



NO DEVELOPMENT IN DARKNESS: THE ROLE OF THE NIGERIAN ELECTRICITY ACT 2023 IN ADVANCING SELECTED SUSTAINABLE DEVELOPMENT GOALS IN NIGERIA

Oluchukwu Precious Obioma¹, Amarachi Remigius Dike², Newman U. Richards³ 

1. Lecturer, Faculty of Law, University of Nigeria, Enugu Campus. Email: oluchukwu.obioma@unn.edu.ng
2. Lecturer, Faculty of Law, University of Nigeria, Enugu Campus. Email: amarachi.dike@unn.edu.ng
3. Associate Professor, Faculty of Law, University of Nigeria, Enugu Campus. Email: newman.richards@unn.edu.ng. Corresponding Author.

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Abstract:

Nigeria's persistent electricity challenges have significantly hindered its progress in sustainable development, affecting vital sectors such as education, healthcare, and industry. This paper examines the role of the Nigerian Electricity Act 2023 in advancing selected Sustainable Development Goals (SDGs), specifically SDG 1 (No Poverty), SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), and SDG 7 (Affordable and Clean Energy). Using a doctrinal research approach, it assesses the provisions of the Act, relevant constitutional principles, and comparative legal instruments to evaluate their effectiveness in addressing Nigeria's long-standing electricity shortages. However, the findings indicate that although the Act introduces progressive reforms—such as decentralisation of the electricity sector, promotion of renewable energy, and the establishment of consumer protection measures. However, implementation gaps, institutional weaknesses, and infrastructural deficiencies continue to hinder the realisation of the targeted SDGs. The paper contends that reliable electricity access is essential for poverty alleviation, health service delivery, and educational outcomes, and therefore plays a central role in Nigeria's sustainable development. It recommends short-term measures (strengthening regulatory agencies and enforcement), medium-term measures (expanding the grid and investing in renewable energy), and long-term strategies (full market liberalisation and universal access initiatives). The study concludes that while the Electricity Act 2023 marks a step forward in aligning Nigeria with the 2030 Agenda, sustained political commitment, adequate financing, and strengthened institutional capacity are vital to ensure that no Nigerian remains in darkness.

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1. INTRODUCTION AND BACKGROUND: NIGERIA'S ELECTRICITY CRISIS AND NATIONAL DEVELOPMENT

Nigeria, the most populous country in Africa and a significant economic player, has faced a severe electricity crisis for decades. Although Nigeria is rich in natural resources, especially oil, its power supply continues to be severely inadequate and unreliable. The nation experiences regular power outages, underutilisation of its generation capacity, and a heavy dependence on private generators. Approximately 85 million Nigerians, representing 43% of the population, lack access to grid electricity, contributing to the world's largest energy access deficit.¹ The per capita electricity consumption stands at a concerning 145 kWh, lagging far behind peers like South Africa's 4,198 kWh and even smaller countries like Ghana.²

Access to modern energy, particularly electricity, has been recognised as a significant driver of socio-economic advancement. Energy poverty underscores the detrimental impact of inadequate electricity access on human development, limiting opportunities in education, healthcare, and the economy.³ Nigeria's power deficit has hindered growth and diminished the quality of life. Businesses and industries rely heavily on private diesel generators, which increases production costs and emissions.⁴ Estimates suggest that more than 22 million small petrol and diesel generators are used to supply 26% of household electricity and 30% of power for micro, small, and medium enterprises (MSMEs), with a combined capacity that significantly exceeds that of the national grid.⁵ The

1 Adedapo Adesanya, 'Adelabu Promises to Tackle Challenges in Nigeria's Power Sector' *BusinessPost* (22 August 2023) <<https://businesspost.ng/general/adelabu-promises-to-tackle-challenges-in-nigerias-power-sector/>> accessed 7 June 2025.

2 Ibid.

3 World Economic Forum, 'Energy Transition: Here's how Nigeria is Tackling the Barriers to its Green Energy Transition' (8 May 2023) <<https://www.weforum.org/stories/2023/05/how-nigeria-is-tackling-barriers-to-its-green-energy-transition/>> accessed 7 June 2025; World Bank, 'Technical Note 2: Igniting Economic Growth by Reforming Nigeria's Power Sector' (Washington, D.C: World Bank Group) 2 <<http://documents.worldbank.org/curated/en/099061723133022449>> accessed 7 June 2025.

4 World Bank (n 3).

5 Ibid.

reliance on generators is unsustainable, Nigerians spend around ₦3.7 trillion (approximately US\$12 billion) each year on fuel and generator expenses, with associated emissions contributing to an estimated 1,500 premature deaths annually.⁶ The broader economic implications are significant. Power shortages in Nigeria are estimated to cost between ₦7 and ₦10 trillion (approximately US\$25 billion) each year, which represents about 5 to 7% of the country's GDP. The World Bank reports that electricity shortages adversely affect GDP growth, as businesses face frequent outages and cite power reliability as their primary operational challenge.⁷ In other words, Nigeria's electricity crisis is keeping the nation's development both literally and figuratively in the dark.

Limited access to reliable electricity significantly influences human development, affecting health, education, and economic well-being.⁸ Schools lacking electricity encounter considerable challenges in delivering quality education, as inadequate lighting and a shortage of modern resources hinder Goal 4 of the SDGs (Quality Education). Healthcare facilities face similar challenges, struggling with vaccine refrigeration and the functioning of critical medical equipment, which presents a significant barrier to achieving SDG 3 (Good Health and Well-being). At the household level, energy poverty compels the use of hazardous lighting and cooking fuels, which elevate health risks and exacerbate poverty, as indicated in SDG 1 and SDG 7. Energy plays a crucial role in sustainable development, facilitating advancements in economic, social, and environmental areas. The UN's SDG 7 emphasises that universal access to electricity is essential for the attainment of other SDGs.⁹ The widely accepted notion in Nigeria that “no development in darkness” encapsulates the urgent need to address its electricity crisis.

⁶ Ibid.

⁷ Ibid.

⁸ World Economic Forum (n 3).

⁹ Ibid; United Nations Department of Economic and Social Affairs Sustainable Development, 'Goals 7: Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All' <<https://sdgs.un.org/goals/goal7#:~:text=7>> accessed 7 June 2025.

Various reforms have been attempted by successive governments to tackle this challenge, but significant progress remains elusive. Nigeria's power sector has undergone substantial changes, shifting from a state-controlled monopoly, exemplified by the now-defunct National Electric Power Authority (NEPA) and its successor, the Power Holding Company of Nigeria (PHCN), to a partially privatised system since 2013. Nevertheless, the anticipated improvements in service delivery and access have not materialised.¹⁰ The 2005 Electric Power Sector Reform Act initiated the liberalisation and restructuring of the sector, leading to the establishment of the Nigerian Electricity Regulatory Commission (NERC) and the unbundling of generation and distribution into successor companies. Ten years later, power generation companies (GenCos) and distribution companies (DisCos) underwent privatisation. Despite these efforts, Nigeria produces only a small fraction of its 13,000 MW installed capacity, with the actual power supplied to consumers generally fluctuating between 3,500 and 4,000 MW.¹¹ Inadequate transmission and distribution infrastructure exacerbates inefficiencies. Privatisation has not yielded the expected outcomes, as the sector continues to experience significant losses (approximately 50% in aggregate technical, commercial, and collection losses compared to the international best practice of around 15%) and an unsustainable tariff system that necessitates substantial subsidies.¹² In 2019, inefficiencies within the sector led to a deficit of ₦1.68 trillion (US\$6 billion), requiring government bailouts that exceeded the national health budget. These challenges indicate that Nigeria's legal and regulatory framework has inadequately addressed its electricity issues.

In 2023, a significant development occurred with the enactment of the Nigerian Electricity Act, replacing the 2005 Act. This reform seeks to “illuminate” the path forward by overhauling the legal and institutional framework, decentralising electricity generation, encouraging renewable energy, enhancing private sector involvement, and improving electricity access.¹³ Nigeria's commitment to achieving SDG 7, particularly the goal of universal electricity access by 2030, is reflected in the introduction of

10 World Bank (n 3) 1.

11 Adesanya (n 1).

12 World Bank (n 3) 1.

13 Adesanya (n 1).

this legislation. The Act signifies a noteworthy shift in Nigeria's electricity governance and provides hope that "darkness" will no longer impede development. However, two years after this Act, significant progress has yet to be made. A comparative review of South Africa and India offers valuable insights into effective reforms in the electricity sector. Both countries have successfully managed energy transitions, implementing policies that may provide significant lessons for Nigeria. South Africa, while grappling with power shortages, has made considerable progress in enhancing its electricity infrastructure.¹⁴ India's significant rural electrification efforts and reforms driven by the private sector¹⁵ serve as important examples for improving access and increasing efficiency. Enhancing regulation, adopting renewable energy sources, and improving infrastructure are essential for addressing the electricity crisis and attaining sustainable development in accordance with the 2023 Electricity Act.

This paper presents a thorough analysis of Nigeria's electricity crisis and the newly established legal framework, critically assessing the potential of these reforms to foster sustainable development. Following this introduction, Section 2 examines the legal and institutional framework regulating electricity, encompassing the 2023 Act and prior legislation, while highlighting significant regulatory challenges. Section 3 explores the relationship between electricity reform, access and the SDGs in Nigeria. Section 4 offers comparative insights from South Africa and India, two jurisdictions that provide valuable examples in the reform of the electricity sector. Finally, Section 5 presents evidence-based recommendations for the reform of Nigeria's electricity sector. Section 6 concludes with considerations on achieving the objectives of the Electricity Act 2023.

14 Gideon Ndubuisi, Elvis Korku Avenyo and Rex Asiana, 'Dancing on the Grid: Electricity Crises, Energy Vulnerability, and Manufacturing Jobs in South Africa' (2025) 202 *Energy Policy* <<https://doi.org/10.1016/j.enpol.2025.114534>>.

15 Anthony Paul Heynen, Paul A Lant, Srinivas Sridharan, Simon Smart and Chris Greig, 'The Role of Private Sector Off-Grid Actors in addressing India's Energy Poverty: An Analysis of Selected Exemplar Firms Delivering Household Energy' (2019) 191(5) *Energy and Buildings* 95-103 <<https://doi.org/10.1016/j.enbuild.2019.03.016>>.

2. LEGAL AND INSTITUTIONAL FRAMEWORK OF NIGERIA'S ELECTRICITY SECTOR

2.1 Evolution of Electricity Law in Nigeria

Nigeria's electricity supply has historically been centralised under federal control, with the National Electric Power Authority (NEPA) holding a monopoly on generation, transmission, and distribution for several decades. Nonetheless, inefficiencies and persistent underinvestment resulted in widespread power shortages, earning NEPA the infamous nickname “Never Expect Power Always.” In response to these failures, the government implemented the Electric Power Sector Reform Act (EPSRA) in 2005, which laid the essential legal framework for reforming the electricity sector. The EPSRA restructured NEPA into successor entities under the Power Holding Company of Nigeria (PHCN) and established the Nigerian Electricity Regulatory Commission (NERC), an independent regulatory body.¹⁶ The restructuring enabled private involvement, resulting in the establishment of six generation companies and eleven distribution companies, all of which were privatised by 2013. Nevertheless, the Transmission Company of Nigeria (TCN) continued to operate under government control.¹⁷ The legislation also introduced consumer rights protections, established a multi-year tariff framework, and created the Rural Electrification Agency (REA).

Even with these reforms in place, challenges in implementation continued to arise. By the late 2010s, the objectives of EPSRA—competitive electricity markets, reliable supply, and cost-reflective pricing—were still largely unfulfilled. Government subsidies persisted, sector debts continued to escalate, and millions of Nigerians remained underserved. A significant concern was the constitutional limitation that placed electricity, except for rural electrification, under federal control, thereby restricting the capacity of state governments to legislate or execute power initiatives. The enforcement of regulations was insufficient; NERC's mandated

16 Anish De, ‘Missing the Last Mile: Indian Electricity Reforms over the Past 25 Years’ *Powerline* (4 October 2023) <<https://powerline.net.in/2023/10/04/missing-the-last-mile-indian-electricity-reforms-over-the-past-25-years/>> accessed 9 June 2025.

17 World Bank (n 3) 2.

metering policy did not effectively address the metering gap, resulting in millions of consumers lacking accurate billing, which undermined revenue collection and consumer trust.¹⁸ Public dissatisfaction escalated, culminating in a 2016 Federal High Court ruling that nullified a tariff increase on the grounds that it was insufficient to warrant service improvement.¹⁹ The legal and operational shortcomings highlighted the need for additional reform to establish a sustainable and reliable electricity market in Nigeria.

2.2 The Nigerian Electricity Act 2023 – Key Provisions

The Nigerian Electricity Act 2023 was enacted to address deficiencies in the sector and modernise its legal framework. It repeals the 2005 EPSRA, consolidates all laws governing the Nigerian Electricity Supply Industry (NESI), and establishes a comprehensive institutional structure for a fully privatised, competitive, and efficiently regulated market.²⁰

Key Reforms introduced by the Act

a) Decentralisation and State Participation: The Act enables state governments to regulate electricity generation, transmission, and distribution within their jurisdictions, dismantling the previous federal monopoly.²¹ This follows the Constitution of the Federal Republic of Nigeria (Fifth Alteration) Act, No. 33, 2023 (the “5th Alteration Act”)

18 Dayo Idowu, Taiwo Peregrino, Oluyemi Oyewole, Saheed Alao, Chidimma Iwunze and Oluwamayowa Daodu, ‘Review of the Electricity Act 2023 and its Implications on the Nigerian Electricity Supply Industry (NESI) (Olajide Oyewole LLP, 16 August 2023) <<https://www.mondaq.com/nigeria/renewables/1355686/review-of-the-electricity-act-2023-and-its-implications-on-the-nigerian-electricity-supply-industry-nesi>> accessed 9 June 2025.

19 World Bank (n 3) 1.

20 Nicholas Okafor, Adeola Sunmola, Godson Iwuzo and Omeiza Alao, ‘The Nigerian Electricity Act 2023: Illuminating the Path Towards Power Sector Transformation in Nigeria’ (Udo Udoma & Belo-Osagie, August 2023) 3 <<https://uubo.org/wp-content/uploads/2023/08/THE-NIGERIAN-ELECTRICITY-ACT-2023-ILLUMINATING-THE-PATH-TOWARDS-POWER-SECTOR-TRANSFORMATION-IN-NIGERIA.pdf>> accessed 9 June 2025; Electricity Act 2023 s 1.

21 Electricity Act 2023 Ss 2(2), 63(1), and 230(2)-(9).

which amended Paragraph 14 (b), Part II of the Second Schedule to the Constitution, and grants states the authority to create independent electricity regulations and regulatory bodies.²² Some states, including Lagos, Enugu, Edo, and Kaduna, have enacted laws to establish sub-national electricity markets.²³ However, until a state enacts such legislation, the federal framework under NERC remains applicable. While this decentralisation encourages local solutions and mini-grid development, it also introduces the complexity of dual regulation, requiring coordination between NERC and state regulators to avoid overlapping licensing requirements.²⁴

b) Competitive Electricity Market Development: The Act envisions the gradual evolution of a competitive electricity market, ensuring that multiple buyers and sellers can transact freely, thereby improving efficiency.²⁵ NERC is tasked with overseeing the transition from the Transitional Stage to a medium-term and long-term market, where independent participants can engage in trade without a single buyer model, such as the government-owned Nigerian Bulk Electricity Trading Plc (NBET). This will lead to the phasing out of the NBET, allowing new players to negotiate power transactions independently.²⁶ The shift aligns with global best practices, like India's electricity sector, which promotes open access and trading exchanges to foster competition and efficiency.²⁷

c) Integration of Renewable Energy and Rural Electrification: The Act prioritises renewable energy development and rural access to electricity, aiming to diversify Nigeria's energy mix, which currently relies heavily on gas and limited hydro resources. The law mandates that generation licensees fulfil renewable generation obligations set by NERC.²⁸ Additionally, distribution companies and large consumers must source a percentage of their power from renewable sources or pay a premium,

22 Idowu et al (n 18).

23 Ibid.

24 Onyekwere (n 20)

25 Electricity Act 2023 Ss 6-7.

26 Idowu et al (n 18).

27 De (n 16).

28 Idowu et al (n 18).

thereby introducing a Renewable Purchase Obligation system.²⁹ To extend electricity to underserved areas, the Act reinforces mini-grid expansion and the Rural Electrification Fund, supporting public-private partnerships for solar home systems. It recognises third-party investments in grid infrastructure and facilitates cross-border electricity trade, aiming to attract new capital investment and bolster energy security.³⁰ These reforms align with SDG7 (Affordable and Clean Energy), aiming for sustainable power access.

d) Consumer Protection and Local Content Development: The Act strengthens consumer rights, reinforcing service quality obligations for electricity providers.³¹ Notably, it prohibits distribution companies (DisCos) from supplying power without proper metering beyond a date set by NERC,³² expediting nationwide metering deployment. Furthermore, electricity generation companies must contribute 5% of their annual operating expenses to a Host Community Development Trust, ensuring that local communities benefit financially from power projects.³³ The Act also advances local content development, prioritising indigenous participation in the electricity sector to build domestic technological capacity.³⁴ This measure seeks to create more employment opportunities and reduce dependence on foreign expertise.³⁵

e) Institutional Reforms and Tariff Regulation: The Nigerian Electricity Regulatory Commission (NERC) remains the primary regulator of the sector, now with enhanced powers. NERC is responsible for licensing, tariff setting, and compliance enforcement, placing a new emphasis on cost-reflective pricing.³⁶ The law establishes a Consumer Assistance Fund, aimed at transparently subsidising vulnerable consumers.³⁷ Over time, it

²⁹ Ibid.

³⁰ Electricity Act 2023 Part XVI and XVII.

³¹ Ibid s 119.

³² Ibid s 114.

³³ Ibid s 95(2)(c).

³⁴ Ibid s 227.

³⁵ Onyekwere (n 20).

³⁶ Electricity Act 2023 Ss 33 and 34.

³⁷ Ibid s 122.

plans to phase out cross-subsidies, ensuring that government support does not distort market dynamics. Additionally, the Act mandates the creation of a National Integrated Electricity Policy and Strategic Implementation Plan (NIEPSIP), a comprehensive master plan for Nigeria's power sector, to be prepared within one year by the Ministry of Power.³⁸ This framework will direct generation expansion, transmission network development, and universal energy access. However, its success hinges on effective execution, which requires strong institutional capacity and political will.

2.3 Key Institutions and Stakeholders

Under the current framework, several institutions play critical roles in Nigeria's electricity sector governance:

a) Nigerian Electricity Regulatory Commission (NERC)

NERC is the primary regulator supervising the electricity market since its inception in 2005. It oversees tariff regulation through the Multi-Year Tariff Order (MYTO), licensing for generation, transmission, and distribution, and ensures adherence to market rules. According to the 2023 Act, NERC is tasked with facilitating the transition to competitive electricity markets while overseeing state-level regulators.³⁹ Maintaining regulatory independence continues to pose challenges due to political pressure, particularly regarding tariff adjustments that frequently encounter opposition, thereby impacting utilities' cost recovery.⁴⁰

b) Federal Government Agencies

The Federal Ministry of Power oversees overall policy and coordinates reforms in the electricity sector, which includes the development of the

³⁸ Ibid Ss 3 and 4.

³⁹ Ibid Ss 33 and 34; NERC Regulations on the Procedure for Electricity Tariff Reviews in the Nigerian Electricity Supply Industry 2024 reg 2.

⁴⁰ World Bank (n 3) 1.

National Integrated Electricity Policy and the Strategic Implementation Plan (NIEPSIP).⁴¹ The major federal agencies are as follows:

- i. The Transmission Company of Nigeria (TCN) supervises the national grid;⁴² however, it faces challenges due to underinvestment in transmission infrastructure. This shortfall results in frequent grid failures and hampers the ability to evacuate generated power.⁴³
- ii. Nigerian Bulk Electricity Trading Plc (NBET) acts as a government-backed intermediary, acquiring power from Generation Companies (GenCos) and selling it to Distribution Companies (DisCos), thereby stabilising transactions.⁴⁴ The objective is to transition away from NBET towards a fully market-based system incorporating multiple buyers and sellers.⁴⁵
- iii. The Rural Electrification Agency (REA)⁴⁶ focuses on enhancing electricity access in remote areas by implementing off-grid projects and solar electrification,⁴⁷ thereby contributing to SDG 7 (Affordable and Clean Energy).

c) The Role of State Governments

Historically, states had minimal participation in electricity regulation because of federal exclusivity. However, the recent constitutional amendment (Fifth Amendment) and the 2023 Electricity Act⁴⁸ have changed this dynamic and now permit them to establish state-level electricity markets. States such as Lagos, Enugu, Edo, and Kaduna have recently enacted laws that facilitate local energy regulations. Their duties

41 Electricity Act 2023 Ss 3.

42 Ibid s 15.

43 Adesanya (n 1).

44 Electricity Act 2023 Ss 6(f) and 7(2).

45 Ibid s 7; NERC Regulations on the Procedure for Electricity Tariff Reviews in the Nigerian Electricity Supply Industry 2024.

46 Electricity Act 2023 s 127.

47 Rural Electrification Agency, 'Off Grid Electrification Strategy' <<https://rea.gov.ng/theagency/off-grid-electrification-strategy/>> accessed 7 June 2025.

48 Electricity Act 2023 Ss 2(2), 63(1), and 230(2-9).

include licensing for intra-state generation and distribution, creating policies for embedded generation, focusing on small-scale plants that supply energy within the state, promoting industrial captive power initiatives and supporting local renewable energy projects, including solar farms.⁴⁹ State electricity regulators must coordinate with NERC to prevent regulatory conflicts, especially concerning interstate and cross-border electricity trade, which falls under federal jurisdiction.

d) Private Sector Participation

Since privatisation in 2013, most generation companies (GenCos) and distribution companies (DisCos) are privately owned.⁵⁰ However, the government retains stakes in certain entities and has assumed control of underperforming DisCos.⁵¹ Private investors are instrumental in advancing the expansion of renewable energy, including mini-grids and solar projects. The 2023 Act promotes an increase in Independent Power Producers (IPPs) by simplifying licensing requirements for small-scale generation, specifically for capacities up to 1 MW, with higher limits for renewable sources and facilitating private investment in transmission infrastructure through concessions and public-private partnerships.⁵² Nonetheless, investors encounter risks related to foreign exchange, challenges with liquidity, and uncertainties in regulation.

49 Idowu et al (n 18).

50 Edino Ojonimi Ferdinand and Audu Enojo, 'The Impact of Privatization of Nigeria's Electricity Industry on the Quality of Electricity Service Delivery in Lokoja Metropolis' (2024) 4(2) *AKSU Journal of Administration and Corporate Governance* 153.

51 Chika Izuora, 'Nigeria: Power Sector Privatisation - Discos Reeling under N3trn Debt 10 Years After' *AllAfrica* (17 February 2024) <<https://allafrica.com/stories/202402190191.html>> accessed 9 June 2025.

52 Electricity Act 2023 Ss 80, 109, 112 and 164(q); Idowu et al (n 18).

2.4 Legal and Regulatory Challenges

While the Nigerian Electricity Act 2023 is ambitious and comprehensive, several challenges in the legal and institutional framework could impede its effectiveness:

a. Challenges in Implementation and Enforcement

Nigeria, despite possessing robust laws, frequently encounters challenges in their implementation.⁵³ Key provisions, including the development of the National Integrated Electricity Policy (NIEPSIP), the rollout of renewable energy, and the transition to full competition, require careful enforcement by NERC and the relevant agencies. Experts have expressed scepticism regarding the likelihood of these plans coming to fruition within the stipulated timelines, citing historical inertia as a concern.⁵⁴ One significant issue is institutional capacity: NERC and emerging state regulators require adequate expertise, staffing, and independence to effectively enforce essential provisions, such as preventing electricity theft, monitoring service quality, and managing tariffs. Weak institutional structures may impede enforcement, thereby undermining investor confidence.⁵⁵

b. Regulatory Overlaps and Federal-State Coordination

The dual regulatory system established by the 2023 Act allows state governments to regulate electricity markets, which may lead to jurisdictional confusion. Clarity is crucial, especially when generation companies aim to sell power across state lines.⁵⁶ The Act maintains federal oversight of interstate electricity trade; however, ambiguities persist. Creating joint committees or memoranda of understanding between

53 Onyekwere (n 20).

54 Ibid.

55 Peter Onuh, James O Ejiga, Emmanuel O Abah, Joy Ojodunwene Onuh, Christian Idogho and Joseph Omale, 'Challenges and Opportunities in Nigeria's Renewable Energy Policy and Legislation' (2024) 23(2) *World Journal of Advanced Research and Reviews* 2354.

56 Idowu et al (n 18).

NERC and state commissions would facilitate the harmonisation of licensing processes and mitigate investor deterrence stemming from uncertainty in regulatory requirements.⁵⁷

c. Infrastructure and Market Limitations

Legal reforms alone are insufficient to address Nigeria's power infrastructure deficits. The national grid is weak, facing numerous collapses each year due to inadequate investment in transmission infrastructure. Despite the increase in generation capacity, insufficient grid reliability hampers effective power delivery. The Act promotes grid expansion and facilitates private investment; however, the realisation of projects necessitates substantial financing and technical execution.⁵⁸ Similarly, the distribution network is plagued by overloaded transformers and significant technical losses. Enforcing the Act's metering mandate and ensuring that DisCos invest in infrastructure upgrades are essential.⁵⁹ The law mandates that unmetered customers be equipped with proper meters by a specified deadline,⁶⁰ which is a constructive measure, assuming it is implemented effectively.

57 Adebola Adeyemi, 'Promoting Renewable Energy through a Decentralised Electricity Regulatory Framework – An Analysis of Nigeria's Electricity Act 2023' (2024) 15(3) *The Journal of Sustainable Development, Law and Policy* 399. DOI:10.4314/jsdlp.v15i3.15.

58 Mojisola A Jimoh and Bello S Raji, 'Electric Grid Reliability: An Assessment of the Nigerian Power System Failures, Causes and Mitigations' (2023) 7(1) *Covenant Journal of Engineering Technology (CJET)* 17.

59 Gerard Nonso Obiora, Godwin Osariemen Igbinsosa and Collins Belouebi Fiomobebefa, 'Technical Losses across Distribution Networks in Nigeria and Mitigative Measures: A Review' (2025) 8(1) *ABUAD Journal of Engineering Research and Development (AJERD)* 43.

60 Electricity Act 2023 s 68(1)(b); Abdulmajeed Abolaji and Kenechukwu Ogbogo, 'Closing the Metering Gap: Nigerian Electricity Regulatory Commission Issues Regulatory Order' (Dentons ACASLAW, 9 July 2024) <<https://www.dentonsacaslaw.com/en/insights/articles/2024/july/9/nigerian-electricity-regulatory-commission-issues-regulatory-order>> accessed 9 June 2025.

d. Challenges in Financial Viability and Tariff Structures

One of the major challenges in Nigeria's electricity sector is achieving a cost-reflective tariff while maintaining social acceptability.⁶¹ The Act facilitates economic tariff structures, enabling licensees to recoup operational costs while ensuring affordability for low-income households through the Consumer Assistance Fund.⁶² Tariff adjustments in Nigeria encounter political resistance, frequently resulting in delays or reversals, thereby impacting financial liquidity within the sector. The culture of non-payment further exacerbates liquidity issues.⁶³ As of 2023, approximately ₦281 billion in electricity bills remain uncollected, which includes unpaid bills from the government.⁶⁴ Moreover, electricity distribution companies recorded a shortfall of over N202bn in their revenue collections for the first quarter of 2025.⁶⁵ The current revenue shortfall poses a significant risk to reforms unless stricter enforcement measures are implemented to ensure payment discipline among consumers and government agencies.

e. Legacy Debts and Contract Resolution

Transitioning to the new competitive electricity framework necessitates resolving legacy financial obligations. Contracts executed under the regulatory framework before 2023, such as NBET power purchase agreements, gas supply contracts, and DisCo performance agreements, must either be renegotiated or adhered to avoid disruptions in the market. The Act aims to decrease dependence on NBET;⁶⁶ however, the abrupt

61 George Nwangwu, 'Quest for Cost-Reflective Electricity Tariffs in Nigeria: Managing the Conflict between Politics and Economics' (2019) 10(1) *NAUJILJ* 158.

62 Electricity Act 2023 s 122.

63 Stephen Chima, Adebayo Adebajo and Philip Anegebe, 'Nigerian Power Sector: Resolving Liquidity Concerns' *Financial Nigeria* (7 April 2025) <<https://www.financialnigeria.com/nigerian-power-sector-resolving-liquidity-concerns-feature-582.html>> accessed 9 June 2025.

64 Onyekwere (n 20).

65 Damilola Aina, 'Discos Raise Bills 107% Despite Poor Power' *Punch* (9th June 2025) <<https://punchng.com/discos-raise-bills-107-despite-poor-power/>> accessed 9 June 2025.

66 Order on the Transition to Bilateral Trading in the Nigerian Electricity Supply Industry ("NESI") 2024 order 18 and 19.

withdrawal of government guarantees could deter investors unless market conditions improve. Furthermore, DisCos' financial instability and NBET's liabilities require a well-defined financing strategy, potentially utilising international mechanisms like the World Bank Performance-Based Loan to support DisCo reforms.⁶⁷ Legal reforms alone are not enough to address sector-wide deficits; fiscal and policy interventions are necessary to enhance the framework.

In summary, Nigeria's legal and institutional framework for electricity has undergone significant reform with the Electricity Act 2023, aiming to create a more decentralised, competitive, and sustainable sector. NERC, state governments, and private actors each have newly defined roles that could jointly address the longstanding challenges. Yet, the effectiveness of this framework will depend on robust implementation and coordination. The next section will link these legal efforts with Nigeria's pursuit of sustainable development, analysing how improved electricity governance and access can accelerate progress toward the SDGs.

3. ELECTRICITY REFORM, ACCESS, AND THE SUSTAINABLE DEVELOPMENT GOALS IN NIGERIA

Electricity serves not merely as an infrastructure commodity; it acts as a catalyst for realising broad developmental goals. The United Nations SDGs emphasise this with SDG 7, which advocates for “access to affordable, reliable, sustainable and modern energy for all” by 2030.⁶⁸ The persistent electricity deficit in Nigeria poses a significant obstacle to

67 World Bank Group, ‘The World Bank Approves Additional Financing to Consolidate the Gains of Nigeria’s Power Sector Recovery Program’ (9 June 2023) <<https://www.worldbank.org/en/news/press-release/2023/06/09/the-world-bank-approves-additional-financing-to-consolidate-the-gains-of-nigeria-s-power-sector-recovery-program>> accessed 9 June 2025; International Trade Administration U.S. Department of Commerce, ‘Electricity. Power Systems and Renewable Energy’ (6 June 2023) <<https://www.trade.gov/country-commercial-guides/electricity-power-systems-and-renewable-energy>> accessed 9 June 2025.

68 United Nations Department of Economic and Social Affairs Sustainable Development, ‘Goals 7 Ensure Access to Affordable, Reliable, Sustainable and Modern Energy for All’ <<https://sdgs.un.org/goals/goal7>> accessed 9 June 2025.

achieving this goal and has far-reaching implications for numerous other SDGs. This section examines the relationship between electricity reform and expanded access in the context of Nigeria's SDGs, as well as the potential effect of the Electricity Act 2023 on the country's progress towards these global objectives.

3.1 Poverty Alleviation (SDG 1)

Access to electricity has a profound effect on income generation and livelihoods. In rural Nigeria, more than 70% of the population live without electricity, and poverty remains a pervasive issue.⁶⁹ SDG 1 aims to eliminate poverty in all its forms, and improving access to electricity is essential for reaching this goal. Reliable electricity plays a crucial role in reducing poverty by facilitating income-generating activities and decreasing expenses for low-income households.⁷⁰ The Electricity Act 2023 is expected to have a positive effect by decentralising power generation, enabling states and private developers to build local projects.⁷¹ It also re-establishes the Rural Electrification Agency⁷² dedicated to off-grid solutions and creates a Consumer Assistance Fund⁷³ to subsidise electricity for specified underprivileged consumers.

Electricity alone does not eradicate poverty; additional programmes, including micro-financing for electrical equipment and training for productive energy use, are essential. Collaboration across sectors involving government, private stakeholders, and development agencies is

69 Martins Eze, 'Impact of Energy Poverty on Nigeria's Agriculture Sector' *The Electricity Hub* (31 December 2024) <<https://theelectricityhub.com/impact-of-energy-poverty-on-nigerias-agriculture-sector/>> accessed 10 June 2025; Deborah O Ayodele-Olajire, Opeyemi Adewale Gbadegesin and Adeniyi Gbadegesin, 'Conquering Energy Poverty in Nigeria: Lessons from Countries Transitioning to Green and Clean Energy' (2023) 3(1) *Benin Journal of Geography, Planning and Environment* 45.

70 World Bank Group, 'Nigeria to Expand Access to Clean Energy for 17.5 Million People' (15 December 2023) <<https://www.worldbank.org/en/news/press-release/2023/12/15/nigeria-to-expand-access-to-clean-energy-for-17-5-million-people>> accessed 4 October 2025.

71 Electricity Act 2023 Part VII.

72 Ibid Part XVI.

73 Ibid Part XV.

necessary for electricity reforms to contribute to long-term poverty reduction effectively.⁷⁴ These measures have the potential to alleviate energy poverty for Nigeria's poorest. However, to attain SDG1, the Power Consumer Assistance Fund must be managed effectively and supported by strong off-grid and rural initiatives, ensuring that access to electricity genuinely helps reduce poverty.

3.2 Good Health and Well-being (SDG 3)

Electricity plays a vital role in modern healthcare. Hospitals and clinics require a dependable power supply for vaccine refrigeration, emergency devices, and continuous services.⁷⁵ On the other hand, the absence of reliable power compels numerous health facilities in Nigeria to depend on petrol generators or kerosene lamps, which leads to unsafe delivery conditions and unsatisfactory health outcomes. More so, in households without electricity, dependence on kerosene lamps and firewood results in respiratory problems and increased fire risks.⁷⁶ Expanding clean energy has the potential to enhance public health. In Nigeria, many health facilities lack basic electricity; about 40% of public primary health centres are entirely without power.⁷⁷ The Electricity Act 2023 does not specify mandates for the health sector; however, its focus on rural electrification and mini grids may indirectly improve health services. The Act enables the

74 Munachi Chikodili Ugwu, Adefolake Olachi Adewusi and Naomi Emeka Nwokolo, 'The Role of Public-Private Partnerships in Building Clean Energy Infrastructure in the United States and Nigeria' (2024) 6(4) *International Journal of Management & Entrepreneurship Research* 1049.

75 UNICEF, *A Brighter Life for Every Child with Sustainable Energy* (UNICEF Climate, Environment, Energy and Disaster Risk Reduction, 2022) 9 <<https://www.unicef.org/documents/brighter-life-every-child-sustainable-energy>> accessed 4 October 2025.

76 United Nations, 'Policy Briefs in Support of the High-Level Political Forum: Leveraging Energy Action for Advancing the Sustainable Development Goals' (Division for Sustainable Development Goals Department of Economic and Social Affairs United Nations, June 2021) <https://sdgs.un.org/sites/default/files/2021-06/2021-POLICY%20BRIEFS_3.pdf> accessed 10 June 2025.

77 Ibraheem Wambai, 'Ending Blackouts in Tertiary Hospitals: Tinubu Prioritises Reliable Power for Healthcare Services' (Federal Ministry of Health and Social Welfare, 10 September 2025) <<https://health.gov.ng/ending-blackouts-in-tertiary-hospitals-tinubu-prioritises-reliable-power-for-healthcare-services/>> accessed 4 October 2025.

technical feasibility of supplying power to remote clinics by encouraging off-grid solar and local generation, thereby supporting SDG3. To realise these benefits fully, policymakers should coordinate the Act's energy deployment with health planning, such as prioritising clinics for new grid or solar connections. Thus, the Act provides a foundation for improved healthcare. Still, its impact on SDG 3 will depend on additional measures and effective implementation to ensure hospitals and clinics have access to reliable electricity.

3.3 Quality Education (SDG 4)

Access to electricity transforms education. Schools need reliable electricity for lighting, ventilation, ICT equipment, and digital tools to facilitate effective learning. Without electricity, students must study under dim or polluting light, which harms their health and learning.⁷⁸ However, students who have access to electricity at home tend to study more hours, which improves their educational outcomes.⁷⁹ Research shows that electrification improves education results. For example, rural electrification correlates with more years of schooling and higher attendance.⁸⁰ In one study, 75% of head teachers in rural Kenya said better lighting would encourage teachers to stay in remote schools.⁸¹ The Electricity Act 2023 has the potential to advance SDG 4 by providing electricity to off-grid schools. Its provisions for mini-grids and renewable energy facilitate the deployment of solar power in rural communities, brightening classrooms

78 United Nations Children's Fund (UNICEF), UN DESA, ENERGIA, The World Bank, and the International Energy Agency (IEA), 'Accelerating SDG 7 Achievement: Policy Brief 4 Energy and SDG 4 Quality Education (Policy Brief #4 Energy And SDG 4 (Quality Education))' 4 <<https://sdgs.un.org/sites/default/files/2021-05/POLICY%20BRIEF%204%20-%20ENERGY%20AND%20SDG%204%20QUALITY%20EDUCATION.pdf>> accessed 4 October 2025.

79 Om Raj Katoch, Romesh Sharma, Sarita Parihar and Ashraf Nawaz, 'Energy Poverty and its Impacts on Health and Education: A Systematic Review' (2023) 18(2) *International Journal of Energy Sector Management* 411 <<https://doi.org/10.1108/IJESM-10-2022-0007>>; World Health Organization, 'Electricity in Health-Care Facilities' (31 August 2023) <<https://www.who.int/news-room/fact-sheets/detail/electricity-in-health-care-facilities>> accessed 10 June 2025.

80 Ibid.

81 Ibid.

and improving access to digital education. For successful implementation, it is crucial for government and donors to align energy projects with educational initiatives, such as utilising the Rural Electrification Agency, climate or development funds to install solar panels in schools. Therefore, the Act creates opportunities to supply electricity to Nigerian schools; however, focused implementation, such as solar programmes tailored for schools, will be vital to translating legal reforms into better classroom environments and enhanced educational outcomes.⁸²

3.4 Affordable and Clean Energy (SDG 7)

The Electricity Act 2023 specifically aims for universal and sustainable energy, aligning with SDG7. As discussed above, it decentralises the power sector, allowing states to oversee generation and distribution, while also supporting mini-grid and decentralised generation projects. It also mandates renewable energy purchase obligations for generators, encouraging a shift from gas-fired and diesel generation to solar, wind, and hydro. These reforms are directly linked to SDG 7, creating a pathway to affordable and clean energy for all Nigerians and advancing SDG 7.2 (Renewable Energy Expansion).

Nigeria's electricity sector is among the most underdeveloped in the world, with access to electricity for only 55-60% of the population. Even in grid-connected households, supply is frequently intermittent, restricting both economic and social development.⁸³ The International Energy Agency has reported that Nigeria has the largest population in the world without access to electricity.⁸⁴ To achieve SDG 7 by 2030, a significant expansion in connections and supply is essential.

The Nigerian government has pledged to achieve universal electrification by 2030, employing strategies such as grid extensions and off-grid solar initiatives.⁸⁵ The Electricity Act 2023 encourages rural electrification,

⁸² Ibid.

⁸³ World Economic Forum (n 3).

⁸⁴ World Bank (n 3) 1.

⁸⁵ World Economic Forum (n 3).

supports mini-grids, and fosters private sector participation, enabling state utilities and independent developers to operate with greater autonomy.⁸⁶ This liberalisation has the potential to enhance electricity access in underserved communities. The Act mandates renewable energy purchase obligations, promoting a transition from natural gas dominance to solar, wind, and hydropower.⁸⁷ This shift directly supports SDG 7.2 by reducing greenhouse gas emissions.

In principle, the Act has the potential to significantly improve Nigeria's energy supply while encouraging cleaner energy sources. However, in practice, Nigeria's energy sector still falls short of target. According to the Transmission Company of Nigeria (TCN), as of 4th March 2025, Nigeria is supplying only 5,801.84 megawatts (MW) to consumers,⁸⁸ well below its capacity. This gap shows that simply having the Act does not guarantee 'affordable and clean' power for everyone. The move to cost-reflective tariffs under the Act should be supported by effective subsidies⁸⁹ through the Power Consumer Assistance Fund, established under the Electricity Act 2023⁹⁰ to help low-income households afford electricity. The Electricity Act provides a strong policy framework for universal, modern energy. However, achieving SDG7 will require careful implementation, expand new generation and distribution capacity, and ensure that the most vulnerable Nigerians can afford to connect to the grid. The Act's success will depend on overcoming infrastructure and financing gaps through rigorous implementation to turn those tools into actual, affordable power for every community.

⁸⁶ Electricity Act 2023 Ss 127, 10, 109-112,

⁸⁷ Ibid Part XVII.

⁸⁸ Olalekan Adigun, 'Nigeria's Power Generation hits Record 5,801.84MW – TCN' (Nairametrics, 6 March 2025) <<https://nairametrics.com/2025/03/06/nigerias-power-generation-hits-record-5801-84mw-tcn/>> accessed 4 October 2025.

⁸⁹ Olufemi A Ayansola, Tayo P Ogundunmade, Afolabi O Adedamola, 'Statistical Analysis of Cost Reflective Electricity Tariff and Distribution in Nigeria (A Study of Southwest States)' (2023) 2(5) *Mod Econ Manag* 2.

⁹⁰ Electricity Act 2023 s 122.

4. COMPARATIVE PERSPECTIVES: LESSONS FROM SOUTH AFRICA AND INDIA

Many countries have faced the challenges of reforming their electricity sectors and expanding access. South Africa and India serve as pertinent comparators for Nigeria, as both are large developing nations with significant energy needs and have undertaken substantial reforms in their power sectors, yielding varied results. Although their contexts differ, they provide international best practices and cautionary tales from which Nigeria can draw lessons in its endeavour to “light up” the nation. This section offers a critical analysis of electricity governance and reform in South Africa and India, highlighting lessons applicable to Nigeria, particularly in the areas of legal frameworks, renewable energy integration, and public-private partnerships.

4.1 South Africa: Transitioning from Monopoly to Competition

For many years, South Africa’s electricity sector has been primarily controlled by Eskom, a state-owned utility that is vertically integrated and previously accounted for 95% of the nation’s electricity generation and 45% of the total power supply across Africa.⁹¹ However, Eskom’s reliance on outdated coal-fired plants, which still make up approximately 85% of its generation⁹² capacity, coupled with years of inadequate investment, has resulted in significant shortages. Since 2007, South Africa has experienced persistent load shedding, with blackouts increasing to more than 200 days in 2022–2023. The crisis has prompted major reforms aimed at fostering competition, diversifying energy sources, and attracting private investment—objectives that align with Nigeria’s ambitions.⁹³

91 International Trade Administration, ‘South Africa – Energy’ (26 January 2024) <<https://www.trade.gov/country-commercial-guides/south-africa-energy>> accessed 19 June 2025.

92 Ibid.

93 Paul Saah and Charles Mbohwa, ‘The Effect of Power Outages on Small- and Medium-sized Enterprises in South Africa’ (2024) 3(2) *Logistic and Operation Management Research (LOMR)* 1.

The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), launched in 2011, has been a key initiative. This competitive bidding scheme has enabled private companies to develop renewable energy projects—such as solar and wind—and sell power to Eskom through long-term contracts. By 2020, REIPPPP had successfully procured over 6.4 GW of renewable capacity, attracting investment through transparent processes and reliable tariffs.⁹⁴ Nigeria can replicate this model through its new Electricity Act by incentivising independent power producers and expanding renewable energy sources, particularly given its substantial solar and wind potential.

In response to Eskom's inefficiencies, South Africa initiated the unbundling of the utility into distinct entities for generation, transmission, and distribution in 2019.⁹⁵ The Electricity Regulation Amendment Act 2024 restructured the power sector by ending Eskom's monopoly and establishing a truly independent Transmission System Operator (TSO), establishing a multi-buyer, multi-seller electricity market, enabling multiple generators (including Eskom's own power plants and IPPs) to compete freely.⁹⁶ It also mandates third-party access to the grid, allowing businesses to purchase power directly from private generators.⁹⁷ This highlights the potential advantages for Nigeria in implementing private transmission operators and moving beyond NBET's single-buyer model, which has limited market flexibility. Nonetheless, South Africa's experience serves as a reminder that legal reform is not a panacea – Eskom's unbundling has progressed slowly and has been mired in political

94 Tonderayi Mukeredzi, 'New Dawn for South Africa's Electricity Supply Industry as ERA Comes into Force' *African Energy* (21 Jan 2025) <<https://www.africa-energy.com/news-centre/article/new-dawn-south-africas-electricity-supply-industry-era-comes>> accessed 19 June 2025.

95 International Trade Administration (n 91).

96 Davin Olen, 'The Electricity Regulation Act in South Africa: The dawn of a new ERA?' (DENTONS, 24 October 2024) <<https://www.dentons.com/en/insights/articles/2024/october/24/the-electricity-regulation-act-in-south-africa>> accessed 19 June 2025.

97 Ibid.

challenges, while the nation continues to grapple with severe power shortages as new generation fails to keep pace with plant breakdowns.⁹⁸

A noteworthy advancement in South Africa's reform process was the removal of restrictions on self-generation. Businesses and municipalities can establish their own power plants—exceeding 100 MW—without the need for licensing, resulting in a significant increase in private investment in distributed energy projects.⁹⁹ Nigeria's Electricity Act 2023 similarly raises the limits for embedded generation, permitting projects of up to 1 MW (and more for renewable sources) to proceed without a licence. If Nigeria successfully implements these reforms, smaller-scale generation may swiftly address supply shortages and relieve pressure on the grid, if there is a framework to integrate that power (or operate it in islanded systems).

Another lesson from South Africa is the critical role of public-private partnerships (PPPs) and finance. South Africa has secured \$8.5 billion in international climate finance through the Just Energy Transition Partnership to facilitate the phase-out of coal and the expansion of renewable energy sources.¹⁰⁰ Nigeria, reliant on outdated gas and coal facilities, has the potential to utilise global climate financing and PPPs to fund its objectives for renewable energy and grid expansion. According to World Economic Forum, Sub-Saharan Africa attracted less than 1.5% of global clean energy investment from 2000 to 2020.¹⁰¹ Unlocking capital will require improving the investment climate by enforcing robust regulations, including investor-friendly tariffs, ensuring currency stability, and credit enhancements (like partial risk guarantees) to promote large-scale financing. The success of South Africa's REIPPPP can be attributed in part to robust government guarantees and Eskom's commitment to purchase power, which instilled confidence in investors. Nigeria may want to explore providing comparable credit support for new

98 Simon Trace, 'South Africa's crippling electricity problem' (Oxford Policy Management) <<https://www.opml.co.uk/insights/south-africas-crippling-electricity-problem>> accessed 19 June 2025.

99 International Trade Administration (n 91).

100 Ibid.

101 World Economic Forum (n 3).

independent power producers or solar initiatives, at least until the market reaches full viability.

In summary, South Africa's trajectory underscores: (a) the significance of diversifying generation through renewables and independent power producers; (b) the necessity of reforming monopolistic structures through clear legislation to encourage competition; and (c) the importance of government support and international partnerships in financing the transition. Nigeria's new Electricity Act aligns with several of these objectives by promoting competition and utilising renewable energy sources. It is crucial to note that failing to address operational inefficiencies and secure political commitment—an area where South Africa has encountered challenges, particularly with political interference in Eskom—may mean that legal changes alone will not promptly resolve power shortages.

4.2 India: Achieving (Near) Universal Electrification Through Reform

India's electricity sector reform offers important lessons for Nigeria, demonstrating how a major developing nation increased power access for nearly all its 1.3 billion citizens. In 2000, only 60% of India's population had access to electricity; by 2019, this figure rose to near-universal household coverage, with over 900 million people gaining access to electricity over two decades.¹⁰² By 2020, 97% of Indian households had access to electricity—a significant transformation from 56% in 2000,¹⁰³ which Nigeria can draw valuable lessons on both policy execution and the enabling legal framework.

India's modern power sector reform began with the Electricity Act 2003, akin to Nigeria's 2005 Act, yet broader in scope, and it consolidated

102 India Energy Outlook, 'Energy in India Today' (Paris, 2021) <<https://www.iea.org/reports/india-energy-outlook-2021/energy-in-india-today>> accessed 19 June 2025.

103 Sunil Mani, 'Overcoming Barriers to Energy Access in Rural India' (Revolve, 16 October 2023) <<https://revolve.media/features/overcoming-barriers-to-energy-access-in-rural-india>> accessed 20 June 2025.

existing electricity laws and introduced competition.¹⁰⁴ The key provisions are as follows: unbundling state electricity boards into separate companies for generation, transmission, and distribution; each state has its own independent regulatory commissions, alongside a Central Electricity Regulatory Commission to address interstate matters; de-licensing power generation to permit private investment, except for hydro projects; open access policies allow large consumers to purchase power from any producer, rather than relying on local distribution companies; and rationalising tariffs and decreasing cross-subsidies to ensure pricing that reflects actual costs.¹⁰⁵ Rural electrification is mandated, placing the onus on the government to ensure universal access. This extensive legal framework—referred to as a “Rolls-Royce” model—facilitated private sector participation, decentralisation, and efficiency.¹⁰⁶ Nigeria's reforms should likewise integrate legal modifications with robust implementation strategies to guarantee effectiveness.

India's legal reforms were supported by strong policy initiatives designed to ensure universal access. The government launched dedicated programs like Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) in the mid-2000s, and Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) in 2014 for rural electrification, which funded grid extension to tens of thousands of villages. The Saubhagya scheme (Pradhan Mantri Sahaj Bijli Har Ghar Yojana) (2017–2019) offered complimentary electricity connections to 25 million households, thereby enhancing universal access.¹⁰⁷ This political commitment, supported by billions of dollars in subsidies, facilitated swift progress. The lesson for Nigeria is the importance of pairing reforms in the electricity sector with adequately funded implementation strategies to achieve universal access. Scaling up initiatives such as the Rural Electrification Fund is crucial for reaching off-grid populations. As of 2023, Nigeria has several projects (like the World Bank/REA Nigeria Electrification Project targeting off-grid universities

104 Anish De, ‘Missing the Last Mile: Indian Electricity Reforms over the Past 25 Years’ (Power Line, 4 October 2023) <<https://powerline.net.in/2023/10/04/missing-the-last-mile-indian-electricity-reforms-over-the-past-25-years/>> accessed 20 June 2025.

105 Ibid.

106 Ibid.

107 India Energy Outlook (n 102).

and hospitals, solar power for communities, etc.), but these need to be accelerated and expanded to meet SDG7 promptly.¹⁰⁸

Another aspect of India's experience is the role of the private sector and regulatory bodies post-reform. The Electricity Act 2003 facilitated private investment in generation, resulting in a notable increase in capacity by independent power producers (IPPs) during the 2000s and 2010s. Currently, a significant share of India's power generation is managed by private companies, and competition has contributed to reducing costs in numerous instances, such as through auctions for solar power that have led to record-low tariffs. India has also established electricity markets, creating two power trading exchanges that facilitate short-term trading of electricity across various regions. The law's open access provisions enable this.¹⁰⁹ In Nigeria, the concept of a power exchange or more dynamic trading has the potential to enhance efficiency. The country primarily depends on long-term contracts and limited day-ahead scheduling, lacking a real-time market.¹¹⁰ India's regulators, both state and central, ensure the presence of an adjudicatory mechanism, specifically the Appellate Tribunal for Electricity, to resolve disputes.¹¹¹ Nigeria might consider this; currently, Nigeria relies on regular courts for appeals of NERC decisions, but establishing a specialised electricity tribunal could expedite dispute resolution.

In terms of renewable energy, India has aggressively pursued green energy as part of its development strategy, linking to SDG7 and SDG13. It set targets of 175 GW of renewable capacity by 2022 (which it nearly met if

108 World Bank Group, 'The World Bank Approves Additional Financing to Consolidate the Gains of Nigeria's Power Sector Recovery Program' (n 67).

109 De (n 104).

110 Yan Shao, Zhe Yang, Yongbing Yan, Yuan Yan, Feruza Israilova, Nawal Khan and Liu Chang, 'Navigating Nigeria's Path to Sustainable Energy: Challenges, Opportunities, and Global Insight' (2025) 59 *Energy Strategy Reviews* <<https://doi.org/10.1016/j.esr.2025.101707>>.

111 Aryan Gupta and Vidhi Saxena, 'Paving Way for Alternate Dispute Resolution Mechanisms in the Indian Electricity Sector' (2022) *Indian Journal of Projects, Infrastructure and Energy Law* <<https://ijpiel.com/index.php/2022/06/01/paving-way-for-alternate-dispute-resolution-mechanisms-in-the-indian-electricity-sector/>> accessed 20 June 2025.

large hydro is included) and 500 GW by 2030.¹¹² Policies such as the development of solar parks, renewable purchase obligations (similar to those being introduced in Nigeria), and subsidy schemes for distributed solar have positioned India as one of the largest producers of renewable energy globally.¹¹³ The key lesson for Nigeria is the necessity of establishing clear targets and maintaining policy consistency. Nigeria's National Renewable Energy and Energy Efficiency Policy establish objectives for renewable energy; however, tangible progress has been sluggish. Drawing insights from India, it will be crucial to set interim targets (such as X GW of solar by 2025) and to align regulations, including measures to ensure that the grid can accommodate intermittent renewables and financial mechanisms that support renewable independent power producers (IPPs). India established a dedicated institution, the Solar Energy Corporation of India, to support the procurement and development of renewable energy.¹¹⁴ Nigeria could also empower an organisation or the REA to lead large-scale renewable initiatives, particularly solar energy in the northern regions and potentially wind energy in coastal areas.

Another lesson from India relates to reforms in the distribution sector. Although India has achieved success in power generation, its distribution companies (mostly state-owned) face financial challenges stemming from losses and subsidies. The government implemented schemes like Ujwal DISCOM Assurance Yojana (UDAY) in 2015 to restructure utility debt

112 Bharat Dubey, Seema Agrawal and Ashok Kumar Sharma, 'India's Renewable Energy Portfolio: An Investigation of the Untapped Potential of RE, Policies, and Incentives Favoring Energy Security in the Country' (2023) 16 *Energies* 5491 <<https://doi.org/10.3390/en16145491>>; Government of India Press Information Bureau, 'India's Renewable Energy Capacity Hits New Milestone' (13 November 2024) <<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2073038>> accessed 25 June 2025.

113 Bikash Kumar Sahu, 'Solar Energy Developments, Policies and Future Prospectus in the state of Odisha, India' (2016) 61 *Renewable and Sustainable Energy Reviews* 526; Kumar Aditendra Nath Shahdeo and Shweta Kumari, 'Renewable Energy in India: An Overview and the Path towards Sustainable Development' (2024) 24(12) *Asian Journal of Economics Business and Accounting* 307.

114 Komal Ahuja, 'Solar Energy and Solar Energy Corporation of India (SECI): A Comprehensive Analysis' (11 January 2025) <<https://bhattandjoshiassociates.com/solar-energy-and-solar-energy-corporation-of-india-seci-a-comprehensive-analysis/>> accessed 25 June 2025.

and enforce improvements; however, challenges persist. Even today, many Indian utilities rely on state government subsidies to cover losses from selling power below cost to agricultural sectors or low-income consumers.¹¹⁵ This demonstrates that financial sustainability remains a global challenge. Nigeria's model of private Discos is different; however, these Discos face similar issues with losses and underpayment. The recent Nigerian government proposal to subsidise specific consumer groups directly and to implement metering¹¹⁶ resembles India's efforts to reduce subsidy burdens through better targeting and loss reduction. The key point is that reforms must address the weakest link in the chain; for Nigeria, ensuring distribution efficiency and financial viability is just as important as expanding generation capacity.

Hence, India's experience demonstrates that rapid electrification can be achieved through strong political will, adequate funding, and an enabling legal framework. The synergy of national policy guidance, state-level implementation, and private sector involvement under independent regulation was crucial to India's progress. Nigeria is making headway in that direction with its 2023 Act and related policies, which empower both federal and state actors while encouraging private investment. The Indian model indicates that a clear division of roles (between the centre and states, as well as public and private sectors), regulatory clarity, and extensive local execution can significantly influence electrification efforts. Nigeria can adopt India's strategies, including targeted subsidies for connections, fostering competition to reduce costs (as seen in India's solar auctions), and maintaining a long-term vision of universal access. India's example underscores that energy reforms are a development pathway: the accurate

115 Pratik Biswas, Himadri Chakrabarty and D Tripathi Rao, 'Did Power Sector Reforms Improve Operational Efficiency and Financial Performance of Discoms In India Evidence from a Difference-in-Differences Based Approach' (2025) <<http://dx.doi.org/10.2139/ssrn.5243690>>; Akul Raizada, 'India's Broken Power Economics Addressing DISCOM Challenges' (Center for Energy and Climate, 15 October 2024) <https://www.ifri.org/sites/default/files/2024-10/ifri_raizada_india_broken_power_economy_2024_1.pdf> accessed 25 June 2025.

116 Pedro Omontuemen, 'The Electricity Act 2023: Powering Nigeria (Report on Proceedings and outcomes)' (PWC, April 2024) <<https://www.pwc.com/ng/en/assets/pdf/power-roundtable-2024.pdf>> accessed 25 June 2025.

measure of success is how many lives are improved and how the economy benefits, rather than the reforms themselves. This perspective is valuable as Nigeria implements its new electricity law.

5. RECOMMENDATIONS

Nigeria stands at a crucial juncture in its energy sector development. The passage of the Nigerian Electricity Act 2023 and related reforms presents a new opportunity to address the nation's electricity crisis effectively. To ensure that these legal changes lead to meaningful developmental outcomes (and that Nigeria can effectively eliminate “darkness” as a barrier to growth), a series of practical, evidence-based measures should be implemented. The following are essential recommendations for the reform of Nigeria's electricity sector, based on prior analysis and comparative insights, and they are divided into short-term measures, medium-term measures (expanding the grid and investing in renewable energy), and long-term strategies (full market liberalisation and universal access initiatives):

Short-Term Measures

1. Enhance Institutional Capacity and Coordination: The Nigerian Electricity Regulatory Commission (NERC) is crucial in maintaining service standards, enforcing anti-theft laws, and regulating tariffs. To maximise effectiveness, the government should invest in NERC's capacity by training personnel, enhancing technical expertise, and ensuring regulatory independence. Emerging state electricity regulators will require similar support to manage decentralisation effectively. Furthermore, federal and state coordination must harmonise electricity policies throughout Nigeria. Establishing a Federal-State Electricity Coordination Committee may help prevent conflicts and bolster investor confidence. It is vital to establish clear guidelines for integrating state electricity markets with the national grid, thereby ensuring efficient operations across all regions.

2. Tackling Transmission and Distribution Limitations: Although electricity generation in Nigeria has increased over the years, the country still faces ongoing challenges in transmission and distribution that hinder reliable and sustainable supply. The Electricity Act 2023 promotes private sector involvement, allowing the government to explore Public-Private Partnerships (PPPs) or concessions for vital transmission projects and particularly focusing on the construction of transmission lines to evacuate stranded power from the south to the high-demand north. Moreover, distribution companies (DisCos) experience significant technical and commercial losses. The government should adopt performance-based financing programmes, like those endorsed by the World Bank, that offer low-interest financing for infrastructure upgrades, contingent on meeting loss-reduction targets. If DisCos fail to improve, franchising parts of their networks to third-party contractors, as permitted by the Act, could improve service delivery.

3. Guaranteeing Financial Sustainability through Strategic Subsidies: Nigeria's transition to cost-reflective electricity tariffs requires careful oversight to balance affordability with the need to attract private investors. The Consumer Assistance Fund, established under the Act, aims to subsidise essential power use for low-income households. The allocation should be transparent and included in the national budget to prevent sector debt. To improve financial discipline, government agencies should lead by example by making timely bill payments, possibly through automatic budget deductions. Implementing anti-theft laws will help prevent illegal connections and reduce losses. Public awareness campaigns are vital to educate citizens on the importance of timely payments and their link to reliable electricity. Aligning tariffs with actual costs, removing blanket subsidies, and encouraging payment discipline will increase revenue and attract private investment, ultimately supporting infrastructure growth and expanding electricity access across Nigeria. These measures are crucial for maintaining a sustainable and inclusive power sector.

Medium-Term Measures

Expanding Renewable Energy and Off-Grid Electrification: The global energy transition prioritises clean, renewable sources, and Nigeria ought to fully incorporate solar and wind power into its electricity mix. To advance progress, there is need to establish clear and actionable targets under SDG 7, including the goal of reaching 10 GW of solar PV capacity by 2030 and committing to electrifying a designated number of rural communities each year, enhance the Rural Electrification Agency's (REA) mini-grid and solar home system initiatives by drawing insights from India's effective electrification efforts. Also, implement renewable energy obligations for generators and DisCos, with NERC regulations specifying minimum percentages and timelines for the integration of clean energy, although, financing continues to pose a challenge. However, Nigeria can tap into innovative funding sources such as green bonds and climate funds dedicated to renewable projects. Nigeria has issued sovereign green bonds¹¹⁷ that can be allocated to solar farms, wind projects, and related grid infrastructure. In addition, international partnerships akin to South Africa's Just Energy Transition deal focused on securing concessional funds to replace diesel generators with solar mini grids, thereby reducing both emissions and energy poverty; and integrating renewable energy into Nigeria's growth strategy will enable the country to progress in achieving both energy access and climate objectives outlined in the Paris Agreement.

Long-Term Measures

1. Utilising Public-Private Partnerships and Competitive Procurement:

Nigeria should enhance competitive procurement and public-private partnerships, drawing inspiration from South Africa and India, to stimulate investment in the electricity sector. In order to accomplish this, implement clear and open bidding processes for Independent Power

117 Debt Management Office Nigeria, 'Green Bond III Investor Presentation' (June 2025) <<https://www.dmo.gov.ng/fgn-bonds/green-bond/5338-fgn-series-iii-green-bond-investor-presentation/file>> accessed 27 June 2025.

Producers (IPPs), applicable to both utility-scale solar and wind projects, engage private contractors to construct and oversee distribution infrastructure, guaranteeing efficiency in the delivery of electricity services, promote private investment in underutilised National Integrated Power Project (NIPP) plants, enabling companies to co-own and operate these facilities for enhanced performance, and collaborate with solar companies to provide electricity to primary health centres across the country, offering viability gap funding when needed. All partnerships and contracts must adhere to established rules and be legally enforceable under the Electricity Act 2023, thereby ensuring investor confidence and promoting a dynamic, well-regulated electricity market.

2. Improving Transparency and Engaging Stakeholders: The reform of the electricity sector can be a politically charged issue; therefore, transparency is crucial for fostering public trust and ensuring regulatory accountability. To ensure transparency, the regular publication of data or reports detailing generation capacity, outages, collections, and fund allocations, including the utilisation of the host community's 5% fund is essential. Additionally, involve consumers and civil society in discussions about electricity by conducting public consultations on significant regulations and tariff changes, and launch awareness campaigns that emphasise improvements, such as a more stable power supply, metering upgrades, and efforts to reduce losses, to ensure the public understands the long-term benefits of reform.

Nigeria should fully liberalise its electricity market within a period of five to ten years, shifting away from single-buyer models to promote competition, lower costs, and improve reliability. To achieve universal access, financing should be sustained through green bonds and results-based funding, focusing on impoverished communities and including off-grid solutions. To support SDG 7, the government should introduce performance metrics related to electricity access in rural areas, healthcare, and education. Regular assessments of reform outcomes will enable policy adjustments, such as increasing subsidies or speeding up rural electrification and ensuring that the Electricity Act continues to support

objectives related to poverty reduction, health improvement, and educational development.

6. CONCLUSION

Reconstructing Nigeria's social contract with electricity consumers requires clear improvements in reliability, which will foster public support for reforms such as tariff changes. The Electricity Act 2023 marks a significant legislative step forward in addressing systemic problems within the power sector, including supply shortages, rural connectivity, and affordability. The success of this initiative depends on coordinated implementation, attracting investments, and flexible policymaking. Commendably, examples, like South Africa's market liberalisation and India's rural electrification, show that fundamental change is achievable with political dedication, financial backing, and effective institutional cooperation.

The Act aligns with Sustainable Development Goals (SDGs) 1, 3, 4, and 7. The subsidy fund and rural electrification measures under SDG 1 (No Poverty) could reduce energy poverty; however, they need full funding and targeted efforts to reach the most impoverished Nigerians effectively. Reliable electricity in clinics and homes improves health outcomes and reduces indoor pollution for SDG 3 (Health); consequently, decentralised generation, such as solar mini grids, should be incorporated into the healthcare sector. Electrified schools enhance learning outcomes for SDG 4 (Education), demanding the integration of off-grid solar solutions into educational initiatives. The Act decentralises the energy sector, encourages renewable sources, and facilitates market entry for new players in line with SDG 7 (Affordable, Clean Energy).

Despite these reforms, Nigeria continues to supply a limited number of megawatts to consumers. Implementing the Act requires overcoming infrastructure shortcomings and attracting investments. Connecting Nigeria's cities and villages with reliable, affordable, and clean energy will "light up" homes and industries and illuminate Nigeria's path towards inclusive and sustainable development.

