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BOA VISTA INTERNATIONAL CONFERENCE OF PARTNERS 2023 (CIP23)

ENERGY_2023

VISION

Type of Opportunity: Public, Private, PPPs

Resources Required: € 518 M

Promoter: Ministry of Industry, Trade and Energy (MICE)

Seeking: International Development Partners, Technical Cooperation, Grants, Concessional Loans and Private Investments

Location: Cabo Verde

Status: Legal Framework and Master Plan approved, Strategy and Goals Established, Studies Developed, and Request for Proposals for international Tenders in Development;

Duration: 2019 - 2030

Beneficiaries: Population of Cabo Verde, Industry, Trade and Energy Sectors

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CONTEXT

Cabo Verde plans to undertake a major shift towards the low-carbon economy by increasing the share of renewable energy sources in the electricity supply from 18% to 30% in 2025, at least up to 50% in 2030. With adequate support, Cabo Verde has indicated that the target for the share of renewable energy sources may go up to 100% by 2040. Cabo Verde also plans to secure on-grid or off-grid electricity supply across nine islands and to reach 100% access to electricity for all consumers by 2026.

The second edition of the National Program for Energy Sustainability (PNSE II), maintain the long-term goal signals the need to accelerate the transition to a secure, efficient and sustainable energy sector, without dependence on fossil fuels, while ensuring universal access and energy security.

Beyond the five axes of interventions identified in the previous edition namely: Institutional Strengthening and Business Environment Improvement; Reform of the Organizational Structure of Energy Market; Investment in Strategic Infrastructures; Development of Renewable Energy; and Promotion of Energy Efficiency. The PNSE II includes to new axes, Promotion of Entrepreneurship and R&D and Inclusion and Gender Equity

Wind and Solar IPPs

The focus is the execution of 2018-2040 Master Plan for the Electricity Sector with the objective of reaching 54% of total energy requirements supplied by renewable sources by 2030, achieving a total capacity of 251 MW, plus more than 620 MWh of storage capacity. This strategy foresees the installation of more than 150 MWp of new solar PV projects and more than 60 MW of new Wind Farms across the Country.

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E ACELERAR O DESENVOLVIMENTO**

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Since its approval, progress has been made in the procurement of new renewable capacities (around 40 MW of new renewable IPP are ongoing), and the distributed generation installed capacity have been increasing from 3,8 in 2018 to 8,6 MW of installed capacity in 2022, and an additional 4 MW of Auto-producer capacity in the Touristic resort and fish processing plant, was also installed, but significant challenges are yet to be overcome and some financial closeness still persists from the side of the project developers.

With the signs of economic recovery and investments in energy-consuming activities, the strategy involves investing in storage systems to allow greater use of renewable energies and launching the new tenders foreseen in the MP.

Santiago PSP

Investment will provide a least cost solution for energy storage in Santiago Island in the context of the 2018-2040 Master Plan for the Electricity Sector contributing to the achievement of 54% penetration of renewable energy in the grid by 2030.

The Santiago PSP will be located in the valley of Ribeira de São João, about 20 km west from the City of Praia, identified during the Feasibility Study performed in 2021. The turbine/reversible pump storage, with an installed capacity of 20 MW and 150.8 MWh energy storage capacity, comprises two large off stream reservoirs, with live water storage capacities of 320 000 m³ and 360 000 m³, connected by a penstock with length of 0.8 km, with a surface Powerhouse / Pumping station.

The envisaged construction schedule has a duration of two and a half years, with commissioning at the end of 2027. The overall cost estimate for the construction of the PSP is 55 M€.

The 20 MW Pump Storage Plant would allow for the minimization of renewable energy curtailment, mostly due to its capacity to provide spinning reserve services in replacement of thermal generation, but also due to its capacity to store surplus energy.

The structuring project has made important progress with the realization of robust detailed studies and preparation of the elements for the structuring of the PPP tender dossier aiming to have the infrastructure on grid by 2027.

Battery Storage

Investment will support the design and implementation of Energy Storage Systems (ESS) in all islands, to serve as a means for reducing the need to curtail renewable energy (RE) production and improve dynamic frequency control. Thus, the investment foresees a utility-scale ESS, which may potentially be used to provide several auxiliary like frequency control, provision of short-circuit power, dynamic voltage control and/or by storing excess output of RE and for grid support.

Where appropriate, implementation will consider a Build Operate and Own (BOO) modality, to be executed by the private sector. In this context, and to mitigate temporary market barriers, the project will consider an up to 30% co-financing grant scheme to make the project bankable. The grant-debt mix of any blended finance will be defined after the completion of the technical evaluation.

- With regard to energy storage the first MW of lithium batteries will start operating by May 2023 and two more tenders will be launched in São Vicente (8 MW/8 MWh) and Boavista (6 MW/6 MWh). New BESS 5MW/5MWh in Sal (cabéolica exp. project) and New BESS 5MW/5MWh in Santiago

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Distributed Generation

The project is intended to have public funding for the promotion of RE microgeneration (distributed generation) for self-consumption, including the co-financing of renewable energy systems for eligible families and small businesses, and the pumping groundwater. And also finance for renewable energy systems for public buildings, including schools and health centers, releasing valuable funds for other needs. With bonus of 50% reduction in interest rates for systems purchased with loans from commercial banks.

In the current context, Cabo Verde has a total of 8.1 MWp of micro-generation capacity (distributed generation) installed (on and off-grid), distributed by almost all sectors, such as water pumping systems for agriculture, self-consumption for public buildings, private systems for self-consumption in industries, businesses and for households. The goal for 2030 is set at 15 MWp of installed capacity.

Energy Efficiency

A Energy Efficiency (EEBC) Building Code, and establishment of Minimum Energy Performance Standard (MEPS)' and 'Labelling of high-efficiency appliances, and a certification and testing mechanism for energy efficiency appliances, are all approved. Also the Regulation to promote energy Efficient in Energy Intensive Consumers and to promote Energy Services Company (ESCO) has been approved. Actions for the operationalization of these legislations have already been identified and have already begun to be implemented.

The next steps will involve the introduction of some demonstration projects, namely: **Energy Efficiency in Public Lighting** (Street Light Replacement with LED bulbs); **Promotion of Energy Efficiency in Appliances and Buildings** (Replacement of Incandescent and Fluorescent Bulbs); Energy Efficiency in the Public Administration; Sustainable Schools Project; Energy Efficiency in Industry and Tourism; **Mass Introduction of Solar Thermal Systems; and Incremental Growth in Access to Clean Cooking technologies** (Changing from the use of firewood for Liquefied Petroleum Gas (LPG)).

Brava Sustainable Island

Investment will support the development and implementation of innovative solutions for the island of Brava, a territory where most of its energy needs are provided through renewable energy (RE) sources, while leveraging technological advances in energy efficiency, energy storage, sustainable mobility, and a smart grid. This investment will serve as a catalyst for capacity building, and lessons learned required to replicate initiatives in other islands, in line with the targets set forward in the NDC.

For the energy component, Phase 1 will involve the installation of both wind and solar power plants with capacity of 1MW (2 M€ capex) and 1.3MW (1 M€ capex) respectively, to be implemented by the participation of private sector. Storage facilities of 1.1 MW/6.6 MWh (2.5M€ capex) are also contemplated, with the inclusion of a SCADA system along with investments in reinforcing and upgrading the electricity grid.

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E-mobility

In this regard, Cabo Verde's Electric Mobility Policy and Action Plan have been adopted in February 2019 which aims of converting the public administration fleet to electric vehicles by 2030, and phase out conventional vehicles by 2050.

The country was able to successfully apply for funds from the NAMA Facility to implement a Project "Promotion of Electric Mobility in Cabo Verde (ProMEC)" that is greatly contributing to the implementation of Electric Mobility Policy and Action Plan. ProMEC will provide Technical and Financial support of rebate mechanism for Electric Vehicles and Electric Vehicles charging stations, the establishment of a basic public charging infrastructure and electric bus demonstration projects.

The implementation of the policy charter for electric mobility is moving forward. From 2016 until now the fleet of EVs in circulation has increased from 0 to more than 120 EV, and we already have about 88 pre-approved applications since the beginning in June 2022 of the scope of the incentive program for the acquisition of electric vehicles. The tender for the selection of a concessionaire that will install the first 44 public charging stations financed under the Promec, a contract to be signed by the end of this month, is also underway.

The resources required will be used to expand the public charging stations and promote adoption of Electric Vehicles in the public administration and public transport.

Grid Reinforcement & SG Road Map

Managing a high rate of penetration of renewable energy in the grid is a challenge and demands a robust distribution network and a technologically advanced, flexible and efficient distribution centre, to avoid or minimize the risk of instability. An assessment of the Cabo Verde's power grid has determined the maximum allowable renewable energy (RE) penetration on all islands from a stability point of view, which is a key-factor for the secure operation each power grid, as well as for selecting which type of RE- power plants will be constructed in the years to come.

A National Dispatching Centre is already built to monitor and control the national energy grid, with a SCADA/EMS/DMS system. Currently only three islands are connected, Sal, Santiago e São Vicente, and studies for SCADA integration of Boa Vista are being executed.

The proposed investment aims at modernizing the grid, and connects the other island to the SCADA/EMS/DMS system. Investments are also needed to integrate new modules into the SCADA System, such as Advance storage module and Distributed Energy Resources Management System.

Other important measures to reduce losses in the grid require the mass substitution of the all analogue meters and the installation of advanced smart meters. This will allow the utility to control the energy distributed to all clients and reduce the non-technical losses.

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Financing of Risk Mitigation Mechanism (De-Risking)

The objective of this project is to introduce centralized de-risking mechanism to improve the financing environment and boost private sector investment in renewable IPPs and Storage and other grid service providers to enhance payment support guaranties in the energy system.

Institutional Strengthening and Reform of Energy Market

Design and implementation of the New Structure of Organization of the Energy Market and to reinforce the institutional and regulatory environment through training, capacity building and development of human resources.

Entrepreneurship and R&D in the Energy Sector + Inclusion and Gender Equity

It is considered important to foster scientific and technological research in the field of wind, solar, geothermal energy and ocean thermal energy conversion (OTEC), and the creation of institutional solutions to centralize energy research efforts, capable of integrating important centers and global knowledge networks and R&D in the field of energy, deepening the scope of the Social Tariff for Electricity for a more inclusive energy market.

Green Hydrogen Pilot

Integrating large-scale solar and/or wind power production and Power-to-X concepts in Cabo Verde

REASONS TO INVEST

- Increase the access to clean, green and modern electricity;
- Reduced energy costs for households, industries, public buildings and the cost of water for agriculture;
- Reduced emissions of greenhouse gases (GHG);
- Reduced imports of fossil fuels;
- Increased penetration of renewable energy;
- Reduction in losses at the electrical grid;
- Reduction of the external dependence on fossil fuels;
- A more competitive economy by reducing the fixed energy costs.

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Investment Impacts

Transformative Potential	HIGH: Contribute to the country's energy transition strategy, with impact on economic transformation and sustainable development, promoting universal access to energy and helping industries, services and other companies to be more competitive.
Efficiency And Effectiveness	HIGH:
Sustainable Development	HIGH: The project will contribute to SDG 7 and improve access of electric energy, reduce the cost of electricity and contribute to reduce the emissions of greenhouse gases (GHG), and create jobs for young people, contributing to Cabo Verde's sustainable development.
Country Ownership	HIGH: The projects are a high priority for the government and specifically addressed in the main strategic documents like PEDS, PNSE (the National Program for Energy Sustainability), NDC and the Master Plan for the Electric Sector, 2018-2040
Recipient Needs	HIGH: Cabo Verde is a SIDS and African State with high levels of vulnerability and fragility, particularly with regard to climate change, and high energy costs and dependency on imported fossil fuels.costs and dependency on imported fossil fuels.
Investment Opportunities	HIGH: Build Operate and Own (BOO) modality, where appropriate, to be executed under public-private partnership (PPP), and complement with tailored incentives to support key pillars

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BUDGET

ID	Projects	Total (M €)
ENE01	Wind and Solar IPPs	241,5
ENE02	Santiago PSP	60,0
ENE03	Battery Storage	60,0
ENE04	Distributed Generation	7,0
ENE05	Energy Efficiency Project	23,0
ENE06	Brava Sustainable Island (Phase 1)	8,5
ENE07	E-mobility	19,8
ENE08	Grid Reinforcement & SG Road Map	46,0
ENE09	Financing of Risk Mitigation (De-Risking)	15,0
ENE10	Institutional Strengthening and Reform of Energy Market	7,4
ENE11	Entrepreneurship and R&D in the Energy Sector + Inclusion and Gender Equity	9,8
ENE12	Green Hydrogen Pilot	20,0
TOTAL (M#)		518,0

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