Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 13-Dec-2022 | Report No: PIDC35402

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Nigeria	P179687		Nigeria Distributed Access through Renewable Energy Scale-up Project (P179687)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
WESTERN AND CENTRAL AFRICA	Jul 17, 2023	Sep 28, 2023	Energy & Extractives
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Federal Republic of Nigeria	Rural Electrification Agency	

Proposed Development Objective(s)

The project development objective (PDO) is to increase private sector led access to reliable electricity services for households, public institutions, and commercial customers in Nigeria, and facilitate increased productive uses of clean electricity.

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	750.00
Total Financing	750.00
of which IBRD/IDA	750.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	750.00
IDA Credit	750.00

Environmental and Social Risk Classification	Concept Review Decision
Moderate	Track II-The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **Nigeria is the most populous country and the largest economy of Sub-Saharan Africa and is central to overall World Bank (WB) goals in the region**. With over 200 million people and an estimated Gross Domestic Product (GDP) of USD 421 billion in 2021, Nigeria is by far the most populous and largest economy in the region. With an estimated 80 million people living in poverty, Nigeria is central to the World Bank Group (WBG) mission of eliminating poverty globally. Fragility, conflict, and insecurity afflict many parts of the country, in particular the northeast. Insufficient capacity constrains the public sector, and on many human development indicators, Nigeria ranks amongst the lowest in the world. To overcome these challenges and bring nearly 40 percent of its population out of poverty, Nigeria needs to sustain a high economic growth rate and take some critical policy actions.

2. **In 2021-2022, the economy recovered from the recession induced by the COVID-19 pandemic and lower oil prices and real GDP growth exceeded population growth for the first time since 2015, but welfare has continued to deteriorate.** Following the contraction of 1.8 percent in 2020, the Nigerian economy grew by 3.6 percent in 2021 and it is projected to grow by 3.2 percent in 2022. However, the recovery seen in 2021 is not enough to cover the per capita income losses of the last 6 years.

3. **The outlook for Nigeria's growth is uncertain and dependent on external factors and the government's policy response to longstanding issues.** Nigeria's growth is expected to remain above population growth in 2022-2023, averaging 3.2 percent. The country's economic outlook remains uncertain. The projected recovery is threatened by: (1) the impact of the 2022 Russian invasion of Ukraine on the global economy through lower capital flows, heightened uncertainty, higher prices of imported food and inputs for fertilizers, lower global growth, and volatile oil prices; (2) lower-than-expected oil production due to technical inefficiencies; (3) increased insecurity; (4) higher uncertainty on policy direction arising from the upcoming February 2023 general elections; and (5) worsening fiscal risks related to the PMS subsidy deductions. Even in the most favorable global context, the policy response of Nigeria's authorities will be crucial for a robust recovery. The authorities can boost growth by: (1) adopting a more flexible and transparent foreign exchange management regime; (2) accelerating revenue-based fiscal consolidation; (3) strengthening expenditure and debt management; and (4) improving the business enabling environment.

Sectoral and Institutional Context

4. **Nigeria has the largest electricity access deficit in absolute terms globally and the trend is worsening**. As of 2020, 55 percent of Nigeria's population has access to electricity leaving over 91 million people without access. Large

disparities exist in access to electricity between urban areas (82 percent) and rural ones (31 percent) as well as along income with only 31 percent of the poorest 40 percent of the population having access to the electricity nationwide. Electricity access deficit has remained at 45 percent for almost a decade and yet the net access deficit has increased by over 7 million citizens over the last decade, as the pace of growth of the population has outpaced the increase in the access rate, making Nigeria an outlier even in Sub Saharan Africa. This situation is worse when considering rural areas. Access to electricity has not only impacted households but has presented a challenge for effective delivery of essential public services such as health and education. Only 40 percent of functional primary health facilities and 26 percent of primary schools in Nigeria have access to electricity.

5. **Almost half of unelectrified Nigerians spend a large part of their income on alternative sources such as gasoline and diesel gensets to meet their energy needs.** Even those Nigerians who are connected to the grid face frequent outages and hence do not get reliable supply**.** An estimated 22 million diesel/gasoline backed generators power about 26 percent of total households and 30 percent of Micro-, Small and Medium-sized Enterprises (MSMEs) in Nigeria[1], with an estimated capacity of about 20GW[2]. In 2018 alone the FGN spent US$2 billion on subsidizing petrol consumption for these generators, while ordinary Nigerians spent around US$12 billion on the purchase and operation of these generators.

6. **Even those Nigerians who are connected to the grid face frequent outages and hence do not get reliable supply.** The growth of grid-connected customers by 62 percent in 2021 from a 2015 baseline figure has outpaced the limited energy supply growth rate at 4 percent in the same period, resulting in decreasing electricity consumption per customer on account of incessant load shedding and power outages[3]. Economic losses from unreliable electricity supply are estimated to be around ₦7-10 trillion (~US$25 billion) annually or 5-7 percent of the GDP.

7. **The off-grid sector has seen a lot of growth.** Recognizing the need to expand access in underserved population the FGN approved the Rural Electrification Strategy and Implementation Plan (RESIP) and forward-looking Mini-Grid Regulations in 2016. The FGN launched the Nigeria Electrification Project (NEP) in June 2018 as a results-based, private-sector led initiative to implement the RESIP. The NEP has directly impacted[4] more than 5 million people already and the deployment of nearly 40MW of decentralized renewable energy capacity.

8. **However, a least-cost electrification program is needed to provide policy direction to electrification efforts**. With scarce public funding, private sector has a big role in helping achieve universal electricity access. The REA is reforming itself to be the apex agency to help Nigeria achieve its vision of achieving universal electricity access to affordable, sustainable electricity access that improves the quality of life and economic opportunities for unserved and underserved[5] communities by 2030

[1] Putting an End to Nigeria's Generator Crisis: The Path Forward", 2019. Access to Energy Institute.
[2] Ibid
[3] EMRC performance agreement review report
[4] Either resulted in the provision of new access (Mini-Grids) or improved access through solar home system
[5] Underserved communities are generally assumed to be in urban and peri-urban areas.

Relationship to CPF

9. The proposed project is aligned with the Country Partnership Strategy (CPS, FY21 – FY25) for Nigeria. In particular, the proposed project is very closely aligned to the CPF Objective 8 on *Increase access to reliable and sustainable power for households* under the Pillar on Promoting Jobs and Economic Transformation and Diversification, as the key focus area under DARES project would be to increase access to reliable and sustainable power to households. Additionally, the proposed project is aligned to CPF Objective 10 to *Enhance Climate Resilience* through exploration of climate smart technologies (solar pumps, solar power equipment to modernize agriculture etc.) that can be supported under the proposed project.

10. The proposed project supports key priorities of Nigeria's Intended Nationally Determined Contribution (INDC) to mitigate greenhouse gas (GHG) emissions and World Bank Group Gender Strategy. By supporting electricity access expansion in rural and remote areas using renewable energy generation and improving urban grid reliability through distributed renewables – the proposed project intends to reduce the use through fossil-fuel based gensets for lighting and productive uses whilst targeting female headed households and businesses.

11. The proposed project also supports the World Bank Group's agenda on maximizing financing for development by providing a platform to attract private solutions to expand access. The pre-cursor to DARES - Nigeria Electrification Project (NEP) leveraged USD 1.5 of private capital for every USD 1 of public finance in Mini-Grids. Proposed DARES project will further scale-up private capital mobilization efforts through a coordinated one WBG approach.

C. Proposed Development Objective(s)

12. The project development objective (PDO) is to increase private sector led access to reliable electricity services for households, public institutions, and commercial customers in Nigeria, and facilitate increased productive uses of clean electricity.

Key Results (From PCN)

13. The key results (PDO Indicators) expected are as follows:

- People provided with new or improved electricity services, of which female headed households (number)
- Commercial and Industrial customers provided with new or improved electricity services (number and capacity)
- Public institutions provided with new or improved electricity services (number and capacity)
- Number of farmers, MSMEs with access to productive use equipment (number)
- Reduced and avoided GHG emissions (tons of CO2)
- Private capital mobilized (USD millions)

D. Concept Description

Vision and Approach

14. **Nigeria DARES will support FGN's vision[6] to reach universal electrification.** Successful ongoing implementation of NEP has created an ecosystem of private-sector led electrification in Nigeria – specifically for the off-grid solar and Mini-Grids industries. DARES will focus on crowding in private sector and its capital through targeted public financing. A comprehensive risk analysis of the entire ecosystem will be carried out to determine policy, macro-economic and ecosystem risks vs risk that are unique to the power sector. This will be done to determine that scarce public resources (credit) are targeted towards real market failures within the renewable energy/access/power sectors, technical assistance deployed to solve informational gaps, and other instruments (including policy dialogue) are deployed to solve policy/ecosystem related issues. This risk-based approach will ensure that the support under DARES remains sustainable beyond the "intervention" period.

15. **DARES will bring a novel one WBG approach and focus on crowding in private sector and its capital through targeted public financing**. To achieve maximum "bang for the buck" for the electrification efforts in Nigeria and to limit additional fiscal burden on FGN, leveraging private capital will be at the center of all activities attempted under DARES – whether it's about expanding access in rural and remote areas through Mini-Grids or solar home systems or about improving reliability of electricity supply in urban areas through distributed renewable energy solutions displacing fossil-fueled gensets.

16. **Nigeria DARES project will scale up successful elements of the NEP.** NEP has catalyzed the establishment of an off-grid and mini grid industry in the country, with 52 off-grid solar companies and 61 mini grid companies that have met rigorous qualification requirements to participate in the program. Experience from the NEP suggests that results-based financing mechanisms (such as Performance Based Grants[7] for Mini-Grids and Output Based Funds[8] for Solar Home Systems) are an effective approach to promote scaling up of distributed renewable energy solutions. Compared to top-down approaches that involve extensive capacity and preparation by the public sector, a private sector led approach does not face the risk and delays of large scale public procurement, delegate environmental and social compliance to private companies that can demonstrate adequate capacity, and place the responsibility for customer selection, business strategy and execution squarely in the hands of the private sector, which allows for swifter deployment and more commercial decision-making. The public sector is tasked with the role of planning, regulation, grievance redressal and oversight – where its strengths and mandate lie. The proposed DARES also intends to support electricity transition in Nigeria through a massive genset replacement drive – powered by urban electrification and densification.

17. **The current design of DARES has been kept both flexible and broad, for now**. Proposed DARES will include as focus areas – (i) policy and partial financing support for productive uses to boost economic activity and improve human capital indicators while enhancing the financial viability and sustainability of ongoing electrification efforts and (ii) support electricity transition in Nigeria through a massive genset replacement drive – powered by Urban electrification and densification. As the final project structure will evolve during the preparation of the proposed project, this concept note proposes 3 components for now (2 that have been successful under NEP, and new Project Preparation Facility based on stakeholder feedback) and classifies other possible components as "Areas of Focus" for now. Whether they remain included as standalone components, or as cross-cutting areas, and the possible amount of financing will be decided during extensive stakeholder consultations to be undertaken between the PCN and the QER.

[6] As outlined in the approved ETP
[7] PBG are a performance-based, viability gap grants offered to NEP qualified mini-grid companies for every new client provided with electricity.
[8] OBF are performance grants of up to 60 percent of system cost to off-grid solar companies that includes a 20 percent discount on the costs of the system to the end consumers, for each eligible system installed and verified by the private sector.

Component 1: Accelerating Mini grids

1. **The Performance Based Grant (PBG) window of the Nigeria Electrification Project successfully established a nascent mini grid sector and developed a growing pipeline of mini grid projects; the PBG will therefore be retained as an essential part of the mini grid component in DARES but may consider adjustments where necessary to enhance project outcomes.**

2. **DARES will consider all options to direct mini grid deployment towards relatively underserved part of the country**, whether through a differentiated PBG scheme that provides additional values for priority areas as mentioned above, or through a minimum subsidy tender or other approaches that allow the Government to select sites to prioritize for mini grid development. The same considerations also apply to the electrification of public institutions and to the delivery of electricity for productive applications through mini grids; some form of results-based financing as well as approaches that offer the Government a more active role in site selection may be considered. As part of project preparation, more active engagement with distribution companies on interconnected mini grids will be initiated to identify information and policy gaps and to devise TA and other support needed to kick-start this market segment.

Component 2: Accelerating off-grid solar markets

3. **The Off-Grid Solar (OGS) market has shown tremendous growth over the last years and is expected to continue on a strong growth curve due to large unmet demand.** NEP has played a critical role in catalyzing growth, but the sector is still facing several barriers constraining market expansion. Through results-based subsidies for both the companies and the end users, NEP has supported the sales of more than 1 million off-grid solar products since the project started in 2018.

4. **Building on the strong foundation laid by NEP, this project seeks to further accelerate off-grid solar market development and increase the pace of delivering rural connections.** As the Nigerian market already exhibits strong growth, DARES seeks to continue to leverage private sector-based solutions and further accelerate market development, building on the strong foundation created through NEP. To ease the finance constraints encountered by the sector, options to facilitate access to FX in a timely and cost-effective manner, as well as avenues to increase the flow of investments into the sector will be explored during project preparation.

Component 3: Technical Assistance (Project Preparation Facility)

5. **The objective of the Project Preparation Facility Technical Assistance (PPFTA) is to provide upstream project preparation support to developers**. Lessons from the existing NEP project and extensive stakeholder engagement highlighted the need for support in preparing projects and developing an adequate pipeline. The developers have repeatedly raised the need for some patient capital upstream that would help them organize better, remove some inefficiencies from their systems and scale up sustainably. There is also limited availability of data, limited demand aggregation in the sector, not conducive for preparation of project pipelines that provide scale. The PPFTA in conjunction with other TA offered through the project will support the development of a conducive policy and regulatory framework, capacity building, and introducing efficient processes and innovative business models to ensure a robust pipeline is developed.

6. The PPFTA is envisioned as a multi DFI collaboration that will benefit all stakeholders working across the various components of the project to help prepare projects and pipelines that are attractive to investors.

Focus Area 1: Powering economies

7. **The focus area on Powering economies rests on creating higher incomes, greater productivity, and more jobs across communities.** The adoption of productive uses of electricity will maximize the impact of electrification by accelerating near and medium socioeconomic benefits. For energy service providers, greater demand of electricity from MSME allows them to increase their financial viability and therefore continue improving the quality and availability of service. While the type of WB support to this focus area is yet to be decided, options under the project have been explored to foster productive uses of electricity in Nigeria.

8. **The focus area on powering economies would seek to provide new or improved access to electricity to farmers and MSMEs via DREs whilst leveraging cross-sectoral approaches.**

9. **While the type of WB support to this focus area is yet to be decided, options under the project have been explored to foster productive uses of electricity in Nigeria.** Project preparation will allow to identify PUE activities which are cutting across technologies and components and the ones which should be implemented as standalone. In addition, it will allow to determine PUE activities that should be either piloted or scaled up based on lessons learned from previous initiatives. Further analytical work on stakeholders' mapping, market assessment and PUE demand will inform the design of the project.

Focus Area 2: Urban access

10. **Even though 85 percent of urban population is connected to the grid, they are significantly underserved leading to extensive use of fossil fuel back up generation**. According to the latest NLSS Survey from 2018-19, Nigerian households receive an average of only 7 hours of electricity in a day from the grid. 26 percent of households in the country are estimated to be using liquid fuel gensets to meet their electricity needs. Nigerian firms are spending 3 to 4 times of the cost reflective tariff to meet their electricity demand negatively impacting their ability to compete with regional and global counterparts. Widespread outages mean that small and large commercial and industrial enterprises spend over US$0.40/kwh and US$0.46 respectively on electricity using gasoline and diesel gensets. Such expenditures, without doubt, make electricity one of the largest components of a firm's cost structure especially in the services sector. Nigerian firms are spending over 2-3 times of the cost-reflective tariff of US$0.12/kwh curtailing their competitiveness and reducing their ability to grow the economy and provide jobs.

11. **The C&I segment and Interconnected Mini Grids (IMG) is where there has been some traction** in terms of innovative models being piloted. The current urban landscape can be divided into the following segments –residential communities, urban market centers mostly featuring micro, small, medium enterprises (MSMEs), commercial and industrial (C & I) installations and public institutions – all connected to the DisCo grid but remain "underserved". WBG has put together a team consisting of WB, IFC, and MIGA colleagues to review this landscape to arrive at a collective understanding of risks, informational gaps, perceived risks, market failures and levers best placed to address them. While the scope of the WB support and implementation framework are yet to be decided, there is a lot of clarity on

the Technical Assistance that needs to be provided given the gaps that have already been identified.

Focus area 3: Electrifying public institutions

12. **With limited private sector participation, long-term sustainability of public facilities' electrification remains the crux of the problem.** In Nigeria, three models have emerged, including the traditional equipment ownership model, the commercial service-based model, and the hybrid model that combines supply-side subsidies to support CAPEX with private developer raising concessional funding to support O&M. Several factors, including affordability and ability to pay, the private sector's capacity to raise capital, transaction costs, and reliance on a grant-based model, impede private sector participation. Risk of non-repayment for services is also high, which justifies the need for subsidies, guarantees, concessional funding, or credit enhancement schemes under the DARES program. However, conversations are still on-going with government institutions to understand government development priority to determine if the program will continue focus on electrification of public institutions.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

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