

TERMS OF REFERENCE

Preparation of a roadmap for the institutional strengthening and capacity building of ONSEC - Transmission, System Operator and Single Buyer in power sector of Cabo Verde.

1- BACKGROUND

The electricity sector in Cabo Verde has made tremendous progress in the past two decades. Access to electricity service reached approximately 95 percent at present (from 47 percent in 2000); there is enough power generation installed capacity to meet the country's demand for electricity; and important investments in new sub-transmission and distribution assets have improved the quality of service. In 2011, the Government of Cabo Verde (GoCV) embarked on a comprehensive recovery and reform plan for the sector with the support of several development partners. Key investments to modernize the sector included the increase of installed capacity and the reduction of operating costs of thermal generation (more efficient and larger plants, substitution of diesel by heavy fuel oil – HFO), the expansion of renewable generation capacity, and the upgrade of the transmission and distribution networks. Despite these major achievements, the electricity sector in Cabo Verde is vulnerable and continues to face challenges (in particular high losses in the distribution and retail segment) that could undermine its ability to be the engine of post COVID-19 economic growth.

Until mid-2024, major operating companies in the electricity sector of the country were the vertically integrated state-owned electric and water utility ELECTRA (only existing concessionaire in the sector), Agua e Energia da Boavista (AEB, 100% owned by GoCV), which provides water and electricity services in the island of Boavista operating under a sub-concession contract signed with ELECTRA, and Aguas de Ponta Preta (APP), which is a private company supplying water and electricity to some of the hotel areas in the south of the Sal Island. Cabeolica and Electric are independent power producers (IPPs) running wind farms with long-term power purchase agreements (PPAs) with ELECTRA.

From 2017, GoCV embarked on a new privatization and public private partnership (4Ps) agenda approved through Decree Law 87/2017. The main purpose of this 4Ps agenda is to promote growth, attracting foreign investment and strategic partners with know-how in key sectors and financial capacity, to invest in the state-owned enterprises included in the agenda, improving their efficiency levels and the quality of services, creating new business opportunities to national private sector, and consequently generating more employees, bringing a new dynamic to Cabo Verde's economy.

In the electricity sector, the 4Ps agenda implies a reform and privatization strategy approved by GoCV through Decree Law 72/2021, which establishes the vertical unbundling of activities of ELECTRA in the sector, and the creation of three separate public shareholding companies: ONSEC (national transmission and system operator and single buyer (SB)); EDEC (DisCo, an electricity distribution and retail utility); and EPEC (GenCo, a thermal power generation company). ONSEC will remain as a state-owned enterprise, while majority of shares of DisCo and GenCo are expected to be sold to investors to incorporate private sector in management and financing of the activities currently carried out by the companies. Provisions in Decree Law 72/2021 were implemented from mid-2024, and at present the 3 companies created in the electricity sector are running as separate entities with specific contractual arrangements between them in place. The Demerger of ELECTRA was approved by the General Assembly on May 16, 2024. The restructuring process has the following objectives: (a) improve transparency in the sector; (b) support energy transition; (c) reduce the cost of service by decreasing the cost of power and non-technical losses; (d) leverage private capital and expertise; and (e) improve quality of service.

Attention should be given to the increasing integration of renewable energy sources, modernization of operational systems and strengthening of institutional and technical capacities required to ensure a reliable, efficient and sustainable power system operation in Cabo Verde.

2- OBJECTIVE OF THE ASSIGNMENT

Support management of ONSEC in the design and implementation of a roadmap for the institutional strengthening and capacity building of the company to efficiently carry out its roles of transmission network operator, system operator and single buyer in the power sector of Cabo Verde.

3- TASKS TO BE CARRIED OUT BY THE CONSULTANT

Task 3.1: Examine the situation of ONSEC in the provision of electricity transmission services and operation of the power system (generation transmission and dispatch) of Cabo Verde following establishment of the company.

The Consultant shall examine ONSEC's current situation in the provision of electricity transmission services and in the operation of the power system (generation, transmission, and dispatch). This assessment shall be structured into two distinct analytical blocks:

1. ONSEC as Transmission Asset Owner

The Consultant shall evaluate ONSEC's emerging responsibilities as owner of the national transmission asset base, including its ability to specify, procure, and supervise the construction of transmission infrastructure through EPC contracts. The assessment shall also examine alternatives for the operation and maintenance (O&M) of transmission assets, including substations, lines, metering systems, protection and control.

2. ONSEC as System Operator (TSO)

The Consultant shall analyze ONSEC's capabilities and processes for real-time system operation, including dispatch of thermal, renewable, and storage resources; coordination of system balancing; and management of operational contingencies.

The assessment shall include ONSEC's organizational structure, the description of assets operated and maintained, and the identification of the main processes and activities associated with each service.

Task 3.2: Gap analysis

Following the diagnostic, the Consultant shall conduct a gap analysis comparing ONSEC's current situation with international best practices in transmission system ownership and system operation, in both developed and emerging countries.

The gap analysis shall clearly distinguish between:

- ONSEC's responsibilities as transmission asset owner, including planning, expansion,

O&M, metering, protection, and control; and

- ONSEC’s responsibilities as operator of an increasingly complex power system, including high penetration of variable renewable energy (VRE), operation of battery energy storage systems (BESS), and future operation of a pumped hydro storage (PHS) plant.

As part of the review of management processes, the Consultant shall also assess ONSEC’s responsibility for electricity procurement. ONSEC will need to develop internal expertise on:

- Procurement alternatives for electricity (VRE, BESS, hybrid projects);
- Basic concepts and design of competitive auctions;
- Structuring and tailoring of PPAs for different technologies;
- Bid evaluation and award criteria;
- Providing technical support to Government in procurement processes

Task 3.3: Propose a roadmap for the institutional strengthening and capacity building of ONSEC

Based on the gap analysis, the Consultant shall prepare a comprehensive roadmap for strengthening ONSEC’s institutional, operational, and technical capabilities. The roadmap shall include:

- Organizational structure for transmission services, system operation (generation dispatch and transmission network operation), and the single buyer function.
- Approaches for O&M of transmission networks, including metering, protection, and control.
- Approaches for system operation, including improvements to SCADA/EMS and integration of supporting tools.
- Approaches for carrying out the single buyer function, including specific procurement skills required for energy contracting.
- Grid code development covering connection requirements, protection settings, frequency and voltage standards, and VRE integration rules.
- Dispatch procedures and operational manuals for hybrid renewable–storage–thermal systems.

- Metering, data acquisition, and settlement procedures for energy flows between ONSEC, IPPs, and distributors.
- Electricity market rules and single-buyer procurement procedures.
- Deployment of a digital IPP contract management and PPA compliance platform, including contract repository, metered generation vs. contracted volumes, invoicing, payment tracking, and regulatory reporting to DNICE and ARME.

The roadmap shall include implementation plans, timelines, resource requirements, KPIs, capacity-building needs, risks, and mitigation measures.

Task 3.4: Consultation workshop

The Consultant will present the results of each task and the components of the proposed roadmap during a workshop with stakeholders. Collect and process stakeholder comments and incorporate key points and suggestions aimed at reaching consensus in a final report. The outcomes of the workshop should be included in the reports to be prepared by the consultant.

Task 3.5: Detailed organizational structure and description of senior management positions

The Consultant will carry out the detailed design of the proposed organizational structure of ONSEC and prepare the job description of all positions in senior management of the structure approved by the Client. The Consultant will recommend approaches for selection and appointment of staff in each senior management position.

Task 3.6: Support in the implementation of the approved organizational structure and execution of other activities in roadmap approved by ONSEC

The Consultant shall support ONSEC's teams in implementing the approved organizational structure and executing the roadmap. This includes drafting terms of reference and other documents required for hiring consultants and services.

Additionally, the Consultant shall support ONSEC in defining **internal processes and IT system requirements**, including:

- Needs assessment for digital systems supporting operations, dispatch, metering, contract management, and regulatory reporting;
- Preparation of procurement documentation for IT systems and operational tools.

Following completion of Task 3.2, the Consultant shall provide references for tools, methodologies, and templates applicable to real-time economic dispatch optimization.

The Consultant shall also promote knowledge transfer and on-the-job capacity building for ONSEC staff.

4- DURATION OF THE ASSIGNMENT

The duration of this assignment is estimated at 18 months, including a combination of one or 2-week missions to Cape Verde during the execution period (total expected stay in the country is 18 to 24 weeks).

5- DELIVERABLES

For each of the tasks from 3.1 to 3.5, the Consultant will prepare and submit a report to the Project Management Unit (PMU), according to a schedule to be agreed between the parties during contract negotiations. Deliverables related to execution of Task 3.6 will be agreed by the parties during its execution.

6- QUALIFICATIONS OF CONSULTANT

- ✓ Holder of an engineering degree or equivalent degree in electrical engineering, with at least ten (15) years of experience in the planning, design and/or operation of electricity networks running at 60 kV or higher voltage levels and/or operation of power (generation, transmission and dispatch) systems with electricity transmission networks of 60 kV or above, and distribution networks of 20 kV.
- ✓ Experience on managing of Electricity Market, especially in Island Countries with substantial renewable integration levels;
- ✓ Fluency in Portuguese, both written and spoken, and effective communication skills; knowledge of English and/or French is an asset, as well as a high sense of responsibility and good organizational skills.