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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
AND
INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON

A PROPOSED LOAN
IN THE AMOUNT OF US\$3.5 MILLION
AND A PROPOSED CREDIT
IN THE AMOUNT OF SDR 2.5 MILLION (US\$3.5 MILLION EQUIVALENT)

WITH CO-FINANCING FROM THE CANADA CLEAN ENERGY AND FOREST CLIMATE FACILITY
(CCEFCF) IN THE AMOUNT OF US\$7.0 MILLION
AND A CCEFCF GRANT IN THE AMOUNT OF US\$0.5 MILLION

AND A TRUST FUND GRANT FROM THE GLOBAL INFRASTRUCTURE FACILITY (GIF)
IN THE AMOUNT OF US\$2.0 MILLION

TO THE
REPUBLIC OF CABO VERDE

FOR A
RENEWABLE ENERGY AND IMPROVED UTILITY PERFORMANCE PROJECT

October 25, 2021

Energy and Extractives Global Practice
Western and Central Africa Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective August 31, 2021)

Currency Unit = Cape Verdean Escudo (CVE)

CVE 93.61 = US\$1

US\$ 1 = SDR 0.7021

FISCAL YEAR

January 1 – December 31

Regional Vice President: Ousmane Diagana

Country Director: Nathan M. Belete

Regional Director: Ashish Khanna

Practice Manager: Kwawu Mensan Gaba

Task Team Leaders: Thierno Bah, Megan Meyer

ABBREVIATIONS AND ACRONYMS

AdP	Water of Portugal (<i>Águas de Portugal</i>)
AEB	Water and Energy of Boa Vista (<i>Águas e Energia da Boa Vista</i>)
AFRI-RES	Africa Climate Resilient Infrastructure Investment Facility
ARME	Multisectoral Regulation Agency of the Economy (<i>Agência Reguladora Multissetorial da Economia</i>)
BAU	Business As Usual
CAGR	Compound Annual Growth Rate
CBA	Cost-Benefit Analysis
CCEFCF	Canada Clean Energy and Forest Climate Facility
CERMI	Center for Renewable Energy and Industrial Maintenance (<i>Centro de Energias Renováveis e Manutenção Industrial</i>)
CLGP	Local Complaints Management Committee
COVAX	COVID-19 Vaccines Global Access
CPF	Country Partnership Framework
CVA	Cabo Verde Airlines
CVE	Cape Verdean Escudo
DFIL	Disbursement and Financial Information Letter
DisCo	Distribution Company
DNICE	National Directorate of Industry, Commerce, and Industry (<i>Direção Nacional da Indústria, Comércio e Energia</i>)
DPF	Development Policy Financing
E&S	Environmental and Social
EDP	Energy of Portugal (<i>Energias de Portugal</i>)
EIRR	Economic Internal Rate of Return
ELECTRA	Electricity and Water Company (<i>Empresa de Electricidade e Água</i>)
ENPV	Economic Net Present Value
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FDI	Foreign Direct Investment
FM	Financial Management
GDP	Gross Domestic Product
GM	Grievance Mechanism
GRS	Grievance Redress Service
FNPV	Financial Net Present Value
GenCo	Generation Company
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gas
GIF	Global Infrastructure Facility
GoCV	Government of Cabo Verde
HFO	Heavy Fuel Oil
HSE	Health, Safety, and Environmental

IBRD	International Bank for Reconstruction and Development
IC	Individual Consultant
ICR	Implementation Completion and Results Report
ICT	Information and Communication Technology
IDA	International Development Association
IFC	International Finance Corporation
IFR	Interim unaudited Financial Report
IMF	International Monetary Fund
IPF	Investment Project Financing
IPP	Independent Power Producer
LCS	Least-Cost Selection
LMP	Labor Management Procedures
LV	Low Voltage
LuxDev	Luxemburg Development Agency
MICE	Ministry of Industry, Commerce, and Energy (<i>Ministério da Indústria, Comércio e Energia</i>)
MoHSS	Ministry of Health and Social Security (<i>Ministério da Saúde e da Segurança Social</i>)
MSMEs	Micro, Small, and Medium Enterprises
MV	Medium Voltage
MW	Megawatt
NDC	Nationally Determined Contribution
NPV	Net Present Value
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
PDO	Project Development Objective
PIM	Project Implementation Manual
PIU	Project Implementing Unit
PPA	Purchase Power Agreement
PPSD	Project Procurement Strategy for Development
PTF	Privatization Task Force
PV	Photovoltaic
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
RFB	Request for Bids
RE&EE	Renewable Energy and Energy Efficiency
RE&EEOI	Renewable Energy and Energy Efficiency and Operational Improvement
RFQ	Request for Quotations
RPF	Resettlement Policy Framework
RPP	Revenue Protection Program
RRESP	Recovery and Reform of the Electricity Sector Project
SB	Single Buyer
SDTIBM	Boa Vista and Maio Islands Tourism Development Society (<i>Sociedade de Desenvolvimento Turístico das Ilhas de Boa Vista e Maio</i>)
SEA/SH	Sexual Exploitation and Abuse and Sexual Harassment
SEP	Stakeholder Engagement Plan
SMEs	Small and Medium Enterprises

SOEs	State-Owned Enterprises
STEP	Systematic Tracking of Exchanges in Procurement
SLV	Special Low Voltage
TACV	Cape Verde Air Transport (<i>Transportes Aéreos de Cabo Verde</i>)
TSO	Transmission and System Operator
UGPE	Special Projects Management Unit (<i>Unidade de Gestão de Projetos Especiais</i>)
VAT	Value Added Tax
VRE	Variable Renewable Energy
WBG	World Bank Group



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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Cabo Verde	Renewable Energy and Improved Utility Performance Project	
Project ID	Financing Instrument	Environmental and Social Risk Classification
P170236	Investment Project Financing	Moderate

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input checked="" type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
15-Nov-2021	31-Dec-2026

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The project development objectives are to (i) increase renewable energy generation; and (ii) improve the performance of the electricity utility in Cabo Verde by leveraging private finance.

Components

Component Name	Cost (US\$, millions)
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Renewable and Efficient Electricity Service	12.50
Advisory Services for Electricity Sector Restructuring and Privatization	2.00
Project Implementation Support and Technical Assistance	2.00

Organizations

Borrower: Republic of Cabo Verde

Implementing Agency: Special Project Management Unit
Ministry of Finance

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	51.50
Total Financing	51.50
of which IBRD/IDA	7.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	3.50
International Development Association (IDA)	3.50
IDA Credit	3.50

Non-World Bank Group Financing

Trust Funds	9.50
Canada Clean Energy and Forest Climate Facility Trust Fund	7.50
GLOBAL INFRASTRUCTURE FACILITY	2.00
Commercial Financing	35.00
Unguaranteed Commercial Financing	35.00



IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Cabo Verde	3.50	0.00	0.00	3.50
National PBA	3.50	0.00	0.00	3.50
Total	3.50	0.00	0.00	3.50

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027
Annual	1.65	2.85	5.24	5.33	0.96	0.47
Cumulative	1.65	4.50	9.74	15.07	16.03	16.50

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	● Low
2. Macroeconomic	● Substantial
3. Sector Strategies and Policies	● Substantial
4. Technical Design of Project or Program	● Low
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Low
7. Environment and Social	● Moderate



8. Stakeholders	● Substantial
9. Other	● Substantial
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant



NOTE: For further information regarding the World Bank’s due diligence assessment of the Project’s potential environmental and social risks and impacts, please refer to the Project’s Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

LA/FA, Schedule 2.I, A: The Borrower (Recipient) shall maintain, at all times during Project implementation, the UGPE with sufficient resources, competent staff in adequate numbers and responsibilities, all acceptable to the Bank and as set forth in the Project Implementation Manual.

Sections and Description

LA/FA, Schedule 2.I, B: Prior to the carrying out of Parts 2.1(b) through 2.1(d) of the Project, the Borrower (Recipient), through UGPE shall: (a) furnish to the Bank a draft AP; (b) diligently review the draft AP to incorporate the Bank’s recommendations; and (c) furnish to the Bank an AP in form and substance acceptable to the Bank.

Sections and Description

LA/FA, Schedule 2.I, C1: Prior to the carrying out of Part 1.2 of the Project, the Borrower (Recipient), through UGPE shall enter into an agreement with CERMI and MoHSS, under terms and conditions acceptable to the Bank and as set forth in the Project Implementation Manual, including, inter alia: CERMI’s obligation to support the operation and maintenance of investments under Part 1.2 of the Project.

Sections and Description

LA/FA, Schedule 2.I, D1: No later than three (3) months after the Effective Date, the Borrower (Recipient), through UGPE shall adopt and thereafter carry out the Project in accordance with the provisions of a manual (the Project Implementation Manual) satisfactory to the Bank, containing, inter alia: (a) specific provisions on detailed arrangements for the carrying out of the Project; (b) the procurement, financial management and disbursement requirements thereof; (c) the performance indicators; (d) the Project environmental and social instruments; and (e) the Anti-Corruption Guidelines.

Sections and Description

LA/FA, Schedule 2.I, E: For purposes of carrying out the Project, the Borrower (Recipient), through UGPE shall, not later than December 15 of each year during implementation of the Project, prepare and submit to the Bank an Annual Work Plan (AWP) for the following year, and thereafter regularly update it as needed, including, inter alia, the proposed investment plan, its related expenditures and the sources of financing needed to implement the Project activities under the AWP, all acceptable to the Bank.

Sections and Description

LA/FA, Schedule 2.I, F1: The Borrower through UGPE, shall ensure that the Project is carried out in accordance with the Environmental and Social Standards, in a manner acceptable to the Bank.

Sections and Description

LA/FA, Schedule 2.I, F5: The Borrower (Recipient), through UGPE, shall establish, publicize, maintain and operate an accessible grievance mechanism, to receive and facilitate resolution of concerns and grievances of Project-affected



people, and take all measures necessary and appropriate to resolve, or facilitate the resolution of, such concerns and grievances, in a manner acceptable to the Bank.

Sections and Description

LA/FA, Schedule 2.II, 1: The Borrower (Recipient) through UGPE shall furnish to the Bank each Project Report not later than forty five (45) days after the end of each calendar semester, covering the calendar semester.

Sections and Description

ESCP: The labor-specific GRM shall be made operational no later than 30 days prior to the recruitment of project workers and maintained throughout project implementation.

Sections and Description

ESCP: The GBV action plan shall be completed no later than six months after the project is approved by the Association.

Sections and Description

ESCP: All approved Prefeasibility-ESIAs/ESMPs for the project sites shall be updated to ESIAs/ESPMs once the feasibility studies are developed and prior to the carrying out of the relevant activities.

Sections and Description

ESCP: The solid waste management plan referred to in the ESMP shall be prepared when the specific sites are known.

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	FA, Article IV, 4.01 (a): The Loan Agreement, the CCEFCF Financing Agreement, the CCEFCF Grant Agreement and the GIF Grant Agreement have been executed and delivered and all conditions precedent to the effectiveness of said agreements (other than the execution and effectiveness of this Agreement) have been fulfilled.
Effectiveness	IBRD/IDA	LA, Article IV, 4.01 (a): The Financing Agreement, the CCEFCF Financing Agreement, the CCEFCF Grant Agreement and the GIF Grant Agreement have been executed and delivered and all conditions precedent to the effectiveness of said agreements (except for the execution and effectiveness of this Agreement) have been fulfilled.
Effectiveness	Trust Funds	Canada Clean Energy and Forest Climate Facility Single-Donor TF FA,



		Article IV, 4.01 (a): The Loan Agreement, Financing Agreement, CCEFCF Grant Agreement and the GIF Grant Agreement have been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it (other than the execution and effectiveness of this Agreement) have been fulfilled.
Type Effectiveness	Financing source Trust Funds	<p>Description</p> <p>Canada Clean Energy and Forest Climate Facility TF GA, Article IV, 4.01: This Agreement shall not become effective until evidence satisfactory to the Bank has been furnished to the Bank that the conditions specified below have been satisfied.</p> <p>(a) The execution and delivery of this Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental action.</p> <p>(b) The Loan Agreement, the CCEFCF Financing Agreement, the Financing Agreement and the GIF Grant Agreement have been executed and delivered and all conditions precedent to the effectiveness of said agreements (other than the execution and effectiveness of this Agreement) have been fulfilled.</p>
Type Effectiveness	Financing source Trust Funds	<p>Description</p> <p>GIF GA, Article IV, 4.01: This Agreement shall not become effective until evidence satisfactory to the Bank has been furnished to the Bank that the conditions specified below have been satisfied.</p> <p>(a) The execution and delivery of this Agreement on behalf of the Recipient have been duly authorized or ratified by all necessary governmental action.</p> <p>(b) The Loan Agreement, the CCEFCF Financing Agreement, the Financing Agreement and the CCEFCF Grant Agreement have been executed and delivered and all conditions precedent to the effectiveness of said agreements (other than the execution and effectiveness of this Agreement) have been fulfilled.</p>



I. STRATEGIC CONTEXT

A. Country Context

1. **Cabo Verde experienced spectacular social and economic progress between 1990 and 2008, despite being a small island economy with a small population only numbering to about half a million people.** Indeed, the gross domestic product (GDP) increased from an annual growth rate of 3.5 percent in 1990 to 10.4 percent in 2008. That growth, driven mainly by the rapid development of inclusive tourist resorts, allowed the small archipelago of ten volcanic islands (of which nine are populated) situated in the Atlantic Ocean, about 500 km off the coast of Senegal, to graduate to middle-income status in 2007 (currently classified in the lower-middle-income group).

2. **Before the COVID-19 pandemic, Cabo Verde experienced robust and accelerating economic growth on the back of a blooming tourism sector and strong structural reforms, which was halted by the economic crisis triggered by the pandemic.** Following the global financial crisis of 2008, annual growth accelerated in Cabo Verde, particularly between 2016 and 2019, reaching 4.7 percent on average during that period, on the back of a thriving tourism sector and strong structural reforms. These included state-owned enterprises (SOEs) reform, fiscal restraint, and debt reduction. The unfolding crisis reversed this progress. GDP is estimated to have contracted by 14.8 percent in 2020 (15.7 percent in per capita terms), the third-largest reduction in Sub-Saharan Africa. Because of the substantial reduction in fiscal revenue, both the fiscal deficit and financing needs increased substantially in 2020. The overall deficit (including grants) widened from 1.8 percent of GDP in 2019 to 8.8 percent in 2020. Tax and nontax revenue declined from 29.4 percent of GDP in 2019 to 23.6 percent in 2020. Total expenditures increased from 31.2 percent of GDP in 2019 to 35.4 percent in 2020. Public debt (as a share of GDP) had been on a declining path since 2017, falling from 128.4 percent of the GDP in 2016 to 124.9 percent in 2019. However, the increase in concessional external borrowing and domestic lending to cover fiscal financial needs in 2020 (and the contraction of GDP) increased public debt to 155.2 percent of GDP. Growth is projected to be 4.0 percent in 2021 supported by the gradual resumption of tourism flows.

3. **Expansionary fiscal policy, including increased support to loss-making SOEs, led to growing fiscal financing needs and a ballooning in public debt.** Weak Central Government fiscal performance, including current transfers to SOEs, was compounded by increasing below-the-line financial support to loss-making SOEs, notably to the airline and the social housing program. Growing fiscal financing needs and the provision of guarantees to SOEs fueled a rapid accumulation of public and publicly guaranteed debt, which climbed from 57 percent of GDP in 2008 to peak at 128.4 percent of GDP in 2016. While progress has been made since 2016, the SOE sector is still the most significant source of fiscal risks, with most SOEs making losses for the last couple of years, leading to an increase in the stock of debt. The total debt stock for the three largest SOEs—the real estate company, Real Estate and Habitat (*Imobiliária Fundiaria e Habitat*), which manages the social housing project House for Everyone (Casa para Todos), the electricity and water company (*Empresa de Electricidade e Água*, ELECTRA), and the national airline company, Cabo Verde Air Transport (*Transportes Aéreos de Cabo Verde*, TACV)—rebranded Cabo Verde Airlines (CVA) as of May 2018—reached 27.7 percent of GDP in 2019.

4. **In response to these challenges, the Government of Cabo Verde (GoCV) has embarked on an ambitious program of reforms for SOEs and, more broadly, of improving the business environment and**



quality of delivery of key services such as transport, energy, and information and communication technology (ICT). The initial reform efforts have already yielded significant results in the performance of the SOE sector in Cabo Verde and, in turn, reduced the fiscal risk related to SOEs. In 2018, the SOE sector in Cabo Verde reached a positive overall net result of CVE 235.786 million (about US\$2.45 million equivalent)¹, constituting an increase of 183 percent over 2017. In 2019, the public financing² to SOEs represented 7 percent of GDP, down from 9.57 percent and 10.90 percent of GDP in 2018 and 2017, respectively. Similarly, annual public revenues from SOEs³ skyrocketed from US\$0.35 million in 2017 to US\$22.5 million in 2019.

5. The COVID-19 pandemic unleashed unprecedented threats to social and economic progress in Cabo Verde, significantly worsening the economic outlook. The pandemic poses major threats to the global economy, which are exacerbated in Small Island Developing States given their high reliance on international financial and trade flows. The main transmission channels in Cabo Verde are threefold. First, the tourism sector, which represents 25 percent of GDP and drives around 40 percent of overall economic activity, is affected by worldwide travel restrictions in place since March 2020. Second, the delay or cancellation of planned investment projects due to lingering global uncertainty reducing foreign direct investment (FDI), a key driver of growth. Third, with a diaspora outnumbering the resident population, the global economic downturn may have an impact on remittances, currently accounting for 9 percent of GDP.⁴ Recognizing the large economic threat posed by the crisis and despite limited policy buffers available, authorities swiftly took resolute measures to contain and mitigate the impact of the pandemic, including declaring for the first time the state of emergency, boosting cash transfers, providing temporary tax exemptions, deferring taxes, facilitating credit to small business, and implementing other measures.

6. The COVID-19 crisis halted progress in the fiscal consolidation program that the Government implemented since 2016. Driven by a substantial increase in revenues and containment in expenditure, the primary balance improved steadily, turning from a deficit of 5.4 percent of GDP in 2014 to a surplus of 0.7 percent in 2019. The overall fiscal deficit declined from 7.6 percent of GDP in 2014 to 1.8 percent of GDP in 2019. Furthermore, total fiscal financing needs, including on-lending to SOEs and recapitalization, almost halved to less than 3.0 percent of GDP between 2016 and 2018—before picking up in 2019 on the back of one-off support to the privatization of CVA. Since 2017, the GoCV has been implementing an ambitious plan to gradually disengage the State from SOEs, which included the partial privatization of CVA and the concession for the provision of inter-island maritime services in 2019. The crisis increased fiscal pressures in early 2020 with the overall fiscal deficit accounting for 8.8 percent of GDP in 2020.

7. Overall, electricity services in Cabo Verde are expensive, which makes the economy less competitive and calls for actions to reduce the cost of that basic service. By reducing the cost of power generation through increased penetration of cheaper renewable energy sources as well as improved commercial performance of a restructured and privatized electricity utility, this project can contribute to

¹ US\$1 = approximately CVE 96.4. Exchange rate as of December 2018, www.oanda.com.

² This includes lending subsidies, capital injections, and guarantees for loans.

³ This includes tax payments, dividends, concession payments, and divestment proceeds.

⁴ According to the World Bank, due to the COVID-19 crisis, remittance flows to Sub-Saharan Africa are expected to decline by 23.1 percent to reach US\$37 billion in 2020. The anticipated decline can be attributed to a combination of factors driven by the coronavirus outbreak in key destinations where African migrants reside including in the EU area, the United States, the Middle East, and China (COVID-19 Crisis through a migration lens (World Bank, 2020)).



lower the cost of electricity services, increase energy independence, reduce exposure to volatile petroleum price fluctuations, and reduce greenhouse gas (GHG) emissions. Sustainable and affordable electricity service is likely to yield a growth dividend and reduce fiscal risks.

8. **Cabo Verde is performing relatively well across a range of gender indicators related to human development, but women’s economic empowerment is still hampered.** On the Global Gender Gap Index, Cabo Verde ranks among the world’s best in the ‘health and survival’ and ‘school enrollment’ dimensions. Progress on human development indicators for women have, however, not translated into women’s economic empowerment. Cabo Verde ranks only 115 out of 149 countries on ‘economic participation and opportunity for women’. The difference in engagement in economic activities between women and men is particularly pronounced in rural areas where only 36 percent of women are involved in economic activities compared to 56 percent of men. Nationwide, labor force participation of women is significantly below that of men. According to the recent Country Gender Profile report for Cabo Verde, some of the key issues that contribute to high poverty and low productivity among women are their lack of time, financing, and knowledge. Lack of financing also hinders growth and productivity of their business efforts and lack of knowledge is a key challenge, on issues including options for productive income-producing activities, networking structures to build skills, how to access markets, and so on.

9. **The archipelago of Cabo Verde is exposed to a wide range of natural hazards including droughts, tropical storms, landslides, and floods.**⁵ Climate change will worsen these risks⁶ as the country will experience higher temperatures⁷ so that by mid-century, sea level rise could vary between 1.08 m and 1.66 m, which would present a direct threat for the coastal population. Cabo Verde accounts for negligible share of global emissions (0.0018 percent) but is ranked 101 out of 188 countries in terms of its vulnerability to climate change impact.⁸ Climate and disaster risk screening indicates that Cabo Verde has a high risk of landslides and medium risk of coastal floods.⁹ The provision of reliable electricity services is critical for emergency preparedness and response systems in case of disaster and climate-related shocks, as the power sector is highly interconnected with other critical sectors, including communication services, transportation, and health care facilities.

10. **Cabo Verde submitted its first nationally determined contribution (NDC) in 2015 and has updated it in 2020 by quantifying emission reductions.** Through its mitigation strategies provided in the NDC, Cabo Verde has made a 2030 commitment to reduce economy-wide GHG emissions by 18 percent below business as usual (BAU) and to increase this target to 24 percent on the condition of adequate international support leading to removal of 764 Gg CO₂eq GHG emissions by 2030. The contribution of the energy sector in the NDC mitigation strategies is based on the Master Plan for the Power Sector (2018–2030) adopted in 2018. Cabo Verde plans to undertake a major shift toward the low-carbon economy by increasing the share of renewable energy sources in the electricity supply from 18 percent to 30 percent

⁵ As an example, on average, once every 10 years, a loss of at least US\$10 million in agricultural income is expected to occur in Cabo Verde and approximately US\$540 million of building stock and around 150,000 people are exposed to flash flood hazards. For more details, see World Bank, Cabo Verde Risk Profile (2019).

<http://documents1.worldbank.org/curated/en/523961573390033686/pdf/Disaster-Risk-Profile-Cabo-Verde.pdf>.

⁶ Cabo Verde is already high on the climate risks index: 155 out of 181 countries—see

<https://www.climatewatchdata.org/countries/CPV>.

⁷ Deltares. 2017. *Cabo Verde - Coastal Flooding Hazard Assessment*.

⁸ <https://gain.nd.edu/our-work/country-index/rankings/>.

⁹ <https://thinkhazard.org/en/report/47-cape-verde>.



in 2025 and up to 50 percent in 2030. With adequate support, Cabo Verde has indicated that the target for the share of renewable energy sources may go up to 100 percent by 2040. Cabo Verde also plans to secure on-grid or off-grid electricity supply across nine islands and reach 100 percent access to electricity for all consumers by 2023.¹⁰

B. Sectoral and Institutional Context

General Overview

11. **The energy sector in Cabo Verde has accomplished tremendous progress in the past 10 years.** Access has reached approximately 95 percent today (from 47 percent in 2000), among the highest in Sub-Saharan Africa; there is enough power generation capacity to meet the country's demand for electricity; and important investments in new transmission and distribution assets have improved the quality of service.¹¹ Cabo Verde performs well on energy intensity compared to neighboring countries; as of 2015 (latest available), it had the lowest energy intensity of all West African countries (2.773 MJ¹²/US\$2011 PPP¹³ GDP).¹⁴

12. **Despite these major achievements, the electricity sector in Cabo Verde is vulnerable and continues to face challenges that could undermine its ability to be the engine of post-COVID-19 economic growth.** In 2011, the GoCV embarked on a comprehensive recovery and reform plan for the sector with the support of several development partners, including the World Bank with the Recovery and Reform of the Electricity Sector Project (P115464). Key investments to modernize the sector included the modernization of thermal generation (more efficient and larger plants, substitution of diesel by heavy fuel oil [HFO]), the expansion of renewable generation capacity, the upgrading of the transmission and distribution networks, and the implementation of a revenue protection program (RPP) beginning in 2016. Despite these efforts, the sector continues to have persistently high commercial losses, financial losses, and significant debt (approximately US\$265 million or 14.9 percent of GDP), all of which could undermine its performance going forward. ELECTRA's level of indebtedness is a significant source of fiscal risk as it holds the largest stock of government-guaranteed debt.

13. **Electricity prices in Cabo Verde are among the highest in Sub-Saharan Africa.** Residential tariffs have averaged US\$0.28 per kWh over the past four years but have fluctuated as high as US\$0.36 per kWh in March 2019 for higher-consuming (>60 kWh per month) residential users. High electricity tariffs limit the affordability of electricity for many households, many being hit hard by the economic impacts of the COVID-19 pandemic and are a contributing factor to the high level of electricity fraud and theft. High electricity service costs are driven by (a) low economies of scale with small isolated systems across the archipelago; (b) dependency on imported fossil fuels for electricity generation; and (c) high commercial losses. Tariff regulation in Cabo Verde allows for cost recovery up to an allowed level of system losses

¹⁰https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Cabo%20Verde%20First/Cabo%20Verde_NDC%20Update%202021.pdf

¹¹ Quality of service has improved significantly over the past decade, and the annual duration of blackouts has decreased by 30 percent between 2013 and 2018. However, the number of blackouts has increased by 60 percent, and all other monitored indicators related to system availability have essentially remained constant over the same period.

¹² MJ = megajoule

¹³ PPP = Purchasing power parity.

¹⁴ World Bank DataBank.



(23.3 percent), with a compensation mechanism for low-income energy consumers who benefit from a social tariff discount policy based on their level of consumption; however, ELECTRA has incurred losses in the last few years in part because its technical and commercial losses (26.1 percent in 2020) are above the regulated loss allowances.

14. **Historically, electricity demand growth in Cabo Verde was met exclusively with thermal generation using imported fossil fuels, however renewable energy penetration has increased significantly in recent years.** Today, thermal generation is still used to supply most of the electricity generation and to cover the demand for industry, transportation, and approximately 30 percent of households' energy consumption. Traditionally, the population of Cabo Verde use biomass as a primary renewable energy resource, which still covers a significant proportion of household energy needs (for cooking), especially in rural areas (55 percent). Renewable energy penetration has increased from less than 2 percent of the utility's power generation mix in 2010 to about 18 percent in 2019, owing to major investments to expand renewable generation capacity and upgrade the transmission and distribution network.

15. **To plan for the necessary infrastructure and related investments to meet the energy goals under the National Program for Energy Sustainability of 2017, the GoCV has developed a Master Plan for the Power Sector (2018–2030, 'Master Plan')** which concludes that the least-cost plan to meet energy demand by 2030 includes 54 percent of power generation coming from variable renewable energy (VRE) sources. The Master Plan, which was endorsed through Resolution No 39/2019 of the Council of Ministers, provides for the installation of around 251 Megawatt (MW) of VRE capacity (160 MW of solar PV and 91 MW of wind). As part of the preparation of the Master Plan, the GoCV developed a Renewable Energy Atlas in 2010, which identified the sites for potential solar and wind projects and designated them as Renewable Energy Development Zones (*Zonas de Desenvolvimento de Energia Renovável*) under the Decree Law No 1/2011. Since then, the GoCV has procured about 13 MW of the 114 MW renewable energy needed by 2025, and it has launched a competitive procurement of independent power producers (IPPs) (5 MW solar in Boa Vista and 10 MW wind in Santiago) with the support of the Luxemburg Development Agency, which are pending financial closure.¹⁵

16. **Distributed energy generation is also expected to play an important role in achieving the goals under the Master Plan.** Cabo Verde has an estimated potential of rooftop solar PV of 250 MW, out of which only 4 MW has been installed so far. Studies under the Distributed Solar Energy Systems Project (P151979) identified challenges for scaling up distributed generation, including lack of adequate financing for residential and small and medium enterprises (SMEs), insufficient local technical capacity, and import duties. The GoCV has established a tax incentive regime promoting investment in renewable energy for distributed generation. In 2019, the GoCV approved regulation for net billing, which allows solar PV system owners to consume solar energy produced on-site and export any surplus production to the grid at a predefined tariff (approximately US\$0.08 per kWh).

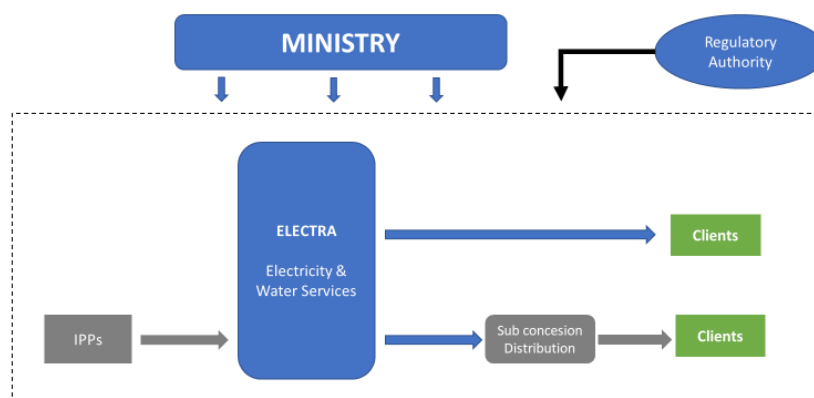
¹⁵ For the Boa Vista 5 MW solar project, the concession contract has been signed and a guarantee has been provided by the Ministry of Finance. Financial closure is still pending, and construction is expected to begin by end 2021. Negotiations are still ongoing to reach contractual close for the 10 MW wind plant in Santiago; construction is targeted to begin by end 2021.



Structure of the Power Sector

17. **The power sector in Cabo Verde involves the following key players:**
- (a) The Ministry of Industry, Commerce and Energy (*Ministério da Indústria, Comércio e Energia*, MICE) develops policy, establishes the sector development plan, and plays an important role in mobilizing major investments in the sector.
 - (b) Multisectoral Regulation Agency of the Economy (*Agência Reguladora Multissetorial da Economia*, ARME), a multisector regulatory authority, is tasked with economic and technical regulation of the electricity sector.
 - (c) ELECTRA, the vertically integrated electricity and water utility, has a concession from the State for electricity service and dominates the market and performs power generation, transmission (very small and only in one island), and distribution activities.
 - (d) IPPs sell bulk power to ELECTRA.
 - (e) Water and Energy of Boa Vista (*Águas e Energia da Boa Vista*, AEB), a privately owned company distributing electricity in Boa Vista, has a sub-concession from ELECTRA.
18. The sector's current institutional structure is represented in Figure 1.

Figure 1. Current Institutional Framework of the Power Sector



19. **ELECTRA is responsible for generation, transmission, distribution, and retail supply activities on eight of the nine islands in the archipelago.** Since 2011, ELECTRA has been organized as a holding company, ELECTRA SA, with two subsidiaries, ELECTRA NORTE SA and ELECTRA SUL SA, operating in the northern and southern islands of Cabo Verde, respectively. AEB¹⁶ was created in 2007 and operated under a sub-concession from ELECTRA to provide electricity and water services to support tourism activity in the island of Boa Vista.

20. **In 2020, ELECTRA produced 419.2 GWh of electricity with an installed capacity of 154 MW (of which 6.5 MW of solar and 0.9 MW of wind).** AEB has an installed capacity of 5 MW (fuel) and 10.5 MW

¹⁶ AEB is a partnership between the Boa Vista and Maio Islands Tourism Development Society (*Sociedade de Desenvolvimento Turístico das Ilhas de Boa Vista e Maio*, SDTIBM), a state-owned association governing the tourism investments in the island, and two private entities—Bucan and Promomax. SDTIBM has 60 percent of AEB's equity, while Bucan and Promomax have 30 percent and 10 percent, respectively.



(diesel). IPPs sell bulk power to ELECTRA. Two IPPs are operating in the country: *Cabeólica* (25 MW of wind),¹⁷ the first IPP in the country, which has been operating successfully since 2012, and *Electric Wind*, a small wind farm in Santo Antão (1 MW), which has been operating since April 2011. There is one transmission line in the country, a 60 kV line located in the island of Santiago, which connects the island's generation center with the north of the island; all other islands use 20 kV and 6 kV sub-transmission and distribution systems.

21. **ELECTRA's operational performance remains weak and characterized by high system losses.** Global losses (technical and nontechnical) amounted to 26.1 percent of generation in 2020, reaching 36.3 percent in the largest island of Santiago, the vast majority of losses being commercial. This is above the efficient level of 23.3 percent losses set by the regulator and higher than the 24.8 percent losses experienced in 2019. This is despite important investments in transmission and distribution network improvements and a loss reduction program to fight fraud and protect revenues, largely driven by the negative economic and social impact of the COVID-19 pandemic leading to an increase in commercial losses.¹⁸ The highest losses are found in urban areas, particularly the capital city of Praia where ELECTRA SUL operates and where energy theft is rampant. High electricity tariffs limit the affordability of energy uses for many households and are a contributing factor to the high level of electricity fraud and theft. The ongoing RPP aims at installing smart meters and securing the revenues from the largest customers to reduce the utility's commercial losses.¹⁹ Its implementation has been delayed because of the need to detect and address fraudulent connections before replacing the meters and the lengthy judicial process to implement the disconnection policy for delinquent customers. In September 2020, ELECTRA intensified its efforts to combat commercial losses and anticipates a decline in losses in 2021.

22. **ELECTRA's financial performance is weak, mainly due to high commercial losses and nonpayment from public entities.** The 2020 audited financial statements indicate that the utility's net result was at a negative CVE 505.4 million (US\$5.13 million equivalent)²⁰ and the retained earnings at a negative CVE 10,747 million (US\$109.1 million equivalent), resulting in negative equity of CVE 5,026 million (US\$51 million equivalent). This is due to the weak performance of the subsidiary ELECTRA SUL that made a loss of CVE 719.0 million, while ELECTRA NORTE made a profit of CVE 218.2 million. As described above, actual losses are higher than the regulatory cap, leading to weak financial performance. To improve its financial situation, ELECTRA must tackle the issue of high commercial losses, particularly those under the jurisdiction of ELECTRA SUL.

23. **Because of the COVID-19 pandemic, ELECTRA's financial performance worsened in 2020 compared to 2019.** This was largely driven by a decrease in demand (419 GWh in 2020 compared to 443 GWh in 2019) and an increase in commercial losses, as described above. In addition, a tariff reduction of CVE 2.64 per kWh (approximately equivalent to US\$0.03 per kWh) was announced by the regulator ARME

¹⁷ This was the first commercial-scale, privately financed, public-private partnership wind farm in Sub-Saharan Africa. The project was developed by EleQtra, which entered into a long-term Purchase Power Agreement (PPA) with ELECTRA. The total capital cost was US\$84 million. Today, Cabeólica has an installed capacity of 25.5 MW and provides sufficient renewable power to satisfy roughly 25 percent of Cabo Verde's demand for electricity. Source: <https://eleqtra.com/projects/cabeolica-wind/>.

¹⁸ These investments were financed by the last IBRD operation (CAPE VERDE - Recovery and Reform of the Electricity Sector Project [P115464]), a loan from the Government of Portugal, and a loan from the European Investment Bank.

¹⁹ The RPP was financed by the Recovery and Reform of the Electricity Sector Project (P115464), approved in 2012 and closed in 2018, with support from other bilateral agencies.

²⁰ US\$1 = approximately CVE 98.5. Exchange rate as of December 2019, www.oanda.com.



before the COVID-19 pandemic hitting Cabo Verde; this tariff reduction was implemented in October 2020, after being postponed from its initial date to take effect in April 2020. Cost savings because of the reduction in demand and lower international oil prices were realized but were not sufficient to offset the reduction in revenues due to the economic downturn.

Action Plan to Restructure and Privatize ELECTRA

24. **In 2016, the GoCV decided to privatize ELECTRA, as a means to reduce the Government's public debt exposure, contingent liabilities, and fiscal risks.** Although there was an earlier unsuccessful attempt which resulted in the Government repurchasing the utility in 2006,²¹ it is felt that the current conditions can support a better outcome today. Importantly, the company holds valuable assets that could incentivize private sector investment in the power generation and distribution sectors of Cabo Verde. As described above, the current electricity service delivery conditions in Cabo Verde, characterized by near-universal access and tariff regulation that allow for cost-reflective tariffs (within allowable losses), are markedly better than at the time of ELECTRA's first privatization attempt in 1999 and better than in most other Sub-Saharan African countries. Furthermore, Cabo Verde is a lower-middle-income country, with a well-educated population living in urban or peri-urban areas and a competent workforce. In addition, the utility's assets are in relatively good condition and do not require immediate and massive investments. Efficient management by the private operators will result in a reduction in the average cost of electricity service delivery, which is expected to be reflected in the average end user electricity tariff, contribute to improvement of the competitiveness of local businesses, and boost the economic development. Private operators will also be able to expeditiously and efficiently implement infrastructure investment plans promoted by the GoCV to accelerate economic recovery in the post-pandemic scenario. The combination of these conditions should make ELECTRA attractive to qualified investors to take over the privatized power generation companies (GenCos) and distribution companies (DisCos).

25. **The World Bank is currently supporting the preparation of the power sector reform plan through investment and development policy operations.** In addition to its past support to the GoCV to create an enabling environment for private sector participation in the energy sector, particularly with the financing of the RPP to tackle the issue of high commercial losses, the World Bank is now providing transaction advisory services to the GoCV under the State Owned Enterprises Related Fiscal Management Project (P160796), which includes, among others, (a) preparing an Action Plan for the restructuring and privatization of ELECTRA; (b) valuing of ELECTRA's assets; (c) identifying institutional restructuring required to ensure a successful privatization and (d) identifying improvements needed for the existing legal and regulatory framework to be more supportive of the efficient development and operations of the power sector. This advisory work is expected to be completed by the end of 2021 and will pave the way for the implementation of the power sector reform supported under Component 2 of this project. The World Bank is also preparing the Cabo Verde First Equitable, Sustainable, and Green Recovery Development Policy Financing (DPF; P174754), which will support the implementation of the power sector reform through the enactment of a reform law to establish the framework for the restructuring and privatization of ELECTRA and incorporate the new GenCos and DisCos to be created as part of the

²¹ ELECTRA was privatized once in 1999/2000 and a majority of its stake sold to a consortium of portuguese utilities Energy of Portugal (*Energias de Portugal*, EDP) / Water of Portugal (*Águas de Portugal*, AdP). In spite of significant initial gains in efficiency and coverage under EDP/AdP management, privatization was marred by disagreements over the respective obligations of the parties, particularly regarding tariff adjustments, which were unavoidable given the increase in oil prices. In 2006, EDP/AdP pulled back and the Government bought back its shares in ELECTRA.



restructuring. The DPF is expected to be submitted to the World Bank's Board by the end of 2021 and the GoCV has already fulfilled the prior action related to the reform law which was enacted on July 21, 2021.

26. **The draft Action Plan for privatization sets out that ELECTRA will be unbundled into three separate public shareholding companies:** (a) a transmission and system operator (TSO) and single buyer; (b) a DisCo; and (c) a GenCo. While ELECTRA TSO will remain an SOE, up to 75 percent of its distribution and power generation shares are expected to be privatized. The GoCV is also considering buying back the private shares in AEB (sub-concession operating on Boa Vista) and the assets of AEB would also be included along with ELECTRA's in the privatization of the power sector. The national DisCo will be responsible for providing distribution and retail services including operating, maintaining, and rehabilitating publicly owned assets under a concession contract. Allowed tariff revenues (revenue requirement) of the DisCo should ensure recovery of its own costs incurred for efficient service delivery, as well as a remuneration on invested equity consistent with the risk of the business, and the cost of energy purchases ('pass-through' of project sales and allowed losses). To maximize predictability and strengthen enforcement of the applicable regulatory framework, a 'regulation-by-contract' approach will be adopted. It consists of preparing a ring-fenced concession contract prescribing in detail the main aspects of the applicable regulatory framework.²² The draft Action Plan is nearing completion and expected to be finalized by November 2021. The timeline to complete the privatization is late 2022 to early 2023. The planned road map and indicative timeline for implementation of the Privatization Action Plan is provided in Annex 2.

27. **The GoCV has also embarked on reforms to the institutional and regulatory framework of the electricity sector to support the supply of electricity under the most efficient (quality and cost) conditions.** The existence of an operating and regulatory environment will be critical to attract private capital and expertise to the sector. Therefore, in parallel to the divestment process, the GoCV is undertaking important measures to strengthen the regulatory framework, consistent with the approach recommended by the World Bank on liberalizing the power sector, which identifies the critical importance of a strong regulator.²³ The GoCV plans to separate policy making, regulation, and operations,²⁴ reflecting international experience in emerging countries that has demonstrated the importance of proper policy and regulatory frameworks to ensure successful privatization. Reform measures being taken include restructuring of the electricity tariff. This is designed to encourage energy efficiency, electric mobility, and distributed renewable energy generation, while providing incentives for loss reduction and allowing the recovery of efficient operational costs and a reasonable rate of return for the electric utilities.

²² This includes, among others, (a) economic regulation procedures and methodologies for setting and periodically adjusting revenue requirement (own operating and investment cost) and initial tariff structure and rates as well as payment to concessionaire at the end of the contract of undepreciated investments; (b) service quality regulation: indicators, target values, procedures for monitoring and enforcement, and penalties for noncompliance; (c) mechanism to ensure systematic payment of consumption of public entities; (d) rights of concessionaire for management of unpaid amounts (service disconnection and switch to prepayment); (e) all relevant contents of the Distribution Code; (f) international arbitration for settlement of disputes (before International Centre for Settlement of Investment Disputes or equivalent); and (g) conditions for contract termination.

²³ Foster, Vivien, and Anshul Rana. 2020. *Rethinking Power Sector Reform in the Developing World. Sustainable Infrastructure*. Washington, DC: World Bank.

²⁴ The definition of energy policies and sector planning is a function of the MICE, while electricity sector regulatory functions will be exercised by ARME. Measures for the reinforcement of the Electricity Sector Regulatory Commission and the Central Planning entity, the General Direction of Industry, Trade and Energy, are under way.



28. **The restructuring and privatization of ELECTRA aims to improve the operational and financial viability of the electricity sector and reduce the fiscal burden of the energy sector on the Government's budget.** Privatization is expected to lead to an improvement in efficiency and a reduction in commercial and technical losses of ELECTRA, which would lead the utility to fully recover its costs. Electricity system losses are expected to reduce by 1.5 percentage points per year, reaching 19 percent in 2025, and by 1 percentage point per year thereafter, reaching 14 percent in 2030. Based on international experience, there may be opportunities for achieving even higher loss reductions. In Latin America, for instance, countries such as Argentina, Peru, and Colombia, which introduced widespread power sector reforms in the 1990s,²⁵ including the privatization of generation and distribution assets similar to the ongoing reform in Cabo Verde, managed to reduce total losses by an average of 3 percent per year.

C. Relevance to Higher Level Objectives

29. The project aligns well with the World Bank Group's (WBG) Country Partnership Framework (CPF) for Cabo Verde for the period FY20–25²⁶ and seeks to address key challenges identified in the Systematic Country Diagnostic published in March 2019.

30. It is directly aligned with the CPF's Results Area II: Strengthening the environment for a more diversified economy. More specifically, it is aligned with Objective 3: Sharpening fiscal and macroeconomic resilience and Objective 4: Improving the foundations for private sector growth. By increasing the share of renewable energy, the project will contribute to decrease the country's vulnerability to price volatility of imported fossil fuels. Lower levelized cost of energy from renewable energy resulting from the project will lead to a reduction in electricity prices making the country more competitive and increase in household's disposable income; both of which can serve as a driver for increased economic growth. The project will increase renewable energy capacity from 18 percent in 2019 to 25 percent in 2023 and contribute to creation of context for improving services for private sector growth. It is also fully aligned with the World Bank's Maximizing Finance for Development approach by providing advisory services and public financing needed to attract private sector investments into the energy sector.

31. The project contributes to the World Bank's twin goals of ending extreme poverty and boosting shared prosperity in a sustainable manner and the World Bank Western and Central Africa Region Priorities for 2021-2025²⁷ by increasing the supply of clean energy for growth, leveraging private investment, and reducing the cost of electricity to low-income households (particularly those that do not meet thresholds for subsidies). It also responds to the priorities identified in the WBG's 'COVID-19 Crisis Response Approach Paper: Saving Lives, Scaling-up Impact and Getting Back on Track', particularly its pillars related to 'Enhancing Sustainable Business Growth and Job Creation', and 'Strengthening Policies, Institutions and Investments for Rebuilding Better'. It is also aligned with the guiding principles included in the WBG's Energy Directions Paper,²⁸ particularly in contributing to the expansion of renewable energy

²⁵ World Bank. 2009. *Reducing Technical and Non-technical Losses in the Power Sector (English)*. Washington, DC: World Bank Group.

²⁶ Report № 127164-CV; discussed by the Board of Executive Directors on October 29, 2019.

²⁷ <https://documents1.worldbank.org/curated/en/978911621917765713/pdf/Supporting-A-Resilient-Recovery-The-World-Bank-s-Western-and-Central-Africa-Region-Priorities-2021-2025.pdf>

²⁸ World Bank. 2013. *Toward a Sustainable Energy Future for All: Directions for the World Bank Group's Energy Sector*.



in the energy mix, seeking market solutions to leverage financial resources, and helping governments foster private sector participation and investments. It is also aligned with the Sustainable Energy for All (SEforALL) Country Action Plan for Cabo Verde and with Sustainable Development Goal 7.

32. Finally, the project is aligned with Cabo Verde's commitments for climate change under its NDC, supporting the global effort to mitigate climate change and improves resilience for Cabo Verde, which is particularly vulnerable as a Small Island Developing State. It is also well aligned with the newly released World Bank Africa Climate Business Plan's objectives related to energy access, renewable energy, and resilience.

II. PROJECT DESCRIPTION

33. The GoCV has an ambitious plan to reform its electricity sector through the restructuring and privatization of its utility company ELECTRA as well as to diversify its energy mix to provide clean, reliable, and affordable electricity supply to its population while mobilizing private sector investments as much as possible. There are, however, a number of challenges, including the lack of scale of power generation facilities due to the small nature of the islands composing the archipelago; the need for grid extensions and reinforcement as well as storage capacity to integrate into the system the power generated from VRE facilities; the institutional barriers to scaling up distributed generation; and the poor financial standing and performance of ELECTRA, as off-taker of the future IPPs, particularly the poor commercial performance of ELECTRA SUL.

A. Project Development Objective (PDO)

PDO Statement

34. The PDOs are to (i) increase renewable energy generation; and (ii) improve the performance of the electricity utility in Cabo Verde by leveraging private finance.

PDO Level Indicators

35. The proposed PDO indicators for this project are the following:
- (a) Generation capacity of energy constructed or rehabilitated (Megawatt) - Corporate Results Indicator;
 - (i) Renewable energy capacity installed as small-scale solar PV plants (Megawatt);
 - (ii) Renewable energy capacity installed as distributed solar PV (Megawatt);
 - (b) Power system losses (Percentage);
 - (c) Net greenhouse gas (GHG) emissions (Tons/year) - Corporate Results Indicator.²⁹

²⁹ Contribution to reduction of GHG emissions is measured separately for the two different project development objectives: increasing renewable energy generation (investments under Component 1) and improving the performance of the electricity utility (advisory services under Component 2). For details, see Annex 3.



B. Project Components

36. **The project comprises three components.** Component 1 will finance investments to integrate additional VRE into the grid and provide sustainable and resilient electricity services to public health buildings. Component 2 will provide transaction advisory services for the restructuring and privatization of ELECTRA. Component 3 will provide project preparation and implementation support to the Project Implementing Unit (PIU), as well as technical assistance and capacity building to the National Directorate of Industry, Commerce and Industry (*Direção Nacional da Indústria, Comércio e Energia*, DNICE) for improved energy system planning to efficiently meet the goals under the Power Sector Master Plan.

37. **The estimated project cost is US\$16.5 million equivalent, which includes the following sources of financing:**

- (a) US\$3.5 million IBRD loan;
- (b) US\$3.5 million equivalent IDA credit;
- (c) US\$7.0 million loan from the Canada Clean Energy and Forest Climate Facility (CCEFCF);
- (d) US\$0.5 million grant from the CCEFCF;
- (e) US\$2.0 million grant from Global Infrastructure Facility (GIF).

Component 1: Renewable and Efficient Electricity Service (US\$12.5 million equivalent, of which US\$3.5 million IBRD loan, US\$1.5 million equivalent IDA credit, US\$7.0 million CCEFCF loan, and US\$0.5 million CCEFCF grant)

Subcomponent 1.1: Small-scale variable renewable energy integration (US\$10.5 million - US\$3.5 million IBRD loan, US\$1.5 million equivalent IDA credit, and US\$5.5 million CCEFCF loan)

38. Based on the priority needs of the GoCV in the first phase of the power sector Master Plan, this subcomponent will finance the development of the following small-scale solar PV projects: 1.3 MW on Fogo, 1.2 MW on Santo Antão, 0.4 MW on Maio, and 0.4 MW on São Nicolau islands at an estimated cost of US\$4.75 million. Pre-feasibility studies have already been conducted to identify the locations and size of the power plants. The final designs will be completed by the Owner's Engineer to be hired by the project shortly after effectiveness. Market sounding indicates that these small-scale power plants are unlikely to attract private developers due to their small scale and geographical dispersion, which is expected to result in limited competition and high transaction costs. Therefore, the construction of the plants will be implemented as engineering, procurement, and construction (EPC) contracts with public financing. During implementation, the GoCV will evaluate the potential to competitively tender the operation and maintenance (O&M) of these plants to local private operators in line with the GoCV's strategy to promote and develop local content and expertise to manage, operate, and maintain small-scale solar power plants.

39. **To facilitate integration of the small-scale solar plants into the grid, this subcomponent will finance power transmission lines to connect the plants to the grid, as well as pilot battery energy storage systems** to optimize production of the small-scale power plants and support voltage and frequency regulation in the grid, at an estimated cost of US\$2.25 million and US\$3.5 million, respectively. Pre-feasibility studies have already been conducted for the design of the power evacuation lines, and the final designs will be completed by the Owner's Engineer to be hired by the project shortly after



effectiveness. The design of the pilot will be informed by the results of an ongoing study financed with an Energy Sector Management Assistance Program (ESMAP) grant (US\$190,000) to better estimate the technical and financial feasibility of the storage needs across the archipelago and identify the optimal location of investments.

40. **A Climate Change and Disaster Risk and Vulnerability Assessment funded by the Africa Climate Resilient Infrastructure Investment Facility (AFRI-RES)³⁰ is under way** and will provide an assessment of vulnerability of the project's investments to climate and disaster risks. This study will also provide recommendations for resilience measures that can be incorporated into the project design (including to include relevant risks in bidding documents for electrification works). Examples of such resilience measures include provision of appropriate anchorage support; deep foundation and size of footings to adapt against extreme wind and flooding; elevation of control room and critical equipment to reduce flood hazard potential; use of steel, concrete, or composite towers; creation of vegetation buffers; and so on.

Subcomponent 1.2: Resilient and Efficient Electricity Services to Public Health Facilities (US\$2.0 million - US\$1.5 million CCEFCF loan and US\$0.5 million CCEFCF grant)

41. The GoCV seeks to reduce the burden of energy on public health services, improve the quality of health care services, and decrease the use of fossil fuels for the public sector. These objectives have become more urgent in the context of the COVID-19 pandemic, where the demands on the health care sector have increased dramatically. This subcomponent will finance public investments in rooftop solar PV systems and energy efficiency on public health buildings, with a focus on public hospitals and health centers. A total of 41 public health buildings have been identified across the nine islands;³¹ this will cover all the public health buildings that have not already benefited from rooftop PV investments under the World Bank's Distributed Solar Energy Systems Project (P151979). This subcomponent was prepared in coordination with the World Bank-financed project in Cabo Verde: COVID-19 Emergency Response Project (P173857) being implemented by the Special Projects Management Unit (*Unidade de Gestão de Projetos Especiais*, UGPE) and the Ministry of Health and Social Security (*Ministério da Saúde e da Segurança Social*, MoHSS). The final design of the rooftop PV systems and energy efficiency investments will be informed by the results of a technical consultancy to be financed under Component 3 of the project, which will be initiated before project effectiveness, and it will also consider resilience measures identified in the project's climate risk assessment described above.

42. **Investments in energy efficiency and distributed rooftop solar PV systems in public health buildings will support the achievement of multiple strategic objectives of the Government**, including (a) reducing the burden of electricity on the fiscal obligations of the public sector by reducing public building energy use and offsetting grid-supplied electricity with on-site generation from solar; (b) reducing ELECTRA's arrears from public sector clients, who tend to be delayed in paying electricity bills; (c) increasing the resilience of the public health sector by providing back-up power options in case of power

³⁰ <https://www.worldbank.org/en/programs/africa-climate-business-plan/investment-facility>

³¹ A total of 19 buildings in Santiago, 3 in Fogo, 2 in São Nicolau, 1 in Boa Vista, 2 in Sal, 1 in Maio, 4 in Santo Antão, 8 in São Vicente, and 1 in Brava. While public health buildings are being prioritized, other key public service buildings may also be considered if the budget allows, including buildings within the Ministry of Justice and the National Police Directorate.



outages due to natural or other disasters; and (d) greening the cold chain for provision of health services to support the deployment of the COVID-19 vaccine and other routine vaccination programs.³²

43. **This subcomponent will also support narrowing of gender gaps in Cabo Verde, namely the gap in women’s employment within the energy sector.** In particular, women’s labor force participation in Cabo Verde was found to be almost 15 percentage points below the rate for men, with an even wider gap within the energy sector. Gender bias in skills development and skilled labor market as well as low enrollment in technical trainings were also identified, as described in the Gender Gap Analysis (see Annex 4). The project will provide women with training programs and subsequent long-term employment opportunities in rooftop PV system O&M services. The gender activities will be implemented by the UGPE in collaboration with the Center for Renewable Energy and Industrial Maintenance (*Centro de Energias Renováveis e Manutenção Industrial*, CERMI), a public corporation that provides professional and technical trainings, certifications, and a business incubator program. The UGPE will partner with CERMI to (a) offer technical and business trainings for the provision of solar PV O&M services; (b) provide business incubation to these trainees to establish their own solar PV O&M companies; and (c) contract these incubated businesses to perform the O&M services for the first two years after the systems are installed.³³ CERMI will monitor and support these new businesses, ensuring quality control and guiding the entrepreneurs through operational, commercial, and other challenges that may arise. CERMI will ensure at least 35 percent female participation in the training programs (compared to a current baseline of 20 percent) and at least 30 percent female employees in non-administrative positions of the newly established O&M companies. Details of the implementation arrangements for the gender activities are provided in Section III.

Component 2: Advisory Services for Electricity Sector Restructuring and Privatization (US\$2.0 million GIF grant).

44. As described above, the main objectives of the privatization are to reduce the fiscal burden of the energy sector on the public sector and reduce system losses through improved management. To ensure these goals will be met, the Action Plan for the restructuring and privatization of ELECTRA sets out that the privatization will be executed using a regulation by contract approach, meaning that a self-contained concession agreement will include all of the key conditions on economic regulation of the concession (methodology and procedures for setting and periodically adjusting the revenue requirement of the distribution company under a performance-based multiyear tariff regime, tariff structure, and charges in each and all tariff categories, and so on), service quality regulations, rights/obligations of the concessionaire and government (including those regarding disconnection of customers due to commercial debts, management of cases of theft and fraud in electricity consumption, regular payment of electricity bills of government agencies), provisions for international arbitration, and so on. To incentivize loss reductions, the concession contract will include starting values of tariff rates and procedures for periodic adjustment within the initial multiyear period following handover of DisCo management and operations

³² In response to the COVID-19 pandemic, the GoCV has developed a comprehensive national plan to deploy vaccines that are being procured by the MoHSS through the COVID-19 Vaccines Global Access (COVAX), an initiative launched by the World Health Organization to ensure vaccine access to the world’s most vulnerable. According to the plan, the GoCV intends to vaccinate a total of 60 percent of the population by 2023 (20 percent in 2021, 20 percent in 2022, and 20 percent in 2023). The vaccination shots will be administered in the health centers and hospitals, among others.

³³ The number of companies required will be based on the optimal aggregation of PV system O&M services, according to the location of the PV systems across the archipelago.



to a private owner, and these values will be set considering a regulatory allowance on total losses. If the DisCo owner exceeds the loss reduction targets in the regulatory allowance, it will be able to earn additional profits; conversely, if these targets are not met, it will suffer direct profit loss.

45. **This component provides additional advisory services and technical assistance up to financial closure of contractual agreements with the successful bidders to support the GoCV in the implementation of the Action Plan for the restructuring and privatization of ELECTRA³⁴** prepared under the State Owned Enterprises Related Fiscal Management Project (P160796) and supported by the Cabo Verde First Sustainable, Equitable, and Green Recovery DPF (P174754), as described in Section B above. These additional advisory services will focus on two key pillars: implementation of the privatization Action Plan and technical assistance to ensure sustainability of the sector restructuring and privatization of ELECTRA.

46. **Pillar 1 - Implementation of the privatization Action Plan.** This pillar will include the following scope of work: (a) update of the Action Plan to include due diligence and asset valuation of AEB, if an agreement is reached between the GoCV and AEB to repurchase AEB's privately held shares; (b) launch of the bidding processes for the new GenCo and DisCo; (c) provision of advisory services up to financial closure of contractual agreements with the successful bidders; and (d) design of de-risking and payment support mechanism(s) to support the privatization of ELECTRA, considering the new institutional arrangements that will be put in place as part of the Privatization Action Plan. The estimated cost for Phase 2 is US\$740,000.

47. **Pillar 2 - Technical assistance for sustainability of the restructuring and privatization.** This pillar will provide technical assistance and capacity building to sector stakeholders to ensure a successful and sustainable implementation of the Action Plan for restructuring and privatization of the electricity sector at an estimated cost of US\$1,260,000. The activities to be supported include the following:

- (a) Preparation of implementation arrangements for institutional reforms and organizational restructuring identified under the Action Plan
- (b) Support to implement the new institutional framework
- (c) Preparation of an incorporation plan for the new GenCos and DisCos into joint stock companies and support in its implementation
- (d) Technical assistance to the TSO to ensure smooth and reliable operation of the system under the newly restructured electricity sector, including with the newly incorporated GenCos and DisCos
- (e) Technical assistance to the national utility regulator ARME:
 - (i) Preparation of a road map for phased implementation and strict enforcement of approved quality of service regulations
 - (ii) Definition and implementation of regulations for accessing databases for infrastructure assets used for delivery of regulated services supported by geographic information system and other information technology applications
 - (iii) Establishment of protocols to collect information needed to carry out oversight duties

³⁴ With the expectation that the GoCV will buy back private shares in AEB, the assets of AEB will also be included in the scope of the privatization activities.



- (iv) Definition of procedures for allocation of revenues from payments of bills made by electricity consumers to transactions across the electricity supply chain and arrangements for implementation and monitoring
- (v) Training on how to access and use operator's information systems.
- (f) Technical assistance in the development of a Social Plan to address any future labor force implications of the privatization process that may arise after the DisCo concession is signed.³⁵

48. It is expected that the support under Component 2 will contribute to the mobilization of approximately US\$35 million private capital as a result of the proceeds of the privatization of ELECTRA when the preferred bidders are declared in early 2023. The private capital mobilized will be determined by the future free cashflows of the newly created GenCos and DisCos. However, given the fact that the GoCV is yet to firm up the structure of the privatization transaction (level of equity to be injected in the companies to be privatized, regulatory framework, revenue requirements, etc.), it is not possible at this stage to precisely determine the private capital mobilized. However, the current book value of ELECTRA can be used as a proxy to determine the private capital mobilized, resulting in US\$35 million³⁶.

49. **Component 3: Project Implementation Support and Technical Assistance (US\$2.0 million equivalent IDA credit).** This component will provide support for the preparation and implementation of the project as well as to DNICE to improve power system planning capabilities for the implementation of the Master Plan for the Power Sector in the context of the restructuring and privatization of ELECTRA.

50. **Subcomponent 3.1: Project implementation support (US\$1.5 million equivalent IDA credit).** This subcomponent will support incremental expenses related to the project's implementation, including the hiring of (a) a consultant to prepare the final environmental and social (E&S) safeguard studies for the activities under Component 1; (b) a consultant to prepare a technical study on the distributed generation component; (c) dedicated electrical/power engineer and accountant staff within the UGPE; (d) an owner's engineer to prepare technical specifications for the investments under Subcomponent 1.1, as well as supervise their construction and implementation; (e) a consultant to undertake a communication campaign to scale up the distributed generation component; (f) an independent auditor for the project; (g) capacity building to the UGPE and other sector stakeholders, as needed; and (h) project operating costs.

³⁵ While this component will provide technical assistance related to potential future retrenchment activities, the project will not finance costs of any eventual retrenchment activities required as a result of the privatization of ELECTRA. As set out in the Action Plan, any costs associated with future retrenchment will be paid for by the GoCV using proceeds from the privatization. The GoCV's privatization road map indicates that staffing decisions will only be made once the new concessionaire has been contracted; any staff not retained by the new concessionaire would be transferred to the public single buyer/TSO, after which any necessary downsizing decisions would be made. Where all alternatives have been fully considered and downsizing is deemed unavoidable, the GoCV shall exercise due diligence to carry out the downsizing in accordance with the provisions of relevant national laws, applicable collective bargaining, and a Social Plan. Capacity building is provided under this component to ensure that the GoCV has the capacity to develop and implement such a Social Plan if needed.

³⁶ In fact, assuming a 75/25 debt/equity ratio, and based on ELECTRA's 2020 annual reports showing a book value of approximately US\$200 million, the private capital mobilized can be estimated as follows: 25 percent equity x 75 percent of book value of assets = 0.25 x 0.75 x US\$200 million = US\$37.5 million. A conservative amount of US\$35 million has therefore been retained as private capital mobilized by the project.



51. **Subcomponent 3.2: Technical assistance and capacity building (US\$0.5 million equivalent IDA credit).** This subcomponent will provide technical assistance to DNICE, under MICE, to support (a) establishment of a dedicated planning department within the ministry; (b) definition of a road map for the systematization of the energy planning function; and (c) supervision of concessions in the energy sector. This work is complementary to the transaction advisory services activities under Component 2 of the project, focusing on the needs of DNICE key stakeholders to supervise and implement the new electricity sector structure as well as improve planning to support the achievements of the Power Sector Master Plan.

52. Table 1 provides an overview of the sources and uses of funds across the components.

Table 1. Sources and Uses of Project Funds (US\$, millions)

Component/Funding Source	IBRD Loan	IDA Credit	CCEFCF Loan	GIF Grant	CCEFCF Grant	TOTAL
Component 1: Renewable and Efficient Electricity Service	3.5	1.5	7.0	—	0.5	12.5
Component 2: Advisory Services for Electricity Sector Restructuring and Privatization	—	—	—	2.0	—	2.0
Component 3: Project Implementation Support and Technical Assistance	—	2.0	—	—	—	2.0
TOTAL	3.5	3.5	7.0	2.0	0.5	16.5

C. Project Beneficiaries

53. The project beneficiaries include (a) electricity customers throughout the country who will benefit from clean, reliable, and affordable electricity services; (b) the health centers that will benefit from rooftop PV systems and energy efficiency facilities; (c) the GoCV, which will benefit from reduced public debt exposure, contingent liabilities, and fiscal risks with its divestment in ELECTRA; and (d) local workers in marketing, supply and installation, and billing and servicing of renewable energy transition industries, including women who will benefit from employment in these industries following a targeted skills development program.

D. Results Chain

54. The proposed project will increase Cabo Verde’s renewable energy generation capacity, reduce CO₂ emissions, and reduce the power system losses to ultimately provide sustainable electricity services to the population of Cabo Verde and meet the GoCV’s ambitious power sector reform and renewable energy targets. It will also improve the efficiency and resilience of public health buildings, as well as support interventions to reduce the skills development and employment gender gap in the energy sector in Cabo Verde. Finally, the proposed project will support the GoCV in achieving these targets by helping mobilize private and public capital for energy sector investments; increasing stakeholder capacity; and supporting the restructuring and privatization of ELECTRA, which is expected to result in improved efficiency and therefore reduced system losses.

55. Under the Theory of Change, the Results Chain with activities, outputs, and outcomes is shown schematically in Figure 2.

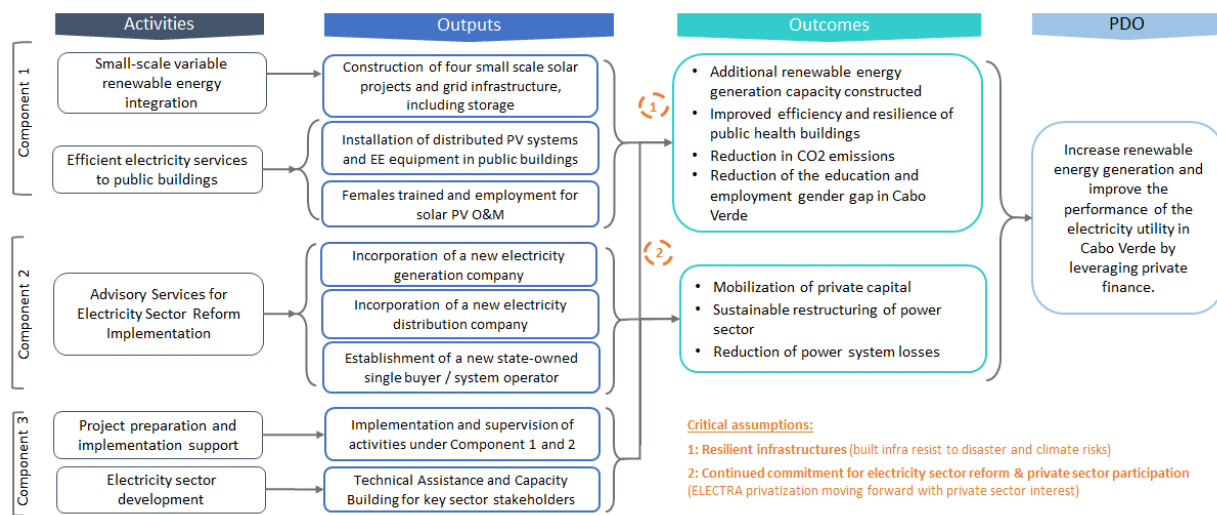


The World Bank

Renewable Energy and Improved Utility Performance Project (P170236)



Figure 2. Theory of Change



E. Rationale for World Bank Involvement and Role of Partners

56. This project is anchored in the World Bank’s strong power sector engagement in Cabo Verde, involving both investment and policy reform support through Investment Project Financing (IPF) and DPF. The World Bank’s historic and current engagement covers a spectrum of strategic issues across the sector’s value chain, including energy infrastructure investments to modernize the generation and transmission assets, implementation of the RPP to reduce commercial losses, support for the electricity sector reform and potential restructuring and privatization of the public utility ELECTRA, tariff reforms to make electricity services more affordable to the poor while being cost reflective, regulatory support, and pilot investments in distributed generation. The deep engagement in the energy sector provides a strong foundation for the World Bank to support the GoCV to meet its renewable energy targets under the Master Plan and mobilize private sector investments as much as possible.

57. WBG expertise will indeed support the GoCV to identify and implement opportunities to leverage private sector investment. As such, this project gives a unique opportunity to the WBG to combine its efforts to collectively maximize finance for development. The World Bank is helping attract private investments in power infrastructure development through technical assistance from GIF to support the structuring of the IPPs. While the size of these IPPs might be too small for a direct engagement of the International Finance Corporation and Multilateral Investment Guarantee Agency, these two institutions will be approached in due course to evaluate the potential to provide and mobilize debt financing and guarantees, respectively, for the IPP developers, therefore limiting the use of scarce public resources. Finally, the World Bank is financing advisory services to the GoCV to develop a road map for the restructuring and privatization of ELECTRA under the State Owned Enterprises Related Fiscal Management Project (P160796), which will pave the way to the implementation of this project’s Component 2 which aims at implementing the said road map.

58. The project will be implemented in close collaboration with the Luxembourg Development Agency (LuxDev), a development partner also deeply engaged in the energy sector in Cabo Verde. LuxDev is,



among others, (a) supporting the GoCV in the data collection for renewable energy resources and procurement of renewable energy IPPs; (b) providing trainings to the regulator ARME on economic and tariff regulation of the electricity sector; (c) assisting with the collection of all the information related to the sector to build an information system; (d) exploring new financing mechanisms for renewable energy (for example, green bonds and innovative financial products); and (e) supporting the NDC update and climate resilience. LuxDev has also supported the preparation of this project with the financing of the project's Environmental and Social Framework instruments.

F. Lessons Learned and Reflected in the Project Design

59. The World Bank has learned valuable lessons from the implementation of the recently completed Cabo Verde - Recovery and Reform of the Electricity Sector Project (RRESP; P115464), for which an Implementation Completion and Results Report (ICR) was finalized in February 2019.

60. **The first lesson is that critical reforms and support to the sector should be backed by a strong commitment from the Government and leverage from the World Bank.** In the case of the RRESP, the losses reduction and reform components suffered major delays and neglect during a long period and, at project closing, had not achieved positive outcomes. This is because the ownership of the Government for those components was weak, and the World Bank did not have any leverage in the absence of a DPF operation at that time, where early progress in the loss reduction plan and reforms could have been set as a prior action. As a result, for this project, the electricity sector reform component is being backed by the approval of the electricity sector reform law establishing the restructuring and public divestiture of the electricity utility company as a prior action in the Cabo Verde First Equitable, Sustainable, and Green Recovery DPF (P174754), which is under preparation.

61. **The second lesson is that because of moderate risks associated with the utility's financial performance, in a context of cost-reflective tariffs, the level of risks associated with the complexity and political economy of the loss reduction and reform components were underestimated in the RRESP.** As a result, for this project, the macroeconomic risk has been rated Substantial to recognize that, in the context of the ongoing COVID-19 pandemic and the related economic contraction, as well as falling FDIs and halted private sector activities, there could be substantial delays in the implementation of the electricity sector reform agenda and the restructuring and privatization of the utility. To mitigate that risk, this project is focusing on reducing the GoCV's public debt exposure, contingent liabilities, and fiscal risks with its divestment in ELECTRA. More broadly, economic recovery efforts are supported by the International Monetary Fund (IMF) and the World Bank. Finally, the GoCV has also created a dedicated contingency fund to finance emergency response and recovery in the aftermath of a natural catastrophe, which enables a more predictable funding for preparedness, emergency response, and recovery.

62. **The third lesson is the lack of capacity of the GoCV to coordinate donor support to the sector, which could allow greater impacts of the project and leverage higher donor support.** During the preparation of this project, the World Bank team worked closely with the other donors active in the energy sector in Cabo Verde, particularly LuxDev, to coordinate and harmonize the donors' interventions and support the counterparts in the implementation of their Master Plan and reform agenda. Furthermore, analysis of the comprehensive experience worldwide in the reform of the electricity sector and incorporation of private sector participation in electricity distribution, both in developed and emerging



countries, makes it possible to identify several key lessons learned and aspects that need to be properly addressed to achieve successful outcomes. Those aspects include (a) macroeconomic stability; (b) establishment and effective enforcement of a clear legal framework consistent with the reform's objectives; (c) application of a stable and predictable tariff system for distribution and retail services providing incentives for efficient performance; (d) definition and implementation of transition periods ('glide paths') for tariff adequacy; (e) establishment of institutional arrangements to avoid risk of abuse of market power by monopolistic service providers; and (f) transparency and fairness of the privatization of bidding processes.

63. Based on lessons learned and to maximize predictability and promote strict enforcement of the regulatory framework applied to the distribution and retail businesses, a ring-fenced concession contract will be prepared prescribing in detail the main aspects of that framework. The concession contract will include, among others, (a) economic regulation: procedures and methodologies for setting and periodically adjusting revenue requirements and initial tariff structure and rates for the first tariff period following takeover by private owner and payment to concessionaire at the end of the contract of undepreciated investments; (b) service quality regulation: indicators, target values, procedures for monitoring and enforcement, and penalties for noncompliance; (c) mechanism to ensure systematic payment of consumption of public entities; (d) rights of concessionaire for management of unpaid amounts (service disconnection and switch to prepayment); (e) other relevant contents of Distribution Code; (f) international arbitration for settlement of disputes; and (g) conditions for termination.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

64. The project will be implemented by the UGPE within the Ministry of Finance, originally established in 1999 to carry out an IDA/Global Environment Facility-financed project (Energy and Water Sector Reform and Development Project, P040990) and subsequently strengthened and entrusted with the responsibility of implementing projects with different donors. The UGPE is now responsible for the implementation of several donor-funded projects (World Bank, African Development Bank, and Japan International Cooperation Agency). The UGPE has a strong track record for effective implementation and has specialized fiduciary staff (financial management [FM] specialists and procurement specialists) with experience with World Bank policies. As the project's lead implementing agency, the UGPE will have the responsibility of managing the process of implementing the project in line with World Bank guidelines, financing agreements, procedures and practices for E&S risk management (including resettlement, if needed), procurement, disbursement, accounting, and FM.

65. A dedicated project manager has been appointed for the implementation of this project. The project manager will report to the coordinator of the UGPE. The project manager will be responsible for day-to-day project implementation. In addition to the project manager, an electrical/power engineer, with strong expertise in implementing renewable energy projects, and an accountant will be hired and financed by the project (under Subcomponent 3.1). The project will benefit from the fiduciary, technical, and administrative expertise available within the UGPE. Detailed project arrangements will be described in the Project Implementation Manual (PIM), including fiduciary and safeguard procedures. The UGPE will prepare and adopt the PIM within three months after project effectiveness.



66. The project manager will work in close collaboration with DNICE and will provide technical support and strategic guidance to ensure the project activities are aligned with the national energy sector objectives and policies. The project manager will also coordinate with other key technical stakeholders, including the regulator ARME for the implementation of the sector development support (Subcomponent 3.2) and other donors active in the sector, such as LuxDev.

67. The UGPE will have full fiduciary responsibility for implementation of the project. Having implemented a complex IBRD-financed energy sector project and IDA-financed projects in other sectors in the past, the UGPE has a thorough knowledge of World Bank FM and procurement rules and procedures, which will facilitate a rapid and smooth implementation of the project.

68. The UGPE will implement the gender interventions under the Resilient and Efficient Electricity Services to Public Health Facilities (Subcomponent 1.2) in collaboration with CERMI, a public corporation³⁷ supported by LuxDev with experience implementing gender-focused initiatives.³⁸ These activities will be financed by the CCEFCF grant.

69. Under Subcomponent 1.2, the UGPE will contract CERMI to provide the technical and business training and business incubation to support establishment of new solar PV O&M businesses. The UGPE will procure the equipment and installation of the solar PV systems as well as the energy efficiency equipment, and the UGPE will contract CERMI to provide O&M services for the solar PV systems for the first two years after their installation.³⁹ CERMI will sub-contract these services to one or more of the companies that are established because of CERMI's training and incubation program.⁴⁰ During the first two years of O&M service provision, one of CERMI's senior technical experts will closely accompany the start-up business's performance, making regular site visits to evaluate the quality of service. CERMI will also provide business support to the companies as needed, for example, supporting them in negotiating service contracts.

70. After two years of O&M service provision by the project (under CERMI's supervision), the MoHSS will be responsible for financing the O&M services for the public health buildings. Provided there has been an adequate quality of service, which will be ensured through the capacity building under the project, the same incubated companies will continue to be contracted by the MoHSS going forward. CERMI has signed a joint agreement with DNICE confirming their role in the project, and an agreement will also be signed with the MoHSS before initiation of investments under Subcomponent 1.2. Once the PV systems have been installed, a tripartite contract will be signed between CERMI, the MoHSS, and the selected companies to ensure that the gender targets specified below will be met and a smooth transition of O&M services after CERMI's first two years of support.

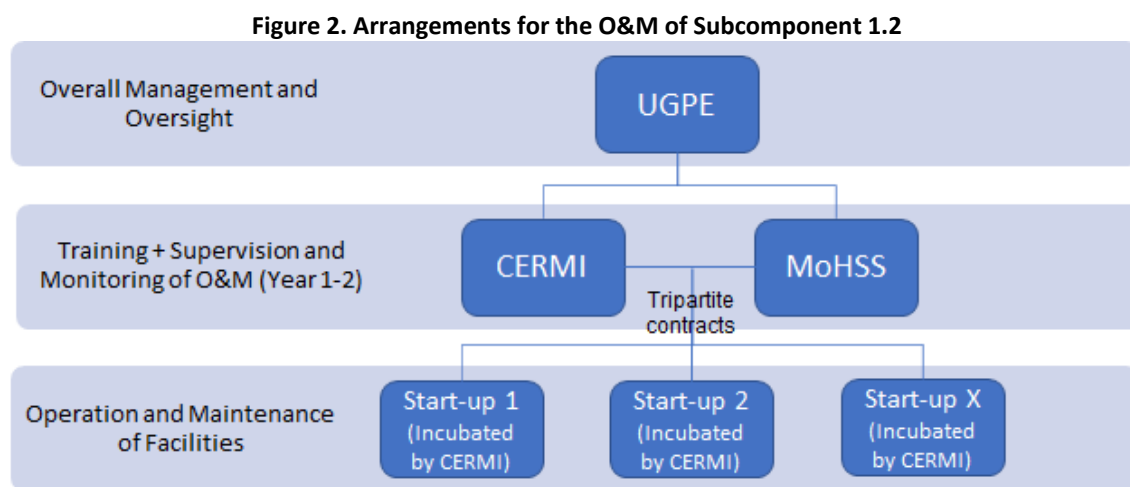
³⁷ <http://cermicv.com/>

³⁸ CERMI has experience implementing gender-focused initiatives. In the first years of its training programs, women comprised approximately 10 percent of the cadre of trainees. Noting this gender gap, CERMI implemented targets for female participation and scholarships to incentivize more women to participate. As a result of these efforts, female participation has increased to an average of 20 percent in its technical training programs.

³⁹ The energy efficiency equipment is, however, not expected to require dedicated O&M service, and any maintenance or repairs will be handled with equipment warranties and/or by the building's owners

⁴⁰ The number of companies required will be based on the optimal aggregation of PV system O&M services, according to the location of the PV systems across the archipelago.

71. The arrangements for the first year of O&M of Sub-component 1.2 are illustrated in Figure 2.



72. Gender activities and targets of the project include CERMI will ensure at least 35 percent female participation in the training and incubation programs described above (compared to the current baseline of 20 percent). Furthermore, only businesses with at least 30 percent female employees, technical and/or managerial positions, will be eligible to provide O&M services for the solar PV systems under the project, with a priority given to firms incubated and women trained by CERMI under the project. To ensure sustainability of the project impact, the incubated companies will agree to maintain at least 30 percent female employees even after they stop receiving direct support from the project. These interventions will narrow the gender gap in skills development in the country and also offer an enhanced opportunity to women to subsequently take up technical jobs in the energy sector, which can close the gap in women’s energy sector employment. The women trained and employed under this project will gain valuable knowledge and work experience in the sector, and they will also be well placed to secure additional and future employment within the growing solar PV industry if they so choose.

B. Results Monitoring and Evaluation Arrangements

73. A Results and Monitoring Framework is being developed to monitor progress in accordance with PDO indicators for the overall project as well as intermediate result indicators for its various components. This framework is described in detail in Section VII of this document. The UGPE will be responsible for collecting and consolidating information on project activities and submitting progress reports to the World Bank, in collaboration with DNICE and other stakeholders, as needed.

74. Progress reports on the project’s implementation will be submitted to the World Bank every six months by the UGPE. The World Bank team will supervise progress on a regular basis and will prepare project Implementation Status and Results Reports, a detailed midterm project review, and an ICR. The midterm review will be conducted jointly with the UGPE and DNICE. The UGPE will also prepare its own Implementation Completion Report which will serve as input for the World Bank’s ICR.

C. Sustainability



75. The project will support reforms needed to create the enabling environment to achieve the operational and financial sustainability of the power sector. This would comprise restructuring and then privatization of generation and distribution activities of ELECTRA and the creation of a state-owned TSO. The project will also provide additional critical and complementary technical assistance and capacity building to the main sector players under Component 3. This would include support to strengthening the capacities of state agencies responsible for regulation and systematic monitoring of the performance of privatized services, to carry out their duties in an effective manner.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

Technical Analysis

76. **Despite tremendous progress in Cabo Verde’s power sector over the past 10 years, there is room to improve ELECTRA’s performance.** In Cabo Verde, each island has a stand-alone power system that is not interconnected to the other systems in the other islands. Most of these systems are small, limiting the economies of scale that can be achieved in the sector.

77. **While good progress has been made in some areas such as increasing access, in others, progress has been less marked, with technical and commercial losses remaining persistently high.** In 2020, technical and commercial losses were about 26.1 percent for ELECTRA (that is, for the whole power sector), with the island of Santiago alone accounting for 81.2 percent of the total losses of the country. ELECTRA received a financing of US\$6 million as part of the Recovery and Reform of the Electricity Sector Project (P115464) in 2011 and another concessional credit line between the Portuguese Government and the GoCV for EUR 3 million in 2013 to support its loss reduction plan. However, the plans have had a limited effect to date and there is significant scope for further improvement. While losses initially fell from 29 percent in 2012 to 22.5 percent in 2014, they then rose to 27 percent in 2016 and there has only been a small improvement since—to 25 percent. By comparison, the World Bank typically uses 10 percent losses as the benchmark for an efficient utility, comprising mainly technical losses.

78. **The generation mix remains heavily reliant on oil-fired thermal generation, even though wind and solar PV generation has grown over time.** Cabo Verde is naturally endowed with good wind and solar resources, with wind capacity factors of 30–40 percent and solar capacity factors of around 20 percent. Total energy produced in 2020 was 419 GWh, representing a decrease of 24 GWh (5 percent) compared to the previous year, driven by the economic impact of the COVID-19 pandemic. As a proportion of total generation, output from thermal power plants has remained broadly constant over 2014–2020, ranging from 77 percent to 82 percent. In 2020, thermal generation was 83.2 percent of total generation. The share of renewable-based generation in 2020 was 16.8 percent, a decrease of 1.8 percentage points compared to 2019 (18.6 percent).

79. **Renewable generation is expected to increase in future, reducing generation costs and GHG emissions.** The Master Plan for the Power Sector (2018–2030) envisages renewable generation installed capacity increasing to 251 MW by 2030, at which time renewables would comprise 54 percent of the energy mix. Both solar PV and wind generation are planned to be developed, with 91 MW of wind and 160 MW of solar PV being installed by 2030. According to the Master Plan, average tariffs (excluding value



added tax [VAT]) could fall from CVE 24 per kWh in 2018 to CVE 22.6 per kWh in 2030 with the development of renewable energy (compared to an increase to CVE 25 per kWh without the development of renewable energy).

80. **ELECTRA has a history of unprofitability, mainly due to high commercial losses and nonpayment from public entities, particularly ELECTRA made a CVE 505 million loss in 2020**, following losses in 2019 and 2018 of CVE 369 million and CVE 867 million, respectively. ELECTRA NORTE, a subsidiary of ELECTRA, is still profitable (CVE 218.2 million in 2020), while the other subsidiary ELECTRA SUL is loss making (negative CVE 719.0 million in 2020). While the regulatory regime allows for a cost-reflective tariff, only efficient technical and commercial losses are allowed (23.3 percent in 2020) when setting tariffs and not the actual higher level of losses (26.1 percent in 2020), most of which are commercial losses, particularly for ELECTRA SUL. To improve its financial situation, ELECTRA must therefore tackle the issue of high commercial losses.

81. **As a result of the COVID-19 pandemic, ELECTRA's financial performance worsened in 2020 compared to 2019.** This was largely driven by a decrease in demand (419 GWh in 2020 compared to 443 GWh in 2019) and an increase in commercial losses, as described earlier. In addition, a tariff reduction of CVE 2.64 ECV per kWh (approximately equivalent to US\$0.03 per kWh) was announced by the regulator ARME (multisectoral regulation agency of the economy) before the COVID-19 pandemic hitting Cabo Verde; this tariff reduction was implemented in October 2020, after being postponed from its initial date of April 2020. Cost savings as a result of the reduction in demand and lower international oil prices were realized but were not sufficient to offset the reduction in revenues due to the economic downturn.

82. **To improve its financial performance, ELECTRA must deal with the key power sector challenges as described earlier.** To do so, ELECTRA needs to move away from high-cost generation to lower-cost generation, reduce technical and commercial losses, reduce operating costs (including optimizing staff costs), and improve collections particularly from the public sector.

83. More details on the technical analysis can be found in Annex 2.

Economic Analysis

84. An economic analysis was carried out to assess the economic viability of the project using a standard cost-benefit methodology to arrive at the economic internal rate of return (EIRR) and net present value (NPV) of the project. The economic evaluation is confined to the project activities that generate quantifiable benefits for which an economic value can be clearly identified and measured, notably benefits associated with investments under Component 1 in the four small solar PV power plants, lines to connect the power plants to the grid, pilot battery storage and rooftop solar PV, and energy efficiency systems for public buildings, as well as benefits associated with the operational improvement resulting from the reform of the power sector through the advisory services provided to the GoCV under Component 2.

85. The benefits of Component 1 are the avoided costs of investing in and operating thermal power plants to generate electricity as a result of developing the four small solar PV power plants, pilot battery storage and rooftop solar PV, and energy efficiency systems for public buildings. An additional benefit is the avoided CO₂ emissions of thermal generation, valued at the World Bank's low estimate of the shadow



price of CO₂.⁴¹ The economic costs of Component 1 relate to the costs of the solar PV power plants and connection to the grid, battery storage systems, and rooftop solar PV and energy efficiency systems.

86. The benefits of Component 2 are the avoided costs of investing in and operating thermal power plants to generate electricity as a result of reducing electricity consumption due to the RPP becoming effective with restructuring and privatization, the related avoided CO₂ emissions, and the reduced staff costs. The economic costs of Component 2 relate to the costs of activating the RPP, advisory services to the GoCV for the sector reform, and ELECTRA restructuring costs.

87. The result of the economic analysis is presented in Table 2. A more detailed discussion of the economic analysis can be found in Annex 3.

Table 2. Summary of Economic Analysis Results

Project Component	Base Case		Fuel Price Sensitivity	
	ENPV	EIRR	ENPV	EIRR
Component 1	US\$8.0 million	13.7 percent	US\$2.2 million	8.3 percent
Component 2	US\$17.8 million	26.9 percent	US\$12.1 million	22.0 percent

Source: World Bank staff calculations

Note: ENPV = Economic Net Present Value.

88. The result of the economic analysis of Component 1 using the World Bank’s low recommended shadow price of carbon is an ENPV of US\$8.0 million, assuming a social discount rate of 6 percent, and an EIRR of 13.7 percent. Over the lifetime of the solar PV projects (to 2050), 139,000 tons of CO₂ emissions are avoided. The result of the economic analysis of Component 2, with Component 1 in place, is an ENPV of US\$17.8 million, assuming a social discount rate of 6 percent, and an EIRR of 26.9 percent. Over the period to 2050, 267,000 tons of CO₂ emissions are avoided.

89. With the World Bank’s high recommended shadow price of carbon, the economic benefit of avoided CO₂ emissions increases for both project components. With the high recommended shadow price of carbon, the result of the economic analysis of Component 1 is an ENPV of US\$11.3 million and an EIRR of 16.4 percent. Component 2, with Component 1 in place, has an ENPV of US\$24.2 million and an EIRR of 31.5 percent.

90. Avoided fuel costs is an important driver of the economic benefits and future fuel prices are uncertain. Therefore, a conservative sensitivity is applied whereby fuel prices return to the same level as in 2020 and remain at that level (along with the low recommended shadow price of carbon), which reduces the benefit of the project from avoided thermal generation. With this sensitivity, Component 1 has an ENPV of US\$2.2 million and an EIRR of 8.3 percent. Component 2 has an ENPV of US\$12.1 million and an EIRR of 22.0 percent.

⁴¹ <https://thedocs.worldbank.org/en/doc/911381516303509498-0020022018/original/2017ShadowPriceofCarbonGuidanceNoteFINALCLEARED.pdf>



Project Financial Analysis

91. The financial analysis of the project was made from the point of view of ELECTRA by comparing cash flows to the utility with and without the project components to arrive at the financial net present value (FNPV) of the project. As with the economic evaluation, the financial analysis is confined to the project activities that generate quantifiable benefits for which a financial value can be clearly identified and measured, notably benefits associated with investments under Components 1 and 2.

92. The financial benefits of Component 1 are the avoided costs of investing in and operating thermal power plants to generate electricity as a result of developing the four small solar PV projects and rooftop solar PV, distributed generation systems, and energy efficiency systems in public buildings. The financial costs of Components 1 relate to the costs of the solar PV power plants and connection to the grid as well as battery storage systems, in addition to an expected reduction in revenues due to the reduced electricity sales from demand replaced by the rooftop solar PV (distributed generation) and energy efficiency systems in public buildings, adjusted by the commercial losses rate. The analysis also assumes that there is no cost of buying VRE to charge the battery energy storage systems, based on the assumption that ELECTRA would not pay for spilled VRE output used to charge these storage systems.

93. The financial benefits of Component 2 are due to the reduction in staff costs with restructuring and the reduction in commercial losses with the RPP becoming effective. This increases sales revenues as well as reducing consumption volumes, which in turn reduces generation costs for the utility. The financial costs of Component 2 relate to the costs of activating the RPP and advisory services to the GoCV for the sector reform. ELECTRA restructuring costs are born by the GoCV and are therefore not included as a financial cost.

94. The result of the financial analysis is presented in Table 3. A more detailed discussion of the financial analysis can be found in Annex 3.

Table 3. Summary of Financial Analysis

Project Component	FNPV
Component 1	US\$4.8 million
Component 2	US\$33.3 million

Source: World Bank staff calculations

95. The result of the financial analysis of Components 1 is an FNPV of US\$4.8 million, assuming a financial discount rate of 10 percent. The result of the financial analysis of Component 2, with Component 1 in place, is an FNPV of US\$33.3 million, assuming a financial discount rate of 10 percent.

Utility's Financial Analysis

96. ELECTRA has a history of unprofitability, mainly due to high commercial losses (total losses of 26.1 and 24.8 percent in 2020 and 2019, respectively, with high losses of 36.2 percent and 35.6 percent in Santiago, the largest island) and nonpayment from public entities. ELECTRA made a CVE 505 million loss in 2020, following losses in 2019, 2018, and 2017 of CVE 369 million, CVE 867 million, and CVE 848 million, respectively. Electra SA recognizes the losses of its two subsidiaries (Electra Sul and Electra Norte) as non-



recurring income or expenses. In 2018, this amount was negative CVE 770.3 million whereas in 2019, the result of the subsidiaries improved to negative CVE 150.1 million. In 2019, Electra Norte remained profitable (CVE 385.6 million) whereas Electra Sul made a loss (negative CVE 546.1 million). However, Electra Sul significantly improved its financial performance compared to 2018 (negative CVE 1,011 million). While the regulatory regime allows for a cost-reflective tariff, only efficient technical and commercial losses are allowed when setting tariffs and not the actual higher level of losses, most of which are commercial losses. To improve its financial situation, ELECTRA must therefore tackle the issue of high commercial losses.

97. In the next few years, the installation of renewable generation and improvements in operational performance are expected to bring strong financial benefits to the sector. In particular, the restructuring and privatization of the sector supported by the project is expected to make ELECTRA's RPP effective, driving down commercial losses. Projections to 2030 show that with the project in place, the utility's financial performance will improve over time, becoming profitable from 2027. By 2030, ELECTRA's net profit is projected to be CVE 614 million, with a net profit margin of 6.4 percent. The utility is forecast to have a positive EBITDA from CVE 269 million in 2025 to CVE 1,852 million in 2030, indicating that the sector is able to cover its operating costs excluding depreciation. This improvement is primarily driven by declining generation costs (initially due to lower fossil fuel prices and later due to increased penetration of renewable energy over time), reduced technical and commercial losses (from 26 percent in 2020 to 12.9 percent in 2030) and reduced personnel costs. Following the reduction in tariffs in October 2020 to reflect lower fuel costs, tariffs are assumed to remain constant at their current level until 2025, despite rising fuel prices, before declining as profitability increases to reach CVE 22 per kWh for low voltage (LV), CVE 17 per kWh for medium voltage (MV), and CVE 21 per kWh for special low voltage (SLV) in 2030. Without the project, the sector is in deficit over the period, due to the inability of the utility to reduce commercial losses.

98. A detailed utility financial analysis with underlying assumptions can be found in Annex 3.

B. Fiduciary

(i) Financial Management

99. An FM assessment of the UGPE, the implementation agency, was carried out in November 2020. The objective of the assessment was to determine whether the UGPE has adequate FM arrangements which include the entity's system of planning and budgeting, accounting, internal controls, funds flow, financial reporting, and auditing. The FM arrangements will be based on the existing arrangements in place within the UGPE which has the fiduciary responsibility of five active World Bank-financed projects. The overall FM performance of the UGPE is Satisfactory. Proper books of accounts and supporting documents have been kept in respect to all expenditures. The UGPE is familiar with the World Bank FM requirements. The interim unaudited financial reports (IFRs) for the ongoing projects are also submitted on time, acceptable to IDA, and the external auditors issued an unqualified (clean) opinion on the 2020 Financial Statements of active projects. The UGPE has an adequate FM manual of procedures which can be used for this project.



100. To ensure readiness for implementation and maintain an adequate FM system, the following measures need to be implemented: (a) update the UGPE FM manual of procedures to include the specificities of this project; (b) customize the accounting software for the bookkeeping of this project, (c) recruit a dedicated accountant; (d) include the project in the internal auditor scope of intervention; and (e) recruit an external auditor with qualification satisfactory to the World Bank to conduct a yearly audit of the project financial statements no later than six months after the end of such period.

101. The overall FM risk is Moderate. The UGPE has the overall responsibility of the FM and procurement functions and has proven experience with World Bank-financed projects. The UGPE's FM arrangements in place satisfy the World Bank's minimum requirements under World Bank Policy and Directive on IPF effective in 2017.

(ii) Procurement

102. The Borrower will carry out procurement under the proposed project in accordance with the World Bank 'Procurement Regulations for IPF Borrowers' (Procurement Regulations) dated November 2020, and the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006, and revised in January 2011, and as of July 1, 2016, and other provisions stipulated in the Financing Agreement.

103. The procuring entity, UGPE, as well as bidders and service providers, that is, suppliers, contractors, and consultants, shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraph 3.32 and Annex IV of the Procurement Regulations.

104. An assessment of the procurement capacity of the UGPE and related risks was performed. The UGPE has implemented several development projects since its establishment in 1999 with adequate fiduciary arrangements. The UGPE has experience with World Bank procurement rules and procedures, and ongoing projects, except for the Tourism Development Project (P146666), are implemented under the new Procurement Regulations. The UGPE is implementing these projects with three procurement specialists and an assistant. The assessment of the UGPE's capacity to implement World Bank procurement determined that the UGPE has the experience and qualifications to carry out procurement under this project. The specialists have acceptable knowledge of the World Bank procedures and experience in using the World Bank Standard Bidding Documents. However, with this project, the UGPE will be procuring some unfamiliar goods and works such as solar power plants and related works as well as other specific goods that are critical for this project. In addition, due to the COVID-19 pandemic, there is a risk of market volatility. Furthermore, the project will bring additional workload that needs to be managed. Given that other World Bank projects currently managed by the UGPE will be closing shortly, the UGPE is expected to have sufficient capacity to manage this additional workload.

105. A detailed procurement description and institutional arrangements can be found in Annex 1, Implementation Arrangements and Support Plan.



C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

106. The proposed project is expected to have direct and indirect E&S benefits, including the decrease of CO₂ emissions and other air pollutants through the integration of renewable energy sources for electricity supply, the potential reduction in the price of electricity, and the strengthening of the UGPE’s capacity. Conversely, potential negative E&S impacts and risks are also expected. The main E&S impacts and risks relate to civil works, environmental disturbances, and land acquisition and resettlement.

107. The Borrower has prepared an Environmental and Social Commitment Plan, a Stakeholder Engagement Plan (SEP), and Labor Management Procedures (LMP)⁴². These instruments ensure that actions and measures to address E&S risks and impacts, as well as the obligations of each party (Borrower and the World Bank), during a specified period, are thoroughly set out, stakeholders’ consultations are maintained, and occupational health and safety (OHS) measures are in place and observed.

108. For the power evacuation lines and the battery storage facilities, the Borrower developed an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) acceptable to the World Bank⁴³. Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plans (ESMPs)⁴⁴ will be completed at a later stage once the specific line routes are known. The ESIAs will be consulted by stakeholders before finalization, reviewed and approved by the World Bank, and publicly disclosed.

109. For the solar PV power plants, the Borrower prepared four pre-feasibility stage preliminary environmental and social assessments. Each assessment defines mitigation measures for construction and operational phases, as well as roles and responsibilities, time plans, costs and implementation procedures for each mitigation measure recommended. Sexual exploitation and abuse and sexual harassment (SEA/SH) prevention and mitigation measures have been developed as part of the pre-feasibility ESIAs. Full ESIAs and ESMPs will be completed at a later stage once the feasibility studies are available.

110. The pre-feasibility ESIAs provide an overview of key risks and impacts per potential solar power plant/per island and provide inputs into the project design and analysis of alternatives. Each pre-feasibility

⁴² The SEP and LMP were disclosed in-country on May 14, 2021, followed by the disclosure at the World Bank website. The ESCP was disclosed in-country and at the World Bank website on August 5, 2021.

⁴³ The ESMF and RPF were disclosed in-country on May 14, 2021, followed by the disclosure at the World Bank website.

⁴⁴ The ESMF and pre-feasibility ESIAs (which include preliminary ESMPs) for the 4 islands (São Nicolau, Santo Antão, Maio and Fogo) were prepared, approved and disclosed in-country on May 14, 2021, followed by the disclosure at the World Bank website. All approved Prefeasibility-ESIAs/ESMPs for the project sites will be updated to ESIAs/ESPMS once the feasibility studies are developed and prior to the carrying out of the relevant activities.



ESIA defines mitigation measures for construction and operational phases, roles and responsibilities, time plans, costs, and implementation procedures for each recommended mitigation measure.

111. The scope and scale of the anticipated risks are expected to be site-specific, limited, localized and largely manageable. The proposed project is anticipated to have direct and indirect environmental and social benefits, including the decrease of CO₂ emission and other air pollutants through the integration of more, clean electricity from renewable sources, a possible reduction in the price of electricity and an increase in PIU capacity building. At the same time, potentially negative environmental impacts and safety risks are also expected. The main environmental and social risks could be related to civil works and environmental disturbance. During the implementation phase, only a few maintenance works could generate moderate risks and are likely to be related to the OHS of workers and the disposal and management of generic waste. The main social risks assessed are related to the proposed infrastructure works, including the construction of the four small-scale power plants, the grid expansion/reinforcement and the pilot battery storage facilities. While works related to the transmission lines may induce involuntary physical and economic displacement, civil works related to the completion of the four small-scale power plants (with co-located pilot batteries) will take place on public land in all the islands and no land acquisition is foreseen, nor temporary, permanent physical or economic displacement.

112. Construction activities will generate solid waste, which will primarily include excavated soil and solid waste. The waste generated by construction will be disposed of at approved sites in accordance with national laws and regulations. The pre-feasibility ESIA's include an assessment of how resources will be managed efficiently to minimize waste generation and harm to the environment, and the potential adverse impacts on human health. The ESMP in turn presents risk management procedures to manage these issues, using the mitigation hierarchy, as well as to deal with construction debris and hazardous or non-hazardous materials that may need to be disposed of. For the battery storage listed under Component 1, a Solid Waste Management Plan will be prepared at a later stage, once the specific sites are known, and implemented by the constructor. The operational phase is also considered in the ESMF/ESIA's: Activities for this project will follow guidance for recycled waste, generated by any activity supported by the project.

113. For any project-related construction works, contractors will have a contractual obligation to implement and comply with the LMP, ESMPs, and OHS measures to be outlined in the ESMPs. In addition, the pre-feasibility ESIA's prepared for the project include a Health, Safety, and Environmental (HSE) plan in line with WBG Environment, Health, and Safety Guidelines. The bidding documents to be prepared are expected to include this HSE plan. Contractors and their workers will also be subject to and trained on codes of conduct, which include measures related to SEA/SH, interaction with local communities, and safety provisions. Lastly, any labor-related grievances will be addressed on time, using the grievance mechanism (GM) included in the LMP.

114. The general areas of the project selected for the installation of the small-scale power plants (with co-located pilot batteries) in the four small islands (1.3 MW on Fogo; 1.2 MW on Santo Antão; 0.4 MW on Maio; and 0.4 MW on São Nicolas islands) plants have been defined by a Decree Law (Decree Law no. 1/2011) as Renewable Energy Development Zones (*Zonas de Desenvolvimento de Energia Renovável*, or ZDERs). These areas were chosen because they are reserved for renewable energy projects and should be free of human population and not cause involuntary resettlement. Nevertheless, because compliance



with this decree law has not always been enforced at the municipal level, the PIU has provided land documents for all four sites, attesting that the land is public property. In addition, all four sites are free of human settlement. The investments in rooftop solar PV systems and energy efficiency on public buildings will be completed on public rooftop properties. Thus, involuntary resettlement is not anticipated for both the installation of the small-scale power plants (with co-located pilot batteries) and the installation of rooftop solar PV systems.

115. **Grievance mechanism.** A project-specific GM that is part of the SEP has been established. The GM includes a Local Complaints Management Committee (CLGP) in each municipality of the project site. The CLGP's mission is to raise awareness/inform the general public about the GM, the data collection systems, the documentation and processing of all complaints, the suggestions and observations received for appropriate solutions, and the direct information to the UGPE about cases related to gender-based violence and exposure to community violence. The CLGP is composed of the following representatives: Municipal Chamber (coordination), delegation from the Ministry of Agriculture and Environment and/or the institution involved in the project implementation, civil society (chosen by the communities); representatives of People affected by the project or likely to be relocated, and vulnerable groups (women and children). The CLGP has a minimum representation of 20–30 percent of women. This committee could have a female focal point trained to receive complaints related to SEA/SH, who will transfer any complaint directly to the UGPE.

116. **Citizen engagement.** It is important to include citizens in the preparation, implementation, and monitoring and evaluation of projects. Citizen engagement will promote community ownership and thereby enhance the project development results and sustainability. This project was designed considering feedback from several in-country consultations undertaken in each island involved in the project. Satisfaction surveys will be conducted at the project midterm review to solicit beneficiaries' feedback. The results of the beneficiaries' satisfaction survey will be integrated into project interventions and inform any necessary course correction. Additionally, a GM, as noted above, will be regularly monitored. Through these citizen engagement mechanisms, the project will enhance citizens voice and ensure beneficiaries participation throughout the project life cycle.

117. **Gender.** From a gender perspective, the GoCV is well positioned in the Gender Equality Index, but the country still lacks economic opportunities for women, with lower labor force participation for women than men by 15 percentage points. Encouraging their active participation in energy projects and specifically energy sector employment might be challenging due to existing social and economic barriers but could help decrease the employment gap, especially if coupled with targeted skills development programs, which the project aims to do. Moreover, providing employment with this new renewable energy project can open the currently male-dominated sector for women in the longer term.

118. Two indicators under the project will track progress toward a reduced employment gap by (a) tracking the percentage of women participating in the CERMI-run technical training and business incubator program, with a target of at least 35 percent, and (b) tracking the percentage of women employed by the companies that will be hired to operate and maintain the distributed generation facilities, with a target of a least 30 percent. Other output- and gender-related indicators will be included in the PIM.



V. GRIEVANCE REDRESS SERVICES

119. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the World Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of World Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and World Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate GRS, please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

120. The overall risk rating for the project is Substantial. This reflects a range of macroeconomic, sector strategies and policies, institutional capacity for implementation, stakeholders, and disaster and climate risks, all of which could compromise the success of the project. The following section describes risks that are considered substantial and higher (as well as the E&S risks), also highlighting mitigation mechanisms where applicable.

121. **Macroeconomic risks are Substantial.** These are primarily associated with a potential delay in fiscal consolidation and SOE reforms due to adverse economic impacts of the COVID-19 pandemic. The global economic recession triggered by the pandemic could affect the appetite of potential private investors for a market that is affected by the slowdown in electricity demand resulting primarily from a stalled tourism sector. There is also a risk of potential delays in project implementation due to the worsening fiscal accounts (unexpected revenue shortfalls and increasing expenditures) and changing government priorities to mitigate the COVID-19 effects in the context of the global economic recession. A sharper economic slowdown could force the GoCV to redirect limited public attention and resources to other sectors by affecting their ability to implement the Master Plan for the Power Sector (2018–2030) and impeding their commitment to electricity sector reforms. Moreover, in the context of falling FDIs and halted private sector activities, the economic contraction could result in substantial delays in the planned procurement of new IPPs and restructuring and privatization of ELECTRA.

122. **Mitigation.** In the wake of the pandemic, the GoCV has demonstrated a continued commitment to implement the Master Plan for the Power Sector (2018–2030) and electricity sector reform. Given the focus of the project on providing clean, reliable, and affordable electricity services to customers throughout the country and reducing GoCV's public debt exposure, contingent liabilities, and fiscal risks with its divestment in ELECTRA, it will remain a high priority for the GoCV. Broad economic recovery efforts are supported by the IMF program and the World Bank-financed State Owned Enterprise Related Fiscal Risk Management Project (P160796), COVID-19 Emergency Response Project (P173857), Disaster Risk Management Development Policy Financing with CAT DDO (P160628), and second State-owned



Enterprise Reform and Fiscal Management DPF (P171080). The GoCV has also created a dedicated contingency fund to finance emergency response and recovery in the aftermath of a natural catastrophe, which enable a more predictable funding for preparedness, emergency response and recovery. The contingency fund was activated on March 16, 2020. Overall, economic growth and related electricity demand growth are expected to be restored over the medium term, driven by ongoing structural reforms to improve connectivity and boost private sector investment. The team will continue to carefully monitor the macro-fiscal situation in close dialogue with the GoCV and the IMF.

123. **Sector Strategies and Policies risks are Substantial.** Because of the COVID-19 pandemic, ELECTRA's revenues and costs have been affected by a decrease in demand; over the nine-month period from January to December 2020, demand was 7.9 percent lower than the same period in 2019, resulting in a reduction in ELECTRA's revenues. While the medium-term financial impact is not yet known, the impact of current economic downturn on ELECTRA's financial position could result in a decreased appetite from investors in the privatization process. Furthermore, the anticipated restructuring and privatization of ELECTRA could create uncertainty among donors and investors involved in developing new renewable energy projects, who may be reluctant to engage with a party which is expected to experience a significant change in its shareholding structure, potentially leading to delays in the implementation of the sector's Master Plan.

124. **Mitigation.** To help mitigate the effect of the pandemic on ELECTRA, a consumer tariff reduction, which was initially planned on April 1, 2020, was postponed and implemented only on October 1, 2020. Similarly, the adjustment of end user tariffs to reflect fuel costs was also postponed and implemented only on October 1, 2020. The risk related to the anticipated restructuring and privatization of ELECTRA can be mitigated through the World Bank's strong engagement to support that reform through the State Owned Enterprises Related Fiscal Management Project (P160796) for the preparation of the reform plan, the Cabo Verde First Equitable, Sustainable, and Green Recovery DPF (P174754) for the publishing of the power sector reform decree law, and this project for the actual implementation of the reform through Component 2. The power sector reform decree law was enacted and officially published in the Official Bulletin of the Republic of Cabo Verde on July 21, 2021.

125. **Institutional capacity for implementation and sustainability risks are Substantial.** In the past, limited technical capacity and insufficient proactivity in a small country such as Cabo Verde have slowed down project implementation. Furthermore, the electricity sector reform may be politically sensitive, in the context of an upcoming presidential elections and a global economic recession resulting from the COVID-19 pandemic. A task force has been set up for the electricity reform involving the restructuring and privatization of ELECTRA and is responsible to lead the reform process. However, insufficient technical capacity within the task force, as well as the restrictions linked with the COVID-19 pandemic, have slowed down the pace of the task force's work. Finally, there are very few successful examples of private sector participation in the distribution segment in Sub-Saharan Africa.

126. **Mitigation.** The establishment of a relatively strong UGPE has proved to be effective in supporting project implementation. The Government also continues to benefit from capacity-building support provided by the World Bank and other development partners. The UGPE will constitute a project team to be headed by a project manager with day-to-day responsibility for implementing the project. Component 3 of the project will also provide funding to further augment the UGPE's project implementation capacity.



Furthermore, with the strong commitment and close oversight of the current government, there are signs of improvements in the political will to timely implement the electricity sector reform agenda. In addition, a transaction adviser (financed under the State-Owned Enterprises Related Fiscal Management Project, P160796) is currently developing a comprehensive privatization road map that will be implemented under Component 2 of this project.

127. **Environmental and social risks are Moderate.** The E&S impacts and related risks are not expected to be irreversible, based on the nature of the project activities to be financed by the World Bank. The project will be in peri-urban and rural areas and the electric grid and distribution substations are not expected to be in the vicinity of legally protected areas or areas of high biodiversity value. The protected areas and areas of high biodiversity value, in Fogo for example, will be avoided/excluded by design from the project in any case. Some temporary, localized, adverse environmental impacts and risks of minor to moderate scale are anticipated, mainly during the construction phase. The potential environmental risks of the project are related to: (a) the loss of vegetation due to potential land clearing; (b) habitat disturbance from the civil works activities; (c) the OHS of workers; (d) community health and safety risks; (e) nuisance caused by dust and noise; (f) waste management; and (g) cultural heritage. During the O&M phase, only a few maintenance works could generate moderate risks related to the OHS of workers and the disposal and management of generic waste. The main social risks assessed are related to the proposed infrastructure works, including the construction of the four small-scale power plants, the grid expansion/reinforcement and the pilot battery storage facilities. While works related to the transmission lines may induce involuntary physical and economic displacement, civil works related to the completion of the four small-scale power plants (with co-located pilot batteries) will take place on public land in all the islands and no land acquisition is foreseen, nor temporary, permanent physical or economic displacement. The social risk is considered moderate as adverse impacts related to the implementation of project activities are considered minimal and can be managed using appropriate ESF instruments—ESMF, ESIA, LMPs and RPF. Finally, investments in solar PV panels could also face risk regarding potential use of forced labor by suppliers of polysilicon.

128. **Mitigation.** The majority of the impacts likely to be generated from the project activities can be mitigated with measures that are readily identifiable. These environmental and social risks and impacts will be site specific, temporary, and manageable to an accepted level by applying construction industry best practices. These guidelines will be included in the site-specific ESIA/ESMPs for the scope of the project involving the implementation of power evacuation lines and battery storage facilities. These studies will include environmental screening, chance find procedures, and OHS. The project design includes, in addition to the UGPE's environmental and social specialist, the recruitment of an Owner's Engineer who will be in charge of supervising civil works and closely monitoring the compliance of individual contractors with, among others, environmental and social contractual clauses related to construction. The Owner's Engineer key staff will include an environmental and social safeguards supervisor. Regarding the risk of forced labor, under Environmental and Social Standards 2 (ESS2), where there is a significant risk of forced labor related to primary supply workers, the Borrower requires the primary supplier to identify those risks and if forced labor cases are identified, the Borrower will require the primary supplier to take appropriate steps to remedy them. Ultimately, where remedy is not possible, the Borrower will, within a reasonable period, shift the project's primary suppliers to suppliers that can demonstrate that they are meeting the relevant requirements of ESS2. Prior to beginning the procurement process, the Borrower will undertake market analysis to identify the possible sellers of solar



panels to the project. The bidding documents will emphasize forced labor risks in solar panels and components and will require that sellers of solar panels to the project will not engage or employ any forced labor among their work force. Bidders will be required to provide two declarations: a Forced Labor Performance Declaration (which covers past performance) and a Forced Labor Declaration (which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers). In addition, enhanced language on forced labor will be included in the procurement contracts. The World Bank will prior review procurements of solar panels and components to ensure that enhanced provisions are used by the Borrower.

129. **Stakeholders' risks are Substantial.** Major policy reforms similar to the ones foreseen in this project with the expected restructuring and privatization of ELECTRA are open to abuse and mismanagement, which can lead to negative consequences for stakeholders. While the Government has a role to play in a privatized power sector framework, through the use of regulation, the stakeholders directly affected by the privatization process, particularly ELECTRA's management and staff, could be tempted to ignore, block, or reverse these reforms, in the absence of a strong regulator.

130. **Mitigation.** The project is reinforcing the capacity of the regulator, ARME, to among others ensure a strong regulatory framework. More broadly, there is an agreement between the various government stakeholders composing the electricity sector reform task force on the need to restructure and privatize ELECTRA. Significant technical support has already been provided by the World Bank to inform the reform options with strong involvement of the various stakeholders through the task force. The GoCV's privatization road map indicates that ELECTRA's staff that are not retained by the new concessionaire would be transferred to the public single buyer/TSO, and subsequently any necessary downsizing decisions would be made. As such, the extent of possible retrenchment is not yet known and will only be confirmed after the concession contract is awarded and is under implementation. It should be highlighted that the project will not include retrenchment activities and thus will not fund any eventual severance payments, which will be paid for by the GoCV using proceeds from the privatization. However, where all alternatives have been fully considered and downsizing is deemed unavoidable, the GoCV shall exercise due diligence to carry out the downsizing in accordance with the provisions of relevant national laws, applicable collective bargaining, and a Social Plan. To ensure that the GoCV has the capacity to develop and implement such a Social Plan, some capacity building is budgeted in Component 3 to eventually support the GoCV in that regard. Once ELECTRA has been privatized and the GenCo and DisCo have assessed their existing workforce and eventually developed a staffing restructuring plan in collaboration with the GoCV.

131. **Disaster and climate risks reflected as other risks are Substantial.** Based on the climate risk screening and previous analyses conducted by Global Facility for Disaster Reduction and Recovery (GFDRR), Cabo Verde is highly vulnerable to landslide and sea-level rise, which will only increase with climate change.

132. **Mitigation.** Given the high natural risks identified during the climate risks screening, the project will integrate adaptation measures in its design and implementation following the World Bank's best practices for strengthening adaptation in the power sector.⁴⁵ Furthermore, a World Bank-executed grant

⁴⁵ ESMAP 'Good Practice Note for Energy Sector Adaptation' and GFDRR 'Stronger Power: Improving Power Sector Resilience to Natural Hazards'.



of US\$35,000 has been mobilized from AFRI-RES to finance in-depth climate risk assessment that could cover both the resilience of the project infrastructure and of the power system in the archipelago. Measures will be identified during the climate risk assessment to ensure the resilience of the built infrastructure, for example, by elevating it when there are risks of floods, choosing a different route or location if the area is at high risk of flooding or landslide, and so on. In addition, it can be noted that by providing reliable and clean energy supply, the project should contribute to reduce deforestation and land degradation.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Cabo Verde

Renewable Energy and Improved Utility Performance Project

Project Development Objectives(s)

The project development objectives are to (i) increase renewable energy generation; and (ii) improve the performance of the electricity utility in Cabo Verde by leveraging private finance.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
Increase Renewable Energy Generation				
Generation capacity of energy constructed or rehabilitated (CRI, Megawatt)		0.00	0.00	3.90
Renewable energy capacity installed as small-scale solar PV plants (Megawatt)		0.00	0.00	3.30
Renewable energy capacity installed as distributed solar PV (Megawatt)		0.00	0.00	0.60
Net greenhouse gas (GHG) emissions (CRI, Metric tons/year)		0.00	5,000.00	5,000.00
Improve the Performance of the Electricity Utility				
Power system losses (Percentage)		26.10	21.70	18.00
Net greenhouse gas (GHG) emissions (CRI, Metric tons/year)		0.00	4,000.00	4,000.00



Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
Renewable and Efficient Electricity Service				
Number of small-scale power plants operational (Number)		0.00	0.00	4.00
Power evacuation lines constructed (Kilometers)		0.00	3.00	7.10
Energy storage facilities operational (Yes/No)		No	No	Yes
MWh renewable energy generated annually by small-scale solar plants (MWh/year)		0.00	0.00	5,781.00
MWh generated annually by distributed generation (MWh/year)		0.00	0.00	1,000.00
Percentage females enrolled in CERMI technical & business training programs (Percentage)		20.00	25.00	30.00
Percentage females employed for distributed generation O&M services (Percentage)		0.00	15.00	30.00
Jobs created (Number)		0.00	100.00	215.00
Permanent jobs created (Number)		0.00	20.00	45.00
Jobs created for women (Number)		0.00	10.00	26.00
Advisory Services for Electricity Sector Reform Implementation				
New electricity generation company incorporated (Yes/No)		No	Yes	Yes
New electricity distribution company incorporated (Yes/No)		No	Yes	Yes
New state-owned single buyer / transmission system operator established (Yes/No)		No	Yes	Yes
Private capital mobilized (Amount(USD))		0.00	35,000,000.00	35,000,000.00



Indicator Name	PBC	Baseline	Intermediate Targets	End Target
			1	
Technical assistance and capacity building provided to the new TSO/SB (Yes/No)		No	Yes	Yes
Implementation Support and Electricity Sector Development				
Final ESS studies prepared for all infrastructure investments (Yes/No)		No	Yes	Yes
Technical specifications prepared for all infrastructure investments (Yes/No)		No	Yes	Yes
Technical assistance and capacity building provided to ARME (Yes/No)		No	Yes	Yes
Technical assistance and capacity building provided to MICE / DNICE (Yes/No)		No	Yes	Yes
Grievances received and addressed through the project's Grievance Redress Mechanism within the specified timeframe (Percentage)		0.00	90.00	90.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Generation capacity of energy constructed or rehabilitated		Semi-annually	UGPE implementation progress report based on reports prepared by the Owner's	Data collected by UGPE and DNICE	UGPE



			Engineer		
Renewable energy capacity installed as small-scale solar PV plants	Renewable energy capacity installed with small-scale solar PV plants: 1.3 MW on Fogo; 1.2 MW on Santo Antão; 0.4 MW on Maio; and 0.4 MW on São Nicolas islands	Semi-annually	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
Renewable energy capacity installed as distributed solar PV	Renewable energy capacity installed with distributed generation - 0.615MW rooftop PV on public buildings	Semi-annually	Project progress implementation report	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
Net greenhouse gas (GHG) emissions	Project net greenhouse gas (GHG) emissions are calculated as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent per year.	Annually	Project progress implementation report	Based on data provided in the Owner's engineer report. 139,000 tCO2e are expected to be reduced between 2023 and 2046, for an approximate annual reduction of 5,700 tCO2e. 5,000 tCO2e/year is used as a conservative results indicator. MTR targets (2024) are the same as the end targeted because the indicator measures the annual average reductions	UGPE



				over the entire economic analysis period	
Power system losses	Electricity system losses reduced	Semi-annually	Project implementation progress reports	Based on data received from ELECTRA or new concessionaire	UGPE/ELECTRA
Net greenhouse gas (GHG) emissions	Project net greenhouse gas (GHG) emissions are calculated as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. They are reported in metric tons of carbon dioxide equivalent per year.	Annually	Project implementation progress reports	Based on loss reduction. 267,000 tCO ₂ e are expected to be reduced by the privatization of ELECTRA under Component 2 for the period 2023 – 2049, assuming investments under Component 1 are also made. The incremental contribution of Component 2 over this same period is 128,000 tCO ₂ e (267,000 tCO ₂ e minus 139,000 tCO ₂ e from Component 1), or approximately 4,700 tCO ₂ e/year. 4,000 tCO ₂ e/year is used as a conservative results indicator. MTR targets	ARME, UGPE



				(2024) are the same as the end targeted because the indicator measures the annual average reductions over the entire economic analysis period	
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Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Number of small-scale power plants operational	Four small-scale power plants will be constructed on the islands of Fogo, Sao Nicolao, Santo Antao, and Maio	Semi-annually	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
Power evacuation lines constructed	Power evacuation lines will be constructed to connect the four small-scale power plants. The distances associated with each plant are as follows: Fogo (4.0km); Santo Antao (0.60km); Maio (0.50km); Sao Nicolao (2.0km)	Semi-annually	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
Energy storage facilities operational	Pilot energy storage facilities installed to	Quarterly	Project implementation progress reports	Project implementation progress reports	UGPE



	integrate the variable renewable energy capacity added by the project		on progress reports	prepared by the UGPE based on the Owners Engineer report	
MWh renewable energy generated annually by small-scale solar plants	MWh renewable energy generated annually by small-scale solar plants	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
MWh generated annually by distributed generation	MWh generated annually by distributed generation installed on public health buildings. Assumes 41 systems to be installed with average size of 15 kWp, generating electricity for an average of 4.5 hours per day (based on data from the Global Solar Atlas).	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE
Percentage females enrolled in CERMI technical & business training programs	Percentage females enrolled in CERMI technical & business training programs for solar PV O&M	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on reports prepared by CERMI	UGPE / CERMI
Percentage females employed for distributed generation O&M services	Percentage females employed for distributed generation O&M services under program implemented in collaboration with CERMI	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on reports prepared by CERMI	UGPE / CERMI



Jobs created	Estimated number of construction and O&M jobs created by the activities under Component 1 of the Project. Indicator required by the CCEFCF. Assumes approximately 110 jobs from the solar PV plants + interconnection lines; 60 jobs from battery storage investments; and 40 jobs from the distributed generation/ EE investments. Splits is approximately 170 jobs during construction and 40 jobs during O&M).	Semi-annually	UGPE, owner's engineer	UGPE implementation progress reports	UGPE
Permanent jobs created	Permanent jobs created (balance are temporary jobs)	Semi-annually	UGPE, contractors	UGPE implementation progress reports	UGPE
Jobs created for women	Jobs created held by women (balance is male)	Semi-annually	UGPE, contractors	UGPE implementation progress reports	UGPE
New electricity generation company incorporated	Incorporation of a new electricity generation company	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE in collaboration with the Privatization Task Force (PTF)	UGPE and PTF
New electricity distribution company incorporated	Incorporation of a new electricity distribution company	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE	UGPE and PTF



			reports	in collaboration with the Privatization Task Force (PTF)	
New state-owned single buyer / transmission system operator established	Establishment of a new state-owned single buyer / transmission system operator	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE in collaboration with PTF	UGPE and PTF
Private capital mobilized	Amount of private capital mobilized through the privatization of the utility ELECTRA	Quarterly	Project implementation progress report	Project implementation progress reports prepared by the UGPE in collaboration with PTF	UGPE and PTF
Technical assistance and capacity building provided to the new TSO/SB	Technical assistance and capacity building provided to the new TSO/SB	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE	UGPE
Final ESS studies prepared for all infrastructure investments	Final ESS studies prepared for all infrastructure investments	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE	UGPE
Technical specifications prepared for all infrastructure investments	Technical specifications prepared for all infrastructure investments	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE based on the Owners Engineer report	UGPE



Technical assistance and capacity building provided to ARME	Technical assistance and capacity building provided to ARME	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE	UGPE
Technical assistance and capacity building provided to MICE / DNICE	Technical assistance and capacity building provided to MICE / DNICE	Quarterly	Project implementation progress reports	Project implementation progress reports prepared by the UGPE	UGPE
Grievances received and addressed through the project's Grievance Redress Mechanism within the specified timeframe	Percentage of grievances received and addressed through the project's Grievance Redress Mechanism	Annually	Project reports	Quantitative	UGPE



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Cabo Verde

Renewable Energy and Improved Utility Performance Project (P170236)

Financial Management

Financial Management Arrangements

1. **Budgeting.** The project budgeting process will be described in the Project Implementation Manual (PIM). The budget would be reviewed and validated by DNICE before the beginning of each fiscal year. Annual draft budgets would be submitted to World Bank's no-objection no later than November 30 before adoption and implementation. Any substantial changes in the budget and work plans would be approved by the directorate and receive a World Bank no-objection opinion. The directorate would also review the quarterly budget execution report and assess the implementation progress and results of the project. Periodic reports of budget monitoring and variance analysis will be prepared by the UGPE.

2. **Accounting.** The UGPE will use the cash basis to maintain the project's accounts. The project financial statements will be prepared by the UGPE using the National Accounting Standards and Financial Reporting used for all ongoing World Bank-financed project in Cabo Verde. The project accounting will be managed through the existing accounting software which has multi-project and multi-donor features; it will be customized to accommodate the new project. All accounting procedures are documented in the UGPE manual of procedures. An accountant will be recruited for the bookkeeping of the project.

Internal Control

3. **Manual of procedures.** The daily operations of the project will be described in the UGPE manual of accounting and financial procedures, which incorporates World Bank FM procedures. The manual will be updated throughout the life of the project as needed to reflect the current procedures.

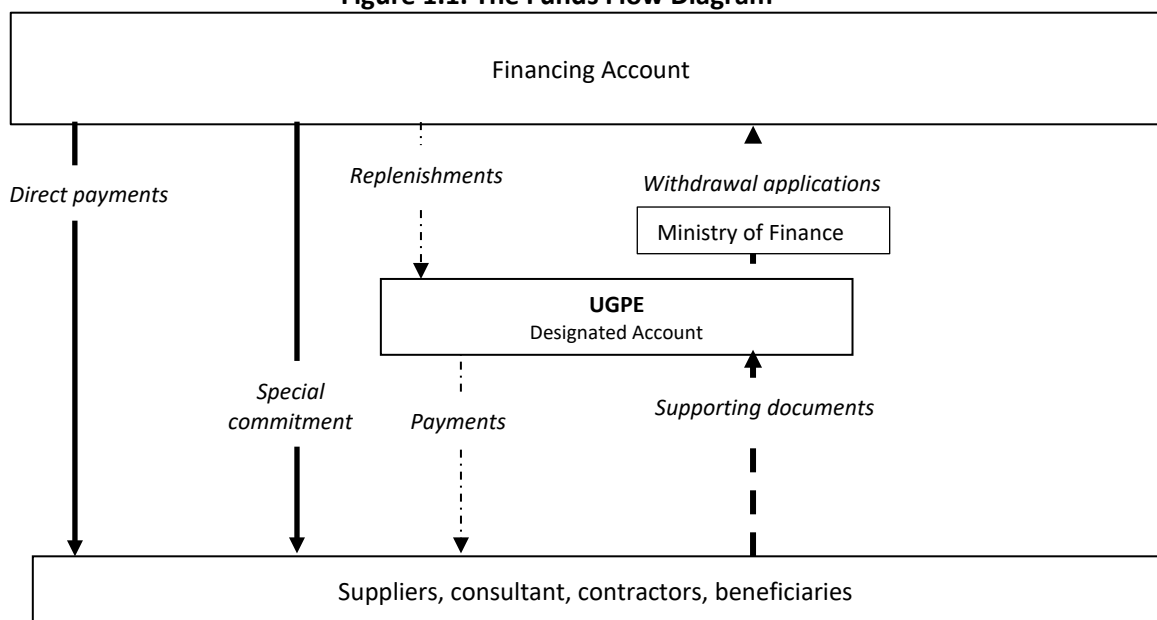
4. **Internal audit.** An internal auditor is in place and covers all World Bank-financed projects. This project will be included in the internal audit's scope of intervention. The internal auditor will expand his scope to carry out ex post reviews. The internal auditor will elaborate a risk mapping of all projects and an audit program for the entire portfolio and submit his report each quarter to the World Bank.

Funds Flow and Disbursement Arrangements

5. **Disbursement methods.** The following disbursement methods may be used under the project: reimbursement, advance, direct payment, and special commitment as specified in the Disbursement and Financial Information Letter (DFIL) and in accordance with the Disbursement Guidelines for IPF, dated February 2017. Disbursements would be report based whereby withdrawal applications will be supported with Statement of Expenditures. The DFIL will provide details of the disbursement methods, required documentation, Designated Account ceiling, and minimum application size.

6. **Designated Account.** A Designated Account will be opened at the Central bank of Cabo Verde. For the project implementation, the Designated Account will be replenished through the submission of withdrawal applications. Requests for reimbursement and reporting on the use of advances will be accompanied by a Statement of Expenditure providing information on payments for eligible expenditures and records required by the World Bank. All supporting documentation will be retained at the UGPE and must be made available for periodic review by the World Bank’s missions. Withdrawals up to an aggregate amount not to exceed SDR 500,000 from the IDA Credit, US\$700,000 from the IBRD Loan, and US\$400,000 from the GIF Grant may be made for payments made prior to the signature date but on or after the date falling twelve months from the signature date, for eligible expenditure.

Figure 1.1. The Funds Flow Diagram



7. The following tables specify categories of eligible expenditures.

Table 1.1. IDA Credit Categories of Eligible Expenditure

Category	Amount of the Credit Allocated (expressed in SDR)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Operating Costs and Training for under Part 1 of the project (except for Part 1.1 of the Project).	1,100,000	100% or such percentage of Eligible Expenditures set forth by the Annual Work Plan in accordance with the provisions set forth in Section III.B.2 of Schedule 2 to the Loan Agreement
(2) Goods, works, non-consulting services, consulting services, Operating Costs and Training for	1,400,000	100%



Category	Amount of the Credit Allocated (expressed in SDR)	Percentage of Expenditures to be financed (inclusive of Taxes)
Part 3 of the project		
TOTAL AMOUNT	2,500,000	

Table 1.2. IBRD Loan Categories of Eligible Expenditure

Category	Amount of the Loan Allocated (expressed in US\$)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Operating Costs and Training for Part 1 of the project (except for Part 1.2 of the project).	3,491,250	100% or such percentage of Eligible Expenditures set forth by the Annual Work Plan in accordance with the provisions set forth in Section III.B.2 of this Schedule
(2) Front-end Fee	8,750	Amount payable pursuant to Section 2.03 of this Agreement in accordance with Section 2.07 (b) of the General Conditions
TOTAL AMOUNT	3,500,000	

Table 1.3. CCEFCF Loan Categories of Eligible Expenditure

Category	Amount of the Loan Allocated (expressed in US\$)	Percentage of Expenditures to be financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, consulting services, Operating Costs and Training for under Part 1 of the project	7,000,000	100% or such percentage of Eligible Expenditures set forth by the Annual Work Plan in accordance with the provisions set forth in Section III.B.2 of Schedule 2 to the Loan Agreement
TOTAL AMOUNT	7,000,000	

Table 1.4. CCEFCF Grant Categories of Eligible Expenditure

Category	Amount of the Grant Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, and consulting services, Operating Cost and Training under Part 1.2 of the project	500,000	100% or such percentage of Eligible Expenditures set forth by the Annual Work Plan in accordance with the provisions set forth in Section III.B.2 of Schedule 2 to the Loan Agreement
TOTAL AMOUNT	500,000	



Table 1.5. GIF Grant Categories of Eligible Expenditure

Category	Amount of the Grant Allocated (expressed in US\$)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Consulting services under Part 2 of the project	2, 000,000	100%
TOTAL AMOUNT	2,000,000	

Financial Reporting Arrangements

8. The UGPE will produce on a quarterly basis unaudited IFRs during project implementation encompassing activities for all components. The IFRs are to be produced on a quarterly basis and submitted to the World Bank within 45 days after the end of the quarter. The UGPE will prepare and agree with the World Bank on the format of the IFRs.

9. The UGPE will also produce the project’s financial statements and these statements will comply with the Cabo Verde’s generally accepted accounting principles and World Bank requirements. These financial statements will comprise the following:

- (a) Statement of Sources and Uses of Funds which includes all cash receipts, cash payments, and cash balances
- (b) Statement of Expenses
- (c) Accounting Policies Adopted and Explanatory Notes
- (d) Management Assertion that project funds have been expended for the intended purposes as specified in the relevant Financing Agreements.

Auditing Arrangements

10. The Financing Agreement will require the submission of audited financial statements for the project to the World Bank within six months after end of every accounting period. An external auditor with qualification and experience satisfactory to the World Bank will be appointed to conduct a yearly audit of the project’s financial statements. A single opinion on the audited project financial statements in compliance with International Federation of Accountant will be required. The external auditors will also prepare a Management Letter giving observations and comments and providing recommendations for improvements in accounting records, systems, controls, and compliance with financial covenants stipulated in the Financing Agreement.

11. In accordance with World Bank Policy on Access to Information, the Borrower is required to make its audited financial statements publicly available in a way acceptable to the World Bank; following the World Bank’s formal receipt of these statements from the Borrower, the World Bank also makes them available to the public.

12. The following actions highlighted in Table 1.6 need to be taken to enhance the FM arrangements for the project.



Table 1.6. FM Action Plan

No.	Action	Due Date	Responsible
1	Update of the UGPE FM manual of procedures to include the specificities of this project	No later than three months after effectiveness	UGPE
2	Customize the existing accounting software to include the bookkeeping of the project	No later than three months after effectiveness	UGPE
3	Include the project in the scope of the internal auditor	No later than three months after effectiveness	UGPE
4	Recruit a dedicated accountant	No later than three months after effectiveness	UGPE
5	Recruit an external auditor	No later than three months after effectiveness	UGPE

Financial Covenants

13. Financial covenants are the standard FM requirements covered under Section 5.09 of the General Conditions and the DFILs.

Implementation Support Plan

14. Based on the outcome of the FM risk assessment, the following implementation support plan is proposed (Table 1.7). The objective of the implementation support plan is to ensure a **satisfactory FM system is maintained throughout the project’s life.**

Table 1.7. FM Implementation Support Plan

FM Activity	Frequency
Desk reviews	As needed
IFRs review	Quarterly
Audit report review of the project	Yearly
Review of other relevant information such as interim internal control systems reports.	Continuous as they become available
On-site visits	As needed
Review of overall operation of the FM system	Annually (Implementation Support Mission)
Monitoring of actions taken on issues highlighted in audit reports, auditors’ Management Letters, internal audit, and other reports	As needed
Transaction reviews (if needed)	As needed
Capacity-building support	As needed
FM training sessions	As and when needed

Procurement

15. The Borrower will carry out procurement under the proposed project in accordance with the World Bank Procurement Regulations, dated July 2016 and revised in November 2020; the ‘Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants’, dated October 15, 2006, and revised in January 2011 and as of July 1, 2016; and other provisions stipulated in the Financing Agreement.



16. The procuring entity, the bidders, and service providers (that is, suppliers, contractors, and consultants) shall observe the highest standard of ethics during the procurement and execution of contracts financed under the project in accordance with paragraph 3.32 and Annex IV of the Procurement Regulations.

17. The Borrower shall prepare and submit to the World Bank a General Procurement Notice and the World Bank will arrange for publication of the General Procurement Notice in United Nations Development Business online and on the World Bank's external website. The Borrowers may also publish it in at least one national newspaper.

18. The Borrower shall publish the Specific Procurement Notice for all goods, non-consulting services, and the Requests for Expressions of Interest on its free-access websites, if available, and in at least one newspaper of national circulation in the Borrower's country and in the official gazette. For open international procurement selection of consultants using an international short list, the Borrower shall also publish the Specific Procurement Notice in United Nations Development Business online and, if possible, in an international newspaper of wide circulation. The World Bank arranges for the simultaneous publication of the Specific Procurement Notice on its external website.

19. **Procurement risk assessment.** The UGPE has implemented several development projects since its establishment in 1999. It is implementing the ongoing IDA credit for the Competitiveness for Tourism Development Project (P146666); Education and Skills Development Enhancement Project (P164294); the Access to Finance for Micro, Small and Medium-Sized Enterprises Project (P163015); the Social Inclusion Project (P165267); the State Owned Enterprises Related Fiscal Management Project (P160796); Cabo Verde: COVID-19 Emergency Response Project (P173857); the Harmonizing and Improving Statistics in West Africa Project (P169265); and Digital Cabo Verde Project (P171099) with adequate fiduciary arrangements. The UGPE has experience with World Bank procurement rules and procedures, and ongoing projects, except for the Tourism Development Project, are implemented under the new Procurement Regulations. The UGPE is implementing these projects with three procurement specialists and an assistant.

20. The assessment of the UGPE's capacity to implement World Bank procurement determined that the UGPE has the experience and qualifications to carry out procurement under this project. The staff has acceptable knowledge of the World Bank procedures and experience in using the World Bank Standard Bidding Documents. However, with this project, the UGPE will be procuring some unfamiliar goods and works such as solar power plants and related works as well as other specific goods that are critical for this project. In addition, due to the COVID-19 pandemic, there is a risk of market volatility. Furthermore, the project will bring additional workload that needs to be managed. There are allegations of forced labor risks associated with the polysilicon suppliers. The Borrower will require bidders to provide two declarations: a Forced Labor Performance Declaration (which covers past performance) and a Forced Labor Declaration (which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers). In addition, the Borrower will include enhanced language on forced labor in the procurement contracts. Thus, the overall procurement risk without mitigation measures has been assessed to be Substantial.



21. **Mitigation measures.** The following measures are proposed to mitigate these risks and reduce their classification from substantial to moderate: (a) develop a contract management plan for the most important contracts as identified in the Project Procurement Strategy for Development (PPSD); (b) update the existing PIM; (c) establish an acceptable procurement filing system (physical and in Systematic Tracking of Exchanges in Procurement [STEP]); (d) reorganize the repartition of the workload among the procurement specialists; (e) use the World Bank's flexibility for procurement process under COVID-19 situation, mainly regarding electronics submissions; and (f) work closely with technical stakeholders to ensure better coordination of the procurement process. Considering these mitigation measures, the procurement residual risk is assessed to be Moderate.
22. **Procurement manual.** Procurement arrangements, roles and responsibilities, methods, and requirements for carrying out procurement shall be elaborated in detail in the Procurement Manual which may be a section of the PIM.
23. **Procurement methods.** The Borrower will use the procurement methods and market approach in accordance with the Procurement Regulations and as described in the PPSD.
24. **Procurement documents.** In case of international competitive procurement of goods, works, and non-consulting and consulting services, the Borrower shall use the applicable World Bank standard procurement documents with minimum changes, acceptable to the World Bank, as necessary to address any project-specific conditions. If agreed, the open national market approach is a competitive bidding procedure normally used for public procurement in the country of the Borrower and may be used to procure goods, works, or non-consultant services, provided it meets the requirements of paragraphs 5.3 to 5.6 of the Procurement Regulations.
25. Operational costs financed by the project, if any, would be incremental expenses, including office supplies, communication costs, rental expenses, utilities expenses, consumables, transport and accommodation, per diem, supervision costs, and salaries of locally contracted support staff. Such service needs will be procured using the procurement procedures specified in the PIM accepted and approved by the World Bank.
26. **PPSD.** As part of the project preparation, the Borrower has prepared its PPSD, which describes how fit-for-purpose procurement activities will support project operations for the achievement of the PDO and deliver value for money. The PPSD is linked to project implementation. It considers institutional arrangements for procurement; roles and responsibilities; thresholds, procurement methods, and prior review; and the requirements for carrying out procurement. It also includes a detailed assessment and description of the state government's capacity for carrying out procurement and managing contract implementation, within an acceptable governance structure and accountability framework. Other issues considered include the behaviors, trends, and capabilities of the market (that is, market analysis) to inform the Procurement Plan. The PPSD concluded that the operational context allows the transparent and successful execution of the contracts to be undertaken by this project.
27. In Cabo Verde, micro, small, and medium enterprises (MSMEs) represent 95 percent of the private sector firms operating in the country and, together, account for a significant share of the economy. Local operators are dependent on imports from Europe to satisfy demand, and with the emergency state due



to COVID-19, the local economy is previewed to endure a decrease or stagnation. From past procurement activities and experience with the implementation of a similar project in a similar sector, the UGPE has established a large database of suppliers, contractors, and consultants. A study of the local solar market, conducted in 2017, shows that the companies acting in the energy market are mainly well-established SME companies, but with limited experience, facing a lot of obstacles such as lack of a regulatory framework to support their investments and raise financing. Some potential national and international firms that might be interested were identified.

28. **Procurement Plan.** The Procurement Plan covering the first 18 months of project implementation was prepared and submitted to the World Bank. It was discussed and approved by the World Bank. The Procurement Plan will be updated by the procuring entity on an annual or as-needed basis to reflect actual project implementation needs (see Table 1.8 for summary). Updates of the Procurement Plan will be submitted to the World Bank for ‘no objection’ and the PPSD will be updated accordingly.

Table 1.8. Procurement for Key Contracts for the Project’s First 18 Months

No.	Contract Title Description and Category	Estimated Cost and Risk Rating (US\$)	World Bank Oversight (Prior/Post)	Procurement Approach	Category	Selection Method	Evaluation Method
1.	Four small-scale power plants installation in the four islands: Lot 1: Fogo, Lot 2: Santo Antão, Lot 3: Maio, and Lot 4: São Nicolau islands.	4,750,000 High	Post (technical review)	Open international	Works	RFB	Lowest evaluated
2.	New transmission and distribution lines to connect the four power plants in Lot 1: Fogo, Lot 2: Santo Antão, Lot 3: Maio, and Lot 4: São Nicolau	2,250,000 High	Post (technical review)	Open international	Works	RFB	Lowest evaluated
3.	Rooftop solar PV and energy efficiency systems installation on public buildings (likely multiple lots)	2,000,000 Moderate	Post (technical review)	Open international	Goods	RFB	Lowest evaluated
4.	Owner’s engineer for the Component 1 of the project	1,000,000 High	Prior	Open international	Consultant service	QCBS	Rated criteria
5.	Technical studies on distributed generation	60,000 Moderate	Post (technical review)	Open international	Consultant service	IC	Best qualified
6.	Consultancy to strengthen capacity on gender-based violence issues	50,000 Low	Post	Open national	Consultant service	IC	Best qualified



No.	Contract Title Description and Category	Estimated Cost and Risk Rating (US\$)	World Bank Oversight (Prior/Post)	Procurement Approach	Category	Selection Method	Evaluation Method
7.	Independent financial auditor	100,000 Low	Post	Open international	Consultant service	LCS	Lowest evaluated
8.	Communications campaign to support scale-up of distributed generation	65,000 Low	Post	Limited national	Non-consultant service	RFQ	Lowest evaluated
9.	Battery storage facilities to smoothen demand and supply fluctuations	3,500,000 High	Prior	Open international	Goods	RFB	Lowest evaluated
10.	Technical study on battery storage	250,000 High	Post (technical review)	Open international	Consultant service	QCBS	Rated criteria
11.	IC to provide technical training and capacity building for DNICE	50,000 Low	Post	Open international	Consultant service	IC	Best qualified
12.	Electrical/power engineer for support of the project	140,000 Low	Post	Open national	Project staff	IC	Best qualified
13.	Accountant for the project	105,000 Low	Post	Open national	Project staff	IC	Best qualified
14.	Recruitment of an IC for the development of the RPF and the ESMF	15,000 Low	Post	Direct selection	Consultant service	Direct selection	Direct selection

Note: IC = Individual Consultant; LCS = Least-Cost Selection; RFB = Request for Bids; RFQ = Request for Quotations; QCBS = Quality- and Cost-Based Selection.

29. The activities listed below are the most critical and require special attention:

- (a) Construction of four Small-scale power plants installation in the four islands: Site 1: Fogo – 1.3 MW and Maio – 0.4 MW; Site2: Santo Antão – 1.2 MW and São Nicolau – 0.4 MW (US\$4,750,000);
- (b) Construction of new transmission and distribution lines to connect the four power plants in Site 1 - Fogo and Maio; Site 2 - Santo Antão and São Nicolau (US\$2,250,000);
- (c) Supply and installation of Rooftop Solar PV panel on public buildings (US\$1,500,000);
- (d) Supply and installation of Battery storage facilities to smoothen demand and supply fluctuations (US\$3,500,000);
- (e) Owners Engineer for the control and supervision of the works and supplies (US\$1,000,000).

30. It was agreed to use retroactive financing for the recruitment of an IC for the development of the RPF and the ESMF (US\$15,000) and technical assistance for implementation of privatization program as an addendum to be signed with consultant of the first phase, under the State-Owned Enterprises Related Fiscal Management Project (P160796) (US\$640,000).

31. The thresholds for market approaches and procurement methods as well as for the World Bank's prior review requirements are indicated in Table 1.9.



Table 1.9. Procurement Prior Review and Procurement Methods Thresholds (US\$, millions)

Category	Prior Threshold Review	Procurement Methods Thresholds				
	Prior Review (US\$, millions)	Open International	Open National	RFQ	Short List of National Consultants	
					Consulting Services	Engineering and Construction Supervision
Works	≥15	≥5	<5	≤0.2	n.a.	n.a.
Goods, IT, and non-consulting services	≥4	≥0.5	<0.5	≤0.1	n.a.	n.a.
Consultants (firms)	≥2	n.a.	n.a.	n.a.	≤0.3	≤0.3
IC	≥0.4	n.a.	n.a.	n.a.	n.a.	n.a.



ANNEX 2: Project Technical Background

COUNTRY: Cabo Verde

Renewable Energy and Improved Utility Performance Project (P170236)

Overview of the Power Sector

1. **The energy sector in Cabo Verde has accomplished tremendous progress in the past 10 years: access has reached approximately 95 percent today (from 47 percent in 2000), among the highest in Sub-Saharan Africa;** there is enough power generation capacity to meet the country’s demand for electricity; and important investments in new transmission and distribution assets have improved the quality of service. The GoCV’s target was to achieve universal electricity access by the end of 2020.

2. **ELECTRA is the vertically integrated water and electricity utility of Cabo Verde, operating in eight of the nine main islands and is the single buyer for electricity and water.** ELECTRA undertakes generation, transmission (a small network on only one island), distribution, and retail supply activities on eight islands in the archipelago. AEB is a privately owned company distributing electricity in a single island, Boa Vista, under a sub-concession from ELECTRA. IPPs sell bulk power to ELECTRA. ELECTRA also undertakes water and sewerage activities, including desalination. Since 2011, ELECTRA has been organized as a holding company, ELECTRA SA, with two subsidiaries, ELECTRA Norte SA and ELECTRA Sul SA, operating in the Northern and Southern islands of Cabo Verde, respectively.

3. **The GoCV has started the divestment process of ELECTRA, which is expected to be completed in 2022.** It is currently anticipated that a TSO will be created and will remain as an SOE, while up to 75 percent of the shares of the distribution and power generation segments are expected to be privatized. With the privatization, the operational performance of the utility is expected to improve, boosting revenues and reducing operating costs including staff costs, thereby allowing for tariff reductions over time.

Power Sector Main Challenges and Prospects

4. **Despite tremendous progress in Cabo Verde’s power sector over the past 10 years, there is room to improve ELECTRA’s operational performance.** In Cabo Verde, each island has a stand-alone power system that is not interconnected to the other systems in the other islands. Most of these systems are small (Table 2.1), limiting the economies of scale that can be achieved in the sector.

Table 2.1. Gross Generation by Island, 2020

Island	Gross Generation (GWh)
Santo Antão	17
São Vicente	78
São Nicolau	7
Sal	51
ELECTRA Norte	152
Maio	4
Santiago	244



Island	Gross Generation (GWh)
Fogo	15
Brava	3
ELECTRA Sul	266
Total ELECTRA	419

Source: World Bank Staff using ELECTRA 2020 annual report

5. **While good progress has been made in some areas such as increasing access, in others, progress has been less marked, with technical and commercial losses remaining persistently high.** In 2020, technical and commercial losses were about 26.1 percent for ELECTRA (that is, for the whole power sector), with the island of Santiago alone accounting for 81.2 percent of the total losses of the country. ELECTRA received a loan of US\$6 million as part of the IBRD Recovery and Reform of the Electricity Sector Project in 2011 and another concessional credit line between the Portuguese Government and the GoCV for EUR 3 million in 2013 to support its loss reduction plan. However, the plans have had a limited effect to date and there is significant scope for further improvement. While losses initially fell from 29 percent in 2012 to 22.5 percent in 2014, they then rose to 27 percent in 2016 and there has only been a small improvement since—to 25 percent (Table 2.2). By comparison, the World Bank typically uses 10 percent losses as the benchmark for an efficient utility, comprising mainly technical losses.

Table 2.2. Technical and Commercial Losses by Island, 2014–2020 (%)

	2014	2015	2016	2017	2018	2019	2020
Santo Antão	18.7	23.0	19.2	19.6	18.5	15.3	15.0
Santo Vicente	18.4	20.4	18.3	15.6	13.8	12.8	12.8
Santo Nicolau	11.6	14.9	17.7	16.4	14.7	16.0	15.4
Sal	-3.2	1.9	1.8	1.9	8.1	7.7	7.7
ELECTRA Norte	10.0	13.3	12.2	10.8	12.0	11.0	11.5
Maio	21.7	22.1	22.4	18.0	13.3	13.9	12.4
Santiago	30.9	32.3	38.0	36.3	36.0	35.6	36.3
Fogo	22.2	23.5	21.5	19.1	16.5	15.1	13.3
Brava	22.2	23.0	19.8	14.5	17.8	17.4	18.3
ELECTRA Sul	30.2	31.6	36.7	34.9	34.4	34.0	34.5
Total ELECTRA	22.5	24.4	27.3	25.7	25.5	24.8	26.1
<i>Change - year-on-year (percentage points)</i>	—	1.9	2.9	-1.6	-0.1	-0.8	1.3

Source: World Bank Staff using data provided by ARME and ELECTRA

6. **While wind and solar PV generation has grown over time, the generation mix remains heavily reliant on oil-fired thermal generation.** Cabo Verde is naturally endowed with good wind and solar resources, with wind capacity factors of 30–40 percent and solar capacity factors of around 20 percent. Total energy produced in 2020 was 419 GWh, representing a decrease of 24 GWh (5 percent) compared to the previous year, driven by the economic impact of the COVID-19 pandemic. As a proportion of total generation, output from thermal power plants has remained broadly constant over 2014–2020, ranging from 77 percent to 82 percent. In 2020, thermal generation was 83.2 percent of total generation. The share of renewable-based generation in 2020 was 16.8 percent, a decrease of 1.8 percentage points compared to 2019 (18.6 percent).



7. **Renewable generation is expected to increase in future, reducing generation costs and GHG emissions.** The power sector Master Plan of 2017 envisages renewable generation installed capacity increasing to 251 MW by 2030, at which time renewables would comprise 54 percent of the energy mix.⁴⁶ Both solar PV and wind generation are planned to be developed, with 91 MW of wind and 160 MW of solar PV being installed by 2030. According to the Master Plan, average tariffs (excluding VAT) could fall from CVE 24 per kWh in 2018 to CVE 22.6 per kWh in 2030 with the development of renewable energy (compared to an increase to CVE 25 per kWh without the development of renewable energy).

8. **ELECTRA has a history of unprofitability, mainly due to high commercial losses and nonpayment from public entities, particularly ELECTRA made a CVE 505 million loss in 2020,** following losses in 2019 and 2018 of CVE 369 million and CVE 867 million, respectively. According to the accounting methods, ELECTRA SA must recognize the losses of its two subsidiaries (ELECTRA Sul and ELECTRA Norte) as nonrecurring income or expenses. In 2018, this amount was at a negative CVE 770.3 million. However, in 2019, it was at a negative CVE 150.1 million. ELECTRA Norte is still profitable (CVE 218.2 million in 2020). ELECTRA Sul has a negative profit compared to 2019 (negative at CVE 546.1 million), the situation deteriorated in 2020 (negative at CVE 719.0 million), largely driven by the E&S impacts of the COVID-19 pandemic. While the regulatory regime allows for a cost-reflective tariff, only efficient technical and commercial losses are allowed (23.3 percent in 2020) when setting tariffs and not the actual higher level of losses (26.1 percent in 2020), most of which are commercial losses. To improve its financial situation, ELECTRA must therefore tackle the issue of high commercial losses.

9. **Although tariffs have fallen over time, they remain high, averaging CVE 23.07 per kWh in 2020** (Table 2.3). Cabo Verde is one of the few Sub-Saharan African countries to have tariffs fully reflective of efficient costs—ELECTRA has incurred losses in recent years in part because its technical and commercial losses are above those allowed by the regulator when setting tariffs. LV customers consuming greater than 60 kWh per month have the highest tariff, paying on average CVE 28.99 per kWh in 2020. High electricity tariffs limit the affordability of electricity for many households and are a contributing factor to the high level of electricity fraud and theft.

Table 2.3. Tariffs, Including VAT (CVE per kWh)

	2014	2015	2016	2017	2018	2019	2020
LV < 60 kWh	26.14	32.02	20.24	19.22	27.07	27.88	21.10
LV > 60 kWh	33.29	n.a.	27.03	26.70	n.a.	n.a.	28.99
PL	26.53	n.a.	21.20	18.17	n.a.	n.a.	21.10
MV	25.44	25.07	19.94	20.26	21.30	21.57	19.60
SLV	30.53	30.42	24.43	24.60	25.88	26.61	24.56
Average	29.64	29.83	23.76	23.80	25.16	25.66	23.07

Source: World Bank Staff using data provided by ARME

Note: LV = Low Voltage
 MV = Medium Voltage
 SLV – Special Low Voltage
 PL = Public Lighting

⁴⁶ Renewable energy includes generation from energy storage and pumped hydro plants, comprising 10 percent and 7 percent of the energy mix, respectively.
 Stantec, Electricity Sector Master Plan 2017–2040 - Final Report, November 2018.



LV < 60 kWh and LV > 60 kWh have been combined for 2018 and 2019.

10. **As a result of the COVID-19 pandemic, ELECTRA’s financial performance worsened in 2020 compared to 2019.** This was largely driven by a decrease in demand (419 GWh in 2020 compared to 443 GWh in 2019) and an increase in commercial losses, as described earlier. In addition, a tariff reduction of CVE 2.64 ECV per kWh was announced by the regulator ARME (multisectoral regulation agency of the economy) before the COVID-19 pandemic hitting Cabo Verde; this tariff reduction was implemented in October 2020, after being postponed from its initial date of April 2020. Cost savings as a result of the reduction in demand and lower international oil prices were realized but were not sufficient to offset the reduction in revenues due to the economic downturn.

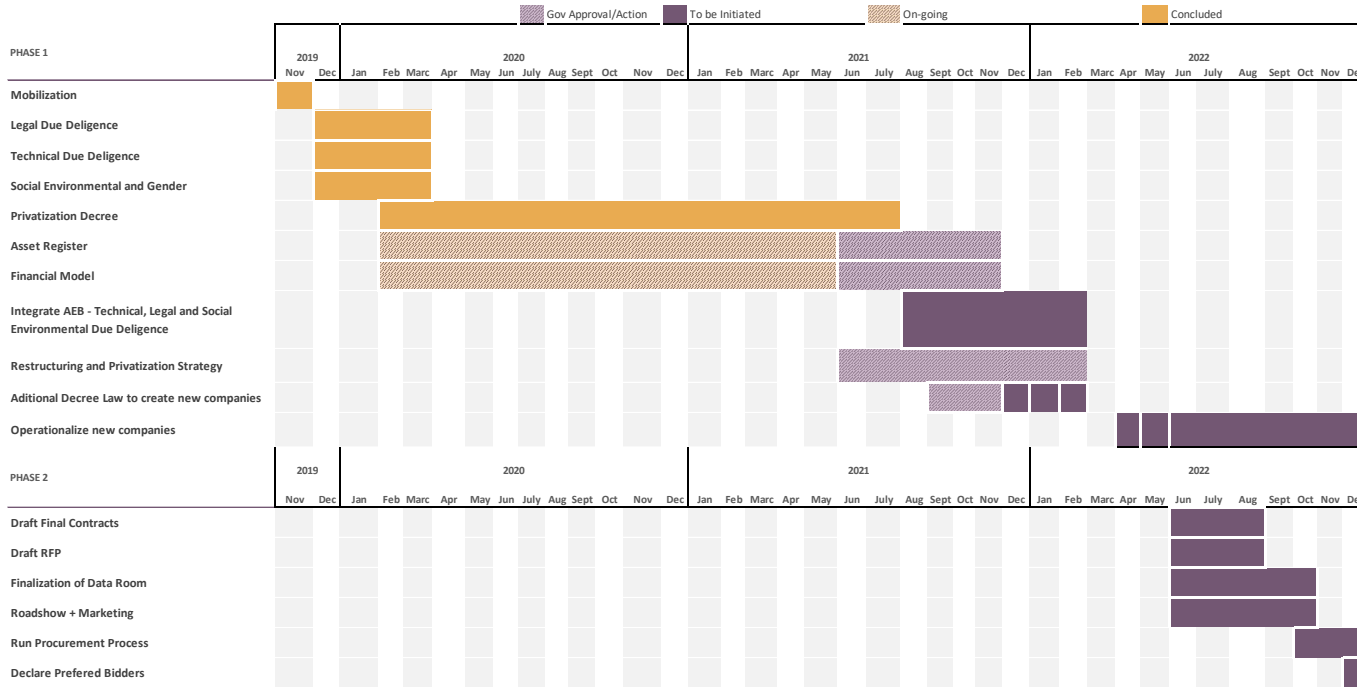
11. **To improve its financial performance, ELECTRA must deal with the key power sector challenges as described earlier.** To do so, ELECTRA needs to move away from high-cost generation to lower-cost generation, reduce technical and commercial losses, reduce operating costs (including optimizing staff costs), and improve collections particularly from the public sector.

12. **To improve the performance of ELECTRA and the electricity sector overall, the project will provide advisory services to support the implementation of the privatization Action Plan.** The indicative implementation timeline for the Action Plan is provided in Table 2.4.



Table 2.4. ELECTRA Privatization Roadmap and Indicative Timeline

Electra Privatization Roadmap





ANNEX 3: Economic and Financial Analysis

COUNTRY: Cabo Verde

Renewable Energy and Improved Utility Performance Project (P170236)

1. This annex first describes ELECTRA's historical financial performance, then sets out the financial analysis of the project, estimates the utility's financial performance with the project, and finishes by presenting the economic analysis of the project.
2. ELECTRA's historical financial performance is presented for its combined electricity, water, and wastewater businesses because these activities have not been financially separated. As part of the project, ELECTRA's power sector activities will be unbundled from its water and wastewater activities. Therefore, the financial and economic analysis of the project and the projected financial performance of the utility are presented for ELECTRA's power sector activities alone, that is, excluding its water and wastewater activities (and excluding the power sector activities of AEB on the island of Boa Vista).

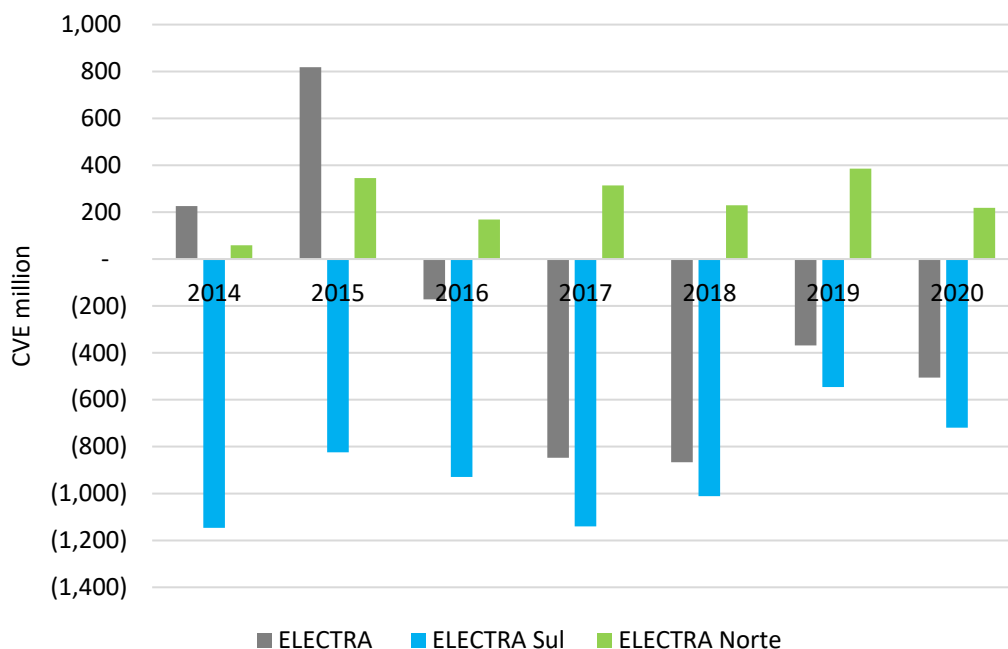
Historical Power Sector Financial Performance

3. Since 2016, ELECTRA has operated at a loss due to the poor results of ELECTRA Sul. ELECTRA Sul has experienced net losses each year over 2014–2020 (Figure 3.1), with losses ranging from CVE 1,146 million in 2014 to CVE 546 million in 2019 and CVE 719 million in 2020, and this has in turn negatively affected the group consolidated performance shown by ELECTRA SA. ELECTRA Sul's financial loss has been driven by its high levels of commercial losses (Figure 3.2), which negatively affect energy billed and hence revenues.⁴⁷ In 2020, ELECTRA Sul's transmission and distribution losses were 91.8 GWh or 34.5 percent of gross generation whereas ELECTRA Norte's losses were 17.6 GWh or 11.5 percent of gross generation. Overall, ELECTRA's transmission and distribution losses were 109.4 GWh or 26.1 percent of gross generation in 2020.

⁴⁷ Although total transmission and distribution losses have not been separated into their technical and commercial components, commercial losses comprise the bulk of overall losses.

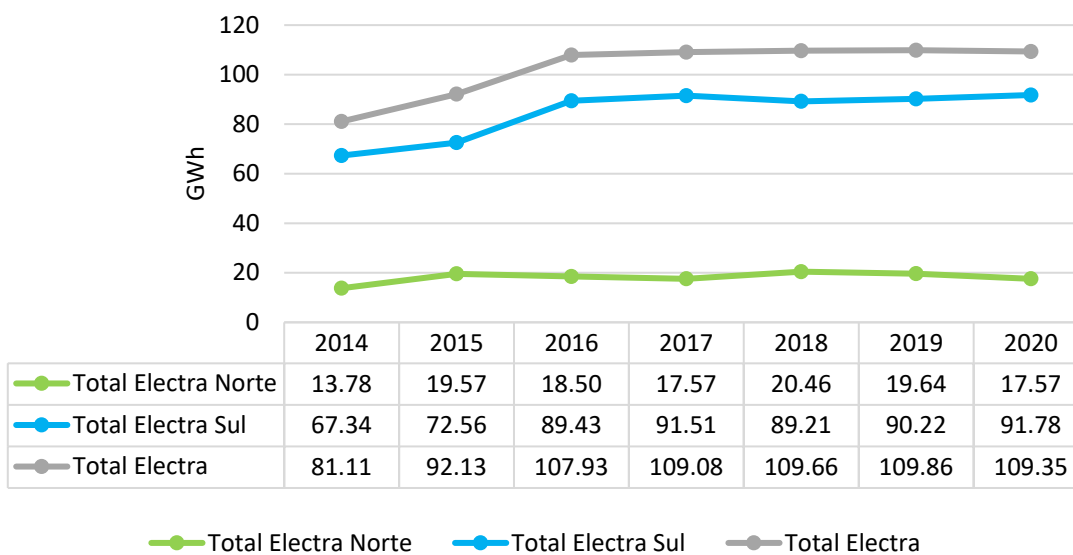


Figure 3.1. Net Profit of ELECTRA SA, ELECTRA Sul, and ELECTRA Norte from 2014 to 2020



Source: World Bank Staff using data from ELECTRA annual reports

Figure 3.2. Technical and Commercial Losses (GWh), 2014–2020



Source: World Bank Staff using data from ELECTRA annual reports

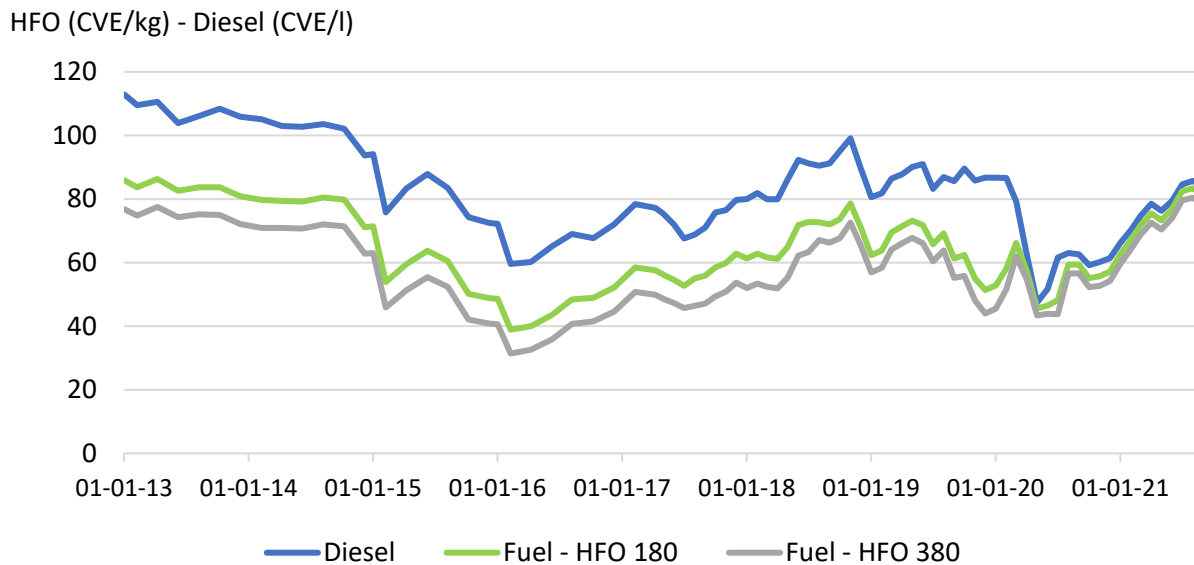


4. ELECTRA’s revenues fell over 2014–2020 at a compound annual growth rate (CAGR) of –3.3 percent, from CVE 10.4 billion in 2014 to CVE 8.5 billion in 2020. This decline was broadly in line with costs (see next paragraph). Revenues from power sector activities, which accounted for 81 percent of ELECTRA’s total revenues in 2020, declined at a CAGR of –3.4 percent, from CVE 7,876 million in 2014 to CVE 6,415 million in 2020. This decline in revenues was despite electricity sales volumes growing over 2014–2020 at a CAGR of 1.7 percent, increasing from 240 GWh in 2014 to 288 GWh in 2019 before falling to 266 GWh in 2020 as a result of the pandemic (a 7.9 percent reduction). Revenues declined mainly due to the sharp reduction in electricity tariffs in 2016. Revenues from water activities declined faster over the same period, with a CAGR of –3.8 percent, from CVE 1,397 million in 2014 to CVE 1,108 million in 2020.

5. ELECTRA’s total costs of sales have been volatile over 2014–2020, declining on average at a CAGR of –3.9 percent from CVE 8,096 million in 2014 to CVE 6,379 million in 2020. This volatility can largely be explained by fuel price volatility over that period, as illustrated by

6. Figure 3.3, and in 2020, by the reduction in consumption due to the pandemic. The World Bank does not have a detailed breakdown of costs between water and power activities from 2014 to 2017 or from 2019 to 2020. However, in 2018, the cost of sales from power sector activities accounted for 83.5 percent of ELECTRA’s total cost of sales (CVE 7,640 million), shared between fuel costs (CVE 4,630 million, 60.6 percent), power purchases (CVE 1,194 million, 15.6 percent), and other power generation-related costs (CVE 555 million, 7.3 percent). Water activities accounted for 10.5 percent of ELECTRA’s total cost of sales (CVE 800 million). The remaining 6 percent relates to purchase of other materials.

Figure 3.3. Historical Fuel Prices Used for Electricity Generation



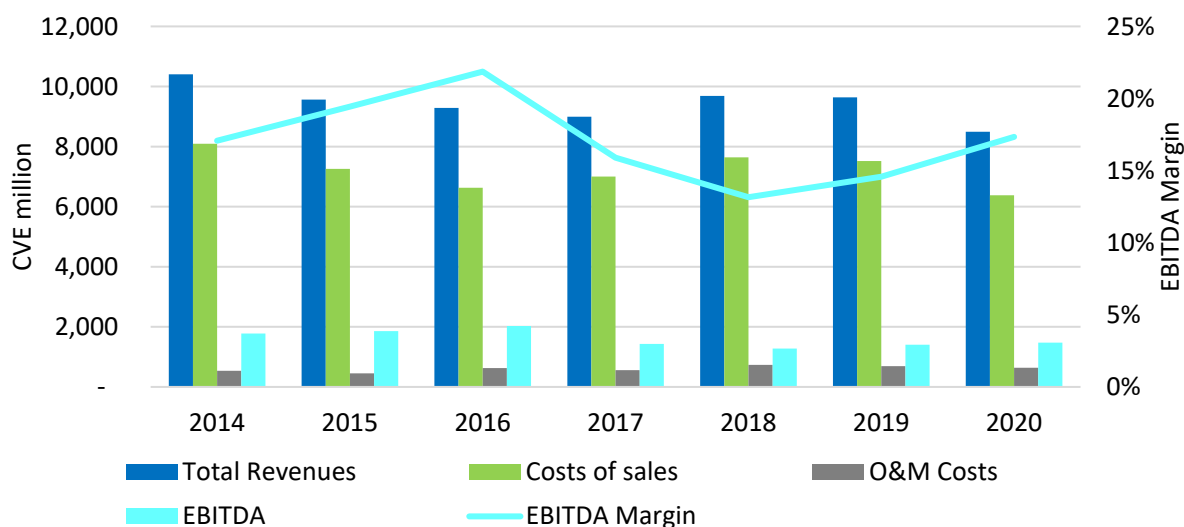
Source: Regulatory Authority of Cabo Verde (ARME).

7. Over 2014 to 2020, ELECTRA’s profitability for its combined power and water activities has declined, driven by ELECTRA’s revenues decreasing at a rate faster than the decline in its costs of sales. This decline is reflected in all measures of ELECTRA’s profitability (



8. Figure 3.4 and Table 3.1), resulting in increasing net losses from 2016 to 2018, a reduced net loss in 2019, and a further increase in net loss in 2020, as shown by ELECTRA’s income statement (Table 3.2). ELECTRA’s negative operating return on equity is driven by the negative value of shareholders’ equity of the company, which has fallen from negative CVE 862 million in 2014 to negative CVE 5,027 million in 2020.

Figure 3.4. Profitability of ELECTRA SA, 2014–2020



Source: World Bank Staff using data from ELECTRA annual reports

Table 3.1. Historical Profitability Ratios of ELECTRA SA

	Gross Profit Margin (%)	EBITDA Margin (%)	Operating Profit Margin (%)	Operating Charges Coverage Ratio	Operating Charges Coverage Ratio (D&A included)	Net Profit Margin (%)	Operating Return on Assets	Operating Return on Equity
2014	22.21	17.07	6.02	1.21x	1.08x	2.17	0.12x	-1.82x
2015	24.15	19.44	12.16	1.24x	1.08x	8.56	0.13x	-1.14x
2016	28.59	21.86	2.13	1.28x	1.08x	-1.85	0.13x	-0.81x
2017	22.12	15.89	-5.87	1.19x	1.02x	-9.42	0.09x	-0.48x
2018	21.13	13.16	-5.86	1.16x	1.02x	-8.95	0.07x	-0.33x
2019	21.99	14.58	-0.68	1.17x	1.02x	-3.82	0.07x	-0.32x
2020	24.88	17.34	-2.57	1.21x	1.04x	-5.95	0.07x	-0.31x

Source: World Bank Staff using data from ELECTRA



Table 3.2. ELECTRA SA Income Statement

Millions of Escudos (CVE)	2014	2015	2016	2017	2018	2019	2020
Total Revenues	10,408	9,566	9,285	8,994	9,688	9,640	8,492
- Power Activities	8,188	7,554	7,238	7,339	7,996	7,863	6,897
- Water Activities	1,599	1,524	1,415	1,347	1,264	1,329	1,198
- Supply of Materials	511	350	469	108	117	124	103
- Services Offered	110	138	163	199	311	325	294
Cost of sales	8,096	7,256	6,630	7,005	7,640	7,521	6,379
- Costs of Production	6,687	5,737	5,221	5,479	5,984	5,951	4,998
- Purchase of Power (Wind/Solar)	1,059	1,065	1,053	1,075	1,194	1,148	1,077
- Purchase of Water	11	10	17	4	1	-	-
- Other materials	339	444	340	447	461	421	304
Gross Profit	2,312	2,311	2,655	1,989	2,047	2,120	2,113
Administrative Expenses	178	178	202	203	228	242	255
Supplies and Services	357	273	423	357	508	450	385
EBITDA	1,776	1,859	2,030	1,430	1,274	1,405	1,473
Depreciation and Amortization	984	1,163	1,305	1,258	1,113	1,215	1,176
Other operating income/expenses	33	(41)	23	(41)	9	(36)	(25)
Non-recurring Income/Expenses	61	351	174	(819)	(770)	(150)	(493)
Operating Profit	626	1,163	198	(528)	(567)	(59)	(218)
Financial Result (Investment Income-Financial Charges)	(400)	(345)	(370)	(319)	(299)	(309)	(287)
- Investment Income	17	17	10	4	0	0	-
- Financial Charges	417	362	380	323	299	309	287
Net Profit	226	819	(172)	(848)	(867)	(369)	(505)

Source: World Bank Staff using data from ELECTRA annual reports



Financial Analysis of the Project

9. As part of the restructuring supported by this project, ELECTRA's power sector operations will be separated from its other activities (water). Therefore, the financial analysis of the project and projected financial performance are presented only for ELECTRA's power sector activities, covering generation (procuring electricity from some IPPs and owning some generation), transmission, distribution, and retail supply.

10. The financial analysis of the project is based on a techno-financial model of ELECTRA's power sector activities developed by the World Bank to project the future utility's financial performance to 2030.⁴⁸ The analysis focuses on the project components with the main effects, grouped as follows:

- (a) **Component 1: Renewable and Efficient Electricity Service.** As a result of this component, small-scale PV power plants on the Fogo, Santo Antão, Maio, and São Nicolau islands will be developed along with network strengthening and battery storage, solar PV distributed generation will be developed on public buildings, and an energy efficiency program will be put in place. The effect is to reduce the cost of generation faced by ELECTRA by avoiding the need to develop more expensive oil-fired generation and reduce demand from those customers with distributed generation installed and the energy efficiency program put in place under the project, which reduces ELECTRA's revenues while avoiding collection issues with respect to the reduced demand.
- (b) **Component 2: Advisory Services for Electricity Sector Restructuring and Privatization.** This component will support the restructuring and privatization of ELECTRA in 2022, making it more efficient and improving its operational performance, therefore resulting in reduced operating costs (largely staff costs) and commercial losses. The reduction in commercial losses increases sales revenues as well as reduces consumption volumes, which in turn reduces generation costs for the utility.

11. As part of the techno-financial model, an island-by-island energy balance for each year from 2021 to 2030 was developed to estimate generation costs to feed into the financial analysis. The generation requirement in each island was estimated as follows:

- (a) Consumption in 2021 for each island was estimated from invoiced demand, adjusted to remove commercial losses. Invoiced electricity demand in 2020 for ELECTRA as a whole was 7.9 percent lower than in 2019, due to the effect of the COVID-19 pandemic on tourism and other economic activities in Cabo Verde. Given higher network losses of 26.1 percent in 2020 compared to 2019 and constant assumed technical losses of 4 percent, the reduction in estimated consumption in 2020 was 6.3 percent, that is, lower than the reduction in invoiced demand. This decline was assumed to be followed by growth of 6.8 percent in 2021, such that 2021 consumption is the same as 2019. After 2021, consumption follows the growth pattern described in the Electricity Sector Master Plan⁴⁹ an 8.5 percent increase in 2022, followed by 3.0 percent per year growth until 2030 (Figure 3.5).

⁴⁸ The power sector is referred to although the financial and economic assessment covers only the eight islands on which ELECTRA is active in the sector, that is, excluding AEB's activities on the island of Boa Vista.

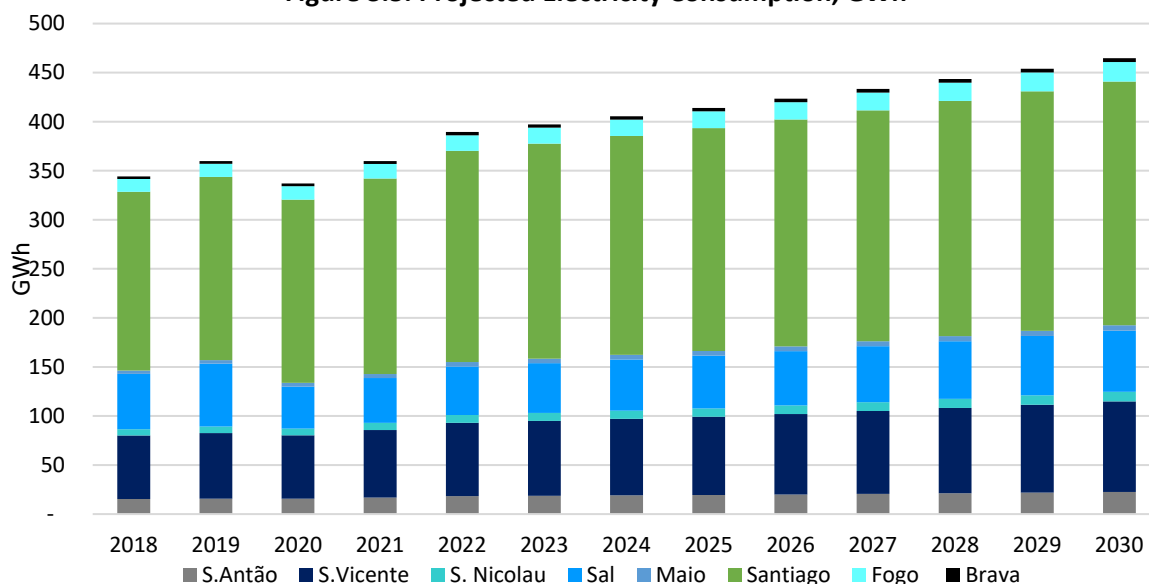
⁴⁹ Stantec, Electricity Sector Master Plan 2017–2040 - Final Report Volume 3 - Least-Cost Demand-Supply Scenario, November 2018.



- (b) Distributed solar PV generation reduces the consumption of some commercial customers with the project in place. The 41 projects with capacity of 0.15 kWp each result in 0.615 MWp of installed capacity or 0.51 MW assuming a ratio of 1.2 MWp per MW. Capital expenditure of US\$1.5 million per MWp is assumed, plus annual operating expenditure of 2 percent of capital expenditure. With an estimated output of 1,718 kWh per kW, in total, the distributed generation reduces consumption by 0.88 GWh in the first year, degrading at 0.5 percent per year thereafter. Without the project, this distributed generation is not installed.
- (c) Total network losses in 2020 were 26.1 percent of gross generation. Losses have remained high despite the RPP already under way. Thus, without the project, total losses are assumed to remain almost constant over the period, falling to 25.7 percent in 2030. Divestment with a well-designed regulatory regime will strongly incentivize the new operator to reduce losses by effectively using the tools that have already been put in place as part of the past RPP. With the project, the results of the RPP gradually emerge from 2023 with improved losses and it is assumed that Cabo Verde will achieve 19.8 percent technical and commercial losses in 2025 and 12.9 percent in 2030. A sensitivity analysis was conducted considering a greater reduction in commercial losses, that is, to 19.0 percent technical and commercial losses in 2025 and 10.9 percent in 2030.
- (d) From 2023 to 2030, 40 percent of the projected reduction in commercial losses is reflected as a reduction in consumption, while the remaining 60 percent is reflected as increased sales by the new distribution operator. The reduction in consumption is the result of demand response due to an effective increase in the amount paid for electricity by customers that had avoided paying the tariff for electricity consumption before the RPP became effective.
- (e) Invoiced demand island by island for each year from 2021 to 2030 was estimated by applying the projection of commercial losses to projected consumption.
- (f) The generation requirement in each year and each island from 2021 to 2030 was estimated by adjusting consumption to add technical losses which are assumed to be constant at 4.0 percent over the period of analysis for all islands, except for Santiago (7.5 percent assumed) which has a larger network than other islands and Sal (3.0 percent) which historically has low network losses.



Figure 3.5. Projected Electricity Consumption, GWh



Source: World Bank Staff projections

12. The starting point for the projection of generation supply used to meet the generation requirement was 2020 available capacity (Table 3.3), with project developments based on the Master Plan, and with some assumed delays to the development of renewable projects in the early years of the plan. These delays reflect the lack of financial closure of renewable energy projects currently being tendered and due to the effect of the COVID-19 pandemic on demand. However, in the medium to long run, it is assumed that the full portfolio of renewable and thermal generation set out in the Master Plan will be developed, as shown in Figure 3.6.

Table 3.3. Available Generation Capacity, 2020

Power Station	Island	Available Capacity (MW)	Fuel Type
Central do Favatal	Brava	1.4	Diesel
João Pinto (São Filipe)	Fogo	5.1	HFO/diesel
Central Torril	Maio	1.6	Diesel
Electric Wind Plant	Santo Antão	0.5	Wind
Central Porto Novo	Santo Antão	4.8	Diesel
Central Ribeira Grande	Santo Antão	0.0	Diesel
Central Eléctrica Palmeira	Sal	9.5	HFO/diesel
Cabéolica Sal	Sal	7.7	Wind
Parque Fotovoltaico da Ilha do Sal	Sal	2.3	Solar
APP - CEP	Sal	3.1	HFO/diesel
APP - CEA	Sal	3.2	Diesel
Central Eléctrica Nova Tarrafal	São Nicolau	3.5	Diesel
Central Eléctrica da Assomada	Santiago	1.5	Diesel
Central Eléctrica do Palmarejo	Santiago	69.1	HFO/diesel
Parque Eólico da Praia	Santiago	9.4	Wind
Parque Fotovoltaico do Palmarejo	Santiago	4.3	Solar
Cabéolica São Vicente	São Vicente	6.0	Wind

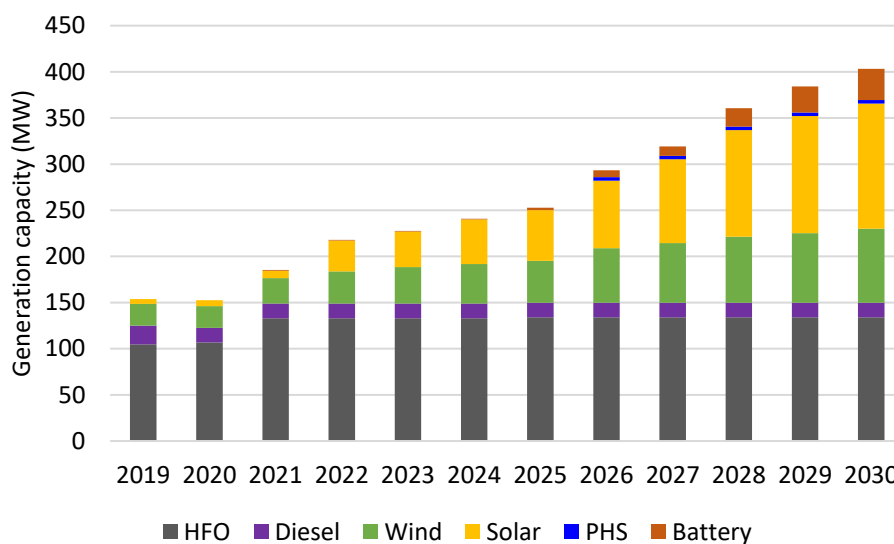


Power Station	Island	Available Capacity (MW)	Fuel Type
Central Eléctrica Lazareto	São Vicente	16.0	HFO/diesel
Central Eléctrica Matiota	São Vicente	4.0	HFO/diesel
Total		152.6	

Source: ELECTRA Annual Report 2020, Cabéolica Annual Report 2019, Master Plan 2018.

Note: Generation capacity connected to the grid excludes Boa Vista because the network on this island is not owned or operated by ELECTRA and excludes distributed generation.

Figure 3.6. Generation Capacity



Source: World Bank Staff projections using data from Electricity Sector Master Plan

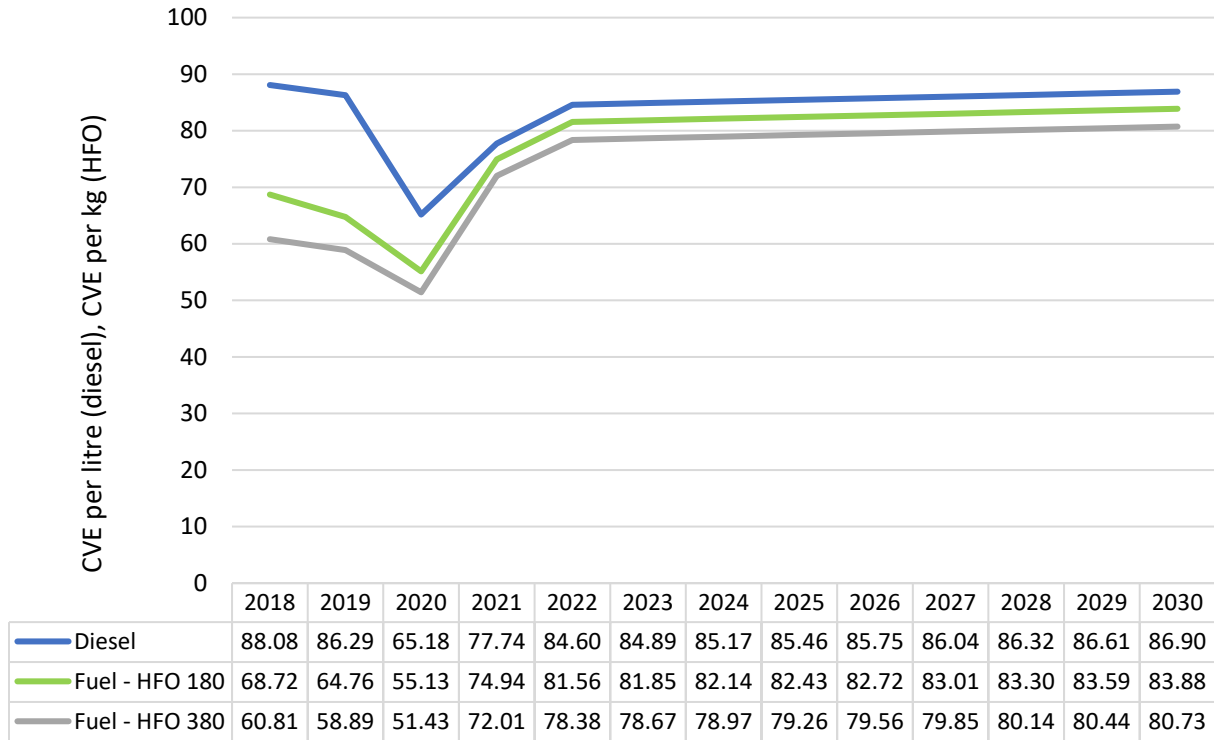
13. With the project, renewable generation projects are developed in line with the Master Plan. However, without the project, some of the renewable energy projects and battery storage projects included in the Master Plan will not be built. In their place, HFO-fired thermal plants are assumed to be built and run to help meet the generation requirement. While the entire electricity production from each renewable plant that is not built without the project is replaced by production from the thermal plants, less thermal generation capacity is required to replace the capacity of the renewable plants. For each MW of reduction in renewable capacity without the project, 0.25 MW of replacement thermal capacity is required. This is because, even with battery storage, renewable generation is less firm than thermal generation and some back-up firm capacity is required.

14. Fuel prices paid by ELECTRA were estimated using a projection of international crude oil prices and the observed historical relationship between the change in fuel prices paid by ELECTRA and the change in international crude oil prices. Crude oil price projections in turn were based on World Bank projections for the crude price in 2035 (Commodity Markets Outlook April 2021), with linear interpolation from actual 2021 prices to 2035 prices. See Figure 3.7 for projected fuel prices paid by ELECTRA. The financial and economic benefit of the project vary with projected fuel prices because fossil-fueled



generation is avoided when renewable generation is developed as part of the project and as consumption changes with the RPP. Higher international crude oil prices increase the financial and economic benefit of the project.

Figure 3.7. Projected Fuel Prices



Source: World Bank projections for crude oil prices

Note: Actual prices for the period 2018 to 2021.

15. The cost of renewable energy generation has reduced over time and the model assumes continued reductions in line with market trends. The regulator published the maximum price it will pay for renewable energy from new projects in 2020 as CVE 8.23 per kWh.⁵⁰ However, although no projects have reached financial close at this price to date, two auctions for renewable electricity have achieved prices below CVE 8 per kWh. Based on financial analysis conducted separately on the estimated cost of the two solar IPPs whose development is supported by this project, the model conservatively assumes a solar PV PPA price of CVE 10 per kWh from 2018 to 2020, falling by 2 percent per year (according to the renewable project commissioning year) thereafter to reflect global trends of falling renewable generation costs. The increased generation from renewable energy as part of the project has a positive financial impact, as the cost of renewable energy is lower than thermal power generation from imported fossil fuels.

16. Typically, a power system must run with a minimum quantity of thermal generation to maintain a stable frequency. Although the battery storage developed under the project also helps manage the system, the model assumes a minimum amount of 25 percent thermal generation output on each island.

⁵⁰ https://www.arme.cv/index.php?option=com_jdownloads&task=download.send&id=680&catid=73&m=0&Itemid=782.



The model then seeks to maximize generation from renewable energy before reverting to output from thermal power stations to meet any residual generation requirement. To the extent there is excess available renewable generation output, the excess is assumed to be spilled at no cost to the distribution utility.

17. Projections of system losses were developed by island without the project and with the project, using actual reported losses (technical plus commercial) for 2020 as the starting point. As noted, losses are assumed to remain broadly unchanged from 2020 without the project. However, with the project, losses are assumed to decline to 19.8 percent by 2025 and to 12.9 percent by 2030 due to a reduction in commercial losses (Table 3.4) with the activation of the RPP.

Table 3.4. Assumed System Losses with the Project, 2018–2030

	2019	2020	2021	2022	2024	2025	2026	2028	2030
S.Antão	15.3%	15.0%	15.0%	15.0%	11.2%	9.3%	7.8%	7.8%	7.8%
S.Vicente	12.8%	12.8%	12.8%	12.8%	9.0%	7.1%	6.9%	6.9%	6.9%
S. Nicolau	16.0%	15.4%	15.4%	15.4%	11.6%	9.7%	7.8%	7.8%	7.8%
Sal	7.7%	7.7%	7.7%	7.7%	5.9%	5.9%	5.9%	5.9%	5.9%
Average - North Islands	11.0%	11.5%	11.5%	11.5%	8.3%	7.1%	6.7%	6.7%	6.7%
Maio	13.9%	12.4%	12.4%	12.4%	8.5%	7.8%	7.8%	7.8%	7.8%
Santiago	35.6%	36.3%	36.3%	36.3%	31.7%	29.4%	27.1%	22.4%	17.8%
Fogo	15.1%	13.3%	13.3%	13.3%	9.4%	7.8%	7.8%	7.8%	7.8%
Brava	17.4%	18.3%	18.3%	18.3%	14.4%	12.5%	10.6%	7.8%	7.8%
Average - South Islands	34.0%	34.5%	34.4%	34.4%	29.8%	27.5%	25.4%	21.1%	16.9%
Total	24.8%	26.1%	25.8%	25.7%	21.7%	19.8%	18.3%	15.6%	12.9%

Source: World Bank staff projections

18. Ongoing costs are incurred in making the RPP effective, although the investment costs in metering equipment do not form part of this project because they have already taken place. RPP costs of US\$50,000 per month or approximately CVE 60 million per year are assumed and applied from 2023 with the project.

19. In preparation for privatization, ELECTRA will be restructured, which includes reducing staff costs through optimization of staffing. Staff costs are estimated at 14 percent of the value of electricity sales in 2020 and we expect this to fall to about 11 percent when demand recovers following the pandemic. Without the project, staff costs are assumed to remain at this level. However, with the project staff costs are expected to fall 20 percent to 9 percent of the value of electricity sales, in line with a study conducted regarding ELECTRA’s operations.⁵¹ The cost of restructuring is estimated at US\$9 million by the consultants advising on the restructuring and this is assumed to be incurred in 2022. This cost will be incurred by the state of Cabo Verde and not by the utility and therefore is not included in the financial analysis of ELECTRA.

20. The financial analysis of the project is made from the point of view of ELECTRA. An IBRD loan for US\$3.5 million, an IDA credit of US\$1.5 million, and a CCEFCF loan for US\$7 million will be made available for the development of renewable energy infrastructure as part of Component 1 and it assumed that ELECTRA is the beneficiary of these loans. Under Component 1, CCEFCF grant in the amount of US\$0.5 million will support narrowing of gender gaps in Cabo Verde, namely the gap in women’s employment within the energy sector. Under Component 2, a GIF grant for US\$2 million is made available to contribute toward the costs of restructuring and it is assumed that this grant goes to the state because the state is assuming the cost of restructuring. Therefore, these grants are not included in the financial analysis. Similarly, the part of the financing of IDA credit in the amount of US\$2 million under Component 3 is

⁵¹ Study conducted by the consultancy firm CPCS in 2020 as part of the transaction advisory work to prepare this project.



assumed by the GoCV and, therefore, it is not included in the financial analysis. Indeed, including all grants and loans under the project in the financial analysis would increase the project NPV because the loan interest rates are less than the financial discount rate (10 percent).

- 21. Three scenarios were developed for a comparative analysis of financial flows to ELECTRA:
 - (a) (Scenario 1) BAU, which assumes the project is not implemented. This results in a smaller increase in renewable generation on the system, commercial losses that are largely unchanged over time and staff costs in proportion to sales revenues that are broadly unchanged from today to 2030.
 - (b) (Scenario 2) Renewable Energy, which assumes the renewable generation related to Component 1 is developed along with the battery storage and transmission and distribution lines, while system losses and staff costs are the same as BAU.
 - (c) (Scenario 3) Renewable Energy and Operational Improvement, which assumes the renewable generation related to Components 1 and 2 is developed along with the battery storage and transmission and distribution lines, and there is a reduction in commercial losses and operating costs associated with restructuring and privatization.

- 22. Comparing ELECTRA’s affected cash flows for scenario 2 to scenario 1 and for scenario 3 to S1 allows the FNPV for the different parts of the project to be calculated (Table 3.5). In calculating the FNPV, a discount rate of 10 percent is used.

Table 3.5. Summary of Financial Analysis

Project Component	FNPV (US\$, millions)
Component 1	4.8
Component 2	33.3

Source: World Bank staff calculations

- 23. In the case of Component 1, the financial costs and benefits are considered over the full 25-year life of the solar PV plants and avoided fossil-fired generation. In the case of Component 3, a conservative estimate covers the financial costs and benefits only until 2030. This, in effect, assumes that ELECTRA would eventually undertake operational improvements on its own accord such that no further benefits accrue from the project’s operational improvements beyond 2030.

- 24. Component 2 has a high NPV, reflecting the large reduction in commercial losses achieved through activating the RPP and the Government taking on the cost of restructuring the electricity sector. Component 1 has a low NPV, due to the removal of IPP investments that would have increased the economic benefits due to the avoided high cost of fossil-fired generation with the introduction of renewable generation.

- 25. Key assumptions used in the financial analysis are set out in Table 3.6 and results presented in Table 3.7.

Table 3.6. Assumptions for the Project Financial and Economic Analysis

Description	Unit	Value	Comments
Component 1: Renewable and Efficient Electricity Service			
Carbon price (low)	US\$/ton CO ₂ e	40.00 (2020) rising to 78.03 (2050)	Guidance note on shadow price of carbon in economic analysis,



Description	Unit	Value	Comments
			November 2017, World Bank
Carbon price (high)	US\$/ton CO ₂ e	80.00 (2020) rising to 156.06 (2050)	As above
Exchange rate	CVE per US\$	96.8 (2020) 100 (2021, onward)	Calculated from European Central Bank data, average exchange rate in 2020
Exchange rate	CVE per €	110.3	Fixed exchange rate
Economic discount rate	Percent per year	6	World Bank guidelines
Financial discount rate	Percent per year	10	World Bank guidelines
Fuel cost – diesel	CVE per liter	65.18 (2020) to 86.90 (2030)	Historic relationship to crude oil applied to crude oil price projection from World Bank Commodity Markets Outlook April 2021
Fuel cost - HFO 180 Cst	CVE per kg	55.13 (2020) to 83.88 (2030)	As above
Emission factor of HFO-fired generation	gCO ₂ e per kWh	677	Guidance Manual: Greenhouse Gas Accounting for Energy Investment Operations, January 2015, World Bank
Grid-connected solar PV capex	US\$ per W	1.44	Project design
Grid-connected solar PV opex	€ per kWp per year	13.5	Interim Report Program Development Support - Cabo Verde Renewable Energy Investment Program, February 2020. Rebel Group and 3E
Number of distributed solar PV systems	Number	41	GoCV
Size of each distributed solar PV system	kWp	15.0	GoCV
Distributed solar PV capex	US\$ per Wp	1.50	Interim Report Program Development Support - Cabo Verde Renewable Energy Investment Program, February 2020. Rebel Group and 3E
Distributed solar PV opex	Percentage of capex per year	2.0	Assumption
Grid-connected solar PV output in year of commissioning	kWh per kWp	1,763	Rebel Group and 3E report. Average of Sal and São Vicente projects
Distributed solar PV output in year of commissioning	kWh per kWp	1,718	Rebel Group and 3E report. São Vicente project
Solar PV output degradation	Percent per year	0.5	Rebel Group and 3E report
Economic life - solar PV	years	25	Rebel Group and 3E report
Technical grid losses	Percent of generation injection	7.5	Assumption. Consumption reduction due to energy efficiency and output of customer located distributed



Description	Unit	Value	Comments
			solar PV are scaled up by dividing by (1 - grid losses) to get avoided thermal generation
Thermal generation capacity equivalent to solar PV with battery storage	MW thermal per MW solar PV	0.25	Assumption
Economic life - HFO generation, lines	years	25	Assumption
Battery storage capex (2022)	US\$ per kWh	300.0	Report for WAPP regional BEST project, high estimate
Replacement battery storage capex (2037)	US\$ per kWh	150.0	DNV report for WAPP regional BEST project, low estimate
Economic life - battery storage	Cycles and years	3,000 cycles or 15 years	Cabo Verde Electricity Sector Master Plan 2017, November 2018 and DNV report for WAPP regional BEST project
Battery storage cycle efficiency	Percent	90.25	DNV report for WAPP regional BEST project
Opex of infrastructure (lines and batteries)	Percentage of capex per year	2.0	Assumption
HFO generation capex	€ per kW	1,000	Cabo Verde Electricity Sector Master Plan 2017 - 2040 Final Report Volume 3 - Least-Cost Demand-Supply Scenario, November 2018. Stantec
HFO generation fixed O&M cost	€ per kW per year	30	As above
HFO generation variable O&M cost	€ per MWh	3.6	As above
HFO generation fuel consumption	g per kWh	218	ELECTRA Annual Report 2019
Proportion of HFO generation used to charge battery storage	Percent	50	Assumption
Proportion of HFO generation displaced by battery discharge	Percent	100	Assumption
Number of energy efficiency projects	Number	41	GoCV
Average consumption of health centers	kWh per month	950	GoCV
Consumption saving with energy efficiency program	Percent	30	GoCV
Cost of energy efficiency program	US\$, millions	0.25	GoCV
Proportion of HFO generation displaced by energy efficiency program	Percent	100	Assumption
Load factor of demand reduction due to energy efficiency used to estimate	Percent	60	Assumption



Description	Unit	Value	Comments
avoided HFO capacity			
Component 2: Advisory Services for Electricity Sector Restructuring and Privatization			
Reduction in consumption as a proportion of reduction in commercial losses	Percent	40	Assumption
Share of reduction in generation costs that are an economic benefit	Percent	50	Assumption. The benefit is less than 100 percent because the willingness to pay of consumers that stop consuming is greater than zero. The entire reduction in CO ₂ costs is an economic benefit.
Capacity factor of avoided HFO-fired generation	Percent	100	Assumption. A high capacity factor minimizes the avoided thermal generation capacity.
Cost of sector restructuring	US\$, millions	9	CPCS study on restructuring
Reduction in staff costs due to restructuring	Percent	20	CPCS study on restructuring
Cost of making RPP effective	US\$ per month	50,000	Assumption

Source: World Bank staff using assumptions and data from different sources



Table 3.7. Project Financial Analysis

(CVE '000)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Component 1											
Financial inflows											
Avoided fossil fired generation (GWh)	0.0	0.0	0.0	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Avoided generation capital expenditure	0	0	0	12,055	12,055	12,055	12,055	12,055	12,055	12,055	12,055
Avoided variable generation operating expenditure	0	0	0	0	6,702	6,700	6,698	6,696	6,694	6,692	6,690
Avoided fixed generation operating expenditure	0	0	0	0	3,283	3,283	3,283	3,283	3,283	3,283	3,283
Avoided fuel costs	0	0	0	0	150,698	151,166	151,632	152,097	152,560	153,022	153,482
Total avoided generation costs due to reduction in thermal generation	0	0	0	12,055	172,737	173,203	173,667	174,130	174,591	175,051	175,510
Loan drawdown	0	0	1,050,000	0	0	0	0	0	0	0	0
Total financial inflows	0	0	1,050,000	12,055	172,737	173,203	173,667	174,130	174,591	175,051	175,510
Financial outflows											
IPPs - Capex & Opex	0	0	0	0	0	0	0	0	0	0	0
Small solar PV - Capex & Opex	0	0	459,800	5,895	5,895	5,895	5,895	5,895	5,895	5,895	5,895
Power evacuation Lines & Energy Storage Facilities - Capex & Opex	0	0	575,000	0	11,500	11,500	11,500	11,500	11,500	11,500	11,500
Demand reduction due to dist. generation (GWh)	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8
Retail tariff (BT) (CVE per kWh)	25.05	25.05	25.05	25.05	25.05	25.05	24.54	24.03	23.52	23.02	22.51
Costs - VRE purchase to charge BESS	0	0	0	0	0	0	0	0	0	0	0
Energy Paid - IPPs	0	0	0	0	0	0	0	0	0	0	0
Distributed generation capex and opex	0.00	0.00	89,055.74	1,781.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy Efficiency capex and opex	0.00	0.00	25,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reduced sales revenues due to dist. generation	0	0	0	15,180	15,104	15,028	14,649	14,274	13,901	13,531	13,165
Reduced sales revenues due to energy efficiency	0	0	2,417	2,417	2,417	2,369	2,320	2,271	2,222	2,173	2,173
Loan interest	0	0	24,938	43,539	42,039	40,475	38,843	37,141	35,367	33,516	31,585
Loan repayment	0	0	0	0	0	0	0	0	0	0	48,770
Total financial outflows	0	0	1,176,211	68,812	76,955	75,266	73,207	71,080	68,884	66,614	113,087
Net financial inflows	0	0	-126,211	-56,757	95,782	97,937	100,460	103,050	105,707	108,437	62,422
Financial NPV ('000 CVE)											477,202
Financial NPV (USD million)											4.8
Financial IRR (%)											79%
Component 2											
Financial inflows											
Avoided fossil fired generation (GWh)	0.0	0.0	0.0	4.7	8.3	11.9	15.0	18.0	21.1	24.4	27.7
Avoided generation costs due to RPP	0	0	0	85,998	151,469	219,789	277,654	333,804	392,629	454,302	519,186
Increased sales volumes due to RPP (GWh)	0.0	0.0	0.0	5.6	11.5	17.5	22.6	27.5	32.5	37.6	42.9
Revenue increase due to RPP	0	0	0	131,593	269,026	409,848	517,114	614,432	710,095	804,081	896,673
Reduction in staff costs	0	0	72,011	136,500	128,583	120,494	112,137	104,610	97,164	89,795	82,471
Total financial inflows	0	0	72,011	354,098	549,089	750,148	906,927	1,052,874	1,199,922	1,348,215	1,498,373
Financial outflows											
Restructuring costs	0	0	0	0	0	0	0	0	0	0	0
Revenue protection program costs	0	0	0	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Total financial outflows	0	0	0	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Net financial flows	0	0	72,011	294,098	489,089	690,148	846,927	992,874	1,139,922	1,288,215	1,438,373
Financial NPV ('000 CVE)											3,330,264
Financial NPV (USD million)											33.3

Source: World Bank staff projections

Note: The economic costs and benefits of Components 1 and 2 are estimated over the 25-year life of the solar PV plants although only the flows to 2030 are shown in this table.

Projection of Utility Financial Performance

26. The purpose of projecting ELECTRA's financial performance is to understand whether the utility is profitable with the effects of the project.

27. The utility's financial performance was projected using ELECTRA's audited financial statements of 2020 as the starting point and projecting outcomes from 2021 to 2030 using the same techno-financial model as used for the financial assessment of the project. Currently, the power sector has four sources of revenue: sales of power, services offered, use of the distribution network, and supply of materials. Each revenue source is described in the following paragraphs with an explanation why different revenue sources are used than those used by ELECTRA for its historical financial statements.

28. Revenues from sales of power are derived from forecast energy demand and end user tariffs. ARME, the sector regulator, sets maximum allowed tariffs based on a standard regulatory formula, to allow ELECTRA to recover its allowed operating costs plus a reasonable return on its regulatory asset base.



The tariff announced by the regulator in March 2020 was assumed to become effective in April 2020. Due to the current global health crisis, the GoCV decided that tariffs as of September 2019 will remain in force. However, new tariffs were announced in October 2020 and the announced tariff decrease has been implemented. Following an appraisal mission undertaken in November 2020, the World Bank team revised the former tariff assumptions and used the more recent published by the regulator. New tariffs per category are the following: CVE 21.10 per kWh (LV < 60 kWh), CVE 28.99 per kWh (LV > 60 kWh), CVE 19.60 per kWh (MV), and CVE 24.56 per kWh (SLV). An average of 25.045 CVE per kWh for the LV category has been used. The World Bank assumes tariffs remain constant at this level until 2025; from 2026, tariffs fall until they reach a target tariff of CVE 22 per kWh (LV), CVE 17 per kWh (MV), and CVE 21 per kWh (SLV) in 2030 (Table 3.8).

Table 3.8. Assumed Tariff Trajectory (CVE per kWh)

Customer Type	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LV	25.0	25.0	25.0	25.0	25.0	25.0	24.5	24.0	23.5	23.0	22.5
MV	19.6	19.6	19.6	19.6	19.6	19.6	19.2	18.7	18.3	17.9	17.4
SLV	24.6	24.6	24.6	24.6	24.6	24.6	24.0	23.4	22.8	22.2	21.6

Source: World Bank staff projections

29. **Electricity used for desalination is a revenue stream for the power sector.** ELECTRA’s historical financial statements do not place a value on the electricity used for desalination because the water and power sector activities fall within the same group. However, as part of the restructuring of ELECTRA, the water and power sector activities will be separated, and the power sector will explicitly derive revenue from the sale of electricity for use in desalination. In 2019 and 2020, 30.0 GWh and 28.8 GWh were used in desalination respectively. This is assumed to grow at 2 percent per year from 2021 to 2030. A fixed tariff of CVE 17.36 per kWh was assumed to apply to this electricity, which is the price of internal consumption of water production published by the regulator ARME.

30. Over 2014–2019, services offered were related to amounts billed to ELECTRA Sul and ELECTRA Norte under the contract for the provision of shared services by ELECTRA SA, in which ELECTRA provides business support and management services. It increased from CVE 109.7 million in 2014 to CVE 311.2 million in 2018 and CVE 324.9 million in 2019. In the forward-looking analysis, this is treated as an internal transfer and not a revenue stream for the power sector. However, this is a conservative approach, as going forward, the utility is likely to develop new services like many other utilities.

31. Use of the distribution network and the supply of materials reported in ELECTRA’s historical financial statements appear to relate to inter-company transfers within the ELECTRA group; therefore, they are not included in the financial projection for the sector from 2020.

32. **Projection of costs.** ELECTRA’s current costs comprise staff costs, depreciation, third-party services and supplies, and financing costs. For this analysis, each cost is projected as a percentage of sales of power based on historical ratios and assumptions about possible operational improvements over time. As noted earlier, revenue protection costs of US\$50,000 per month or approximately CVE 60 million per year are assumed and recognized from 2023 with the project.

- (a) Staff costs are currently estimated at 12 percent of sales of power. Without the project, staff costs are assumed to remain at this level. However, in the context of sector restructuring, it



is expected that staff costs will be reduced as a result of the expected improvement in operational efficiency and related optimization of staffing. Therefore, with the project, staff costs are assumed to fall by 20 percent to 9 percent of sales of power, as noted in Table 3.9.

- (b) Depreciation is currently approximately 15 percent of sales of power. Depreciation costs are assumed to fall to 12 percent in 2022 and to 10 percent during 2023–2030 as the network grows and some economies of scale in generation and the networks are achieved under all scenarios.
- (c) Third-party services and supplies related to power sector activities currently are about 5 percent of sales. This is assumed to stay constant at 3 percent over 2022–2030 both with and without the project.

33. Financing costs are currently estimated to be directly related to sales of power activities and represent, on average, 3 percent of the total value of sales of electricity. This is held constant over 2022–2030 with and without the project.

Table 3.9. Projected Costs

Cost item	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Staff costs - Without Project (no privatization)	% of power sales	14%	12%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Staff costs - With Project (privatization)	% of power sales	14%	12%	10%	9%	9%	9%	9%	9%	9%	9%	9%
Depreciation	% of power sales	15%	15%	12%	10%	10%	10%	10%	10%	10%	10%	10%
Third party services and supplies	% of COGS	5%	5%	5%	3%	3%	3%	3%	3%	3%	3%	3%
Financing costs	% of power sales	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

Source: World Bank staff projections

Note: COGS = Cost of goods sold.

34. Other inputs to the techno-financial model are those described for the financial analysis of the project, system losses, generation costs, and electricity demand.

35. A corporate income tax rate of 25.5 percent is applied, in line with Cabo Verde Law No. 82/VIII/2015, of January 7, 2015, approving the Corporate Income Tax Code.

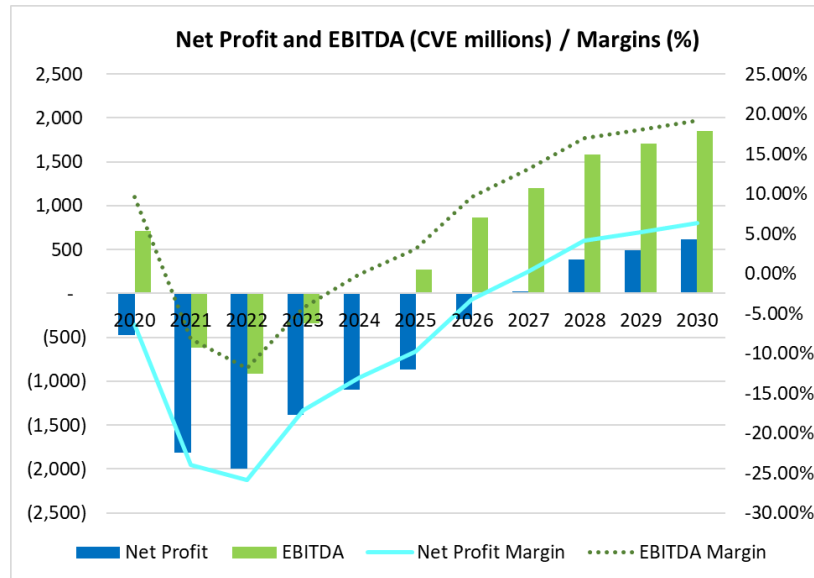
36. **Installation of renewable generation and improvement in operational performance are expected to bring strong financial benefits to the sector, as reflected by the utility’s net income.** Projections to 2030 show that with the project, the utility’s financial performance will improve over time, becoming profitable from 2024 (Figure 3.8). By 2030, ELECTRA’s net profit is projected to be CVE 614 million (US\$6.1 million equivalent)⁵² with a net profit margin of 6.3 percent. Without the project, the sector is in deficit over the period (see Table 3.10). The profitability ratios and the projected income statement for the sector with the project are shown in Table 3.10 and Table 3.11, respectively.

37. The utility is forecast to have a positive EBITDA from 2025, indicating that the sector is able to cover its operating costs excluding depreciation. This improvement is primarily driven by declining generation costs (initially due to lower fossil fuel prices and later due to increased penetration of renewable energy over time), reduced losses, and reduced personnel costs, whereas tariffs are assumed to remain constant until 2025. By 2030, the EBITDA margin is 19 percent (Figure 3.8).

⁵² See Table 3.6. Assumptions for the Project Financial and Economic Analysis.



Figure 3.8. Projected Net Profit, Projected EBITDA, Net Profit, and EBITDA Margins of Cabo Verde’s Power Sector



Source: World Bank staff projections

Table 3.10. Forecast Profitability Ratios

	EBITDA Margin (%)	Operating Profit Margin (%)	Operating Charges Coverage Ratio	Operating Charges Coverage Ratio (D&A Included)	Coverage Ratio (Operating + Finance Costs)	Net Profit Margin
2020	9.56	-2.90	1.11x	0.97x	0.94x	-6.40
2021	-8.17	-19.16	0.92x	0.82x	0.81x	-23.97
2022	-11.86	-21.13	0.89x	0.81x	0.79x	-25.85
2023	-4.26	-13.76	0.96x	0.88x	0.86x	-17.14
2024	-0.11	-10.21	1.00x	0.91x	0.89x	-12.99
2025	3.05	-7.34	1.03x	0.94x	0.92x	-9.82
2026	9.61	-0.46	1.11x	1.00x	0.97x	-3.24
2027	13.09	3.34	1.15x	1.04x	1.01x	0.25
2028	16.92	7.67	1.20x	1.08x	1.05x	4.10
2029	17.99	9.01	1.22x	1.09x	1.06x	5.17
2030	19.16	10.52	1.24x	1.11x	1.08x	6.36

Source: World Bank staff projections



Table 3.11. Projected Income Statement - With the Project

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<u>Income Statement - Highlights (CVE million)</u>													
Total Revenues	8,424	8,832	7,458	7,562	7,722	8,080	8,450	8,831	9,014	9,185	9,350	9,510	9,665
Revenues from Electricity Activities	8,113	7,987	6,664	7,052	7,201	7,549	7,909	8,279	8,451	8,610	8,764	8,912	9,055
- Sales of Power	7,586	7,384	6,218	6,639	7,201	7,549	7,909	8,279	8,451	8,610	8,764	8,912	9,055
- Use of Electricity Network	410	478	376	359	-	-	-	-	-	-	-	-	-
- Supply of Materials	117	124	69	54	-	-	-	-	-	-	-	-	-
Additional Revenues - Desalination	-	-	500	510	521	531	542	552	563	575	586	598	610
Services Offered	311	325	294	-	-	-	-	-	-	-	-	-	-
Costs of Sales	6,379	6,493	5,571	7,032	7,540	7,519	7,522	7,589	7,172	6,998	6,776	6,794	6,795
- Costs of Production	5,185	6,493	4,405	5,714	5,583	5,348	5,197	5,123	4,169	3,644	3,090	2,945	2,768
- Purchase of Fuels - Power Generation	4,630	n.a	4,066	5,335	5,217	4,987	4,840	4,766	3,833	3,320	2,778	2,637	2,463
- Variable Costs - Production of Electricity	555	n.a	339	379	366	361	357	357	336	324	312	309	305
- Purchase of Power (Wind/Solar)	1,194	n.a	1,166	1,318	1,957	2,171	2,326	2,466	3,003	3,353	3,685	3,848	4,027
EBITDA	640	979	713	(618)	(916)	(344)	(9)	269	867	1,202	1,582	1,710	1,852
- Staff Costs	897	910	895	797	720	679	712	745	761	775	789	802	815
- Third party and supplies	508	450	279	352	377	226	226	228	215	210	203	204	204
- Other operating Income/Expenses	9	(36)	-	-	-	(60)	(60)	(60)	(60)	(60)	(60)	(60)	(60)
- Non recurring Income/Expenses (Retrenchment costs)	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Profit	(432)	(335)	(244)	(1,614)	(1,780)	(1,159)	(860)	(619)	(39)	281	646	759	886
- Depreciation	1,113	1,215	957	996	864	755	791	828	845	861	876	891	906
- Financing Costs	299	309	234	199	216	226	237	248	254	258	263	267	272
- Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Result	(731)	(645)	(478)	(1,813)	(1,996)	(1,385)	(1,097)	(867)	(292)	23	383	492	614

Source: World Bank staff projections



Table 3.12. Projected Income Statement - Without the Project

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<u>Income Statement - Highlights (CVE million)</u>													
Total Revenues	8,424	8,832	7,458	7,562	7,724	7,950	8,184	8,424	8,671	8,925	9,187	9,457	9,735
Revenues from Electricity Activities	8,113	7,987	6,664	7,052	7,203	7,419	7,642	7,871	8,107	8,351	8,601	8,859	9,125
- Sales of Power	7,586	7,384	6,218	6,639	7,203	7,419	7,642	7,871	8,107	8,351	8,601	8,859	9,125
- Use of Electricity Network	410	478	376	359	-	-	-	-	-	-	-	-	-
- Supply of Materials	117	124	69	54	-	-	-	-	-	-	-	-	-
Additional Revenues - Desalination	-	-	500	510	521	531	542	552	563	575	586	598	610
Services Offered	311	325	294	-	-	-	-	-	-	-	-	-	-
Costs of Sales	6,379	6,493	5,571	7,032	7,603	7,658	7,725	7,860	7,501	7,382	7,218	7,297	7,362
- Costs of Production	5,185	6,493	4,405	5,714	5,698	5,533	5,441	5,435	4,539	4,069	3,573	3,489	3,375
- Purchase of Fuels - Power Generation	4,630	n.a	4,066	5,335	5,330	5,169	5,079	5,072	4,195	3,736	3,251	3,169	3,058
- Variable Costs - Production of Electricity	555	n.a	339	379	368	364	362	363	344	333	322	320	318
- Purchase of Power (Wind/Solar)	1,194	n.a	1,166	1,318	1,905	2,125	2,284	2,425	2,962	3,313	3,645	3,808	3,986
EBITDA	640	979	713	(618)	(1,051)	(754)	(614)	(538)	53	404	807	967	1,149
- Staff Costs	897	910	895	797	792	816	841	866	892	919	946	975	1,004
- Third party and supplies	508	450	279	352	380	230	232	236	225	221	217	219	221
- Other operating Income/Expenses	9	(36)	-	-	-	-	-	-	-	-	-	-	-
- Non recurring Income/Expenses (Retrenchment costs)	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Profit	(432)	(335)	(244)	(1,614)	(1,916)	(1,496)	(1,378)	(1,326)	(758)	(432)	(53)	81	236
- Depreciation	1,113	1,215	957	996	864	742	764	787	811	835	860	886	912
- Financing Costs	299	309	234	199	216	223	229	236	243	251	258	266	274
- Taxes	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Result	(731)	(645)	(478)	(1,813)	(2,132)	(1,718)	(1,608)	(1,562)	(1,001)	(682)	(311)	(185)	(38)

Source: World Bank staff projections



Economic Analysis

38. An economic analysis was also undertaken to assess the impact of the project. The net economic benefits of the different components of the project and for the project overall are estimated using a standard cost-benefit analysis (CBA) framework. With this framework, the economic costs and benefits are compared with and without the respective project components.

39. The economic analysis compares the same three scenarios as the financial analysis of the project:

- (a) (Scenario 1) Business as Usual (BAU)
- (b) (Scenario 2) Renewable Energy & Energy Efficiency (RE&EE)
- (c) (Scenario 3) Renewable Energy & Energy Efficiency and Operational Improvement (RE&EEOI).

40. Under the **RE&EE scenario**, the economic benefits stem from a reduction in thermal generation costs from development of the small grid-connected renewable projects on the four islands, battery storage (which leads to a net reduction in generation from thermal generation), the distributed renewable generation projects, and the energy efficiency projects. When thermal generation falls, the accompanying reduction in CO₂ emissions is an additional economic benefit. Conversely, the economic costs of this scenario relate to the costs of the renewable projects, grid reinforcement, battery storage, and energy efficiency program. The differences between the economic and financial analysis for this scenario are as follows:

- (a) **CO₂ emissions** from electricity generation are estimated with and without the renewable generation, battery storage, and energy efficiency program related to the project. These emissions are valued at the World Bank's low recommended CO₂ shadow price, which is a price that rises from US\$40 per tCO₂e in 2020 to US\$50 per tCO₂e in 2030, rising thereafter at 2.25 percent per year until it reaches US\$78 per tCO₂e in 2050. As a sensitivity, emissions are also valued at the World Bank's high recommended CO₂ shadow price, which is double the low price in each year. CO₂ emissions were not considered as part of the financial analysis since there is no financial cost to ELECTRA from emissions.
- (b) **Distributed generation.** Installation of distributed renewable generation at public sector sites provides an economic benefit by displacing fossil-fired generation just as the development of renewable generation by ELECTRA also reduces the need for fossil-fired generation. The economic cost is the cost of the renewable generation, capex US\$0.92 million and ongoing opex. The reduction in ELECTRA's revenues due to the reduction of demand related to the distributed generation is not an economic cost. In contrast, the financial analysis considered both the reduction in revenues and the reduction in thermal generation costs due to the distributed generation.
- (c) **Battery storage.** Installation and use of battery storage has two effects. First, it improves the reliability of solar PV generation during peak demand periods, allowing the PV generation to avoid the need to develop some thermal generation. As noted earlier, it is assumed that for each 1 MW of solar PV generation installed, 0.25 MW of thermal capacity is avoided. Second, battery storage allows arbitrage of the economic value of energy in different periods—the batteries are charged during periods of low economic value and discharged during periods of high economic value. It is assumed that 50 percent of the energy used to charge the battery storage is from the output of renewable generation that would otherwise be spilled and the remainder is from HFO generation. The energy discharged from battery storage



displaces only HFO generation. Batteries have limited lifetimes, assumed to be 15 years at 200 cycles per year. The replacement cost of battery storage after 15 years is included in the analysis, assuming that the capex is half of the initial investment.

- (d) **Energy efficiency.** The energy efficiency program at the public sector sites provides an economic benefit by reducing the need for fossil-fired generation. The economic cost is the cost of the energy efficiency program. The reduction in ELECTRA's revenues due to the reduction of demand related to the energy efficiency program is not an economic cost. In contrast, the financial analysis considered both the reduction in revenues and the reduction in thermal generation costs due to the energy efficiency program.
- (e) **Project funding costs.** The economic analysis does not consider the costs of funding the project but rather the costs of the renewable generation, battery storage, distribution reinforcement, and energy efficiency program.

41. With the operational improvement scenario, the economic benefits stem from the reduction in consumption due to the RPP and a reduction in staff costs. Economic costs relate to the costs of activating the RPP and the staff restructuring plan costs. The differences between the economic and financial analysis for this scenario are as follows:

- (a) **Commercial losses.** A part (40 percent) of the reduction in commercial losses is assumed to result in a reduction in consumption and the other part (60 percent) in increased sales for ELECTRA. Increased sales are a welfare transfer from consumers to the distribution utility and thus are not considered as an economic benefit. However, the reduced consumption is partly a transfer and partly an economic benefit. Consumers were willing to pay something for the electricity they received essentially for free and therefore increasing the effective price paid through the RPP above their willingness to pay reduces consumer benefits while increasing producer benefits. Therefore, it is assumed that half of the economic benefit of the avoided generation cost due to the reduction in consumption is a net economic benefit and the remainder is a transfer from consumers to ELECTRA. The volume (kWh) of reduced consumption is valued at the avoided cost of oil-fired generation since this is the type of generation on the margin in each island. A value is placed on both the reduced output from oil-fired generation and the reduced capacity needed. In estimating the capacity reduction, it is conservatively assumed that the power plant is able to run at 100 percent capacity factor, thereby minimizing the avoided capacity. In contrast, the financial analysis treats the increased sales due to the RPP as a revenue and the reduction in consumption flows through to a reduction in generation costs. Both the financial and economic analysis consider the cost of activating the RPP (US\$50,000 per month or approximately CVE 60 million per year). The economic analysis looks out to 2050, which is further than the financial analysis. After 2030, it is assumed that the effect of the project on commercial losses falls steadily to have no effect from 2050, reflecting the possibility that ELECTRA is eventually able to reduce commercial losses over time without restructuring and privatization.
- (b) **CO₂ emissions.** The reduction in CO₂ emissions resulting from the reduction in consumption due to the RPP is valued at the World Bank's low CO₂ shadow price. As a sensitivity, emissions are also valued at the World Bank's high recommended CO₂ shadow price.
- (c) **Cost of staff restructuring.** Reduced staff costs due to implementation of the staff restructuring plan, beginning in 2022, are treated as an economic benefit whereas the staff restructuring plan costs of US\$9 million (approximately CVE 900 million) borne by the GoCV in 2021 are treated as an economic cost. Conversely, the financial analysis did not consider



the staff restructuring costs borne by the GoCV since this is not a cost seen by ELECTRA and instead considered the cost of reform advisory services under Component 2.

- (d) **Project funding costs.** As for the previous scenario, the economic analysis does not consider the costs of funding the project.

42. Other economic costs and benefits have not been considered because they are difficult to estimate, such as those related to the increase in productivity and competitiveness as electricity tariffs fall in the medium term in response to an increased sector efficiency. Therefore, the economic analysis is considered to be conservative and is likely to underestimate the economic benefits of the project.

43. Under the CBA framework, two sets of comparisons of net benefits are made: (a) RE&EE compared to BAU and (b) RE&EEOI compared to RE&EE. There is a small combinatorial effect of the RE&EEOI components of the project, which is why the economic benefits of operational improvement with the RR&EE components in place are estimated.

44. The result of the economic analysis of Component 1 using the World Bank's low recommended shadow price of carbon is an ENPV of US\$8.0 million, assuming a social discount rate of 6 percent, and an EIRR of 13.7 percent. Over the 25-year lifetime of the solar PV projects (to 2046), 139,000 tons of CO₂ emissions are avoided.

45. The result of the economic analysis of Component 2, with Component 1 in place, is an ENPV of US\$17.8 million, assuming a social discount rate of 6 percent and an EIRR of 26.9 percent. In the period to 2050, 267,000 tons of CO₂ emissions are avoided.

46. With the World Bank's high recommended shadow price of carbon, the economic benefit of avoided CO₂ emissions increases for both project components. With the high recommended shadow price of carbon, the result of the economic analysis of Component 1 is an ENPV of US\$11.3 million and an EIRR of 16.4 percent. Component 2, with Component 1 in place, has an ENPV of US\$24.2 million and an EIRR of 31.5 percent.

47. Avoided fuel costs are an important driver of the economic benefits and future fuel prices are uncertain. Therefore, conservative sensitivity is applied, whereby fuel prices fall to the average level for 2020 and remain at that level (along with the low recommended shadow price of carbon), which reduces the benefit of the project from avoided thermal generation. With this sensitivity, Component 1 has an ENPV of US\$2.2 million and an EIRR of 8.3 percent. Component 2 has an ENPV of US\$12.1 million and an EIRR of 22.0 percent.

48. In the case of Component 1, the economic costs and benefits are considered over the full 25-year life of the solar PV plants and avoided fossil-fired generation. In the case of Component 2, there is a conservative consideration of the full effect of the RPP on economic costs and benefits only until 2030. From 2031 to 2050, it is assumed that the effect of the RPP on economic costs and benefits gradually diminishes. This assumes ELECTRA would eventually undertake operational improvements on its own accord such that the benefits accruing from the project's operational improvements decline beyond 2030.

49. The project EIRR and ENPV by component are summarized in Table 3.13, while the results of the economic analysis are presented in Table 3.14.



Table 3.13. Summary of Economic Analysis

Project Component	Base Case		Fuel Price Sensitivity	
	ENPV (US\$, millions)	EIRR (%)	ENPV (US\$, millions)	EIRR (%)
Component 1	8.0	13.7	2.2	8.3
Component 2	17.8	26.9	12.1	22.0

Source: World Bank staff calculations



Table 3.14. Economic Analysis

(CVE '000)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Component 1 and 2											
Economic inflows											
Avoided fossil fired generation (GWh)	0.0	0.0	9.6	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Avoided generation capital expenditure	0	119,604	0	0	0	0	0	0	0	0	0
Avoided generation operating expenditure	0	0	7,385	7,381	7,377	7,374	7,370	7,366	7,362	7,358	7,355
Avoided fuel costs	0	0	128,162	131,730	135,397	139,166	143,368	147,537	151,637	155,672	159,644
Total avoided generation costs due to loss reduction	0	119,604	135,547	139,111	142,774	146,540	150,738	154,903	159,000	163,030	166,998
Avoided CO2 emissions (t)	0	0	6,475	6,469	6,462	6,456	6,450	6,443	6,437	6,430	6,424
Avoided cost of CO2 emissions	0	0	26,255	26,853	27,450	28,046	28,641	29,234	29,826	30,417	31,007
Total economic inflows	0	119,604	168,277	172,433	176,687	181,042	185,828	190,581	195,263	199,878	204,429
Economic outflows											
Solar PV capital expenditure	0	737,241	0	0	0	0	0	0	0	0	0
Solar PV operating expenditure	0	0	8,863	8,863	8,863	8,863	8,863	8,863	8,863	8,863	8,863
Lines and batteries capital expenditure	0	555,090	0	0	0	0	0	0	0	0	0
Lines and batteries operating expenditure	0	0	11,102	11,102	11,102	11,102	11,102	11,102	11,102	11,102	11,102
Energy efficiency capital expenditure	0	24,134	0	0	0	0	0	0	0	0	0
Total economic outflows	0	1,316,466	19,965	19,965	19,965	19,965	19,965	19,965	19,965	19,965	19,965
Net economic flows	0	-1,196,862	148,312	152,468	156,722	161,077	165,863	170,616	175,298	179,913	184,464
Economic NPV ('000 CVE)	797,683										
Economic NPV (USD million)	8.3										
Economic IRR	12.7%										
Component 3											
Economic inflows											
Avoided fossil fired generation (GWh)	0.0	0.0	4.741	7.6	10.7	13.2	15.5	17.8	20.3	22.9	25.6
Avoided generation capital expenditure	0	0	2,334	3,755	5,250	6,490	7,618	8,780	9,999	11,276	12,614
Avoided generation operating expenditure	0	0	1,836	2,954	4,130	5,106	5,993	6,907	7,866	8,870	9,922
Avoided fuel costs	0	0	31,766	52,580	75,623	96,192	116,431	138,235	161,956	187,686	215,523
Total avoided generation costs due to loss reduction	0	0	35,937	59,289	85,002	107,787	130,042	153,923	179,821	207,832	238,059
Avoided CO2 emissions (t)	0	0	3,210	5,164	7,219	8,925	10,476	12,074	13,749	15,505	17,345
Avoided cost of CO2 emissions	0	0	13,015	21,437	30,664	38,771	46,519	54,782	63,712	73,346	83,720
Reduction in staff costs	0	65,283	139,028	133,443	127,586	123,595	117,995	112,495	106,972	101,432	95,882
Total economic inflows	0	65,283	191,190	219,333	250,471	279,079	305,032	333,274	364,255	398,116	435,006
Economic outflows											
Restructuring costs	0	900,000	0	0	0	0	0	0	0	0	0
Revenue protection program costs	0	0	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Total economic outflows	0	900,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Net economic flows	0	-834,717	131,190	159,333	190,471	219,079	245,032	273,274	304,255	338,116	375,006
Economic NPV ('000 CVE)	1,575,035										
Economic NPV (USD million)	16.3										
Economic IRR	24.0%										

Source: World Bank staff projections

Note: Although the economic costs and benefits of Component 1 and Component 2 are estimated to 2046 and 2050, respectively, only the flows to 2030 are shown in this table. The results shown here use the World Bank's low recommended shadow price of carbon and the base fuel price.



ANNEX 4: Gender Gap Analysis and Entry Points

COUNTRY: Cabo Verde Renewable Energy and Improved Utility Performance Project (P170236)

Rationale

1. In Cabo Verde, investments in renewable energy projects can open up various new opportunities to women, who could find employment at new operations or earn income from distribution, retail, and maintenance of solar appliances and related after-sales services. Off-grid technologies can also support income-earning activities by extending the working day or setting up small businesses that depend on energy access. Economic opportunities and social dynamics affect which of the above can have the highest impact on closing gender gaps and are realistic to be achieved. Specifically, in Cabo Verde, the following elements are to be considered.

2. **Labor and employment.** Women’s labor force participation rate in Cabo Verde was 48.7 percent in 2018, almost 15 percentage points below the rate for men (62.5 percent). Additionally, when female workers are employed, they are more likely than males to participate in part-time employment (28.2 versus 20.1 percent) and in the informal sector (59.6 versus 55.9 percent).

3. Participation in the labor market is more limited for women because they are generally responsible for unpaid care work. About 90 percent of women surveyed by Cabo Verde’s national institute of statistics declared to participate in non-paid labor, compared to 73 percent of men.⁵³ In the same line, women indicated that they devote an average of 63 hours per week in non-paid labor, while men devote an average of about 38 hours.⁵⁴ The burden is higher in rural areas where the access to electrification and running water is lower, which increases the time spent cooking, gathering water and fuel, and in other unpaid activities.

4. **Labor participation by industry and profession.** Economic activities also show a distribution by gender. Females are overrepresented in the service sector (82.1 of all women versus 53.2 of all men) while men are overrepresented in agriculture and industry (see Table 4.1). The gap is particularly high in the electricity; gas and water supply sector—women encompass only 8.9 percent of the labor force in this category.⁵⁵

⁵³ Cape Verde, National Institute of Statistics 2017. <http://ine.cv/wp-content/uploads/2018/03/mulheres-e-homens-em-cabo-verde-factos-e-numeros-2017.pdf>

⁵⁴ Unpaid care is defined as the provision of personal face-to-face services to others for their physical and emotional needs, complemented by daily domestic tasks of cooking, cleaning, gathering water and fuel, and laundry. UN Women. 2018. “Cabo Verde Country Gender Profile.” <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2018/country-gender-profile-cabo-verde-en.pdf?la=en&vs=1331>.

⁵⁵ Compared to row six in the table of economic sectors, this number excludes mining and quarrying. Additionally, this percentage is calculated dividing the number of female workers in the sector over the total number of workers in the sector.



Table 4.1. Cabo Verde, Employment by Gender and Economic Sector in 2018 (percent)

Economic Sector	Female	Male
Agriculture	6.5	16.0
Industry	11.1	30.4
Manufacturing	9.2	9.7
Construction	0.9	18.1
Mining and quarrying; electricity, gas and water supply	1.0	2.5
Services	82.1	53.2
Trade, transport, accommodation and food, and business and admin. services	41.6	33.2
Public administration, community, social and other services and activities	40.5	20.0
Not classified	0.2	0.4

Source: ILOSTAT 2018.

5. **Skills development and training.** Gender gaps in the labor market start early, during education, and even before. Data of student registration to professional training by gender show that women primarily chose fields such as tourism, business, and public sector (73 percent), while only one-third (35 percent) enrolls in technical-scientific training. A report by UN Women (2018)⁵⁶ also points out that women with secondary or higher education endure higher unemployment rates than women with primary schooling. The report suggests that this result may be indicative of a gender bias in the skilled labor market and/or the gendered exploitation of women in low-level work. Ultimately, this context could reduce parents' incentives to keep girls in school, while increasing the pressure for educated women to emigrate in search of appropriate work.

Entry Points and Actions

6. The project can be leveraged to contribute to closing identified gender gaps in Cabo Verde by opening up opportunities for women to join the energy sector workforce. In particular, specific focus will be placed on increasing the number of women in a skills enhancement and business incubator program so that they can gain access to employment in the energy sector as a consequence, particularly in O&M of distributed solar PV systems financed under Subcomponent 1.2 of the project. To this end, the project will work with CERMI, a nonprofit technical institute supported by LuxDev, which has a proven track record for enhancing women's employment in the energy sector.

⁵⁶ UN Women. 2018. "Cabo Verde Country Gender Profile." <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2018/country-gender-profile-cabo-verde-en.pdf?la=en&vs=1331>.