MISSION 300
AFRICA
ENERGY
SUMMIT

# NATIONAL ENERGY COMPACT
FOR THE FEDERAL REPUBLIC OF NIGERIA



UNITY AND FAITH, PEACE AND PROGRESS

# Preamble

**The Federal Republic of Nigeria's National Energy Compact, aligned with its National Electrification Strategy and Implementation Plan under preparation and the UN Sustainable Development Goal 7 (SDG7), serves as a roadmap for accelerating the pace of access to energy towards ensuring affordable, reliable, inclusive, sustainable, and clean energy for the Nigerian people.**

- **Nigeria is the most populous country and the second largest economy in Sub-Saharan Africa. It is endowed with vast fossil fuel (crude oil and natural gas) and renewable energy resources, especially hydroelectric and solar, and a vibrant private sector, giving Nigeria a unique opportunity to redefine energy access for millions. This National Energy Compact for Nigeria aims to accelerate the pace of access to electricity from 4 percent to 9 percent per annum and the pace of access to clean cooking from 22 percent to 25 percent per annum to achieve universal access by 2030. Nigeria is also committed to increasing the renewable energy share in the generation mix from 22 percent to 50 percent. The private sector will need to play an increasingly critical role towards meeting these targets, and Nigeria aims to mobilize US$15.5 billion in private investment for last mile electrification.**

- **To achieve these ambitious targets, a time-bound and realistic action plan is included in the Compact. The action plan outlines the various reform actions to be taken across five pillars: (a) expanding power generation and investment into transmission and distribution infrastructure at competitive costs; (b) working towards financially viable utilities that provide reliable service; (c) incentivizing private sector participation to unlock additional resources; (d) embracing distributed renewable energy (DRE) and clean cooking solutions for affordable last mile access; and (e) leveraging the benefits of increased regional integration.**

- **Recognizing that success requires collective effort, the Federal Government of Nigeria calls upon development partners, philanthropies, the private sector, and civil society to join this transformative journey in accelerating the pace of access to energy and help in mobilizing US$23.2 billion in financing needed for last mile electrification, including US$15.5 billion from the private sector. The Federal Government of Nigeria is committed to implementing the action plan included in the Compact to address the bottlenecks across the energy value chain to help in mobilizing the needed financing that will help provisioning of reliable, affordable, inclusive, sustainable, and clean energy and contribute to economic growth and development of the country and the region.**

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# 1

# Declaration of Commitment



**The Federal Government of Nigeria (FGN) is committed to** providing reliable, affordable and sustainable electricity to all of Nigeria's unelectrified population by 2030. Universal access will require an investment of over US$23 billion (only for last-mile access), including contributions from the public and private sectors and from end-users of electricity.

While ubiquitous, reliable and affordable grid power may be a logical end-state for universal access, with the inability of distribution companies (DISCOs) to rapidly extend the grid, distributed renewable energy (DRE) offers an immediate pathway to electrification for more than 60 million Nigerians on a least-cost basis. [1] This includes people located predominantly in dense urban areas further from existing grid infrastructure that could be best connected via mini grids, which are often the least-cost solution in the North of the country, and people in mostly sparse rural and remote areas could best be connected via standalone solar (SAS) solutions. Tier 1 and 2 access through SAS systems, while bringing much-needed immediate and basic electrification, should not be the end goal but an intermediate transition to higher incomes and hence consumption at Tiers 3-5, justifying migrations to a mini-grid/grid and requiring further investments over time.

**The Federal Government of Nigeria (FGN) is committed to transforming the energy landscape and accelerating the pace of energy access towards the provisioning of reliable, affordable, inclusive, sustainable and clean energy to the Nigerian people that will be the catalyst for social, economic and environmental progress of the country.** To this end, the Government aims to:

- Increase the pace of access to electricity to 9 percent annually, up from the recent trajectory of 5 percent per annum, to reach universal access to electricity by 2030, up from the electricity access rate of 61 percent in 2022
- Increase the pace of access to clean cooking to 25 percent annually from the recent trajectory of 22 percent per annum to achieve universal access to clean cooking by 2030, providing access to clean cooking to 227 million people and particularly benefiting women and marginalized communities
- Increase the current share of renewable energy in the generation mix from 22 percent to 50 percent
- Create an enabling environment for private sector participation in the energy sector to mobilize no less than US$15.5 billion of private capital.

To achieve these targets, we declare our commitment to take action to address the bottlenecks across the energy value chain as outlined in the Action Plan included in this National Energy Compact. In particular, the Federal Government of Nigeria is committed to:

**Ensuring that grid generation and transmission expansion is based on least cost planning and through competitive procurement**

**Electricity Policy (2025)** Approval of National Integrated Electricity Policy and Strategic Implementation Plan ("NIEP-SIP") in consultation with relevant stakeholders by 2025 to clarify the role of federal vs states, the role of different generation sources, sector institutions, including distribution, market creation etc. 2025

1. **Least-Cost Planning and Integrated Resource Plan (IRP) (2025)**
   - Systematization of least-cost grid generation and transmission expansion planning in line with FGN's policies on the use of indigenous resources, environment, NDCs and others
   - Timely implementation of resulting projects through a transparent bidding process between developers (generators and transmission companies) and financially viable distribution companies.
2. **Building Skills in the sector (2025)**
   - Building on the NIEP, the SIP will detail actionable strategies to strengthen capacity development across the electricity sector. This will include leveraging the expertise and resources of the National Power Training Institute of Nigeria (NAPTIN) to provide comprehensive training programs, foster technical expertise, and develop the next generation of skilled professionals.

**Financially Viable Utilities**

1. **Transition to financially viable utilities (Decrease regressivity of electricity subsidies and progressively phase out)**
   - In order to decrease the regressivity of electricity subsidies, move towards a full cost reflective tariff system which includes a limited and uniform subsidy for all customers in 2025 while the metering gap is being closed. This scheme can take the form of a uniform monthly subsidy per customer, or the first 50 kWh per month being subsidized.

[1] WB/SEforALL 2023. Nigeria Integrated Energy Plan Refresh.

– Move towards a full cost reflective scheme with a social tariff to protect low (vulnerable) consumers based on their social affordability not later than 2027.

**2. Closing the metering gap (2024-2027)**

- Eliminating the 7 million electricity end users' metering gap to diminish losses, increase collection, and adopt cost reflective tariffs for all customers except for low (vulnerable) consumers. This will be done by installing 1.5 million smart meters in 2025, 4 million in 2026, and 1.5 million in 2027.

**3. Regulatory intervention of distribution companies**

- Implement firm regulatory intervention of distribution companies (DisCos) failing to comply with core obligations in their license contracts (full payments to energy suppliers and TCN, implementation of PIPs, etc.) by the end of 2025.

**Private Sector Participation**

1. Setting up a project preparation and financing facility by 2025 to drive pre financial close to post construction human capital and financing needs
2. Long-term local currency capital deployed in DRE ($100 million by 2026)
3. Securing funding to expand gas infrastructure and transportation networks, ensuring a reliable gas supply to thermal power plants.
4. Facilitating the development of innovative business models and the provision of funding opportunities to enhance transmission network infrastructure.

**Last Mile Access**

**1. National Electrification Strategy (2025)**

– A National Electrification Strategy and Implementation Plan (NESIP) defining access, approach to universal electrification (technical, business models), and its roadmap including institutional roles and financing – to ensure it reflects the key objectives of the Ministry of Power.
– Decide on grid-based access methodology in line with NIEP-SIP and NESIP related to institutional and financing arrangements
– Integrated resource plan approved by 2025 with a specific procurement policy for procuring new generation competitively in line with IRP

**2. Regulatory improvements for accelerating pace of electrification and attracting private investment.**

– Licensing limits (provision of increase from 1 MW and above for either mini-grids or creating new asset class in line with regulations and with technical requirements compliant with grid code for interconnection with the grid in future) by 2025
– Streamlined processing of registration, licensing, and tariff applications (batch processing) by 2025
– Standardized contract management and dispute resolution (tri-partite arrangements in urban grid-connected projects involving consumers, RESCOs/developers and DISCOs, termination conditions, consumer rights) by 2025

**Regional Integration**

1. Synchronization of West African Grids with Nigeria interconnected.

**To achieve its targets and implement the actions and commitments outlined in this National Energy Compact, the Government is committed to strengthening the institutional and governance capacities of the electricity sector.** The Government commits to identify the human resource and capacity building needs across the sector to achieve the targets and prepare a capacity development plan to address these gaps in the short, medium and long term.

**The Government undertakes to ensure rigorous and transparent monitoring of the National Energy Compact** through a structured M&E framework including a detailed geographic information system. Emphasis will be placed on institutional capacity-building, the active participation of local communities and the use of information and communication technologies. The Federal Ministry of Power, supported by relevant stakeholders, will lead data collection, and regular feedback will help adjust policies and targets as needed. Monitoring efforts will be integrated into the program budget to ensure alignment with national and international energy goals.

## CALL FOR PARTNERSHIP

**The Government calls on the development partners, philanthropies, and the private sector to come forward to meet the funding needs as the Federal Republic of Nigeria embarks on this journey to accelerate the pace of access** towards provisioning of affordable, reliable, inclusive, sustainable and clean energy that will help creating jobs and income opportunities for millions of Nigeria and contribute to economic growth and development of the country and the region.

Funding needs from the public and private sectors by 2030 [US$ Million]

| | Generation | Transmission | Distribution *(including last mile)* | Off-grid *(including last mile)* | Clean cooking | Total |
|---|---|---|---|---|---|---|
| Public | 3,000 | 5,300 | 3,400 | 4,300 | 1,200 | **17,200** |
| Private | TBD | TBD | 5,100 | 10,500 | TBD | **15,500** |
| **Total** | **3,000** | **5,300** | **8,500** | **14,800** | **1,200** | **32,700** |

## 1.1
# Compact Targets and Action Plan

| Trajectory target | Current Annual Pace Between 2017 and 2021 | Targeted pace between 2024 and 2030 |
|---|---|---|
| Increase Access to Electricity | 5% p.a., | 9% p.a. |
| Increase Access to Clean Cooking | 22% p.a. | 25% p.a. |

* Note: For access to electricity, only direct connections, and not inferred or indirect connections, are to be targeted. Improved cookstoves should be counted as access to clean cooking.

| | Current Share Renewable Energy in Fuel Mix | Target by 2030 |
|---|---|---|
| Increase share of Renewable Energy | 22% (Hydro) | 50% (including hydro) |

| | Baseline | Target by 2030 |
|---|---|---|
| Amount of Private Capital Mobilized | 0 | $15.5 billion<br>(of the total $23.2 billion needed for last mile electrification. This does not include investment in other parts of the energy sector value chain) |

* Note: Private sector investment across the sector value chain (generation, transmission, and distribution, and off-grid access, as appropriate) should be targeted

| Pillar | Indicator | Baseline Data (2024) | Target Year & detailing the action needed to achieve goal (including timeline) |
|---|---|---|---|
| **I: Generation Expansion & Cost Reduction** | Integrated Least Cost Power System Planning adopted incorporating regional resources | No | • **Electricity Policy (2025** Approval of **National** Integrated Electricity Policy and Strategic Implementation Plan ("NIEP-SIP") in consultation with relevant stakeholders by 2025 to clarify the role of federal vs states, role of different generation sources, sector institutions including distribution, market creation etc. 2025)<br>• In line with the new Electricity Act (2023), States could create their own energy policy in line with the national one. The national regulator, NERC, should collaborate with State governments to develop an action plan to guide the transfer of responsibilities to **State regulators**<br>• **Least Cost Planning and Integrated Resource Plan (IRP) (2026)**<br>– The regulator institutionalizes arrangements and defines processes for the systematic update of the 5-year horizon least-cost power development plan (LCPDP) by 2026.<br>– The regulator institutionalizes the Integrated Resource Plan as a roadmap to implement the LCPDP by 2027, with the IRP now ready to guide the sector's development.<br>– States should develop and operationalize Integrated Resource Plans (IRPs) or at least conduct realistic demand studies (pending the completion of their IRPs) as a recommended starting point for the state market.<br>– Demand studies and IRPs should serve as the foundation for procuring generation capacities. Licensed suppliers and investors will have access to these plans to align their investments appropriately.<br>– Regulator to approve LCPDP – a precursor to the IRP – by 2026, with the IRP already prepared and ready for implementation.<br>– Demand studies and IRPs should be the basis for procuring generation capacities and generators and licensed suppliers and investors should have access to these plans to align their investments appropriately. Regulator to approve LCPDP – a precursor to the IRP by 2026.<br>• **Improved transmission grid network functioning and governance (2025-2028)**<br>– NERC Approval of an Action Plan roadmap for unbundling of Transmission Company of Nigeria (TCN) into i) An Independent System Operator (ISO) and ii) Transmission Service Providers (TSP) by 2025 (AFDB and WB)<br>– NERC completes the MYTO Extraordinary Review and issues a new MYTO for the period 2024-2026 for TCN, redefining allowances on CAPEX, OPEX, and losses consistent with the PIP.<br>• **Energy Transition (2025)**<br>– Review the NDCs and the ETP to ensure alignment with evolving global climate commitments and the country's sustainable energy goals.<br>– Prepare a Gas Master Plan and gas flaring policy consistent with Nigeria's 2060 net zero targets as provided by the energy transition plan and the NDCs.<br>• **Hydro**<br>– Ministry of Power prepares the Hydro Power Master Plan by 2027<br>– Under the leadership of the Ministry of Power, Bureau of Public Enterprises (BPE) and Infrastructure Concession Regulatory Commission (ICRC) develop a PPP framework for investment in large hydropower projects by 2028 |

| | | | |
|---|---|---|---|
| | Competitive procurement policy and framework in place for private sector investment in renewable energy | No | • **Transition to a competitive market (2026 - 2027)**<br>– The Regulator approves a framework and roadmap for transitioning to bilateral contracts (between generators and distribution) and novating existing PPAs held by bulk traders/single buyers (NBET). The target is to ensure that at least 30% and 75% of energy is transacted on a bilateral basis between 2026 and 2027.<br>– Regulator approves provisions on how existing and new energy must be competitively procured by off-takers<br>– FGN/NERC (regulator) implements first auction to procure new generation capacity in consistency with 2024 bilateral contracts roadmap (and respecting national electricity policy)<br>• **Building Skills in the sector (2025)**<br>– Building on the NIEP, the SIP will detail actionable strategies to strengthen capacity development across the electricity sector. This will include leveraging the expertise and resources of the National Power Training Institute of Nigeria (NAPTIN) to provide comprehensive training programs, foster technical expertise, and develop the next generation of skilled professionals.<br>• **Supporting domestic manufacturing of equipment on-grid & off-grid systems,**<br>– Enable investment into development of domestic supply chains by incorporating standards and local content opportunities within national and sub-national programmes so this will include meters, cables, panels etc. |
| **II: Financially Viable Utilities** | Audited annual financial statements of utilities published | Yes | • **Included as a requirement in law and FGN's Power Sector Recovery Program (PSRP) – continue this.** |
| | Utilities achieving at least 100 percent operational cost recovery | No | • **Transition to a financially viable utilities (address liquidity challenges, strengthen revenue management, and address arrears)**<br>– Periodic (quarterly) adjustments and enforcement of tariffs adjustments based on macroeconomic factors with a path towards cost reflectivity.<br>– While cost reflectivity is not achieved and the metering gap is not closed in 2027, starting 2025 put in place a subsidy scheme that provides a universal and flat limited subsidy to each connected customer (be it for first kWh of monthly consumption or through voucher).<br>– Develop, on an ongoing basis, a funding plan to finance subsidies due to non-cost reflective tariffs.<br>– Approval of the Power Sector Debt resolution scheme for GENCOs and Disco's on arrears owed by FG as a line item in the 2025 budget.<br>• **Closing the metering gap (2024-2027)**<br>– NERC approves updated Metering Code<br>– FGN through SGDL approves in 2024 a Metering Plan to close the metering gap in the period 2025 to 2027. Plan updated annually backed by financing from all sources.<br>– Deployment of key Management Information Systems (MIS) - including commercial and outage management systems – by all DisCos by 2027.<br>• **Reducing losses**<br>– Ensuring implementation of DISCO's (PIPs) and hold them responsible for them.<br>– Provide seed financing for PIP to enable DISCOs to access commercial financing later<br>– Focus on commercial losses and low collections first and set aggressive targets.<br>• **Improving transmission's ability to wheel increased power** |

| | | | |
|---|---|---|---|
| | | | – NERC approves TCN's PIP for next 5 years with redefining allowances on CAPEX, OPEX and losses, consistent with the PIP and ensure funding is available with yearly targets of improvements (Available Installed transmission capacity (i.e., physical capacity of TCN to transfer to DISCOs) is increased) – also AfDB prior action for 2024<br>• **Corporate Governance improvements**<br>– Prepare and approve a strategy and road map to address the situation of distressed privatized DISCOs (2025)<br>– Strengthen regulatory oversight of the distribution companies;<br>– Agree and implement penalties for nonperforming DISCOs (not paying for energy purchases in full) and consider approaches such as affermage for ones in high-risk areas not viable for private sector.<br>– Incentivize well performing ones with more funding support. |
| **III: Private Sector Participation** | Process outlined for regulatory approval of private sector-led mini-grids including tariff regulations | Yes | Nigeria already has the most advanced mini grid and off grid regulations in SSA.<br>• Regulatory improvements for accelerating pace of electrification and attracting private investment. While Nigeria has one of the most progressive and forward-looking regulations pertaining to mini grids, more can be done on tweaking them to ensure they are "fit for purpose" to support 10x increase in the pace of electrification through private sector supported capital and skills while ensuring consumer rights remain paramount. A comprehensive revision, as needed, of existing and proposed end of state regulations on, but not limited to:<br>– Licensing limits (increase from 1 MW and above for mini grids with technical requirements compliant with grid code for seamless interconnection with the grid in future)<br>– Quicker, streamlined Processing of registration, licensing and tariff applications (batch processing)<br>– Introducing a net billing policy to incentivize consumers to become producers<br>– Better contract management and dispute resolution (Tri-partite arrangements in urban grid connected projects involving consumers, RESCOs/developers and DISCOs, Termination conditions, consumer rights)<br>– Updated tariff regulations including, where possible, harmonization at state levels, including adjustments based on macro costs (automatic adjustments) |
| | Financial support to private sector DRE and clean cooking operators ensures affordability and viability | Yes | Existing legal and commercial framework to unlock, expedite, and scale access to long-term local currency capital for distributed renewable energy (DRE) projects. The framework will also provide project preparation and sponsor support to pathfinder DRE developers including Interconnected Mini-Grid projects, Mini-Grid projects, and Stand-alone Solar System as a Service Business Models, enabling them to reach financial close. |
| **IV: Last Mile Access** | Monitoring & evaluation program adopted to track the multi-tier framework for access to electricity and clean cooking | No | • MTF framework already implemented in 7 states in Nigeria. A follow on survey and analysis to expand the MTF to all of Nigeria to begin in Q2 2025 and to be completed by Q2 2026.<br>• Once baseline data is collected, regular updates to the MTF to be carried out at a regular cadence to measure progress towards electrification and clean cooking targets. These surveys will be complemented for DREs by information collected through remote verification of smart meters and integration with CRM software, and for from utilities for on-grid customers.<br>• A data platform for M&E to be established by Q1 2025, whether by adapting existing solutions or by developing a new one to document and analyze progress towards access goals. |

| | | | |
|---|---|---|---|
| | National Electrification Strategy adopted including an updated 5-year electrification plan with clearly defined role for private sector | Yes/ no | **National Electrification Strategy (2025)**<br>• With multiple technological pathways toward universal electrification, the FGN needs to adopt a least-cost electrification program to provide policy direction for financing and implementing electrification efforts. Without such a roadmap, multiple conflicting approaches for expanding access, driven by individual stakeholder interests, have emerged. Long-term policy certainty and institutional architecture (key agencies, processes, technologies) can guide stakeholders (public and private) to work towards universal electrification collaboratively. Committed, capable institutions with political ownership at the highest level are needed to implement this vision on the ground through private sector participation. A strategy needs to define clearly the institutional roles (esp states) to ensure institutional ownership by 2025<br>**Approval of the National Action Plan on Gender Mainstreaming in Energy Access (2024)** |
| | Scale proven governance frameworks for DRE procurement and implementation | Yes | • **Replicable Framework for DRE Implementation (2025)**<br>One of the flagship projects under the M300 initiative is the Nigerian Distributed Access through Renewable Energy Scale-Up (DARES) project, which builds on the achievements of the Nigeria Electrification Project (NEP).<br>DARES plays a critical foundational role in Mission 300's efforts to expand electricity access across Nigeria and serves as a model for scaling similar projects across the African continent. Amidst the massive scale up and changing landscape in the energy access space, the REA recognizes the need to strengthen its institutional capacity to effectively coordinate programmes like DARES alongside existing and emerging electrification initiatives within the Agency's portfolio. This enhancement will ensure alignment, synergy and efficiency in achieving the long-term objectives of the M300, while reinforcing the Agency's central role in expanding the sustainable energy access across Nigeria. Part of this drive is the Federal Government's ambition to setup a renewable energy Academy for Africa that will be responsible for developing the talent pipeline that will support the continent's energy access, transition and development goals as well |
| | National clean cooking strategy in place | Yes/ no | **Clean cooking policy**<br>• FEC Approval of a Clean Cooking Policy – 2024 |
| | Policy and regulatory framework including adopting minimum quality standards for off-grid and clean cooking solutions | Yes/ no | The DARES PMU of the Rural Electrification Agency has developed and adopted minimum technical and service standards for mini grids and quality certification standards for solar home systems for the NEP, which have been updated in preparation for implementation for the DARES project. |
| **V: Regional Integration** | Adopt and enforce harmonized transmission pricing within their respective power pools to facilitate power trade across borders | Yes/ no | • **Adoption of a Transmission Charging Model (2025)**<br>– ECOWAS to implement a transmission charging model to enhance inter-country electricity trade and decrease costs, with the grid now synchronized from Senegal to Benin and Nigeria expected to join soon, enhancing regional connectivity and stability. |

- **ECOWAS Master Plan for Power Generation and Transmission (2019-2033)**
  - Adoption and implementation of this master plan - aims to address the region's growing electricity demand by using local resources and includes 28 projects with 22,932 km of high-voltage transmission lines.
- **Synchronization of West African Grids**
  - A significant milestone has been achieved with the synchronization of West African grids by WAPP, integrating national grids across 12 member states to improve electricity management and access across the region. Nigeria should be interconnected soon.

# 2

# Energy Sector Overview and Challenges



## 2.1
# Energy Sector Overview

**With more than 200 million people and an estimated Gross Domestic Product (GDP) of US$417 billion in 2022, Nigeria is the most populous country and one of the major economies in Sub-Saharan Africa.** After strong GDP growth between 2001 and 2014 of an average of 7 percent per year, Nigeria's growth began to slow down in 2015, declining to an average GDP growth rate of 0.7 percent by 2020. In 2021-2022, the economy recovered from the recession induced by the COVID-19 pandemic and lower oil prices, but welfare remains challenged. In 2023, the incoming government eliminated the petrol subsidy, which represented almost half of the fiscal deficit, implemented foreign exchange market reform to improve fiscal imbalances, stabilizing the economy and setting the country towards the path to growth. Despite those policy measures, however, the country still faces considerable financial gap challenges (N10.7 trillion) at the Federal government level in 2023. The outlook for Nigeria's growth is uncertain and dependent on external factors and the government's policy response to longstanding issues.

**Nigeria has the most significant electricity access deficit in absolute terms in the world.** As of 2022, 61 percent of Nigeria's population had access to electricity, leaving more than 86 million people without access. [2] Even Nigerians connected to the grid face frequent outages and do not receive adequate or reliable supply, making them dependent on fossil-fueled generator sets to meet their needs. Estimates put power supply from gensets to be 10 times that from the grid (~4 GW). The situation is worse for cooking. Over 160 million people lacked access to clean cooking fuels and technologies in 2022, the third largest absolute deficit in the world after India and China.

**Nigeria's power sector is largely private and unbundled.** The Nigerian power sector consists of six privately owned generation companies (GENCOs), eleven privately owned distribution companies (DISCOs), and the state-owned Transmission Company of Nigeria (TCN). The Nigerian power market is at a Transitional Market stage where the government-owned Nigerian Bulk Electricity Trading Company (NBET) has been fulfilling the role of a bulk trader. With the enactment of the Electricity Act 2023, however, the regulator has issued an order on transition to bilateral contracting between DISCOs and GENCOs, and NBET has ceased to enter into any new contracts for the purchase and resale of energy. Furthermore, as per the presidential assent that granted the amendment of the Constitution, the electricity market in Nigeria is transitioning to decentralization where states are responsible for their respective electricity market. While the privatization of the DISCOs and GENCOs was completed in 2013, it has yet to yield the expected outcomes. Only limited investment has gone into strengthening distribution performance since privatization, and the sector's aggregate technical, commercial and collection (ATC&C) losses remain extremely high, with DISCOs reporting total losses on average about 42%, comprising 21% technical and commercial losses, and 26% collection losses. The physical condition and efficiency of the transmission network needs to be significantly improved as well to adequately evacuate available generation capacity.

**The Federal Ministry of Power (FMoP) is responsible for setting the policy and long-term vision, including electrification planning in conjunction with the Nigeria Electricity Regulatory Commission (NERC).** The DISCOs are responsible for increasing grid-based access in their franchise areas. Between 2015 and 2023, they added 4.7 million 'legal' connections, mostly attributed to new metering than actual new connections. However, during that time, the population in the country increased by 24 million (equivalent to about 4.8 million connections), leading to an increase in the access gap. Furthermore, the new electricity Act will usher in a new central policy and plan for electrification in the country and a lot of efforts are being made for that. In the current arrangement, under the Federal Ministry of Power's guidance, the Rural Electrification Agency has the strongest awareness of the country's political economy, with a focus on socioeconomic development needs, a high level of stakeholder engagement and a mandate for implementing electrification in unserved and underserved areas.

**Recognizing the need to expand access for unserved and underserved populations, FGN approved power sector reforms with a specific focus on electrification.** In 2016, the FGN approved the Rural Electrification Strategy and Implementation Plan (RESIP) to facilitate private investment in expanding access, especially through the use of off-grid access mechanisms to rapidly extend access cost-effectively. Nigeria also adopted one of

[2] https://trackingsdg7.esmap.org/

the region's most progressive and comprehensive sets of mini-grid regulations, covering issues regarding licensing, retail tariff setting and eventual grid connection. In 2017, the FGN's Federal Executive Council approved the Power Sector Recovery Program to recover the fiscal burden from power sector, provide reliable and affordable power to citizens and support universal electrification through creating an enabling environment for private investment in the power sector. The Program also included financial, operational, governance and policy actions to turn around the distribution sector. Nigeria also has a Renewable Energy Master Plan, launched in 2006, and a National Renewable Energy and Energy Efficiency Policy, introduced in 2015 for promoting renewable energy investments and improving energy efficiency across various sectors.

**The Energy Transition Plan (ETP) approved in 2022 is a bold statement of ambition from the FGN to achieve universal electricity access by 2030 and a carbon-neutral energy system by 2060.** Currently, the average power plant in the sector is more than 20 years old, 79 percent of installed capacity is from thermal generation, and the rest is from hydro. With multiple technological pathways toward universal electrification, the FGN needs to adopt a least-cost electrification program to provide policy direction for financing and implementing electrification efforts.

**Universal access will require an investment of at least US$23 billion,[3] including contributions from the public and private sectors as well as from end-users of electricity themselves.** Nigeria's capacity to unlock and sustain almost US$15.5 billion [4] in private financing requires critical market enabling conditions currently not in place.

[3] WB/SEforALL 2023. Nigeria Integrated Energy Plan Refresh.

[4] Ibid.

## 2.2

# Current Status and Challenges

### PILLAR I
### EXPAND GENERATION AND INVEST INTO T&D INFRASTRUCTURE AT COMPETITIVE COSTS

**Generation Capacity.** Only about 40 per cent of total installed grid-connected capacity of 12GW is currently utilized where almost all of the installed capacity is contracted through PPAs with NBET [5], the bulk trader, up to now. Most of the PPAs have not been executed as signed and as a result, only a fraction of usable capacity of GENCOs is available to the downstream market on a permanent basis. With the Electricity Act 2023, NBET will no longer enter into new contracts and the electricity market is transitioning to bilateral contracting between DisCos and Gencos, with states now having regulatory oversight over their respective state electricity market. No specific policy or regulatory guidance describing how existing and new generation capacity should be procured by DisCos to serve their captive demand exists.

**State of T&D infrastructure.** The physical condition and efficiency of the transmission network need to be significantly improved. The ability of the transmission system to evacuate available generation capacity is inadequate due to aging and poorly maintained infrastructure. The regulator has approved TCN's PIP [6] for 2024-26 (a result in FGN's Power sector recovery program) in December 2023. The PIP includes US$300 million CAPEX to be raised from tariff and US$1.8 billion CAPEX to be funded from non-tariff sources.

Similarly, very little investment has gone into strengthening the distribution sector since the privatization was completed in 2013. The sector's aggregate technical, commercial and collection (ATC&C) losses are extremely high, with DISCOs reporting an average of 47 percent losses. The approval of DISCOs' PIPs was one of the DLIs in the PSRO where the implementation of the PIPs is tracked since their approval. In addition, DISREP will provide funds to the early stages of PIP implementation to improve DISCOs performance, eventually enabling them to raise the private financing required to fully realize their performance targets.

No least cost power system plan exists but multi-agency work on it is ongoing led by NERC and supported by UKNIAF, WB.

No specific procurement policy for renewable energy exists. Decision for this will now be decentralized at state level

[5] Nigerian Bulk Electricity Trader

[6] Performance Improvement Plan

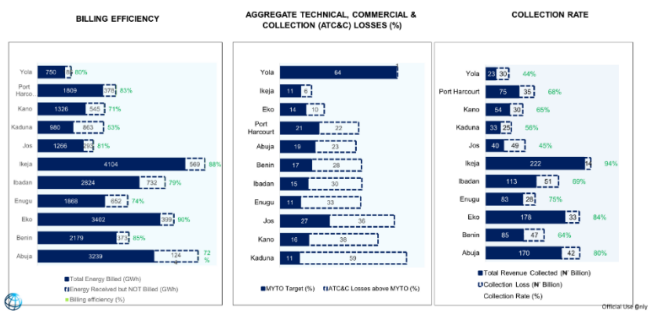
## PILLAR II
# WORK TOWARDS FINANCIALLY VIABLE UTILITIES THAT PROVIDE RELIABLE SERVICE

**In Nigeria, the regulated electricity tariff has been below cost recovery and the Federal Government of Nigeria (FGN) has been subsidizing tariffs by covering tariff shortfalls** – the difference between the regulated and cost-reflective tariff- through budget transfers. The implementation of FGN's bold Power Sector Reform Program (PSRP)'s critical actions in 2020-2022 had a transformative effect on the financial performance and viability of the power sector in Nigeria and significantly reduced the fiscal burden of tariff shortfalls until 2022. Annual tariff shortfalls decreased from N581 billion (US$1.6 billion) in 2019 to N166 billion (US$410 million) in 2022. The unification of the official and parralel market exchange rates of Naira in 2023, however, led to a significant devaluation of Naira and drove the sector revenue requirement upward considerably given the significant proportion of dollar denominated inputs (gas for power generation in particular). As a result, tariff shortfalls in 2023 went up to N650 billion, significantly higher than N192 billion that was planned. The 2024 tariff shortfalls is expected to reach N 2.2 trillion. The FGN has not identified sufficient funding sources to cover the 2024 tariff shortfalls and the carryover from 2023. Subsidization to cover tariff shortfalls is highly regressive, as 80% of amount of subsidies benefit the richest quintile of the population.

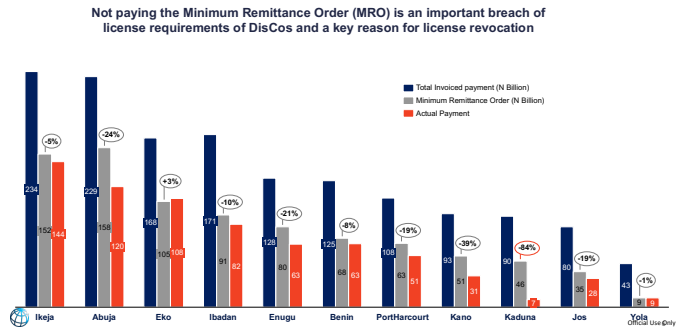
**The Electricity Act that became effective in June 2023 notes that States are responsible for regulation of electricity activities carried out within its geographic boundaries, which implies that end-user tariff will now be handled by a regulatory entity of those states, while NERC will be responsible for wholesale inter-state generation and transmission.** NERC has started transferring the regulatory oversight of the electricity market to State regulator in at least seven states (Edo, Enugu, Ekiti, Ondo, Oyo, Kogi and Imo). It is expected that NERC will continue to issue orders for the remaining states in the near future. While the decentralization offers opportunities for the sector, it also generates risks that need to be appropriately managed.

**In parallel to tariff shortfall, non-tariff shortfalls have been increasing and has become another key factor impacting the financial sustainability of the power sector.** Non-tariff shortfalls (or market shortfalls) have arisen due to the DISCOs' high technical, commercial and collection losses beyond the allowed losses under the MYTO regime. These losses translate into lower remittances to NBET and the sector. Failure to fully resolve the market shortfalls could create not only an additional fiscal pressure to the government as NBET's inability to pay GENCOs due to insufficient cash coming from DISCOs could potentially require additional budget support to clear NBET's payables but also delay in payment will negatively affect GENCOs to supply sufficient energy in the system, creating a vicious cycle of low payment and unreliable energy system. In order to address market shortfalls issues, the government is (i) fast-tracking a mass-metering program; and (ii) enforcing and facilitating implementation of investments in approved DISCOs' PIPs that are aimed at reducing technical and commercial losses.

**DisCos operational performance is poor, but heterogeneous**




**Most DisCos lack payment discipline**



## PILLAR III
## INCENTIVIZE PRIVATE SECTOR PARTICIPATION TO UNLOCK ADDITIONAL RESOURCES

**State of private sector participation for on-grid and off-grid access**

(on-grid): All 11 DisCos and 6 Gencos are privatized, however, there have been highly limited investments flowing into the sector since the privatization. DISREP to provide funds for the early stages of Performance Improvement Plan (PIP – capex and loss reduction plan approved by the regulator) implementation to improve DISCOs performance to the level that will enable them to raise the private financing required to fully realize their PIP targets. This includes closing the metering gap, improvement in network performance, loss reduction, corporate governance improvements and liquidity improvements.

(off-grid): An active and growing community of private companies has emerged in response to the financial incentives offered by the NEP and a conducive regulatory environment. This includes 81 mini grid developers that have qualified to participate in the NEP, of which 45 have signed grant agreements with the REA to develop mini grid projects, of which 27 mini grids have already built and are operating mini grids. For standalone solar, 61 distributors have qualified for the NEP, of which 52 have signed grant agreements, of which 46 have deployed systems and claimed grants from REA. However, most sales for standalone solar are from just a few of these companies.

**Status of mobilizing private capital (disaggregated by generation, transmission, distribution, and access)**

Key barriers and obstacles to scaling up private investment in each segment of the energy value chain

(on-grid): High ATC&C losses of the distribution sector leads to DISCOs' inability to pay their bills to GENCOs and NBET on time and/or in full amount as well as recover, which also makes private investments to be hesitant to participate. Targeted concessionary lending to qualifying DISCOs to strengthen distribution infrastructure may break the cycle of high losses impacting liquidity and vice versa.

(off-grid): While the leading DRE companies are starting to raise larger volumes of financing, lack of sufficient access to working capital for standalone solar distributors and to long-term local currency financing for mini grid developers remains a binding constraint on further scale up of the DRE sector, especially for smaller, local firms. High import duties and complicated and lengthy customs procedures also continue to hamper the business of both mini grid and off-grid solar companies.

There is a need for local currency long term financing for the power sector to ensure that exchange rate risk is mitigated.

## PILLAR IV
## EMBRACE DRE AND CLEAN COOKING SOLUTIONS FOR AFFORDABLE LAST MILE ACCESS

**FGN's flagship NEP supported by WB ($350m) and AfDB ($200m) has provided results-based financing for 158 mini grids that currently serve over 100,000 connections (over 0.5 million people).** The NEP has also provided results-based financing to distributors who have sold almost 1.1 million standalone solar solutions (impacting over 5 million Nigerians).

These performance based grants provided to the private sector have helped to bring down the tariff to affordable levels for mini grid customers, and the supply side and demand side subsidies for standalone solar solutions have reduced the cost of the systems and extended the reach of the sales distribution networks. **Each public $1 has leveraged $1.2 of private capital.** [7]

While significant gains have been made in expanding access to **clean cooking** in recent years (3.2% per year from 2017-2022), **the access rate of 26% remains well below the global average of 74%**. Furthermore, the gains have come entirely from gas, indicating that adoption of electric cooking has yet to take off.

**MTF surveys were carried out and an Energy Access Diagnostic Report published in 2020, but the coverage was limited to 7 states** in the North-West geo-political zone (Kaduna, Kano, Katsina, Kebbi, Jigawa, Sokoto, and Zamfara), so a complete picture of energy access across the country is still not available.

An Integrated Energy Plan (IEP) based on a geospatial model for universal electrification of Nigeria was published by SEforALL in January 2022, and a refresh of the IEP was carried out for the World Bank in May 2023. Acceptance of the modeled results and full buy-in of key stakeholders, including state governments, is required for widespread adoption and use in the development of a more comprehensive national electrification strategy and plan.

NERC updated the 2016 Mini Grid Regulations in 2023, incorporating new clauses that the private sector had advocated for, including streamlining regulatory review, and adding more protections for investors.

## PILLAR V
## LEVERAGE BENEFITS OF INCREASED REGIONAL INTEGRATION

Nigeria, Niger, and Benin have a long tradition of intergovernmental agreements for exchange of electricity that build on the cooperation between the countries that share the waters of the Niger River. Nigeria has exported electricity for decades, in exchange for Niger and Benin refraining from damming the waters upstream. The current amounts traded are small (amounting to roughly [8] N30B for Q4, 2023) in relation to its overall capacity, 180 MW to Niger and 200 MW to Benin. The interconnection between Nigeria and Benin was inaugurated in 2007 with the line to Sakété in Benin.

Electricity exported from Nigeria to Niger is transported through two 132 kV lines that bring electricity from the Kainji hydro plant. Nigeria is supplying 180 MW contracted to Niger, utilizing current transmission capacity to the maximum. Electricity exported from Nigeria to Benin is transported through 70 km of 330 kV line between Ikeja in Nigeria and Sakété in Benin, with a contracted amount under intergovernmental agreements of 260 MW. In December 2017, a separate contract for 60 MW was signed between the Société Béninoise d'Energie Electrique (SBEE) and Parras, a Nigerian independent power producer (IPP), using a one-year renewable PPA. Given the capacity constraints of the transmission line between Nigeria and Benin, the total amount traded is 200 MW, with priority given to the electricity sold by Parras.

Limited political ownership and focus on domestic energy issues is the primary reason for regional integration not being prioritized enough

[7] Calculated by the World Bank and the Nigeria Electrification Project (NEP) Project Management Unit

[8] NBS trade statistics

# ANNEX I
# ONGOING AND COMMITTED PROJECTS

| Development Partner | Project Name | Timeline | Project Description | Funding (including from the private sector) | Contribution to Compact Targets | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Access to Electricity | Access to Clean Cooking | Renewable Energy Installed | Binary & Numerical Targets |
| World Bank | Nigeria Power Sector Recovery Performance Operations (P164001) | Closing on June 30, 2027 | The objectives of the operation are to improve the reliability of electricity supply, achieve financial and fiscal sustainability, and enhance accountability. The PSRO provides results-based financing to support the implementation of the Government's Power Sector Recovery Program (PSRP). The PSRP is a comprehensive program to restore the power sector's financial viability, improve service delivery and reduce its fiscal burden. | US$ 1.5 billion (World Bank) | Expected to improve reliability of electricity supply of existing grid.<br>No explicit last mile connection related activities. | N/A | May include DLI on competitive auctions for new generation (including solar). | |
| | Nigeria Distribution Sector Recovery Program (P172891) | Closing on May 30, 2028 (Expected, subject to restructuring in November, 2024) | The development objective of Distribution Sector Recovery Program for Nigeria is to improve financial and technical performance of the electricity distribution companies. The Program for Result component will provide funds to the early stages of Performance Improvement Plan (PIP) implementation to improve Distribution Company (DISCOs) technical and financial performance, eventually enabling them to raise the private financing required to fully realize their PIP targets. | US$500 million (World Bank) | Expected to improve reliability of electricity supply of existing grid.<br>No explicit last mile connection related activities. | N/A | | |
| | NG-Electricity Transmission Project - (P146330) | Closing on December 31, 2024 | The development objective of the Electricity Transmission Project for Nigeria is to increase the transfer capacity of the transmission network in Nigeria. | US$486 million | | N/A | | |
| | Nigeria Energy Access and Clean Energy Transition Programmatic ASA - (P181167) | | This PASA strengthens implementation of the initiated reforms and push the boundaries to scale-up clean energy transition for universal power access. It will provide a blend of analytical work, technical assistance, and stakeholder engagement for both on and off grid activities. | US$ 5 million | | N/A | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Nigeria Electrification Project (P161885) | Closing on December 31, 2024 | The development objective is to increase access to electricity services for households, public institutions, and underserved micro, small and medium enterprises. | US$350 million | Has extended electricity access to around 5.5 million people through standalone solar and to about half a million people through mini grids. | N/A | 62 MW |
| | Nigeria Distributed Access Through Renewable Energy Scale-up (P179687) | Pending effectiveness; Closing on December 31, 2028 | The project development objective is to increase access to electricity services for households and MSMEs with private sector-led distributed renewable energy generation. | US$750 million<br><br>9$1.1 billion from private sector) | Expected to extend new electricity access via mini grids and standalone solar to around 16.2 million people and improved access via interconnected mini grids to about 1.3 million people. | N/A | 465 MW |
| AfDB | Nigeria Electrification Project | Closing December 2025 | The project objective is to increase access to electricity services for households and micro, small and medium enterprises | US$200 million | Expected to provide access to electricity to over 500,000 people | | 68 MW |
| | Nigeria Transmission Expansion Plan Phase 1 | Closing December 2026 | Project objective is to increase the wheeling capacity of the grid by 2000MW and remove all bottlenecks | US$252 Million | Expected to provide electricity for 5 million People | | Evacuate 2000MW |
| USAID | Nigerian Power Sector Program (NPSP) | Closed on 30th September 2024 | NPSP will increase electricity availability, access, and reliability throughout Nigeria, while measuring<br><br>objective progress across the following thematic technical areas: Generation, Gas, Transmission, Distribution, Off-Grid, Enabling environment and cross cutting areas i.e. Gender. | US$109 Million | Expected to provide 3 million electricity connections | N/A | 10,000 MW of new and rehabilitated generation capacity. |
| | Empower Nigeria | Under preparation and will come on stream by December 2024 | Empower Nigeria will increase the availability of and access to affordable, reliable, sustainable and modern electricity services in Nigeria. This program will connect more Nigerian homes, businesses, and institutions to electricity on the grid and beyond the grid; reduce greenhouse gas emissions from the energy sector by supporting cleaner electricity generation delivered by the grid and accelerating distributed renewable energy | US$75 Million | 3 million electricity connections | N/A | 2500-3000 MW |

| | | | | | |
|---|---|---|---|---|---|
| | | | (DRE); and, working in partnership with the Government of Nigeria and other institutions to improve the enabling environment for energy sector investment (including climate finance) and innovation. | | |
| EU | Solar for Health Program | At conception stage and expected to end in 2028 | Provide electricity to health care centers across Nigeria with the Health care facilities serving as anchor load and excess demand will be provided to other beneficiaries in proximity to the health facilities including households. | Electricity connections to about 250 health care centers. | N/A |

# ANNEX II
# METRIC OF KEY INDICATORS

| Pillars | Metrics /Indicators | Data (latest available) |
|---|---|---|
| Pillar 1 – Expand Generation and T&D Networks | • **Generation Capacity Installed / Available** (MWs)<br>• % Thermal, % Renewable (including BESS)<br>• Average annual growth rate (%) (of last 3 years) | • 12GW installed (46 % available)<br>• 75.5% gas, 24.3% hydro, 0.3% solar PV |
| | • **Energy Produced Annually** (MWhrs) – Total<br>• % Thermal, % Renewable (including VRE/BESS)<br>• Average annual growth rate (%) (of last 3 years)<br>• Average Cost per kWhr – Thermal, Renewable | • 36,710 GWh (2023)<br>• 75.25% Thermal; 24.75% hydro<br>• 6.2%<br>• US$/kWh |
| | • **Energy Imported Annually** (MWhrs) – Total<br>• Average annual growth rate (%) (of last 3 years)<br>• Average cost per Kwhr (USD) | • 0 MWh (2023)<br>• %<br>• 0 US$/MW (2023) |
| | • **Energy Exported Annually** (MWhrs) – Total<br>• Average annual growth rate (%) (of last 3 years)<br>• Total revenue (USD) | • 2,316,000 MWh (2023)<br>• %<br>• US$53.39 million (2023) |
| | • **Transmission Network** (HV, MV), Total: Length (km); Voltage (kV): Transfer Capacity – MW/MVA | Total HV :<br>• 330 kV AC– 5,530 km; MW<br>• 132 kV AC – 6800km; MW<br>• 330 kV substations combined available capacity: 10,994MVA<br>• 132 kV substations combined available capacity: 15,360 MVA |
| | • Rehabilitation: | |
| | • Expansion: | |
| | • **Distribution Network (LV), Total:** Length (KM); Voltage (KV): Transfer Capacity – MW/MVA | Total MV: 12,300 km<br>Total LV: 224,838 km |
| | • Rehabilitation: | |
| | • Expansion: | |
| | • **Access to energy (electricity and clean cooking)** | |
| | • Number of new on-grid connections (by customer[9] type) | |

[9] Residential, commercial, industrial, mining, etc

| | | 2022 | 2023 | 2024 | |
|---|---|---|---|---|---|
| | Households | | | | |
| | Industries | | | | |
| | Commercial | | | | |
| | .... | | | | |
| | .... | | | | |
| | | | | | |
| | | | | | |
| Pillar 2: Regional integration | • Transmission Interconnectors (HV), Total: Length (KM); Voltage (KV): Transfer Capacity – MW/MVA | | | Three (3) interconnectors to export power to utilities in Benin Republic, Togo Republic and Niger Republic. | |
| | • Energy traded in Bi-lateral Power Purchase Agreements / MOU: | | | | |
| | • Energy Traded in Power Pool: | | | | |
| | • Transmission Wheeling Charges (USD per Kwhr) | | | | |
| | • Payables (arrears) / Receivables (USD) | | | | |
| Pillar 3: DRE / Clean Cooking | • Number of new mini-grid connections (by customer10 type) (last 3 years, if possible) | | | Households: At least 93,193<br>SMI/SME: At least 14,326 | |
| | | | | | |
| | • Number of Solar Home Systems (last 3 years, if possible) | | | At least **2.93 million SHS** | |
| | • Number of Clean Cooking Connections / Appliances | | | 1% of Nigeria households have access to clean cooking via electricity while 10.5% or 7.9 million households use LPG even as 174 million Nigerians lack access to clean cooking solutions | |
| Pillar 4: Private Sector Participation | • Total Investment Required to Meet 2030 Energy Compact Goals / Targets - Public / Private.<br>• Total Investment Available as of 2024 – Public / Private)<br>• Investment Gap to be mobilized each year up to 2030 - Public / Private (based on Government priorities and sequencing) (Domestic and International) | | | US$ | |
| | • Total (Private) investment needs by 2030 (USD, percentage) -split (by Grid, mini-grid, off-grid) and clean cooking); spilt (by generation, transmission, distribution and access) (Domestic and International) | | | US$; 54% | |

[10] Residential, commercial, industrial, mining, etc

| | | |
|---|---|---|
| Pillar 5: Sector Reforms and Sustainable Utilities | • Utility financial profitability (per audited accounts) – Net income/loss (US$ amount and US$/kWh) for Discos, Transcos, Gencos | N/A |
| | • (Regulator) Tariff policy, average end-user tariffs (per Kwhr) and trajectory to full cost reflectivity (current % of recovered costs to achieve 2030 target) | Average end-user tariff: NGN 69/kWh ($ 0.09 c /kWh)<br>Trajectory to full cost-reflectivity: $ 600 million per year subsidy in 2025 to 2027 (while metering gap is being closed), and then fully CRT except for social tariff for vulnerable customers. |
| | • Total Subsidy Amount (USD)11; Path/Timelines to full cost reflectivity12 (estimate); | Total subsidy of $ 1.5 billion (2024 estimate). |
| | • Aggregate Technical Commercial & Collection (ATCC) Losses: % reduction targets per year.<br>• Number of metered / unmetered customers<br>• Number of prepayment meters | 5.84 million metered customers / 7.32 million unmetered customers |
| | • Level of Debt – Payables to Government, IPPs, other vendors.<br>• Level of arrears – Receivables from Government / Public entities (any pre-payment meters).<br>• Revenues by breakdown of customer types (e.g. from households, industries, commercial, mines, imports, etc).<br>• Capital restructuring plan (yes/no) | |
| | • Load shedding (e.g. average number of hours per day and/or estimated lost MWhrs per annum). | |
| Additional - Cross-Cutting for consideration | • Capacity Building requirements (US$) (at all levels)<br>• Alignment of Power Sector Least Cost Expansion Plans to country Long Term Strategies and NDCs /Paris Agreement – Yes/No<br>• Household Affordability (i.e. % level of household disposable income available to be spent on energy services and/or % of Households Receiving Energy Subsidies)<br>• Jobs: e.g. Track the number of jobs created for Youth and Women | |

[11] This could include subsidies for electricity generation, distribution, renewable energy projects, and consumer subsidies.
[12] Tariff Subsidy for Consumers (USD/kWh[12]); Cost Recovery Rate (%)[12]; Dedicated Funds (esp. rural) (USD, annual)

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