CASE STUDY

Transforming Energy Access in Nigeria: The Nigeria Electrification Project as a Catalyst for Sustainable Development



Based on conversation with Chigoziri Cyrinus EGERUOH, Power Engineer at the African Development Bank, Nigeria Country Department, based in Abuja, Nigeria. The author gratefully acknowledges the invaluable contribution of Chigoziri EGERUOH and thanks him for his time.

EXECUTIVE SUMMARY

Nigeria, one of Africa's largest economies and most populous countries, has a dynamic domestic market and significant potential for solar and other renewable energy development. The Federal Government of Nigeria has pursued investments and policy reforms to expand electricity access, including support for grid and decentralized solutions. The Nigeria Electrification Project (NEP), implemented through the Rural Electrification Agency (REA), is an important example of this commitment. While substantial access and reliability gaps remain, these initiatives demonstrate efforts to translate the country's energy resources into more reliable services and wider development opportunities.

Electricity access and reliability remain major challenges. An estimated 100 million people—nearly one in every two Nigerians—lack access to electricity, while many of those connected to the national grid experience frequent power interruptions, voltage instability, and prolonged outages. Chigoziri Cyrinus Egeruoh, Power Engineer at the African Development Bank's Nigeria Country Department, explained: "For 200 million people in Nigeria, you can take it that for every two people, one person has electricity, and the other person does not. Even the one person who does have electricity does not have constant electricity."

The resulting dependence on diesel and petrol generators increases the cost of doing business, contributes to greenhouse gas emissions, and reduces the competitiveness of the national economy and health standards of the populace.

Table 1. Nigeria demographics and electricity access

Indicator	Value
Population	232,679,478
Global rank	6th
Annual population growth	2.1%
Electricity access	62.5%
Population without access (approx.)	100 million

Source: WB (2025), World Development Indicators: Population, total - Nigeria (SP.POP.TOTL); IEA, World Energy Outlook 2024; and WB, Tracking SDG7: The Energy Progress Report 2026.

The consequences of unreliable electricity extend well beyond the economic sphere. Access to quality healthcare, digital services, education, research, and public administration depends on reliable, affordable, and competitive power. Universities and research institutions are particularly affected, as power disruptions interrupt laboratory activities, limit access to digital learning platforms, compromise scientific research, and increase operational costs. Students are often unable to study effectively after dark, while academic institutions devote a significant share of their budgets to generator fuel and maintenance rather than educational investment.

Improving reliable and affordable electricity access is fundamental to sustainable development, productivity, employment and long-term economic resilience. Decentralized renewable energy solutions, particularly solar-hybrid systems serving communities and public institutions, can complement grid expansion while lowering operating costs and environmental impacts. Against this backdrop, the Federal Government of Nigeria launched the NEP, with the REA responsible for implementation and coordination. The programme brings together public-sector leadership, development finance and private-sector delivery to expand access and strengthen the off-grid

market. The NEP received separate financing from the World Bank and the African Development Bank, with the WB providing a USD 350 million IDA credit, while the financing package provided by the AfDB comprised a USD 150 million AfDB loan and a USD 50 million loan from the Africa Growing Together Fund. This case study focuses specifically on the AfDB-financed NEP operation.

Table 2. NEP overview

Indicator	Value
Project	Nigeria Electrification Project (NEP)
Implementing Agency	Rural Electrification Agency (REA)
Approval Year	2018
Planned Completion	December 2026
Total Financing	USD 550 million
World Bank Financing	USD 350 million
African Development Bank Financing	USD 200 million
Program Components	3
Number of Federal Universities benefiting from the Energizing Education Programme, Phase III (EEP3)	8

Source: AfDB (2018), Nigeria Electrification Project – Appraisal Report, Project Summary and Project Description; Rural Electrification Agency (REA), Nigeria.

The AfDB-financed NEP was designed around three principal electricity-access components, supported by a fourth component dedicated to technical assistance and capacity building. The first supports the development of solar-hybrid mini-grids in rural and peri-urban communities. The second uses results-based financing to promote productive uses of electricity by facilitating access to energy-efficient appliances and equipment. The third, the Energizing Education Programme Phase III (EEP III), provides reliable electricity to eight federal universities and one teaching hospital through dedicated renewable-energy systems. The technical-assistance component strengthens the capacity of public- and private-sector institutions involved in Nigeria's off-grid energy sector. A central feature of the AfDB-financed NEP is the Minimum Subsidy Tender, a competitive mechanism that awards support to developers requiring the lowest public subsidy to construct, own and operate mini-grids in preselected communities, thereby mobilizing private investment and improving the efficient use of public resources.

Since its inception, the AfDB-financed NEP has delivered significant results. Twenty-nine mini-grids, totaling approximately 5 MW and no less than 100 kilowatts each, have been deployed through an innovative minimum-subsidy tender mechanism, while a second phase covering eight additional sites and approximately 30 MW is underway. Eight universities have benefited from approximately 40 MW of installed generation capacity and 100 MWh of battery storage, providing uninterrupted electricity for academic activities, research facilities, and teaching hospitals. In addition, 160 young female students have received specialized training in solar energy system installation and maintenance, contributing to gender inclusion and workforce development.

Table 3. Selected technical and development results of the NEP

Indicator	Value
Mini-grids commissioned	29
Installed mini-grid capacity	5 MW
Minimum mini-grid size	100 kW
Phase II implementation sites	8
Phase II planned capacity	30 MW
Universities electrified	8
Installed university generation capacity	40 MW
Battery storage capacity	100 MWh

Indicator	Value
Female students trained in solar system installation and maintenance	160

Source: AfDB (2018), Nigeria Electrification Project – Appraisal Report; Primary interview with Chigoziri Cyrinus Egeruoh, African Development Bank, 4 May 2026.

Beyond infrastructure delivery, the project has strengthened Nigeria's renewable-energy ecosystem by building institutional capacity, mobilizing private-sector investment, supporting regulatory reforms and fostering local technical expertise. By combining innovative financing, decentralized renewable-energy solutions and strong public-private collaboration, the Nigeria Electrification Project demonstrates how sustainable electrification can serve as a catalyst for broader socio-economic transformation. The lessons generated by the program provide valuable insights for other African countries seeking to accelerate energy access while promoting sustainable development.

1. Nigeria's Energy Access Challenge

Nigeria is one of Africa's economic powerhouses, with a dynamic domestic market and growing demand for electricity. The country is expanding access through grid and off-grid solutions, including solar mini-grids and standalone solar systems supported by the Nigeria Electrification Project (NEP). Extending access to underserved communities and improving the reliability of supply for existing customers remain priorities. For Nigerian businesses, reliable electricity is particularly important because it affects the cost of keeping operations running. Businesses face high operating costs because they must rely on diesel and petrol generators to maintain operations. This dependence on self-generation reduces competitiveness, increases production costs, and discourages investment. Small and medium-sized enterprises, which form the backbone of the Nigerian economy, are particularly vulnerable to these constraints.

The educational sector is similarly affected. Universities and educational institutions struggle to provide reliable learning environments due to power shortages. Laboratories, information technology infrastructure, and research facilities often operate below capacity because of unreliable electricity. Students are frequently forced to study under poor lighting conditions, limiting educational outcomes and academic performance.

Healthcare facilities face comparable challenges. Hospitals and clinics depend on uninterrupted electricity for medical equipment, refrigeration of medicines, and patient care. Power interruptions can compromise healthcare delivery and limit the availability of advanced diagnostic and treatment services.

The social consequences are equally significant. Limited access to reliable lighting affects community safety and disproportionately impacts women and girls. In educational institutions, inadequate campus lighting creates security concerns for students participating in evening programs and academic activities.

Table 4. Development impacts of electricity access

Dimension	Key impact
Economic	Lower operating costs and improved business competitiveness
Education	Reliable laboratories, digital learning and research continuity
Healthcare	Continuous operation of medical equipment and cold chains
Social	Improved public safety and inclusion of women and girls

Dimension	Key impact
Environment	Reduced dependence on diesel generators and lower emissions

Source: AfDB (2018), Nigeria Electrification Project Appraisal Report; Federal Republic of Nigeria, Environmental and Social Management Framework (ESMF).

At the same time, major environmental impacts have been reported, as the widespread use of diesel and petrol generators contributes to greenhouse gas emissions, local air pollution and noise pollution. Consequently, expanding access to reliable electricity is an economic imperative, but also a social and environmental necessity. Recognizing the scale and urgency of these challenges, the Government of Nigeria sought innovative solutions capable of delivering sustainable electricity access more rapidly than traditional grid expansion. That engagement resulted in the Nigeria Electrification Project.

2. The Nigeria Electrification Project

The Nigeria Electrification Project (NEP) was established as a nationwide program to accelerate access to reliable and sustainable electricity through decentralized renewable energy solutions. Implemented by the Rural Electrification Agency (REA), the project combines public-sector leadership, development finance and private-sector participation to address one of Nigeria's most significant infrastructure challenges.

Government leadership and REA's coordination have been important to the programme's implementation. REA has coordinated developers and other stakeholders, overseen procurement and project delivery, and supported the application of technical and environmental and social requirements. Its introduction of the Minimum Subsidy Tender helped establish a competitive procurement framework with harmonized specifications and clearer subsidy requirements. Alongside the programme's technical assistance and institutional capacity activities, these measures helped connect development financing with practical delivery and strengthen conditions for private sector participation. The results therefore reflect both financing and developer investment, and sustained public sector support and coordination.

Jointly financed by the World Bank (USD 350 million) and the African Development Bank (USD 200 million), the program mobilizes total investment of approximately USD 550 million. Approved in 2018, implementation was affected by the COVID-19 pandemic and global supply chain disruptions but has continued to advance through adaptive procurement strategies and phased deployment.

As implementation progressed, the Nigeria Electrification Project demonstrated steady financial execution. Total commitments reached UA 145.6 million, with UA 119.4 million disbursed, corresponding to an 82% disbursement rate. The project also recorded UA 5.3 million in loan repayments and UA 6.3 million in interest payments, reflecting the transition from project implementation towards longer-term financial sustainability.

Table 5. NEP financial performance

Financial indicator	Value (UA)
Total Commitments	145,631,201
Total Disbursements	119,417,585
Disbursement Rate	82%
Loan Repayments	5,326,905
Interest Payments	6,304,730

Source: African Development Bank Group, Nigeria Electrification Project – Project Financial Status (latest available implementation data).

The NEP adopts an integrated approach that simultaneously expands electricity access, stimulates productive economic activities and strengthens reliability of supply to public institutions. Rather than focusing exclusively on grid extension, the program deploys decentralized renewable energy systems capable of providing reliable electricity to communities, enterprises, universities and teaching hospitals.

Its implementation is organized around three complementary components. The first supports the deployment of solar hybrid mini-grids in unserved, underserved rural and peri-urban communities, increasing electricity access while reducing dependence on fossil-fuel generators. The second promotes the productive use of electricity by supporting enterprises and income-generating activities that create employment and strengthen the financial sustainability of mini-grid investments. The third component, the Energizing Education Programme, delivers dedicated renewable-energy systems to federal universities and teaching hospitals, improving teaching, research, healthcare delivery and institutional resilience.

By integrating infrastructure investment, enterprise development and institutional capacity building within a single program, the Nigeria Electrification Project addresses both the supply and demand dimensions of electrification while supporting private-sector participation, market development and long-term sustainability.

Table 6. Components of the NEP

Component	Objective	Principal beneficiaries
Solar Hybrid Mini-Grids	Expand electricity access through decentralized renewable energy	Unserved rural and underserved peri-urban communities
Productive Use of Electricity	Promote enterprise development and productive demand	MSMEs, local businesses and farmers
Energizing Education Programme	Provide dedicated power systems for universities and teaching hospitals	Public universities, teaching hospitals and students

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report.

3. Building Sustainable Mini-Grids Through Market Innovation

The deployment of mini-grids represented one of the most innovative aspects of the AfDB-financed Nigeria Electrification Project. The objective was not merely to install renewable-energy infrastructure but to create a sustainable market capable of attracting investment and delivering long-term services. Initially, the program utilized a performance-based grant mechanism. Under this approach, developers identified communities without electricity, constructed mini-grids and received payments based on the number of customers connected.

Although the earlier methodology helped stimulate mini-grid deployment, several weaknesses emerged. Technical specifications varied among developers, resulting in inconsistent quality standards, while the absence of a robust method for determining subsidy levels created uncertainty regarding value for money and project efficiency. To address these shortcomings, the Rural Electrification Agency introduced the Minimum Subsidy Tender (MST), a competitive mechanism under which preselected unserved and underserved communities are grouped into commercially attractive procurement packages. Private developers compete for these packages based on the lowest public subsidy required to construct, own and operate mini-grids, while complying with prescribed technical standards and tariff requirements. By aggregating demand and allocating support competitively, the MST promotes consistency, improves the efficient use of public resources and mobilizes private-sector investment in communities where mini-grid

projects might otherwise be commercially unattractive. This innovative mechanism produced several important benefits, as follows:

- First, it improved quality control. Developers were required to comply with harmonized technical specifications, ensuring higher-quality infrastructure and more reliable service delivery.
- Second, the competitive procurement process has helped with price scaling, as, by comparing bids, REA gained a clearer understanding of actual deployment costs, enabling more efficient allocation of public resources.
- Third, the model strengthened private-sector capacity. Because project packages were larger and more predictable, developers could secure financing from commercial institutions, improve cash flows and invest in organizational growth.

The results were significant. Approximately 29 mini-grids, totaling around 5 MW were deployed under the program. Importantly, no installation was smaller than 100 kW, reflecting a deliberate emphasis on larger and more sustainable systems.

Table 7. Evolution of the mini-grid procurement model

Procurement approach	Key characteristics	Observed outcome
Performance-Based Grant	Developer identifies communities and receives grants per connection	Rapid deployment but inconsistent standards
Minimum Subsidy Tender	Competitive bidding based on lowest subsidy and harmonized specifications	Improved quality, transparency and market efficiency

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; REA.

The project's experience suggests that scale matters as, indeed, larger mini-grids require important upfront investment and rigorous planning, encouraging developers to focus on long-term viability rather than short-term deployment targets. These larger systems are less likely to be abandoned or relocated and are better positioned to support productive economic activities.

Building on these successes, a second procurement phase covering eight sites and approximately 30 MW is currently underway, demonstrating growing confidence in the model and increasing market maturity.

4. Productive Use of Electricity: From Equipment to Enterprise Development

Sustainable electrification requires productive demand capable of generating income, employment and economic growth. Many rural communities were willing to pay for electricity but lacked sufficient economic activity to sustain long-term demand. Consequently, the project incorporated a dedicated Productive Use of Energy (PUE) component designed to transform electricity access into economic opportunity, employment and local value creation.

Initial interventions focused on subsidizing productive-use equipment such as small appliances and tools. While these initiatives generated some immediate benefits, they often struggled to deliver lasting impact. Equipment eventually required maintenance or replacement, and many beneficiaries lacked sufficient revenue streams to sustain operations once subsidies ended. As a result, project implementers subsequently shifted toward a more holistic approach focused on productive-use enterprises rather than individual equipment.

Therefore, instead of supporting isolated assets, the program began supporting businesses capable of creating jobs, generating income and sustaining electricity demand over the long term. Examples include rice milling facilities, greenhouse agriculture projects and shea butter

processing enterprises connected to mini-grids. These businesses consumed electricity but also created employment opportunities, increased local incomes and stimulated broader economic activity.

Table 8. Evolution of the productive use strategy

Approach	Main characteristics	Observed limitations / benefits
Equipment Subsidies	Support for individual productive assets	Short-term benefits and limited sustainability
Enterprise Development	Support for commercially viable businesses	Long-term demand, employment and income generation

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; Primary interview with Chigoziri Cyrinus Egeruoh.

The enterprise-based approach also improved opportunities for access to finance, as commercially viable businesses connected to mini-grids became more attractive to financial institutions and guarantee providers. Access to local-currency financing further enhanced sustainability by reducing currency risks and improving affordability. The programme's shift from individual equipment subsidies towards enterprise development illustrates an adaptive approach informed by implementation experience and collaboration among REA, developers, financiers and other stakeholders.

The following lesson can be learned: electrification programs should focus on connecting consumers but also on creating economic ecosystems capable of utilizing electricity productively.

Table 9. Examples of productive use enterprises

Enterprise Type	Development Impact
Rice milling	Value addition and local employment
Greenhouse agriculture	Increased agricultural productivity
Shea butter processing	Local industrial development and women's employment
Mini-grid connected SMEs	Higher electricity demand and business growth

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; REA.

5. Energizing Education: Transforming Universities and Teaching Hospitals

Among all the project components, the Energizing Education Programme stands out as one of the most transformative achievements of the Nigeria Electrification Project.

Indeed, the program delivered approximately 40 MW of generation capacity and 100 MWh of battery storage across eight public universities. These installations provide reliable and uninterrupted electricity to academic facilities, research centers, administrative buildings, student residences and teaching hospitals. Universities that previously struggled with frequent outages can now support modern teaching and research activities. Laboratories, data centers and digital learning systems operate more reliably, and students have access to safer and better-lit learning environments, while academic programs can continue without interruption.

Improved lighting has also enhanced campus security. Reports from university stakeholders such as academic staff confirm that expanded lighting coverage has reduced security risks and improved conditions for students participating in evening academic activities, especially young women.

The program's benefits extend beyond education. Several beneficiary universities host major teaching hospitals that depend on reliable electricity for healthcare delivery. Stable power supplies

have enabled these facilities to operate advanced medical equipment, improve service quality, and expand healthcare capabilities.

A particularly notable aspect of the program is its contribution to human capital development. Through a dedicated gender-focused initiative, approximately 160 young women – 20 from each participating university – received training in the design, installation and maintenance of solar energy systems. The initiative sought to address the underrepresentation of women in the renewable-energy sector while creating employment opportunities in a rapidly expanding industry.

Table 10. Key results of the Energizing Education Programme Phase 3 (EEP3)

Indicator	Value
Participating universities	8
Installed generation capacity	40 MW
Battery storage capacity	100 MWh
Young female students trained:	160
Female students trained per university	20

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; Primary interview with Chigoziri Cyrinus Egeruoh.

Several graduates of the program have already secured positions with renewable-energy companies involved in project implementation and operations, demonstrating the initiative's contribution to workforce development and gender inclusion.

The program also illustrates how universities can function as anchor institutions for development. By combining education, research, healthcare, skills development and economic activity within a single energy ecosystem, universities become powerful catalysts for broader transformation.

Spotlight: University of Port Harcourt

The University of Port Harcourt provides a compelling example of the impact of the Energizing Education Programme. In November 2025, the university activated a 10.7 MWp solar hybrid power system combining solar photovoltaic generation, battery storage and backup systems. The installation supports important infrastructure across the campus, including technology laboratories, artificial intelligence centers, research facilities, administrative buildings and the University of Port Harcourt Teaching Hospital.

Figure 1. Solar Hybrid Power Installation at the University of Port Harcourt, Rivers State, Nigeria (2025)



According to university leadership, the project reduced monthly electricity expenditure from approximately ₦60 million to ₦3.5 million. These savings release resources for academic programs, infrastructure improvements, and institutional development. The project has also

enabled more reliable teaching, learning, and research activities while improving the university's resilience and sustainability. The University of Port Harcourt experience demonstrates how renewable-energy investments can strengthen institutional performance while generating significant financial savings.

Figure 2. 10.7 MW Solar Hybrid Power Plant constructed at the University of Port Harcourt



6. Environmental and Social Sustainability

Environmental and social sustainability was embedded in the Nigeria Electrification Project from its design phase through the application of the African Development Bank's Integrated Safeguards System (ISS). The project was classified as a Category 2 operation, reflecting the low to moderate environmental and social risks typically associated with decentralized renewable energy infrastructure.

To manage these risks, REA adopted an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF). These frameworks established procedures for identifying, assessing, and mitigating environmental and social impacts across project sites.

Key areas of focus included land acquisition, stakeholder engagement, occupational health and safety, waste management, biodiversity protection and grievance redress mechanisms.

Particular attention was devoted to battery recycling and electronic waste management. As renewable-energy deployment expands, the responsible disposal and recycling of batteries and solar equipment become increasingly important. The project therefore promoted sector-wide approaches to addressing these long-term challenges.

Gender inclusion also received significant attention. Dedicated measures were implemented to ensure meaningful participation by women in consultations, training programs and employment opportunities. The appointment of gender specialists further strengthened the project's ability to address gender-specific challenges and opportunities. These safeguards helped ensure that the project benefits were achieved while minimizing adverse impacts and promoting inclusive development.

Table 11. Environmental and Social Safeguards Framework

Safeguard area	Principal objective
Environmental and Social Management Framework (ESMF)	Environmental screening and impact mitigation
Resettlement Policy Framework (RPF)	Management of land acquisition and resettlement risks
Stakeholder Engagement	Community participation and consultation
Occupational Health and Safety	Protection of workers and contractors

Safeguard area	Principal objective
Battery and E-waste Management	Lifecycle management of renewable-energy equipment
Gender Inclusion	Participation, employment and capacity development for women
Grievance Redress	Transparent resolution of stakeholder concerns

Source: African Development Bank Group (2018), Nigeria Electrification Project – Environmental and Social Management Plan Summary; Environmental and Social Management Framework (ESMF).

7. Strengthening Local Markets and Institutions

One of the most enduring achievements of the Nigeria Electrification Project may be its contribution to market development and institutional strengthening. Indeed, the project helped transform Nigeria's renewable-energy sector by supporting the growth of local developers, raising their profile and competitive advantage to global standards (extending their reach across Africa), attracting cheap and competitive capital, and creating conditions conducive to private investment.

Participation in the program enabled local mini-grid developers to strengthen their technical, financial and operational capabilities. Companies gained experience managing larger projects, complying with international technical and environmental standards, participating in competitive procurement processes and accessing commercial financing. Several developers have subsequently expanded their activities beyond Nigeria, demonstrating the emergence of locally rooted expertise with regional relevance.

The program also supported the evolution of the regulatory environment. Relationships between distribution utilities and mini-grid developers shifted from competition towards complementarity, creating a more coordinated approach to expanding electricity access. This regulatory evolution reduced investment uncertainty and improved confidence among private investors and financial institutions.

Within the Rural Electrification Agency, the project strengthened institutional capabilities in strategic planning, competitive procurement, environmental and social safeguards, contract management and project supervision. Technical assistance and capacity-building activities enhanced the Agency's ability to design and manage increasingly complex renewable energy programs while promoting transparency and accountability.

These market and institutional outcomes are needed to ensure that progress continues beyond the project's implementation period. By combining policy reform, private-sector development and institutional strengthening, the NEP demonstrates that sustainable electrification depends as much on building resilient markets and capable institutions as on deploying energy infrastructure.

Table 12. Institutional and market development outcomes

Outcome	Contribution
Private-sector development	Expansion of local renewable-energy developers
Competitive procurement	Improved transparency and cost efficiency
Commercial financing	Increased bankability of mini-grid investments
Regulatory environment	Better coordination between utilities and developers
Institutional capacity	Strengthened REA planning, procurement and supervision capabilities
Regional expertise	Nigerian developers expanding into other African markets

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; Primary interview with Chigoziri Cyrinus Egeruoh.

LESSONS LEARNED

The implementation of the Nigeria Electrification Project offers several valuable lessons for policymakers, development finance institutions and renewable energy practitioners:

i. First, sustainable electrification should be measured by the quality and reliability of service rather than by connection numbers alone. Reliable electricity that supports education, healthcare and productive economic activities generates greater long-term development impact than simple access statistics.

ii. Second, market-based procurement mechanisms can improve efficiency and strengthen private-sector participation. Under the AfDB-financed NEP, the Minimum Subsidy Tender uses competitive procurement to select developers requiring the lowest subsidy to serve preselected communities. This approach can improve pricing transparency, promote consistent infrastructure standards, and optimize the use of public resources.

iii. Third, scale is a key determinant of long-term sustainability. Larger mini-grid systems supported by robust business models and predictable revenue streams are more resilient, attract commercial financing, and are better positioned to stimulate productive economic activities than smaller stand-alone installations.

iv. Fourth, Productive Use of Energy (PUE) should be considered an integral component of decentralized electrification strategies. Supporting enterprises rather than individual equipment creates employment, strengthens local value chains, and generates sustained electricity demand, improving the financial viability of mini-grid investments.

v. Fifth, universities and teaching hospitals can serve as anchor institutions for local development. By integrating reliable electricity with education, research, healthcare, and technical skills development, these institutions create benefits that extend far beyond their campuses and contribute to long-term human capital formation.

vi. Finally, development finance plays a catalytic role in market creation. Strategic public investment reduces risk, strengthens institutions and creates the conditions under which commercial financing and private-sector participation can progressively replace public subsidies.

Table 13. Strategic lessons from NEP

Key lessons	Principal outcome
Reliable electricity is more important than connection numbers	Sustainable social and economic impact
Competitive procurement improves efficiency	Better quality and value for money
Larger mini-grids enhance sustainability	Improved bankability and long-term viability
Productive Use of Energy strengthens demand	Higher employment and local economic growth
Universities function as anchor institutions	Broader education, research and healthcare benefits
Development finance creates markets	Increased private-sector participation and investment

Source: African Development Bank Group (2018), Nigeria Electrification Project Appraisal Report; Primary interview with Chigoziri Cyrinus Egeruoh.

LOOKING AHEAD: FROM NEP TO DESERT-TO-POWER

As the Nigeria Electrification Project approaches completion, attention is turning toward the next phase of electrification efforts.

Building on the lessons and successes of NEP, a successor program is being prepared with an estimated budget of approximately USD 700 million. Planned activities include support for 20 universities, 20 teaching hospitals and a larger portfolio of mini-grid projects.

The new program is expected to benefit from a more mature market environment, stronger local developers, improved government support and coordination, and increased private-sector participation. As a result, future interventions may require lower subsidy levels while delivering larger development impacts. The transition toward the broader Desert-to-Power initiative illustrates how development-finance programs can evolve from targeted interventions into large-scale market transformation strategies.

CONCLUSION

The Federal Government of Nigeria launched the Nigeria Electrification Project and entrusted its implementation to the Rural Electrification Agency. With financing from the African Development Bank (USD 150 million) and the Africa Growing Together Fund (USD 50 million), REA coordinated the delivery of solar-hybrid mini-grids, support for the productive use of electricity, and reliable power for universities and an affiliated teaching hospital. Government backing and REA's coordination helped bring these activities together under one programme, linking expanded electricity access with local enterprise development and improved conditions for education and healthcare. Reliable power is strengthening universities and an affiliated teaching hospital, improving learning, research and healthcare environments, and supporting local enterprise development. At the same time, competitive procurement mechanisms, capacity-building initiatives and targeted investments in human capital are helping to establish the foundations of a more resilient and commercially sustainable decentralised energy sector.

The project also shows how energy investments can generate multiple development benefits when implemented through capable institutions and supported by effective public-private collaboration. Experience gained through solar-hybrid mini-grids, the Productive Use of Energy approach, the Minimum Subsidy Tender and the Energizing Education Programme Phase III provides a practical framework for linking infrastructure investment with economic development, social inclusion and environmental sustainability.

As Nigeria prepares the next generation of electrification programmes, the AfDB-financed NEP provides lessons that could inform similar initiatives across Africa. Its experience illustrates how development finance can support reliable, affordable and sustainable energy access while strengthening institutions, mobilising private investment and developing local markets.

Ultimately, the value of the AfDB-financed NEP extends beyond the megawatts installed and the communities connected. It lies in demonstrating how access to reliable electricity can strengthen education, healthcare, enterprise development and inclusive growth.

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