

Security of the Electricity Supply Under the Electricity Act, 2023

Gideon Agbedo^{1*}, Adiele-Chi Emejuru², Adekunbi Imosemi³

¹Doctoral Candidate of College of Postgraduate Studies, Babcock University, Ilishan Remo, Ogun State, Nigeria.

^{2,3}Department of International Law and Security Studies, School of Law and Security Studies, Babcock University, Iperu Remo Campus, Ogun State, Nigeria.

Keywords:

Electricity act,
Electricity,
Nigerian electricity
Regulatory commission
Subsidies,
West African power pool.

Abstract. Nigeria is endowed with sources of electricity including coal, gas and renewables. Yet, Nigeria has been unable to supply electricity to 45% of its residents and service is unreliable among those with electricity connection thereby constraining Nigeria's socio-economic development. This paper interrogated the strategies adopted in the Electricity Act, 2023 for the achievement of security of electricity supply. Data for this paper was collected from statutes including the Electricity Act, 2023 and other sources, using the doctrinal method. The paper concluded that the Electricity Act includes measures to enhance security of electricity supply but have limitations which will undermine its effectiveness and noted that the Act's provisions on subsidies and independence of Nigerian Electricity Regulatory Commission was not being implemented. It recommended removal of the requirement for licences for electricity generation, open access to transmission and distribution infrastructure and suspending participation in the West African Power Pool.

1. INTRODUCTION

1.1. Background

Nigeria is richly endowed with primary sources of electricity including coal, gas, hydro, solar and wind. Notwithstanding these sources, Nigeria has been unable to supply electricity to all its residents. Only 50% of Nigeria's population has access to on-grid electricity. Among those with access, brownouts and blackouts are common. As a result, most on-grid electricity consumers, like those without access to electricity, resort to self-generation with costly and environmentally unfriendly alternatives such as diesel or petrol generators. Given that electricity is central to socio-economic development, the lack of reliable electricity supplies constrain Nigeria's growth.

Nigeria's electricity crisis makes its realisation of the 2030 Agenda for Sustainable Development which was adopted by the UN in 2015 unlikely. The agenda include seventeen (17) Sustainable Development Goals (SDGs) which are to be achieved in 2030. One of the goals of SDG 7 is to ensure universal access to affordable, reliable and modern energy services. SDG 7 cannot be achieved without universal access to reliable electricity. This paper will interrogate the strategies adopted in the Electricity Act, 2023 for the achievement of security of electricity supply with a view to assessing their effectiveness.

The paper is divided into 6 sections. Section 1 is this introduction. Section 2 discusses the concept of security of supply and the resource curse theory. Sections 3 describes the various segments of the Nigerian Electricity Supply Industry (NESI). Sections 4 and 5 respectively analyses the different strategies included in the Electricity Act, 2023 for the achievement of availability and affordability of electricity supply. Section 6 contains the conclusion and the recommendations.

1.2. Research Objective

The objective of this paper is to examine the extent to which the Electricity Act, 2023 enhances security of electricity supply. The research question is to what extent does the Electricity Act, 2023 enhance security of electricity supply.

1.3. Statement of the Problem

Electricity is necessary in most human activities. Unreliable electricity limits living standards and economic growth by disrupting households and businesses. Notwithstanding electricity's centrality to economic development and Nigeria being endowed with abundant sources of electricity up to 45% of Nigeria's population do not have access to electricity. Among electricity consumers, service is unreliable.

Electricity generation companies (Gencos) in Nigeria suffer gas supply constraints due to under-investment in gas infrastructure. Between the point of generation and the place of use, 39.1% of the power generated in Nigeria is lost due to dilapidated infrastructure. The revenue of the Nigerian Electricity Supply Industry (NESI) has not been sufficient to cover its costs due to the losses and subsidies. These have discouraged investment.

The Electricity Act, 2023 is recent. It created new institutions and include innovative provisions which are yet to be tested to determine their efficacy. The devolution of the regulatory powers over electricity to sub-national entities for the first time in Nigeria's history will raise questions on how they would interact with similar institutions of the Federal Government of Nigeria (FGN) or those of other states. There are also questions on how the states will exercise their powers over electricity generation given that gas and hydro energy which constitute over 99% of Nigeria's electricity mix are in the exclusive control of the FGN.

The sources of electricity generation in Nigeria is not diversified as almost 100% of the electricity supplied to the national grid are generated from gas and hydro power plants. The gas is exclusively produced in Nigeria's Niger Delta area which also has a concentration of power plants while most of Nigeria's hydro power is generated from Niger State in Nigeria. Both locations are

prone to violence and vandalism of infrastructure. This concentration of sources of generation exposes the electricity industry to risk.

2. CLARIFICATION OF CONCEPTS AND THEORETICAL FRAMEWORK

2.1. Clarification of Concept: Security of Supply

The terms security of supply and energy security are sometimes used interchangeably¹ but can be differentiated. Security of supply focuses on the reliability of supply and the security of the sources of supply.² It is an aspect of energy security. The broader term energy security in addition to security of supply also encompasses infrastructure security and security of personnel.³ With respect to electricity, security of electricity supply refers to the capacity of the electricity system to deliver uninterrupted electricity supply to consumers at an affordable price and at the right voltage. The key pegs of security of supply are availability and affordability. This study adopts the definitions of availability and affordability provided by Elkind⁴ which are outlined below.

2.1.1. Availability

Availability refers to the ability of consumers to access the energy that they need. The concept of availability encompasses the ability of suppliers, consumers and transit countries, where the energy is imported, to agree on terms of trade; the availability of energy sources within the country; technical solutions for generation, transmission and distribution of energy; investment; and enabling legal and regulatory frameworks. At the core of availability is consistent availability without interruptions. Elkind listed strategies of ensuring reliability as diversification of the supply chain; diversification of sources of supply; enhancing the capacity of energy networks; building redundant infrastructure and emergency stock; reducing energy demand; and spreading market information.

2.1.2. Affordability

Affordability of energy deals with stability of prices and how energy prices compare with disposable incomes and the cost of producing the energy. The price of energy is important because it influences consumer choices and investment decisions. Energy prices below the cost of production, encourages consumption but discourages investment. Shock price increases can make consumers significantly reduce their consumption. To achieve security of supply prices should cover the full cost of energy production. Such prices encourage investment and incentivise suitable consumer choices.

2.2. The Resource Curse Theory

The Resource Curse Theory (RCT) postulates that resource rich nations tend to have sluggish economic growth. This proposition contradicts the classical economists view that the abundance of natural resources is a boost to a country's economic growth and that such abundance gave the endowed countries an advantage over less endowed countries.⁵ The emergence of the RCT is credited to M.L Ross who in a 1999 article justified RCT on the factors he largely classified as political and economic.⁶

The political reasons he listed are that resource booms tend to lead to short-sightedness among political leaders and weaken state institutions. The economic explanations identified by Ross for resource curse are decline in the terms of trade of primary commodities, fluctuations in the prices of raw materials, weak economic links between the resource sectors and the rest of the economy and the Dutch disease. Ross also cited the use of State-Owned Enterprises (SOEs) for natural resource extraction and the inability to enforce property rights as triggers of resource curse. These factors have been endorsed in current literature.⁷ Corruption is considered one of the key causes of resource curse because it erodes the quality of institutions and undermines the regulatory framework for the governance of natural resources.⁸

The Dutch disease phenomenon emerged from the experience of Netherlands which export of natural gas during a boom led to the appreciation of its currency.⁹ The stronger currency caused a weakening of Netherland's export competitiveness, a reduction in the value of its aggregate exports and the shrinking of its economy.¹⁰ So the Dutch disease is said to occur when the currency appreciation from increase in the price of raw materials exported by a country or its exports from new deposits makes the economy less competitive. Other manifestations of the Dutch disease are decline of interest in manufacturing and services.¹¹ Unfavourable terms of trade when the primary sector is the major foreign exchange earner results in capital flight and stagnation of the economy.¹²

¹ IEA's definition of security of supply in its glossary is just a reference to its definition of energy security thereby implying that the two terms are the same. Please see IEA, 'Glossary', <www.iea.org/glossary#S> (accessed 15 October, 2024)

²Yinka Omorogbe, 'Regional and National Frameworks for Energy Security in Africa,' in Barry Barton, Catherine Redgwell, Anita Ronne and Donald N. Zillman (eds.), *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford University Press, 2004) 121, 124-25

³ *ibid*

⁴ Jonathan Elkind, 'Energy Security: Call for a Broader Agenda', in Carlos Pascual and Jonathan Elkind (eds.), *Energy Security: Economics, Politics, Strategies and Implication* (Brooking Institution Press, 2010) 119, 124-125

⁵ Syed Rahim and others, 'Do natural resources abundance and human capital development promote economic growth? A study on the resource curse hypothesis in Next Eleven countries' (2021) 4 *Resources, Environment and Sustainability* 1, 1; See also Mladen Anđelković, Zoran Stefanović and Dragan Petrović, 'Institutional Aspects of the Curse of Natural Resources' (2024) 62(4) *Economic Themes*, 429, 431

⁶ Michael L Ross, 'The Political Economy of Resource Curse' (1999) 51(2) *World Politics* 297, 298

⁷ Sanjeev Yadav and others, 'Nexus between Fintech, Green Finance and Natural Resources Management: Transition of BRICS Nation Industries from Resource Curse to Resource Blessed Sustainable Economies' (2024) 91 *Resource Policy* 1, 2

⁸ Muhammad Atif Khana and others, 'A Cultural Perspective of Natural Resource Curse in Finance', (2025) 32(5) *Applied Economic Letters* 603,603; See also Zhiqiao Xionga and others, 'Breaking the resource curse: can the development of digital economy in resource-based cities improve corporate ESG performance?' (2025) *Applied Economic Letters* 11

⁹ Rahim and others (n 5) 3.

¹⁰ *ibid*

¹¹ Anđelković and Others (n 5) 433

¹² *ibid*

Nigeria features prominently in RCT literature. Corruption has been blamed for Nigeria's poor economic performance despite its significant natural resources.¹³ An affirmation of this view is Nigeria's ranking as the 140th of 180 countries in the Transparency International Corruption Index.¹⁴ Nigeria's Gross Domestic Product (GDP) per capita in 2024 was \$806.9 compared to another oil exporter, Norway's \$86,809.7.¹⁵ RCT would therefore be relevant in examining why despite Nigeria's humongous energy sources, 45% of its population does not have access to electricity. The RCT was used in identifying wider issues beyond the legal framework which affect the achievement of security of supply.

RCT does not hold true for all countries with an abundance of natural resources especially those which are less dependent on natural resources.¹⁶ The fact that United States of America, Norway, Australia and Canada are among the richest countries in the world even though they have an abundance of natural resources while Nigeria, Chad and Libya which are equally well endowed are among the poorest countries is explained by their level of dependence on income from their primary commodities.¹⁷ Erum and Hussain, with time-series panel data over the period 1984–2016 found that natural resources have a significant positive impact on economic growth, but that corruption obstructs the possible growth.¹⁸

3. THE NIGERIAN ELECTRICITY SUPPLY INDUSTRY

3.1. Generation

Approximately, 77% of Nigeria's electricity is generated from gas while another 22.2% is generated from hydropower plants.¹⁹ Nigeria had 28 (twenty-eight) power plants comprising two (2) gas/steam-powered plants, two (2) steam plants, five (5) hydro power stations and nineteen (19) gas plants as at the end of 2024.²⁰ Although the plants had an aggregate installed generation capacity of 13,000 MW²¹, the average available capacity as at Quarter 4, 2024 was 5,296.89 MW²² due largely to gas constraints and poor infrastructure.²³ This capacity serves Nigeria, the sixth most populated country in the world with a population of two hundred and twenty-nine million, five hundred and twenty-one thousand, four hundred and nine (229,521,409) as at 2024²⁴. 54.28% of Nigeria's population live in urban areas which has significantly higher levels of access to electricity than the rural areas.²⁵

3.2. Transmission and System Operation

Nigeria's electricity transmission network is owned and operated by a monopoly, the Transmission Company of Nigeria (TCN) which is wholly owned by the FGN.²⁶ The transmission network consists of approximately 18,000 kilometres of 330 kV and 132 kV high-voltage lines transmitting power through more than 200 transmission substations to distribution networks.²⁷ The transmission system suffers technical losses of up to 9% due to equipment obsolescence.²⁸ Further to Section 15 (1) of the Electricity Act, 2023, the market and system operation previously provided by TCN²⁹ has been transferred to Nigerian Independent System Operator (NISO).³⁰ Key functions of NISO as set out in Section 67 of the Electricity Act, 2023 includes generation scheduling, commitment and dispatch; management of transmission congestion; procurement and scheduling of ancillary services; and administration of the wholesale electricity market including settlement of payments. Nigeria's system operation function still relies on manual systems³¹ and often, the NISO instructs generators to reduce their output as a result of transmission constraints.³²

3.3. Distribution

The distribution of segment of Nigeria's electricity industry consists of twelve (12) Discos. Eleven (11) of the Discos were

¹³ Ali Elwerefli, James Benhin, 'Oil a Blessing or Curse: A Comparative Assessment of Nigeria, Norway and the United Arab Emirates' (2018) 8 *Theoretical Economics Letters* 1136, 1155

¹⁴ Transparency International, 'Corruption Perception Index – Nigeria,' < www.transparency.org/en/countries/nigeria > accessed 11 July, 2025

¹⁵ World Bank, 'GDP Per Capita (Current US\$) – Nigeria' <<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NG> > accessed 11 July, 2025

¹⁶ Anđelković and Others (n 5) 432

¹⁷ Naila Erum and Shahzad Hussain, 'Corruption, natural resources and economic growth: Evidence from OIC countries' (2019) 63 *Resources Policy*, 18-9

¹⁸ *ibid*; See also Oumarou Zallé, 'Natural resources and economic growth in Africa: The role of institutional quality and human capital' (2019) 62 *Resources Policy*, 616, 622

¹⁹ IEA, 'Where does Nigeria get its Electricity' <<https://www.iea.org/countries/nigeria/electricity> > accessed 13 November 2025); See also Olushola Joshua Olujobi and others, 'Fossil-Fuel Disruptions and Low Carbon Transition: Legal Responses to Energy Security and Sustainability in Nigeria's Power Sector' (2023) 26 *Journal of Legal, Ethical and Regulatory Issues* 1, 2

²⁰ NERC, *Quarter 4, 2024 Report* (2025) viii < https://nerc.gov.ng/wp-content/uploads/2025/03/2024_Q4-Report.pdf > accessed 1 July, 2025

²¹ Federal Ministry of Power (FMP), *National Integrated Electricity Policy* (2024) 10, 25 <<https://intdev.tetracheurope.com/wp-content/uploads/2025/03/UKNIAF-National-Integrated-Electricity-Policy-2025.pdf> > accessed 1 July, 2025

²² NERC, *Quarter 4, 2024 Report* (n 20) 3

²³ FMP, *National Integrated Electricity Policy* (2024) (n 21) 9 <<https://powerlibrary.theelectricityhub.com/2025/03/04/national-integrated-electricity-policy/> > accessed 13 July, 2025

²⁴ Statista, 'Population of Nigeria in selected years between 1950 and 2024' <<https://www.statista.com/statistics/1122838/population-of-nigeria/> > accessed 2 July, 2025

²⁵ Statista, 'Nigeria: Urbanization from 2013 to 2023' < <https://www.statista.com/statistics/455904/urbanization-in-nigeria/> > accessed 1 July, 2025

²⁶ Anthony Chibuike Ohajianya, 'Estimate Billing System is the Bane of Grid Electricity Supply and Development in Nigeria: An Empirical Analysis', *Journal of Advances in Science and Engineering* 5 (2021) 1, 2

²⁷ NERC, *Quarter 3, 2024 Report* (2024) 11 < <https://nerc.gov.ng/resource-category/nerc-reports/#> > accessed 20 March, 2025

²⁸ NERC, *Quarter 4, 2024 Report* (n 20) 11

²⁹ NERC, *Quarter 3, 2024 Report* (n 27) 11

³⁰ Order on the Establishment of the Independent System Operator, 2024 (Order No: NERC/2024/45), paragraph A(i) <<https://nerc.gov.ng/resources/order-on-the-establishment-of-the-independent-system-operator-in-nesi/> > accessed 2 July, 2025

³¹ Edirii Ejoh, 'Power Failures: Nigeria Loses 20,100 Gwh to gas flaring in 9 months' *Vanguard* (Lagos, 22 October 2024) <<https://www.vanguardngr.com/2024/10/power-failures-nigeria-losses-20100gwh-to-gas-flaring-in-9-months/> > accessed 2 July, 2025

³² FMP, *National Integrated Electricity Policy* (2024) (n 21) 11

legacy companies created out of the Power Holding Company of Nigeria (PHCN), the successor of National Electric Power Authority (NEPA), following the Electric Power Sector Reform Act, 2005 (EPSRA).³³ The twelfth, Aba Power Electricity Distribution Plc, operates a concession to generate, transmit and distribute power in the Old Aba and Osisioma districts in Abia State consisting of nine local government areas.³⁴ Other than Aba Power, Ikeja Electricity Distribution Company and Eko Electricity Distribution Company each Disco's franchise covers at least three (3) states as shown in Table 1.

Table 1. Disco Coverage Areas.

DISCO	COVERAGE AREA (STATES)
Aba	Old Aba and Osisioma Districts (9 LGA'S of Abia state)
Abuja	Federal Capital Territory (FCT), Kogi, Nasarawa, Niger
Benin	Delta, Edo, Ekiti, Ondo
Eko	Southern Local Government Areas (LGAs) of Lagos State (From Badagry to Epe) Plus Agbara Industrial Estate (Ogun State)
Enugu	Abia (8 LGAs not covered by Aba Disco), Anambra, Ebonyi, Enugu and Imo
Ibadan	Kwara, Ogun, Osun, Oyo
Ikeja	Northern LGAs of Lagos State
Jos	Bauchi, Benue, Gombe, Plateau
Kaduna	Kaduna, Kebbi, Sokoto, Zamfara
Kano	Jigawa, Kano, Kastina
Por Harcourt	Akwa Ibom, Bayelsa, Cross River, Rivers
Yola	Adamawa, Borno, Taraba, Yobe

Source: Federal Ministry of Power (FMP), National Integrated Electricity Policy, 2025, 11

<<https://intdev.tetracheurope.com/wp-content/uploads/2025/03/UKNIAF-NationalIntegrated-Electricity>

The Discos operate 33 kV, 11kV, 400V distribution lines within their franchise area, convert the high voltage from transmission substations to lower voltages and transport it to their consumers for domestic, industrial or commercial use³⁵. Other than Aba Power, which is wholly private, the FGN owns 40% of the shares of each Disco.³⁶ Like the transmission system, the distribution infrastructure is poorly maintained and obsolete thereby compounding the Average Technical Commercial and Collection (ATC&C) losses.³⁷ The inefficiency of the Discos has been attributed to poor governance and management, subsidies and lack of firm contracts.³⁸

3.4. Bulk Trading

Following the unbundling of Nigerian Electric Power Authority (NEPA), the Generating Companies (Gencos) especially the Independent Power Producers (IPPs) and gas producers were reluctant to deal with successor Discos and Gencos respectively due to their weak balance sheet and NEPA's poor credit history. The FGN's response to this misalignment was the establishment of the Nigerian Bulk Electricity Trading Plc (NBET) a wholly FGN owned public liability company.³⁹ NBET was incorporated under the Companies and Allied Matters Act, 1990 on 29th July 2010 with the FGN's shareholding held by the Bureau of Public Enterprises (BPE) and Ministry of Finance Incorporated (MOFI) in a ratio of 80:20 respectively.⁴⁰ NBET derived its mandate from Sections 25(a) and 68 of the Electric Power Sector Reform Act, 2005. Section 25(a) provides that the bulk trader shall, pursuant to a licence issued by NERC engage in the purchase and resale of electrical power and ancillary services from IPPs and successor Gencos.⁴¹

NERC was given the power to issue trading licences under Section 68 of the EPSRA and has issued a bulk purchase and resale licence to NBET. Consequently, NBET purchases bulk power from Gencos under Power Purchase Agreements (PPAs) and re-sells them to Discos, eligible consumers or international customers through vesting contracts. In addition to its role as the bulk purchaser, the objects of the NBET as contained in its memorandum and articles of association includes to assume the contract management functions and other obligations of the FGN under PPAs existing at the time NBET was incorporated and to act as the FGN's anchor for gas supply guarantees.⁴²

NBET's primary role is to provide credit enhancement by acting as a bridge between the Gencos and Discos. Also, the FGN which wholly owns NBET is a perceived to be better placed to bear the risk of payment defaults by Discos. To this end, the FGN through the Central Bank of Nigeria (CBN) granted NBET a seven-hundred-and one-billion-naira (₦701,000,000,000.00) payment guarantee to enable NBET meet its payment obligations to the Gencos.⁴³ NBET does not appear to have been successful in achieving its mandate of providing liquidity to the Gencos. Oke identifies funding constraints, corruption, political interference and payment defaults by Discos as the reasons why NBET has not lived up to expectations.⁴⁴ In Q4, 2024, only one Disco remitted 100% of NBET and the Market Operator's invoices.⁴⁵

4. ELECTRICITY ACT, 2023 AND THE AVAILABILITY OF ELECTRICITY SUPPLY

The Electricity Act does not explicitly include the availability of power among its objectives but lists objectives which realisation

³³ *ibid*

³⁴ *ibid*

³⁵ FMP, *National Integrated Electricity Policy* (2024) (n 21) 11

³⁶ *ibid*

³⁷ Emma Ujah, 'MOFI clarifies FG's 40% shares take-over in DISCOs', *Vanguard* (Lagos, 16 January, 2024)

<<https://www.vanguardngr.com/2024/01/mofi-clarifies-fgs-40-shares-take-over-in-discos/>> accessed 2 July, 2025

³⁸ NERC, *Quarter 4, 2024 Report* (n 20) 11

³⁹ The role of NBET was extensively discussed in Yemi Oke, *Nigerian Electricity Law and Practice* (2nd edn. Princeton & Associates 2021) 418-454

⁴⁰ NBET, 'Our History', <<https://nbet.com.ng/history.html>> accessed 2nd July, 2024

⁴¹ Electricity trading is now licensed under section 69 of the Electricity Act, 2023.

⁴² NBET, 'Our Mandate', <<https://nbet.com.ng/mandate.html>> accessed 2nd July, 2024

⁴³ Ayodele Oni, *The Nigerian Electricity Market: Understanding the Transactional, Legal and Policy Issues* (Self-published 2021) 305

⁴⁴ Oke (n 39) 422

⁴⁵ NERC, *Quarter 4, 2024 Report* (n 20) 24, 25

will lead to the availability of power. The objectives of the Act include to:⁴⁶

Stimulate policy and regulatory measures to generally scale up efficient power generation, transmission, and distribution capabilities of the power sector with a view to achieve a (sic) national electricity access targets and attaining the highest per capita consumption in Africa within a reasonable time frame.

The Electricity Act's other objectives include to attract private investment to the NESI, stimulate the development and utilisation of renewable energy, secure electricity infrastructure, promote policies that will address technology limitation and promote indigenous renewable energy technology.⁴⁷ These objectives, if realised, will promote the availability of electricity.

The Electricity Act did not exclude any source of power that could contribute to the goal of making electricity sufficiently available to every Nigerian household or firm. The Act provides that the contents of the National Electricity Policy and Strategic Implementation Plan (NEP-SIP) shall include a plan for the use of power generated from coal, nuclear substances, natural gas and renewable energy.⁴⁸ The list is not exhaustive. The inclusion of coal in the list of sources suggests an emphasis on availability given that at the time the Electricity Act was enacted in 2023 many countries were already making plans to decommission or scale down generation from their coal power plants or have stopped development of new coal fired plants on account of its negative impact on the environment.⁴⁹ Belgium, Austria, Sweden and Portugal phased out their coal power plants in 2016, 2020, 2020 and 2021 respectively.⁵⁰

Another strategy adopted under the Electricity Act, 2024 to ensure availability of electricity is opening up the sector to more participation. The creation of State Electricity Markets (SEM) creates a structure for state governments to invest in and regulate the electricity industry in their respective states.⁵¹ States can deploy that power to build and to authorise the private sector to build power plants, establish transmission networks, operate mini-grids, and distribute power within a state.⁵² This states' power properly deployed will increase access to electricity and the stability of electricity networks. In order to minimize the risk of inconsistency of regulation across states and the FGN, Section 230(9) of the Electricity Act, 2023 requires NERC and the states regulatory commissions to set up an intergovernmental body to enhance harmonious relationship among the regulators for coordinating the creation of rules and principles. NIEP also lists Renewable Energy Feed-In Tariffs (REFIT), green energy purchase obligations and net metering as strategies to attract private investment into Nigeria's energy sector.⁵³

The increased participation of states enhances opportunities for private sector participation. Prior to the Electricity Act, 2023, there was only one transmission system, the national grid and twelve distribution networks with most covering up to four states.⁵⁴ Owing to the size of the networks and the significant capital required to maintain them, not many investors will have the capacity to acquire or manage them. The opportunities the states have to license or build (by itself or through PPPs) mini-grids, Independent Electricity Distribution Network (IEDN) or Independent Electricity Transmission Network (IETN)⁵⁵ expand the opportunities for private investment in NESI. There are also opportunities for the private sector to invest or operate as Independent Electricity Distribution Network Operators (IEDNO) or Independent Electricity Transmission Network Operator (IETNO).⁵⁶ These opportunities will deepen the capacity available to generate, transmit and distribute electricity and thereby ensure its availability. The intermittent collapse of the national grid earlier reported in this study⁵⁷ often resulted in nationwide blackout because all distributions networks are connected to it. The IETNs and IEDNs provided in the Electricity Act, 2023 will minimize the extent of the blackouts following a national grid collapse.

States powers over electricity may also be disruptive and so discourage investment in NESI. The recent dispute between the Enugu Electricity Regulatory Commission (EERC) and NERC over the extent of EERC's powers to determine electricity tariffs within Enugu State signals such disruption. On 18th July, 2025, EERC issued Tariff Order for MainPower Electricity Distribution Limited (MEDL)⁵⁸ which reduced the end-user tariff of Band A electricity customers from A209/kWh to ₦160.4kWh with effect from August 1, 2025. The order froze the tariffs of other classes of electricity customers. Both MEDL and NERC resisted the Order. NERC argued that EERC lack jurisdiction over the national grid and power generating stations established under federal laws or operating under licences issued by NERC and so cannot determine tariff over such segments. NERC was of the view that any end-user tariff determined by EERC must include generation and transmission tariff as determined by NERC where the relevant Disco offtake power from the national grid or NERC licensed Gencos. EERC argued that states' exclusive constitutional powers over electricity distribution within their state includes the power to determine all components of the tariff. Main Power agreed with NERC. This study considers NERC's position more reasonable as it will better ensure regulatory harmony in the NESI. The

⁴⁶ Electricity Act, section 1(c)

⁴⁷ Please see generally Electricity Act, 2023, section 1

⁴⁸ Electricity Act, 2023, section 3(1)

⁴⁹ Joel Jaeger, 'These 10 Countries Are Phasing Out Coal the Fastest' *World Resources Institute* (Washington D.C 30 November 2023) <<https://www.wri.org/insights/countries-phasing-out-coal-power-fastest> > accessed 9 October, 2025

⁵⁰ *ibid*; See also IEA, 'Phasing Out Unabated Coal Current status and three case studies' <<https://iea.blob.core.windows.net/assets/861dc94d-a684-4875-80fb-a1faaf914125/PhasingOutUnabatedCoal-CurrentStatusandThreeCaseStudies.pdf>> accessed 09 October, 2025

⁵¹ States have regulatory powers within their boundaries over the development of electric power stations; the generation, transmission and distribution of electricity; and the establishment of any authority for the management of electricity power stations established by the state. Before 2023, States were only able to regulate the generation, transmission and distribution of electricity in areas not covered by a national grid system. Item 14 Part II, Second Schedule of the CFRN, 1999, as amended by the Fifth Alteration Act (No.17) of 2023 extended the powers of states over electricity to areas covered by the national grid by deleting the words 'not covered by a national grid system' previously included in the constitution.

⁵² Electricity Act, 2023, section 2(2)(b)

⁵³ Federal Ministry of Power, Works and Housing, *Rural Electrification Strategy and Implementation Plan* Para 2.5.4 <<https://rea.gov.ng/wp-content/uploads/2017/09/RESIP.pdf> > accessed 12 July, 2025

⁵⁴ Table 3 above

⁵⁵ Electricity Act, 2023, section 63 (7); Please note that NERC retains the power to regulate mini-grids, IEDNs, IETNs, IEDNOs and IETNOs in states which are yet to establish legal and institutional framework for the regulation of electricity networks or operators or where the relevant IETN, IETNO, IEDN or IEDNO or electricity undertaking within any State relies on any part of the national grid for its operations

⁵⁶ Electricity Act, 2023, section 63 (7)

⁵⁷ Paragraph 1.1 above

⁵⁸ Order No. EERC/2025/003; MEDL is the Disco that succeeded Enugu Electricity Distribution Company Plc (EEDC) as the provider over electricity distribution services in Enugu State

dispute, however, signifies the need for collaboration between the state regulatory commissions and NERC.

The Electricity Act also contains provisions designed to ensure the security of investments in NESI. Such structures include security of the licence term and providing for appeals against decisions of NERC. Before penalizing a licensee for breaching the terms of the licence, NERC is required to notify the licensee that NERC is about to issue an order regarding a breach and what NERC requires the licensee to do to cure the breach or prevent a threatened contravention and the period within which such action may be taken.⁵⁹ NERC must give the licensee opportunity to make representations to it after receiving the order and take the representations into consideration in deciding whether or not to issue the order.⁶⁰ Any such order issued by NERC may require the licensee to do or refrain from doing anything specified in the order within a particular time and could specify a penalty for each day the licensee defaults in complying with the order.⁶¹ The Electricity Act therefore creates ample opportunity for a licensee to cure a default before being sanctioned.

Even when a licensee is failing, the Electricity Act requires NERC to first seek to stabilize the licensee before attempting to revoke the licence. The Act deems a licensee to be failing if it notifies NERC that it is unable to discharge its obligations under the licence or the Electricity Act.⁶² The Act also deems a licence to be failing if, after an enquiry, NERC determines that⁶³ the licensee is in prolonged default in carrying out its obligations as required by law; subject to a major management crisis that is detrimental to the licensee's performance and the interest of its shareholders or is in imminent risk of receivership.

In such situations, NERC is empowered to dissolve the board of directors of the licensee and appoint interim directors and administrators, require the licensee to take or refrain from taking particular actions within a particular time or employ any other regulatory intervention tools that it deems necessary.⁶⁴ The goal of each of these regulatory actions is to sustain the provision of electricity service.⁶⁵ It is only after taking these actions that NERC may revoke the licence of the relevant licensee, if there is no improvement in the operations of the licensee.⁶⁶ Section 75 of the Electricity Act enhances energy security because the restraint in invoking revocation even when the licensee is in a grave situation will give investors' confidence in the regulatory system and so encourage more investment which will improve availability of electricity. The regulatory restraints and interventions also mitigate the risk of disruptions in electricity service.

Where NERC revokes a licence, it is required to take steps to sell the business of the licensee which licence was revoked. The steps NERC is required to take in that regard are to invite bids for the acquisition of the business, evaluate them and require the licensee to sell the business to the preferred bidder.⁶⁷ The preferred bidder is to be selected mainly on the basis of the purchase price such that the bidder which offered the highest price wins the bid.⁶⁸ Pending the completion of the sale, NERC may appoint an administrator or permit the preferred bidder to operate and maintain the business and its system.⁶⁹ The proceeds of the sale are to be paid directly to the licensee which licence was revoked.⁷⁰ The value these provisions on sale of distressed electricity undertakings add to the availability of electricity lies in the assurance it provides to investors that they will realise value from their investment even if the licence is revoked and the mitigation of the risk of service disruptions in such an event.

The Electricity Act also protects licences from amendments of the licence. This protection is important because unconstrained powers of amendment could be deployed to the detriment of the licensee. The Act restricts NERC's power to amend a licence to when the licensee requests the amendment; where the licence provides that some of its terms could be amended or modified by NERC or upon NERC receiving a petition from a consumer or another licensee.⁷¹ NERC has no power to initiate an amendment. Except an amendment which is provided for in the licence, all proposed amendments must be published with a request for objections and representations to be made to NERC within a particular time.⁷² NERC must consider and determine all objections and representations it receives, prior to making the amendment.⁷³

Franchising is provided for in the Electricity Act, 2023 as a strategy to attract resources into the distribution and supply segment of the electricity industry. The Chambers dictionary defines a franchise as 'an agreement by which a business company gives someone the right to market its products in an area' or 'a concession granted by a public authority to a TV, radio, etc company to broadcast in a certain area'.⁷⁴ The Electricity Act, 2023 does not define franchise but defines franchisees as 'persons authorised by a distribution licensee to distribute electricity on its behalf in a particular area and within his area of supply'.⁷⁵ In view of the above definitions, this study defines franchise under Electricity Act, 2023 as an authorisation given by a distribution or supply licensee to another entity to distribute or supply electricity in a defined area with the licensee's area of supply. A franchise is not a separate licence and the ultimate responsibility of meeting the terms of the licence remains with the franchisor (the licensee that granted the franchise).⁷⁶

Section 68(4) of the Electricity Act, 2023, requires NERC to approve distribution or supply franchising arrangements or similar arrangements between distribution licensees and third parties within the respective supply or distribution licensee's operations and coverage areas which are in accordance with the NERC's models, terms and tariff. NERC may approve distribution franchises at any of market stages provided for under the Electricity Act, 2023. However, NERC, in granting such approvals, must take into the account the aggregate tenure of the licensees held PHCN successor Discos, any separation of the distribution licences into distribution and supply licences.⁷⁷

⁵⁹ Electricity Act, 2023, section 76(2)(a)&(b)

⁶⁰ Electricity Act, 2023, section 76(2)(c) & 76 (3)

⁶¹ Electricity Act, 2023, section 76(4)

⁶² Electricity Act, 2023, section 75(3) (a)

⁶³ Electricity Act, 2023, section 75(3) (b)&(c)

⁶⁴ Electricity Act, section 75(2)

⁶⁵ *ibid*

⁶⁶ Electricity Act, section 75(4)

⁶⁷ Electricity Act, section 77(1)

⁶⁸ Electricity Act, section 77(1)(b)

⁶⁹ Electricity Act, section 77 (1)(d) & (e) and section 77(4)

⁷⁰ Electricity Act, section 77(2)

⁷¹ Electricity Act, section 74(1)

⁷² Electricity Act, section 74 (2) &(4)

⁷³ *ibid*

⁷⁴ The Chambers Dictionary (Chambers Harrap Publishers, 1998)

⁷⁵ Electricity Act, section 232

⁷⁶ Electricity Act, section 68(4)

⁷⁷ Electricity Act, section 68(5)

Prior to the Electricity Act, 2023, NERC derived its power to approve distribution franchises from Section 69 of the Electric Power Sector Reform Act, 2005 (EPSRA) which prohibited licensees from assigning or ceding their licences or transferring their undertaking or any part of it without the prior written consent of NERC. A comparison of section 69 of the EPSRA and section 68 of the Electricity Act, 2023 shows that while former sought to prohibit franchising unless with the approval of NERC, the later requires NERC to approve franchising arrangement which are in accordance with the law and NERC's rule. The EPSRA required that NERC's consent be given before the franchising arrangement. There is no such requirement under the Electricity Act, 2023. This study considers the framework for franchising of distribution licences under the Electricity Act, 2023 to be more effective than the EPSRA regime in attracting investments because it is more flexible with the timing of the approval of franchise and provides a framework to guide such arrangements.

Pursuant to its powers under the EPSRA, NERC issued the Guidelines on Distribution Franchising in the Nigerian Electricity Supply Industry, 2020.⁷⁸ The Guidelines, provided a non-exhaustive list of activities that may be franchised. They are metering, billing and collection; providing the complete suite of electricity distribution function within a defined area; providing all electricity distribution function including billing and collection across distribution feeders; and loss reduction and provision of embedded generation.⁷⁹ The Guidelines also require all franchising arrangements to comply with NERC rules and prior consultation with customers affected by the franchising.⁸⁰ All franchises must be based on firm contracts which must provide relevant data on the franchised area or activity before the franchise; the fee or service due from the franchisee; duration of the franchise which must not exceed the unexpired residue of the franchisor's licence; and the licensee's deliverables including capital expenditure.⁸¹ The franchise must also provide for termination; delineation of the franchise area; trading point; treatment of legacy contracts; reporting requirements; metering; termination; and dispute resolution.⁸² The Guidelines on distribution franchising require that all payment obligations of the franchisee be secured; prohibit franchisee arrangements between a licensee and related parties; and recommends competitive bids for franchise arrangements.⁸³

NERC may revoke a franchise, after conducting an enquiry and a public hearing, if it is satisfied that the franchise is being executed in a manner that contravenes the law, the relevant licence or NERC's regulations; the operation of the franchise constitute an immediate threat to public health and safety; or if there are circumstances which make it necessary to suspend the franchise for overriding public interest.⁸⁴ It is the view of this study that the grounds on which NERC may terminate a franchise are sufficiently elastic to admit of abuse and that the processes do not contain enough checks against abuse. In order to constitute an effective vehicle for the attraction of investment into NESI, NERC should cease to have a role in the termination of franchises since it is not a necessary party to a franchise. If the operation of a franchise is contrary to law or the franchisor's licence, NERC may take regulatory action against the franchisor which continue to hold ultimate responsibility for the performance of the licence terms irrespective of the franchise. This process will increase the confidence of the franchisees as the franchise would be protected from arbitrary regulatory action. Specific to collection services, NERC made the Guidelines on the Registration and Engagement of Third-Party Collection Service Providers by Electricity Distribution Companies, 2025 (Guidelines on CSPs). The Guidelines were issued to provide a clear framework for the engagement of Collection Service Providers (CSPs) and to prescribe the applicable transaction charges.⁸⁵ NERC had by Order (The Migration Order)⁸⁶ required super agents, collection agents, payment solution service providers ("PSSP"), sub-agents, and payment terminal service providers ("PTSP") employed to provide collection services to Discos to be registered with the Central Bank of Nigeria.⁸⁷ Providers of collection services are also required to operate banks accounts that would be exclusively for the receipt and disbursement of collections.⁸⁸

A CSP must register with NERC to qualify to provide collection services in NESI.⁸⁹ The Guidelines on CSPs require that all collection services agreement must be registered with NERC before it is operationalized.⁹⁰ NERC will only approve collection services agreements with CSPs holding any of the following CBN licences: switching and processing licence; a super-agent authorization; card/payment scheme; banking, Payment Terminal Services Provider (PTSP); Payment Solution Services Provider (PSSP) and Mobile Money Operator (MMO).⁹¹ The Guidelines classifies collection services into Unstructured Supplementary Service Data (USSD); banking and switching services; mobile payment services; agency and rural services.⁹² It caps the rates and amounts that may be paid by Discos for the various services with the highest rate of 3.25% applying to rural services and least of 0.75% applying to banking and switching services.⁹³ The checks introduced by the Guidelines on CSPs such as requiring CBN licenses, dedicated accounts, NERC's approval prior to operationalizing collection services agreements; and capping of collection fees are designed to and would be effective at limiting the opportunities to use the collection service agreement to unlawfully siphon funds from Discos. The Electricity Act promotes renewable energy as a tool to diversify the energy mix, increase the electricity available for delivery to consumers and reduce GHG emissions.⁹⁴ Other than solar energy which contributed 0.5% of Nigeria's energy mix for electricity in 2023, no other renewable energy did.⁹⁵ An increase in the contribution of renewable

⁷⁸ Document No, NERC/GL/1/2020, 24th June, 2020

⁷⁹ Guidelines on Distribution Franchising in the Nigerian Electricity Supply Industry, 2020, para 3

⁸⁰ *ibid* para 3.1

⁸¹ *ibid* para 3.2(i)

⁸² *ibid*

⁸³ *ibid* para 3.3 (ii) – (iv)

⁸⁴ *ibid* para 5.2

⁸⁵ Guidelines on CSPs para 5(6)

⁸⁶ Order on the Mandatory Migration of R3 Class of Residential Customers, Industrial and Commercial Customers to Cashless Settlement Platforms and Other Matters Relating to Revenue Protection in the Nigerian Electricity Supply Industry (Migration Order), NERC/183/2019

⁸⁷ *ibid* para 9

⁸⁸ *ibid* para 10

⁸⁹ Guidelines on CSPs, para 7(3)

⁹⁰ *ibid* para 7(4)

⁹¹ Guidelines on CSPs

⁹² *ibid* para 8

⁹³ *ibid* para 9(3)

⁹⁴ Stella O Idehen and EU Oyemwense, 'An Examination of the Electricity Act 2023: Catalyst for Renewable Energy in Nigeria?' (2024) 1(4) KBL Law Scholars Journal 12,18

⁹⁵ Large hydro from which Nigeria generated 22.2 of its electricity in 2023 is considered renewable energy because of its negative environmental impact especially on fisheries and water flows. It is also a source of GHG emissions. See Olga-Lucía, Castillo-Ospina 'Hydroelectric Energy Is Considered Renewable, But... Is It Also Sustainable?' <www.researchgate.net/publication/395837126_Hydroelectric_energy_is_considered_renewable_but_is_it_also_sustainable> accessed 7

energy to the energy mix will increase electricity supply and electricity system resilience due to increasing diversity and inherent environmental sustainability. Section 65 of the Electricity Act imposes on NERC and NISO a continuing obligation to advance the generation of electricity from renewable energy. NERC, in granting generating licensees, is required to promote renewable energy by considering embedded generation, co-generation, hybrid generation and the generation of electricity from renewable energy sources.

Section 164 of the Electricity Act, 2023 lists various measures NERC should take to support the contribution of renewable energy to Nigeria's electricity supply. Such measures include developing favourable pricing mechanisms, introduction of feed-in tariffs,⁹⁶ ensuring clarity in the market rules, supporting the Rural Electrification Agency, developing investor-friendly measures for renewable energy concessions. Others include setting standards for PPAs, monitoring and enforcing compliance with renewable energy purchase obligations, facilitating easy access to the national grid and distribution networks, offering incentives for IPPs to generate energy from renewable sources, developing guidelines for net metering and energy storage and simplifying licensing and fees. NERC has the power to set renewable purchase obligation and to permit a bulk customer to purchase a percentage of its total electricity demand from renewable energy sources.⁹⁷ To incentivise the bulk customer to honour the obligation, it must pay a premium to NERC if it fails to make the purchase.⁹⁸ The Minister of Finance is required to create incentives to promote the generation and consumption of renewable energy under the Industrial Development (Income Tax Relief) Act⁹⁹ or other similar legislation.¹⁰⁰ Under section 1 of the Industrial Development (Income Tax Relief) Act a product or an industry may be declared a pioneer product or industry. Companies that have pioneer status enjoy tax relief for a period of three years which may be extended by another two years.¹⁰¹ Profits of pioneer companies in any year as certified by the Federal Inland Revenue Service are exempted from companies' income tax.¹⁰² NERC is required to set guidelines on feed-in tariffs taking into consideration the location of the generating facility and the technology being used to generate renewable energy and to balance the interest of the consumer and the investor.¹⁰³ Discos are prohibited from purchasing electricity from renewable energy sources except in accordance with the guidelines issued by NERC in that respect.¹⁰⁴ The feed-in tariff rate is to be guaranteed for such period as NERC may determine.¹⁰⁵ All feed-in tariff rates must be approved by NERC.¹⁰⁶ The Regulations on Feed-In Tariff for Renewable Energy sourced electricity in Nigeria, 2015 (REFIT Regulation) made under the EPSRA, 2005 was saved by section 231(3) of the Electricity Act, 2023 and therefore continue to apply. The REFIT Regulations seeks to promote electricity supply¹⁰⁷ through guaranteeing a price for electricity generated from renewable sources and adequate return on investment.¹⁰⁸ To qualify for the feed-in tariff programme, the quantity of electricity generated at a site from the renewable energy source must be at least 1MW and not beyond the cap set for the particular resource.¹⁰⁹ For instance, the cap for small hydro is 30MW while that of Solar Photovoltaic (Solar PV) is 5MW.¹¹⁰ Capacities below the floor are to be sourced through net metering¹¹¹ while those above the cap would be procured by competitive bidding.¹¹² The offtaker which could be NBET, a Disco or an off-grid system is required to buy all electricity supplied from such renewable energy sources within the capacity limits.¹¹³ The REFIT Regulations require NBET or its successor to purchase 50% of the electricity within the capacity limit while the relevant Disco will purchase the remaining 50%.¹¹⁴ The REFIT Regulation's modest goals of adding 1,000MW of the renewable energy comprising 380 MW, 370 MW, 150MW and 100MW generated from solar, small hydropower, biomass and wind respectively to the grid in 2018 was not achieved in 2025. As at 2025 as shown in Table 2,¹¹⁵ small hydro, biomass and wind added zero capacity to Nigeria's energy mix for electricity.

Table 2. Energy Mix for Nigeria's Electricity Supply.

	Energy Source	% Domestic Production
1	Natural Gas	77
2	Hydro	22.2
3	Solar PV	0.5

Source: IEA, 'Where does Nigeria get its Electricity'

<www.iea.org/countries/nigeria/electricity > (accessed November 13, 2025)

Nigeria's solar generating capacity in 2024 was 385.7MW achieved mostly through off-grid solutions adopted in response to the removal of subsidy on electricity from a class of consumers.¹¹⁶

November 2025; Please note that the Electricity Act defines renewable energy sources in section 232 to include hydropower without excluding small hydro.

⁹⁶ Feed-in tariffs are special tariffs, usually higher than tariffs from other sources of energy, that DISCOs may pay for electricity procured from renewable energy sources. See Michael Dugeri, 'Promotion of Renewable Energy in Nigeria Through Feed-In Tariff Schemes: A Legal Analysis' 1<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3509510> accessed 14 October, 2025

⁹⁷ Electricity Act, section 167(1)

⁹⁸ Electricity Act, section 167(2)

⁹⁹ Chapter I7, LFN, 2004

¹⁰⁰ Electricity Act, section 166

¹⁰¹ Industrial Development (Income Tax Relief) Act, section 10

¹⁰² ibid section 16

¹⁰³ Electricity Act, section 168(2) & (3)

¹⁰⁴ Electricity Act, section 168(1)

¹⁰⁵ Electricity Act, section 168(4)

¹⁰⁶ Electricity Act, section 169(1)

¹⁰⁷ REFIT Regulation, Regulation 3(a)

¹⁰⁸ REFIT Regulation, Regulation 3(f)

¹⁰⁹ REFIT Regulation, Regulation 4(ii)(a)

¹¹⁰ REFIT Regulation, Schedule 1

¹¹¹ Net metering arrangements permit consumers with generating capacity to export surplus generation and net it off against their consumption. Please see Emmanuel Ok , Mayowa Emmanuel and Stephanie Popoola, 'Comparative Study of Feed-in Tariffs vs. Net Metering for Solar in Nigeria'

<https://www.researchgate.net/publication/395695301_Comparative_Study_of_Feed-in_Tariffs_vs_Net_Metering_for_Solar_in_Nigeria > accessed 14 October 2024

¹¹² REFIT Regulation, Regulation 4(i)(b)

¹¹³ REFIT Regulation, Regulation 5(b)

¹¹⁴ REFIT Regulation, Regulation 5(f)

¹¹⁵ incorporate

¹¹⁶ Niniola Odeyemi, 'Nigeria Ranks 4th in Africa for Solar Growth' The Electricity Hub (Abuja 16 January, 2025)

The Electricity Act creates the Rural Electrification Agency (REA) to among other things create a channel for the supply of electricity to rural, unserved and underserved communities and to provide a framework for the diversification of electricity supplies and for improved access to electricity through the use of renewable energy.¹¹⁷ The functions of REA includes promoting universal access to affordable and sustainable electricity and the management of the Rural Electrification Fund (REF).¹¹⁸ The REF is established to provide sustainable and renewable rural electrification programmes and projects through Public Private Partnerships (PPPs).¹¹⁹ Key sources of the REF are operating surplus of NERC; fines and penalties imposed and collected by NERC; appropriations of the National Assembly; contributions by licensees and eligible consumers and 2% of funds accruable to NERC from tariffs.¹²⁰ The purposes and functions of the REA and REF show that they are specialized institutions created to ensure the availability of electricity in rural areas, underserved and unserved communities in Nigeria.

Another area in which the Electricity Act contributes to the availability of electricity is in the creation of special offences related to the industry and providing stringent penalties for them compared to those in EPSRA. Offences created under the Electricity Act, 2023 are¹²¹ theft of electricity, theft of electric lines and materials, receiving stolen electric line or material, interference with meters or works of licensees, negligently breaking or damaging electricity materials, intentionally disrupting power supply, offence relating to damage to public streetlights, contravention of regulation or orders, false declaration, abetment of an offence punishable under the Act, unlawful use of information by inspector, obstruction and impersonation.¹²²

The creation of the offences is targeted at ensuring the integrity of the system and promoting the availability and affordability of electricity. Electricity theft, for instance, results in loss of income to the Disco, limitation of funding available to expand access to electricity and improve supply reliability and in higher tariff to make up for the loss. Stealing electric lines and materials could result in both immediate, short term and long-term unavailability of use. In recognition of its significant impact, the Electricity Act, 2023 punishes it with a fine of at least ₦500,000 or imprisonment of up to five years for first offenders¹²³. The punishment for receiving stolen electricity is a fine of three times the value of the stolen property received or imprisonment for a term of 14 years or both.¹²⁴ Providing stringent penalties against electricity theft was said to have resulted in 12% reduction in transmission and distribution losses within four years in India.¹²⁵ The serious penalties for electricity offences under the Electricity Act, 2023 could have a similar impact given the high ATC&C losses suffered by Discos in Nigeria.

Section 68(11) of the Electricity Act, 2023 provides that electricity customers may voluntarily fund, wholly or partially, the acquisition, installation or maintenance of electricity distribution equipment such as transformers to ensure the stability of electricity supply where the relevant licensee is unable to provide such equipment within a reasonable time. A customer may only fund under section 68(11) where there has been a prior written request to the relevant licensee providing details of the equipment, place of installation and of the customer. Section 68(10) of the Electricity Act, 2023 clarifies that any funding provided by a customer under section 68(11) shall not be deemed part of the usual obligations of such customer which implies that the cost of such projects cannot be offset against the customer's electricity bills. Sections 68(10) and 68(11) are a codification of an existing practice of neighbourhoods and communities acquiring and installing electricity equipment and infrastructure to obtain or improve access to electricity. The codification is likely to accelerate such practice as it signals that the provision of equipment for the supply of electricity by non-licensees is recognised by law.

The copious provisions of the Electricity Act to enhance the availability of electricity are mitigated by a strict licensing regime and Nigeria's commitment to supply power to the West African Power Pool (WAPP). The Electricity Act¹²⁶ require licensing for all generation, transmission and distribution services except the undertakings for generating electricity of not more than one megawatt (1MW) at a site or an undertaking for distribution of electricity with a capacity of not more than 100 (KW) at a site.¹²⁷

Nigeria is a net exporter of power under the WAPP having not imported power from any member of WAPP between 20018 and 2021.¹²⁸ In 2021, Nigeria exported 2 308. 2 MW under WAPP and did not import any power.¹²⁹ If the objectives of the WAPP are realised it will create a wider pool for the satisfaction of Nigeria's electricity needs. It also creates a market for surplus capacity in Nigeria and is an opportunity to aggregate resources to develop projects that will improve energy security and sustainability. Currently, it detracts from security of electricity supply in Nigeria because despite Nigeria's acute electricity supply deficit it is a net exporter of power to the WAPP.

5. AFFORDABILITY OF ELECTRICITY UNDER THE ELECTRICITY ACT, 2023

Electricity prices are regulated by NERC.¹³⁰ Among the functions of NERC are ensuring that electricity prices are fair to consumers and allow reasonable earnings for efficient operations and promoting Cost Reflective Tariffs (CRT) and the elimination of cross subsidies.¹³¹ Aspects of the electricity value chain that are subject to tariff regulation by NERC are generation, trading, transmission, distribution, supply, system operation, electricity distribution and any other activity that NERC determines would be

<<https://theelectricityhub.com/nigeria-ranked-4th-in-africa-for-solar-energy-adoption-in-2024-adding-63-5-mwp-of-capacity-bringing-its-total-installed-capacity-to-385-7-mwp/>>

¹¹⁷ Electricity Act, section 126

¹¹⁸ Electricity Act, section 199 (1)

¹¹⁹ Electricity Act, sections 142 and 143

¹²⁰ Electricity Act, sections 142 and 146

¹²¹ Electricity Act, sections 208 -220

¹²² The EPSRA, 2005 only created the offences of false declaration; contravention of the Act or its regulations; obstruction and failure to supply information. The maximum penalty under the EPSRA, 2005 was imprisonment for a term of three years and a fine of five hundred thousand naira. See EPSRA, 2005, sections 93 and 94

¹²³ Electricity Act, 2023, section 209(1) (c)

¹²⁴ Electricity Act, 2023, section 210

¹²⁵ Yemi Oke, *Electricity Offences and Prosecution under the Nigerian Electricity Act 2023 and Other Related Offences*, 27 (Princeton and Associates, 2024)

¹²⁶ Electricity Act, section 63

¹²⁷ West African Power Pool, '2021 Annual Report' 6-7 <www.ecowapp.org/sites/default/files/wapp_2021_annual_report.pdf> accessed 12 November 2025

¹²⁸ *ibid* 44

¹²⁹ *ibid* 44

¹³⁰ Electricity Act, section 116(2)

¹³¹ Electricity Act, sections 34(d) & (j)

subject to tariff regulation.¹³² Tariff methodologies adopted by NERC for the purpose of tariff regulation are required by the Electricity Act to:¹³³allow efficient operators to recover their costs and reasonable return on capital; incentivise efficiency and quality improvements; and send economically efficient cost signals to consumers. Other principles that guide tariff methodologies are avoiding unreasonable discrimination among consumers and consumer categories; eliminating cross subsidies within a specified time and promoting the generation of electricity from renewable sources.¹³⁴

The Electricity Act permits NERC to allow willing buyer willing buyer arrangements designed to achieve premium services outside of the applicable tariff methodology¹³⁵ and to institute tariff methodologies that reflect the terms of an agreement between licensees and eligible customers.¹³⁶ A tariff methodology may discriminate among consumers on the basis of levels of consumption, time at which consumption occurs, power factors, load factors, voltage levels, location within the country and such other factors as are likely to affect the cost of a service and may allow a lifeline tariff for some consumers.¹³⁷ NERC is required to consult widely,¹³⁸ give notice of an impending tariff methodology and consider objections and other feedback in connection with a proposed tariff methodology.¹³⁹

The Power Consumer Assistance Fund (PCAF) was established by section 122(1) of the Electricity Act to subsidize underprivileged power consumers as specified by the Minister of Power in consultation with NERC.¹⁴⁰ The PCAF is managed by NERC and comprises contributions by designated consumers, class of consumers and eligible customers; and any subsidies of electricity granted by the FGN.¹⁴¹ The Electricity Act requires that government subsidies of electricity be implemented within the framework of the Power Consumer Assistance Fund (PCAF). NERC sets the contributions to be made by the designated consumers and eligible consumers into the PCAF and is required in setting it to consider the impact on the contributors and to factor such contributions into the contributor's tariff.¹⁴²

Further to its powers to establish tariff methodologies under the EPSRA, 2005, NERC adopted the Multi Year Tariff Order (MYTO) in 2008 as the pricing framework for electricity in Nigeria.¹⁴³ The MYTO incorporates all costs incurred in the process of delivering electricity to the consumers including generation cost; transmission cost; administrative cost and distribution cost in the end user tariff.¹⁴⁴ The generation cost/tariff is benchmarked against the Long Run Marginal Cost (LRMC) of the most economically efficient new generator while the transmission and distribution costs are set based on the revenue requirement and the quantum of energy to be traded over a certain period.¹⁴⁵ The three components of the revenue requirement are the allowed return on capital, the recovery of the capital investment over the life of the assets; and efficient operating costs.¹⁴⁶ The cost of spare capacity is not included in the MYTO framework.

The MYTO was originally designed to undergo minor reviews biannually and a major review every five (5) years but since 2020, following the Regulations on the Procedure for Electricity Tariff Reviews in the NESI (NERC-R-002-2024), has also been subjected to monthly minor reviews due to rapid changes in the tariff parameters. The monthly minor reviews affects pass-through costs beyond the operators such as inflation rates, interest rates, generation capacity, gas prices and exchange rates.¹⁴⁷ Major reviews affect all tariff assumptions including ATC&C loss target, Transmission Loss Factor (TLF), energy delivered to the Disco, Capital Expenditure (CAPEX), Regulatory Asset Base (RAB); Operations and Maintenance (O&M) cost, generation cost and transmission and administrative cost.¹⁴⁸ Other than the inflation rates, the exchange rate and the TLF which are the same for all Discos, the other parameters are different for each Disco with the result that MYTO is issued separately for each Disco and that there are differences in the tariffs applicable to each Disco.

NERC has not always followed the schedule for MYTO reviews due largely to market instability and political interference.¹⁴⁹ As a result minor reviews were not always carried out on schedule while major reviews were issued more frequently. MYTOs were issued in 2008, 2012, 2015, 2020, 2021, 2022 and 2024. The 2020 MYTO was revised the same year and introduced the Serviced Based Tariff (SBT) regime. Under the SBT regime, electricity customers are grouped based on the level of service they receive as set out in Table 3.¹⁵⁰

Table 3. Customer Cluster and Expected Service Delivery.

Band	Minimum supply per day
A	20 hours

¹³² Electricity Act, section 116 (1)

¹³³ Electricity Act, section 116 (2)

¹³⁴ ibid

¹³⁵ Electricity Act, section 116 (4)(a)

¹³⁶ Electricity Act, section 116 (4)(b)

¹³⁷ Electricity Act, section 116 (5)

¹³⁸ Electricity Act, section 116 (7)

¹³⁹ Electricity Act, section 116 (6)

¹⁴⁰ Electricity Act, section 120 (4)

¹⁴¹ Electricity Act, section 120 (3), 123 and 124

¹⁴² Electricity Act, Section 123 (2)

¹⁴³ NERC, *2024 Annual Report and Accounts* (2025)127 < <https://nerc.gov.ng/wp-content/uploads/2025/07/2024-Annual-Report.pdf>> accessed 4 November 2025; See also AE Airoboman, FO Adunola, HA Saliu, IS Fahim, MA Aderibigbe, 'Electricity Pricing in an Emerging Deregulated Market: A Case of Nigeria and Egypt' (6th IEEE International Energy Conference, Gammarth, Tunisia, September 2020)

¹⁴⁴ NERC, *2024 Annual Report and Accounts* (n 143) 126; See also OALP, 'No Change to Electricity Tariffs in NERC's MYTO 2024' OALP (Lagos, March 2024) 2 < www.olaniwunajayi.net/blog/nigerias-myto-2024-nercs-tariff-revisions-and-subsidy-implications/> accessed 15 October 2025

¹⁴⁵ NERC, *2024 Annual Report and Accounts* (n 143) 126-17

¹⁴⁶ ibid 127

¹⁴⁷ NERC, 'July 2025 Supplementary Order to the Multi-Year Tariff Order 2024 For Jos Electricity Distribution Plc' ORDER/NERC/2025/065, 30th June, 2025 < https://nerc.gov.ng/wp-content/uploads/2025/08/JED_July_2025_065.pdf> accessed 7 January 2026

¹⁴⁸ NERC, '2024 Annual Report and Accounts' (n 143) 129 143

¹⁴⁹ ibid 128,129 and 131

¹⁵⁰ NERC, 'Electricity Tariff', October 8, 2023 < <https://nerc.gov.ng/faq/electricity-tariffs/>>> (accessed September 11, 2024); Olayinka Ajayi, 'Tariff Hike Row: '95 per cent of Discos' customers in Band A don't get 20hrs of electricity daily', *Vanguard* (7 April 2024) < <https://www.vanguardngr.com/2024/04/tariff-hike-row-95-per-cent-of-discos-customers-in-band-a-dont-get-20hrs-of-electricity-daily/>> (accessed September 11, 2024);

B	16 hours
C	12 hours
D	8 hours
E	4 hours

Source: NERC, '2024 Annual Report and Accounts' 131 < <https://nerc.gov.ng/wp-content/uploads/2025/07/2024-Annual-Report.pdf>> accessed 4 November 2025.

The CRT in the case of Jos Electricity Distribution customers for July, 2025 was ₦210.60/kWh.¹⁵¹ The tariffs of customers on other bands are frozen at the rates payable since December, 2022 which for retail customers on Bands B and C was ₦63.26/kWh and ₦52.83/kWh respectively.¹⁵² Lifeline customers, that is customers with energy consumption of not more than 50kWh/month enjoy tariffs at ₦4.00/kWh. Non-Band A customers therefore enjoy a subsidy which NERC estimates in the case of Jos Electricity Distribution Plc customers alone to cost the FGN approximately ₦11.52bn monthly.¹⁵³ CRT was introduced for Band A customers with effect from April 1, 2024. This led to a decrease in the FGN subsidy obligations from ₦633.3 billion in Q1, 2024 to ₦380.06 billion in Q2, 2024.¹⁵⁴ The FGN policy directive to freeze tariff at July, 2024 levels while CRT rose led to increase in its subsidy obligations to ₦464.12 billion and ₦471.60 billion in Q3 and Q4, 2024 respectively.¹⁵⁵

A comparison of Nigeria's average CRT compared to those of selected African countries is show in Table 4.

Table 4. Comparison of the Average Electricity Tariffs in Nigeria with Those of Other African Countries.

Country	Average Tariff (\$/kWh)	Average Tariff (₦/ kWh)
Nigeria	0.07	100.26
South Africa	0.18	263.70
Burkina Faso	0.20	293.00
Gambia	0.24	351.60
Ghana	0.11	161.15
Guinea Bisau	0.38	556.70
Ivory Coast	0.13	187.52
Liberia	0.35	512.75
Mali	0.21	307.65
Mauritania	0.15	212.29
Mauritius	0.13	190.45
Niger	0.12	174.33
Senegal	0.18	263.70
Sierre Leone	0.25	366.25
Togo	0.18	263.70
Uganda	0.18	263.70

Source: NERC, '2024 Annual Report and Accounts' 136 < <https://nerc.gov.ng/wp-content/uploads/2025/07/2024-Annual-Report.pdf>> accessed 4 November 2025.

NERC estimates that the CRT (US\$0.12/kWh; ₦175.31) is only 63% of the average tariff charged in the reference countries (US\$0.19/kWh) in Table 4.¹⁵⁶

The subsidies embedded in NERC's tariff orders are inconsistent with the Electricity Act which provided for subsidies for only 'underprivileged power consumers' under the auspices of the PCAF.¹⁵⁷ The subsidy provided for under MYTO 2024 is based on service levels enjoyed by power consumers rather than their income levels and there is no structure or practice of funding the PCAF to cover the subsidy. The constant changes to MYTO are not consistent with the affordability component of energy security which requires stability of the tariff regimes. FGN directives to NERC on tariffs undermines NERC's independence and authority to establish tariffs. The FGN subsidies are not funded and have resulted in significant debts to operators. It has been projected that FGN's debt to Genco will reach ₦6 trillion by December, 2025.¹⁵⁸

These debts cause significant liquidity constraints to the electricity industry and discourage new investments. The subsidy also results in consumers not receiving appropriate economic signals from the market on the cost of the service they enjoy. So, there may be no incentive to be as efficient in the use of energy as they would have otherwise been. The liquidity constraints caused by the unfunded subsidies is compounded by significant ATC&C losses beyond the levels allowed under MYTO. For instance, the aggregate ATC&C loss of 37.95% among Discos in 2024 was significantly higher than the ATC&C loss of 24.73% assumed in the MYTO for 2024.¹⁵⁹ The implication is that the losses in excess of the loss assumed in the tariff are not billed for thereby aggravating the revenue shortfalls. Of the ₦2,196.71 billion billed by Discos in 2024, only ₦1,659.72 billion (75.56%) was collected with four Discos achieving collection efficiency of less than 55%.¹⁶⁰

The Order on the Capping of Estimated Bills in the NESI, 2020¹⁶¹ promotes affordability of electricity. The Order which was made in response to exaggerated bills of Discos to unmetered customers established the maximum monthly bills that shall be paid by R2 and C1 customers.¹⁶² The Order also incentivised Discos to meter their customers by establishing deadlines for metering and by freezing energy bills of customers then billed below the cap until such customers are metered.¹⁶³ NERC noted

¹⁵¹ NERC, July 2025 Supplementary Order to the Multi-Year Tariff Order 2024 (n 147) 3

¹⁵² *ibid* 4

¹⁵³ *ibid* 4

¹⁵⁴ NERC, *2024 Annual Report and Accounts* (n 143) 133-134

¹⁵⁵ NERC, *2024 Annual Report and Accounts* (n 143) 133-134

¹⁵⁶ NERC, '2024 Annual Report and Accounts' (n 143) 136

¹⁵⁷ Electricity Act, sections 117 and 122.

¹⁵⁸ CNBC Africa, 'Nigeria's power debt may reach ₦6trn by year-end' *CNBC Africa* (15 September 2025)

<<https://www.cnbc.com/news/7757944464610/nigerias-power-debt-may-reach-6trn-by-year-end>> accessed November 15 2025

¹⁵⁹ NERC, *2024 Annual Report and Accounts* (n 143) 170

¹⁶⁰ NERC, *2024 Annual Report and Accounts* (n 143) 169

¹⁶¹ Order No/NERC/197/2020

¹⁶² Order on the Capping of Estimated Bills in the Nigerian Electricity Supply Industry, 2020, paragraph C.

¹⁶³ *ibid*, para F and G

in the Order that non-provision of meters and unrealistic billing of unmetered customers accounted for 65% of the complaints at Discos' customer care centres.¹⁶⁴ While the Order by establishing a cap may have increased the capacity of consumers to pay their bills, if such caps are below the customer's consumption it would amount to a subsidy which could result in inefficient consumption and limit the capacity of the system to pay its costs and ensure a reasonable return on investment.

6. CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

The Electricity Act, 2023 includes several measures to enhance security of electricity supply. These include allowing generation from all sources of electricity; devolution of more powers over electricity to states; promotion of renewable energy and institution of a targeted subsidy regime. However, it did not go far enough in several respects. Requiring licences for generating facilities with capacity as low as 1.1 MW and for providing any kind of electricity transmission and distribution service unreasonably increases barriers to entry in the industry. The Act also did not provide for suspension of the export of power to prioritize domestic consumption despite Nigeria's severe electricity supply deficit.

Not implementing the Electricity, 2023 provisions on subsidy and independence of NERC signifies absence of the rule of law or even corruption which are symptoms of resource curse and disincentive to private investors. Such non-implementation has already emerged with the provision of subsidies outside the framework of the Act. The subsidies pronounced by the FGN against the determination of NERC undermines the regulator and the independence of the regulator which is one of the core tenets of commercial energy markets.

6.2. Recommendations

One gap in the Electricity Act, 2023 is the absence of measurable targets towards the expansion of access to electricity and the achievement of security of supply. This study recommends that the Nigeria develops time-bound security of electricity supply goals that would be binding on the government, and which delivery should be a central issue in election campaigns

The primary strategy for procuring renewable energy projects in Nigeria should be competitive bids rather than feed-in tariffs. Competitive bids could be a cost discovery process, reduce costs; and improve affordability and transparency. Nigeria already has experience in conducting such bid rounds which are regularly organised to allocate oil blocks and to select preferred bidders in the privatisation of national assets.

Nigeria needs to reduce the barrier to entry into NESI. At a minimum, Nigeria should not require licensing for power generation and dedicated transmission and distribution lines. This study notes that Nigeria is in competition with other countries for international capital for the development of electricity infrastructure and so if Nigeria's entry barriers are higher than that of those other countries, it will attract less investment.

A joint commission of the FGN and states is necessary to ensure consistency in the regulation of electricity. Without such platform, the regulation among states could be so disparate as to discourage investors. The work of the joint commission may include developing model electricity laws and contracts to be used by the states to facilitate operations across states. Contiguous states with similar demography may also establish joint institutions to pool resources together and leverage economies of scale. Creation of joint regulatory authorities by states will accelerate the development of common standards and limit the proliferation of regulatory islands. This paper recommends that the intergovernmental body provided for in section 230(9) of the Electricity Act, 2023 to coordinate the various regulatory bodies be established.

States should be allowed at least partial control of some sources of electricity to relieve them of the burden of seeking federal approval before utilizing such sources. The sources this study recommends for state control are all renewable energy sources including small hydro and sources from which the electricity is not currently being supplied to the national grid, which is not subject to international regulation and from which the FGN does not earn foreign exchange. A primary example is coal. Nuclear energy is excluded because its use is regulated by international law.

This paper also recommends that Nigeria winds down its participation in the WAPP until it is able to mitigate its power deficit. It could do this by reducing the MWs it supplies under WAPP or suspending its participation since it exports power to other West African countries without importing any. Any power supplied under WAPP is at the expense of satisfying demand at home.

Towards, improving availability of electricity and achieving sustainability, this study recommends the enactment of an Electricity Conservation Act that will codify incentives for the consumption of less electricity in the same tasks. Such incentives includes establishing energy efficiency standards for equipment, incentivising the manufacture of energy efficient appliances and offering tax incentives for energy savings.

This study recommends that the FGN and states implement the subsidy regime included in the Electricity Act to the letter. The Electricity Act, 2023 provides for subsidy only to the poor and that the subsidy be funded from the PCAF. Implementing subsidies outside the legal framework indicates the absence of the rule of law and interference with the independent regulator. These results in unpredictability which discourages investment. Such subsidies should, as in South Africa, be limited to free 50kWh a month to poor metered consumers. The subsidy should be administered by local governments which are closest to the people. Beneficiaries must be registered and prove that they cannot afford electricity.

REFERENCES

Anđelković, M., Stefanović, Z., & Petrović, D. (2024). Institutional aspects of the curse of natural resources. *Economic Themes*, 62(4).

¹⁶⁴ Ibid, para 8

- Dugeri, M. (n.d.). *Promotion of renewable energy in Nigeria through feed-in tariff schemes: A legal analysis*. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3509510
- Ejoh, E. (2024, October 22). Power failures: Nigeria loses 20,100 GWh to gas flaring in 9 months. *Vanguard*. <https://www.vanguardngr.com/2024/10/power-failures-nigeria-losses-20100gwh-to-gas-flaring-in-9-months/>
- Elwereflli, A., & Benhin, J. (2018). Oil: A blessing or curse? A comparative assessment of Nigeria, Norway and the United Arab Emirates. *Theoretical Economics Letters*, 8.
- Erum, N., & Hussein, S. (2019). Corruption, natural resources and economic growth: Evidence from OIC countries. *Resources Policy*, 63.
- Federal Ministry of Power. (2025). *National integrated electricity policy*. <https://intdev.tetracheurope.com/wp-content/uploads/2025/03/UKNIAF-National-Integrated-Electricity-Policy-2025.pdf>
- Federal Ministry of Power, Works and Housing. (2016). *Rural electrification strategy and implementation plan*. <https://rea.gov.ng/wp-content/uploads/2017/09/RESIP.pdf>
- Idehen, S. O., & Oyemwense, E. U. (2024). An examination of the Electricity Act 2023: Catalyst for renewable energy in Nigeria? *KBL Law Scholars Journal*, 1(4).
- International Energy Agency (IEA). (n.d.). Glossary. <https://www.iea.org/glossary#S>
- International Energy Agency (IEA). (n.d.). *Phasing out unabated coal: Current status and three case studies*. <https://iea.blob.core.windows.net/assets/861dc94d-a684-4875-80fb-a1faaf914125/PhasingOutUnabatedCoal-CurrentStatusandThreeCaseStudies.pdf>
- International Energy Agency (IEA). (n.d.). Where does Nigeria get its electricity? <https://www.iea.org/countries/nigeria/electricity>
- Jaeger, J. (2023, November 30). These 10 countries are phasing out coal the fastest. *World Resources Institute*. <https://www.wri.org/insights/countries-phasing-out-coal-power-fastest>
- Khana, M. A., et al. (2025). A cultural perspective of natural resource curse in finance. *Applied Economics Letters*, 32(5).
- Nigerian Bulk Electricity Trading Plc (NBET). (n.d.). Our history. <https://nbet.com.ng/history.html>
- Nigerian Bulk Electricity Trading Plc (NBET). (n.d.). Our mandate. <https://nbet.com.ng/mandate.html>
- Nigerian Electricity Regulatory Commission (NERC). (2024). *Quarter 3, 2024 report*. <https://nerc.gov.ng/resource-category/nerc-reports/>
- Nigerian Electricity Regulatory Commission (NERC). (2025). *Quarter 4, 2024 report*. https://nerc.gov.ng/wp-content/uploads/2025/03/2024_Q4-Report.pdf
- Odeyemi, N. (2025, January 16). Nigeria ranks 4th in Africa for solar growth. *The Electricity Hub*. <https://theelectricityhub.com/nigeria-ranked-4th-in-africa-for-solar-energy-adoption-in-2024-adding-63-5-mwp-of-capacity-bringing-its-total-installed-capacity-to-385-7-mwp/>
- Ohajanya, A. C. (2021). Estimated billing system is the bane of grid electricity supply and development in Nigeria: An empirical analysis. *Journal of Advances in Science and Engineering*, 5.
- Ok, E., Emmanuel, M., & Popoola, S. (n.d.). Comparative study of feed-in tariffs vs. net metering for solar in Nigeria. ResearchGate. <https://www.researchgate.net/publication/395695301>
- Olga-Lucía, C. (n.d.). Hydroelectric energy is considered renewable, but... Is it also sustainable? ResearchGate. <https://www.researchgate.net/publication/395837126>
- Oke, Y. (2021). *Nigerian electricity law and practice* (2nd ed.). Princeton & Associates.
- Olujobi, E., et al. (2023). Fossil-fuel disruptions and low carbon transition: Legal responses to energy security and sustainability in Nigeria's power sector. *Journal of Legal, Ethical and Regulatory Issues*, 26.
- Omorogbe, Y. (2004). Regional and national frameworks for energy security in Africa. In B. Barton et al. (Eds.), *Energy security: Managing risk in a dynamic legal and regulatory environment*. Oxford University Press.
- Oni, A. (2021). *The Nigerian electricity market: Understanding the transactional, legal and policy issues*. Self-published.
- Rahim, S., et al. (2021). Do natural resources abundance and human capital development promote economic growth? A study on the resource curse hypothesis in Next Eleven countries. *Resources, Environment and Sustainability*, 4.
- Ross, M. L. (1999). The political economy of the resource curse. *World Politics*, 51(2), 297–322.
- Statista. (n.d.). Nigeria: Urbanization from 2013 to 2023. <https://www.statista.com/statistics/455904/urbanization-in-nigeria/>
- Statista. (n.d.). Population of Nigeria in selected years between 1950 and 2024. <https://www.statista.com/statistics/1122838/population-of-nigeria/>
- Transparency International. (n.d.). Corruption perception index: Nigeria. <https://www.transparency.org/en/countries/nigeria>
- Ujah, E. (2024, January 16). MOFI clarifies FG's 40% shares take-over in DISCOs. *Vanguard*. <https://www.vanguardngr.com/2024/01/mofi-clarifies-fgs-40-shares-take-over-in-discos/>
- World Bank. (n.d.). GDP per capita (current US\$) – Nigeria. <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NG>
- Xiong, Z., et al. (2025). Breaking the resource curse: Can the development of digital economy in resource-based cities improve corporate ESG performance? *Applied Economics Letters*.
- Yadav, S., et al. (2024). Nexus between fintech, green finance and natural resources management: Transition of BRICS nation industries from resource curse to resource-blessed sustainable economies. *Resources Policy*, 91.
- Zallé, O. (2019). Natural resources and economic growth in Africa: The role of institutional quality and human capital. *Resources Policy*, 62.