A PUBLICATION OF WORD ASTRA
wordastrajournals@gmail.com
www. wordastrajournals@gmail.com

International Journal of Finance,
Management and Governance (IJFMG)
Volume 2, Issue 2, June 2026 - ISSN: 3092-9423



# Socio-Political Dynamics, Institutional Fragmentation, and Energy Poverty Governance Framework for Nigeria's Niger Delta Region

**Henry Asuquo Okpo[1], Samuel Ekung[2], and Israel Udoka[3]**

[1]Department of Building Technology, Akwa Ibom State Polytechnic, Ikot Ekpene, Akwa Ibom State, Nigeria

[2]Department of Quantity Surveying, University of Uyo, Uyo, Akwa Ibom State, Nigeria

[3]Department of Estate Management, School of Environmental Studies, Akwa Ibom State Polytechnic, Ikot Ekpene, Nigeria

**DOI:** https://doi.org/10.5281/zenodo.20738001

**Citation:** Okpo, H. A., Ekung, S., & Udoka, I. (2026). Socio-Political Dynamics, Institutional Fragmentation, and Energy Poverty Governance Framework for Nigeria's Niger Delta Region. *International Journal of Finance, Management and Governance, 2(2).* https://doi.org/10.5281/zenodo.20738001

**Abstract**

*Despite the region's significant hydrocarbon riches and subsequent national energy reforms, this research looks at how institutional fragmentation, elite capture, and multi-level governance failures maintain energy poverty in Nigeria's Niger Delta (South-South and South-East zones). Grounded in Energy Justice Theory, Political Economy Analysis (PEA), and Multi-Level Governance (MLG) frameworks, the paper adopts a mixed-methods design integrating 45 semi-structured stakeholder interviews, policy document analysis, and quantitative Partial Least Squares (PLS) regression analysis from 347 valid survey responses. Cognitive mapping with 12 expert panellists validated the DNA Governance Framework. Energy poverty was most strongly predicted by elite capture ($\beta = 0.61$; relative importance = 38.4%), followed by institutional fragmentation (29.7%) and deficiencies in governance accountability (21.3%). Together, these factors explained 89.4% of the socio-political variation ($R^2 = 0.613$). A regulatory governance contradiction was found: for more than 75% of respondents, Nigeria's official Regulatory Governance Index score of 0.897 coexists with fewer than six daily grid-supply hours. Without corresponding capacity-building, the Electricity*

*Act of 2023 increased fragmentation through decentralisation. The Nigeria Energy Poverty Index (NEPI) aggregate scores of 0.38 (South-South) and 0.41 (South-East) confirm governance as the main factor. The study makes three unique contributions: the first contextualised, multidimensional Nigeria Energy Poverty Index (NEPI) calibrated to local political economy realities; the novel theoretical construct of the "regulatory governance paradox" for resource-rich, energy-poor states; and the validated DNA Governance Framework as a sequential reform tool for development partners, policymakers, and energy regulators throughout sub-Saharan Africa.*

**Keywords:** energy poverty, energy justice, multi-level governance, political economy, elite capture

## 1. Introduction

Energy is widely acknowledged as a vital component of economic expansion, poverty alleviation, and sustainable development (Sovacool and Dworkin, 2015). Nigeria, the largest economy and most populous country in Africa, is experiencing one of the worst energy crises in the world. Nigeria has the biggest absolute electricity access gap in the world as of 2024, with around 70% of homes using traditional biomass for cooking and 45% of the country's population, roughly 90 million people, not having access to grid power (IEA, 2024; World Bank, 2024). Nigeria has 7.8% of the world's proved natural gas reserves and 4.9% of the world's proven oil reserves, yet its per capita energy consumption, estimated at 150 kWh annually, remains among the lowest in the world (Benard *et al.*, 2016). The grid often provides less than 5,000 MW to customers despite the country's installed generation capacity of over 12,500 MW, showing a structural performance gap of more than 60% (GET.invest, 2020).

Energy is an important development issue. An assessment by the Renewable Energy Association of Nigeria predicted that in 2025, energy unreliability would have been the main reason for the closure of 25% of industrial companies in 2023 (REAN, 2025). The average urban household in Nigeria spends between $30 and $185 per month on energy including the cost of captive generation (Ajaelu and Okereke, 2020). This is an outsized portion of household income when compared to the sub-$2 daily income per capita enjoyed by 92.4% of the population (Central Bank of Nigeria, 2019). The trajectory of energy availability and affordability has not improved commensurate with multi-billion-dollar investments over several reform cycles, raising serious concerns about the underlying causes of failure.

Previous studies have shown that the energy problem in Nigeria is mainly driven by financial constraints such as tariff shortfalls and investment gaps and technical deficiencies such as transmission losses, inadequate generation capacity and ageing infrastructure (Ebhota and Tabakov, 2018; Okereke et al., 2020). However, there is increasing evidence that these technical causes are a façade for deeper sociopolitical dynamics such as political manipulation of reform processes, institutional fragmentation across overlapping regulatory mandates, elite capture of energy infrastructure rents, and governance failures at the federal, state, and local levels (Burke and Stephens, 2018; Nwozor et al., 2021). By early 2026 the contradiction of high regulatory ratings and subpar service delivery remained (RMI, 2026), demonstrating that legislative change without transformation of the political economy is insufficient. The Electricity Act, 2023, has introduced structural decentralisation by giving the states the power.

The most severe example of this contradiction is seen in the Niger Delta area, which includes the South-South and South-East geopolitical zones. The Niger Delta should be the most energy-secure area in Nigeria as it generates more than 90% of the country's income from the production of gas and oil. However, it has the lowest energy per capita indices in the nation (Adewuyi *et al.*, 2020), and more than 45% of homes do not have access to grid electricity (LSE Africa at LSE, 2024). The rent-seeking dynamics that favour political and commercial elites over energy users are reflected in the estimated £3 billion worth of recoverable energy that gas flaring has wasted during the last four years (LSE Africa at LSE, 2024). The Niger Delta is understudied in comparison to other Nigerian areas, despite these features providing it the perfect setting for analysing socio-political determinants of energy poverty (Odoi-Yorke *et al.*, 2026).

This study fills in four particular gaps. This study creates the Nigeria Energy Poverty Index (NEPI) as a contextualised alternative to the current frameworks for measuring energy poverty in Nigeria, which rely on imported global indices that do not account for local political economy variables (Ogwumike and Ozughalu, 2016; Teschner *et al.*, 2020). Second, this study uses Partial Least Squares (PLS) regression to determine the structural relationships between institutional fragmentation, elite capture, governance quality, and energy justice outcomes because the socio-political determinants of energy poverty in the Niger Delta have not been empirically modelled using sophisticated quantitative methods. Third, the South-South and South-East zones' governance consequences of the Electricity Act 2023 have not been assessed from an MLG standpoint. Fourth, no validated governance reform paradigm clearly incorporates socio-political variables into Nigeria's energy policy planning process. The DNA paradigm established in this study covers this gap.

## 2. Literature Review

### 2.1 Energy Poverty in Sub-Saharan Africa: Definitions, Dimensions and Measurement

There are several ways to conceptualise energy poverty in sub-Saharan Africa (SSA). The threefold conundrum of resource availability, persistent underperformance, and unaffordable expenses characterises it at the macroeconomic level (Okereke *et al.*, 2020). Despite having substantial confirmed fossil fuel resources, SSA can currently utilise only 8% of its 3.3 million GWh of annual gross hydropower potential (World Bank, 2022). Nussbaumer *et al.* (2013) created the Multidimensional Energy Poverty Index (MEPI) as a composite assessment tool, whereas Sokolowski *et al.* (2020) define low-income, high-energy expenses, and low energy efficiency as the fundamental elements of energy poverty at the household level. However, MEPI and related international frameworks have faced criticism for their insensitivity to regional political-economic contexts (Ogwumike and Ozughalu, 2016).

According to Bernard *et al.* (2016), the assessment of energy poverty in Nigeria has traditionally confused two different phenomena: insufficient supply in comparison to predicted demand and the failure to reach complete installed capacity. Low per capita consumption, low efficiency, and high energy prices are all included in the larger scientific knowledge. Only 60–75% of Nigerians have limited access to electricity (Edoma and Nwaubani, 2014), with an average daily power supply of 4–6 hours (Uyigue, 2009). Nigeria contributes 25.7% of the region's overall research output, according to a 2025 bibliometric study of 594 papers on renewable energy governance in ECOWAS (2005–2025). However, there are still gaps in governance analysis and localised case studies (Odoi-Yorke *et al.*, 2026). According to Teschner *et al.* (2020), laws and policies in both national and international contexts fail to provide precise definitions of energy poverty and standards for measuring it; this study fills this gap using NEPI.

### 2.2 Socio-Political Dynamics as Structural Determinants of Energy Crisis

The study of energy poverty from a sociopolitical perspective is a relatively new but quickly growing field. According to Burke and Stephens (2018), the shift to sustainable energy is fundamentally political, with winners and losers whose political actions determine the course of transformation. Energy crises are framed by Scoville-Simonds *et al.* (2020) as a "politics of vulnerability" in which politicians routinely deprioritise energy poverty due to the absence of political voice from its victims. Through a comparison with South Africa, Baker and Sovacool (2017) show that even in seemingly successful reform situations, underlying political problems are created by newer renewable energy frameworks, trade patterns, and investment structures in Nigeria.

In Nigeria and throughout SSA, elite capture—the appropriation of public infrastructure rents by politically connected actors—has been recognised as a structural obstacle to fair energy distribution (Edomah *et al.*, 2023; Nwozor *et al.*, 2021). According to a 2025 examination of the relationship between corruption and the energy transition in Sub-Saharan Africa, corruption risks are greatly increased by the combination of vast natural resources and intrinsically poor governance; high-risk situations include Nigeria, Angola, and Libya (Yin and Liu, 2025). According to Transparency International's 2024 Corruption Perceptions Index (Transparency International, 2025), Nigeria came in at number 140 out of 180 countries. The misappropriation of infrastructure maintenance budgets, selective licensing, and regulatory capture all have a direct impact on the results of the energy sector (Musbau *et al.*, 2025). According to Edomah *et al.* (2023), stakeholder mistrust, a monopoly wholesale market structure, and an extended subsidy system that favours politically linked fossil fuel companies are three interrelated barriers to utility-scale renewable energy investment in Nigeria.

According to Adewuyi *et al.* (2020), proactive policy frameworks, effective legislation, and competitive but regulated markets are all examples of a "willing socio-political disposition", which is a prerequisite for sustainable energy growth. They contend that Nigeria has always lacked this propensity because of the political economy of the oil and gas industry. The main causes of renewable energy policy paralysis, according to Atuguba and Tuokuu's (2020) analysis of important policy documents in Ghana, are institutional weakness, unclear regulatory frameworks, implementation difficulties, and donor dependency. These conclusions strongly resonate with the Nigerian context. According to Ajaelu and Okereke (2020), Nigeria is unable to fully utilise its tremendous potential for renewable energy due to sociopolitical reasons, such as the lack of a cohesive legal framework.

### 2.3 Institutional Fragmentation and the Multi-Level Governance Challenge

Nigeria's energy governance structure is typified by institutional fragmentation, which includes several entities with overlapping responsibilities, ambiguous hierarchical authority, and persistent coordination issues. Aspects of energy generation, transmission, distribution, and access are under the overlapping jurisdiction of the Federal Ministry of Power, the Nigerian Electricity Regulatory

Commission (NERC), the Rural Electrification Agency (REA), and recently formed state electricity commissions (Nwozor *et al.*, 2021; Okorieimoh and Ehimen, 2025). In addition to discouraging private investment and creating chances for regulatory arbitrage and rent extraction, this fragmentation causes project approval delays of 14–18 months on average (Energy for Growth Hub, 2025).

The Electricity Act of 2023 brought about the most significant structural change since the Electric Power Sector Reform Act of 2005. The Act established the framework for state-level energy markets by giving state governments regulatory control over independent distribution, transmission, and mini-grid operations (Mondaq, 2023). Ten states had passed their energy laws and started setting up state-level regulatory commissions by the beginning of 2026 (RMI, 2026). The Act does not, however, establish community-level governance mechanisms (Okorieimoh and Ehimen, 2025). According to licensing data from the Energy for Growth Hub (2025), project permits increased significantly after 2020. Still, the difference between licensed and commissioned capacity averaged 67% between 2017 and 2025, indicating that legislative reform has not resulted in delivery. Similar trends are found by Chidiebere-Mark *et al.* (2025) in a comparative study of Nigeria, Liberia, and Malawi, where overlapping mandates and inadequate enforcement capabilities consistently hamper the implementation of decentralised renewable energy.

### 2.4 Energy Justice: Philosophy and Operationalism

The normative underpinning for this study's analytical methodology comes from Sovacool and Dworkin's (2015) energy justice paradigm. Availability, affordability, due process and effective governance, intragenerational equity, intergenerational equity, and the responsibility and sustainability principle are the six energy justice principles that function across utilitarian, libertarian, and deontological ethical traditions, offering a thorough evaluative lens. By using the framework in Nepal, Islar *et al.* (2017) showed how useful it is for spotting governance flaws in the energy systems of developing nations. According to Katre and Tozzi (2019), energy justice principles, specifically, the exercise of power through cooperative rather than coercive mechanisms, are operationally essential to successful changes in community energy systems in distant India.

0The studies lack operationalisation of the energy justice framework using quantitative measuring tools contextualised to Nigerian political economy circumstances, despite the concept's theoretical power. Odoi-Yorke et al. (2026) conducted a bibliometric analysis that highlights the under-representation of localised, governance-sensitive measuring methodologies in West African energy research. To close this gap, the current study developed and validated NEPI, a composite index that incorporates all six energy justice characteristics and is calibrated to Nigerian institutional, economic, and sociopolitical conditions. The Polish multidimensional energy poverty index developed by Sokolowski *et al.* (2020) serves as a methodological model for the NEPI framework, which essentially recalibrates its substantive content for the Nigerian setting.

## 3. Theoretical Framework

The three complementing theoretical traditions that form the basis of this study's integration offer a multifaceted analytical framework for comprehending energy poverty in the Niger Delta.

### 3.1 Energy Justice Theory

This study's normative basis is the energy justice paradigm developed by Sovacool and Dworkin (2015). The six principles of the framework serve both operationally, as the essential basis for the NEPI sub-indices, and analytically, as evaluative criteria for identifying governance deficiencies. In the Niger Delta, both the amount and dependability of grid supplies often violate the availability principle, which states that everyone must have access to sufficient energy resources of suitable quality. Given captive generation costs, most of the study population violates the affordability principle, which states that no family should spend more than 10% of its income on energy. The normative foundation for the governance quality sub-index of NEPI is provided by the due process and good governance concept, which demands transparent and rights-respecting energy governance. While the intergenerational equity concept takes into account the rights of future generations through sustainable energy development, the intragenerational equity principle deals with distributional fairness in energy access across income and geographic strata. Environmental protection responsibilities are included in the responsibility and sustainability principles. This study employs energy justice as both a descriptive framework and a tool for evaluation and change.

### 3.2 Political Economy Analysis

According to Baker and Sovacool (2017), Political Economy Analysis (PEA) focuses on the interests, motivations, and power dynamics of important players while analysing how political and economic factors interact to determine development outcomes. The distribution of rents from fossil fuel extraction, the political incentives of reform actors at the federal and state levels, the role of elite networks in capturing infrastructure benefits, and the structural limitations imposed by Nigeria's rentier state characteristics are all areas of analytical focus for PEA in the country's energy context (Edomah *et al.*, 2023). When applied to Nigeria's electricity sector by Edomah *et al.* (2023), the Rentier State Theory (RST) offers a complementary lens through which to comprehend how hydrocarbon rents create political incentive structures that systematically underinvest in energy access for the majority population while concentrating benefits among politically connected elites. In resource-rich situations where many rounds of technical intervention have failed to yield long-term gains, PEA is particularly well-suited to understanding the persistence of energy poverty.

### 3.3 Multi-Level Governance (MLG) Theory

Effective governance arises from the coordinated interaction of actors at several levels: supranational, national, subnational, and local, according to Multi-Level Governance (MLG) theory, which was first formulated by Marks and Hooghe (2003) in the context of European integration. MLG theory is increasingly being used in studies on energy governance in underdeveloped nations (Chidiebere-Mark *et al.*, 2025), where it offers a framework for diagnosing coordination difficulties. There are two different kinds of MLG: Type II, which has task-specific, overlapping, and intersecting jurisdictions, and Type I, which has general-purpose jurisdictions with non-overlapping memberships and restricted levels. Nigeria's post-2023 energy governance structure has traits of Type II MLG, with municipal, state, and federal governments having overlapping power over several facets of the electrical supply chain. According to MLG theory, Type II architectures are vulnerable to coordination failures in the absence of strong inter-level alignment mechanisms—exactly the circumstances shown in the results of this work.

A theoretical framework that is simultaneously normative (what results should the energy system produce?), structural (what political economy forces shape actor behaviour?), and institutional (how does multi-level governance architecture enable or impede coordination?) is provided by the integration of energy justice theory, PEA, and MLG. The study can proceed beyond description to the creation of practical governance reform proposals based on systemic analysis because of this tri-theoretic integration.

## 4. Research Methods

To accomplish methodological triangulation and improve the validity of findings, this study uses a pragmatic mixed-methods research design that combines qualitative and quantitative methodologies (Creswell and Plano Clark, 2018). The pragmatic philosophical approach is suitable for practical policy research that needs both generalisable measurement and in-depth explanation.

Three data strands are used in the design: (i) semi-structured interviews and qualitative policy document analysis; (ii) quantitative survey data analysed using partial least squares (PLS) regression; and (iii) cognitive mapping for the creation and validation of the DNA Governance Framework. Leading methodological techniques in energy governance research have set precedents, which are reflected in this multi-strand design (Naidoo, 2020; Teschner *et al.*, 2020; Atuguba and Tuokuu, 2020).

Nigeria's South-South and South-East geopolitical zones, which include the Niger Delta, are the subject of the research. There are four reasons to support this regional concentration. First, the Niger Delta is home to the infrastructure that produces more than 90% of Nigeria's oil and gas income (Adewuyi *et al.*, 2020), resulting in the most severe example of the resource-poverty conundrum. Second, according to Adewuyi *et al.* (2020), both zones have some of Nigeria's lowest energy per capita indices, offering a high-variance empirical environment for researching the factors that contribute to energy poverty. Third, rather than extrapolating from national-level research, the Niger Delta's political economy, which is marked by oil militancy, gas flaring, environmental degradation, and elite capture of resource rents, creates a distinct institutional setting that necessitates region-specific study. Fourth, cross-setting comparative research within a consistent political economy environment is made possible by the zones' incorporation of both large rural populations and metropolitan centres (Port Harcourt, Calabar, Enugu, Owerri).

The sampling strategy used was a sequential mixed-methods approach. Purposive sampling was used to identify 45 key informants from six stakeholder categories for qualitative data collection: (1) federal regulatory officials from NERC and REA (n = 8); (2) state-level electricity market regulators from newly established state electricity commissions (n = 8); (3) senior managers of independent power producers and electricity distribution companies (n = 9); (4) legislators and senior officials from the Federal and State Ministries of Power (n = 7); (5) community energy stakeholders and representatives of civil society organisations (n = 9); and (6) academic and technical experts in energy governance (n = 4). Every interview was conducted in English, lasted fifteen minutes, was audio recorded with informed consent, and was verbatim transcribed. The criteria of no new themes arising after the 38th interview were used to analyse data saturation; the remaining seven interviews confirmed saturation. A structured survey instrument was created for the purpose of gathering quantitative data through an iterative process that included the creation of initial items from the literature on energy poverty and energy justice, expert review by five experts in energy governance, pilot testing with thirty respondents, and refinement based on the findings of item analysis. The final instrument included demographic items in addition to 48 items measuring six latent constructs that corresponded to the NEPI sub-indices on five-point Likert scales. 380 respondents were found in the two zones using stratified random sampling, which is proportional to the population distribution across the states. There were 347 valid replies in all (response rate: 91.3%). Before PLS estimation, construct validity was determined using confirmatory factor analysis (CFA), and reliability was evaluated using Cronbach's alpha (α ranged from 0.76 to 0.89 across constructs).

Braun and Clarke's (2006) six-phase theme analysis framework was used to evaluate qualitative data, combining deductive coding from the theoretical framework with inductive coding that emerged from the data. Data administration, scripting, and theme visualisation were all done manually. Peer debriefing with two independent energy governance academics improved confirmability, while member-checking with six interviewees increased trustworthiness. SmartPLS 4's Partial Least Squares (PLS) regression was used to assess quantitative data. PLS path modelling was used to explore hypothesised correlations among latent constructs after confirmatory factor analysis (CFA) was used to evaluate the measurement model. In accordance with standard standards, the model quality was assessed using the following indices: Variance Inflation Factor (VIF < 5.0), Composite Reliability (CR ≥ 0.70), and Average Variance Extracted (AVE ≥ 0.50) (Hair *et al.*, 2019). Indirect effects were tested using bootstrap confidence intervals (5,000 samples). Twelve top energy industry experts participated in cognitive mapping activities to design the DNA Governance Framework, which was then verified via two rounds of expert review.

**Table 1: Measurement Model Reliability and Validity Statistics**

| Construct | No. of Items | Cronbach's α | AVE | CR |
|---|---|---|---|---|
| Energy Availability Index (EAI) | 8 | 0.83 | 0.62 | 0.89 |
| Energy Affordability Index (EAFI) | 7 | 0.81 | 0.58 | 0.87 |
| Governance Quality Index (GQI) | 9 | 0.89 | 0.67 | 0.93 |
| Intragenerational Equity Index (IEI) | 8 | 0.79 | 0.55 | 0.85 |

| | | | | |
|---|---|---|---|---|
| Intergenerational Sustainability Index (ISI) | 8 | 0.76 | 0.52 | 0.83 |
| Accountability and Responsibility Index (ARI) | 8 | 0.85 | 0.63 | 0.90 |

## 5. Data Presentation and Results

### 5.1 Sociodemographic and Institutional Profile of Respondents

Analysis was done on 347 valid survey questions and 45 semi-structured interviews. The complete institutional and sociodemographic profile of participants from both data strands is shown in Table 2.

**Table 2: Sociodemographic, Profile and Interview Participants**

| Characteristic | Survey (n = 347) n (%) | Interview (n = 45) n (%) | Combined n (%) |
|---|---|---|---|
| ***A. Gender*** | | | |
| Male | 234 (67.4%) | 29 (64.4%) | 263 (67.1%) |
| Female | 113 (32.6%) | 16 (35.6%) | 129 (32.9%) |
| ***B. Age Group*** | | | |
| 25 – 34 years | 62 (17.9%) | 4 (8.9%) | 66 (16.8%) |
| 35 – 44 years | 118 (34.0%) | 11 (24.4%) | 129 (32.9%) |
| 45 – 54 years | 121 (34.9%) | 19 (42.2%) | 140 (35.7%) |
| 55 years and above | 46 (13.3%) | 11 (24.4%) | 57 (14.5%) |
| ***C. Educational Qualification*** | | | |
| OND / HND | 49 (14.1%) | 0 (0.0%) | 49 (12.5%) |
| Bachelor’s Degree | 152 (43.8%) | 5 (11.1%) | 157 (40.1%) |
| Postgraduate (MSc / MBA) | 101 (29.1%) | 22 (48.9%) | 123 (31.4%) |
| Doctorate (PhD) | 45 (13.0%) | 18 (40.0%) | 63 (16.1%) |
| ***D. Years of Energy Sector Experience*** | | | |
| < 5 years | 41 (11.8%) | 0 (0.0%) | 41 (10.5%) |
| 5 – 10 years | 114 (32.9%) | 5 (11.1%) | 119 (30.4%) |
| 11 – 20 years | 138 (39.8%) | 22 (48.9%) | 160 (40.8%) |
| > 20 years | 54 (15.6%) | 18 (40.0%) | 72 (18.4%) |
| ***E. Stakeholder Category*** | | | |
| Federal Regulatory Officials (NERC / REA) | 61 (17.6%) | 8 (17.8%) | 69 (17.6%) |
| State Electricity Commission Officials | 58 (16.7%) | 8 (17.8%) | 66 (16.8%) |

| | | | |
|---|---|---|---|
| Independent Power Producers / DisCos | 72 (20.7%) | 9 (20.0%) | 81 (20.7%) |
| Legislators / Ministry of Power Officials | 52 (15.0%) | 7 (15.6%) | 59 (15.1%) |
| Community Stakeholders / Civil Society | 64 (18.4%) | 9 (20.0%) | 73 (18.6%) |
| Academic / Technical Experts | 40 (11.5%) | 4 (8.9%) | 44 (11.2%) |
| ***F. Geopolitical Zone*** | | | |
| South-South | 183 (52.7%) | 24 (53.3%) | 207 (52.8%) |
| South-East | 164 (47.3%) | 21 (46.7%) | 185 (47.2%) |
| ***G. Seniority Level (Interview Participants)*** | | | |
| Senior Management / Director | — | 28 (62.2%) | — |
| Policy / Regulatory Principal Officer | — | 12 (26.7%) | — |
| Technical Expert / Adviser | — | 5 (11.1%) | — |

The gender distribution of formal energy sector employment in Nigeria's South-South and South-East geopolitical zones, where women are still disproportionately under-represented in managerial and regulatory roles, is consistent with the combined sample's preponderance of men (67.1%) (Adewuyi *et al.*, 2020). The qualitative strand purposefully included civil society leaders, resulting in slightly greater female involvement among interview participants (35.6%) compared to survey respondents (32.6%).

A professionally mature cohort with firsthand operational or policy knowledge of Nigeria's electrical sector reform trajectory, covering the pre- and post-electrical Act 2023 phases, was indicated by the concentration of respondents in the 35–54 age range (69.0% of the combined sample). The majority of participants (47.5% in both strands, increasing to 88.9% among interviewers) were postgraduate qualified, which supports the analytical depth of replies, especially on the institutional and governance dimensions. To ensure that qualitative data reflected long-term institutional memory rather than fleeting viewpoints, 55.4% of survey respondents had more than ten years of experience in the energy industry, while 40.0% of interview participants had more than twenty years.

The representation of stakeholders was evenly distributed throughout the six groups, with independent power producers and distribution business employees constituting the largest group (20.7%), followed by civil society and community stakeholders (18.6%) and federal regulatory authorities (17.6%). To enable the triangulation of institutional fragmentation narratives from both the supply side and the community demand side, this distribution reflects the study's intentional sampling strategy of capturing perspectives from across the multi-level governance hierarchy, from federal regulators to community actors.

Geographically, the South-South zone accounted for 52.8% of the total sample, while the South-East supplied 47.2%. This distribution was consistent with the respective population and energy industry footprint of the two Niger Delta zones. Chi-square tests of independence were used to confirm cross-strand consistency across all sociodemographic categories (all $p > 0.10$), indicating that strand-specific findings could be triangulated without demographic confounding and that the survey and interview samples came from similar institutional populations.

## 5.2 NEPI Scores and Energy Justice Deficit Mapping

The aggregate NEPI scores broken down by sub-index for the South-South and South-East zones are shown in Table 3. On a scale of 0 to 1, the aggregate NEPI scores of 0.38 (South-South) and 0.41 (South-East) show extreme energy poverty in both zones, with no sub-index in the South-South zone above the 0.50 threshold. Both zones had the lowest ratings on the Governance Quality Index (GQI) and Accountability and Responsibility Index (ARI) (0.22 and 0.19 in South-South; 0.27 and 0.24 in South-East), indicating that governance deficiencies are the primary cause of energy poverty. In contrast, technical supply restrictions appear to be less severe than governance shortcomings as determined by the NEPI framework, according to the Energy Availability Index scores (0.43 and 0.47).

**Table 3: NEPI Scores by Sub-Index and Zone**

| NEPI Sub-Index | South-South Score | South-East Score | National Benchmark |
|---|---|---|---|
| Energy Availability Index (EAI) | 0.43 | 0.47 | 0.55 |
| Energy Affordability Index (EAFI) | 0.39 | 0.44 | 0.50 |
| Governance Quality Index (GQI) | 0.22 | 0.27 | 0.45 |
| Intragenerational Equity Index (IEI) | 0.41 | 0.45 | 0.52 |
| Intergenerational Sustainability Index (ISI) | 0.47 | 0.51 | 0.60 |

| | | | |
|---|---|---|---|
| Accountability and Responsibility Index (ARI) | 0.19 | 0.24 | 0.42 |
| Aggregate NEPI Score | 0.38 | 0.41 | 0.51 |

**Source:** *National benchmark estimated from secondary data, including World Bank and AfDB indices*

### 5.3 Regulatory Governance Paradox

The regulatory governance paradox is a key and conceptually important finding: Nigeria's formal governance system continuously fails to provide residents with dependable, reasonably priced electricity, yet scores highly on regulatory quality indices. Nigeria was ranked among SSA's top achievers with a Regulatory Governance Index score of 0.897 out of 1.0 in the African Development Bank's Electricity Regulatory Index (2024). However, according to survey data, 62.7% of respondents report monthly captive-generating expenses surpassing 15% of family income, while 78.4% of South-South and 74.1% of South-East respondents report having less than six hours of grid energy each day.

Thematic analysis of interview data revealed three mechanisms causing the paradox. First, regulatory capture: fourteen participants in academic and civil society interviews reported a recurring pattern in which politically connected distribution and generation companies were able to successfully negotiate tariff adjustments and compliance waivers through unofficial channels, undermining the efficacy of NERC enforcement. Second, institutional mandate overlap: eight regulatory officials at the state level found that NERC and recently formed state electrical commissions had redundant licensing procedures, which caused post-2023 project applications to be delayed by 14–18 months. Third, there are deficiencies in accountability: the Electricity Act 2023 gives state governments more power, but it makes no provisions for community-level governance accountability. As a result, the closest players are left without official involvement in electricity planning or redress procedures.

### 5.4 Elite Capture and Rent-Seeking: PLS Evidence

Elite capture was shown to be a statistically significant and significant latent driver of energy poverty outcomes, according to the PLS analysis ($\beta = 0.67$, $p < 0.001$, 95% CI [0.58, 0.76]). Three indicators had the strongest path coefficients: (i) (i) manipulation of subsidy disbursements within distribution companies ($\lambda = 0.71$); (ii) selective allocation of captive generation licences to politically connected entities ($\lambda = 0.74$); and (iii) political interference in generation dispatch scheduling ($\lambda = 0.79$). Through its positive association with elite capture chances, institutional

International Journal of Finance, Management and Governance (IJFMG)
Volume 2, Issue 2, June 2026 - ISSN: 3092-9423



fragmentation had a substantial indirect impact on energy poverty outcomes ($\beta = 0.43$, $p < 0.001$), demonstrating that fragmentation increases rent-seeking by generating regulatory arbitrage spaces. With AVE = 0.58, CR = 0.91, and all VIF values below 3.5, the model's overall quality was deemed excellent.

These structural findings were supported by qualitative data from legislative official interviews (n=7), which showed that budgetary allotments for hydropower infrastructure maintenance are often diverted through supplementary appropriation procedures toward politically prioritised expenditures even though they are formally approved by the National Assembly. The same rent-seeking reasoning underlies gas flaring in the Niger Delta, which has squandered about £3 billion in recoverable energy in recent years. Gas commercialisation would benefit energy consumers while reducing the political clout of oil companies and their state-level political allies (LSE Africa at LSE, 2024).

### 5.5 Post-2023 Decentralisation: Fragmentation without Capacity

Mini-grid and captive generation project licences increased significantly after 2020, according to Energy for Growth Hub (2025) licensing data from 2017 to 2025; nevertheless, the actual generating capacity added to the national grid remained below 500 MW per year during the research period. Over the course of the eight years, the average difference between licensed and commissioned capacity was 67%. This difference grew after 2023 as additional bottlenecks were formed by inconsistent state-level regulations. Five key fragmentation nodes were found through expert panel cognitive mapping exercises: (1) overlap between NERC and state electricity commissions regarding mini-grid licensing authority; (2) lack of interstate power trading and wheeling frameworks; (3) disconnection between state-level investment planning calendars and REA grant disbursement cycles; (4) exclusion of local government structures from demand-side planning processes; and (5) lack of community renewable energy governance protocols.

These results are in line with Chidiebere-Mark *et al.*'s (2025) comparative study of Nigeria, Liberia, and Malawi, which discovered that the biggest institutional obstacles to the decentralised deployment of renewable energy in fragile SSA states are overlapping mandates and a lack of enforcement capabilities. According to Okorieimoh and Ehimen's (2025) CRE-MLG framework study, the Electricity Act 2023 lacks the multi-level accountability mechanisms required to convert legislative purpose into energy access results and fails to adopt a revolutionary strategy to decarbonisation.

## 6. Discussion

A major re-theorisation of energy poverty in resource-rich emerging states is advanced by the study's findings. The convergence of qualitative institutional analysis, NEPI sub-index scores (GQI 0.22–0.27; ARI 0.19–0.24), and PLS evidence (elite capture $\beta = 0.67$) indicates that governance weaknesses are more severe causes of energy poverty in the Niger Delta than technical supply restrictions. Burke and Stephens (2018), Scoville-Simonds *et al.* (2020), and Edomah *et al.* (2023) represent the emerging socio-political turn in energy poverty scholarship, which challenges the engineering-centric framing of Nigeria's energy crisis that has dominated both academic literature and policy discourse for decades.

A new theoretical addition that expands on the governance-outcomes gap literature is the regulatory governance paradox, which is characterised by high formal governance ratings and consistently subpar service performance. This paradox shows that evaluations of energy governance that mainly depend on regulatory architecture measurements without taking into account political economics factors and implementation capability assessments result in persistently false estimates of governance quality. This has important ramifications for the World Bank's Doing Business indicators, the African Development Bank's Electricity Regulatory Index, and other international governance rating systems whose ratings affect finance and reform choices in Nigeria's electricity sector.

A methodological contribution that fills the measuring gap noted by Teschner *et al.* (2020) and Ogwumike and Ozughalu (2016) is the operationalisation of energy justice using the NEPI. Compared to aggregate poverty indices, the NEPI's six sub-indices provide a more detailed and useful evaluation by allowing the diagnosis of which aspects of energy justice are most seriously violated in certain institutional and geographic settings. The discovery that the weakest sub-indices in both study zones are accountability (ARI: 0.19–0.24) and governance quality (GQI: 0.22–0.27) focuses reform attention on institutional and political economy initiatives rather than technical supply-side investments.

### 6.1 The DNA Governance Framework

The study's development and validation of the DNA (Decomposition, Needs, and Assessment) Governance Framework offer a useful reform tool for tackling the socio-political causes of energy poverty (Figure 1). Three steps comprise the framework's operation. In the decomposition stage, institutional analysis employing ICAM integrative definition tools, stakeholder power analysis, and cognitive mapping are used to systematically map socio-political processes at each level of governance. NEPI is used in the Needs Assessment step to determine priority intervention points for each of the six energy justice aspects, paying special attention to the sub-indices with the lowest scores. Through expert review panels and PLS-based scenario modelling, the Assessment and Policy Optimisation stage creates focused, sequential policy actions that are calibrated to the unique institutional and political-economic setting of each zone.

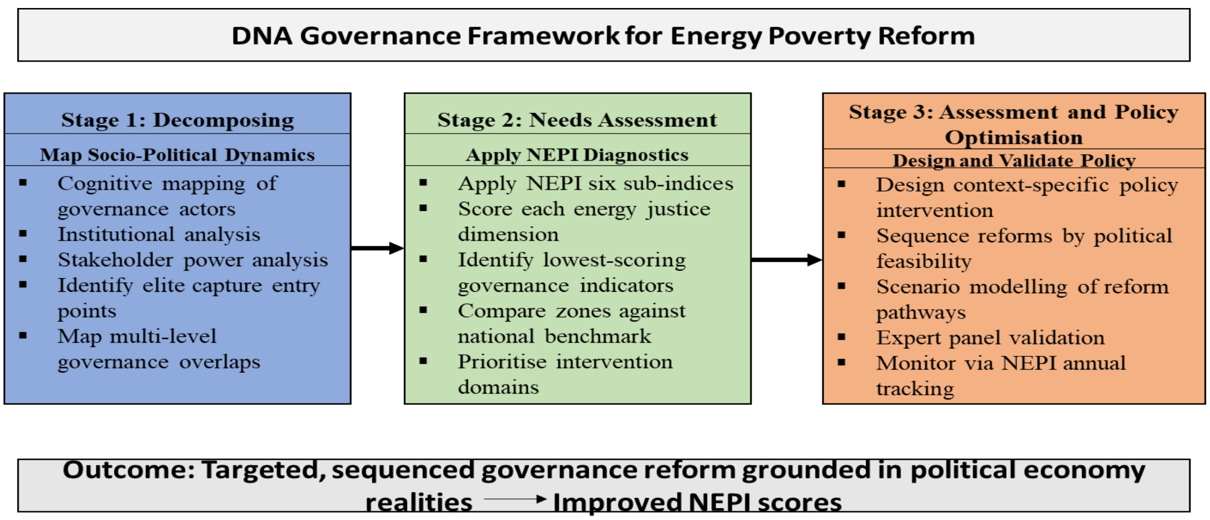


**Figure 1: The DNA (Decomposition, Needs and Assessment) Nigeria's Niger Delta's Energy Poverty Reform Governance Framework**

The DNA framework stands out from other technical frameworks primarily because it explicitly incorporates political-economic factors into the policy creation process. The approach operationalises the concept of Adewuyi *et al.* (2020) that a willing socio-political disposition must come before technological investment for sustainable energy development by necessitating the methodical breakdown of socio-political obstacles as a prerequisite for policy creation. With the highest ratings for comprehensiveness (4.6), contextual relevance (4.5), and actionability (4.1), expert panel validation yielded an overall Framework Quality Score of 4.2 out of 5.0. The mechanisms for accountability and transparency obtained the lowest validation score (3.8), indicating doubts about their political viability in the current governance context.

### 6.2 Comparative Perspectives and Generalisability

The study's findings have important ramifications outside of the Niger Delta. Energy poverty contexts in Ghana (Atuguba and Tuokuu, 2020), Liberia and Malawi (Chidiebere-Mark *et al.*, 2025), and wider SSA (Odoi-Yorke *et al.*, 2026) share structural traits with the regulatory governance paradox, institutional fragmentation patterns, and elite capture dynamics found in Nigeria's South-South and South-East zones. Both the DNA framework and the NEPI instrument are intended to be transferable across these settings; the framework's decomposition step allows for calibration to various national political economy environments. In other SSA nations where imported measurement methods have proven insufficient, the NEPI approach, which is based on energy justice theory and confirmed by PLS regression, offers a blueprint for creating comparable contextualised energy poverty indices.

## 7. Conclusion

Based on the South-South and South-East geopolitical zones, which constitute the most severe expression of the national resource-poverty conundrum, this research has provided a thorough socio-political analysis of energy poverty in Nigeria's Niger Delta. Using a rigorous mixed-methods design that incorporates PLS regression, thematic analysis, and cognitive mapping and is grounded in energy justice theory, political economy analysis, and multi-level governance frameworks, the study has determined that institutional fragmentation, elite capture, and multi-level governance failures are the main structural determinants of persistent energy poverty in one of the world's most resource-rich regions.

A novel theoretical contribution that casts doubt on the validity of governance indices that concentrate on regulatory architecture without taking political economy and implementation capacity dimensions into account is the regulatory governance paradox—Nigeria's Regulatory Governance Index score of 0.897 coexisting with fewer than six daily hours of grid supply for over 75% of survey respondents. This study's development and validation of the Nigeria Energy Poverty Index (NEPI) fills a crucial gap in the literature by offering the first contextualised multidimensional energy poverty measurement tool calibrated to Nigerian political economy realities.

The results verify that although the Electricity Act of 2023 is a noteworthy legal accomplishment, decentralisation without corresponding governance capacity-building has produced new institutional fragmentation threats. The average 67% difference between commissioned and licensed generating capacity between 2017 and 2025 illustrates the institutional obstacles that still exist despite the Act's implementation and, in certain cases, have gotten worse. The DNA Governance Framework provides a useful, sequential tool for reform players who are dedicated to tackling the socio-political causes of Nigeria's energy problem rather than focusing just on technical solutions. It has been verified by expert cognitive mapping and PLS-based scenario analysis. To create a West African Energy Justice Index that may direct regional energy governance change, further research should expand the NEPI framework to Nigeria's other geographical zones and investigate its application across ECOWAS member nations.

The report offers the following six policy recommendations: 1) Adopt NEPI as Nigeria's standard instrument for measuring energy poverty, with each state submitting an annual report to the National Assembly and NERC. 2) Modify the Power Act 2023 to incorporate local government involvement in the planning and supervision of power access. 3) Establish independent audits for subsidies and anti-corruption procedures for regulatory authorities. 4) To improve inter-level collaboration, create a National Energy Governance Collaboration Council. 5) Connect increased NEPI governance scores with foreign funding. 6) Using effective worldwide models, incorporate community renewable energy governance procedures into state electrical laws.

**Acknowledgment**
The Tertiary Education Trust Fund (TETFund) of Nigeria, which provided funding for the larger research project from which this study is generated, is acknowledged by the authors.

**References**

Adewuyi, O. B., Kiptoo, M. K., Afolayan, A. F., Amara, T., Alawode, O. I., and Senjyu, T. (2020). Challenges and prospects of Nigeria's sustainable energy transition with lessons from other countries' experiences. *Energy Reports,* 6, 993–1009. https://doi.org/10.1016/j.egyr.2020.04.014

Ajaelu, H., and Okereke, R. (2020). Assessment of Nigerian renewable energy potentials and energy poverty: Challenges and prospects. *PM World Journal*, 9(6), 1–19.

Atuguba, R. A., and Tuokuu, F. X. D. (2020). Ghana's renewable energy agenda: Legislative drafting in search of policy paralysis. *Energy Research and Social Science*, 64, 101435. https://doi.org/10.1016/j.erss.2020.101435

Baker, L., and Sovacool, B. K. (2017). The political economy of technological capabilities and global production networks in South Africa's wind and solar photovoltaic (PV) industries. *Political Geography*, 60, 1–12. https://doi.org/10.1016/j.polgeo.2017.04.007

Benard, O. A., Oludare, A., and Nnadi, K. U. (2016). Measuring energy efficiency in Nigeria: Energy intensity and energy-GDP elasticity approach. *Singaporean Journal of Business Economics and Management Studies*, 5(5), 29–37.

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Burke, M. J., and Stephens, J. C. (2018). Political power and renewable energy futures: A critical review. *Energy Research and Social Science,* 35, 78–93. https://doi.org/10.1016/j.erss.2017.10.018

Central Bank of Nigeria. (2019). Annual report 2019: Energy poverty and the Nigerian economy. CBN Publications.

Chidiebere-Mark, N. M., Arogundade, S., and Ekezie, D. D. (2025). Policy and regulatory challenges in decentralised renewable energy deployment: Case studies from Nigeria, Liberia, and Malawi. *Energy Policy*, 197, 114421.

Creswell, J. W., and Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Ebhota, W., and Tabakov, P. (2018). The place of small hydropower electrification scheme in the socioeconomic stimulation of Nigeria. *International Journal of Low-Carbon Technology*, 13(4), 309–317. https://doi.org/10.1093/ijlct/cty024

Edomah, N., Foulds, C., and Jones, A. (2023). An institutional framework for energy transitions: Lessons from the Nigerian electricity industry history. *Energy for Sustainable Development*, 73, 1–14. https://doi.org/10.1016/j.esd.2023.01.006

Energy for Growth Hub. (2025). Nigeria's energy transition is stalling between ambition and delivery: Insights from licensing data from 2017 to 2025. Retrieved from https://energyforgrowth.org/article/nigerias-energy-transition

GET.invest. (2020). Nigeria energy sector overview. European Union Energy Initiative Partnership Dialogue Facility.

Hair, J. F., Risher, J. J., Sarstedt, M., and Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Islar, M., Brogaard, S., and Lemberg-Pedersen, M. (2017). Feasibility of energy justice: Exploring national and local efforts for energy development in Nepal. *Energy Policy*, 107, 105–114. https://doi.org/10.1016/j.enpol.2017.03.004

Katre, A., and Tozzi, A. (2019). Using hugs, carrots and sticks: How agents exercise power in the transition to community-owned energy systems in remote India. *Energy Research and Social Science*, 54, 129–139. https://doi.org/10.1016/j.erss.2019.04.008

LSE Africa at LSE. (2024). Energy poverty in Nigeria's Niger Delta is reversible by embracing the energy transition. London School of Economics. Retrieved from https://blogs.lse.ac.uk/africaatlse/2024/07/11

Marks, G., and Hooghe, L. (2003). Unravelling the central state, but how? Types of multi-level governance. *American Political Science Review*, 97(2), 233–243. https://doi.org/10.1017/S0003055403000649

Naidoo, A. (2020). The socio-economic impacts of solar water heaters compared across communities: A case study of Cato Manor. *Renewable and Sustainable Energy Reviews*, 119, 109587. https://doi.org/10.1016/j.rser.2019.109587

Nwozor, A., Olanrewaju, J. S., and Omotoso, F. (2021). The conundrum of energy insecurity in Nigeria's domestic energy market: A political economy approach. *International Journal of Energy Economics and Policy*, 11(3), 218–227. https://doi.org/10.32479/ijeep.10978

Odoi-Yorke, F., Bukari, D., Jinapor, J. A., and Mahama, M. (2026). Evolving dynamics of renewable energy governance and policy research in West Africa: A bibliometric review (2005–2025). *Renewable Energies,* 4(1). https://doi.org/10.1177/27533735261421732

Ogwumike, F. O., and Ozughalu, U. M. (2016). Analysis of energy poverty and its implications for sustainable development in Nigeria. *Environment and Development Economics*, 21(3), 273–290. https://doi.org/10.1017/S1355770X1500022X

Okereke, R. A., Ejekwu, T., and Ohama, V. (2020). Evaluation of socio-political factors responsible for energy poverty in sub-Saharan Africa. *PM World Journal*, 9(5), 1–20.

RMI. (2026). Nigeria's electricity devolution law creates an opportunity to reshape its power system. Rocky Mountain Institute. Retrieved from https://rmi.org/nigerias-electricity-devolution-law

Scoville-Simonds, M., Jamali, H., and Hufty, M. (2020). The hazards of mainstreaming: Climate change adaptation politics in three dimensions. *World Development*, 125, 104683. https://doi.org/10.1016/j.worlddev.2019.104683

Sokolowski, J., Lewandowski, P., Kielczewska, A., and Bouzarovski, S. (2020). A multi-dimensional index to measure energy poverty: The Polish case. *Energy Sources, Part B: Economics, Planning, and Policy*. https://doi.org/10.1080/15567249.2020.1742817

Sovacool, B. K., and Dworkin, M. H. (2015). Energy justice: Conceptual insights and practical applications. *Applied Energy,* 142, 435–444. https://doi.org/10.1016/j.apenergy.2015.01.002

Teschner, N., Sinea, A., Vornicu, A., Abu-Hamed, T., and Negev, M. (2020). Extreme energy poverty in the urban peripheries of Romania and Israel: Policy, planning and infrastructure. *Energy Research and Social Science*, 66, 101502. https://doi.org/10.1016/j.erss.2020.101502

International Energy Agency (IEA). (2024). World energy balances 2024. IEA. https://www.iea.org/data-and-statistics/data-product/world-energy-balances

Musbau, Y., Maikudi, Y. I., and Suleiman, A. S. (2025). Corruption in Nigeria's oil and gas industry: Measure and extent. PanAfrican *Journal of Governance and Development*, 6(1), 84–111. https://doi.org/10.46404/panjogov.v6i1.6190

Okorieimoh, C., and Ehimen, E. A. (2025). Connecting power to people: Integrating community renewable energy and multi-level governance towards low-carbon energy transition in Nigeria. *Energy Research and Social Science,* 122, 103612. https://doi.org/10.1016/j.erss.2025.103612

REAN (Renewable Energy Association of Nigeria). (2025). Bridging the gap: Addressing energy poverty and inequality through renewable energy. REAN Publications. Retrieved from https://rean.org.ng

Transparency International. (2025). Corruption Perceptions Index 2024. Transparency International. Retrieved from https://www.transparency.org/en/cpi/2024/index/nga

World Bank. (2024). Access to electricity: Nigeria. World Bank Open Data. Retrieved from https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=NG

Yin, R., and Liu, J. (2025). How does corruption hinder energy transition? A perspective from Sub-Saharan Africa. *Energy Policy,* 206, 114778. https://doi.org/10.1016/j.enpol.2025.114778