Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 04-Dec-2018 | Report No: PIDC25913

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Parent Project ID (if any)	Project Name
Angola	P166805		Angola - Electricity Sector Improvement Project (P166805)
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
AFRICA	May 27, 2019	Nov 21, 2019	Energy & Extractives
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Ministerio das Financas	Ministerio da Energia e Aguas	

Proposed Development Objective(s)

The Project Development Objective is to improve the operational and commercial performance of the electricity sector utilities and increase electricity access in selected cities in Angola

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	250.00
Total Financing	250.00
of which IBRD/IDA	250.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	250.00

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

Other Decision (as needed)

B. Introduction and Context

Country Context

1. **Despite its oil and mineral wealth, the Republic of Angola (Angola) faces critical development challenges, especially in terms of shared prosperity.** With around 25.8 million inhabitants and a gross domestic product (GDP) per capita of over US$3,450, Angola is the seventh most populous country, the third-largest economy and the second largest oil producer in Africa. Despite the country's middle-income status and the large natural wealth, the pattern of resource use has excluded large segments of the population, especially the poor, and inequality across the country is remarkable.

2. **Angola needs to transition to a new growth model, grounded on macroeconomic stability, economic diversification and private sector participation**. Angola's economic structure, characterized by overreliance on oil and a pervasive presence of the State in the key economic sectors – whose most notable example is the national oil company, Sonangol[1] - showed all its limitations when international oil prices began to collapse in 2014. After decades of record growth propelled by the expansion of the oil sector, Angola fell into a deep macroeconomic crisis, whose effects are still reeling the economy.

3. **Transforming Angola towards an inclusive, sustainable economy requires establishing an enabling environment for private investments and providing essential infrastructure and services, including electricity.** Lack of competitiveness, weak governance and the challenging investment climate are structural issues in Angola. Equally important is to provide essential infrastructure and services, whose lack is a key constraint to firm productivity and competitiveness. Despite massive investments in the past decade, Angola's infrastructure remains insufficient both in terms of coverage and quality. Targeted investments are needed to guarantee access to basic services, especially electricity, and maximize the impact of productive opportunities in and around urban areas. Better connectivity and access to electricity service are mostly needed in rural areas to increase agriculture productivity and provide access to markets to agriculture products.

Sectoral and Institutional Context

4. **Angola's electricity sector has reached a critical juncture following the unbundling reform.** Launched in 2014, the reform led to the creation of three new public operators, including Empresa Publica de Producao de Electricidade (PRODEL) for generation; Rede Nacional de Transporte (RNT) for transmission; and Empresa Nacional de Distribuição de Electricidade (ENDE) for distribution. The GoA also established the Gabinete de Aproveitamento do Medio Kwanza (GAMEKE) to oversee the development and construction of large hydropower projects in the Kwanza river basin. Sector oversight is entrusted to the Ministry of Energy and Water (Ministério da Energia e Águas – MINEA), and regulation to a national regulatory agency (Instituto Regulador dos Servicos de Electricidade e de Agua – IRSEA), whose role was

[1] Sonangol is the largest state-owned-company in Angola, holding shares in many non-oil companies. By 2013, it was Sub-Saharan Africa's largest corporation. In addition to its key role in managing Angola's oil, Sonangol was able to contract oil-backed loans when the Angolan state itself was shut out of access to international finance. In this context, Sonangol became the center of vast quasi-fiscal operations amounting to half the Angolan budget in the late 1990s and early 2000s.

strengthened following the unbundling. While the reform of 2014 was a good first step towards liberalization of the power sector, the governance and regulatory frameworks of the sector are yet to be completed; the functional and operational relationships between the operators remain to be clarified; the financial transactions among the three utilities are not based on a clear financial model and their financial autonomy remains constrained.

5. **Most of the Angolans still have no access to electricity and service remains unreliable.** While progress has been made to increase electricity supply, power network coverage has not kept up with the fast-growing urban population and in rural areas is nearly negligible. The transmission network consists of three separate grid systems, (northern, central, and southern) covering selected regions. The distribution network extends just to the periphery of the country's 18 provincial capitals. Only 34 percent of the population has access to electricity services, a share that drops to less than 10 percent in rural areas. Nearly 60 percent of electricity customers served by ENDE are located in the Luanda province; 30 percent in the northern and central regions, and the remainder in the eastern and southern regions. Additionally, total network losses are above 40 percent and service is unreliable due to frequent interruptions and voltage fluctuations. The limited availability and reliability of national grid electricity force customers, especially commercial and industrial ones, to resort to diesel generation for continuous power supply, which is estimated to cost as much as US$ 0.40 per kilowatt-hour (kWh), several times the average production cost faced by PRODEL.

6. **The low electricity tariffs severely impair the financial standing of Angola's power sector and ability to scale up electricity access.** Cost-recovery is a central issue in Angola's electricity sector. The average tariff of Kz 6.05/kWh (US$0.02/kWh) covers only a third of the average production cost per kWh of Kz 15.81/kWh (US$0.052/kWh). In addition, electricity consumption is mostly unmetered and ENDE's billing system remains below standards. Inadequate revenues constrain ENDE's investment capacity and ability to expand its network and connect new customers. The GoA intends to reform electricity tariffs following the ongoing fuel subsidy reform and has mandated IRSEA to identify a new tariff regime. However, an early assessment reveals that this exercise is not based on a robust analysis of cost of service and revenue requirements along the value chain.

7. **The GoA is committed to a transformational energy sector program, targeting energy transition, major scale up of electricity supply and access, and regional connectivity.** Faced with a projected demand growth of 12 percent per year, the GoA has embraced an ambitious strategy for the sector (Angola Energia 2025), targeting 9.9 GW of installed generation capacity and 60 percent electricity access nationally by 2025. Generation expansion under the strategy relies mostly on hydropower and gas, in addition to 800 MW of solar, wind, biomass and mini-hydro. The strategy also envisages the interconnection of the three transmission systems through a north-central-south backbone, a five-fold expansion of the grid and possibly the interconnection of the domestic power system with the Southern and Central African Power Pools. ENDE's ambitious investment plan targets service improvement in Luanda area and grid extension towards the north. As a result, by 2022 electricity access should increase to 50 percent and customers served by ENDE double (from nearly 1.4 to 2.7 million). Over the medium term, ENDE plans to further expand the grid and increase connections in the other 11 provinces of the central, eastern and southern regions.

8. **A shift towards a more affordable energy mix, higher cost recovery, regulatory improvements and improved utility performance are essential to attract private investment and help deliver the energy sector transformation**. Overall investment needs under the Angola Energia 2025 strategy total US$23.3 billion, an amount that outstrips the capacity of Angola's power companies and government support. The GoA has a clear objective to attract private participation, which should contribute US$9.8 billion of investments in generation and urban distribution. Private sector interest is significant, especially in the renewable sector, whose potential looks promising (55 GW solar, 3 GW wind, and 18 GW in hydro throughout the country according to mapping studies). However, key steps must be undertaken to

establish investment climate. Above anything else, raising the credibility of incumbent power companies as off-takers of privately-produced power is the most critical step.

9. **Consistent with the principles of maximizing finance for development (MFD), the World Bank Group (WBG) is establishing a diversified and integrated assistance program to help Angola address the most impending challenges and transformational opportunities facing the energy sector**. This marks the beginning of a new engagement for the Bank, which, given the multiplicity of the challenges facing the sector, must be: (i) comprehensive; that is, blending high-level technical support, policy advise with investment financing and de-risking instruments; (ii) a sustained effort and sequencing reforms over time to address the key bottlenecks to private sector participation and improved service delivery (iii) thoughtfully sequenced while implementation capacity is built up overtime. As a foundation to the new engagement in the energy sector, the World Bank has designed the Angola Energy Sector Engagement Programmatic TA, a bank-executed 3-year program (TA Program) that is intended to deliver just-in-time policy advice, analysis, and technical support to help complete reforms, improve sector performance and build investment climate.

10. **In this context, the proposed Energy Sector Improvement Project (the Project), is intended to deliver the most critical actions needed to reduce inefficiencies in the electricity sector, improve the operational and commercial performance of utilities, and ultimately improve the investment climate to attract private sector participation**. The Project will target 'low-hanging fruits' for which immediate results for improved service delivery and higher value-for-money can be achieved. This design responds to two circumstances. First, challenges and related financing needs exceed what can be achieved under one single project. Second, as this is the first Bank-funded project in a sector that is navigating through a transition phase, selectivity and sequencing are key. Investments will be accompanied by extensive technical assistance to raise technical and operational skills at the utility level, in complementarity with the efforts made under the TA Program, as well as to establish and maintain adequate project management capacity.

Relationship to CPF

11. **The proposed Project will help reduce poverty and boost shared prosperity in Angola as envisaged under the World Bank's Country Partnership Strategy (CPS) for FY14–16, extended until the end of FY19.** The CPS is geared towards promoting more inclusive development, through two pillars: (i) s*upporting integrated national economic diversification; and (ii) enhancing the quality of service delivery.* A better performing energy sector and the expansion of electricity infrastructure are explicitly recognized as instrumental to enabling higher competitiveness and productivity of economic sectors and therefore economic diversification as envisaged under the first pillar. Expanded and more reliable electricity service is also instrumental to pillar 2 and its stated objective; that is, to improve the quality of life of the population and equip them to take a greater role in the development of the country. The Performance and Learning Review (PLR) extended the CPS and reformulated its objectives to respond to the macroeconomic challenges emerging from the decline in oil prices, with economic diversification remaining the hardcore of the Strategy. The Country Partnership Framework (CPF) for FY20-25 under preparation also recognizes the electricity sector as a priority area where to focus Government's efforts to expand and modernize infrastructure, increase access and services, lower costs, and promote integration.

12. **The Project will complement and reinforce the wider Bank's engagement in Angola, including in agriculture development, water provision, health, education and private sector participation.** Electricity is key to raise agriculture productivity and to enable provision of other basic services, such as water, health and education. Thus, outcomes under the Project will have positive externalities on other projects, including the Commercial Agricultural Development Project; the Second Water Sector Institutional Development Project; the Health System Performance Strengthening Project; and the Angola Learning for All Project.

C. Proposed Development Objective(s)

The Project Development Objective is to improve the operational and commercial performance of the electricity utilities and increase electricity access in selected cities in Angola.

Key Results (From PCN)

13. The ultimate goal of this Project is to ensure expanded and reliable electricity service to Angola's people and firms. Electricity access expansion in selected areas will be a key outcome of the Project. Equally important will be results in terms of operational and commercial improvements at the utility level, which will contribute to lift the financial and operational viability of the power sector as a whole, improve the investment climate for the private sector and enable progress towards the sector development targets set by the GoA.

14. The achievement of the PDO will be measured through the following PDO level results indicators:

- Reduction of total system losses (percent);
- Reduction of duration of outages at the transmission system level (hours/year);
- People provided with new or improved electricity service (Corporate) (Number).

15. Intermediate results indicators will include:

- Distribution lines constructed or rehabilitated under the project (km);
- Upgraded National Dispatch Center (SCADA) operational installed under the project (yes/no);
- Distribution substations constructed under the project (number);
- Increase in installed capacity in transmission substations (MVA);
- Transmission substations upgraded under the project (number)
- Enterprise Resource Planning (ERP) software installed and operational at RNT (yes/no).
- Smart meters installed to customers under a revenue protection program (number).
- Improve the billing collection rate in the sector (%).

D. Concept Description

16. **The Project consists of three complementary components.** The first focuses on the transmission sub-segment and is intended to help improve operational performance of the transmission network, which is critical to make electricity service more reliable. The second component will target the distribution sub-segment and ENDE's performance in particular. On one hand it will finance grid expansions in selected areas. On the other hand, it will finance measures to bring ENDE on a more solid financial footing and prepare the utility to handle a larger customer basis. As result, ENDE will be better equipped to implement the massive investments needed to reach electricity access targets. Also, a stronger revenue capacity on ENDE's side will complement efforts towards improving the financial standing of the sector as a whole and reduce the need for tariff increases. The last component will provide technical assistance to build technical capacity at the utility level and project implementation capacity.

17. ***Component 1 - Electricity access expansion and improvement of revenue collection (US$100 million).*** ENDE is expected to be at the forefront of the country's electrification efforts to reach 60 percent of the population by 2025. In line with this objective, ENDE plans to densify and extend the distribution network in the country's 18 province capitals. This component will finance the electrification of one or two province capitals (Uige or Cuanza Norte), with the number of municipalities and the exact locations to be determined during project preparation and based on the National Electrification Action Plan (NEAP). Investments will include densification of the low-voltage network (extension of LV networks) and construction of service connections for households, commercial, industrial and public institutions.

18. In parallel, the Project will support immediate measures to improve ENDE's commercial performance through a revenue protection program (RPP) supported by advanced metering infrastructure (AMI) to secure revenues from high value customers (i.e. commercial and industrial). The RPP will reduce ENDE's unmetered consumption on a systemic basis and, hence, increase the company's billing revenues. The RPP will complement an ongoing program sponsored by the African Development Bank (AfDB), which is targeting reduction of technical and commercial losses.

19. **Component 2 – Electricity service improvement (US$112 million).** As the country's transmission system operator (TSO), RNT is responsible for the reliable transmission of power from generation plants to the national state-owned distribution company, ENDE, through the existing high-voltage electrical grid. The reliability and safety of the electricity grid depends on RNT's capacity to optimally balance power demand and supply to avoid any fluctuations in frequency, service interruptions and even grid failure. However, RNT is unable to fulfill its functions due outdated power dispatch hardware and software, overloaded substations and inadequate company management tools. Investments under this component include: the upgrade of the SCADA system, the extension and upgrade of own telecommunications network through the installation of fiber cables in existing transmission lines, installation of capacitors for reactive compensation in existing lines and substations in Luanda province, reinforcement and upgrade of Kuito substation, upgrade of Quileva substation, and installation of software for improving power system planning and RNT's business performance and processes.

20. **Component 3 – Capacity Building for planning, operation and maintenance and for project management (US$38 million).** The sustainability of the massive investments in generation capacity and network expansion in line with the expectations set under Angola Energia 2025, very much hinge upon an improvement of the planning skills at the utility level, ability to operate and maintain the large renewable energy and notably hydropower generation capacity being built, ability to structure projects that attract commercial capital, as well as robust project implementation. This component will finance extensive technical assistance and equipment, under the following sub-components:

- Sub-component 3.1 – Capacity building for more sustainable operation of hydropower generation capacity (US$18 million). Activities financed under this sub-component will include equipment, software and technical assistance for PRODEL in the following areas: (i) Development of hydrological monitoring and forecast; (ii) Reinforcement of dam safety; (iii) Strengthening of data monitoring and management system; and (iv) Strengthening of operation and maintenance (O&M).
- Sub-component 3.2 – Technical assistance to strengthen RNT's planning capacity (US$5 million). This sub-component will finance critical feasibility studies to enable RNT to adquately plan for transmission network extensions in the eastern and southern provinces, where coverage is the least developed compounding the economic disparity and isolation of these regions.

- Sub-component 3.3 – Project management capacity building (US$15 million). Given the lack of experience of Angola's power companies in preparation and implementation of Bank-funded projects, this component will finance the costs of a Project Implementation Unit (PIU) to be established within MINEA, most likely beginning with a project preparation advance.

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

This is the first Bank-funded energy project in a changing sector context and therefore the implementation capacity is considered to be of high risk. Common structural project management weaknesses within the Government and publicly-owned sector agencies observed in other World Bank financed projects include limited human and technical capacity. A PIU will be implemented within the Ministry of Energy and Water and funds will be allocated for recruitment of specific expertise. A Stakeholder Engagement and Information Disclosure Plan (SEIDP) will be developed and disclosed. This plan will address specific risks identified by stakeholders, including risks to vulnerable people, safety and security risks affecting delivery of services, etc. and it will be updated as and when necessary. Key environmental concerns are related to potential risks and impacts from the reinforcement and expansion of the transmission and distribution network. The proposed civil works may generate some adverse impacts related to: (i) disposal and management of waste during the construction phase, (ii) occupational health and safety of workers, (iii) nuisances related to air and noise emissions, and (iv) community health and safety. As such, likely impacts are expected to be minor, of limited duration and site specific. The borrower will need to adopt measures specified in the EHSGs to the extent technically and financially feasible, prepare an ESMF and site specific ESIA. The project may involve temporary and/or permanent economic and physical displacement of people living in or near the Rights of Way. As specific sites and works will not be known until project implementation, the project is preparing an RPF.

Note To view the Environmental and Social Risks and Impacts, please refer to the Concept Stage ESRS Document**.**

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