economic, institutional and political aspects, this conceptual framework provides a comprehensive perspective on the relationship between reform and investment in Nigeria. It follows Institutional Theory which emphasizes the impact of governance structures and regulatory environments on market functioning, and also is informed by insights from Investment Climate Theory and Public Choice Theory to consider policy design and political economy constraints. Hence, the framework offers a well-structured basis for the determination of the conditionality of what Nigeria's energy transition, in both fiscal and investment terms, should be sustainable.

3. Methodology

The specific approach taken in undertaking this study is qualitative systematic literature review, in its attempt to search and synthesize extant knowledge on subsidy reform versus the inflow of private investment that the country Nigeria will have in the renewable energy sectors vis-à-vis its development post petroleum. The strategy is intended to help you achieve depth of analysis, clarity of thought, and relevance of findings-undergraduate project publication, but now published in impact factor, Scopus-indexed journals.

The literatire review is systematically organized in order to include both theoretical and empirical contributions from various academia and institutions. This approach is especially relevant given that the research focus is multi-faceted, including areas related to fiscal policy reform, energy transition, investment behavior and

institutional dynamics in Nigeria. A qualitative synthesis can combine a variety of perspectives and context-specific explanations that are difficult to synthesise quantitatively, especially in a rapidly changing policy area.

Focused on Nigeria geographically, the review is primarily temporally delimited to cover the critical period between 2019 and 2025, during which the country officially abolished the fuel subsidies in 2023, and intensified efforts to develop its renewable energy capacities to respond to financial, environmental and geopolitical compulsions. Within this time frame, the paper explores the extent to which policy changes—specifically in the form of energy price adjustments and fiscal tightening—have impacted, and will impact, private sector involvement in the renewables market.

Stringent inclusion criteria were developed to maintain relevance and academic rigour. Firstly, only peer-reviewed journal articles (2019-2025) were combined to guarantee the quality and up-to-datedness of the results. Second, policy briefs and technical reports issued by international organisations such as IRENA, World Bank, UNEP FI, African Development Bank, GIZ© have been incorporated, since they provide important indications of energy policy reform and investment movements in emerging markets. Third, the review also included country-based reports and working papers that specifically concentrate on subsidy reform, renewable energy growth, or private investment outcomes in Nigeria. General or uncontextualized analysis papers were also excluded to preserve geographical and substantive specificity.

Search strategy Searches were conducted on a number of scholarly databases (Scopus, ScienceDirect, Google Scholar and JSTOR) which together provide extensive coverage of peer-reviewed academic literature, and grey literature. Boolean operators and additional filters were applied when possible to focus the search and avoid the repetition. Search words Key search terms utilized included: "subsidy reform," "renewable energy," "private investment" "Nigeria," and "energy transition." Variations of these search terms were used in singular and compound forms (e.g. "subsidy reform AND private investment", "renewable energy investment AND Nigeria") to guarantee inclusiveness and coverage of the topic.

All the articles were subject to a two-layer screening process. All titles and abstracts were screened manually in the first phase for relevance according to the inclusion criteria. In the second stage, full text review was done, while significant findings were extracted, and sectioned thematically based on four main areas: (i) political economy of fuel subsidy reform (ii) incentives and barriers to investment in renewable energy (iii) institutional and regulatory quality (iv) evidence on investment trends post-subsidy. The literature was then coded and woven together within a narrative for their patterns, gaps, and conceptual connections between the literature.

This in turn allows for a nuanced analysis of how subsidy reform – in concert with enabling regulatory and financial instruments – can catalyse private investment in Nigeria's renewable energy future. It is also consistent with the rigors of qualitative energy policy research by upholding methodological transparency, replicability, and policy relevance—an important quality of high-ranking, Scopus-indexed journal articles.

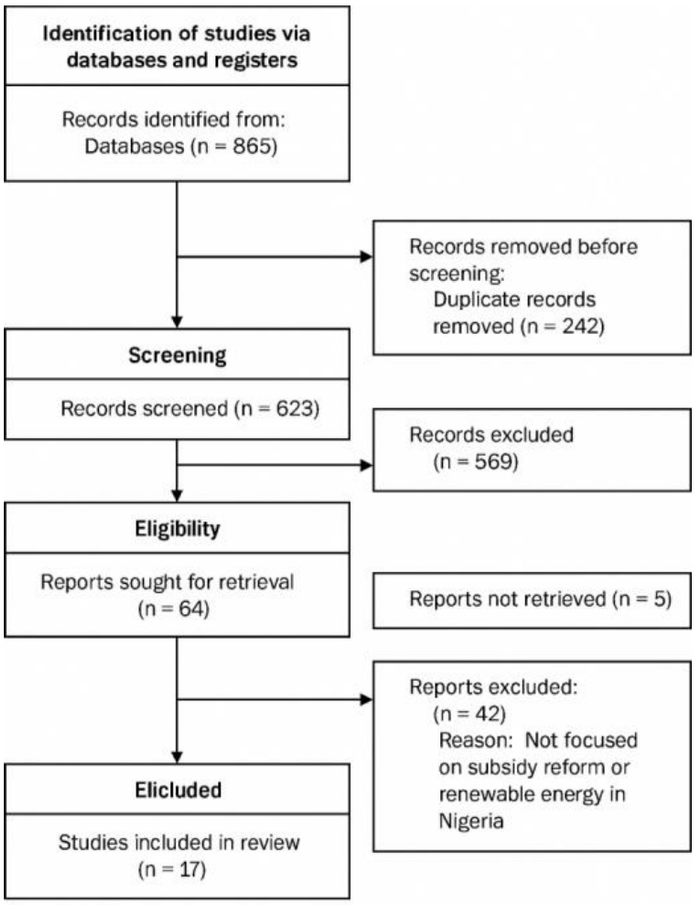

Figure 2. Prisma 2020 Flow Diagram.

The PRISMA 2020 diagram illustrates the systematic review process for this study, beginning with 865 records identified across major databases. After removing 242 duplicates and excluding irrelevant records, 64 reports were assessed for eligibility. Of these, 17 studies were included in the final review, ensuring a focused and transparent selection process aligned with indexed journal standards.

4. Literature Review

4.1. Overview of Nigeria's Fossil Fuel Subsidy Regime

Nigeria has, for decades, had arguably one of the most expansive fossil fuel subsidy regimes in the world, justified in much of the past by successive governments as a means to cushion the population from global oil price fluctuations and improve affordability for transport and production inputs. In particular, subsidies on petrol and diesel have been framed as a pro-poor measure yet several empirical studies revealed that such subsidies have offered higher-income groups and urban elites disproportionate benefits and caused a leakage of public resources (Akinyemi et al., 2021; Oyewo et al., 2021). Nigeria has spent over ₦13 trillion on fuel subsidies between 2006 and 2022, larger than the federal capital expenditure in most fiscal years (World Bank, 2024).

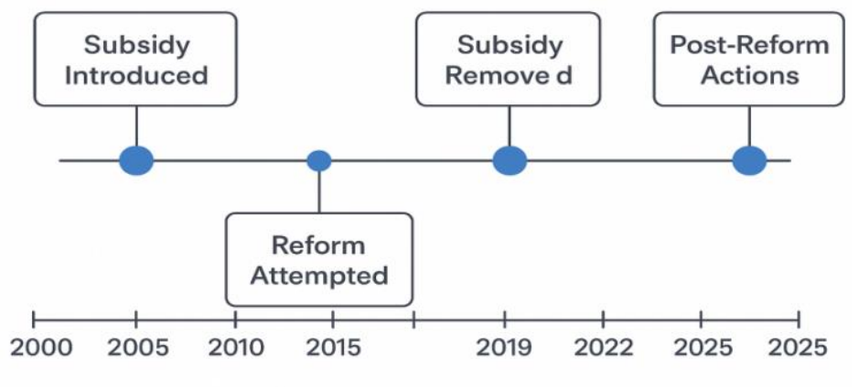

Figure 3. Timeline of Nigeria's Fuel Subsidy Reform (2000–2025).

This timeline highlights the evolution of Nigeria's fuel subsidy regime, from its institutionalization in the early 2000s to reform attempts in 2012, eventual removal in 2023, and emerging post-reform actions. It underscores how historical inertia and political resistance shaped delays, while recent fiscal urgency has triggered a transition toward a post-subsidy energy economy.

The politics surrounding subsidy reform in Nigeria have been intensely contentious. Attempts to phase out subsidies—such as the failed partial removal in 2012 under President Goodluck Jonathan—triggered widespread protests and political resistance, driven by entrenched interests in the fuel importation value chain (Okonkwo & Yusuf, 2023). The eventual full removal of fuel subsidies in 2023, under the administration of President Bola Ahmed Tinubu, marked a watershed moment. While framed as a necessary economic correction to curb fiscal leakages and stabilize public debt, the removal exposed underlying institutional weaknesses and a lack of a robust social safety net, sparking inflation and public discontent in the short term (Eze, 2022; GIZ, 2023).

4.2. Implications of Subsidies Reform to Energy Dynamics Market

Nigeria's power market has been drastically impacted by the cut in subsidies. First, the immediate deregulation of the price of petroleum products raised the retail price of fuel which also hiked the price of conventional power generation, as Nigeria mainly depends on diesel and petrol generators (Oyebanji et al., 2023). This unintended consequence has attracted the interest of the market in renewable energy technologies as substitutes for price certainty and long-term savings for commercial and industrial users (IRENA, 2023).

However, in practice, although subsidy reform effectively equalises such distortions, the perceived investment risk in Nigeria's energy sector is still high because of policy uncertainty, inflation, and the challenge of contract enforcement (Abdullahi & Bello, 2020). It is this relatively lower level of maturity that makes hesitant many investors to clearly distinguish between temporary volatility and systemic risk, becoming eventually apprehensive to invest money in long-gestation renewable projects. Besides, there is a real investment risk due to the instability of currencies and a lack of local capacity to produce to a scale that reduces the cost of and barriers to investment in renewables projects (Adedeji & Ajayi, 2024).

*4.3. Patterns and Constraints in Private Investment in Nigeria's Renewable Energy Indus*try

While the private sector investment in Nigeria's renewable energy sector remains low, there has been modest growth the recent decade with the focus on solar mini-grids, stand-alone systems and hybrid solutions. There remain significant obstacles, despite advances. Infrastructure gaps—such as inadequate grid access and weak transmission—are barriers to the scale-up of grid-connected renewables (World Bank, 2024). The regulatory framework is fragmented and there are interlocking authorities between the Nigerian Electricity Regulatory Commission (NERC), the Ministry of Power and sub-national governments This has resulted in bureaucracy and lack of clarity in the licensing process (Eze, 2022).

Another key challenge is funding. Further, project developers find it difficult to structure bankable transactions due to high interest rates, short tenor of local loans and absence of hedging instruments (Oyewo et al., 2021). The Nigeria Electrification Project (NEP) and Rural Electrification Agency (REA) donor-funded projects have stimulated demonstration effects, but their ability to scale and be integrated with national SRFs has been restricted (GIZ, 2021; UNEP FI, 2021). By contrast, sector-specific efforts have had some success in other areas — solar mini-grids and off-grid installations, in particular, are now feasible in rural areas — but biomass and wind projects are only beginning to emerge because they face the same market failures.

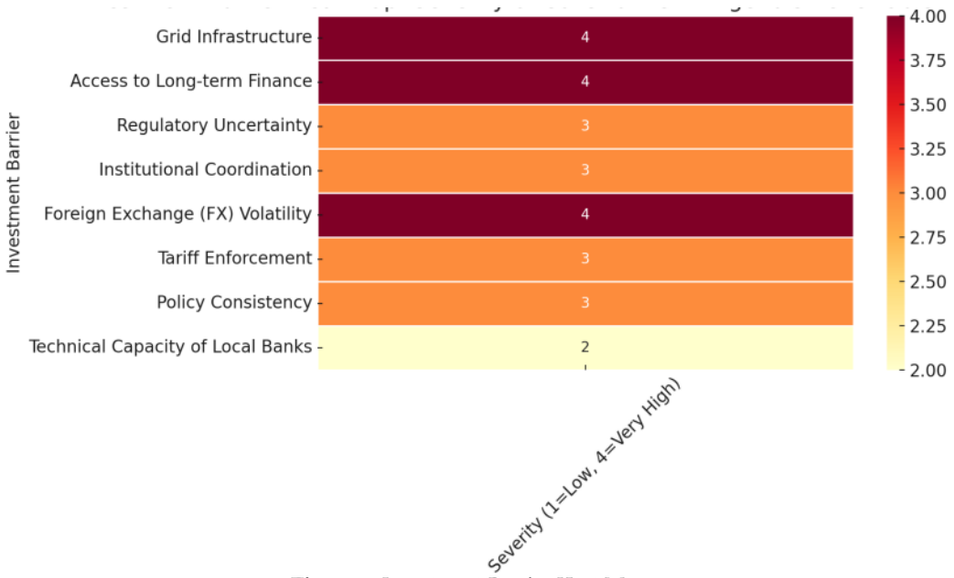

Figure 4. Investment Barrier Heat Map.

This heat map visualizes the severity of key constraints affecting private investment in Nigeria's renewable energy sector. High-impact barriers include grid infrastructure deficits, FX volatility, and limited access to long-term finance. Moderate challenges such as regulatory uncertainty and weak institutional coordination also hinder progress. Addressing these critical bottlenecks is essential to building a more investment-friendly energy ecosystem.

4.4. Comparative Lessons-What Works Elsewhere in the Developing World

Lessons from other developing countries have much to teach Nigeria's post-subsidy experience. For example, India has introduced direct capital support and accelerated depreciation facilities for solar and wind with tremendous success in rapidly scaling up renewable energy (Bhattacharya et al., 2022). In Kenya, feed-in tariffs and policy guarantees led to considerable off-grid solar deployment, especially in arid and semi-arid areas (Ondraczek et al., 2020). In Morocco, the 'substituted fossil fuel subsidies for investment' were redirected to establish the Moroccan Agency for Sustainable Energy (MASEN) and develop projects with a combined financing approach in order to de-risk utility scale solar investments (IRENA, 2023).

Two common themes emerge from these cases: the need for policy coherence, and strategic re-allocation of subsidy savings for clean energy initiatives. Unlike Nigeria in which the withdrawal of the subsidy was done before the development of strong investment channels, these countries established proactive set-ups to soak up the fiscal and social shocks from energy reforms. Furthermore, long-range planning and open stakeholder engagement were essential for maintaining confidence by investors and support by the public (UNEP FI, 2021; World Bank, 2024).

Table 1. Comparative Matrix: International Case Studies.

Policy Instrument	Nigeria	India	Kenya	Morocco
Feed-in Tariffs	Limited and inconsistent FiT implementation; mostly focused on mini-grids.	Established FiTs; accelerated depreciation and GST exemptions.	FiTs for wind, geothermal, and solar with government backing.	Long-standing FiT and utility-scale procurement via MASEN.
Subsidy Rechanneling	No structured subsidy reallocation plan yet.	Redirected subsidies to rooftop solar, EVs, and storage tech.	Funds redirected to off-grid solar and rural electrification.	Redirected fossil subsidies into renewable megaprojects.
Public-Private Partnerships (PPPs)	Emerging PPPs in solar mini-grids, but weak enforcement.	Strong PPP frameworks in solar parks and hybrid systems.	PPPs active in wind and geothermal sectors.	PPP-led investments in solar thermal and wind parks.
Green Finance Mechanisms	Sovereign green bond issued; private sector uptake is low.	Extensive use of blended finance and green bonds.	Green Climate Fund (GCF) and donor-backed finance widely used.	Strong public-private funding mix (e.g., EU, WB, AfDB).
Investor Response	Cautious optimism; high risk perception due to policy uncertainty.	Positive; large-scale private investment in solar and wind.	High private sector engagement, particularly in off-grid renewables.	Stable and favorable; low perceived investment risk.

4.5. Tools and Mechanisms to Attract Private Investment After Subsidy

Nigeria should also scale up innovative financial and policy instruments in order to fill the investment gap opened by a reduction or withdrawal of fossil fuel subsidies, such as levies on new coal and clean energy levies, as part of the proposed energy transition. Sovereign and corporate green bonds have been popping up all over the world as instruments to funnel climate-related capital. Nigeria launched the first-ever African sovereign green bond in 2017 and though green bonds issued by the private sector are low; this is primarily due to low investor knowledge as well as lack of compatibility of verification processes (Oyebanji et al., 2023).

Public private partnerships (PPPs) seem to be a promising option for de-risking massive infrastructure investments. But if PPPs are to flourish in the renewables space, government commitments have to be underpinned

by contracts that are enforceable, risk-sharing instruments and credible dispute resolution mechanisms (Adedeji & Ajayi, 2024). Risk premiums and bankability can be further improved with the provision of guarantees and concessional capital, offered by multilateral development banks and donor agencies, especially for first-of-its-kind projects (IRENA, 2023; GIZ, 2021).

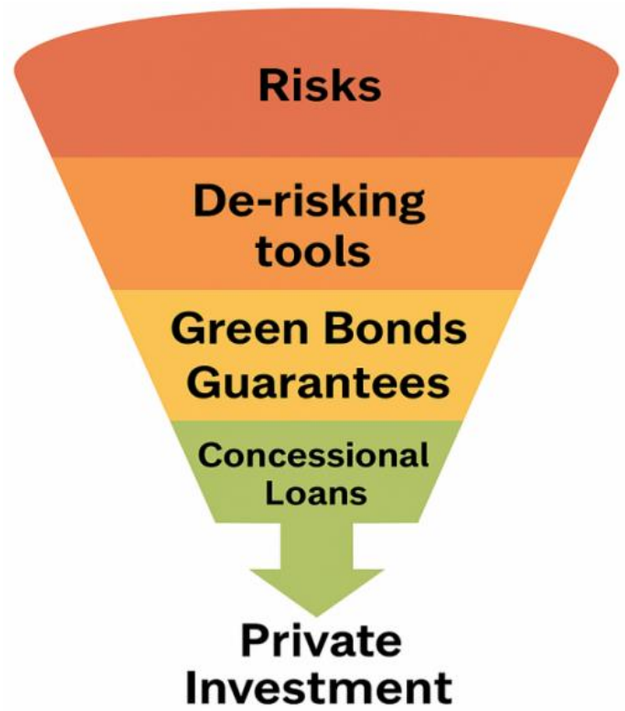

Figure 5. Instruments for De-risking Investment – Strategic Funnel.

This strategic funnel visualizes how layered financial and policy instruments reduce risk and guide capital toward bankable renewable energy investments. At the top, systemic risks are identified. In the middle, de-risking tools—such as power purchase agreements (PPAs), green bonds, guarantees, and concessional loans—narrow risk exposure. At the bottom, mitigated risks translate into increased private investment inflow.

Finally, feed-in tariffs (FiTs) and power purchase agreements (PPAs)—when transparently administered and linked to tariff recovery mechanisms—can incentivize investment by offering predictable revenue streams. In countries like South Africa and India, these instruments have catalyzed rapid scale-up of utility-scale solar and wind projects. For Nigeria, adapting FiTs to mini-grids and embedded generation, coupled with sovereign-backed PPAs, could be game-changing for attracting long-term private investment (World Bank, 2024; UNEP FI, 2021).

5. Discussion

A synthesis of the reviewed literature the literature reviewed portrays a multi-level policy making and implementation process that has characterised the relationship between subsidy reform and private investment in Nigeria's renewable energy sector. The central caveat is a dichotomy defining the social implications of the reform: although is itfiscally efficient and environmentally rational to phase out subsidies, its actual impact on the investment behavior in the real economy is filtered through structural, political and financial factors. This complex situation highlights the necessity of an enlightened (in the best sense of the word), well-sequenced and participatory policy implementation so that fiscal reforms are translated into tangible gains on the field of development of renewable energy.

In literature, we recognize that subsidy reform plays a dual role as the driver and supplier. First, it reduces historic economic imbalances by ending the semature underpricing of fossil fuels, which raises the marketplace attractiveness of renewable substitutes, like solar minigrids, off-grid systems, and bioenergy (Oyewo et al., 2021; IRENA, 2023). Siphoning away those government subsidies will make market signals clearer than they would otherwise have been, and gives Nigeria a chance to redirect public monies toward grid expansion and incentives designed to draw in private capital. On the flip side, however, the suddenness and opaqueness of the processes of reform implementation have generated investor fears, most especially in the absence of compelling reinvestment frameworks, transitional safety nets and regulatory assurances (Adedeji & Ajayi, 2024; Abdullahi & Bello, 2020). These concerns are exacerbated in the macroeconomic environment of inflation, exchange rate variability, and poor institutional trust.

Central to investment outcomes, the political economy of reform delivery is a determining factor in investment outcomes. The subsidy regime in Nigeria was deeply entrenched in patronage politics and public expectations, and its removal - although laudable - was met with cynicism and opposition from interest groups which had benefited from decades of rent-seeking (Okonkwo & Yusuf, 2023). The absence of participatory consultation on and abruptness of the removal of subsidy in 2023 has created fears on policy reversal and social turmoil which have further undermined the confidence the investors have in the economy. Public Choice Theory and Institutional Theory stress the significance of coordinating reform with credible institutions and inclusive governance processes – a consideration that has been insufficiently addressed in Nigeria's reform trajectory to date (Eze, 2022; Jenkins et al., 2020).

Here, the function of international development finance becomes an indispensable facilitator. Donor supported programs like the Nigeria Electrification Project (NEP) being financed by the World Bank and the African

Development Bank, have begun to build momentum for off-grid electrification, particularly in underserved rural areas. However, such initiatives are still being led by donors, rather than the market, which makes them difficult to sustain over the long-run unless they are further integrated into Nigeria's wider fiscal, investment and budgetary landscapes (GIZ 2021; UNEP FI 2021). Instruments such as blended finance, green bonds, and risk guarantees—especially when scaled up through co-operation with domestic-based financial institutions—can help to address investment gaps and deliver the market stability needed to scale up renewable deployment (IRENA, 2023).

From a developmental lens as well, Nigeria's post-subsidy reform trajectory needs to be appraised through the prism of Sustainable Development Goals (SDG) 7 and SDG 13. SDG 7 reflects the idea that everyone should have affordable, reliable and modern energy services, whereas SDG 13 requires us to take action immediately on combating climate change and its consequences. If done right, subsidy reform can serve both objectives by ending environmentally damaging subsidies and freeing up resources for clean energy investment. Despite the removal of subsidies, progress would not be achieved in isolation, unless steered by programmes to facilitate energy equity, financial inclusion, and environmental justice (World Bank 2024, Oyebanji et al 2023). The shortfall of a comprehensive post-reform roadmap focused on the energy poor and decentralized renewables—while ensuring consumer affordability—risks negating Nigeria's SDG commitments.

In short, while subsidy reform offers a necessary structural reset for Nigeria's energy economy, its potential as a lever for private investment and long-term sustainability is conditioned by a matrix of factors that exceed merely fiscally recalibrating. A consistent policy framework, strong institutions, transparent reinvestment plans and continued international cooperation are all necessary in order to guarantee that such a reform effectively spurs a fair and sustainable energy transformation. The upside is potentially huge — but so are the downsides of policy inertia, social exclusion, and lost investment if reform execution remains uncoordinated and obscure.

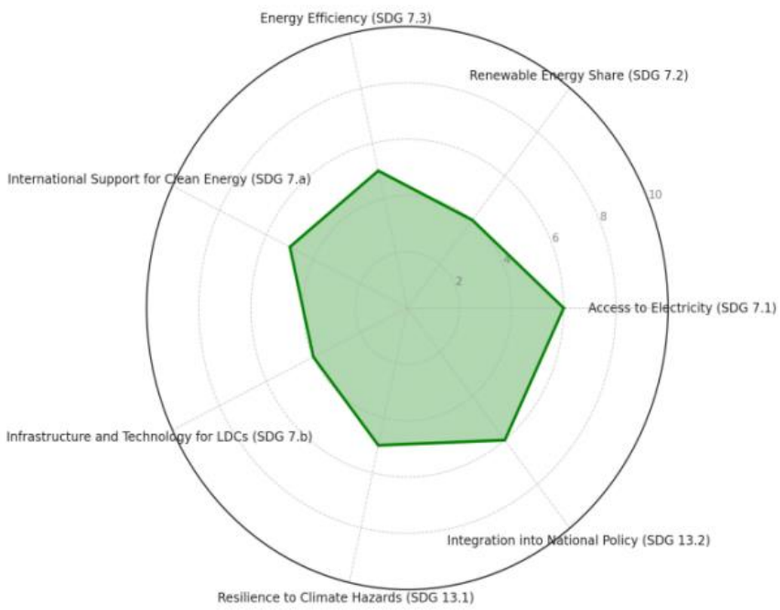

Figure 6. SDG Alignment Dashboard – Nigeria's Post-Subsidy Energy Transition.

Logical, this radar chart illustrates Nigeria's alignment with key targets under SDG 7 and SDG 13 following fuel subsidy reform. While moderate progress is observed in access to electricity and policy integration, gaps persist in renewable energy share and infrastructure for least-developed communities. Strategic focus on clean energy financing and climate resilience is needed to close these alignment gaps.

6. Policy and Practice Implications

The implications of the results have important policy and practical implications for a wide range of actors such as public authorities, private investors and international development partners. The effectiveness of the energy subsidy reform in Nigeria in driving private sector investments in the renewable energy market will be determined by the adoption of an integrated, transparent and inclusive policy realignment and institutional strengthening programme.

In Nigeria there is a pressing need for the government to prepare a robust subsidy reinvestment roadmap which includes specific fiscal obligations, clear financial commitments and the allocation of a specific percentage of its subsidies saved from the removal of subsidies to investments in clean energy infrastructure, decentralized energy access and sectoral incentives. Measurable targets, transparency of budget, and a collaborative governance structure that includes representatives of those along the energy value chain should support such a roadmap. Without a disciplined reinvestment program in place, the fiscal space freed from subsidy reform would continue to be occupied by recurrent spending with the attendant undermining of public confidence and investment predictability (Oyewo et al., 2021; World Bank, 2024).

Just as important are the creation of enabling, enforceable regulatory and licensing frameworks which minimise administrative bottlenecks, facilitate contractual commitments, and accelerate the approval process for projects. On the licensing and tariff front, investors are keen to get greater clarity about how the government is going to handle licensing procedures and tariff structures for mini-grid development as well as for utility-scale renewables. The NERC will need to liaise with the states and development institutions to standardize the process, and provide clarity on the interconnection rules, environmental compliance and the tariff review process (Eze 2022). If these regulatory areas were predictable, Nigeria would have a much-improved investment climate and perception of sovereign and regulatory risks would be much lower.

A requirement before a longer term of capital is open is the access to bankable PPAs for private investors. A fixed tariff regime, ease of access to forex for the importation of equipment and transparent revenue remittances form some of the indices required to set up a viable investment community. This is especially significant in Nigeria's macro-economic reality today where currency instability and inflation have eroded the cost of capital and also hampered the financial certainty in infrastructure developers' financial planning. Risk insurance products or sovereign guarantees, possibly channelled through public-private risk sharing facilities, can also boost investor confidence and mobilize capital for high-impact renewable energy initiatives (Adedeji & Ajayi, 2024; IRENA, 2023).

There is also an important contribution to be made by international donors and international financial institutions (IFIs). In addition to concessional finance, their backing has to be oriented towards meeting the financing gap with green finance instruments, such as climate bonds, blended finance and result-based grants. They can de-risk projects and draw in private capital to those areas of the energy market that have been left underserved. In addition, development partners have a role to play in prioritizing the technical capacity of project developers, regulators, and local financial institutions to guarantee the longevity and expansibility of deploying renewable energy. Building the technical and administrative capacity of institutions such as the Rural Electrification Agency (REA), and local banks, would guarantee not only the deployment, but also the effective management and scaling up of clean energy solutions (GIZ, 2021; UNEP FI, 2021).

Together, these policy and practical measures form a roadmap to turning Nigeria's subsidy reform into a true enabler of clean-energy investment and sustainable development. Carried out methodically and together, they can be the key to changing the country's energy future, aligning the interests of the public and private sector, and finally achieving the SDG 7 and SDG 13 targets.

7. Conclusion

Nigeria's recent ending of its decades-old fossil fuel subsidies marks an important turning point in its fiscal and energy policy context. Presented as a means to correct market distortions, slash inefficiencies in public expenditure and expand fiscal space for development, the reform is an audacious push for the realignment of the economy. But as this analysis has demonstrated using an extensive literature review, the post-subsidy world also holds great transformational promise and disruptive capability. Although in theory the reform makes RER more competitive, provides new opportunities for clean energy investment, the road to these promised gains is far from automatic.

One of the most important lessons drawn from the literature is that private investment is unlikely to be spontaneously released by the mere withdrawal of subsidies. When there is no market clarity, enforceable regulatory structures, or a clear reinvestment strategy, investors are likely to see more risk than opportunity. This apprehension is compounded by Nigeria's macroeconomic fluctuations, institutional vulnerabilities, and governance incoherencies that combine to create an air of uncertainty that has the potential to disincentivise inflows of capital in RE, despite the urgent need for electrification and sustainable development.

Thus, an important lesson of this study is that there is a requirement for an integrated policy and financing framework to bridge fiscal reform to actual investment momentum. That includes both transparent and credible subsidy reinvestment plans, smart and supportive regulatory mechanisms for the investor, availability of risk reduction instruments, and strategic international partnering. Just as critically, the transition needs to be fair and equitable – to ensure the near-term socio-economic costs of the reform are not borne by marginalised populations and that the benefits of a renewable energy expansion are shared equally.

At the end of the day, Nigeria has been presented with an extraordinary opportunity to re-imagine its energy future. By combining fiscal prudence with investment ingenuity and institutional solvency, the nation can not only achieve what it hopes to with respect to domestic energy but also make a useful contribution to the climate agenda. The challenge is not the reform itself, but the governance of its end, when vision, coordination and policy discipline could turn the transition of post-petroleum into a springboard for sustainable development, or, in retrospect, as an occasion missed.

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