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RES4AFRICA FOUNDATION

Summary Regulatory Review of the Electricity Market in Ghana:

Towards Crowding-in Private Sector Investment



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This analysis is based on policies, laws and regulations adopted until June 2021. 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 report provides an analysis of Ghana's electricity sector policies, laws, and regulations in relation to crowding-in private sector participation in developing national electricity infrastructure. The report is part of the United Nations Economic Commission for Africa and RES4Africa Foundation joint program on *Regulatory Review of the Electricity Sector in Africa: Towards Crowding-in Private Sector Investment*.

Ghana's power sector reforms were initiated in the 1990s to open the system to private participation, introduce competition, and enhance the efficiency of electricity service provision. The reforms introduced far-reaching policy and institutional changes to stimulate the transformation of the sector to meet international standards. Before the reform, the prevailing system was a vertically integrated, monopolistic system in which the main power utility, the Volta River Authority, owned and operated all the electricity generation and transmission, and a significant part of the distribution assets. The reforms resulted in unbundled generation, transmission, and distribution services controlled by separate independent utilities. At the center of the reformed electricity market is the National Interconnected Transmission System, owned and operated by the National Grid Company (GRIDCo).

The review of the policy and regulatory framework indicates that Ghana has been quite successful in defining an enabling legislative environment to govern the electricity supply industry. All the regulations governing the value chain originate from a primary enabling law (Energy Commission Act 541) that seeks to promote private sector participation. Provisions to ensure transparency, guarantee fairness, and define the rules of engagement for all industry participants (without discrimination) are adequately in place for each segment of the electricity market.

Private sector participation in Ghana's electricity market has been mostly confined to generation, where several independent power producers are active. The law prohibits more than one operator to be licensed for transmission at any time, and the license is held by the public company GRIDCo, the owner of the transmission system, until 2035, but the distribution sector is open to private participation. The Energy Commission Act also envisages private sector participation in electricity brokerage, sale and exports. Nevertheless, the private sector appears not to have made substantial inroads into the value chain beyond the generation segment. Ghana has also opted for a public-led model for the development of mini-grids as alternative electricity supply solutions, limiting private sector contribution in the off-grid space.

The purpose of this regulatory review is to pinpoint the main strengths and gaps of the policy and regulatory framework 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 towards attaining a competitive, resilient, and sustainable electricity market.

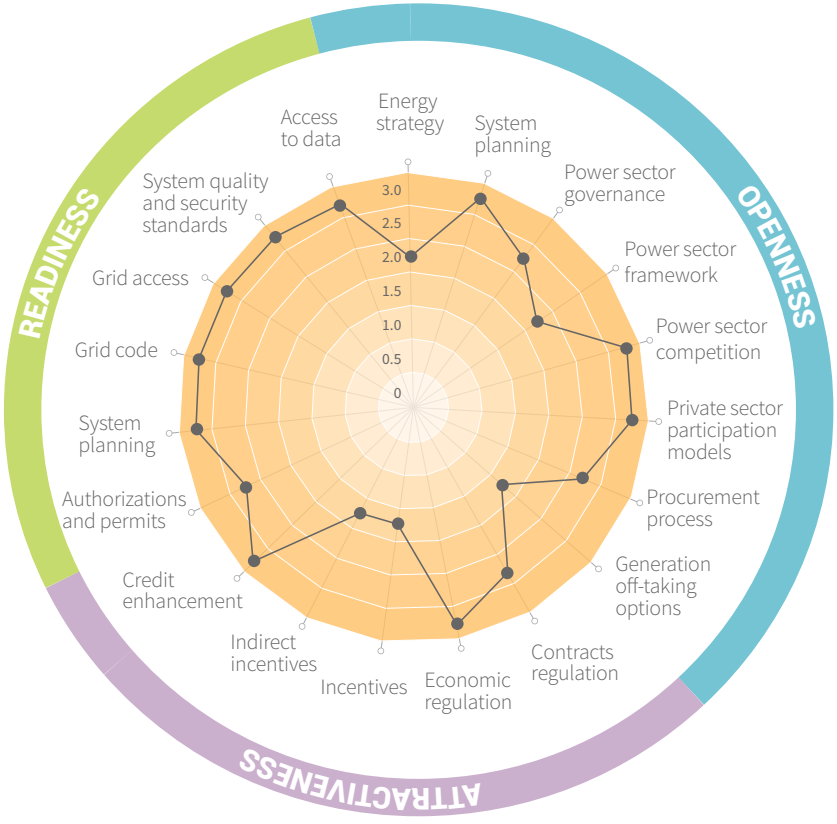
The regulatory analysis is undertaken following a comprehensive UNECA and RES4Africa regulatory review methodology, which was developed with the participation of African and international regulatory experts. The approach enables three broader assessments: the degree of *openness*

of the electricity market to the private sector based on 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

Regarding policies and regulations relevant to private investments in the electricity generation segment, Ghana appears to have reached, overall, a high degree of *openness.* The assessment confirms the good governance of the electricity sector by national regulatory authorities, the successful reform of the market framework through the introduction of the unbundling, well managed system planning regulation, as well as the ability to adopt competition-friendly legislation and successfully introduce diversified models for private sector participation. The adoption of clear rules for the economic regulation of the sector and the extensive coverage of its technical regulation by the Grid Code, explain the moderate to high level of performance in the other Dimensions, respectively the *attractiveness* and *readiness.* However, areas where further development may be beneficial have been identified for the *energy strategy,* due to an outdated national energy policy, and *off-taking options*, where generators still benefit from limited routes-to-market. The country also possesses only limited regulation concerning *incentives* and *indirect incentives* for generators, which play an important role in supporting the economic viability of investments.

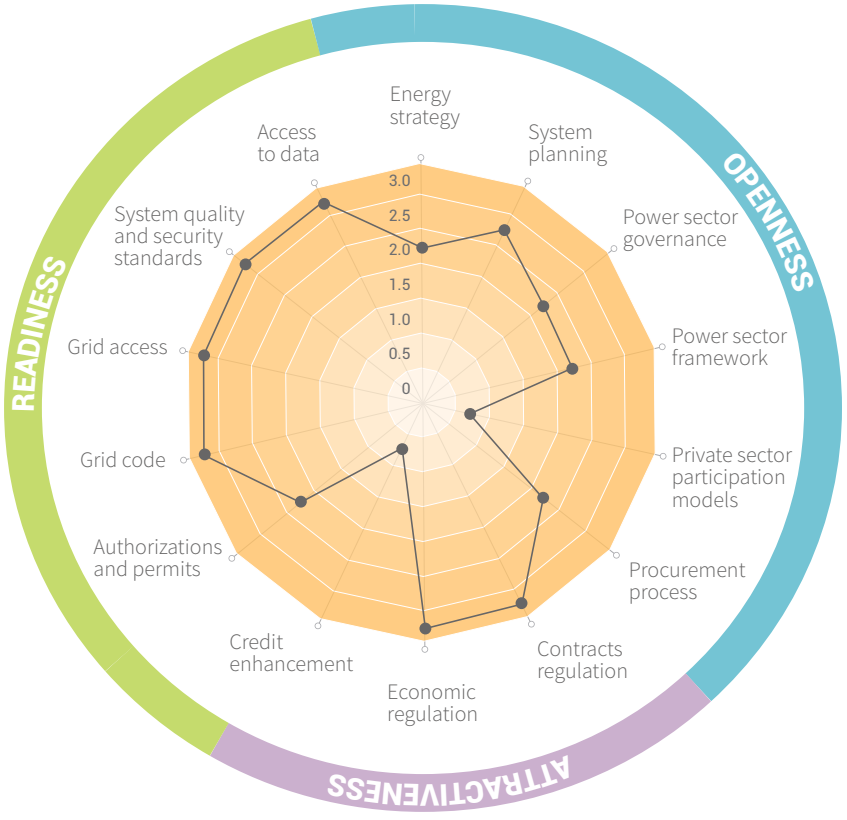
Figure 1: Overview of the generation segment



Main findings related to the Transmission segment

Ghana's Grid Code allows for private participation through engineering, procurement and construction contracts and private ownership of transmission assets, but the Energy Commission Act only allows one transmission operator to be licensed and any time, with the current operator being the national utility GRIDCo. The weaker performance in this segment is a direct consequence of the current limitations on private sector participation in the transmission service. The limitation in the *openness* Dimension is partially compensated by better performance in *attractiveness*, where the country benefits from the definition of clear rules for determining transmission service tariffs and related charges as well as a clear definition of the conditions and requirements to be included in the transmission license. For *readiness*, Ghana also performs very well in the transmission segment. Overall, from a regulatory perspective the country seems fairly prepared to crowd-in private investment in this segment of the value chain, if and when this will be possible; but would benefit from the definition of dedicated *credit enhancement* instruments and better access to necessary *authorizations and permits*.

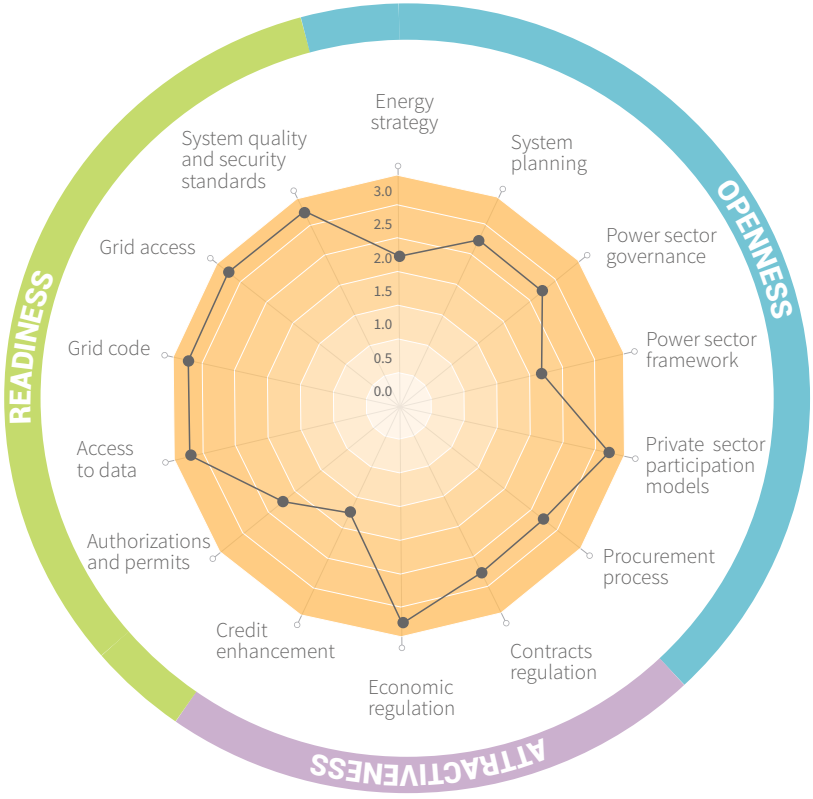
Figure 2: Overview of the transmission segment



Main findings related to the Distribution segment

Ghana policies and regulations related to the distribution segment display moderate to good performance in all the Dimensions covered. The regulation provides for private sector participation in the distribution service, as well as in electricity brokerage operations and retail, and a private distributor, Enclave Power Company, is currently operating in the country, along with the two public distributors, NEDCo and ECG. Distribution and retail licenses are accessible to private operators, and private sector participation can take a variety of forms, from concession to divestiture and privatization, as well as involvement in the construction of new assets. Rights and obligations of electricity distributors and retailers are well defined by the current regulation in terms of standards of performance, metering, billing and payments, complaints and dispute resolution, and tariff setting rules are also available from the Public Utilities Regulatory Commission. Here, private investors may benefit from better defined and diversified credit enhancement instruments to increase the bankability of their projects and better access to necessary *authorizations and permits*.

Figure 3: Overview of the distribution segment

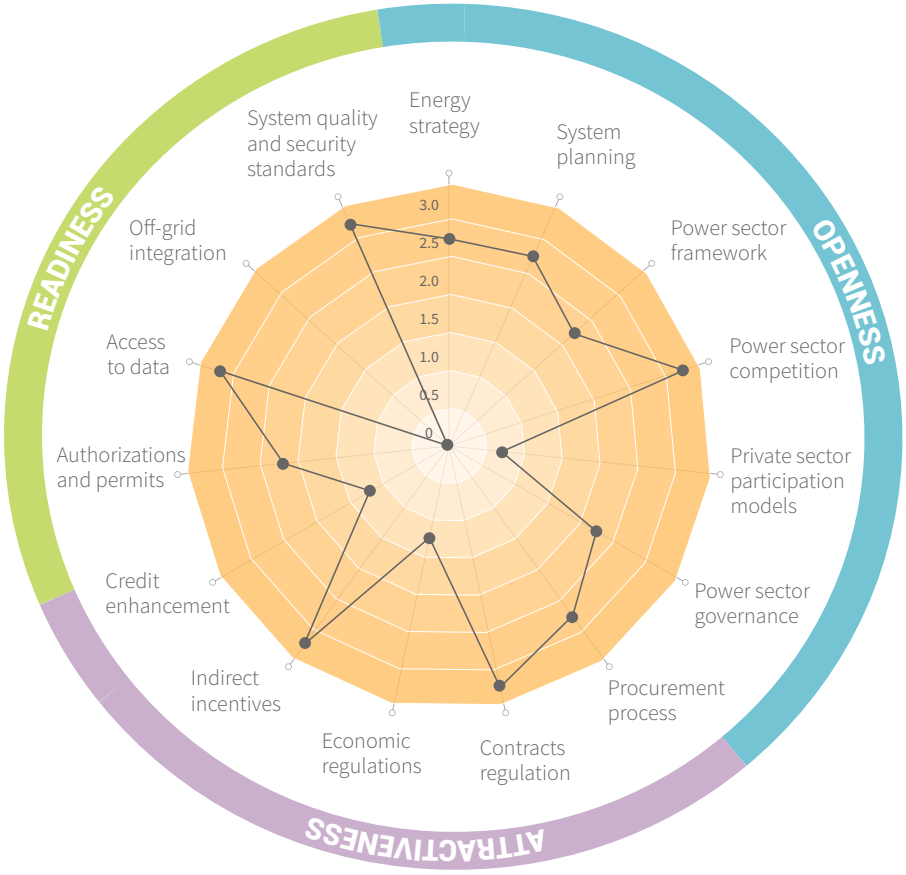


Main findings related to the Off-grid segment

The government has opted for a public sector-led business model for mini-grid assets and has severely limited private sector participation in this space. As a result, the review of policies and regulations for the off-grid market shows a lower performance in all three Dimensions. The country lacks a public agency dedicated to overseeing and implementing the national electrification agenda, potentially affecting the governance of this market segment, and specific commercial and technical regulations for the operation of mini-grids are still under development, leaving key aspects such as rules for *off-grid system integration* with the main grid currently uncovered. The uniform electricity tariff policy currently in force applies also to mini-grid operators, with potential impacts on the financial viability of these assets that may require further and more in-depth evaluations from Ghana's electricity sector authorities.

To address the identified challenges and gaps in the policy and regulatory environment and move towards more effective private sector participation, the following measures are recommended for Ghana.

Figure 4: Overview of the off-grid segment



Recommendations

To enhance the *Openness* of the electricity market



Energy strategy

- Pursue a comprehensive review and update of its energy policy to provide overall guidance on the evolution of the national electricity supply industry and drive investments along the value chain; energy policy update must continue over the years to align with Ghana's socio-economic progress.
- Set ambitious yet realistic energy policy targets, compatible with the realities of national social and economic development ambitions and backed by appropriate legislation to ensure their enforceability and an effective oversight of their implementation.



System planning

- Strengthen the link between indicative electricity system plans and the public procurement of new infrastructure, notably generation assets, to ensure an effective system development and avoid cost inefficiencies.
- Ensure coordination and encourage investments in the off-grid space through a *national electrification plan* and related *investment plan*.



Power sector governance

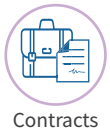
- Explore the opening of the mini-grid space to private companies and adopt a dedicated licensing regime for mini-grid operators to ease and regulate market entry by investors.
- Explore the possibility of adopting an *electricity law* as a foundational law to define sector governance, electricity service operators' regimes, and rights and obligations for all market players.



Procurement process

- Adopt dedicated legislation to support the implementation of *national policy on public-private partnership* and set rules for public-private partnerships in the electricity supply industry to support investments in the relevant infrastructure.

To enhance the *Attractiveness* of the electricity market



Contracts regulation

- Develop and adopt standard guidelines for power purchase agreements to increase market transparency and reduce transaction costs in negotiating contracts.



Economic regulation

- Proceed towards full cost-reflectiveness of final electricity tariffs by progressively reducing all remaining subsidies (direct and indirect), as a necessary step for the financial sustainability of utilities.
- Evaluate the impact of the current uniform tariff policy on the financial sustainability of mini-grid technologies and explore new tariff policies for mini-grids based on the principle of cost-reflectiveness and on the use of a standard calculation tool for mini-grid tariff definition.



Incentives

- Review the national legislation on the public supporting schemes dedicated to renewable energy to align it with government objectives through the amendment of the Renewable Energy Act.



Credit enhancement

- Considering that financing is a major challenge for energy investors, enhance market *attractiveness* by improving accessibility of credit enhancement instruments, especially for the distribution and off-grid segments of the market.

To enhance the *Readiness* of the electricity market



Authorizations and permits

- Institute a one-stop-shop, or a single-window, to coordinate and facilitate authorizations and/or permit applications accessible to investors.



System planning

- Integrate off-grid technologies and service expansion into national electricity system planning, along with distribution system extension, for a better coordination of electrification efforts.



Grid code

- Adopt a National Distribution Code detailing procedures that govern distribution service and the relationship between a distributor and users of its distribution system to enhance clarity and ensure accountability of distributors.



Off-grid system integration

- Adopt clear rules on commercial options for mini-grid business continuity, or exit options, in anticipation of main grid arrival.
- Develop and enforce dedicated technical standards for mini-grids, which can offer mandatory and optional grid-compatible standards to ensure safety, stability, and reliability of mini-grid system integration without undue costs to investors.

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



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