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

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DOI: https://doi.org/10.64633/wissj.v10i1.21

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 mixed-methods 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 continues to be amongst the very important infrastructures in Africa, but it is being increasingly characterisedby inefficiencies, poor supply. Although Nigeriaproduce the most oil in the continent and have huge reserves of gas, more than 85 million people in the country have no access to electricity, and the rest of the population who have access to the power grid are subject to frequent power outages. This non-performance sabotages the growth of the industry, the under-strength of social services, and the restriction of national development, which is why energy reform is one of the priorities of the country.

The African Development Bank (AfDB), which was created in the effort to promote economic and social growth in Africa, has been instrumental in the energy sector of Nigeria. AfDB has spent over USD 1 billion in energy projects between 2010 and 2023 such as 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 introduced the New Deal on energy to Africa, a plan to bring about universal access by 2025 by creating large scale grid expansion, and off-grid renewable solutions. These activities make AfDB the prime player in the transition of energy in Nigeria.

Nonetheless, the effectiveness of AfDB's initiatives is still up for debate. Whilst initiatives like the Jigawa Solar IPP and the Nigeria Electrification Project (NEP) have increased rural access and supported renewable energy, the Bank still places a high priority on gas-based infrastructure, which makes up about 59% of its investments in Nigeria. This focus is against articulatedpromises of renewable energy, equality of access. Besides, the problem of governance, elite capture and dependency on foreign contractors have undermined the gains of the project and community involvement and provoked questions regarding the inclusivity and sustainability of the strategies adopted by AfDB.

It is important to situate these dynamics in the context of institutional and political economy of Nigeria in order to understand the interventions of AfDB. The Electric Power Sector Reform Act of 2005 separated National Electric Power Authority (NEPA) into electric generation, distribution, and transmission companies, but the regulatory ambiguity, liquidity limits, and the lack of infrastructural capacity remain. The opportunities and constraints of donor engagement are predetermined by these conditions and, therefore, affect the manner in which AfDB aligns with Nigerian ministries, agencies, and the private-sector. The territorial responsibility and alignment of the Bank to SDG 7 and Agenda 2063 are additional indicators to

examine whether its interventions are actually promoting equitable, sustainable access to energy.

This paper thus assesses the case of AfDB interventions in the energy sector in Nigeria between 2010 and 2023. It uses Energy Justice to evaluate the distributive, procedural, and recognition aspects as well as Liberal Institutionalism to analyse the institutional coordination and the financing with rules, as theories. It goes ahead to examine the influence of AfDB projects on access outcomes, governance structures and alignment with global and regional energy agendas using documentary analysis, fuzzy-set Qualitative Comparative Analysis (fsQCA) and stakeholder interviews whilst pioneering fsQCA application to AfDB energy interventions in Nigeria. Thus, adding value to academic discourse, policy discourse pertaining to multilateral development banks in the energy transition in Africa.

Research Problem

Systemic inefficiencies and governance failures that lower the potential of the energy sector to support social-economic development persist in Nigeria. The installed capacity of the country is 12.5 GW though only 4-5 GW is generated as a result of disruptions in the supply of gases (International Energy Agency, 2014; Nigeria Energy Transition Office, 2024) , ageing infrastructure, and loss in the transmission. Over 85 million Nigerians are still without power and those who have power supply experience constant interruptions. Such unremitting deficits cripple industrialisation, undermine social services and restrict national development, even after decades of reforms and donor aid.

Africa Development Bank (AfDB) has injected a significant amount of money into Nigeria's energy sector between 2010 and 2023, with a commitment of over USD 1 billion to various projects like the Nigeria Electrification Project (NEP), Jigawa Solar IPP, and the Economic and Power Sector Reform Programme (EPSERP). The portfolio of AFDB is, however, still predominantly gas-based infrastructure, with almost 59% of investment consisting of gas-based infrastructure, despite these efforts to expand rural access and stimulate renewable energy. This focus is in opposition to proclaimed activities on renewable energy and fair access and questions the consistency and sustainability of its energy policy.

Frailty of governance also makes the interventions of AfDB even harder. The inefficiency, rent-seeking, and elite capture of projects amongst the Nigerian ministries and agencies that are involved in the implementation of the projects have been linked to the dilution of the project benefits and degradation of trust by the people. The procurement procedures tend to prefer foreign contractors which restricts the local participation and capacity building. Such dynamics result in skewed relationships in which the domestic stakeholders are not central in decision-making and economic benefits.

Existing literature has looked into the issue of energy challenges in Nigeria in general, yet little is said on how AfDB interventions inform distributive justice, institutional coordination, and convergence to the global energy structures like SDG 7 and Agenda 2063. This paper fills that gap as it assesses the impact of AfDB on the Nigerian energy sector in the perspectives of the Energy Justice and Liberal Institutionalism and offers a more subtle view of its achievements, weaknesses and the implications of its effectiveness in ensuring fair energy transitions 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 study adopts a qualitative case study design to evaluate the African Development Bank's interventions in Nigeria's energy sector between 2010 and 2023. The approach combines content analysis, fuzzy-set Qualitative Comparative Analysis (fsQCA), and stakeholder interviews to provide a triangulated understanding of project outcomes. Julius Native 3.0 software was used for coding, categorisation, and interpretation of documentary evidence. The analysis focused on governance, financing, private sector involvement, and alignment with SDG 7 and Agenda 2063. FsQCA enabled the calibration of conditions such as governance quality, renewable energy focus, private sector participation, and community engagement, allowing for cross-case comparison

The population under study include AfDB-supported energy projects in Nigeria. Purposive sampling method was adopted to choose interventions that cover various categories as grid-based reforms, off-grid renewable projects, and governance projects. Five stakeholder interviews were carried-out, (one with a regulator and four beneficiaries) of AfDB-supported projects, including the Jigawa Solar IPP and the Nigeria Electrification Project. The sample size was chosen as a result of accessibility, relevance and was triangulated with documentary evidence in order to improve validity.

The main sources of data were officially requested AfDB project reports, such as appraisal reports, completion reports, and strategy papers. Additional sources were the Nigerian documents of energy policies and governmental and development agency reports that were publicly available.

Conceptual Clarification

Energy Justice is usually understood in terms of distributive, procedural, and recognition (Sovacool et al., 2016). Most uses of it revolve around national energy policy or domestic access, and little has been done in terms of interventions led by donors. The paper builds on this idea by applying it to multilateral finance and posing questions like, not just who benefits AfDB projects, but also how the procedural and recognition justice is violated when people are not consulted in them and foreign contractors are in charge of procurement. Thus, the repositioning of Energy Justice as a prism of interrogating equity within development finance as such is accomplished.

Liberal Institutionalism focuses on the cooperation and coordination of states and non-states in a manner of rules (Keohane, 1984). Although this framework has been used to explain the purposes of institutions in global governance, the assumptions have been criticised in situations where governance deficits and elite capture inappropriately affect the results. Regime theory also illustrates how institutional arrangement influences actor behaviour (Krasner, 1983) but this paper criticises such assumptions because the intervention of AfDB in Nigeria is placed within the political economy of the country in which institutional coordination is not a

sufficient condition to promote equitable or sustainable energy transitions.

Sustainable Development offers a normative framework to consider the interventions of AfDB. Based on the definition by the Brundtland Commission (WCED, 1987), it focuses on fulfilling the current needs without jeopardising those of future generations. This concept in the energy sector entails a balance in terms of economic growth, social inclusion as well as environmental protection. This paper presents energy interventions within Sustainable Development Goal 7 and the African-Union Agenda-2063 to situate energy initiatives in a global sustainability dialogue and suggest some tensions in the short-term gas investments and long-term renewable energy commitments.

Literature Review and Theoretical Framework

Yettano Roche et al. (2019) offer one of the most demanding scenario-based assessments of the power sector in Nigeria to 2030, assuming the LEAP model as an energy accounting methodology as opposed to cost optimisation. Their three cases, that are Business-as-Usual, Moderate Change, Green Transition portray the imbalanced quality of access even with the optimistic forecasts, and fossil fuels continue to serve half of production (53%). This result is relevant to the current research since it shows that Nigeria is dependent on fossil fuels, and the importance of renewables is limited, although the government has ambitious visions. It helps to argue out that the donor interventions, the Desert-to-Power by AfDB, and the Nigeria Electrification Project, should follow a two-track approach based on grid and off-grid approaches. Moreso, it empirically demonstrates that access will not be sufficient, but governance, regulatory, and implementation challenges will have a central place in the energy transition of Nigeria.

The present discussion is furthered by Pavanelli et al. (2023), who takes a look at the impact of legislative and institutional changes on the success of AfDB interventions, specifically, the Economic Governance and Energy Transition Support Programme (EGET-SP). Their discussion of the Electricity Act of 2023 reveals that the system of decentralisation and feed-in tariffs has triggered the emergence of the installation of mini-grids on a privatised basis, although there was only a slight increase in grid reliability, and elite capture continues, where 35% of contracts are assigned politically. According to Pavanelli et al. (2023), legislative adjustments by themselves are inadequate in the absence of enforcement authority and oversight. This viewpoint emphasises governance constraints as a crucial obstacle to the energy transition, an aspect that the current research will examine. Which will prove the point of the thesis that institutional factors are more determinants of the effectiveness of AfDB. In as much as Pavanelli et al. highlight policy coherence gaps, they understate the role of donor conditionalities and external oversight in shaping reform feasibility.

Emodi and Boo's (2021) work includes a multidimensional evaluation of Nigeria's energy sector using policy analysis alongside economic and qualitative analysis. Their results identify challenges like overreliance on fossil fuels, incoherent policy frameworks, and ageing inefficient infrastructure. They also list poor financial incentives and minimal concessional funding to be limiting to clean energy entrepreneurs, and social resistance because of poor public awareness. Their focus on national policy gaps overlooks how donor interventions interact with these weaknesses. This study therefore interrogates their framework, showing that AfDB's projects are constrained not only by national policy incoherence but also by governance deficits in donor-recipient coordination. This expands the

discourse by situating donor finance within Nigeria's institutional challenges.

Akuru and Okoro (2014) discuss the problems of energy in Nigeria and state that the fact that the generation and transmission systems are not strong since the structure is weak has continuously hampered the process of reform. Their article brings out the contradiction between renewable potential and rampant energy poverty. But this also brings a very important question: how can it be that such a huge potential of energy in Nigeria has been subjected to reforms so thoroughly and has still not been converted into stable supply? The authors attribute this to a great extent to the technical and infrastructural deficits, (which this study does not totally agree) but they undermine the contribution of governance and institutional capture. The current research intends to fill in this gap revealing that the interventions made by AfDB are not only inhibited by infrastructure but also poor regulatory enforcement as well as elite interest that corrupt the results of the project. But then, their perspectives do back up the thesis regarding the focus on structural inequality, and this paper adds to this discussion by putting the inequalities in the context of donor-receiving relations.

Eberhard & Shkaratan (2012), in their comparative assessment of the power sector in Africa, they point out to inadequate investment over time, poor institutions, and fragmentation of the regulatory system as major hindrances to access to energy. There is same in Nigeria, where the reliability of the grid is low and completely unequally implemented. But this also begs the question: do these institutional weaknesses have good documentation in Africa, and then why are multilateral interventions like that of AfDB still repeating the same bottlenecks in governance?

The authors emphasize the importance of the stricter regulatory frameworks, but they fail to elaborate on the interaction between donor funding and local political economies. This omission is questioned by the current research, which shows that the politics of institutional weaknesses that Eberhard and Shkaratan identified in their study are also applicable in AfDB projects in Nigeria but are aggravated by donor conditionalities and co-financing schemes. This extends the horizon of argument connecting continental processes of institutional frailty with the particular result of AfDB intervention in Nigeria.

Lastly, the principle of sustainable development, which overrides the definition of the Brundtland Commission (WCED, 1987), places the interventions of AfDB in context of sustainable development at the global level, including SDG 7 and Agenda 2063. Although AfDB has done well to align its portfolio to these frameworks, the results of this research paper have shown a conflict of short-term gas investments and the long-term renewable energy objectives. Such questioning is an indication of the necessity to balance the short-term access to energy and the sustainability requirements of the system, which places the interventions of AfDB in the context of the wider debate of equitable and sustainable development.

These researches have examined Nigeria's energy sector from various angles, including scenario modeling (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). However, these studies have limitations. The effectiveness of governance, distributive and recognition justice, and the influence of donor conditionalities on intervention results are not systematically addressed in these studies. None has used fuzzy-set Qualitative Comparative Analysis (fsQCA) for Nigerian AfDB energy projects. In assessing AfDB interventions between 2010-2023 via Energy

Justice and Liberal Institutionalism theories, pioneering fsQCA, and placing donor funding inside Nigeria's governance and inclusion concerns, this study therefore closes these gaps.

Theoretical Framework

The primary analytical framework that will be used in the current work is Energy Justice, which was described by Sovacool et al. (2016). Its distributive, procedural and recognition facets can help determine who benefits in energy transitions, who is involved in decision making and what needs are considered. This brings about the question, whether Energy Justice that was designed, in most cases, with reference to national energy policies addresses the dynamics of donor-led interventions effectively? The results of this research indicate that it is not able to do so entirely. The gas-based portfolio of AfDB generates distributive inequities, whereas the foreign-based procurement impairs procedural and recognition justice. This work deconstructs the relevance of Energy Justice to AfDB initiatives in Nigeria, extending the concept to its traditional boundaries to ask what justice is and how inequality continues to be reproduced in the name of expanding access to donor interventions?

Keohane (1984) developed Liberal Institutionalism which offers a complementary explanatory approach, regarding the importance of cooperation and coordination through a set of rules among states and non-state actors. The regime theory (a strand of liberal institutionalism) developed by Krasner (1983) also underscores the influence of institutional settings on the manner in which actors behave and how they align their policies. But this also leads to another important question, which is whether institutional rules and cooperative mechanisms can be effective when it comes to governance situations characterised by elite capture and regulatory weakness? There are indications that do not support this in the case of the interventions in Nigeria by AfDB. The projects of Economic Governance and Energy Transition Support Programme (EGET -SP) delivered partial renewable goals but were postponed by governance bottlenecks, indicating that institutional co-ordination is not enough to support equitable or sustainable energy transition. The paper thus critiques Liberal Institutionalism and shows how it has its limitations in weak governance settings and broadens the discussion by establishing institutionalist suppositions in the political economy of Nigeria.

Findings and Analysis

Nigeria Electrification Project (NEP) is the AfDB prototype intervention in rural energy access, which has a 200-million co-financing envelope with World Bank funds.Based on the document corpus (with NEP as the best-specified case), the following fuzzy-set calibrations were applied for cross-case patterning:

i. GOV (Governance transparency &proceduralisation): 0.50 for NEP (documented procurement/O&M; limited independent verification).

ii. PRI (Private sector involvement): 0.80 (26 SHS firms + results-linked grants). Given the number of active firms and grant activity, Private sector involvement is calibrated 0.80 (high).

iii. REN (Renewable/Off-grid share): 1.00 (NEP is dominantly solar/mini-grid).

iv. SDG (SDG 7 alignment in text and design): 1.00 (explicit targeting of access/renewables).

v. OUT (Performance against stated output targets): 0.13 for SHS (194,613/1.5m as a progress proxy).

Although the REA document does not explicitly map to Agenda 2063, its emphases oninclusive growth, rural productivity, and human development services are consistent with Aspiration 1 (prosperous Africa) and Priority Area: Infrastructure and Energy.In terms of Energy Justice, the distributive dimension is commendable. Rural households and SMEs had their initial access to electricity, and their welfare in the households, business growth, farm productivity were reported to have benefited.

There is a weak procedural and recognition justice. Procurement pipelines and bidding procedures had been documented, yet the fsQCA calibration of transparency of governance was only 0.50, which means little external verification, and a poor system of grievances. There was limited participation of communities and there was little sign of co-design or varying focus upon women or informal workers or conflict-affected localities. This leads to an important question, can distributive justice be taken to be enough when the procedural and recognition justice are ignored systematically? The findings suggest not. The interventions made by the AfDB threatens to repeat the imbalances of persons by making access a statistical goal instead of a participatory undertaking.

For Liberal Institutionalism, NEP shows the ability of AfDB to coordinate actors through REA, outcome-based grants to private SHS providers, and technical support in procurement. The degree of involvement of the private sector was high (0.80) with 26 private firms. However, the coordination of institutions failed to achieve success. According to the fsQCA outcomes, high private participation, and renewable orientation were both the necessary and not sufficient to achieve success; one of the likely enabling factors was governance quality (GOV ≥ 0.80). This finding works against the presumption of Liberal Institutionalism that rule-based coordination in itself would be effective. Elite capture, tariff politics and ineffective enforcement weaken institutional arrangements in Nigerian context hence hindering AfDB regime-organising role.

NEP case thus shows the conflict between capital flow, capacity of governance. The blended-finance model of AfDB stimulated the involvement of the private sector and the deployment of renewables, yet unless there is good governance, affordability mechanisms and community involvement, the gains of distributive facet are partial and procedural justice is breached. It supports the argument of the study that donor aid should transcend funding in order to instill governance and inclusivity in the core of energy transitions.

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

This case study is an overview of technical assistance(TA) grant by the African Development bank (AfDB) to the Rural Electrification Agency (REA) in Phase 1 of the Jigawa Solar Independent Power Procurement Programme, aimed at developing a 1 GW solar park in the Jigawa State under the AfDB renewable energy portfolio. In 2018, USD 1.5 million was approved by the Sustainable Energy Fund for Africa (SEFA), and it was carried out between 2018-2020.

"The project was approved on 30 April 2018 as a technical assistance grant to the FGN through the REA." (PCR, p. 4) *"The total amount paid to the Consultants for the various deliverables amounted to USD 836,519.02."* (PCR, p. 2)

fsQCA Calibration:

i. Renewable focus (REN) = 1.0 (full membership; 1 GW solar park)

ii. Private involvement (PRI) = 0.67 (transaction advisor procurement, no direct co-financing yet)

The project engaged lots of institutional actors REA, Ministry of Power, Transmission Company of Nigeria (TCN), and Jigawa State Government. Coordination helped resolve challenges, including land allocation, which was reduced from 2,000 hectares to 400 due to forest reserve restrictions as well as delays from COVID-19 and procurement processes, The performance in reference to output targets is exceptionally low (0.13), whereas the level of the high involvement of a private sector (0.80) and the complete compliance with renewable/SDG (1.00) is casting a very low score. This brings about an important issue: why then do high design characteristics and capital flows not translate into quality results?

Regarding the distributive justice, one can speak about the distributive justice in terms of energy justice as rural families and SMEs were provided with electricity on a first-time basis as stated by respondents. But procedural justice is poor with transparency of governance having a score of 0.50. There was a lack of community involvement and poor grievance systems which imply that access was not seen as a participatory process but as a quantifiable number. There is the absence of recognition justice as well, where various needs were not met systematically (e.g., women, conflict-stricken localities). The values of the calibration thus point out that distributive gains are not sufficient to offset the deficits of procedures and recognition.

Through a Liberal Institutionalist perspective, NEP illustrates how AfDB is able to organise donor loans, private SHS providers, and technical assistance in procurement. Nonetheless, the findings of the fsQCA indicate that institutional coordination is needed and not enough. The quality of governance (GOV $\geq$ 0.80) was an enabling factor, and institutional arrangements cannot work without it. This is a challenge to the Liberal Institutionalism assumption that rule-based cooperation is effective. The situation in Nigeria brings about a regime-organising role of AfDB because elite capture, tariff politics and poor enforcement weaken institutional arrangements in the country.

Therefore, NEP case demonstrates the conflict between governance capacity and the capital flows. The blended-finance model created by AfDB triggered the involvement of the private sector and the introduction of renewable sources, yet without a robust governing structure and inclusivity, distributive benefits will be biased and procedural justice undermined.

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.

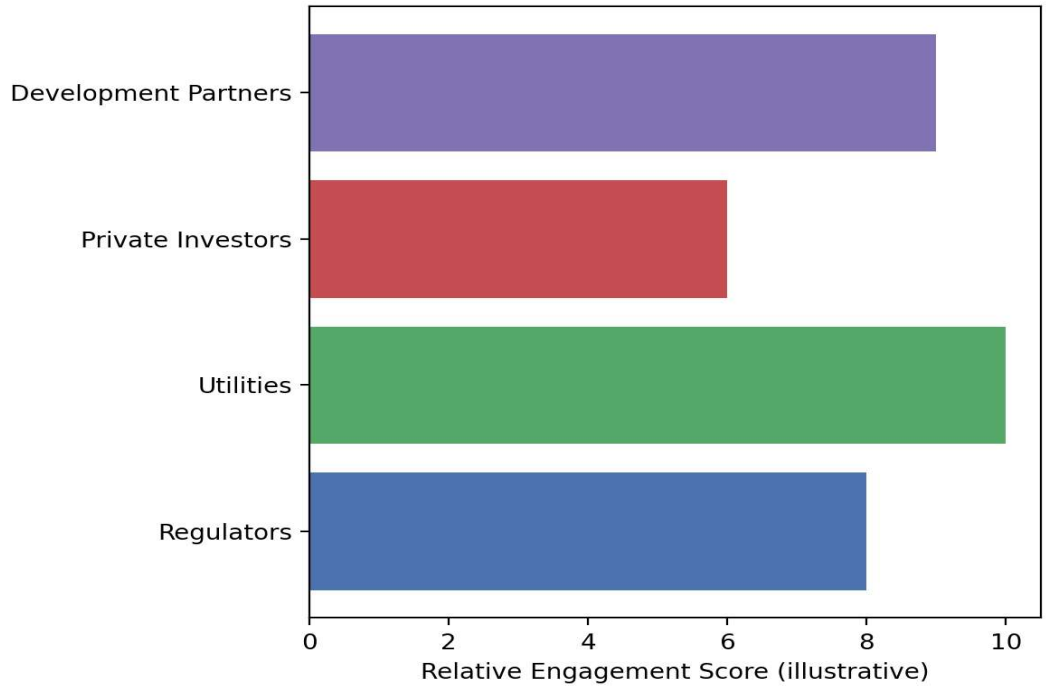


Figure 1: Stakeholder Engagement Scores in AESTAP I (Source: AESTAP I Report). Illustrates engagement levels across regulators, utilities, private investors, and development partners

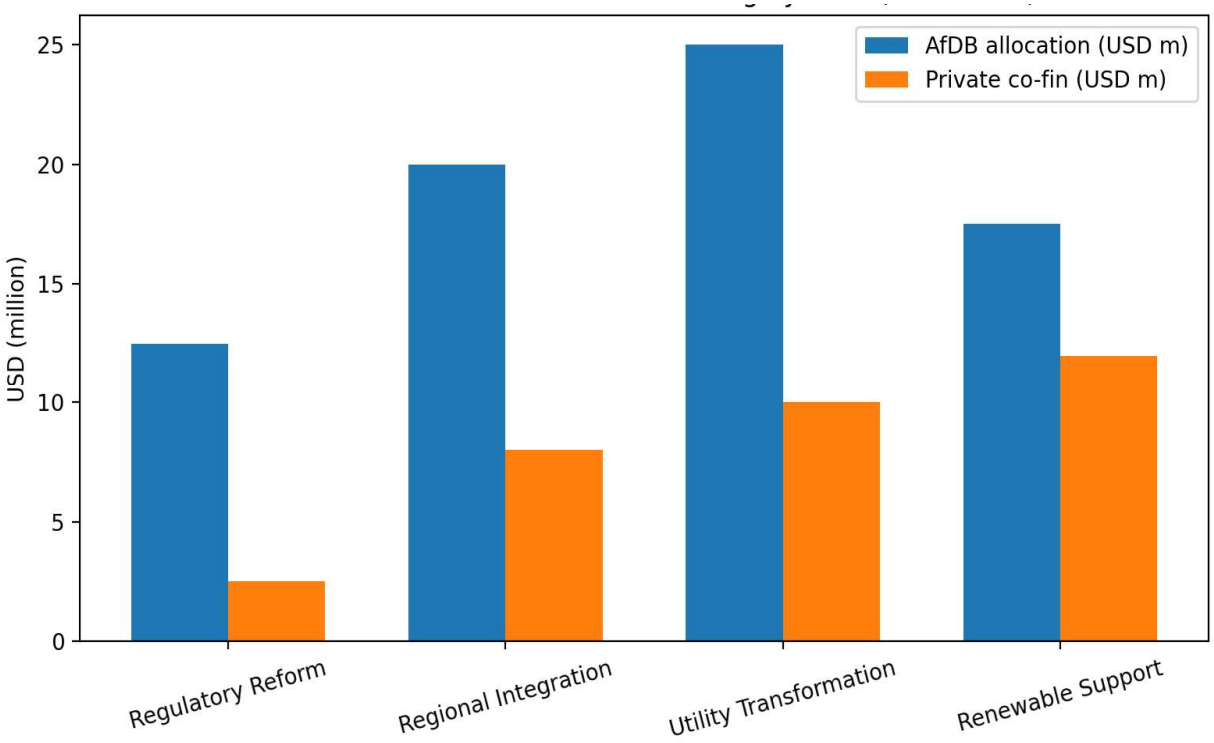


Figure 2: AfDB Allocations vs Private Co-financing by Pillar (Source:AESTAP I Report). Shows financing distribution across reform and integration components.

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)

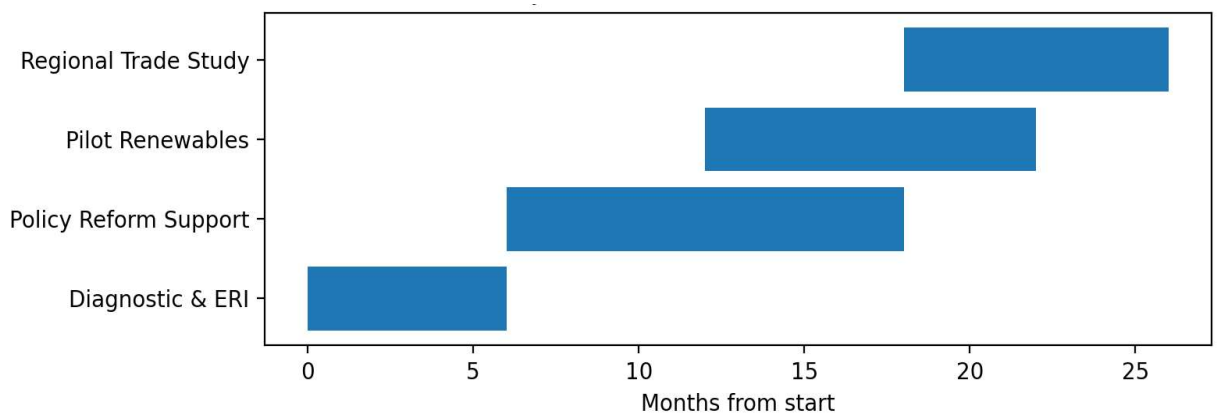


Figure 3: Project Timeline (Months) for AESTAP I (Source: AESTAP I Report). Shows planned vs actual duration and extensions.

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

Centering impact assessment on justice and institutional enforcement, thus lets the study reframe the evaluation of donor-driven energy interventions. This research indicates that distributive benefits must be evaluated in conjunction with procedural and recognition outcomes, rather than considering access, funding, and technical assistance as adequate measures of success. From its conceptual framework, donor initiatives should be seen as socio-technical interventions, depending on governance and involvement procedures since they either reinforce or lessen social inequality while simultaneously reconfiguring access patterns.

The results immediately lead to two theoretical contributions. First, the concept of Energy Justice is expanded into the field of multilateral finance. Its three dimensions: distributive, procedural, and recognition offer a reliable diagnostic for donor projects, showcasing that weak participation and inadequate recognition of differentiated needs can coexist with numerical access (distribution).

Second, for liberal institutionalism, the study reveals that formal institutions by themselves do not ensure results in situations of lax enforcement and elite capture, even though AfDB functions as a regime organiser(establishing regulations, de-risking investments, and coordinating actors). To transform coordination into fair and long-lasting outcomes, regimes need reliable enforcement, anti-capture measures, and local absorptive capacity. The results of this study add to the body of knowledge on energy access and governance whilst also being consistent with and expanding upon previous research. A comparison with earlier research shows both convergence and divergence, underlining the difficulty of expanding access to renewable energy.

This analysis confirms the benefits of a dual-track strategy (grid + off-grid) and the possibility of decentralized renewables to increase access, much to Yetano Roche et al. (2019). In order to achieve universal access, both studies emphasize the importance of diverse energy options.
In terms of size, under a green transition, this study deviates from Yetano Roche's modeling. This empirical data demonstrates that scale is brittle in the absence of affordability and governance facilitators; the design by itself does not guarantee results. This implies that strong governance structures must be combined with technicalassistance.

The focus on legislative and institutional change highlighted by Pavanelli et al. (2023) is supported in this research, but the case is strengthened by showing that reforms need to be enforced and supported by supervision. If political economic obstacles continue, decentralisation and new legislation are insufficient, stressing the necessity for workable solutions.
This study posits that donor instruments may unintentionally duplicate the structural and financial hurdles identified by Emodi& Boo (2021) unless they specifically incorporate participatory safeguards and governance improvements. This emphasizes how crucial context-sensitive, adaptable therapies are. They contend that in order to obtain sustained

results, institutional improvement must be combined with technical and policy advances.

Recommendations

Drawing on the conclusions, the following recommendations are made:

1. 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.
2. Nigerian authorities should strengthen enforcement by creating independent monitoring units with clear mandates to audit procurement and performance.
3. 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.
4. 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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