THE AFRICAN DEVELOPMENT BANK AND THE ENERGY SECTOR IN NIGERIA (2010 -2023)

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Keywords

African Development Bank; Energy Justice; Liberal Institutionalism; Nigeria; SDG 7; Renewable Energy; Energy Governance

Abstract

Research Problem
This paper examines how the African Development Bank (AfDB) has contributed to Nigeria's energy sector between 2010 and 2023, focusing on governance effectiveness, equity in energy access, and alignment with SDG 7 and the African Union's Agenda 2063. AfDB interventions through technical assistance, and financing have expanded access but criticised for gas bias, procedural shortcomings, and uneven distributive outcomes.

Methods/Theory
Using a qualitative case study design, the research applies Energy Justice Theory (distributive, procedural, and recognition dimensions) and Liberal Institutionalism (institutional coordination and mutual gains). Data sources included documentary analysis of AfDB projects and national policies, Fuzzy-set Qualitative Comparative Analysis (fsQCA) of causal configurations, and stakeholder interviews (one regulator and four Jigawa Solar IPP beneficiaries).

Results
Findings show modest gains in distributive justice through rural electrification and off-grid renewables, exemplified by the Nigeria Electrification Project (2 million connections) and the Jigawa Solar IPP (50,000 households). However, procedural and recognition justice remain weak due to limited community engagement and elite-driven

decision-making.

Conclusion

All in all, AfDB has become more accessible and institutionally stable but its developmental performance is limited by gaps in inclusivity, which lead to incomplete SDG 7 and Agenda 2063 adherence.

Contribution to Knowledge

This study pioneers the use of fsQCA in evaluating AfDB energy interventions in Nigeria and recommends participatory governance via community quotas, local institutional capacity building through knowledge transfer, and redistribution of funding toward community-based renewables to achieve sustainable and inclusive energy models.

Recommendation

It recommends participatory governance via community quotas, local institutional capacity building through knowledge transfer, and redistribution of funding toward community-based renewables to achieve sustainable and inclusive energy models.

Introduction

The energy sector in Nigeria is one of the most critical infrastructures in Africa; nonetheless, it is increasingly marked by inefficiencies and inadequate supply. Despite Nigeria being the largest oil producer on the continent and possessing substantial gas reserves, over 85 million citizens lack access to electricity, while the remainder of the population with grid connection experiences frequent power outages. The lack of performance undermines industry expansion, weakens social services, and constrains national development, making energy reform a national priority. The African Development Bank (AfDB), established to foster economic and social development in Africa, has played a pivotal role in Nigeria's energy industry. The AfDB has invested in excess of USD 1 billion in energy initiatives from 2010 to 2023, including the Light Up and Power Africa Programme, the Economic and Power Sector Reform Programme (EPSERP), and the Sustainable Energy Fund for Africa (SEFA). In 2016, the Bank launched the New Deal on energy for Africa, a strategy aimed at achieving universal access by 2025 through extensive grid expansion and off-grid renewable options. These initiatives position AfDB as the principal actor in Nigeria's energy transition.

Nevertheless, the efficacy of AfDB's efforts remains contentious. Although projects such as the Jigawa Solar IPP and the Nigeria Electrification Project (NEP) have enhanced rural access and promoted renewable energy, the Bank continues to prioritise gas-based infrastructure, accounting for approximately 59% of its investments in Nigeria. This emphasis contradicts stated commitments to sustainable energy and equitable access. Moreover, issues related to governance, elite capture, and reliance on foreign contractors have compromised the project's achievements and community engagement, raising concerns about the inclusivity and sustainability of the measures employed by the AfDB.

It is essential to contextualise these dynamics within the institutional and political economy of Nigeria to comprehend the actions of the AfDB. The Electric Power Sector Reform Act of 2005 divided the National Electric Power Authority (NEPA) into distinct entities for electric generating, distribution, and transmission; nonetheless, regulatory ambiguity, liquidity constraints, and

insufficient infrastructure capacity persist. The potential and limitations of donor involvement are dictated by these factors and consequently influence how the AfDB collaborates with Nigerian ministries, agencies, and the corporate sector. The Bank's territorial responsibility and compatibility with SDG 7 and Agenda 2063 serve as further indicators to assess if its interventions genuinely foster equitable and sustainable energy access. This report evaluates the AfDB's initiatives in Nigeria's energy industry from 2010 to 2023. It employs Energy Justice to assess the distributive, procedural, and recognition dimensions, with Liberal Institutionalism to examine institutional coordination and funding regulations, as theoretical frameworks. This study investigates the impact of AfDB projects on access outcomes, governance frameworks, and alignment with global and regional energy agendas through documentary analysis, fuzzy-set Qualitative Comparative Analysis (fsQCA), and stakeholder interviews, while also introducing the application of fsQCA to AfDB energy interventions in Nigeria. Consequently, enhancing the scholarly and policy discourse around multilateral development banks in the context of Africa's energy transition.

Research Problem

Systemic inefficiencies and governance flaws continue to diminish the energy sector's capacity to facilitate socio-economic growth in Nigeria. The nation's installed capacity is 12.5 GW; however, only 4-5 GW is produced due to gas supply disruptions, ageing infrastructure, and transmission losses (International Energy Agency, 2014; Nigeria Energy Transition Office, 2024). Over 85 million Nigerians remain without electricity, while those with access endure frequent disruptions. Persistent deficits hinder industrialisation, weaken social services, and limit national progress, despite decades of reforms and foreign assistance. The African Development Bank (AfDB) has invested over USD 1 billion in Nigeria's energy sector from 2010 to 2023, supporting initiatives such as the Nigeria Electrification Project (NEP), Jigawa Solar IPP, and the Economic and Power Sector Reform Programme (EPSERP). The AFDB portfolio remains primarily focused on gas-based infrastructure, with about 59% of investments allocated to this sector, despite initiatives aimed at enhancing rural access and promoting renewable energy. This emphasis contradicts declared initiatives for renewable energy and equitable access, raising concerns about the coherence and sustainability of its energy strategy.

The fragility of government further complicates the operations of the AfDB. The inefficiency, rent-seeking, and elite capture of projects inside Nigerian ministries and agencies responsible for execution have been associated with the erosion of project benefits and a decline in public trust. The procurement rules favour foreign contractors, hence limiting local participation and capacity development. Such dynamics lead to distorted relationships where domestic stakeholders are marginalised in decision-making and economic advantages.

Current literature has examined energy difficulties in Nigeria broadly; however, there is less discussion on how AfDB initiatives influence distributive justice, institutional coordination, and alignment with global energy frameworks such as SDG 7 and Agenda 2063. This paper addresses the gap by evaluating the AfDB's influence on the Nigerian energy sector through the lenses of Energy Justice and Liberal Institutionalism, providing a nuanced analysis of its accomplishments, shortcomings, and the ramifications of its efficacy in facilitating equitable energy transitions, along with recommendations.

Objectives of the Study

In assessing the African Development Bank's interventions in Nigeria's energy sector, the study pursues the following objectives: to examine the nature of interventions undertaken in Nigeria's energy sector between 2010 and 2023, identify the institutional and governance factors influencing the effectiveness of AfDB interventions, evaluate the extent to which AfDB interventions align with Sustainable Development Goal 7 (SDG 7) and the African U's Agenda 2063,analyse how private sector co-financing shapes the outcomes and sustainability of AfDB interventions in Nigeria's energy sector.

Research Methodology

This research employs a qualitative case study methodology to assess the African Development Bank's initiatives in Nigeria's energy industry from 2010 to 2023. The methodology integrates content analysis, fuzzy-set Qualitative Comparative Analysis (fsQCA), and stakeholder interviews to yield a comprehensive understanding of project outcomes. The Julius Native 3.0 software was utilised for coding, categorisation, and interpretation of documentary material. The analysis concentrated on governance, financing, private sector participation, and compatibility with Sustainable Development Goal 7 and Agenda 2063. FsQCA facilitated the calibration of variables including governance quality, emphasis on renewable energy, business sector involvement, and community engagement, hence permitting cross-case analysis.
The population under examination comprises energy projects in Nigeria that are sponsored by the AfDB. The purposive sample method was employed to select interventions including many categories, including grid-based reforms, off-grid renewable initiatives, and governance projects. Five stakeholder interviews were conducted, comprising one with a regulator and four with beneficiaries of AfDB-supported projects, including the Jigawa Solar IPP and the Nigeria Electrification Project. The sample size was selected based on accessibility and relevance, and was corroborated with documentary evidence to enhance validity.
The primary data sources consisted of formally solicited AfDB project reports, including assessment reports, completion reports, and strategic documents. Supplementary sources included publicly accessible Nigerian energy policy documents and reports from governmental and development agencies.

Conceptual Clarification

Energy Justice is typically conceptualised through the lenses of distributive, procedural, and recognition dimensions (Sovacool et al., 2016). The majority of its applications pertain to national energy policy or domestic accessibility, with minimal donor-led initiatives undertaken. The study expands on this concept by applying it to multilateral finance and raises enquiries on not only who benefits from AfDB projects but also how procedural and recognition justice is compromised when individuals are not consulted and foreign contractors oversee procurement. Consequently, the recontextualization of Energy Justice as a framework for examining fairness within development finance is achieved.
Liberal Institutionalism emphasises the collaboration and coordination of governments and non-state actors through established rules (Keohane, 1984). This concept has been employed to elucidate the roles of institutions in global governance; nevertheless, its assumptions have faced criticism in contexts where governance shortfalls and elite capture adversely influence outcomes. Regime theory demonstrates the impact of institutional arrangements on actor behaviour (Krasner, 1983); however, this paper critiques these

assumptions, arguing that the AfDB's intervention in Nigeria must be contextualised within the country's political economy, where institutional coordination alone is inadequate to foster equitable or sustainable energy transitions.

Sustainable Development provides a normative framework for evaluating the actions of the AfDB. According to the Brundtland Commission's definition (WCED, 1987), it emphasises meeting present demands without compromising the ability of future generations to meet their own requirements. This notion in the energy sector involves a balance between economic growth, social inclusion, and environmental protection. This article examines energy interventions in relation to Sustainable Development Goal 7 and the African Union Agenda 2063, positioning energy initiatives within a global sustainability discourse while highlighting contradictions between short-term gas investments and long-term renewable energy promises.

Literature Review and Theoretical Framework

Yettano Roche et al. (2019) present a rigorous scenario-based evaluation of Nigeria's power system until 2030, utilising the LEAP model as an energy accounting framework rather than a cost optimisation approach. Their three scenarios—Business-as-Usual, Moderate Change, and Green Transition—illustrate the inequitable quality of access despite optimistic projections, with fossil fuels still accounting for 53% of production. This outcome is pertinent to the ongoing research as it indicates Nigeria's reliance on fossil fuels, while the significance of renewable energy remains constrained, despite the government's high aspirations. It is essential to assert that the donor interventions, including the Desert-to-Power initiative by AfDB and the Nigeria Electrification Project, should adopt a dual strategy encompassing both grid and off-grid methodologies. Furthermore, it experimentally illustrates that access alone will be inadequate; governance, regulatory, and implementation issues will play a pivotal role in Nigeria's energy transformation.

Pavanelli et al. (2023) advance the current discourse by examining the influence of legislative and institutional modifications on the efficacy of AfDB interventions, particularly the Economic Governance and Energy Transition Support Programme (EGET-SP). Their analysis of the Electricity Act of 2023 indicates that the decentralisation system and feed-in tariffs have facilitated the establishment of privately operated mini-grids, despite only a marginal improvement in grid reliability, and the persistence of elite capture, with 35% of contracts allocated through political means. Pavanelli et al. (2023) assert that legislative modifications alone are insufficient without enforcement authority and oversight. This perspective highlights governance limitations as a significant barrier to the energy transition, a facet that the present research will investigate. This would substantiate the thesis that institutional variables are more significant determinants of the efficiency of the AfDB. Pavanelli et al. emphasise the shortcomings in policy coherence but underestimate the influence of donor conditionalities and external scrutiny on the viability of reforms.

Emodi and Boo's (2021) study encompasses a comprehensive assessment of Nigeria's energy sector through policy analysis, as well as economic and qualitative evaluations. Their findings highlight difficulties such as excessive dependence on fossil fuels, disjointed policy frameworks, and outdated inefficient infrastructure. Poor financial incentives, little concessional support, and societal resistance due to inadequate public awareness are cited as constraints for clean energy businesses. Their emphasis on national policy deficiencies neglects the interaction between donor actions and these

vulnerabilities. This paper examines their structure, demonstrating that AfDB's programs are limited not only by inconsistencies in national policy but also by deficiencies in governance regarding donor-recipient collaboration. This broadens the discussion by contextualising donor financing inside Nigeria's institutional obstacles.

Akuru and Okoro (2014) address the energy challenges in Nigeria, asserting that the inadequacy of the generating and transmission networks, due to their fragile structure, has persistently obstructed the reform process. Their article highlights the disparity between renewable potential and widespread energy poverty. This raises a critical question: how is it possible that Nigeria's vast energy potential has undergone extensive reforms yet remains untransformed into a reliable supply? The authors largely ascribe this to technical and infrastructural deficiencies, a viewpoint with which this study does not entirely concur; however, they downplay the impact of governance and institutional capture. This research aims to address the gap by demonstrating that the interventions by the AfDB are hindered not only by inadequate infrastructure but also by weak regulatory enforcement and elite interests that compromise project outcomes. However, their viewpoints support the concept of structural inequality, and this research contributes to the discourse by contextualising these discrepancies within donor-recipient relations. Eberhard and Shkaratan (2012) identify insufficient investment, ineffective institutions, and regulatory fragmentation as significant barriers to energy availability in their comparative analysis of Africa's power sector. In Nigeria, the reliability of the grid is inadequate and its implementation is markedly unequal. This raises the question: is there adequate documentation of these institutional deficiencies in Africa, and why do international interventions, such as those by the AfDB, continue to encounter the same governance bottlenecks? The authors underscore the significance of more stringent regulatory frameworks; nevertheless, they neglect to discuss the interplay between donor finance and local political economies. The current research challenges this omission, demonstrating that the institutional flaws noted by Eberhard and Shkaratan are also relevant to AfDB programs in Nigeria, exacerbated by donor conditionalities and co-financing arrangements. This broadens the scope of discourse linking continental institutional weaknesses with the specific outcomes of AfDB assistance in Nigeria. Finally, the notion of sustainable development, as defined by the Brundtland Commission (WCED, 1987), contextualises the interventions of the AfDB within the framework of global sustainable development, encompassing SDG 7 and Agenda 2063. Despite the African Development Bank's successful alignment of its portfolio with these guidelines, the findings of this research paper indicate a tension between short-term gas investments and long-term renewable energy goals. This inquiry signifies the need to reconcile immediate energy access with sustainability demands, positioning AfDB's actions within the broader discourse of equitable and sustainable development. This research has analysed Nigeria's energy sector from multiple perspectives, including scenario modelling (Yetano Roche et al., 2019), legislative reforms (Pavanelli et al., 2023), national policy analysis (Emodi& Boo, 2021), infrastructure deficiencies (Akuru& Okoro, 2014), and continental institutional weaknesses (Eberhard &Shkaratan, 2012). Nonetheless, these investigations possess drawbacks. The studies do not systematically evaluate the effectiveness of governance, distributive and recognition justice, or the impact of donor conditionalities on intervention outcomes. No one has employed

fuzzy-set Qualitative Comparative Analysis (fsQCA) for energy projects of the African Development Bank in Nigeria. This study addresses gaps by evaluating AfDB initiatives from 2010 to 2023 via the lenses of Energy Justice and Liberal Institutionalism theories, employing pioneering fsQCA, and contextualising donor assistance within Nigeria's governance and inclusion issues.

Theoretical Framework

The principal analytical framework employed in this study is Energy Justice, as articulated by Sovacool et al. (2016). The distributive, procedural, and recognition aspects can elucidate who gains from energy transitions, who participates in decision-making, and which demands are acknowledged. This raises the question of whether Energy Justice, primarily formulated in relation to national energy policies, adequately handles the dynamics of donor-led interventions. The findings of this investigation suggest that it cannot achieve this completely. The gas-centric portfolio of AfDB produces distributive imbalances, while foreign procurement undermines procedural and recognised fairness. This study analyses the significance of Energy Justice in relation to AfDB activities in Nigeria, broadening the concept's conventional limits to interrogate the nature of justice and the perpetuation of inequality under the guise of enhancing access to donor interventions. Keohane (1984) proposed Liberal Institutionalism, which provides a supplementary explanatory framework emphasising the significance of collaboration and coordination among states and non-state entities through established rules. Krasner's regime theory (1983), a component of liberal institutionalism, emphasises the impact of institutional frameworks on actor behaviourand policy alignment. This raises a critical question: can institutional rules and cooperation mechanisms be effective in governance contexts marked by elite capture and regulatory deficiencies? Evidence contradicts this regarding the interventions in Nigeria by AfDB. The Economic Governance and Energy Transition Support Programme (EGET-SP) achieved only half renewable objectives, since progress was hindered by governance impediments, suggesting that institutional coordination alone is insufficient for a fair and sustainable energy transition. The study examines Liberal Institutionalism, highlighting its shortcomings in contexts of weak government, while expanding the discourse by establishing institutionalist assumptions within Nigeria's political economy.

Findings and Analysis

The Nigeria Electrification Project (NEP) is the African Development Bank's model initiative for rural energy access, featuring a co-financing allocation of 200 million dollars in collaboration with World Bank resources. Utilising the document corpus, particularly with NEP as the most precisely defined instance, the subsequent fuzzy-set calibrations were implemented for cross-case pattern analysis:

i. GOV (Governance transparency and proceduralisation): 0.50 for NEP (documented procurement/operations and maintenance; restricted independent verification).
ii. PRI (Private Sector Involvement): 0.80 (26 SHS enterprises and results-based grants). Considering the quantity of active enterprises and grant activity, private sector participation is assessed at 0.80 (high).

iii. REN (Renewable/Off-grid share): 1.00 (NEP is predominantly solar/mini-grid).
iv. SDG (Alignment with SDG 7 in text and design): 1.00 (clear focus on access and renewable energy).
v. OUT (Performance relative to specified output objectives): 0.13 for SHS (194,613/1.5m as a progress indicator).

The REA paper, while not directly aligned with Agenda 2063, emphasises inclusive growth, rural productivity, and human development services, which are congruent with Aspiration 1 (prosperous Africa) and the Priority Area: Infrastructure and Energy. The distributive aspect of Energy Justice is praiseworthy. Rural homes and small and medium-sized enterprises (SMEs) experienced first access to electricity, which reportedly enhanced household welfare, company growth, and agricultural output. There exists a deficiency in procedural and recognition justice. The procurement pipelines and bidding procedures were recorded; however, the fsQCA calibration of governance transparency was merely 0.50, indicating minimal external monitoring and an inadequate grievance system. Community participation was minimal, with less evidence of co-design or differentiated attention to women, informal workers, or conflict-affected areas. This raises a crucial inquiry: can distributive justice be deemed sufficient when procedural and recognition fairness are habitually overlooked? The results indicate otherwise. The measures implemented by the AfDB jeopardise the rectification of disparities by prioritising access as a statistical objective rather than a collaborative endeavour. Liberal Institutionalism claims that NEP demonstrates the AfDB's capacity to organise stakeholders via REA, outcome-oriented grants to private SHS providers, and procurement technical assistance. The private sector's level of involvement was substantial (0.80), with 26 private enterprises. The collaboration among institutions did not provide success. Based on the fsQCA outcomes, elevated private engagement and a renewable focus were both necessary yet insufficient for success; a probable facilitating factor was governance quality (GOV ≥ 0.80). This discovery contradicts the assumption of Liberal Institutionalism that rule-based coordination alone would be effective. Elite control, tariff politics, and inadequate enforcement undermine institutional arrangements in Nigeria, hence obstructing the AfDB's function in structuring regimes. The NEP scenario illustrates the tension between capital flow and governance capabilities. The AfDB's blended-finance approach has encouraged private sector participation and the implementation of renewable energy; nevertheless, without effective governance, affordability strategies, and community engagement, the benefits of distribution remain incomplete and procedural fairness is compromised. The report argues that donor help must extend beyond mere financing to embed governance and inclusivity at the heart of energy transitions.

Jigawa Solar IPP Programme Phase 1 (AfDB/SEFA Technical Assistance)

This case study provides an overview of the technical assistance (TA) grant from the African Development Bank (AfDB) to the Rural Electrification Agency (REA) during Phase 1 of the Jigawa Solar Independent Power Procurement Programme, which seeks to establish a 1 GW solar park in Jigawa State as part of the AfDB's renewable energy portfolio. In 2018, the Sustainable Energy Fund for Africa (SEFA) approved USD 1.5 million, which was executed from 2018 to 2020.

The project received approval on 30 April 2018 as a technical assistance grant to the Federal Government of Nigeria through the Rural Electrification Agency. (PCR, p. 4) The total compensation disbursed to the Consultants for the diverse deliverables was USD 836,519.02. (PCR, p. 2) Calibration of fsQCA: Renewable emphasis (REN) = 1.0 (complete membership; 1 GW solar facility) Private participation (PRI) = 0.67 (transaction adviser procurement, no direct co-financing to date)

The project involved numerous institutional

stakeholders, including the REA, Ministry of Power, Transmission Company of Nigeria (TCN), and the Jigawa State Government. Coordination facilitated the resolution of issues, notably land allocation, which was diminished from 2,000 hectares to 400 owing to forest reserve constraints, in addition to delays caused by COVID-19 and procurement procedures. The performance on output targets is notably low (0.13), but the high involvement of the private sector (0.80) and full compliance with renewable/SDG (1.00) contribute to an overall poor score. This raises a significant question: why do superior design attributes and capital investments fail to yield quality outcomes?

In the context of distributive justice, it is pertinent to discuss energy justice, as rural families and small and medium-sized enterprises were granted access to power for the first time, as indicated by respondents. However, procedural justice is inadequate, with government transparency receiving a score of 0.50. The absence of community engagement and inadequate grievance mechanisms suggest that access was perceived not as a participatory process but rather as a measurable statistic. There is a lack of recognising justice, as numerous needs have not been properly addressed (e.g., women, conflict-affected regions). The calibration values indicate that distributive gains are inadequate to compensate for the shortcomings in procedures and recognition. From a Liberal Institutionalist viewpoint, NEP demonstrates how the AfDB effectively coordinates donor loans, private secondary health service providers, and technical help in procurement. However, the fsQCA data suggest that institutional coordination is necessary but insufficient. The quality of governance (GOV $\geq$ 0.80) served as a facilitating element, and institutional arrangements are ineffective without it. This challenges the assumption of Liberal Institutionalism that rule-based collaboration is efficacious. The circumstances in Nigeria necessitate the AfDB's participation in regime organisation due to elite capture, tariff politics, and inadequate enforcement that undermine institutional frameworks in the nation. Consequently, the NEP scenario illustrates the tension between governance ability and capital flows. The blended-finance model established by AfDB has stimulated private sector participation and the adoption of renewable resources; but, in the absence of a strong governance framework and inclusivity, the distribution of benefits will be inequitable, compromising procedural fairness.

Analysis of Africa Energy Sector Technical Assistance Programme I (AESTAP I) Project Appraisal Report

A USD 10 million multi-country technical assistance programme (2019-2023) described in the AESTAP I Report (financed by AfDB USD5 million) empowered the establishment of energy governance and utility reform and regional integration in ten African countries, including Nigeria. It brought in systematic devices like the Electricity Regulatory Index, sectoral researches and capacity-building workshops, transparent budgeting and quantifiable indicators. There were regulatory tests, enhanced regional cooperation, minimal outputs for Nigeria, private sector mobilisation was modest and co-financing was defined as planned but not quantified. Obstacles to reform implementation, the lack of investment inflows (on a short-term basis) and corruption or equity analysis, demonstrate how hard it is to convert technical assistance into real national results in a political and institutional diversity.

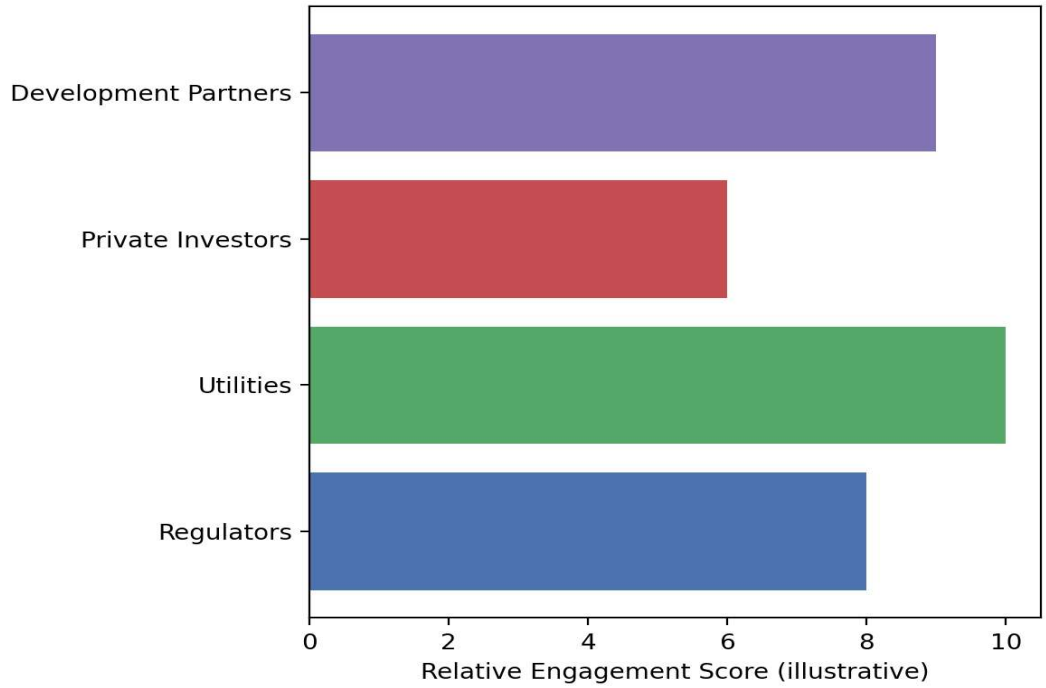


Figure 1: Stakeholder Engagement Scores in AESTAP I (Source: AESTAP I Report). Illustrates engagement levels across regulators, utilities, private investors, and development partners

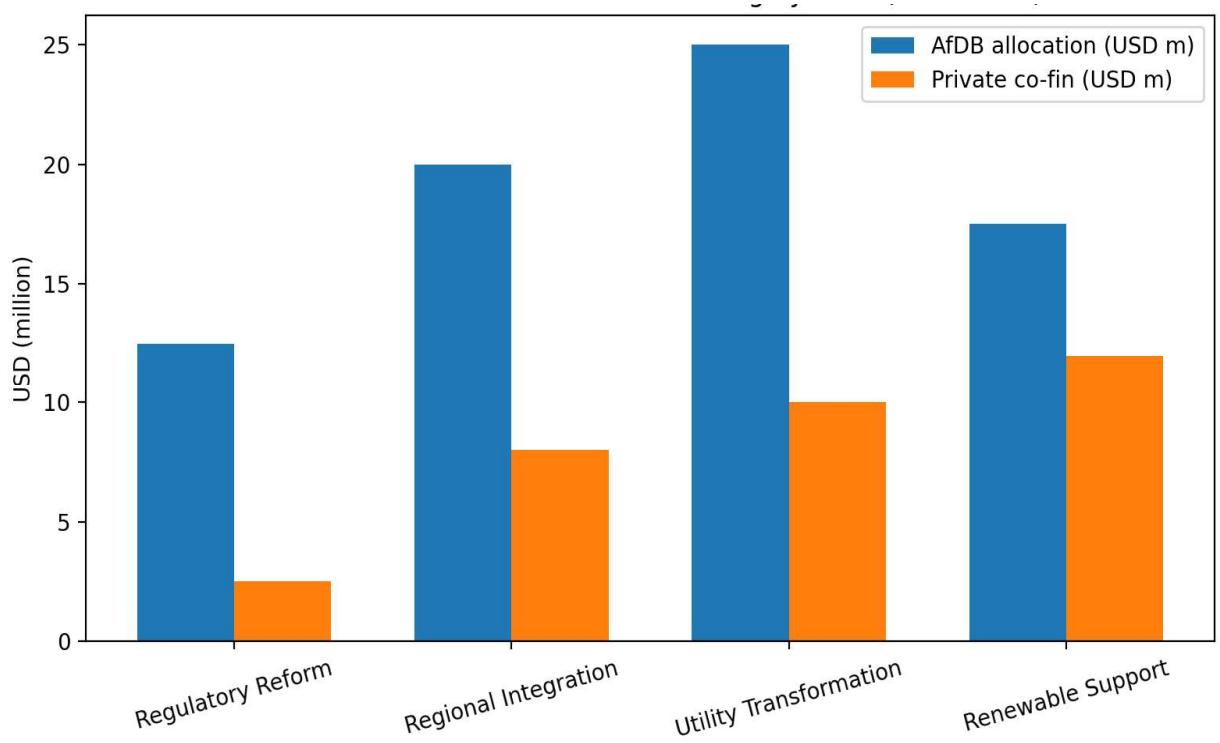


Figure 2: AfDB Allocations vs Private Co-financing by Pillar (Source:AESTAP I Report). Shows financing distribution across reform and integration components.

The project supports SDG 7.1 (universal access) through mini-grid promotion and SDG 7.2 (renewables) via solar capacity expansion. Agenda 2063 Aspirations 1 (inclusive growth)

and 7 (sustainable development) are indirectly addressed through regional integration.

"Growth in regional power trade volumes… and number of cross-border projects operational." (p. 3)

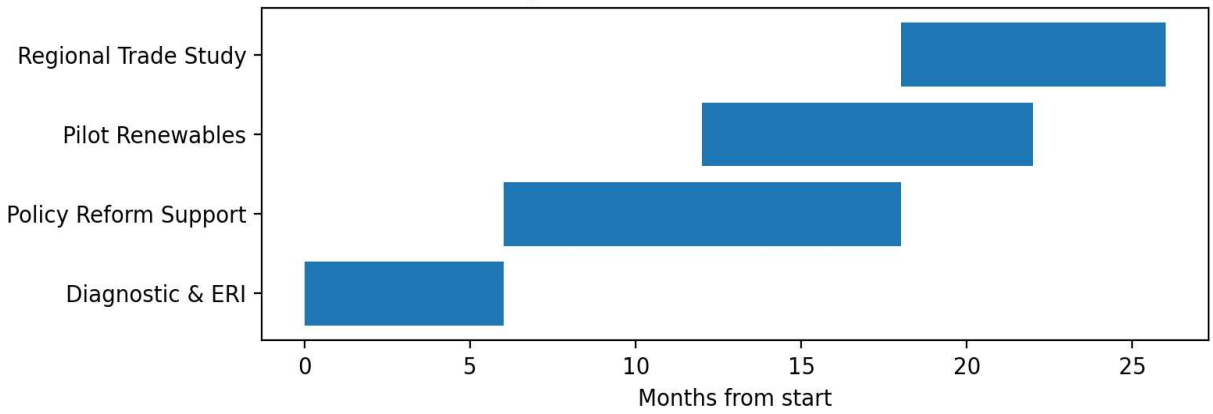


Figure 3: Project Timeline (Months) for AESTAP I (Source: AESTAP I Report). Shows planned vs actual duration and extensions.

Private sector engagement occurs mainly through preparatory de-risking measures (e.g., procurement of transaction advisors). No measurable co-financing materialised in Phase 1; effects are expected in Phase 2.

AESTAP I programme can be used to show the focus of AfDB on the technical assistance and regional integration. For Energy Justice, distributive justice is indirectly considered. Although the programme is in line with SDG 7.1 (universal access) and 7.2 (renewables), the production levels in Nigeria also did not yield much, so communities did not experience much direct impact. Procedural justice is also poor: the stakeholder involvement was centralised with the regulators and the Bank. Local communities, entrepreneurs were not involved. This is a very important question: could the outcomes of justice be argued when interventions are still at the level of technical assistance without being converted into tangible access improvements? The results imply that distributive and procedural justice is undermined when the donor projects are concerned with the institutional diagnostics instead of delivery.

Within Liberal Institutionalism, AESTAP I shows how AfDB engages in the suppression of regimes at the regional level. Electricity Regulatory Index and capacity-building workshops were among the instruments that were aimed at harmonising norms and enhancing institutional coordination. Quality of governance was also mediocre, as the gaps in the implementation capacity and stakes nurtured the delay of reforms. The mobilisation of the private sector was low and no co-financing was realised in Phase 1. This is contrary to the Liberal Institutionalism assumption that institutional arrangements that follow rule-oriented approaches can overcome the political economy obstacles. Practically, the institutional instruments of AfDB did offer frameworks but did not deliver any outcome of substantive investment or reform in Nigeria.

AESTAP I case thus brings out the weaknesses of technical assistance(TA) as a tool for development. Though it is in line with SDG 7 and Agenda 2063, its poor performance in Nigeria indicates the necessity for more robust governance, enforcement, and participation. The results support the argument in the study that interventions by donors should instill governance and inclusivity with technical and financial aid, otherwise distributive and procedural justice will lack

completeness and institutional coordination will be in a dream form instead of real.

Discussion of Findings

Objective 1: Nature of AfDB interventions (2010-2023)

It has been evidenced that AfDB has its portfolio in Nigeria which has integrated blended-finance off-grid projects (NEP), technical assistance and de-risking (Jigawa Phase 1; AESTAP I), and targeted institutional support. Calibration: NEP, REN = 1.00 and PRI = 0.80; Jigawa, REN = 0.83 and PRI = 0.67; governance scores that are centered on GOV = 0.50.

Why are outputs so low when AfDB's interventions are varied and well-designed? The puzzle is that NEP output is only 0.13 (194,613/1.5m SHS): strong design and capital failed to deliver scale. The inference is critical since it argues that design breadth is not implementation depth. Technical assistance and advisory work de-risks projects, but not a replacement of enforceable governance, affordability or local capacity to take in investment. Within Energy Justice, the interventions of the Bank lead to distributive gains (establishing new relationships) without adequate procedural and recognition results. For Liberal Institutionalism, AfDB conducts the role of a regime organiser, but the instruments of the regime (loans, grants, TA) are not enough in cases where enforcement and local accountability are ineffective.The intervention mix provided by AfDB is not only necessary, but also catalytic: the instruments of the Bank have to be combined with more robust mechanisms at the governance level and at the community level, in order to transform design into long-term effect.

In comparison with previous work, Yetano Roche posited dual-track solutions (grid + off-grid). The study demonstrates that dual-track without governance can only produce partial, weak benefits and not systemic change.

Objective 2: Institutional and governance factors influencing effectiveness

It was observed that the Governance quality is brought up as a likely enabling condition on numerous occasions. NEP, with Jigawa, AESTAP I captures capacity discrepancies and vested interests. Delays, part-payment and the awarding of contracts to politically-related companies replicate in the corpus.

Can institutional rules and coordination on their own guarantee outcomes? Data indicate that it is a no. Institutional arrangements are important, but enforcing them, making them transparent, and having anti-capture mechanisms mean whether these arrangements yield. The missing enabling condition according to fsQCA is high, PRI high, REN low OUT.This is a direct castigation of Liberal Institutionalism: regimes and rules are important, but in a situation where there is elite capture and ineffective enforcement they are permeable. Regime theory should be read thus in conjunction with political-economy constraints; the design of the institution in the absence of accountability is weak.

This result further narrows down Pavanelli et al. (2023): reform and decentralisation can trigger activity (mini-grids), yet no enforcement and monitoring of these reforms will convert this change into consistent, fair results.The factor that matters is the quality of governance: the success of AfDB does not lie in the fact (of formal rules) but in the ability, desire to implement them.

Objective 3: Alignment with SDG 7 and Agenda 2063

The Projects are clearly aligned to SDG 7 and Agenda 2063 (NEP = SDG 1.00) (Jigawa is mapped to renewable targets). Nonetheless, design alignment had no equivalent results:

NEP met its SHS goal (approximately 13%); AESTAP I yielded small amounts of Nigeria-specific outputs. Does it suffice to rhetorically align? No. The data indicate that alignment is widespread: projects embrace SDG/Agenda language and goals, but implementation loopholes imply alignment is a far-fetched ideal. The question to ask then is whether alignment is operationalised using governance, affordability and local capacity indicators.

Normative frameworks (SDG 7; Agenda 2063) offer a sense of legitimacy and goals, but do not transform local political incentives. Energy Justice stipulates that the concept of alignment must be assessed based on substantive justice deliverables (distribution, participation, recognition), rather than design statements only.AFDB projects are technically compatible with global standards, but the compatibility is only often on paper unless it is supported by some binding system of governance and funding in place so that they can be delivered and achieve fair results.This is a continuation of Emodi and Boo (2021): incoherence in policy is an issue, but through prioritising targets over governance and affordability, donor projects may also generate incoherence.

Objective 4: Private sector co-financing and sustainability

Although the private sector is heavily involved in AfDB's Nigerian portfolio, its existence by itself does not ensure long-term results. Private participation is relatively low in AESTAP I, moderate in Jigawa Solar IPP (PRI = 0.67), and high in Nigeria Electrification Project (NEP) (PRI = 0.80). Strong private engagement has not always translated into scale or durability, despite these differences. For instance, Jigawa's technical assistant support de-risked the project but did not instantly mobilise direct investment; NEP recorded significant private-sector activity but only met a small portion of its solar home system target.

Credible risk-return signals elicit a response from private investors. The commercial case for long-term investment is weak in areas with poor governance, ongoing foreign exchange restrictions, ambiguous tariff regimes, and widespread working capital shortages. Private companies may enter these areas on a pilot or advisory basis, take short-term rents, or leave when market or political risks materialise. Therefore, private involvement that lacks stable market conditions and predictable regulations results in episodic rather than long-term investment, weakening the sustainability that donor organisations frequently aim to catalyse.

There are two possible ramifications: Private co-financing can increase distributive access from the standpoint of energy justice, but if community needs, affordability, participatory processes are not safeguarded, it may also worsen procedural and recognised facets. Even as they increase the number of connections, market-led initiatives that put financial viability ahead of local inclusion run the risk of making inequality worse. For liberal institutionalism, private actors are essential components of the institutional regime that the AfDB aims to establish; yet, their efficacy is contingent upon legitimate regulations, enforcement, and institutional capability. Private capital cannot be consistently transformed into sustainable and socially equitable energy services in regimes that lack enforcement mechanisms or are susceptible to capture.

This paper applies the concept of Energy Justice to the context of donor driven actions, demonstrating how the dimensions of justice are manifested in multilateral financing. It also strengthens Liberal Institutionalism by showing that the instruments of the regime must be credibly enforced and have anti-capture mechanisms in order to work in weak political economies. AfDB has been driving significant access and de-risking benefits, and

its interventions can only be sustainable and equitable when the Bank expressly incorporates governance strengthening, community engagement, and affordability systems in project design and conditions.

Conclusion

Focussing impact assessment on justice and institutional enforcement allows the study to recontextualise the evaluation of donor-driven energy interventions. This research suggests that distributive advantages should be assessed alongside procedural and recognition outcomes, rather than viewing access, funding, and technical help as sufficient indicators of success. Donor efforts should be regarded as socio-technical interventions, influenced by governance and participation processes, since they can either exacerbate or mitigate social inequality while concurrently altering access patterns.

The findings promptly yield two theoretical contributions. The notion of Energy Justice is broadened to encompass global funding. The three dimensions—distributive, procedural, and recognition—provide a dependable diagnostic for donor programs, demonstrating that insufficient participation and inadequate acknowledgement of diverse needs can coexist with numerical access (distribution). Secondly, the analysis indicates that formal institutions alone do not guarantee outcomes in contexts of weak enforcement and elite appropriation, despite the AfDB's role as a regime organiser (creating laws, mitigating investment risks, and coordinating stakeholders). To convert coordination into equitable and sustainable results, regimes require dependable enforcement, anti-capture strategies, and local absorptive capacity. The findings of this study contribute to the existing knowledge on energy access and governance, while also aligning with and enhancing prior studies. A comparison with prior research reveals both convergence and divergence, highlighting the challenges of broadening access to renewable energy. This analysis validates the advantages of a dual-track plan (grid and off-grid) and the potential of decentralised renewables to enhance access, as noted by Yetano Roche et al. (2019). To attain universal access, both studies underscore the significance of varied energy alternatives.

This study diverges from Yetano Roche's modelling regarding size in the context of a green transition. This empirical evidence illustrates that scale is fragile without affordability and governance mechanisms; the design alone does not ensure outcomes. This indicates that robust governance frameworks must be integrated with technical support. This research corroborates the emphasis on legislative and institutional change articulated by Pavanelli et al. (2023), further reinforcing the argument that reforms must be implemented and bolstered by oversight. If political economic barriers persist, decentralisation and new legislation will be inadequate, highlighting the need for viable remedies.

This study asserts that donor instruments may inadvertently replicate the structural and financial obstacles described by Emodi& Boo (2021) unless they explicitly integrate participatory protections and governance enhancements. This underscores the importance of context-sensitive, flexible therapy. They assert that achieving lasting success necessitates the integration of institutional enhancement with technical and policy advancements.

Recommendations

Drawing on the conclusions, the following recommendations are made:

For AfDB, governance must be viewed as a necessity for its interventions to be both just and successful. Clear benchmarks like open procurement, independent audits, and anti-capture measures should be linked to

disbursement. Participation must also be institutionalised (before procurement starts, projects should show community co-design, gender-sensitive needs assessments, and operational grievance procedures). Local capacity financing and de-risking must work together.

Nigerian authorities should strengthen enforcement by creating independent monitoring units with clear mandates to audit procurement and performance.

Adopting inclusive business models that incorporate affordability protections like tariffs or targeted subsidies is necessary for private sector partners to be sustainable. Local partnerships must be established to improve legitimacy and long-term viability. Rather than concentrating exclusively on capital investment, allocating a portion of blended financing to governance improvement and affordability measures guarantees that initiatives are not only technically sound but also socially equitable and financially sustainable.

Researchers should prioritise doing an empirical evaluation of enforcement mechanisms in order to determine which supervision and anti-capture techniques best translate donor design into observable results

If energy transitions are to be both large-scale and equitable, donor funding and technical support must be interwoven with enforced governance, participatory procedures, and affordability measures.

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