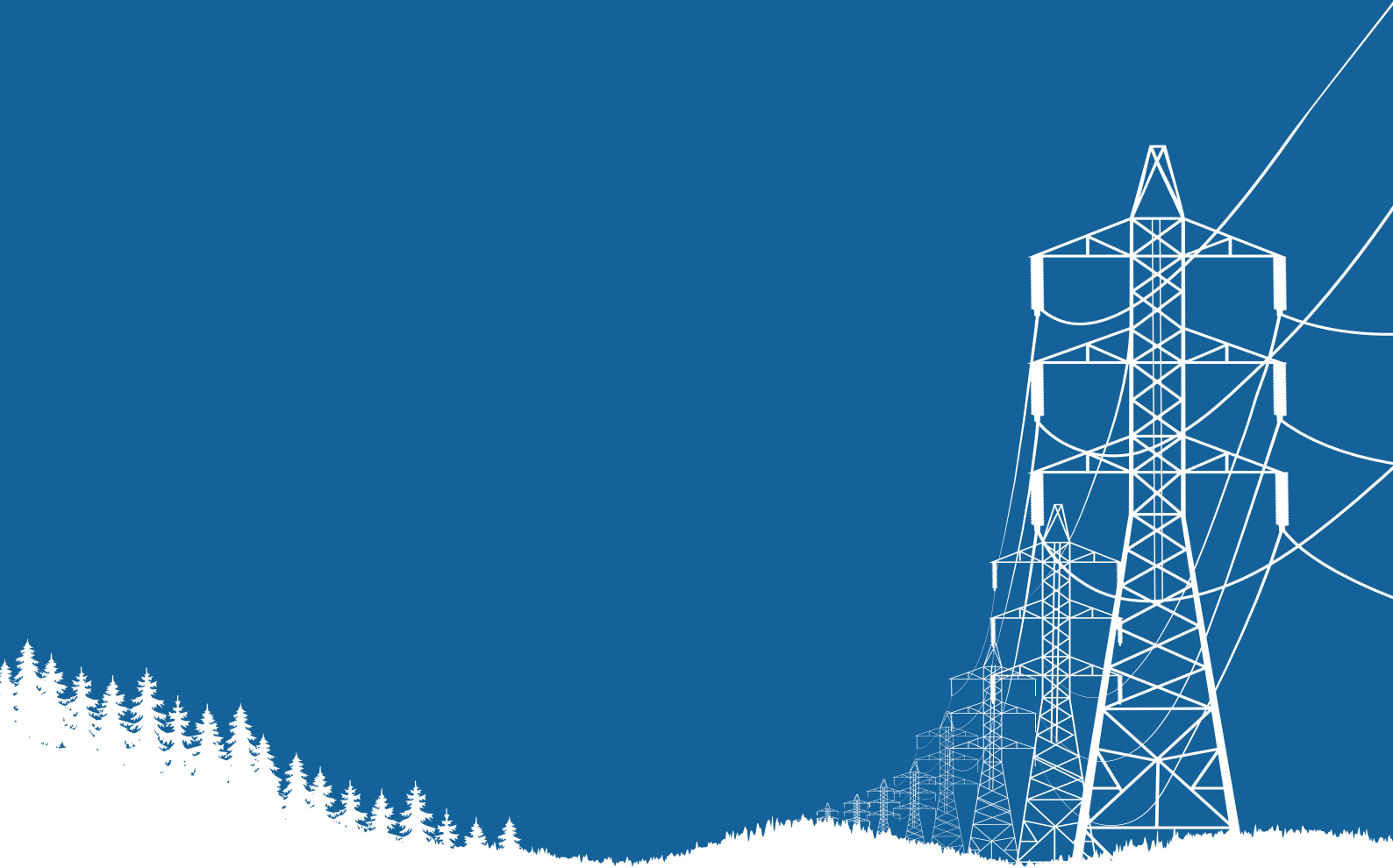




United Nations
Economic Commission for Africa



Regulatory Review of the Electricity Market in Angola:

Towards Crowding-in Private
Sector Investment



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This analysis is based on policies, laws and regulations adopted until April 2022. Therefore, the results will not consider and/or reflect the impact of policy and regulatory changes adopted thereafter.

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Analysis of Electricity Market Policy and Regulatory Framework

This regulatory review provides analyses and observations on electricity sector policies, laws, and regulations of Angola towards crowding-in private sector investment in developing national electricity infrastructure. The report is part of the joint program of the United Nations Economic Commission for Africa and the RES4Africa Foundation on *Regulatory Review of Electricity Markets in Africa: Towards Crowding-in Private Sector Investment*.

Angola is the ninth-largest economy in Africa. It is also the fourth largest oil-producing country in the continent, with oil accounting for nearly 90 percent of exports and about one-third of GDP (World Bank, 2020). In the early 2010s, Angola experienced rapid economic growth. However, growth slowed down due to a drop in oil prices. In 2016, the economy entered a recession that persisted until 2020. While the pandemic has worsened the socioeconomic condition in Angola, pre-pandemic reforms have contributed to a recovery in 2021.

The power sector of Angola has experienced rapid growth in the last decade, with electricity generation and consumption more than doubling between 2010 and 2019. Since the early 2010s, Angola has made tremendous strides in rendering its power sector governance framework more transparent and robust. Such measures were intended to address the technical and financial challenges plaguing the sector and promote the development of renewable technologies. These efforts resulted in the unbundling of the former vertically integrated public utility and the restructuring of the sector, as well as policy and regulatory reforms to create a more conducive environment for private investment.

In particular, the Amendment of the General Electricity Law in 2014 and the adoption of a comprehensive Regulation on the Generation, Transmission, Distribution, and Commercialization of Electricity (Presidential Decree No. 76/21) have ensured a clear regulatory framework for all operators in the sector, offering a wide array of options for private participation across the value chain. These reforms, alongside comprehensive and robust technical regulations, have made Angola one of the most *open* and *ready* countries for private investment on the continent.

Notwithstanding these reforms and recent developments pointing to new commitments from independent power producers (IPPs), to date, Angola has seen little private participation in any segment of the electricity sector value chain, and structural challenges persist in the electricity market. Major barriers include insufficient grid infrastructure, high distribution losses, and a slower pace of development of solar and wind energy resources compared to the country's potential. Electrification currently stands at 47 percent, and while universal electricity access remains a priority, reaching this goal requires effective participation of private investment across the value chain.

The purpose of this regulatory review is to pinpoint the main policy and regulatory strengths and to identify remaining gaps in the policy and regulatory frameworks currently in force related to private sector participation in the entire electricity market. It further aims to offer concrete recommendations for regulatory improvement and reform toward attaining a competitive, resilient, and sustainable electricity market in Angola.

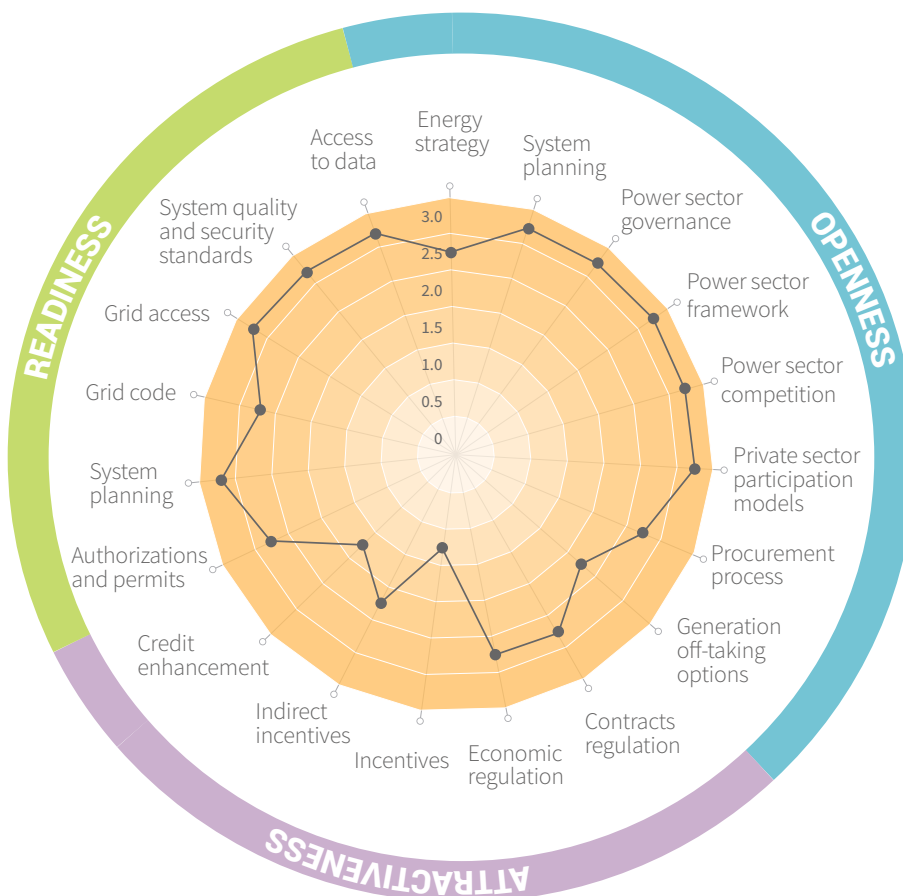
The regulatory review is undertaken following a comprehensive UNECA and RES4Africa regulatory review methodology, which was developed with the participation of African and

international regulatory experts. The approach enables three broader assessments: the degree of *openness* of the electricity market to the private sector based on an evaluation of the power sector structure and governance; the *attractiveness* of the market based on an assessment of sector economics, fair competition, and overall economic regulation; and the *readiness* of the market based on an assessment of technical regulations..

Main findings related to the Generation segment

The robust regulatory framework of Angola ensures a good degree of *openness* in its unbundled electricity generation market for private investors, offering clear procedures and a range of models for entering the market. Generators can choose from various off-taking options, benefiting from competition at both wholesale and retail levels. Greater *openness* could be achieved through the implementation of the competitive *procurement process* set out in the legislation and the strengthening of the independence of the regulatory authority, IRSEA. *Contracts* and *economic regulation* represent strong features of the current regulatory *attractiveness*, thanks to a standardized PPA and clear tariff setting and revision procedures. Angola offers limited *incentives* and *credit enhancement* options for investors, which would benefit from further policy and regulatory consideration. Despite the absence of a dedicated *grid code*, the country performs very well in market *readiness* due to a comprehensive set of regulatory instruments.

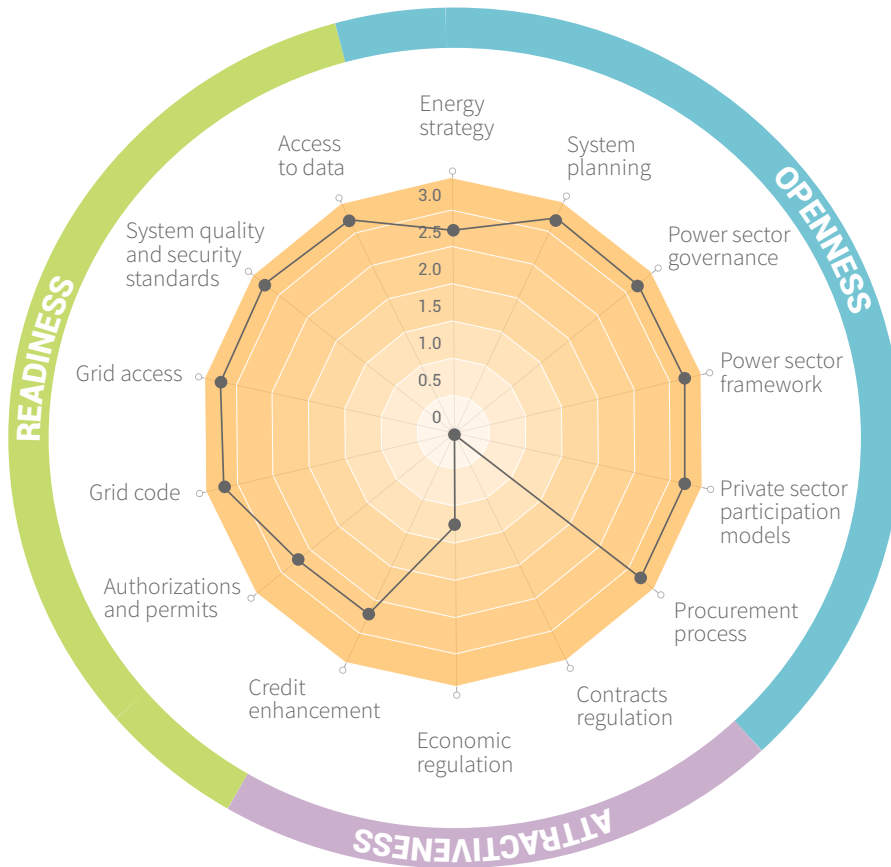
Figure 1: Overview of the generation segment



Main findings related to the Transmission segment

Transmission remains the domain of public entities in Angola, with private sector participation restricted to engineering, procurement, and construction (EPC) contracts. Nevertheless, transmission development is guided by comprehensive system planning tools and benefits from a clear regulatory and governance framework. Significant improvements in *openness* could be engendered by the liberalization of transmission activities. Transmission also offers a mixed picture of *attractiveness*. Despite the inability of private parties to obtain transmission concessions, the regulation details standardized concession agreement clauses, ensuring robust *contract regulation*. *Economic regulation* is particularly well-established due to the clear network tariff methodology and review procedures. However, the general lack of *credit enhancement* options represents a key area of improvement. Market *readiness* is strong, demonstrated by regulatory clarity regarding dispatching, non-discriminatory *grid access*, *system quality and security standards*, and *access to data*.

Figure 2: Overview of the transmission segment



Main findings related to the Distribution segment

In contrast with the transmission market segment, the policy and regulatory environment is generally *open* to distribution market investors, with private parties being able to obtain distribution concessions offering exclusivity within a geographic area. However, despite legal provisions for the issuance of tenders for distribution concessions, none have taken place yet. Distribution market *attractiveness* mirrors that of the transmission market. *Contracts* and *economic regulation* are major strengths, while considerable room remains for improving *credit enhancement* opportunities for private investors. In addition to robust regulation for technical aspects such as system operation and quality and security standards, Angola provides a contractual framework for connection to and use of system agreements for both generators and final customers.

Figure 3: Overview of the distribution segment



Main findings related to the Off-grid segment

The off-grid market segment demonstrates a good degree of *openness* to private sector participation. Strategic priorities and targets for mini-grid-based electrification are well-defined and accompanied by an investment plan. Private participation is possible through engineering, procurement, and construction (EPC) contracts, and merchant investments. The latter can take one of two forms: a mini-grid within the Sistema Eléctrico Público (SEP) governed by legislation, or a mini-grid in the parallel Sistema Eléctrico Não Vinculado (SENV) governed almost entirely by bilateral agreements between private parties. SEP mini-grids benefit from regulatory provisions for licensing requirements and procedures, to which SENV mini-grids are not required to adhere. As concession-type investments in the off-grid market are not possible, there is no need, or regulation, for their public procurement. The business environment for off-grid investors is fairly attractive. *Contracts regulation* stands out as a key strength due to legal provisions for retail contracts, as well as rules for metering and billing which apply to SEP and SENV mini-grids alike. *Economic regulation* is somewhat more complex, as SEP mini-grids must adhere to the national uniform tariff approach applied to the main grid, while SENV tariffs are deregulated. *Credit enhancement* and *indirect incentives* remain key areas of improvement in the off-grid market segment, with limited options currently available to private investors. Off-grid *readiness* for private investments is considerably weak, largely due to the absence of dedicated regulation for *off-grid system integration* and *quality and security standards*.

Figure 4: Overview of the off-grid segment



Recommendations



To enhance the *Openness* of the electricity market



Energy strategy

- ⚡ Ensure the timely review and update of energy sector policies, as defined by the law, to provide certainty about medium- and long-term strategic priorities and targets for the evolution of the national energy system;
- ⚡ Establish a legal framework for the national climate policy based on the National Strategy for Climate Change and define an institutional framework to govern its periodical review and update.



System planning

- ⚡ Comply with the legal provisions on electricity system planning stated in Presidential Decree No. 76/21 and adopt and publish a long-term power sector master plan with periodic (such as 5 years) updates;
- ⚡ Formulate shorter-term generation expansion, network expansion, and electrification plans, aligned with the long-term master plan.



Power sector governance

- ⚡ Clarify the rules and licensing procedures applicable to renewable energy generators by adopting the Regulation on Linked Renewable Generation;
- ⚡ Address the uncertainty regarding the governance of isolated systems operating within the SEP and SENV by clarifying which of the existing regulatory provisions apply to SENV isolated systems;
- ⚡ Adopt dedicated regulation for isolated systems to clarify the operational regime for both SEP and SENV operators;
- ⚡ Enhance the independence and powers of the regulator, IRSEA, notably by extending its mandate in economic regulation to improve private sector confidence in the impartial regulatory oversight of the market.



Private sector participation model

- ⚡ Assess the feasibility of introducing Public-Private Partnership (PPP) models for transmission asset investments, and evaluate the costs and benefits linked to the introduction of an Independent Power Transmission (IPT) business model for new investments in transmission asset expansion.



Procurement process

- ⚡ Provide clarity to potentially interested stakeholders and improve market predictability through procurement plans by publishing medium-term schedules for tenders and implementing competitive procurement schemes for awarding generation concessions (in line with national capacity expansion targets). Furthermore, issue tenders for distribution concessions for designated areas to encourage private sector participation in distribution infrastructure development.



Generation off-taking options

- ⚡ Pursue plans to connect to the Southern African Power Pool to provide generation market investors in Angola access to a regional spot market to expand off-taking options.



Economic regulation

To enhance the *Attractiveness* of the electricity market

- ⚡ Encourage further efforts to remove direct and indirect subsidies to electricity sector tariffs to ensure the financial sustainability of power sector utilities and attract additional private investment;
- ⚡ Evaluate the impact of the current uniform tariff policy on the financial sustainability of SEP mini-grids and assess the necessity for incentives to ensure the financial sustainability of mini-grid assets;
- ⚡ Introduce a standard tool for calculating mini-grid tariffs based on the principle of cost-reflectiveness.



Incentives

- ⚡ Specify provisions for a renewables tender program as foreseen by Presidential Decree No. 76/21 and strive for its timely implementation;
- ⚡ Assess the feasibility of introducing a feed-in-tariff for renewable energy systems under 10 MW as foreseen by the National Energy Security Policy and Strategy, and evaluate the costs and benefits of incentive mechanisms such as green certificates and renewable energy sources (RES) quotas.



Indirect incentives

- ⚡ Introduce targeted sector-specific incentives such as tax and duties exemptions for renewable technologies and off-grid asset components.



Credit enhancement

- ⚡ Establish mechanisms and instruments to de-risk investments in electricity infrastructure development, covering generation, networks, and off-grid assets;
- ⚡ Assess the feasibility of creating a risk mitigation facility dedicated to de-risking investments in energy infrastructure.



To enhance the *Readiness* of the electricity market



Authorizations
and permits

- ⚡ Streamline investment processes by establishing a one-stop-shop (or a single window) for the issuance of all permits for energy projects.



Off-grid system
integration

- ⚡ Adopt clear rules on commercial options for mini-grid business continuity, or exit options, in the event of main grid arrival.

As Angola takes further bold steps toward its energy sector regulatory reform, the United Nations Economic Commission for Africa and the RES4Africa Foundation remain committed to partnering with the Republic of Angola in addressing any of the identified regulatory and policy gaps. They also commit to supporting regulatory capacity development, as well as any area of reform interest of Angola towards greater *openness*, *attractiveness*, and *readiness* of the electricity market.



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