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Report No: PAD3231

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT
IN THE AMOUNT OF SDR 216.5 MILLION
(US\$300.0 MILLION EQUIVALENT)

AND

PROPOSED PROJECT-BASED GUARANTEES
IN THE AMOUNT OF US\$120.0 MILLION

AND A

PROPOSED GRANT
IN THE AMOUNT OF US\$24.0 MILLION
FROM THE SINGLE DONOR TRUST FUND FOR NORWAY

TO THE

REPUBLIC OF MOZAMBIQUE

FOR THE

TEMANE REGIONAL ELECTRICITY PROJECT

May 30, 2019

Energy and Extractives Global Practice
Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective April 30, 2019)

Currency Unit = Mozambique Metical (MZN)

MZN 64 = US\$1

SDR 0.7216256 = US\$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
ARENE	Energy Regulatory Authority (<i>Autoridade Reguladora de Energia</i>)
BANP	Bazaruto Archipelago National Park
CAPEX	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
CMH	Mozambican Hydrocarbons Company (<i>Companhia Moçambicana de Hidrocarbonetos</i>)
CNELEC	National Council for Electricity (<i>Conselho Nacional de Electricidade</i>)
COD	Commercial Operations Date
CPF	Country Partnership Framework
CTRG	Ressano Garcia Thermal Power Plant (<i>Central Térmica Ressano Garcia</i>)
CTT	Temane Thermal Power Plant (<i>Central Térmica de Temane</i>)
DA	Designated Account
DAM	Day Ahead Market
DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
DHS	Demographic and Health Survey
DSCR	Debt Service Coverage Ratio
EAIF	Emerging Africa Infrastructure Fund
EAPP	East African Power Pool
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Tax, Depreciation, and Amortization
ECA	Export Credit Agency
EDM	Electricity of Mozambique (<i>Electricidade de Moçambique</i>)
EIRR	Economic Internal Rate of Return
ENH	National Hydrocarbons Company (<i>Empresa Nacional de Hidrocarbonetos E.P.</i>)
EPC	Engineering, Procurement, and Construction
ESAP	Environmental and Social Action Plan
ESHS	Environmental, Social, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
ESMP	Environmental and Social Management Plan



ESMS	Environment and Social Management System
ESU	Environment and Social Unit
FDP	Field Development Plan
FM	Financial Management
FSO	Floating Storage and Offloading
FSP	Financial Strengthening Plan
FUNAE	Energy Fund (<i>Fundo de Energia</i>)
GBV	Gender-based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoM	Government of Mozambique
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
GSA	Gas Sales Agreement
GWh	Gigawatt-hours (one million kilowatt-hours)
HCB	Cahora Bassa Hydropower Plant (<i>Hidroelectrica de Cahora Bassa</i>)
HVAC	High-voltage Alternate Current
HVDC	High-voltage Direct Current
ICR	Interest Coverage Ratio
IFC	International Finance Corporation
IFR	Interim Financial Report
IPP	Independent Power Producer
IsDB	Islamic Development Bank
JICA	Japan International Cooperation Agency
kWh	Kilowatt-hours (one thousand watt-hours)
KfW	German State-owned Development Bank (<i>Kreditanstalt für Wiederaufbau</i>)
LC	Letter of Credit
LLCR	Loan Life Coverage Ratio
LNG	Liquefied Natural Gas
LRMC	Long-run Marginal Cost
MFD	Maximizing Finance for Development
MIGA	Multilateral Investment Guarantee Agency
MIREME	Ministry of Mineral Resources and Energy (<i>Ministerio de Recursos Minerais e Energia</i>)
MOTRACO	Mozambique Transmission Company
MPI	Mozambique Power Invest, S.A.
MVA	Mega Volt Ampere (one million Volt Ampere)
MW	Megawatt (one million watts)
MZN	Mozambique Metical
NES	National Electrification Strategy
NPV	Net Present Value
NTF	Norwegian Trust Fund
O&M	Operations and Maintenance
OCF	Operating Cash Flow
OCGT	Open Cycle Gas Turbine



OFID	OPEC Fund for International Development
OHL	Overhead Line
OHS	Occupational, Health, and Safety Plans
OPEC	Organization of Petroleum Exporting Countries,
OPEX	Operating Expenditure
PAP	Project-affected Person
PePA	Petroleum Production Agreement
PERIP	Power Efficiency and Reliability Improvement Project
PFM	Public Financial Management
PFS	Project Financial Statement
PIU	Project Implementation Unit
POM	Project Operations Manual
PPA	Power Purchase Agreement
PPP	Public-private Partnership
PPSD	Project Procurement Strategy for Development
PPZ	Partial Protection Zone
PSA	Production Sharing Agreement
PV	Photovoltaic
RAP	Resettlement Action Plan
RICAS	Africa Regional Integration and Cooperation Strategy for the Period FY18-FY23
RFB	Request for Bids
RPF	Resettlement Policy Framework
RoE	Return on Equity
RoIC	Return on Invested Capital
RoW	Right of Way
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SCADA	Supervisory Control and Data Acquisition
SEA	Sexual Exploitation and Abuse
SE4ALL	Sustainable Energy for All
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SNTE	National Enterprise for Electricity Transmission (<i>Sociedade Nacional de Transporte de Energia</i>)
SPM	Sasol Petroleum Mozambique
SPT	Sasol Petroleum Temane
SPV	Special Purpose Vehicle
SRMC	Short-run Marginal Cost
TEC	Temane Energy Consortium (Pty) Ltd
TREP	Temane Regional Electricity Project
TTP	Temane Transmission Project
USAID	United States Agency for International Development
WAPP	West African Power Pool
VAT	Value Added Tax



The World Bank

Temane Regional Electricity Project (P160427)

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Mozambique, South Africa	Temane Regional Electricity Project	
Project ID	Financing Instrument	Environmental Assessment Category
P160427	Investment Project Financing	A-Full Assessment

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 checked="" type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Disbursement-linked Indicators (DLIs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input checked="" 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)	

Expected Approval Date	Expected Closing Date	Expected Guarantee Expiration Date
20-Jun-2019	30-Sep-2025	30-Jun-2048

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to enhance transmission capacity for domestic and regional markets and increase electricity generation capacity through private sector participation.

**Components**

Component Name	Cost (US\$, millions)
Temane Transmission Project	533.00
CTT Power Generation Plant	750.00
Implementation Support, Technical Assistance and Capacity Building	23.00

Organizations

Borrower:	Ministry of Economy and Finance
Implementing Agency:	Ministry of Mineral Resources and Energy Electricidade de Mozambique Sociedade Nacional de Transporte de Energia

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	1,426.00
Total Financing	1,426.00
of which IBRD/IDA	300.00
Financing Gap	0.00

DETAILS**Private Sector Investors/Shareholders**

Equity	Amount	Debt	Amount
Government Contribution	13.00	IFI Debt	519.00
Government Resources	13.00	IDA (Credit/Grant)	300.00
Non-Government Contributions	225.00	Other IFIs	219.00
Private Sector Equity	225.00	Commercial Debt	175.00
		Unguaranteed	175.00
		Other Debt	350.00



		Trust Funds	24.00
Total	238.00		1,068.00

Payment/Security Guarantee

Financed by Commercial Loans/LC and with IDA Grant Guarantee	120.00
Total	120.00

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Mozambique	0.00	300.00	120.00	420.00
National PBA	0.00	100.00	120.00	220.00
Regional	0.00	200.00	0.00	200.00
Total	0.00	300.00	120.00	420.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026
Annual	0.00	35.00	100.00	75.00	60.00	20.00	8.00	2.00
Cumulative	0.00	35.00	135.00	210.00	270.00	290.00	298.00	300.00

INSTITUTIONAL DATA**Practice Area (Lead)**

Energy & Extractives

Contributing Practice Areas

Infrastructure, PPP's & Guarantees

Climate Change and Disaster Screening

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

Gender Tag**Does the project plan to undertake any of the following?**

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes



b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

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

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03	✓	



Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50		✓
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

IDA Grant (Financing Agreement: Schedule 2, Section I.A.1): The Recipient shall cause SNTE to establish not later than three months after the Effective Date, and thereafter, to maintain, throughout Project implementation, the SNTE-PIU within SNTE, composed of key staff, with qualifications and under terms of reference acceptable to the Association, including one project director, one technical coordinator, one procurement officer, two accountants, one financial manager, one environmental specialist, one health and safety specialist, one biodiversity management specialist, one social safeguards specialist, one gender specialist and any other technical, fiduciary, and safeguard specialists as may have been agreed with the Association, as further detailed in the POM. The SNTE-PIU shall be responsible for implementation of Parts 1 and 3.1. of the Project, including, inter alia, ensuring coordination with key stakeholders, managing the Project’s fiduciary and safeguard aspects, and monitoring and evaluation with respect to Parts 1 and 3.1. of the Project, as further detailed in the POM.

Sections and Description

IDA Grant (Financing Agreement: Schedule 2, Section I.A.2): Not later than four (4) months after the Effective Date, the Recipient shall cause SNTE to appoint and, thereafter, retain, throughout Project implementation, external auditors for the Project, under terms of reference, qualifications and experience satisfactory to the Association.

Sections and Description

IDA Grant (Financing Agreement: Schedule 2, Section I.A.3): Not later than three (3) months after the Effective Date, the Recipient shall cause SNTE to purchase and install an automated accounting package, satisfactory to the Association and in accordance with the Procurement Regulations.

Sections and Description

IDA Grant (Financing Agreement: Schedule 2, Section I.A.4): Not later than twelve (12) months after the Effective Date, the Recipient shall cause SNTE to appoint and, thereafter, maintain, throughout Project implementation, an internal audit function within SNTE, under terms of reference, qualifications and experience satisfactory to the Association.



Conditions

Type	Description
Effectiveness	IDA Grant: The Subsidiary Agreements have been executed and delivered and all conditions precedent to their effectiveness or to the rights of the Recipient to make withdrawals under it [other than the effectiveness of the Financing Agreement] have been fulfilled.
Effectiveness	IDA Grant: The Project Operations Manual [including financial management and procedures] has been adopted by the Recipient, SNTE and EDM, in form and substance acceptable to the Association.
Effectiveness	IDA Grant: A financial manager, under terms of reference, qualifications and experience satisfactory to the Association is appointed by SNTE, in accordance with the procurement regulations.
Signing	IDA Guarantee Agreements: Including but not limited to conditions that demonstrate to the satisfaction of IDA that EDM and Government of Mozambique continue to implement the agreed Financial Strengthening Plan for EDM.
Signing	IDA Guarantee Agreements: Update the environmental and social impact studies for the final selection of sea transport route of heavy equipment for CTT. The update and the selection need to be satisfactory to the Bank.
Effectiveness	The governance structure of SNTE is finalized, in form and substance satisfactory to the Association.
Effectiveness	The SNTE-PIU is established within SNTE, with composition, resources and under terms of reference satisfactory to the Association.
Effectiveness	Usual and customary conditions for financing of this type, including but not limited to the following: (a) Firm commitment for sufficient financing to complete the construction of the CTT Project, including satisfactory contribution of equity; (b) Execution, delivery and effectiveness of all Project and financing agreements, in form and substance satisfactory to IDA, including the Indemnity Agreement and the Project Agreement; (c) Delivery of all relevant host country environmental approvals required for the operation of the CTT Project, and compliance with all applicable World Bank requirements relating to Sanctionable Practices and environmental and social safeguards, including the World Bank



Performance Standards;

(d) [Effectiveness of all required insurance (to include IDA as an additional insured on third-party liability insurance);]

(e) Satisfaction of all conditions precedent for first disbursement under the financing documents, save for any condition that requires the effectiveness of the Guarantee Agreement to have occurred;

(f) Provision of satisfactory legal opinions;

(g) Payment in full of the [Initiation Fee] and [Processing Fee], the first installment of the Guarantee Fee (if applicable) [and the reimbursement of IDA's outside legal counsel expenses]; and

(h) Satisfactory integrity due diligence of Project Company (and related parties) and guaranteed parties.



I. STRATEGIC CONTEXT

1. The proposed Temane Regional Electricity Project (TREP) is part of the transmission backbone of Mozambique to integrate its disjointed northern and southern power systems and strengthen regional connectivity to the Southern African Power Pool (SAPP). The 400 kV transmission interconnector, located within the geographic footprint of Mozambique, will also evacuate power from the 400-MW gas-to-power project in Temane—the largest generation plant in the country since Cahora Bassa Hydropower plant (*Hidroelectrica de Cahora Bassa*, HCB) was inaugurated in 1975. This flagship US\$1.3 billion infrastructure project—part of Mozambique’s least-cost generation and transmission expansion plan—has been developed over the last three years as a strategic initiative of the Government of Mozambique (GoM) to chart a path toward private sector ownership and commercial financing for the power plant and donor financing for the transmission line. The project leverages public and private financing through IDA direct financing and project-based guarantees to support ‘Maximizing Finance for Development’ (MFD) in a debt-constrained and fragile environment.

2. The proposed project demonstrates both regional and domestic benefits. It is integral to the efforts of the SAPP to increase the generation capacity and expand the regional transmission network, create conditions to provide access to millions of people in the region living without electricity, and reduce the carbon intensity of the Southern Africa power systems, which are currently dominated by coal generation. It is also fundamental to developing the Mozambican domestic power system, expanding access, and ensuring secure, affordable, and sustainable power supply, one of the key drivers of economic and social development of the country.

A. Country and Regional Context

Country Context

3. **Mozambique is a low-income country, strategically located in the Southern Africa region.** With 30 million people, it occupies an area of 800,000 km² and more than 2,500 km of coastline along the southwestern rim of the Indian Ocean. It is one of the poorest countries in the world, with gross domestic product (GDP) per capita of US\$475 in 2018. About 70 percent of the population live and work in rural areas. The country is endowed with ample arable land, water, energy, gas and mineral resources; three deep seaports; and a relatively large potential labor pool. It is also strategically located, bordering six countries—four of them landlocked and hence dependent on Mozambique as a conduit to global markets. In addition, the country’s strong ties to the regional economic engine of South Africa underscore the importance of Mozambique’s economic, political, and social development to the stability and growth of Southern Africa.

4. **Mozambique is emerging from a period of elevated macroeconomic volatility, following the revelations of previously undisclosed public debt in 2016, which triggered a significant economic downturn.** Mozambique’s economy is dominated by agriculture, which accounts for a quarter of the GDP and employs three-quarters of the population, including more than 90 percent of rural residents. After registering average GDP growth of 7.3 percent over the preceding decade, the economy experienced a sharp downturn in 2016–2017, with growth falling to 3.8 percent. Aided by strong monetary policy, currency stability since mid-2017 helped reduce inflation from its peak of 26 percent in November 2016 to 3.9 percent in 2018.

5. **The economy is expected to continue to grow at a more moderate pace, but the fiscal outlook remains fragile.** GDP growth is projected to firm up gradually toward 4 percent by 2020, with upward revisions contingent on progress in exports of liquified natural gas. A reduction in direct budget support



and project lending from donors (equivalent to 5 percent of GDP) and an increase in the cost of domestic financing were unanticipated fiscal shocks. The overall fiscal deficit fell from 7.1 percent of GDP in 2016 to 4.6 percent in 2017 due to increased revenue collection efforts and spending controls. However, an increase in domestic borrowing and the accumulation of arrears to private suppliers highlight the difficulties in controlling public finances, and budgetary pressures will continue to be elevated. When taken together with the high cost of debt service and the persistent fiscal risks from state-owned enterprises, a fragile fiscal outlook becomes evident.

6. **Poverty is expected to remain high.** The population share of the poor measured at US\$1.9 per day per capita (2011 purchasing power parity) is projected to decline by less than 1 percent from 60.8 percent to 59.9 percent between 2017 and 2020. Such stagnation of poverty reduction is expected because GDP growth in per capita terms is weak, dominated by export-oriented extractive industries, and concentrated in relatively more prosperous urban areas. Due to high population growth and the absence of adequate safety nets, the absolute number of poor households are expected to increase.

7. **Mozambique's Five-Year Government Program (2015–2019) highlights agricultural and industrial development as the basis for socioeconomic development of the country.** The five-year Government plan presents five strategic pillars to achieve accelerated economic growth and social development and targets expanding infrastructure as a key element to enhancing the productive sectors of the economy, promoting economic diversification, and improving access to markets. The strategy calls for expanding access to electricity services to all Mozambicans by 2030 to support the young and growing population with productive opportunities. The strategy also calls for increasing energy exports and relying on public-private partnerships (PPPs) to achieve the objectives of the energy sector development.

Regional Context

8. **Mozambique is part of the Southern Africa region that possesses diverse and significant resource endowments.** The Southern Africa region covers a vast geographical area of about 9 million km² and is home to over 340 million people, with total GDP of about US\$690 billion (2017). The 16 countries in the region are members of the Southern African Development Community (SADC), which was established in 1992 to promote socioeconomic integration and political and security cooperation.¹ South Africa is the region's economic engine. A number of the lower income but large countries such as the Democratic Republic of Congo, Mozambique, Tanzania, Zambia, or Zimbabwe are endowed with large and diverse natural resources and have significant potential to drive the growth and economic diversification of the region.

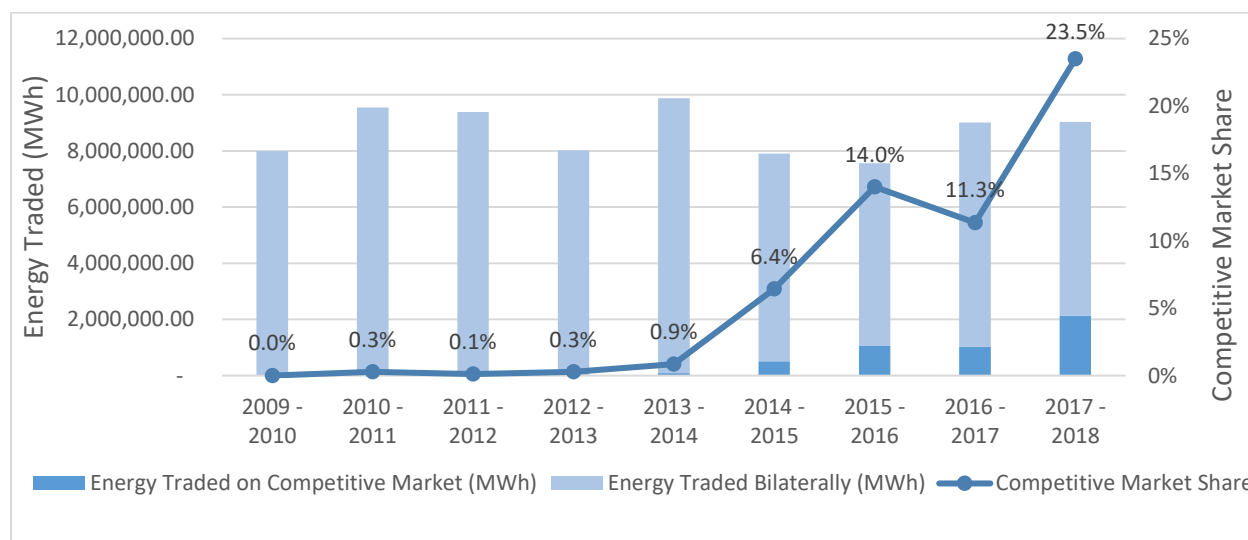
9. **Regional integration is Southern Africa's political and economic priority, and energy has been identified as one of the key areas.** Equitable regional integration has been among the principal founding objectives of the SADC, with a vision of moving the region toward a common market, monetary union, and eventually an economic union with single currency. Energy is prominent in SADC's key areas for regional development and integration to exploit the economies of scale, diversity in the energy resource endowments, and complementarities of these resources in terms of costs and resilience to external shocks, whether market or climate related.

10. **The SAPP is now the most advanced power pool in Africa in promoting regional electricity trade.** Recognizing the importance of regional energy integration, in 1995 the SADC created the SAPP, whose

¹ The SADC was established in 1992. The SADC member countries are Angola, Botswana, Comoros, the Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Eswatini, United Republic of Tanzania, Zambia, and Zimbabwe (<https://www.sadc.int>).

members include the SADC’s 12 non-island countries. The main objectives of the SAPP are to promote cooperation in the regional electricity planning and operation, facilitate regional trading, increase access to electricity in rural areas, and ensure an attractive investment environment. The SAPP has established a sound governance structure at the policy and operating levels, developed functioning multilateral competitive markets, and established a Coordination Center, which advises on feasibility of transmission arrangements for bilateral trade, operates the competitive markets, and monitors the operation of the power pool and adherence to the operating rules.²

Figure 1. SAPP Bilateral and Market Trade Volumes



Source: World Bank. (2018)

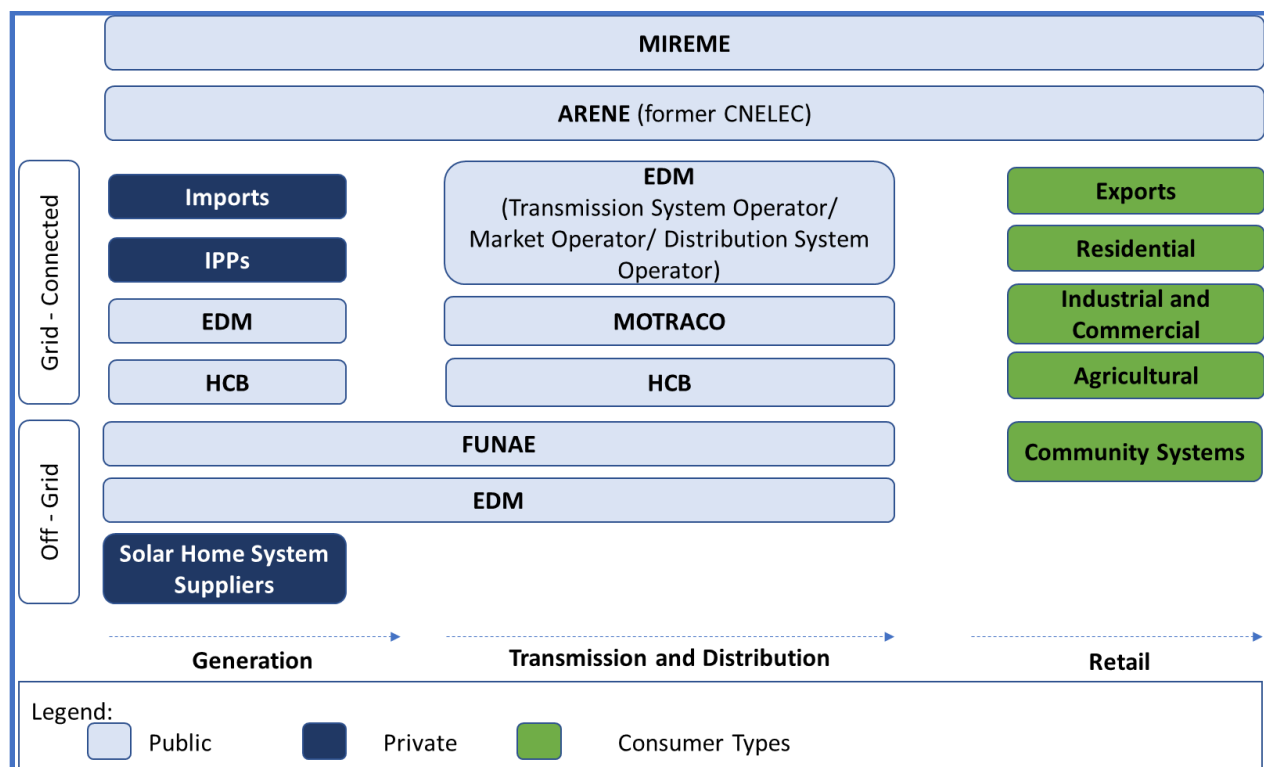
B. Sectoral and Institutional Context

11. **The power sector in Mozambique is guided by the Electricity Law of 1997 that keeps state authority over the sectoral policies and regulations.** The Council of Ministers approves tariffs and the fiscal regime for the sector and major concessions. The Ministry of Mineral Resources and Energy (*Ministerio de Recursos Minerais e Energia*, MIREME) is the government agency responsible for energy policy and planning, sector performance, and governance. Electricity of Mozambique (*Electricidade de Moçambique*, EDM) is the state-owned, vertically integrated utility with operations in generation, transmission, and distribution countrywide. The Energy Fund (*Fundo de Energia*, FUNAE) is a public body subordinated to MIREME with the aim of promoting the development and use of different forms of low-cost energy and the sustainable management of energy resources. The Mozambique Transmission Company (MOTRACO), founded in 1998, is a joint venture of the three national electricity utilities of Mozambique, South Africa and Eswatini, established to operate transmission lines linking the three countries and supplying the aluminum smelter MOZAL in Mozambique. The Electricity Law allows for private sector participation and such activities in the electricity sector, which are also governed by the PPP Law of 2011. In May 2017, the Parliament approved the creation of the Energy Regulatory Authority (*Autoridade Reguladora de Energia*, ARENE) in an effort to separate regulatory and policy functions.

² The SAPP is the first and the most advanced power pool on the continent. Sub-Saharan Africa has three other power pools, with varying degrees of institutional development and physical integration: West African Power Pool (WAPP), East African Power Pool (EAPP), and Central Africa Power Pool (CAPP).

ARENE has replaced former National Council for Electricity (*Conselho Nacional de Electricidade, CNELEC*), which had an advisory role in regulation. The new regulatory body has been given the authority, among other things to regulate the electricity tariff, promote and monitor competition in the power sector, and monitor and enforce the terms and conditions of the licenses or concession contracts in the power sector. Its authority extends over the regulation of the power sector—as well as the storage, distribution, and sale of liquid fuels—and the distribution and sale of natural gas at a pressure of 16 bar or less. ARENE is currently building its capacity and is yet to become functional and assume the authorities prescribed by the law. Figure 2 presents the current structure of the sector.

Figure 2. Current Institutional Structure of the Power Sector in Mozambique³



Source: World Bank; Note: IPP = Independent power producer.

Mozambique’s energy vision encompasses both regional and domestic priorities

12. **The Government’s economic development strategy set out in the Five-Year Government Program (2015–2019) and in Mozambique’s Energy Strategy for 2015–2024 translates into the following strategic objectives for the energy sector:**

- Scaling up the energy infrastructure and production for domestic markets and energy exports (gas and electricity).

³ National Enterprise for Electricity Transmission (*Sociedade Nacional de Transporte de Energia, SNTE*) is in the process of being established as a subsidiary of EDM



- Expanding domestic access to electricity from 25 percent in 2015 to 62 percent by end of 2024⁴, which should provide a major impetus to the country's economic and social development⁵.

13. **Mozambique has become a regional energy hub and is strategically placed to continue being one in the future.** With gas reserves in the Rovuma basin, Mozambique holds the third largest proven natural gas reserves in Africa after Nigeria and Algeria, and it could well be the largest gas resource holder on the continent. A Renewable Energy Atlas, published in 2014, identified 8 GW in 'priority' renewables projects (5.6 GW in hydropower, 1.3 GW in solar energy, and 1.1 GW in wind power), with the overall potential being significantly larger.⁶ These resources far exceed projected long-term domestic demand and resources have been harnessed to meet the regional needs as well. The 2,075 MW state-owned HCB station in the Tete region of northern Mozambique sells about 70 percent of its electricity to South Africa, with the balance sold mainly to EDM, with some relatively limited exports to the SAPP. About 85 percent of natural gas currently produced at Mozambique's onshore gas fields at Pande and Temane, which is approximately 197 million GJ per year, is exported to South Africa through a pipeline built in 2004. These electricity and gas exports are generating significant foreign exchange revenues for the country and have established Mozambique as an important regional energy hub. Recent discoveries of massive off-shore gas reserves in the Rovuma basin have attracted global energy players, positioning the energy sector as a key engine of Mozambique's future economic growth through global and regional exports.

14. **Development of Mozambique's power sector has been export driven from its inception.** A key milestone in the history of Mozambique's energy sector has been the construction of Cahora Bassa in 1975. The plant was designed at the outset as a regional project, as the bulk of its production was destined for South Africa. A large part of HCB production which totals between 14 and 17 TWh annually continues to be exported to South Africa under a long-term contract with ESKOM, through a dedicated 1,400 km long high-voltage direct current (HVDC) line built together with the plant. This was followed by the construction of two 400 kV transmission lines between South Africa and Maputo (one line passing through Eswatini) in 1998 to supply electricity to the Mozal aluminum smelter. The lines are owned and operated by the Mozambique Transmission Company (MOTRACO), jointly owned by the utilities of Mozambique (EDM), South Africa (ESKOM), and Eswatini (SEC). MOTRACO also wheels electricity to the EDM network in southern Mozambique, as electricity generated by HCB and destined for consumption in the southern EDM system cannot reach southern Mozambique other than through ESKOM's and MOTRACO's networks. Mozambique is also connected with Zimbabwe through a 400 kV line (operated at 330 kV), diversifying the country's interconnections with the SAPP network. As a result, electricity trade has been a prominent feature of Mozambique's electricity balance (annex 2).⁷

15. **The GoM has pursued a strategy for financing the power generation projects through PPPs, including solar energy projects.** Mozambique has added 440 MW in four generation plants since 2015, the first significant additions to the power generation fleet in 40 years since HCB was built in 1975. Three

⁴ As per National Electrification Strategy.

⁵ Access to electricity service by 2018 reached 31 percent.

⁶ The total renewable energy potential was estimated at 23,000 GW, dominated by solar energy. The 'priority' projects are those that could be developed around the existing and planned transmission infrastructure. Mozambique also has significant coal reserves, estimated at 20 billion tons, including high-quality coking coal. Mozambique exported 13 million short tons of coal in 2017 (<https://www.eia.gov/beta/international/analysis.php?iso=MOZ>).

⁷ Similarly, Mozambican gas sector development started in 2004, for exporting gas from the Pande and Temane gas fields to South Africa. Most of the gas—165 PJ out of 197 PJ currently produced—is transported by an 865 km pipeline for consumption to South Africa, with several offtake points in Mozambique for the remaining 32 PJ.



of the four plants, with total capacity of 335 MW, were developed, financed, and constructed with the private sector participation as IPPs with long-term power purchase agreements (PPAs) with EDM. Another IPP, a 41 MW solar photovoltaic (PV) plant at Mocuba, is being commissioned and another solar PV project of similar size at Metoro is in an advanced stage of preparation.⁸ These power generation projects, totaling about 500 MW, have enabled Mozambique to meet its domestic demand, remove most of the short-term contracts with rental plants (the ‘emergency generation’),⁹ and maintain its position in the SAPP regional market.

16. Government’s commitment to achieve universal access to electricity by 2030 has elevated the importance of domestic demand. Only 8 percent of Mozambican population had access to electricity in 2006. By 2018, the access rate jumped to 31 percent and electricity services have reached all 128 administrative centers across the country. Off-grid services have also started to develop to serve isolated areas. In October 2018, the President launched the National Electrification Strategy (NES) to be implemented through *Programa Nacional de Energia para Todos* (‘National Electricity Program for All’), representing a renewed momentum toward Mozambique achieving universal electricity access by 2030. The strategy, endorsed by a number of key donors in the sector, envisages ramping up the annual electricity connections to 350,000 by 2020 and to 590,000 on average between 2025 and 2030, with an estimated overall investment of US\$6.5 billion. It is expected that 70 percent of the population will be connected to the grid while 30 percent will be provided with off-grid energy solutions. The NES established a National Electrification Account that would pool the funding for the Government’s electrification plan to be implemented by EDM (on-grid electrification) and FUNAE (off-grid electrification). The funding is to be provided by contributions from the GoM’s budget, generation concessions fees, taxes on electricity exports, concessional financing from development partners,¹⁰ and contribution from existing electricity consumers through an electrification levy. The NES envisages integration of private sector investment in the access program, especially in the off-grid space.

17. Mozambique needs to expand both transmission grid infrastructure and generation capacity to meet domestic demand and contribute to supply in the regional market. Electricity demand in Mozambique grew at an average compound annual rate of 11 percent between 2005 and 2016. The growth flattened in 2017 and 2018 as a result of the economic slowdown but is expected to pick up pace in the coming years as the economy recovers and electrification accelerates. Figure 3 shows grid-based demand projections, with a conservative estimate of demand growth of 5 percent per year for the next six years. The projections indicate that EDM’s capacity to maintain electricity exports will diminish and its capacity to meet domestic demand with requisite security (as measured by the capacity reserve) will be compromised unless sizable generation is added by 2023. Mozambique’s grid is stressed and fragmented, constraining expansion of access and addition of generation.

18. The SAPP needs to invest in the regional transmission network. A SAPP regional study¹¹ found that the region could achieve significant savings in investments through strengthening of the regional network, which would allow sharing the generation reserve capacity and optimizing the generation

⁸ International Finance Corporation (IFC) was the sole lead arranger in the 41 MW Mocuba IPP project which included long-term financing from IFC, IFC-administered blended finance from the concessional Climate Investment Funds, and Emerging Africa Infrastructure Fund.

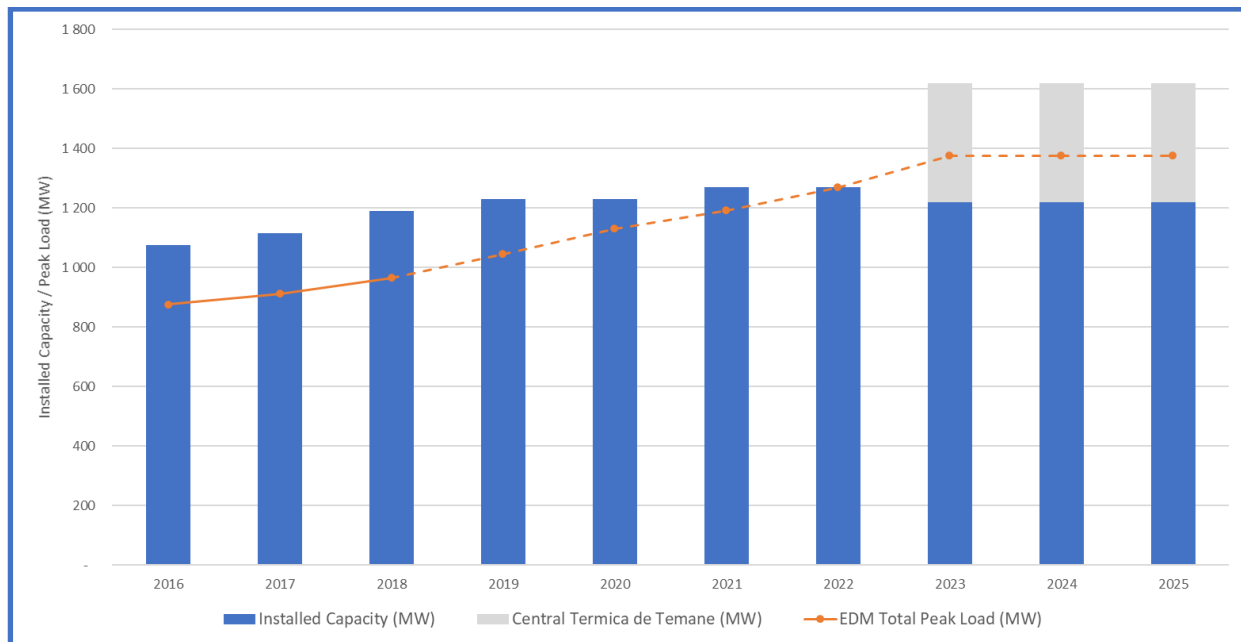
⁹ Before commissioning the IPPs, EDM had 250 MW under the short-term rental contract, of which only 40 MW is retained for supplying Nacala and Cabo Delgado areas.

¹⁰ The World Bank is supporting implementation of the NES with a separate IDA operation ProEnergia (P165453), in cooperation with Sweden, Norway and European Commission.

¹¹ SAPP Pool Plan 2017, SAPP, December 2017.

portfolio (including renewables) at the regional level. Transmission constraints are also keenly felt in the SAPP short-term competitive trading markets, which prevent a significant amount of trading taking place.

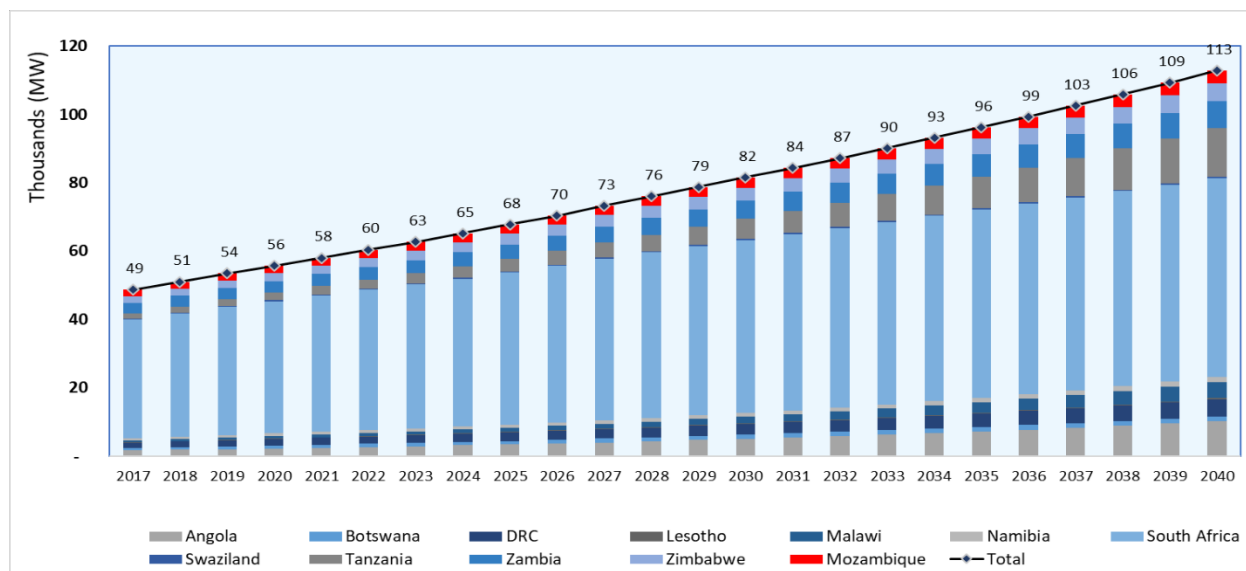
Figure 3. Power Supply and Demand in Mozambique



Source: World Bank. (Actual data for 2016-2018; projections for 2019-2025)

19. **Availability of energy is essential to expanding access across the SAPP.** Average access to electricity in the SAPP was only 37 percent in 2016 (27 percent if South Africa is excluded)—lower than the Sub-Saharan African average of 40 percent, with the level of access quite uneven across countries. South Africa is the only member where it exceeds 90 percent and in only three other countries it exceeds half of the population: Botswana (61 percent), Namibia (52 percent), and Eswatini (66 percent). In the remaining countries, it ranges between 11 percent (Malawi) and 41 percent (Angola). Electrification programs are a developmental priority in all the countries, with a shared objective of achieving near-universal electrification by 2030, consistent with the UN Sustainable Development Goals. A recent study for the SAPP forecasted that, in the base case, electricity demand in the SAPP, measured by peak demand, will grow from 49 GW in 2017 to 113 GW in 2040 (Figure 4). The study reckons that generation capacity will need to expand to 130 GW (compared to 54.7 GW in 2017) by 2040, considering the need to secure adequate reserve to meet the projected demand with the requisite reliability.

Figure 4. Peak Demand Projections of the SAPP



Source: SAPP Pool Plan 2017, SAPP, December 2017.

20. Availability of lower-carbon energy sources can reduce carbon intensity of electricity generation in the SAPP region. About 70 percent of electricity generation in the SAPP region is based on coal plants (75 percent in South Africa), resulting in a high carbon intensity of electricity generation of 0.95 tCO₂ per MWh. As a comparison, the carbon intensity of gas-fired, modern combined cycle gas turbine (CCGT) power plants using natural gas as fuel (that this project supports) is about 0.35 tCO₂ per MWh. The SAPP countries do recognize the need to shift away from coal and decarbonize electricity. Significant efforts are underway in SAPP (e.g., fourth round of renewable energy IPP program in South Africa, Scaling Solar projects in Zambia and several solar IPPs awarded in Malawi) to scale up solar energy investments. Natural gas, as an affordable, dispatchable and lower-carbon technology, will play an important role in facilitating the decarbonization, complementing and enabling the scale up of hydropower, solar, and wind power.

TREP contributes to creating a flagship infrastructure asset in Mozambique to support both domestic and regional energy priorities and building a partnership with the private sector and donor community.

21. The proposed TREP responds to Mozambique’s aspirations to develop an investment strategy for the power sector that aligns the domestic and regional priorities. The strategy involves fundamental strengthening of the country’s transmission system by constructing a countrywide 400 kV transmission backbone that would (a) integrate the country’s disjointed subsystems; (b) provide domestic and regional markets with access to the country’s hydropower and gas-to-electricity sites; and (c) facilitate large-scale electrification of the country and contribute to the electrification of the region with low-carbon energy sources (see the map in Annex 2). The TREP is part of this strategy as Phase 1 of the 400 kV north-south transmission backbone interconnection project, known as National Society for Electricity Transmission (*Sociedade Nacional de Transporte de Energia, SNTE*) project.¹²

¹² Mozambique Power System Development, Draft Final Report, November 2017, Japan International Cooperation Agency (JICA), JERA Co., Inc.; and SAPP Pool Plan 2017, SAPP, December 2017.



22. **The TREP is a PPP in which IDA leverages significant private investment.** The transmission component of the TREP—Temane Transmission Project (TTP), is to be implemented as a public sector project, whereas TREP’s generation component will be largely financed and implemented by the private sector. In effect, public funding of transmission infrastructure enables private investment in generation. The TTP component will be implemented by SNTE (an EDM-owned subsidiary), established as a special purpose vehicle (SPV) for implementing the transmission investment. The ring-fencing of the TTP investment sets up an arrangement that will eventually facilitate private and commercial funding in transmission. The TREP continues the GoM’s strategy of building a robust partnership with the private sector in power generation while prioritizing public and concessional funds for energy access.

23. **The TREP is part of GoM’s least-cost power investment plan to meet the growing demand and support electrification.** The least-cost power development plan prepared in 2018 by MIREME and EDM with the support of JICA indicates that the TTP and Temane Thermal Power Plant (*Central Térmica de Temane*, CTT) are the lowest-cost options for providing energy security and expanding the system, with the cost expected to be substantially below the current marginal electricity production cost in the country. The timing of the project is driven by the need to add generation capacity by mid-2023 to avoid a potential energy supply crisis in the country, which would require contracting costly short-term emergency generation, with adverse financial implications for the sector and the economy.

24. **The TREP supports the GoM’s focus to strengthen the financial fundamentals of the power sector.** The financial sustainability of the power sector and thus the sustainability of investments in the sector rests on the financial position of EDM. EDM has operated with net loss since 2013 due to a number of adverse developments (see Annex 3 for details). It has accumulated significant receivables and payables, including payables to the IPPs. EDM’s balance sheet remains burdened with large short- and long-term liabilities and its borrowing space remains constrained. Commercial and technical losses are high and the overall financial position of EDM remains fragile. The GoM and EDM, with support of the World Bank, have developed a Financial Strengthening Plan (FSP) for EDM, with multifaceted measures to strengthen financial sustainability and governance of the sector. The FSP encompasses measures to improve operational efficiency, raise tariffs towards cost recovery, sustainably finance the electrification program, and restructure EDM’s balance sheet (see Section IV.A). A number of measures under the FSP have been implemented, including tariff adjustments and adoption of NES for financing electrification. The FSP is supported by ongoing World Bank operations, including the Power Efficiency and Reliability Improvement Project (PERIP) (P158249) and Mozambique Energy for All (ProEnergia) Project (P165453).

25. **The TREP is structured to minimize the use of scarce public resources in a debt-distressed economy through a transparent process to select private investment at least cost.** While CTT was originally conceived as a 51/49 joint venture between the GoM (through EDM) and Sasol Limited (further referred to as Sasol)¹³, the World Bank encouraged and supported EDM’s decision to reduce its ownership stake and induce further private sector investment in CTT through a transparent, competitive process. This selection process resulted in a 30 percent reduction in the equity return agreed by the prospective CTT investors, thereby lowering the cost of power to Mozambican and regional consumers. IDA supporting the reduction of Government ownership to a minority position is an integral part of the World Bank’s MFD approach to structuring sector investments to maximize private sector financing.

26. **The TREP is an integral component of a suite of World Bank Group interventions to support the ambitious energy agenda of Mozambique.** The World Bank’s energy portfolio provides comprehensive support for Mozambique’s power sector strategy, addressing, in mutually reinforcing ways, all elements

¹³ Sasol Limited is an integrated energy and chemical company based in Sandton, South Africa.



of the strategy across the sector's value chain (access, distribution, transmission, generation, and regional power trade). IDA financing focuses primarily on improving electricity services through on-grid and off-grid electrification; grid rehabilitation, reinforcement, and expansion; regional integration; and strengthening of the financial and operational performance of EDM. The proposed project is well aligned with this diversified portfolio, which includes three other operations: (a) PERIP, which is under implementation and addresses priority network infrastructure rehabilitation and enhances EDM's technical and commercial operations; (b) ProEnergia, approved by the Board recently, which supports peri-urban and rural electrification; and (c) Mozambique-Malawi Regional Interconnector Project (P164354), under preparation. IFC and Multilateral Investment Guarantee Agency (MIGA) have been instrumental in financing some of the major IPPs and mobilizing private investments in the power sector (including renewables) through debt and risk mitigation instruments (refer to Section II.D).

C. Relevance to Higher Level Objectives

27. **The project supports the implementation of the World Bank's Country Partnership Framework (CPF) for FY17–FY21¹⁴ and Africa Regional Integration and Cooperation Strategy for the period FY18–FY23 (RICAS)¹⁵.** The project will promote the strategic objective of expanding access and improving reliability of electricity, under Focus Area 1 ('Promoting Diversified Growth and Enhanced Productivity') of the CPF. The CPF envisages a comprehensive World Bank Group support to this objective, through the following activities: (a) facilitating regional integration (with two operations—TREP and Mozambique-Malawi interconnector); (b) improving reliability and efficiency of the existing power system and advancing corporate reforms at EDM – PERIP; and (c) expanding access. The CPF expects to leverage World Bank Group resources with private sector investments to achieve a transformational impact, especially in generation. The project is directly aligned with the RICAS Objective 2 to develop functioning regional markets in energy and other sectors by developing priority transmission links and enhancing power trade between countries.

28. **The project is also fully aligned with the Africa regional strategy.** The TREP supports economic transformation and human capital development in Mozambique through improved domestic electricity supply, energy security and increased export revenues. It enables a framework for PPP that leverages significant private financing and private participation consistent with the principles of MFD. By helping close the transmission interconnection gaps in the power pools, the project supports regional integration and partnerships, one of the foundations of the regional strategy.

29. **The project will help meet the World Bank's twin goals of poverty reduction and shared prosperity and is aligned with Sustainable Development Goal 7, Sustainable Energy for All (SE4ALL), and the World Bank's Energy Sector Directions Paper.** Providing additional power generation and the means to evacuate the power and wheel it countrywide and regionwide is part of ensuring expanded access to electricity services for poor and non-poor households, businesses, and social services in rural and urban areas. Electricity exports supported by the project will also contribute to the country's foreign exchange earnings.

30. **The project is well aligned with principles of MFD.** Mozambique's overall macroeconomic situation and the level of development of the power sector and its financial position are not conducive to private investment in the sector without public support. The proposed use of IDA resources to fund electricity transmission, combined with IDA guarantees for EDM's payment obligations, addresses the key

¹⁴ Report No. 104733-MZ.

¹⁵ Report No. 121912-AFR.



infrastructure and commercial barriers for deployment of private investment in power generation. The proposed use of IDA funds, amounting to US\$420 million and mobilizing a sizable funding from other development finance institutions (DFIs), enables private investment to the tune of US\$750 million, for a project that would initiate transformational change of the Mozambique's power sector and set the stage for a sustained PPP in the sector.

31. **The World Bank is also supporting regional integration in the SAPP through other operations and activities.** The World Bank is providing a technical assistance IDA grant,¹⁶ complemented by a multi-donor trust fund, to assist the SAPP with identification and preparation of regional investment projects, as well as with regional planning and integration issues. The World Bank is also financing regional interconnections in the SAPP, including the Tanzania-Zambia Transmission Interconnector Project (P163752), which has been approved, with two regional projects under preparation: Zambia-Tanzania Interconnector (P166099), which is complementing the Tanzania-Zambia interconnector project from the Zambian side, to create a connection linking the EAPP and the SAPP; and Mozambique-Malawi Regional Interconnector Project (P164354), which is to integrate Malawi power system into the SAPP.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

32. The PDO is to enhance transmission capacity for domestic and regional markets and increase electricity generation capacity through private sector participation.

PDO-Level Indicators

33. The project is expected to achieve the following results:
- (a) Increased transmission capacity (MVA)
 - (b) Increased generation capacity (MW)
 - (c) Private and commercial capital mobilized (US\$)
 - (d) Increased electricity exports attributable to the Project (MWh).

B. Project Components

Component 1: Temane Transmission Project (Estimated cost: US\$533 million equivalent, of which IDA Grant US\$291 million, Norwegian Trust Fund (NTF) US\$14 million)

34. **This component includes construction of approximately 563 km of a 400 kV, single-circuit power transmission line between Maputo and Vilanculos (near Temane).** The line will connect to CTT located at Temane through a 25 km Vilanculos-Temane transmission line, financed under the project's CTT component. At the Maputo substation, which will be upgraded, the TTP line will connect to the existing transmission infrastructure to deliver power to the Maputo transmission and distribution network (that is, to Mozambique's southern subsystem) and to the SAPP network, which has strong interconnections with the Maputo area. The TTP also includes substations at Vilanculos, Chibuto, and Matalane to allow for future connections to the transmission network at 110 kV, 275 kV, and 66 kV, respectively, facilitating large-scale electrification and lower-voltage integration of the country's transmission system, as well as

¹⁶ Southern African Power Pool Program for Advancing Regional Energy Transformational Projects (SAPP AREP, P126661).



an upgrade of the existing Maputo substation. The financing available for Component 1 will cover the electrical and civil works, switchgear, transformers, reactive power equipment (bus and line reactors), control-protection-communication systems, Supervisory Control and Data Acquisition (SCADA), and auxiliary system equipment along the entire transmission route and in all substations. (See the maps in Annex 2 for a geographic depiction of the project.)

35. **The TTP will be developed, constructed, owned, and operated by SNTE, a wholly owned subsidiary of EDM¹⁷.** This will segregate TTP line operations into a commercially distinct entity from EDM market operator and distribution activities. While a publicly owned infrastructure asset, the TTP has been designed as a commercial venture by nature, providing necessary power evacuation solution for CTT, and, in the future also for other new power generation projects and other significant offtakers. The commercial rationale behind the TTP dictates that TTP's full costs (of development, construction, financing, operation and maintenance [O&M]) must be recovered from the users of the TTP infrastructure, initially with the CTT Project as the TTP's anchor customer. This process helps EDM transparently evaluate the required wheeling tariff for the transmission infrastructure. The structure of SNTE is intended to facilitate consideration of subsequent investments in the national transmission backbone being carried out with participation of the private sector.

Component 2: CTT Power Generation Plant (Estimated cost: US\$750 million equivalent; IDA Guarantees: up to US\$120 million)

36. **Sasol and EDM initiated the CTT project in May 2014.** Subsequently, EDM offered a portion of its shares to a third private sector investor through a transparent and competitive selection, assisted by an external transaction adviser. The process resulted in the Temane Energy Consortium (Pty) Ltd. ('TEC'), a joint venture of the UK-based Globeleq and EleQtra (80 percent and 20 percent stakes, respectively), being selected as the preferred investor in CTT in December 2017.¹⁸ These four companies constitute the project sponsors currently developing CTT, with EDM holding approximately 20 percent, Sasol 15 percent and the balance 65 percent with TEC. EDM and TEC executed a Joint Development Agreement in June 2018 and has concluded the negotiation of a Shareholders' Agreement, with a new Mozambican registered majority private sector-owned holding company called Mozambique Power Invest, S.A. (MPI) having been formed. MPI, on 25 April 2019, entered into an Amended and Restated Joint Development Agreement with Sasol.

37. **This component includes construction of a 400 MW gas-to-power generation plant.** In considering the technology selection, the CTT sponsors have sought to optimize an output profile that will provide maximum value to EDM in terms of meeting load profile requirements. EDM is also seeking to maximize the energy production from the available gas (from gas discoveries in nearby Temane/Pande/Inhassoro area). On the basis of these requirements, the project sponsors have opted to use gas turbine technology, with a minimum of 300 MW being CCGT plant (which would be operating substantially as base load capacity), with the remaining part of the overall plant capacity of up to 100 MW based on open cycle gas turbines (OCGT). The CTT power generation plant will also include ancillary facilities, such as a short gas pipeline (up to 2 km in length) to connect the plant with the gas connection point, water supply pipeline to one or more water borehole(s), paved access road to the CTT site and gravel maintenance roads within the transmission line and pipeline servitudes, and temporary beach landing structures at Inhassoro area for delivery of heavy and oversized equipment to build the power plant. The power plant will be connected by approximately 25 km of 400 kV double-circuit line from

¹⁷ SNTE was legally established and registered in 2014 but is being operationalized only now in connection with the initiation of the TTP project.

¹⁸ A total of 14 entities submitted expressions of interest, which resulted in EDM receiving three qualified binding bids.



Temane to Vilanculos. Natural gas for the power plant will be supplied from the nearby Temane and Inhassoro gas fields, developed by Sasol Petroleum Mozambique (“SPM”) and Empresa Nacional de Hidrocarbonetos E.P. (“ENH”) (Gas Sellers), pursuant to a Production Sharing Agreement dated 26 October 2000 (the “PSA”) between the Gas Sellers and the GoM.

38. **The CTT power generation plant project will be supported by two IDA payment guarantees, as follows:** (a) for EDM purchase of electricity generation services from CTT (under the Tolling Agreement between EDM and CTT); and (b) for de-risking payment terms from EDM purchase of gas from Gas Sellers, under Gas Sales Agreement (GSA) between EDM and Gas Sellers. The two IDA payment guarantees combined would amount to a nominal value of US\$120 million. The IDA payment guarantees are intended to improve the commercial terms on which EDM purchases electricity and gas from the eligible suppliers (i.e., CTT and the PSA Gas Sellers, respectively) through the provision of a credit enhancement to EDM’s purchasing arrangements.

39. **The process of financial close of CTT is expected by the end of 2020.** The CTT Project sponsors have recently (in April 2019) completed the process of hiring an Owner’s Engineer. A call for request for qualification of Engineering, Procurement, and Construction (EPC) contractors was issued in May , with the Request for Proposal expected to be issued to short-listed parties by end of July 2019. The project sponsors have initiated discussions with potential project lead financiers to get feedback from the financial markets on project risks, risk mitigation needs and instruments, and analysis of options and indicative lending terms for project financing. This included IFC on their potential interest in lead arranging long-term debt as well as their possible participation as minority equity participation in CTT.

Component 3: Implementation Support, Technical Assistance and Capacity Building (Estimated cost US\$23 million equivalent, of which IDA Grant US\$9 million, NTF US\$10 million)

40. **Subcomponent 3.1: Support to SNTE for project implementation (US\$19 million of which IDA US\$5 million, NTF US\$10 million).** This subcomponent will include financing for (a) project management expenses, Owner’s Engineer (Supervision Engineer) contract, assistance with contract management and procurement, and supervision of health and safety aspects during construction and (b) implementation of environmental and social safeguards measures, as well as mitigation of gender-based violence (GBV) risks and implementation of GBV action plan.

41. **Subcomponent 3.2: Technical assistance to EDM (US\$2 million).** The funding under this subcomponent will cover (a) preparing technical background studies for enhancing regional power integration and integration of renewable technologies in power system planning and operation; (b) strengthening of EDM capacity for regional trading, optimal dispatch planning and operations; (c) capacity building for corporate management; and (d) the development and implementation of EDM’s young profession program to increase women’s participation in EDM workforce and strengthen gender balance, including at technical and managerial positions.

42. **Subcomponent 3.3: Technical assistance to MIREME/ARENE (US\$2 million).** This assistance will cover (a) studies on power sector investment plans, including Mozambique’s role in regional trading and integration of renewable technologies in power system planning and operation; (b) analysis of options for further strengthening of enabling environment for private sector investment and competitive procurement of generation capacity; (c) assistance with advancing legal, institutional, regulatory, and governance framework for the energy sector; and (d) strengthening of the policy and regulatory capacity of MIREME and ARENE, respectively.

Project Cost and Financing

43. Total cost for the TTP is estimated at US\$533 million, excluding the implementation support, which is included in the technical assistance component, of US\$19 million. The DFIs interested in financing the publicly financed components—the TTP and technical assistance—have indicated the following amounts available for the project:

- African Development Bank (AfDB): US\$33 million grant to the GoM
- Development Bank of Southern Africa (DBSA): Up to US\$50 million loan to EDM
- IDA: US\$300 million grant to the GoM (US\$100 million from national IDA and US\$200 million from regional IDA)
- Islamic Development Bank (IsDB): US\$100 million loan to the GoM
- NTF, administered by IDA: US\$24 million grant to the GoM
- OPEC Fund for International Development (OFID): US\$36 million loan to the GoM

44. The total indicative financing for TTP from the DFIs amounts to US\$543 million, against cost estimates of US\$552 million for the TTP capital investment and technical assistance, including estimated US\$39 million for funding the Resettlement Action Plan (RAP) and the cost of other environmental and social impact mitigation measures. The estimated costs of the RAP includes US\$17.1 million for land expenditures and cash compensation and other assistance paid in cash for involuntary resettlement. The Africa Regional Vice President approved on May 17, 2019 to exceptionally use IDA Grant funding for this purpose.

45. The funds from AfDB, IDA, and NTF will be grants, and the funds from IsDB, OFID, and DBSA will be long-term development finance loans to the GoM (or EDM in the case of DBSA).

46. The total cost of CTT is estimated at about US\$750 million. About 30 percent (US\$225 million) will be financed through equity contributions from the project sponsors and 70 percent (US\$525 million) through long-term commercial debt. IDA is expected to provide payment guarantees in the amount of US\$120 million (see Table 1).

Table 1. Project Costs and Financing (US\$, millions)

Project Components	Costs	IDA	NTF	Other IFIs ^a	Equity	Commercial Loans	EDM	Total
Component 1: Temane Transmission	533	291	14	215	—	—	13	533
Component 2: CTT Power Generation Plant	750	—			225	525	—	750
Component 3: Implementation Support, Technical Assistance and Capacity Building	23	9	10	4	—	—	—	23
Subcomponent 3.1: Support to SNTE for project implementation	19	5	10	4	—	—	—	19
Subcomponent 3.2: Technical assistance to EDM	2	2		—	—	—	—	2
Subcomponent 3.3: Technical assistance to MIREME/ARENE	2	2		—	—	—	—	2
Total Project Cost*	1,306	300	24	219	225	525	13	1,306
Total Guarantees	120	120						120

Note: IFIs = International financial institutions.



a. AfDB: US\$33 million; DBSA: US\$50 million; IsDB: US\$100 million; OFID: US\$36 million.

* Data Sheet shows Total Project Cost at US\$1,426 million by adding up the Total Project Cost shown in this table (US\$1,306 million) and the value of the Guarantees (US\$120 million)

47. The TTP and implementation support components will be co-financed in the form of a grant from the Single-Donor Trust Fund for Norway's Support to the Regional Power Infrastructure Projects in Southern Africa (the NTF), which has been established and has supported the preparation of the project. It is expected that grant resources, in an indicative total amount of US\$24 million for the recipient-executed portion, will be secured and be available for joint co-financing. The grant agreement will be signed based on the contributions received into the Multi-Donor Trust Fund¹⁹. Additional grant resources will then be passed on to the GoM as and when they are received without the need to process a restructuring or additional financing. In case the co-financing does not materialize or is less than expected, either additional resources will be sought potentially through an IDA additional financing mechanism; or the financing gap will be funded by SNTE or the GoM; or the project will be restructured to be proportionately scaled down.

48. **IDA will provide two project-based payment guarantees to backstop the GoM's payment obligations.** The IDA guarantees in the total nominal value of up to US\$120 million (financed fully from national IDA) will backstop the GoM's payment obligations under certain project-related agreements and provide comfort to both lenders and investors. Specifically, the IDA payment guarantees will support the security package for EDM's payments under (a) the Tolling Agreement with CTT²⁰ and (b) the Gas Supply Agreement with SPM and ENH (the PSA Gas Sellers). IDA has ensured the complementarity of both guarantees and has structured and sized them following the principle of minimum coverage necessary to make CTT bankable, in consultation with the investors and based on a market sounding carried out with private sector DFIs and commercial banks. Both guarantees are structured considering the other guarantee's risk coverage, triggering events, and beneficiaries. The guarantees would be finalized and signed at the same time that the commercial financing package for CTT is signed²¹, provided that EDM's FSP is being implemented in a satisfactory manner.

49. **First, IDA will provide a payment guarantee to a commercial bank issuing a letter of credit (LC) for the Tolling Agreement to mitigate nonpayment risks from EDM to CTT.** In line with the requirements stipulated in the Tolling Agreement, EDM will competitively select a commercial bank²² (the LC Bank) to issue an LC in favor of CTT for up to a maximum number of months of tolling payments necessary to support EDM's creditworthiness. The LC would be fully guaranteed by IDA. The LC Bank will sign a credit and reimbursement agreement with EDM stipulating that any draws made under the LC will be reimbursed by EDM within a period of 12 months (including any accrued interest). The term of the LC will likely be one year but provided no default will roll over for a period commensurate with term of the debt. If EDM fails to repay the amounts drawn under the LC, the LC Bank may call on the IDA guarantee up to the maximum amount of the guarantee as indicated in the Guarantee Agreement. To support this payment guarantee, IDA will negotiate a Project Agreement with CTT ensuring that the project is executed

¹⁹ The NTF supports the preparation and implementation of the Mozambique-Malawi Interconnection Project (P164354/TF018537), and Temane Regional Energy Project (P160427/TF097013). A total of US\$5 million has previously been made available to support project preparation activities and early implementation.

²⁰ A Tolling Arrangement is a contractual agreement for the conversion of fuel (supplied by a third party) into electricity for a fee. Under this arrangement, the party converting the gas into electricity takes no risk on the fuel supply or the price.

²¹ This is anticipated in the last quarter of calendar 2020.

²² Based on market sounding, there are sufficient acceptable commercial banks that are able to provide the LCs.



in line with World Bank policies and procedures, including safeguards (OP 4.03), anti-corruption provisions, and so on.

50. **Second, in order to enhance the bankability and facilitate the commercial financing of CTT, IDA will provide a parallel payment guarantee to a commercial bank issuing an LC for the Gas Supply Agreement to mitigate nonpayment risks from EDM to PSA Gas Sellers.** In a tolling structure, EDM is the counterparty for the gas supply and not CTT directly. Therefore, the PSA Gas Sellers (SPM and ENH) are also exposed to EDM's creditworthiness over the term of the gas supply arrangement, which is expected to be 25 years. EDM will competitively select an LC Bank²³ to issue an LC in favor of the PSA Gas Sellers for up to a maximum number of months of gas supply payments, necessary to support EDM's creditworthiness. The LC will be fully guaranteed by IDA. The LC Bank will sign a credit and reimbursement agreement with EDM stipulating that any draws made under the LC will be reimbursed by EDM within a period of 12 months (including any accrued interest). The term of the LC will likely be one year but provided no default will roll over for a period of 25 years. If EDM fails to repay the amounts drawn under the LC, the LC Bank may call on the IDA guarantee up to the maximum amount of the guarantee as indicated in the Guarantee Agreement. To support this payment guarantee, IDA will negotiate a Project Agreement with the PSA Gas Sellers, which will contain standard and project-specific covenants and representations and warranties, including environmental and social and anti-corruption aspects.

51. **If IDA makes a payment under either of the guarantees, IDA would have the right to require the GoM to reimburse it immediately on demand or as IDA may otherwise direct, pursuant to the Indemnity Agreement.** Any amounts paid out by IDA under the guarantee, even if subsequently recovered from the GoM or otherwise, cannot be reinstated. The Indemnity Agreement will mirror those obligations that the GoM has already made in the project contracts. A diagram of the proposed IDA guarantees structure is provided in Figure 5.

C. Project Beneficiaries

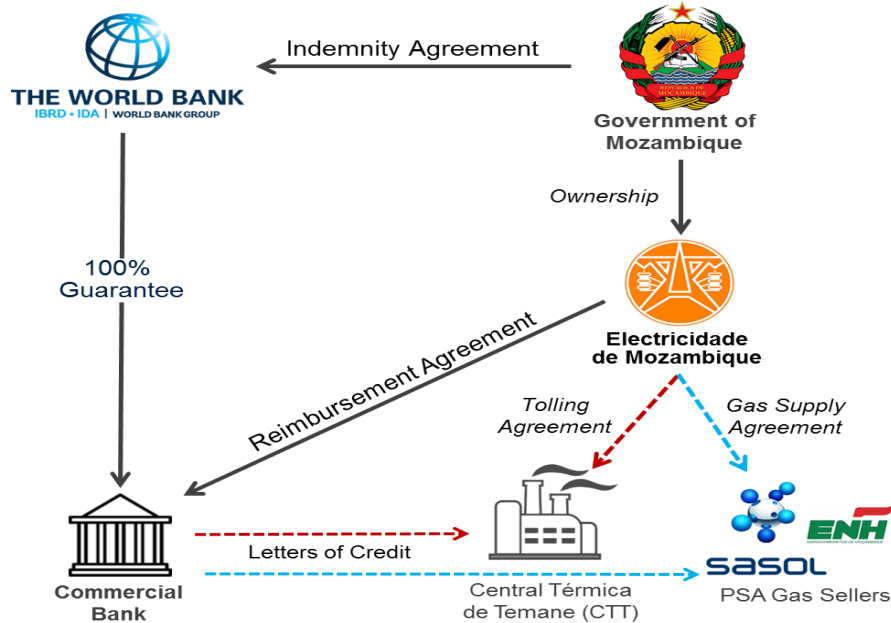
52. The main project beneficiaries are the consumers of additional electricity provided by EDM in domestic and regional markets. Addition of new generation capacity and transmission lines will enable more regional trade, lower carbon intensity of generation, connecting new consumers and improving services to the existing ones. This applies to residential consumers in rural and urban areas, as well as to schools, hospitals, farmers, businesses, and so on. To these categories, access to electricity and better reliability and quality of supply would mean improved educational and health services, improved productivity, and expanded businesses. These benefits ultimately extend to the population at large in Mozambique and in the Region through induced job creation and economic growth, and better prospects for poverty alleviation and shared prosperity.

53. Mozambique's power sector institutions—SNTE, EDM, MIREME, and ARENE—will also benefit from the project through technical assistance for project implementation, capacity building, and analytical studies, enabling them to better carry out their mandates in investment planning, regional trade, sector regulation, and engagement of the private sector.

²³ This could be the same or a different LC Bank which provided the LC for the Tolling Agreement.



Figure 5. Proposed IDA Guarantee Structure for CTT



Source: World Bank.

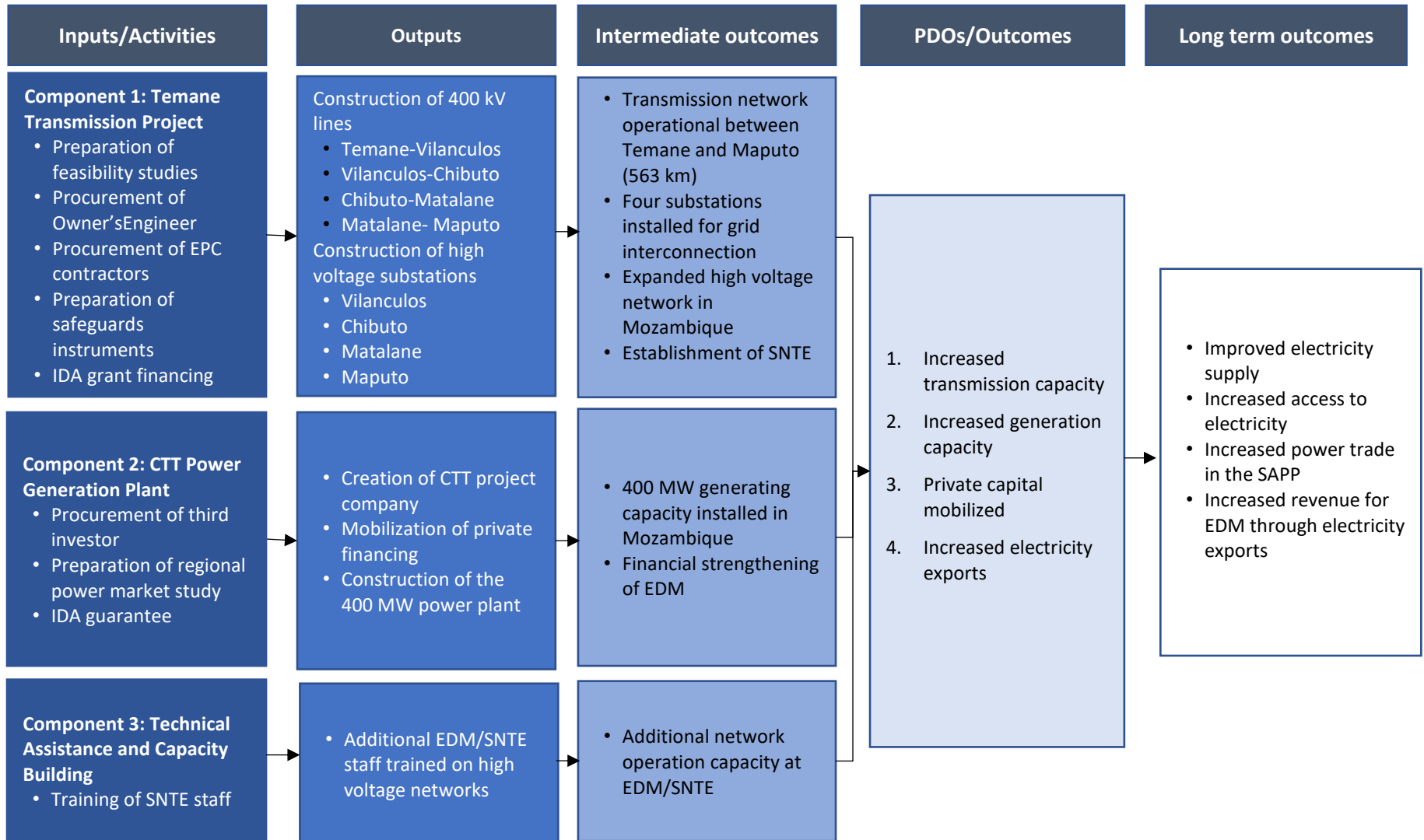
54. The private sector sponsors' lenders in CTT will also benefit from the IDA guarantees proposed as part of the project. The combination of Mozambique's macroeconomic distress, and EDM's financial challenges have constrained the environment for additional private sector investment. Without IDA guarantees to de-risk the project and provide credit enhancement to private investors and commercial lenders in CTT, this financing would not be possible unless accompanied by high-risk premiums, which would limit the benefits of the project to end consumers. This de-risking structure ensures that public and private sector investments in the project are complementary and sustainable.

D. Results Chain

55. The results chain is presented in Figure 6.



Figure 6. Results Chain



Source: World Bank.



E. Rationale for World Bank Involvement and Role of Partners

56. The rationale for World Bank involvement is multifaceted, from the World Bank's broader sectoral engagement in project preparation to project structuring, donor coordination, resource mobilization, and provision of payment guarantees. The World Bank's power sector engagement, involving both investment and policy support, covers a spectrum of strategic issues across the sector's value chain and regional integration, helping develop the sector in an economically, socially, and financially sustainable manner, including through participation of the private sector. The World Bank's upstream policy advice has been carried out through direct dialogue with the GoM and EDM and through technical assistance. This assistance has also been built into project design, being an intrinsic part of the investment projects.

57. As part of preparation of the TREP, the World Bank helped mobilize private investment in a competitive manner for the first time in the country's power sector. The World Bank has also been instrumental in ensuring that the project preparation is comprehensive and meets the standards of international bankability in terms of technical, economic, environmental, and social aspects. The World Bank's ongoing engagements across Sub-Saharan Africa in supporting the development of regional markets will help leverage global and regional expertise. The World Bank has also helped structure the overall project as a PPP, with public investment focusing on transmission, which has broader developmental impacts. This approach has attracted additional DFIs and mobilized large private investment in generation.

58. **The World Bank is a key development partner providing comprehensive support to the GoM in its efforts to advance development of the power sector.** In addition to the TREP, the World Bank has three operations under implementation or in advanced stage of preparation in the power sector in Mozambique, covering the entire value chain:

- **PERIP** (under implementation). The project is funding priority rehabilitation and upgrade of network infrastructure and enhancement of EDM's technical and commercial operations, to improve the operational capacity of the network and the operational efficiency of EDM. The total cost is US\$150 million, fully funded by IDA (approved in September 2017).
- **ProEnergia** (approved by World Bank Board on March 28, 2019). The project is to fund peri-urban and rural electrification (on-grid and off-grid), with the objective of increasing access to electricity service to households, enterprises, and public institutions. The total cost is estimated at US\$148 million, of which IDA finances US\$82 million and a multi-donor trust fund is expected to finance US\$66 million.
- **Mozambique-Malawi Regional Interconnector Project** (under preparation). The project is to finance a 210 km, 400 kV Mozambique-Malawi transmission interconnection line (135 km in Mozambique and 75 km in Malawi) and associated substations (Matambo in Mozambique and Phombeya in Malawi). The total cost is estimated at US\$127 million (US\$92 million in Mozambique and US\$35 million in Malawi) to be financed by IDA (US\$57 million), German State-owned Development Bank (*Kreditanstalt für Wiederaufbau*, KfW (US\$40 million), and Government of Norway (US\$30 million).

59. **The proposed project builds upon long-term experience and continued engagement of the World Bank in supporting capacity building and construction of physical infrastructure in the regional markets.** The World Bank has been providing financing for regional infrastructure in the West African Power Pool (WAPP) and East African Power Pool (EAPP) countries. In the SAPP region, the World Bank is



funding investment planning and preparation of selected priority regional energy projects.²⁴ The World Bank is providing support for the Tanzania-Zambia interconnector, which would connect the East African Power Pool (EAPP) and the SAPP. The World Bank is also supporting technical assistance and capacity building for the EAPP.

60. **The World Bank power sector program in Mozambique is part of the overall World Bank Group effort to combine the programs of the World Bank, IFC and MIGA to collectively maximize finance for development.** The World Bank Group has pursued an overall program in the power sector that combines the resources and the instruments of each organization to mobilize the private sector capital and maximize finance for development.

61. IFC has been strongly engaged in the energy sector in Mozambique over the last five years. In June 2017, IFC signed two power plant transactions: the refinancing of the 175 MW Ressano Garcia Thermal Power Plant (*Central Térmica de Ressano Garcia*, CTRG) gas-fired plant sponsored by Sasol and EDM and the 41 MW Mocuba PV solar plant sponsored by Scatec, Norfund, and EDM. To help consolidate this success and build much needed capacity, IFC, with financing from the Government of Norway, is providing technical assistance of about US\$2 million to EDM, financing an embedded adviser who is assisting EDM in strengthening its treasury and risk management functions.

62. IFC has indicated that it would consider providing project development equity as well as arranging debt financing for the CTT IPP Project when the sponsors are ready to discuss potential financing.

63. MIGA continues to support the energy sector in Mozambique with approximately US\$97 million of gross exposure in the energy sector, consisting of two projects: (a) Gigawatt IPP; and (b) MOTRACO transmission line running from Mozambique to Eswatini.

Role of Partners

64. The proposed project will have five co-financing development partners for the TTP component. In addition to IDA and the Government of Norway (whose funds, deposited in the NTF, are administered by IDA), they are AfDB, DBSA, IsDB, and OFID. The project will be implemented through a number of EPC contracts, financed, to the extent possible, by one of the project financiers ('parallel financing'), to simplify project implementation, although there may be a need for some EPC contracts to be financed by more than one financier ('joint financing' of contracts). Preparation of the TTP has been financed largely through the NTF grant. A Project Coordinator for the TTP has been funded by United States Agency for International Development (USAID).

65. **The role of partners in financing the CTT component remains to be decided.** Private sector arms of the DFIs, which are co-financing the TTP component, have shown significant interest in financing CTT. IFC may become involved, subject to progress made on EDM's Financial Strengthening Plan, as could a number of other private sector financing agencies.

F. Lessons Learned and Reflected in the Project Design

66. The TREP has been designed considering the experience with investment projects in Mozambique and with similar projects within the SAPP region and across Sub-Saharan Africa and elsewhere. The following are some key lessons that have informed and influenced the design of the project:

²⁴ International Development Association: Project Appraisal Document on a Proposed Grant in the Amount of SDR 13.2 million (US\$20 million equivalent) to the Southern African Power Pool for a Southern African Power Pool (SAPP)–Program for Accelerating Transformational Energy Projects, October 21, 2014, Report No. 86076-AFR.



- **Country ownership and integration of national and regional objectives.** The proposed project is strongly supported by the GoM and EDM due to its contribution to the development agenda of integrating the national transmission system and strengthening interconnections within the region (that is, exporting power at competitive prices). These reinforcing goals will increase the security, reliability, and affordability of supply; accelerate energy access; and utilize domestic energy resources. The project is also recognized by the SAPP as an important element of strengthening regional connectivity and trade and regional access to the scarce resources of natural gas and hydropower.
- **Developing regional projects at scale with a long-term vision.** Electricity transmission infrastructure in general, and regional transmission projects in particular, must be developed with a long-term sectoral vision in mind. Infrastructure must be developed with scalability to handle longer-term needs, create space for increasing electricity volumes over time, and provide more certainty for future IPP investors as well as those looking to invest in local industries, which requires stable supply of power. The proposed project takes this into consideration as the capacity of the TTP transmission line is significantly higher (900 MW) than that required for CTT alone (400 MW).
- **Facilitating regional integration and trade by appropriate institutional and regulatory framework.** The SAPP has a well-established governance system and institutions that foster trade, including through well-designed and tested short-term markets. The proposed project has been calibrated to exploit these features through an integrated approach across all of EDM's generation sources, not just one IPP. This helps mitigate the risk of not having exports from CTT fully covered by long-term PPAs, given its relatively modest size in comparison with the depth of the regional market. The project also includes technical assistance for further strengthening the capacity of EDM to manage Mozambique's regional electricity trade through the SAPP. Parallel assistance continues to be provided to the SAPP through the World Bank's other operations.
- **Power sector capacity building and financial sustainability.** From the experiences of recent IPP developments in Cameroon, Zambia, Kenya, and Nigeria, the success of an individual project fundamentally requires a financially sustainable power sector. Continued reforms and capacity building must be carried out consistently with both the GoM and EDM. The ongoing IDA support provides continued capacity building to sector stakeholders to increase planning capacity and transparency and improve sector governance. Furthermore, the World Bank has worked with the GoM on a sector performance improvement program, which includes (a) retail tariff adjustments to move toward full cost recovery; (b) a financing plan for national electrification, on-grid and off-grid; (c) a loss-reduction performance contract with EDM; and (d) addressing of the payment arrears that have accumulated since the 2016 financial crisis. These elements have been incorporated into project design to put the sector on a firm path to financial sustainability and ensure that a conducive investment climate is formed to provide confidence to private sector lenders and investors.
- **Efficient use of IDA resources.** The design of the project has incorporated an MFD approach to make efficient use of IDA resources. Guarantees are an efficient use of IDA to leverage private sector investment and commercial financing. Furthermore, the project has explored how additional financing for CTT could be mobilized through IFC and MIGA, reserving the bulk of available IDA resources to finance the public sector TTP transmission assets.



- **High-quality and experienced private sector sponsors.** The private sector sponsors of CTT need to have the technical and financial capability to appropriately manage risks and successfully commission the IPP. Globeleq, a leader in power generation in Sub-Saharan Africa, has strong experience in developing and operating similar IPPs in challenging markets. Sasol, a regional leader in natural gas field development and supply, helps ensure efficient production of indigenous natural resources, and their participation in the IPP also keeps these interests aligned with development objectives. Furthermore, Globeleq is providing its project management skills to the development and implementation of the TTP, ensuring that the private and public sector components of this investment are synchronized.
- **Risk mitigation instruments (for example, guarantees) are key to mitigating payments risks.** The proposed IDA payment guarantees structure has a proven track record of mobilizing private sector investments and is an efficient mitigant of the payment risks associated with state-owned offtakers, which are yet to establish a consistent track record of contractual performance on IPPs. The proposed project has benefited from the deployment of these instruments in similar IDA countries. In the case of a payment delay, the IDA-guaranteed LC would provide valuable time for the Government and the offtaker to resolve any liquidity issues while avoiding any payment defaults or early termination. Thus, it would help ensure the continuous operation of the gas supply and the power plant during what would otherwise result in disruption of supply of electricity to Mozambique and knock-on effects to the economy.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

67. The project will be implemented over a five-year period. SNTE, a wholly owned subsidiary of EDM, will implement the TTP (Component 1) and the corresponding technical assistance (Component 3). CTT (Component 2) will be implemented by the CTT Project Company as a private sector project. EDM and MIREME will implement their respective elements of technical assistance (Component 3).

TTP Implementation

68. The TTP is being structured through SNTE. SNTE was originally created to implement the SNTE Backbone Project, whose development is now phased, with TTP being its Phase 1. The SNTE structure facilitates fully ring-fenced revenues and costs for development, construction, O&M of TTP/SNTE, providing maximum transparency and flexibility for future SNTE development as a commercial structure with possible participation of the private sector in transmission financing.

69. SNTE will be appropriately staffed and resourced to take on the necessary scope of work to develop, implement, and operate the TTP infrastructure, using a combination of own resources, individual consultants, and contractual arrangements with an Owner's Engineer and other advisory entities as required. During project development and implementation, SNTE will be funded through project financing. Once TTP is operational, SNTE will get its revenues through a transmission surcharge, paid for by users of SNTE's transmission infrastructure.

70. Oversight of the TTP development is currently provided by a Steering Committee that is tasked with approving all contracts before formal approval by the SNTE Board. In addition, the Steering Committee acts as a coordinating body between the TTP and the CTT Project, ensuring harmonization of



project timelines and appropriate exchange of information and communication. The TTP Steering Committee comprises the following members: (a) EDM Executive Board Member – Planning, Business Development & Operations (Chair); (b) EDM Executive Board Member – Finance; (c) EDM Business Development Adviser; (d) CTT shareholder representative (TEC/Globeleq consortium). In addition, the Steering Committee meetings are attended by the TTP Project Management team consisting of (e) TTP - Project Director; (f) TTP - Deputy Project Director, and (g) TTP - Project Coordinator.

71. EDM has established a Project Implementation Unit (PIU) for the TTP—currently reporting to the TTP Steering Committee—which will be replaced by the SNTE Board of Directors. SNTE will be responsible for the day-to-day project management and coordination of the TTP. SNTE will prepare a Project Operations Manual (POM), which will govern project administration/implementation, monitoring, and evaluation activities.

72. The PIU will be supported by an Owner’s Engineer in two key functions:

- General design review and procurement support up to award of contracts in line with the approved procurement strategy
- Owner’s engineering services for the construction phase and subsequent warranty period

73. Given the scale of works and the length of the TTP, SNTE, the Owner’s Engineer, and contractors will each be required to have a qualified Environmental Specialist, a Social Development Specialist/Resettlement Specialist, and a Health and Safety Officer/Specialist. These Environmental, Social, and Health and Safety Specialists will be responsible for implementing all the actions and management plans proposed and for ensuring compliance with requirements of the World Bank’s environmental and social safeguards policies and Environmental, Social, Health, and Safety (ESHS) guidelines, as well as with the requirements of the national environmental legislation and regulation.

74. The PIU is expected to remain in place throughout the different stages of TTP development and will migrate from being a PIU to becoming an Asset and O&M Management Unit on completion of commissioning and testing of the TTP infrastructure.

75. The PIU will manage the Owner’s Engineer. Also, with support from the Owner’s Engineer, the PIU will manage the procurement process and coordinate the approval of contracts during the implementation of the project. The PIU will also be responsible for approving disbursements, monitoring overall project progress, preparing reports for the SNTE Steercom (or the SNTE Board as the case may be) and the TTP funders, utilizing data from Owner’s Engineer deliverables, and ensuring that financial and reporting requirements are met and World Bank Procurement Procedures are followed. This will also include environmental and social management of the TTP as well as oversight over the complementary CTT Project, as required by World Bank rules and regulations.

76. EDM reinforced the development and implementation of the TTP by engaging the TEC consortium (also referred to as the ‘Globeleq Consortium’), the development partner for CTT, in helping manage the TTP. The strategic deployment of experienced TEC resources within the TTP PIU team has provided significant additional capacity and competence in supporting TTP development and is considered a major project strength. The arrangement was formalized in June 2018 as part of the EDM-TEC Joint Development Agreement for the CTT Project.

77. **O&M.** SNTE will contract out O&M of TTP substations to the equipment contractors and suppliers, initially under a three-year O&M contract, awarded as part of the selection of EPC contractors.



Transmission line maintenance will be either subcontracted to EDM transmission directorate or to the EPC contractors (final decision will be made upon further analysis).

CTT Project Implementation

78. The CTT Project will be implemented by CTT, an SPV that will be incorporated under the laws of the Republic of Mozambique. CTT will be responsible for the overall design, financing, construction, and O&M of the CTT Project. CTT will have an Owner's Engineer for project implementation. The power plant will be constructed through an EPC contractor, which will be responsible for detailed engineering design, supply and installation of equipment, construction of the plant, testing and commissioning.

79. The contractual framework of the CTT Project includes a suite of contracts ('Key Project Agreements') between CTT Project Company (Concessionaire), the GoM (Concedent), EDM (electricity offtaker and gas supplier to CTT), SNTE (TTP - Project Company and transmission service provider), SPM/ENH (gas producers and gas suppliers to EDM), and EPC contractor. The Key Project Agreement, to stay in force for 25 years after the project's commercial operations date (COD) (except for the EPC contract, of course), includes the Concession Agreement, the Tolling Agreement, the Transmission and Use of System Agreement, the Gas Supply Agreement, and the Connection and Operation Agreement.

80. **Project financing agreements.** A shareholder's agreement will govern the relationship between MPI (inclusive of EDM and TEC) and Sasol and injection of the required equity contributions to finance 30 percent of the project's total costs. Providers of long-term debt will enter into a common terms agreement and parallel facility agreements with CTT to provide sufficient resources to finance the remaining 70 percent of CTT costs. An inter-creditor agreement will be signed between all the lenders (or their agents) governing administration of the parallel loans and the rights and responsibilities of each. Direct agreements will be required between the lenders and EDM or the GoM with respect to lenders' step-in rights to the CTT assets and contracts under certain events. Documentation regarding IDA's payment guarantees is described in Annex 2.

81. **O&M.** The CTT Project Company will be ultimately responsible for the O&M of the project throughout the duration of the concession. As part of the EPC evaluation process, CTT expects to procure long-term support services from the original equipment manufacturer. These arrangements will be documented in a Long-Term Service Agreement, helping mitigate the O&M risks.

Implementation of Technical Assistance

82. SNTE, EDM, and MIREME will implement their respective parts of the technical assistance component (Component 3). The SNTE project implementation structure is explained earlier, under the TTP component. EDM and MIREME have established arrangements for implementing World Bank-financed projects, which will be used for implementing technical assistance under the TREP.

Project Implementation Schedule

83. The construction of the TTP component is expected to start in mid-2020 and be completed by second quarter of 2023. The financial close of CTT is scheduled to be achieved by end of 2020, following the selection of EPC contractor and completion of financing arrangements. Construction of the CTT plant is expected to start in the first quarter of 2021 and completed in the second half of 2023. Gas supply needs to be available in time for commissioning and testing the gas turbines for the CTT plant and is envisaged to start in the second quarter of 2023, but the schedule will be further refined after the EPC Contractor for the CTT plant is hired and the project schedule for CTT construction and commissioning is firmed up. The schedule of gas supply, CTT construction, and TTP construction will continue to be closely coordinated



to minimize the risk of mismatches which could result in financial costs to the various parties under the contracts for gas supply or for electricity delivery (the Tolling Agreement). Such coordinated schedules will be reflected in the commercial contracts.

B. Results Monitoring and Evaluation Arrangements

84. **The monitoring and evaluation of the TTP will be carried out by the PIU**, consistent with the monitoring and evaluation requirements stipulated in the POM. The PIU, assisted by the Owner's Engineer, will prepare quarterly reports, which will be submitted to SNTE Senior Management, the Board, MIREME, and project financiers, including the World Bank. Activities to be monitored include the procurement, construction progress, contractual payments, and other aspects of contract management and quality control. The reports will also include implementation of Environmental and Social Management Plans (ESMPs), RAPs, health and safety aspect of the project (including a full reporting of incidents), GBV issues, and training activities. The reports will include project progress and results indicators, as per the project's Results Framework.

85. SNTE will prepare financial monitoring reports. Project financial reports and SNTE financial statements will be audited by an independent financial auditor.

86. EDM will share its annual independently audited financial statements, as well as its performance results under the Performance Agreement.

87. The World Bank will carry out regular implementation support missions at least twice a year, in coordination with other financiers. The World Bank will conduct reviews of the project reports, procurement, financial monitoring reports, financial audit reports, and other relevant project documents.

88. The World Bank will carry out a midterm project implementation review (about two years after project effectiveness). The midterm review will be coordinated with other project financiers. The World Bank will prepare an Implementation Completion and Results Report at the end of the project.

89. **On CTT**, information for the monitoring of results will be obtained from EDM and CTT, which will be responsible for preparing and submitting progress reports to IDA, as required under the IDA Project Agreements. Key project performance information will be provided by CTT on the amount and costs of electricity generated and the commercial debt and equity financing mobilized, as well as detailed information based on invoicing and payment records. The project's intermediate outcomes will be monitored through project reports prepared by CTT during construction and operation of the project.

90. **SNTE will report on implementation of technical assistance** as part of reporting on implementation of the TTP. EDM and MIREME will prepare annual reports on implementation of their components of technical assistance.

C. Sustainability

91. The project's sustainability depends on EDM's ability to sell electricity generated by CTT and operate and maintain the transmission infrastructure constructed under the project. Demand projections indicate that the combined regional and domestic markets should be able to absorb the CTT output. Both markets are forecast to keep growing for years and even decades to come, as a result of continued electrification and economic growth. CTT should also be competitive in both markets in terms of cost and dispatchability. Therefore, demand and price risks to the sustainability of the project should be low. Financial health of EDM is seen as potentially a more serious constraint as the utility has been experiencing



financial difficulties in recent years. This project will support mitigation of this constraint, as it should contribute to EDM's financial sustainability given the competitive pricing of the power plant and the transmission line. The measures taken as part of EDM's FSP are designed to strengthen financial sustainability of EDM. The business and commercial arrangements for the transmission infrastructure, to be owned and operated by EDM's subsidiary SNTE, also contribute to the sustainability of the project through transparent pricing of the electricity and as a platform for completing the SNTE Project using project financing approaches in raising investment capital for transmission.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

92. Technical and economic studies have been conducted to assess technical feasibility of the project and its rationale in relation to the development of the power sector in Mozambique and the region.²⁵ At the strategic level, the project is aligned with the Mozambique Power Master Plan (least-cost development plan), National Energy Strategy 2015–2024, EDM Strategy 2018–2028, and NES 2018–2030, which aim at achieving universal access to electricity by 2030 and positioning Mozambique as an important regional hub for electricity. A key component of these strategies and plans is the development of the SNTE transmission backbone to connect Mozambique's northern, central, and southern systems and the wider SAPP network, tying in the country's disjointed parts of the network and opening up domestic and regional access to its hydropower and gas resources. Given the financial resources that the transmission backbone would require, the GoM opted to phase the investment, with TTP being the first phase of the SNTE Backbone Project, vital for its role in connecting the onshore Pande/Temane gas field to the national power system through gas-to-power projects. In the pursuit of this national priority, in early 2016, the GoM approved the allocation of gas from the PSA license for these fields for the CTT Project. Therefore, the CTT Project and the TTP are closely integrated, although—as part of the SNTE Backbone Project—the TTP role goes beyond connecting just CTT.

Technical Analysis: TTP

93. The design of TTP benefited from the previous technical and economic studies carried out for the SNTE Backbone Project. The design and the system studies were updated to reflect the SNTE phasing. The studies examined the relative merits of gas transport versus electricity transmission and different alternatives of evacuating electricity from CTT, selecting the optimal evacuation route from Temane to Maputo. The studies confirmed the technical viability of the project and informed the technical design of the TTP transmission lines and substations.

94. The design capacity of the TTP line is approximately 900 MW and is designed to accommodate additional generators and loads to meet the longer-term needs of domestic and regional power systems. The TTP will be designed and implemented to meet internationally accepted technical criteria and standards, as well as the SAPP standards. The TTP equipment is based on proven technology and should not present any unusual construction and operational challenges. The implementing agency, SNTE, has hired an Owner's Engineer, which will assist with procurement of the TTP contractors, contract management, and supervision of construction and commissioning, as well as with monitoring the

²⁵ Source: Temane market study, SNO power system studies, Norconsult studies for SNTE Backbone and TTP, Gas supply studies for Temane, JICA Master plan, SAPP study.

performance of the equipment during the operational defect liability period. The Owner’s Engineer will also supervise implementation of ESMPs and the RAPs.

95. The TTP infrastructure will be connected to power systems and equipment owned and operated by other parties (CTT, EDM, and MOTRACO). Appropriate interconnection agreements will be signed between the relevant parties to operationalize the connections.

Technical Analysis: CTT

96. CCGT technology in power generation is well established and proven. CTT will deploy the most efficient CCGT technology that maximizes efficient use of the available natural gas and minimizes the carbon footprint of power generation. The proposed solution represents a reasonable trade-off between efficiency and system requirements for power supply security and reliability. The gas supplier (SPM/ENH) commissioned an independent gas resource assessment, which was completed in late 2018. The assessment confirmed that with a probability of more than 80 percent, there are sufficient recoverable gas resources in the PSA gas fields to fuel CTT for 25 years, which leads to a conclusion that the risk of gas supply volumes is acceptable. This is comparable to the typical level of security of gas supply found in long-term liquified natural gas (LNG) purchase contracts, which are often used to fuel gas-fired power plants in gas-importing countries.

Economic Analysis

97. The economic analysis of the project was developed following the standard cost-benefit analysis to determine the net economic benefit of the proposed project. The economic benefits of the project derive from the forecast of EDM selling the electricity generated at CTT to the domestic and regional market. The economic benefits are quantified by estimating the avoided cost of domestic and regional generation. The results of the economic analysis show that the project is economically viable, with an economic internal rate of return (EIRR) of 14.6 percent and net present value (NPV) of US\$107 million (at 10 percent discount rate). The results are notably improved when global environmental benefits through greenhouse gas (GHG) abatement are included; the EIRR increases to 17 percent with an NPV of US\$152.1 million (refer to Annex 3).

Table 2. Economic Analysis Highlights

Composition of NPV	Net Value at Discount Rate of 10% (US\$, millions)
Total economic costs	1,349.5
Total economic benefits	1,456.5
GHG abatement benefit	45.1
Net benefit without GHG	107.0
Net benefit with GHG	152.1
EIRR without GHG	14.6%
EIRR with GHG	17.0%

98. **Sensitivity analysis.** A switching value analysis has been carried out to test the robustness of the project to changes in key input parameters. The analysis shows that the project remains economically feasible as long as (a) the commissioning of the CTT Project is not delayed by more than three years; (b) cost overruns in the transmission line do not exceed 26 percent of the project’s capital expenditures (CAPEX); and (c) the domestic avoided cost of generation does not decrease more than 11 percent across

the entire life span of the project. Based on recent experience in similar World Bank-financed projects, we do not anticipate these to be likely scenarios.

Financial Analysis of the TTP

99. The financial analysis of the TTP is based on the TTP financial model prepared by EDM, which the World Bank team has reviewed and found satisfactory. The TTP financial model is developed to determine the transmission tariff required for financial viability of the TTP because the actual transmission tariff for the TTP will only be determined after the EPC contractor for the project is procured. The financial model calculates a levelized tariff required to meet a 2 percent internal rate of return (nominal in U.S. dollar and after tax, basically similar to the weighted average cost of capital from a SNTE perspective). The financial model shows, by design, that the TTP is financially viable and derives a levelized cost of transmission of US\$7.75 per kW per month (in January 2018 prices), equivalent to US\$1.31 per kWh (assuming transmission of 2,800 GWh per year).

100. Table 3 presents a summary of key debt sustainability ratios included in the financial model: debt service coverage ratio (DSCR) with a minimum required value of 1.25 against a forecast minimum of 1.85, interest coverage ratio (ICR) with a minimum required value of 1.10 against a forecast minimum of 5.69, and the loan life coverage ratio (LLCR) with a minimum required value of 1.25, equal to the forecast value in the latest model.

Table 3. TTP Key Ratios

Financial Covenants	Target	Min. Value
DSCR (senior debt)	1.25 x	1.85 x
ICR (senior debt)	1.10 x	5.69 x
LLCR (senior debt)	1.25 x	1.25 x

Source: EDM.

Financial Analysis of EDM

101. **Financial sustainability of EDM is critical for the overall performance of the power sector, including for ensuring bankability and the financial closure of the CTT Project.** The domestic electricity market in Mozambique is dominated by EDM,²⁶ which is the single-buyer/seller of electricity. Under the current trading arrangements, IPPs, including both state-owned HCB and privately owned firms, cannot sell electricity directly to domestic end consumers. EDM is responsible for adequacy of electricity supply in the domestic market, dispatch, transmission network expansion, and O&M of the transmission and distribution networks (with the exception of MOTRACO’s transmission system and transmission lines that belong to HCB). Therefore, the financial viability of the power sector and sustainability of sector investments rest on the financial health of EDM. EDM’s financial situation is particularly critical for CTT given the multiple roles that EDM is assuming in the project.

102. **The financial situation of EDM is weak due to a combination of external and internal factors.** EDM has operated with a net loss since 2013 despite cumulative tariff increases of 127 percent over 2015–2018. The financial losses were caused by the escalating fuel and energy purchase costs (aggravated by a sharp depreciation of the Mozambique currency over the same period) and worsening of operational inefficiencies, which have outpaced tariff increases. The operating losses, coupled with accumulation of

²⁶ EDM market does not include Mozal, which has special supply arrangements with ESKOM of South Africa, through MOTRACO.



significant receivables in 2016–2017 due to nonpayment by some bilateral trading partners and increased financing of electrification, have resulted in significant cash deficits and accumulation of payables. The payables to IPPs and other suppliers, as of December 31, 2018, stood at US\$450 million. EDM also has sizable debt, which stood at US\$1.1 billion as of December 31, 2018. The combination of the above factors burdens EDM’s balance sheet and constrains its borrowing space.

Table 4. EDM’s Financial Performance (selected indicators – 2018 figures are provisional)

	Unit/Description	2013	2014	2015	2016	2017	2018(p)
Net profit	US\$ millions	-2.3	-1.8	-196.1	-13.8	-47.2	-57.3
Operating cash flow (OCF)	US\$ millions	111.0	267.4	-163.4	36.4	-147.6	-30.7
Profitability ratio	Earnings before interest, taxes, depreciation and amortization (EBITDA)/revenue	24%	23%	3%	2%	-4%	0%
Quick ratio	Cash and receivables/current liabilities	0.57	0.52	0.46	0.43	0.36	0.24
Leverage ratio	Debt/equity	1.02	1.87	3.13	5.58	4.21	5.04
Solvency ratio	DSCR	0.35	0.10	-0.41	-0.37	-0.61	-0.33

Note: (p) provisional, based on EDM’s provisional 2018 management accounts dated March 3, 2019.

103. **The GoM is implementing an FSP that comprehensively addresses the financial viability of EDM.** The FSP encompasses measures to improve operational efficiency of EDM, increase revenues in a socially sustainable manner, strengthen EDM’s balance sheet, and finance electrification in a financially sustainable manner. The implementation of the FSP should eliminate the cash deficits of the power sector from 2021 onward, allowing EDM to fully meet its recurrent payment obligations to suppliers, service debt, and gradually repay the accumulated arrears to IPPs. The key elements of the FSP include the following:

- **Tariff adjustment.** Enacting an average 25 percent increase in end user tariffs followed by adjustments in response to changes in exogenous factors, such as changes in electricity purchase costs and other external impacts (exchange rate variations, domestic inflation).
- **Operational efficiency improvement.** Reducing technical and commercial losses from about 29 percent in 2018 to 20 percent in 2024 together with strengthening of the transparency and accountability in the EDM’s corporate management.²⁷
- **Ensuring sustainable funding for electrification** by approving the NES, which limits EDM’s responsibility for funding electrification to its connection service area, defined as a 200 m band centered around the existing distribution lines. The cost of electrification beyond EDM’s service area is to be borne by the GoM (including additional funding mobilized from IDA and other donors).
- **Recapitalization of at least 50 percent of the GoM onlent debt to EDM** to strengthen EDM’s balance sheet and improve its solvency and leverage ratios.

²⁷ Losses are calculated by deducting export from gross supply available in Mozambique, and with exports also deducted from the electricity use total. Based on EDM’s audited accounts for 2017, the figure of losses was 27.1 percent.



104. **GoM has made good progress with the implementation of the FSP.** The GoM enacted 25 percent tariff increase for high and medium voltage customers on December 1, 2018, and average 25 percent tariff increase for low voltage customers on March 1, 2019. This followed several substantial tariff increases since 2016. The GoM approved the NES in November 2018 limiting EDM's responsibility for financing electrification.

105. **Improving operational efficiency, adhering to the NES and foreign currency depreciation are the three factors most critical for the financial situation of EDM.** Sensitivity analysis of key variables affecting EDM's financial sustainability indicate that if EDM's losses are reduced by only five percent over the next five years (instead of ten percent projected under the FSP), or if the local currency depreciates by an additional ten percent (over and above the base case exchange rate forecast) without tariff adjustment, or if EDM continues to finance electrification investments equivalent to the level of 2018, EDM's key financial ratios will deteriorate. The impact of lower domestic demand is limited due to EDM's ability to export electricity to the SAPP market. Debt recapitalization, while useful for strengthening EDM's balance sheet and providing headroom for future borrowing, does not significantly affect the financial deficit of EDM.

106. **The World Bank's sizable engagement in the power sector of Mozambique facilitates implementation of the FSP and helps mitigate the key risks.** Specifically, the World Bank is supporting implementation of the NES with the recently approved ProEnergia Project. The ongoing World Bank-financed PERIP directly supports loss reduction efforts of EDM (see Box 3.1 in Annex 3). The World Bank is also providing technical assistance funded by the Energy Sector Management Assessment Program (ESMAP) to provide capacity building and implementation support for the overall FSP, including the introduction of tariff setting methodology that will include automatic adjustments for exogenous factors. The TREP project includes technical assistance for strengthening the regulatory capacity in the sector.

107. **The World Bank will closely monitor the continued implementation of the FSP and the financial viability of EDM.** In addition to the monitoring exercised as part of supervision of the implementation progress of PERIP and ProEnergia, the World Bank will monitor EDM's financial viability through a set of financial performance indicators, which will be included as conditions precedent to the signing of the IDA guarantees (anticipated by end 2020). Further to focusing GoM and EDM attention on the implementation of the key measures of the FSP, these conditions precedent will have an important signaling role to the private sector that efforts are under way toward EDM's improved financial situation by the time of the financial close of CTT (and beyond). The financial covenants proposed as part of the conditions' precedent (and subject to confirmation) will include the following:

- **Quick ratio** determined based on receivables and payables accumulated from 2019 onwards, of at least 0.4 to ensure that EDM has sufficient liquidity to meet its current financial obligations and gradually reduce the accumulated arrears.
- **EBITDA margin** of at least 18 percent to ensure that EDM receives sufficient revenues to cover its recurrent costs and adequately meet its debt service obligations.

108. **EDM should be able to achieve both of the above conditions' precedent upon satisfactory implementation of the FSP.** The increase in tariffs combined with reduction of technical and commercial losses should allow EDM to improve its EBITDA margin. Increasing margins and adherence to the NES when financing electrification should ensure that EDM remains current with its payments to suppliers, including IPPs, improving the quick ratio. Sensitivity analysis of key variables affecting EDM's financial sustainability indicate that if EDM's losses are reduced by only five percent over the next five years (instead of ten percent projected under the FSP), or if the local currency depreciates by an additional ten



percent without tariff adjustments, or if EDM continues to finance electrification investments equivalent to the level of 2018, EDM's key financial ratios will deteriorate. The impact of lower domestic demand is limited due to EDM's ability to export electricity to SAPP market. Debt recapitalization, while useful for strengthening EDM's balance sheet and providing headroom for future borrowing, does not significantly affect the financial deficit of EDM.

B. Fiduciary

(i) Financial Management

109. A Financial Management Assessment was undertaken to evaluate the adequacy of the proposed TTP financial management (FM) arrangements. The assessment was carried out in accordance with the World Bank Policy and Directives for Investment Project Financing (IPF) and the World Bank Guidance on FM in World Bank IPF Operations issued on February 28, 2017. The proposed project will be implemented by MIREME, EDM, and SNTE. MIREME and EDM have gained experience over time in implementing the following World Bank-financed operations: Energy Reform and Access Project (P069183, closed on March 31, 2011), Energy Development and Access Project (P108444, closed on June 15, 2017), and PERIP (P158249, ongoing). EDM has established a PIU for the TTP, which includes EDM staff, TEC staff, and an external consultant. The PIU will be transferred to SNTE. Concerning SNTE, the arrangements (accounting staff and systems, internal control produces, and project external auditors) are not yet in place as it is a newly established implementing agency and it is yet to become fully operational. However, this entity is fully owned by EDM, which has experience in managing World Bank-financed operations. The overall FM arrangements, once the mitigation measures are implemented, would be considered adequate. The FM risk rating was assessed as Substantial. Some mitigation measures are proposed accordingly, as detailed in Annex 5, which also describes the requirements related to budgeting, staffing, accounting, internal controls, auditing, and financial reporting.

110. To facilitate disbursement of IDA funds, three Designated Accounts (DAs) will be opened and maintained. MIREME, EDM, and SNTE will open DAs in U.S. dollars with the Bank of Mozambique (Central Bank) to receive funds from IDA. From the DAs, MIREME, EDM, and SNTE will (a) make payments to contractors, consultants, and suppliers of goods and services and (b) transfer funds to the DA subaccount in local currency, to be opened with a commercial bank in Mozambique, to facilitate payments of local eligible project expenditures. All payments to local resident suppliers and consultants will be made strictly in local currency in compliance with Mozambique rules and regulations. Disbursements of IDA funds will be done on a transaction basis. An initial advance will be made into the DAs upon the effectiveness of the Financing Agreement, based on the DA ceiling and at the request of MIREME, EDM, and SNTE. The advances will be based on the estimated cash requirements to meet the project expenditure for the first four months for each implementing agency. As currently Mozambique has a long outstanding Lapsed Loan, no advances will be released until the full settlement of the outstanding balance of the Designated Account under the Lapsed Loan. Once lapsed loan is settled advances will then be released in accordance with Disbursement and Financial Information Letter. The option of disbursing the IDA funds through direct payment, reimbursement, and special commitment are be available for the project. The World Bank will issue the Disbursement and Financial Information Letter, which will specify the additional instructions for withdrawal of the proceeds of the IPF.

111. The implementing agencies will prepare semi-annual unaudited interim financial reports (IFR) (disclosing information related to all project funds and expenditures, including those related to the resettlement costs) and provide such reports to the World Bank within 45 days of the end of the calendar



semester to which they relate. The project Financial Statements will be audited annually by independent auditors acceptable to the World Bank, in accordance with International Standards on Auditing as issued by the International Auditing and Assurance Standards Board (IAASB) within IFAC. The audit report together with Management Letter will be submitted to the World Bank within six months after the financial year-end; that is June 30th of each following year.

112. **Effectiveness conditions.** SNTE should, by effectiveness, (a) appoint a financial manager with skills and experience acceptable to the World Bank and (b) develop and adopt the POM, including FM procedures.

113. **Dated covenants.** SNTE should, within three months after project effectiveness, (a) appoint one project accountant with skills and experience acceptable to the World Bank and (b) purchase and install an automated accounting package. The external auditors acceptable to the World Bank should be appointed within four months after the effective date and the internal audit department to be established within twelve months after project effectiveness.

CTT Project

114. No disbursement from IDA will take place for the CTT component, and thus FM rules for World Bank-financed projects are not applicable to this component, which will be implemented and financed by the private sector. However, IDA will provide payment guarantees (to facilitate CTT financing) for Gas Supply Agreement and Tolling Agreement. CTT shall maintain adequate FM of its operations, which includes accounting staff and systems, internal control produces, and project external auditors. The financial performance of the CTT Project will be monitored through regular progress reports (including financial information) and its financial statements will be audited by a private audit firm acceptable to IDA, in accordance with International Standards on Auditing as issued by the International Auditing and Assurance Standards Board. The CTT FM arrangements shall be reviewed by IDA and recommendation for any improvement will be discussed and agreed with CTT.

(ii) Procurement

115. **Procurement arrangements.** The proposed procurement activities for the project will be managed by SNTE. EDM has extensive experience with the implementation of World Bank-funded operations as well as from other multilateral and bilateral international financing agencies. EDM has an implementing agency with all required core competencies for project management, including fiduciary. EDM has established a PIU for the TTP, which includes EDM staff, TEC staff, and an external consultant. The PIU will be transferred to SNTE.

116. **PPSD summary.** EDM had commissioned a Project Procurement Strategy for Development (PPSD) for the project, with support from the World Bank. The PPSD has thoroughly reviewed the market for the proposed project and informed the most appropriate methods to approach the market and be able to achieve value for money with the intended procurement packages. While the project is co-financed by other financiers, the market approaches to be used by the other financiers are consistent with the recommendations laid out in the PPSD. Risks identified in the PPSD include the following: (a) delays in concluding the procurement phase of the TTP caused by slow response times for contract approvals from government agencies together with delays arising from differing procurement requirements from donor funding agencies in a multi-donor funded project environment; (b) the potential for contractors to not have sufficient resources to efficiently construct substations in multiple locations simultaneously; (c) a low threshold of decision making within EDM causing delays in the approval process in the various phases of TTP procurement; (d) lack of a coherent internal operational strategy with respect to the management



of critical spare parts and the standardization of key equipment specifications such as transformers, reactors, switchgear, insulators, and so on; (e) high levels of bureaucracy in government agencies and in particular customs clearance, company registration with respect to enabling timely payment of advance payments, and labor permitting; (f) unknown subsurface ground conditions for substations and static compensator units that will cause EPC contractors, in a competitive bidding environment, to pass this risk back to the TTP resulting in probable claims for time and cost; and (g) project risk with respect to unknown subsurface conditions for overhead line (OHL) that is unavoidable until such time as line designs are completed by the OHL contractor. Mitigation measures were recommended to reduce the likelihood of occurrence of these risks.

117. **Procurement capacity.** The procurement capacity within EDM was reviewed and found to be adequate for project implementation. In addition to the EDM personnel, an Owner's Engineer with core technical and fiduciary competencies is being recruited to manage the implementation of the procurement function of the project, under terms acceptable to the World Bank. In view of the extensive technical assistance being provided by the Owner's Engineer, the risk associated with the implementation is Moderate. The World Bank will continue to support and monitor the implementation of the project and provide advice as required, throughout the implementation.

118. Procurement for the proposed operation will be carried out in accordance with the 'World Bank Procurement Regulations for IPF Borrowers', dated July 1, 2016, revised August 2018, and the provisions stipulated in the Financing Agreement. Furthermore, 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 July 2016, will apply.

119. The country's current practices for making payments abroad may also affect the performance of the procurement function of the project, as substantial delays are occurring throughout the portfolio. As the project will have large value contracts, the use of direct payment will mitigate the delays. In addition, the fulfillment of the requirements of the Attorney General's office and the Administrative Tribunal may lead to delays in contract signing after completion of the evaluation process and of the contract award. It is instrumental that the time required for processing by the Attorney General's office and the Administrative Tribunal is carefully considered in the activities planning process.

120. **Risk.** The overall procurement risk associated with the project, in view of the risks indicated earlier and the experience of EDM in previous World Bank-financed projects and associated with the sourcing of qualified technical assistance throughout the implementation, is rated **Moderate**.

121. Annex 4 has additional details.

C. Safeguards

(i) Environmental and Social Safeguards

Project Location and Salient Physical Characteristics Relevant to the Safeguard Analysis

122. **TTP.** The transmission line from Vilanculos to Maputo will pass mostly through undifferentiated woodland, miombo woodland natural habitat with a low population density, agricultural land, and semi-urban areas of low biodiversity value. The line passes near a critical habitat area of miombo hardwood forest but will not cross it. The selected line corridor does not pass through conservation areas, important wetlands, or important bird areas. The line will cross 13 districts in the provinces of Maputo, Gaza, and Inhambane. All the districts have a large young population and small elderly population and are ethnically and religiously diverse, especially in Maputo Province. All the localities along the line corridor have at least



one primary school, but less than half of the localities have a health center. Along the around 563 km TTP corridor, an estimated 898 social units are expected to be affected by resettlement (including physical, economic, permanent or temporary) as a result of the TTP. The affected social units include: (i) 410 households (primary residences) which will be permanently physically resettled; (ii) 167 units (103 houses under construction,²⁸ 41 agricultural fields, 11 businesses, nine small church buildings, and three public infrastructures) which will be permanently economically resettled; (iii) 307 units (agricultural fields) which will be temporarily economically resettled; and (iv) 12 family graves, and two community cemeteries. The small church buildings will be relocated. Graves and cemeteries will be secured and granted access after construction or relocated as agreed with affected families/communities. Other impacted assets include fruit trees, crops and other livelihood assets. The most common diseases in the project area are malaria, tuberculosis, asthma, diarrhoea, cholera, sexually transmitted diseases, and HIV/AIDS. Almost a quarter of households surveyed reported having a member with a chronic illness. Only 7 percent of households are connected to electricity. The households use mainly firewood and charcoal for cooking and candles, kerosene, and torches for lighting. Water is sourced primarily from public taps and standpipes and boreholes. Sanitation facilities are primarily septic tanks in peri-urban areas and latrines and open areas in rural areas. In the districts of interest, the most important economic activity is agriculture. Other economic sectors in the provinces include fishing, tourism, and industry. The majority of the households surveyed stated a monthly income lower than MZM 5,000 (about US\$83 per month). With an average of 4.2 members per household, this amounts to an income significantly below the poverty line of MZM 120 per day per person.

123. **CTT.** The proposed site of the CTT is located in the District of Inhassoro, in the northern part of the Inhambane Province, about 30 km southwest of the town of Inhassoro, approximately 20 km inland of the coastline. The site is about 30 m above the sea level. The vegetation in the project area consists mainly of a mixture of tall and short woodland and bush with grass areas and river habitat alongside the Govuro River. Most of CTT, as well as the 25 km transmission line connecting the plant to the TTP at Vilanculos substation, and the plant's ancillary infrastructure are located on land that has been transformed through human activity with limited natural habitat that will be disturbed by the project. The general project area covers 12 villages and communities. The proposed CTT site and ancillary facilities are expected to affect at most approximately 50 houses and 55 production plots. There is high unemployment in the project area and literacy levels are low. Women and elderly people are the most vulnerable groups. Subsistence agriculture is indicated as the principal economic activity, followed by poultry and small-scale fishing. Access to service is similar to that described earlier for the rural localities of the TTP area. The towns of Inhassoro and Vilanculos have developed into popular tourist venues for both holiday and fishing enthusiasts. The Bazaruto Archipelago, a group of six islands that forms a national park and considered one of East Africa's best and Mozambique's premier fishing destination, is located approximately 10 km offshore between the cities of Vilanculos to the south and Inhassoro to the north.

124. All ancillary facilities (beach landing for transporting equipment, jetty and offshore anchoring and barge routes, access roads and bridges, transmission lines, water pipelines, any new flowlines/gas pipelines, borrow pits and quarries, waste disposal sites, worker camps, equipment staging areas, and so on) have been treated as part of the project for the Environmental and Social Impact Assessment (ESIA) and mapped (where possible), evaluated, and included in the ESMPs and related plans and method statements. Specific provisions for site selection, management, and decommissioning of ancillary facilities

²⁸ Of the 103 houses under construction, some may be primary residences and if so confirmed will be reclassified as part of the physical relocation count.



(access roads, borrow pits, disposal areas, camps, and so on) have been included.

125. The heavy equipment for the power plant and transmission substations at Temane and Vilanculos will need to be transported from the countries of origin to the vicinity of Inhassoro town by ships. The equipment will be offloaded to barges, which will bring it onshore to a landing site near Inhassoro where it will be loaded on trucks and transported to the power plant and substation sites by roads. The sea area around Inhassoro is habitat for a number of species of conservation concerns, including some critically endangered species. Bazaruto Archipelago National Park (BANP), a marine protected area, extends also to the sea waters approximately 2-3 km offshore from Inhassoro and Vilanculos. It is understood that the vessel will not be anchored for extended periods of time and will most likely be anchored for 1-2 days at a time to offload the equipment over approximately 8-15 months, although this will be defined once the EPC construction contract is in place and preferred manufacturers of the various large and oversized power plant components known. The ESIA study refers to two previously used anchoring points within the BANP, and three candidate landing sites near Inhassoro considered for the CTT project. CTT has confirmed that there are technically feasible options to transport heavy equipment for CTT without affecting the BANP, by unloading the equipment from ships at the port of Beira and transporting it by barge from Beira to a landing site in or near Inhassoro town. Additional studies are under way to select acceptable overall transport route that would minimize the impact and the risk to the critical natural habitat. The additional studies are to be completed before IDA guarantees are signed (ahead of the construction start, expected in early 2021) and will need to be acceptable to the World Bank and consistent with Performance Standards under the World Bank's OP 4.03 requirements.

Borrower's Institutional Capacity for Safeguard Policies

126. **TTP.** EDM has established an Environmental and Social Unit (ESU), which will be further supported under Component 3. This component will include development and implementation of a corporate Environmental and Social Management System (ESMS) for EDM/SNTE.

127. As part of the TREP, additional training is envisaged both for EDM and SNTE staff, customized to the project's specific requirements. EDM is in the process of hiring a team of consultants specialized in ESHS to design ESMS for EDM/SNTE and oversee its implementation. The strengthening of the ESU and implementation of the ESMS will ensure the availability of qualified safeguards and health and safety specialists and their capacity to handle the safeguards instruments that will guide the implementation of the project in full compliance with the World Bank Safeguards Policies; applicable World Bank Group Environmental, Health, and Safety Guidelines; and the applicable Mozambique environmental and social regulations.

128. In addition, engineering/safeguards/health and safety supervision and monitoring and evaluation consultants will be hired to support SNTE in the implementation of the safeguards instruments, ESMPs and Health and Safety Plans, and the GBV/sexual exploitation and abuse (SEA) prevention and response action plan. The ESMPs will include specific requirements for contractors, including, among others, the preparation and enforcement of a Labor Management Plan; Influx Management Plan; Camp Management Plan; Grievance Redress Mechanism (GRMs) for project-affected persons (PAPs) and for workers; code of conduct (including standards and sanctions against SEA/GBV, sexual abuse/exploitation of minors, child labor, forced labor, and discrimination based on gender, race, religion, and so on); and community and workers' health and safety.

129. **CTT.** The CTT project sponsors will be responsible for the oversight and implementation of the environmental and social aspects of the project. The CTT project sponsors will hire specialists to finalize and implement key management plans as needed, such as the RAP and the Biodiversity Management Plan.



In addition, CTT will add staffing sufficient to manage the environmental and social risks of the project, including implementation of the ESMS. The project's Environmental and Social Action Plan (ESAP) provides for updating the management plans and hiring the personnel in accordance with relevant milestones.

Applicable World Bank Safeguards Policies

130. The project is classified as Category A. World Bank safeguards policies apply to the TTP component (a public sector investment), for which the following World Bank Safeguards Policies are triggered: OP/BP 4.01 - Environmental Assessment, OP/BP 4.04 - Natural Habitats, OP/BP 4.11 - Physical Cultural Resources, OP/BP 4.12 - Involuntary Resettlement, and OP/BP 4.36 - Forests. The World Bank's OP/BP 4.03 - Performance Standards for Private Sector Activities applies to the CTT component (a private sector investment)²⁹.

131. The preparation status of the safeguard instruments is described in the following paragraphs.

TTP Safeguard Instruments

132. EDM has prepared a site-specific ESIA/ESMP in accordance with World Bank Safeguards Policies and ESHS guidelines. The ESIA/ESMP has been consulted upon in Xai-Xai, Inhambane, and Maputo. The ESIA/ESMP has been disclosed on the World Bank website on February 22, 2019, and by EDM on March 18, 2019. The Project ESAP and all other plans and method statements further detailing the mitigation measures are included in the ESMP, with indication of the timeline for their implementation and the respective reporting requirements.

133. A RAP for TTP was prepared by EDM and disclosed on May 3, 2019 at the World Bank website and on May 6, 2019 in country at EDM website. The estimated costs of the RAP of US\$39 million, of which US\$17.1 million for land expenditures and cash compensation and other assistance paid in cash for involuntary resettlement will be financed by the World Bank. Funding for such compensations to PAPs will be channeled through the designated account for the proposed project. Compensation payment cheques will be processed by the PIU. The PIU announces to the individual PAPs the dates and time for issuing the payment cheques. The PIU will have a safeguards team who have experience in payment of compensation and provision of other resettlement support to PAPs. Before the effectiveness of the IDA Financing Agreement for the Project, a Project Implementation Manual will be prepared to clarify the administrative process and accountabilities and responsibilities for use of IDA funds to pay cash compensation and assistance under the TTP RAP.³⁰

CTT Safeguard Instruments

134. The CTT Project sponsors have prepared an ESIA, including a social impact assessment (SIA) in order to identify and manage potential environmental and social impacts of the project. For CTT and its ancillary facilities, the ESIA and a Resettlement Policy Framework (RPF) have followed the World Bank Performance Standards (OP 4.03). Consultations with local communities within a 5-km buffer of the area

²⁹ OP 4.10 is not triggered because there are no groups in Mozambique that qualify as indigenous as defined by OP4.10.

³⁰ The resettlement planning for the TTP and CTT was based on a 100 meter wide right of way (RoW) for the needed infrastructure to account for the partial protection zone (PPZ) imposed by operation of Mozambique's Land Law. EDM has requested a reduction of the partial protection zone to 50 meters and this is under consideration by the Council of Ministers. Should the request be granted, the impacts and costs of resettlement will be reduced, and the RAP will be updated accordingly. As per the RAP, all PAPs residing in the 100-meter PPZ will be resettled and compensated. PAPs with agricultural plots will have the option to receive other land or to remain in the PPZ under an agreement with EDM that provides for continued use for agricultural purposes under restrictions agreed with EDM and licenses for special use as required by the Land Law. EDM will obtain the licenses in favor of the PAPs and the agreement will stipulate that should a PAP be resettled or subject to further use restrictions by EDM or any other agency, EDM will ensure that the PAP is resettled and compensated with equivalent land.



of the project site were conducted during preparation of the ESIA, as well as with institutional stakeholders, particularly local authorities in Inhassoro, Inhambane, Maimelane and Maputo. Stakeholders' concerns were documented and addressed, where possible, in the scope of work and proposed mitigation measures. The CTT ESIA and the RPF were disclosed on the World Bank's website on April 19, 2019 and on April 22, 2019, respectively. Both documents were disclosed on April 19, 2019 by CTT sponsors.

135. For both investment components of the project—TTP and CTT, where exact locations or well-defined corridors and the PAPs cannot be known at the appraisal stage, special provisions have been prepared and included in the ESMPs and RAP for the TTP and the RPF for CTT. As the site for each facility is identified, a screening and a site assessment will be conducted to finalize selection of the location of the project component involved, including minimizing environmental, resettlement, and livelihood impacts where possible. Once the site is defined, a final assessment of impacts and census of the people and assets that will be affected will be carried out. Based on the results, site-specific ESMPs and resettlement/compensation and livelihood restoration plans will be developed and implemented for the specific site following procedures for approval and disclosure set out in the ESMP/RAP/RPF. Before the start of any construction, resettlement and compensation measures will be fully implemented and arrangements will be in place to implement the ESMP.

136. The TTP and CTT will have project-level GRMs described in their respective ESIA, RAP, and RPF. These mechanisms have local-level participatory grievance management committees and will be managed, monitored, and reported on by SNTE for the TTP and by the CTT management for CTT. EDM/SNTE and CTT Project sponsors' ESHS team are working together on a GBV/SEA risk assessment and action plan, which will include enhancing/complementing the GRM to handle GBV/SEA cases and responses. The Project GRM should also be informed by and benefit from the mapping of GBV services and response providers to GBV survivors that will be prepared for the project by a specialized GBV consultant. Contractors will be required to have systems in place to respond to worker and community complaints and to register any complaints received in the respective client's GRM management system for follow-up and reporting.

(ii) Natural Gas Supply

137. Natural gas will be supplied to the CTT power plant from the nearby gas fields developed by the PSA Gas Sellers. The PSA gas fields are not an associated facility to the CTT project under the Performance Standards because the planned development of the PSA concession by the Gas Sellers has been in consideration of a phased approach for commercial sale of multiple products to multiple customers and markets.

138. The PSA concession between SPM/ENH and GoM was signed in 2000 and a Field Development Plan (FDP) for the PSA concession was submitted to GoM in February 2015. The FDP included production and sales of natural gas, light oil, liquified petroleum gas (LPG), and condensate. Tranche 1 of Phase 1 of the FDP was an integrated light oil and natural gas project, which included also production of LPG, while Tranche 2 of Phase 1 proposed, depending on the results of Tranche 1, the construction of a pipeline for the export of condensate through a floating storage and offloading (FSO) platform. The GoM allocation of natural gas to CTT in February 2016, as part of the FDP approval, prioritized customers and markets for natural gas within the overall phased PSA concession development approach.

139. Due to the close linkages between CTT and PSA gas fields, the World Bank will seek representations and warranties/covenants regarding the environmental and social management of the gas fields. The upstream PSA gas fields are within the areas of influence of the CTT component of TREP



and as such presents certain corporate reputational risk for the World Bank in its implementation of TREP. The World Bank has done an initial review and met with the Gas Sellers to discuss its environmental and social standards and application to the PSA gas fields, which indicate that the Gas Suppliers have a credible ESMS based on IFC Performance Standards. A more thorough assessment/audit of their ESMS will be completed before the signing of the GSA Guarantee. The World Bank will seek to negotiate with the PSA Gas Sellers and include within the Project Agreement with the Gas Suppliers representations and covenants regarding the environmental and social management of the gas fields which are expected to include: (i) that the PSA gas fields have been developed in accordance – and will continue to comply -- with all relevant local laws and the PSA Gas Sellers environmental and social management system (ESMS); and (ii) that the PSA Gas Sellers will provide the World Bank with regular monitoring reports on the implementation of the ESMS. The World Bank is not proposing to engage in active field supervision and would rely on the ESMS monitoring reports provided by the Gas Suppliers. In case of any observed non-compliance with their ESMS, the World Bank would have, through the Project Agreement for the IDA Guarantee, an ability to request the Gas Suppliers to remedy the non-compliance. If the situation remains uncured, the World Bank would have the right to suspend, or ultimately may terminate the Guarantee, for the GSA. These proposed mitigation measures should ensure the World Bank can appropriately manage the reputational risks.

140. Additional risk mitigants include CTT's commitment to managing assessed cumulative impacts resulting from the PSA gas fields, among other developments in the area of the project, and the IFC's participation as a minority equity partner in the Petroleum Production Agreement (PePA) concession which has significant geographic overlap with the PSA concession area. The PePA concession is between GoM and an unincorporated joint-venture including Sasol Petroleum Temane (SPT), Mozambique Hydrocarbons Company (*Companhia Moçambicana de Hidrocarbonetos*, CMH), ENH and the IFC.

(iii) Gender

141. EDM conducted a general review about women's participation in EDM's operations by the end of 2017. The results indicated that women represent 17 percent of the workforce; 40 percent of women perform activities related to their training areas; 25 percent of women work in technical areas; and 57 percent of women have a university degree, 34 secondary technical level, and 9 percent basic education. Around 50 percent of women have 12 or more years of service at EDM. One out of four Executive Board Members is a woman. EDM is carrying out a gender audit to assess the challenges in terms of gender participation, diversity, and equality. Based on the results, EDM will formulate a corporate gender strategy to achieve at least 40 percent of gender index by 2030. EDM corporate gender strategy will apply to SNTE as well.

142. To advance women's participation in the workforce, EDM has initiated the following programs: (a) increased awareness among the next generation workforce of potential economic activities or jobs through the 'Bring your Daughter to Work' program; (b) outreach to high school-level educational institutions to attract youth to the careers relevant for EDM; (c) technical visits to power sector facilities (such as generation plants or substation) for women in EDM's workforce, to increase their understanding of the business; (d) increase of women's participation in management positions, through the introduction of gender targets in the competitive selection processes; (e) preferential hiring for technical positions recently advertised (for example, *Central Térmica de Maputo*); and (f) creation of a Young Professional Program. The World Bank is supporting these efforts through the recently approved access project ProEnergia (P165453). The proposed TREP will further support the implementation of the gender strategy ('Engendering EDM'), with targeted interventions. Under the project, a target has been set to increase the



number of females hired under the Young Professionals Program at SNTE. This will enhance the female technical talent pool and contribute to the closure of the identified gender gaps.

(iv) Gender-Based Violence

143. The contextual risk for GBV in Mozambique is similar to other Sub-Saharan Africa countries. According to the latest Demographic and Health Survey (DHS), one in every three women have experienced physical or sexual violence at some point in their lifetime, with even higher rates found among young women ages 20–24 in Mozambique. Mozambique has the 10th highest early marriage rate in the world with almost half of women ages 20–24 married before age 18 and one in seven young girls ages 20–24 married before turning 15. About 40 percent of adolescent women were mothers or pregnant, and this level of adolescent motherhood/pregnancy has barely changed in the last 15 years. Taking into consideration the contextual issues as well as the project activities, the GBV risk assessment tool has been applied to the project to identify necessary mitigation measures that need to be included as per the World Bank's Good Practice Note for projects with civil works (see Annex 8: Status of GBV Risk Rating and Recommended Actions). The risk is rated as substantial. Also, GBV risks and identification measures have been included in the ESAs, RPF and RAP and will be reinforced by a specific Prevention and Response Action Plan. Such measures include strengthening of the implementing agency knowledge of GBV through capacity-building activities and requiring that a Code of Conduct with specific rules and sanctions for GBV be presented during bidding processes and be signed by all workers before any civil works start. The ESMPs for both the TTP and CTT include community health and safety components that integrate mitigation measures for GBV/SEA risks, such as contractors' code of conduct, labor influx management, and community awareness. The Client has also hired a specialized consultant to carry out a specific GBV Risk Assessment and a Mapping of GBV Services and Response Providers to GBV Survivors around the Project and will prepare a prevention and response GBV Action plan consistent with the World Bank policies and the GBV Guidance Note, in coordination with the implementing agency and the Project team. The GBV Action Plan is required to be approved by the Client (with the Bank's no-objection) and the recommended measures put in place before construction mobilization starts. Additionally, there will be specific GBV sensitive channels included in the GRM and requirements for training of GRM responsible personnel to handle such cases.

(v) Citizen Engagement

144. EDM has committed to develop a Stakeholder Engagement Plan (SEP) as part of the ESMP, which will be in place before the contractors are recruited. The SEP will be approved by the World Bank and implemented throughout the project. The regular discussions with stakeholders and community groups can provide feedback regarding the construction process and associated activities and impacts. Meetings with various community groups within the right-of-way—including women, youth, and vulnerable populations—can signal any emerging issues related to the project's impact and enable EDM to address them proactively. The SEP will also offer an avenue for the communities to ask questions and receive answers related to project implementation. The community feedback will be reviewed on a quarterly basis and help moderate activities and mitigation measures in the communities.

145. The regular consultations will be complemented by a comprehensive GRM that will be administered by EDM, which will have designated staff responsible for implementation of the SEP and operation of the GRM. The GRM will address inquiries and grievances related to various aspects of project implementation, including environmental and social safeguards. EDM will regularly report on complaints received and responded to. It will publish an annual report on grievance redress and how the issues were resolved. Relevant indicators are included in the Results Matrix. The RAP and ESMP provide for detailed



GRM processes, including PAP participation in the first instance and appeals to EDM Directors and an Arbitration Committee, if escalation is necessary.

146. CTT will also implement a SEP and GRM with similar characteristics.

(vi) Grievance Redress Mechanisms

147. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB'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 WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB 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 Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (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.

(vii) Climate and Disaster Risk Screening

148. The CTT components will include IDA guarantees for electricity offtake from -- and gas supply to - the 400 MW gas-to-power generation plant, which is to be constructed at Temane, some 35 km by road south west of the coastal town of Inhassoro. The risk of sea level rise and storm surge is likely to be limited due to the distance between the plant and the coastal line. Nonetheless precautionary measures will be considered in the design of the plant, including protective measures if needed.

149. **A portion of the generated electricity will be exported to SAPP, which is predominantly powered by coal-fired power plants.** The project will add lower-carbon gas-based electricity generation in a region dominated by high carbon intensity coal plants. The project will use high-efficiency CCGT technology. By adding highly dispatchable generation capacity, which mitigates the risk of intermittency and variability of some key renewable technologies (solar, wind, hydropower), and by integrating the power system of Mozambique internally and regionally, the project will enable significant scaling up renewable technology in a fast-growing power system. Technical assistance under the project includes studies for integration of renewables in the power system.

150. **The project will implement resilience measures to expected disasters induced by climate change.** Overall, Mozambique is facing increased frequency of extreme weather events, including droughts, tropical cyclones and floods. Most recently, cyclone Idai in March 2019 devastated the city of Beira in Sofala province as well as other areas in the central region and subsequently cyclone Kenneth in April 2019 with impacts on north of Pemba (see text Box 1). The cyclone resulted in major floods which severely damaged all infrastructures, including hydropower plants, transmission lines, substations and distribution lines. Frequency and/or intensity of such cyclones and floods are expected to increase in the future due to the climate change³¹.

151. The transmission component (TPP) is vulnerable to climate-change induced extreme weather-related risks due to its sheer length of about 563 km that increases the likelihood of cyclones/floods

³¹ GoM (2015) Intended Nationally Determined Contribution of Mozambique to the UNFCCC.



affecting a portion of the line. The country's experience from cyclone Idai suggests that a category 2 hurricane can result in complete or partial collapse of transmission towers through foundation uprooting as well as damage on conductor lines by debris flown by wind. EDM already identified wetland near Chibuto, as well as crossings of eight different rivers as high-flood risk areas in the planned transmission route. However, beyond these flood-prone areas, cyclones can potentially reach any parts of the transmission line. The project has incorporated mitigation measures against such risks through measures such as: (i) the use of self-supporting towers instead of guyed V-towers in certain sections of the line; (ii) raising platforms for new substations by 1-2 meters; and (iii) strengthening foundations, such as by using tall foundation chimneys; and (iv) designing transmission lines to withstand wind loads of 40m/s and hurricane winds of 65m/s. These measures will be implemented in areas where flood/cyclone risks are considered to be high along the transmission line route. Although the incremental cost of such measures will vary depending on locations and the technical specifications, it is generally estimated at approximately 20 percent, based on the technical assessment of various technology options for enhancing resilience to the transmission and substation infrastructure against wind/cyclone.³² More broadly, the project's transmission line and additional generation will provide increased flexibility in power system supply, strengthening security of supply in cases of the extreme weather events.

V. KEY RISKS

Overall Risk Rating and Explanation of Key Risks

152. The overall risk rating of the proposed operation is Substantial. Key risks and mitigation measures are presented in the following paragraphs.

153. **Political and governance (Substantial).** Political and governance risks could affect the environment for the project, mainly the financial sustainability of the sector. There may be delays in recapitalization of EDM due to the level of public debt. Maintaining pressure on EDM through governance channels to reduce commercial losses may prove ineffective. **Mitigation.** The recently adopted NES should bring in non-tariff resources over time to help with access expansion, including funding from the World Bank and other donors, as well as from the GoM. The World Bank support through the investment program (for example, PERIP) should start bringing results in helping EDM reduce losses and improve efficiency, reducing the pressure on tariffs and helping EDM stabilize financially.

154. **Macroeconomic (Substantial).** Macroeconomic risks remain considerable, as the country continues on a reduced growth trajectory, although inflation has eased, and exchange rate of metical has stabilized. External risks are significant considering Mozambique's high level of concentration in commodity exports. Public finances consolidation efforts are gradually progressing, but debt levels remain high and fiscal space is limited. These risks could affect EDM's operating environment through reduced demand, exchange rate volatility (as EDM's tariffs are in local currency while significant liabilities are foreign currency denominated), and budgetary/borrowing constraints (as a state-owned enterprise). **Mitigation.** Macroeconomic risks are mitigated partially through concessional financing of the public sector investment part of the project (transmission line), and through the efforts to reduce sectoral costs, supported by the World Bank-financed investment projects and technical assistance. Much of the macroeconomic risks remain beyond the project's influence.

³² Miyamoto (2019, unpublished) The Overview of Engineering Options for Increasing Infrastructure Resilience. Commissioned by the World Bank.



155. **Sector strategies and policies (High).** Mozambique needs to ensure that (a) its power sector's financial viability is restored and sustained; (b) the sector is more efficient; (c) electricity access is expanded to meet the national electrification targets established by the GoM; (d) the investment environment is attractive to the private sector; and (e) power sector planning and implementation of investment projects—both in the public and the private sector—result in transparent, competitively determined, efficient, and timely investments. **Mitigation.** EDM and the GoM are implementing an FSP for EDM, designed to restore financial sustainability of EDM. A number of actions under the FSP have been implemented, including significant tariff adjustments and adopting the NES. The expected revenue enhancement through the loss-reduction program under the PERIP, and reduced pressure on EDM in funding electrification as a result of GoM's commitments under the NES, should help restore financial balance of EDM. The World Bank is also providing assistance for building the capacity for policy and regulatory institutions, including through the proposed TREP.

156. **Institutional capacity for implementation and sustainability (Substantial).** EDM has limited institutional capacity to undertake large and complex projects. Its project management is stretched and limited due to the larger capital investments under implementation with an uneven record of implementation. **Mitigation.** The TTP would be implemented through a ring-fenced SPV structure and financed by the DFIs. It will be assisted by the private sector in project implementation, with an independent Owner's Engineer and other external advisers. CTT will be implemented by the private sector, led by Globeleq, which has proven track record in successfully implementing power generation projects in Sub-Saharan Africa.

157. **Fiduciary (Substantial).** The TTP will be implemented by the newly established SNTE, being an SPV that is wholly owned by EDM. While this structure facilitates fully ring-fenced revenues and costs, providing maximum transparency and flexibility for future development of SNTE, the entity needs to be staffed and resourced to take on the necessary scope of work to develop, implement, and operate the TTP infrastructure representing a substantial risk. **Mitigation.** SNTE will be staffed by using a combination of EDM's own resources, individual consultants and an independent Owner's Engineer, and other advisory entities as required to put in place the systems required for FM as well as procurement and contract management. SNTE will be assisted in project management by the private sector firm (TEC consortium). EDM has hired a procurement expert familiar with the World Bank and has recently concluded the hiring of an Owner's Engineer. For Component 2 (CTT), the CTT IPP should ensure that the project is carried out diligently and efficiently and that procurement of the required goods, works, and consulting services is done with due attention to the economy and efficiency of the project.

158. **Environmental risks (High).** The main risks of the project from the environmental perspective for the TTP component are (a) potential impacts on miombo woodland natural habitat from improving access by opening a new corridor, which also increases the risks of potential impacts on a critical natural habitat consisting of miombo hardwood forests; and (b) health and safety risks during construction and operation. A key environmental risk associated with the construction of the thermal power plant (CTT component) relates to potential impacts of heavy equipment by sea on marine critical habitat of the BANP.

159. **Mitigation.** An ESIA and ESMP for the TTP transmission line and an ESIA and ESMP for the CTT Project have been prepared.

160. The TTP ESMP includes mitigation measures to address potential impacts on the critical habitat miombo hardwood forest. The critical habitat has been avoided by changing the transmission line route. The TTP will develop and implement a Biodiversity Management Plan that includes measures to manage potential impacts and monitor encroachment on this critical habitat and other natural habitat areas.



161. The CTT ESMP includes mitigation measures to avoid and minimize impacts on a marine critical natural habitat. CTT has confirmed that there are technically feasible options to transport heavy equipment for CTT without affecting the BANP. Additional studies are under way to select acceptable anchoring points and an overall transport route that would minimize the impact and the risk to the critical natural habitat. The additional studies and selection of transport routes are to be completed before the IDA guarantees are signed and will need to be acceptable to the World Bank and consistent with WB Performance Standards. The following mitigation measures will be implemented for any selected barge routes: (a) large vessels and barges will have a small lead boat in front with a Certified Marine Mammal Observer to avoid collisions with dugongs and sea turtles and other marine life; (b) speed limit of the large vessels and barges will be limited to 5 km per hour in or near the critical habitats; (c) barges lanes will be marked with non-styrofoam buoys; (d) utmost care will be taken to avoid spills of hydrocarbons when refueling the barges and in case of an oil spill, clean-up shall be undertaken immediately; (e) landing sites will be chosen in such a way as to minimize environmental impacts (for example, on fishing) and on communities; and (f) speed of trucks with heavy equipment should be limited to 20 km per hour in areas with high population density.

162. In areas with a high bird and fruit bat activity, guyed-V transmission towers will be avoided because they pose a higher collision risk for birds and fruit bats in general and for birds of conservation concern, including species of conservation concern, such as several globally threatened vulture species. The distance between the conductors will be at least 3 m to minimize bird and bat collisions.

163. The ESIA's spell out the responsibilities for the preparation and implementation of the ESMPs and the Occupational, Health, and Safety Plans (OHS), as well as the required recruitment of experienced environmental and social and OHSAS 18001:2007 certified health and safety staff for the contractors and the Owner's Engineer. Contractor ESMPs and OHS plans are to be prepared and implemented by the contractors. The Owner's Engineer will be responsible for approving and supervising the adequate implementation of the contractor ESMPs and OHS plans.

164. The ESMPs for the TTP and CTT include a Waste Management Plan, a Traffic Management Plan, an Influx Management Plan, a Worker's Camp Management Plan, and others. The ESIA's include commitments by the TTP and CTT to engage specialists for preparation of specific plans to be completed and reviewed by the World Bank before construction (as detailed in the ESAP).

165. All contractor employees need to sign a code of conduct to ensure that employees do not engage in various prohibited activities, including sexual relationships with minors (<18 years of age); GBV, SEA; discrimination based on race, religion, and gender; activities that may endanger protected species; and so on. The contractors will prepare monthly reports on ESHS issues, as will the Owner's Engineer which should contain information about any potential breaks in the Code of Conduct and the measures taken to address each case. SNTE and CTT will prepare quarterly reports to project financiers. SNTE and CTT will have the overall responsibility for the adequate implementation of the construction ESMPs and Health and Safety Plans.

166. **Social risks (High).** The social risk rating for the project is due to the scale of resettlement impact, economic impacts during construction, potential for labor influx (and its associated GBV risks) and associated social risks in the project corridor and the client's capacity to implement safeguards requirements in line with the World Bank safeguards policies. Economic and physical resettlement impacts will occur mostly as a result of project activities under the TTP component. Along the 563 km TTP, an estimated 898 social units are expected to be affected by resettlement (physical, economic, permanent or temporary) as a result of the TTP. Social impacts and risks related to the CTT component were assessed



as part of the CTT's ESIA, which was complemented by specialized studies including an SIA (and will be further complemented by the ongoing GBV risk assessment commissioned by the Client). These studies confirmed that the main social impacts relate to the following aspects: (a) population and labor influx in the project area, which is incremental to an ongoing and cumulative influx process; (b) potential impacts of temporary equipment landing sites on fishermen, tourism operators, land and road users, potentially including roadside businesses along heavy equipment transport routes, and any users of affected land and natural resources in these areas; (c) resettlement related to the associated/ancillary facilities: the 25 km transmission line from the power plant to the TTP substation at Vilanculos; water pipeline, which together may affect around 50 houses and 55 production plots; and other ancillary facilities (camps, borrow pits, accesses, and so on). Overall, the CTT impacts of direct land acquisition and economic displacement are expected to be of limited scale and typical severity. Influx and construction traffic will present risks and impacts to community health, safety, and security, including those related to GBV/SEA, which will need to be managed.

167. **Mitigation.** Based on the results of the social assessments, including cumulative impacts, a set of social impact management instruments were developed and will be implemented. In addition to a labor influx management plan and code of conduct, these will include land compensation, livelihood restoration (covered under the RPF for CTT and RAP for TTP), SEPs, GRMs, local labor hiring and local content plans, cultural heritage management plans including specific elements if applicable and a chance find procedure, community health, safety and security plans, and community development plan for CTT and community development fund for TTP. Plans, including the ESMP, will cover all access ways, ancillary sites (including sources of materials and waste disposal sites), traffic routes, and temporary facilities (camps, staging areas, and so on). The SIA included in the ESIA for Component 1 (TTP), which followed the World Bank's Safeguards Policies, focused on livelihood impacts and restoration, visual impacts, and influx impacts, especially as they relate to resettlement and increased access to the project area. The SIA for Component 2 (CTT), which followed the World Bank's Performance Standards, considered factors described above and focused on influx issues and impacts of construction and operation including exposure to pollution and noise, ancillary sites, and population influx in the project area.

168. A preliminary GBV risk assessment carried out according to the GBV good practice guidance note and the application of the GBV risk tool resulted in a Substantial risk rating. To address the risks preliminarily identified by this analysis, a series of measures were included in the ESMPs, including: (i) strengthening of the implementing agency knowledge of GBV through capacity building activities and requiring that a Code of Conduct with specific rules and sanctions for GBV be presented during bidding processes and signed by all workers before any civil works start ; (ii) community awareness activities, and (iii) specific GBV sensitive channels included in the GRM and requirements for training of GRM responsible personnel to handle such cases. CTT and the TTP will complement this preliminary GBV risk assessment with an expert study to be carried out by a specialized consultant to assess risks at the local level and map institutions, services, and nongovernmental agencies that can provide services to survivors and awareness to project beneficiaries. The specialized consultant will assist EDM/SNTE and CTT in designing and implementing a GBV/SEA prevention and response action plan in accordance with World Bank Group Guidance. The GBV Action Plan will be prepared and mitigation measures (as described in previous paragraphs) will be in place before construction starts.

169. **Capacity of EDM's ESU.** EDM's ESU currently consists of two environmental specialists, a sociologist, and two surveyors/topographers, who currently handle all projects across the country. Recruitment of additional, suitably qualified staff is critical. **Mitigation.** The services of an external firm are being retained to support EDM and SNTE in developing the ESMS to help build capacity within the



organization initially to adequately manage environmental and social impacts of the TTP in particular. EDM and SNTE will also hire specialists to support implementation of the ESMS (EDM's ESU will also be responsible for managing the environmental and social aspects of other EDM projects). The contractors, the Owner's Engineer, and SNTE's Environmental and Social Management Unit will be required to report regularly on implementation of the ESMP and all other ESMPs. Aspects of particular interest to affected communities may also require a community monitoring program.



Box 1. Impact of Cyclone Idai on the Electricity Sector

Mozambique ranks high among African countries in terms of exposure to natural disasters like cyclones, floods, and droughts. Tropical cyclone Idai made landfall in Beira on March 15th, 2019, with a wind speed of 175km/h (49m/s). Striking near Beira (Mozambique's 4th largest city, with 600,000 people), Idai produced a storm surge of 4.4m in the city, coupled with torrential rains and disastrous flooding. Rainfall in Beira city exceeded 200mm, while the heaviest totals of more than 600mm fell near Chimoio. This resulted in massive human displacements and considerable loss of lives.

Widespread destruction was reported in Beira. Communications in the city were crippled and roads were temporarily rendered impassable. The initial assessment done by the World Bank estimated total damages to buildings, infrastructure and agriculture amounting to US\$773 million.

A significant portion of electricity infrastructure in Sofala, Manica, Tete and Quelimane have been damaged. These include damages to hydropower plants, a transmission line, primary/secondary substations, distribution lines, transformers and standalone solar PV systems. These damages disrupted electricity supply to households and institutions in those areas. It is estimated that 570,000 EDM customers were affected. The cost of physical damage to the electricity infrastructure is conservatively estimated to be US\$130 million. The largest damage was in Beira (60 percent of the estimate), which was hit hardest by Idai, followed by Chimoio (38 percent). The cyclone has also impacted EDM's business as usual in other regions of the country. Significant amounts of materials and human resources were allocated to Sofala and Manica to support the recovery efforts.

The sector responded rapidly to restore electricity services in the affected areas. Immediately after the aftermath of cyclone Idai, EDM mobilized its in-house engineers and local contractors to restore electricity services. It has hired diesel generators for a period of a month to supply power to the critical lifeline facilities such as hospitals and water treatment facilities. EDM has also mobilized its available warehouse stock of poles and line materials, as well as available supply from local suppliers to restore distribution lines. By the end of April 2019, about 75 percent of the pre-cyclone demand had been restored through EDM's interventions.

However, EDM has limited resources to continue the restoration effort. EDM's warehouse stock of spare materials quickly depleted, making it a challenge to continue the service restoration effort. In addition, as EDM was in a weak financial situation when hit by Idai, it has limited financial resources to mobilize to continue these efforts. The cost of temporary diesel generators and fuels may become a burden for EDM unless the grid supply is restored to end the use of temporary solutions. All the materials mobilized from the local suppliers was on credit basis, which will add pressure to the already weak financial situation of the EDM.

A strong emphasis has been placed on building-back-better. Modified technical specifications and quality assurance during construction can strengthen the resilience of the grid infrastructure. These include (i) use of self-supporting transmission towers; ii) use of concrete distribution poles, which are less vulnerable to floods than wood poles; (iii) strengthened pole foundations, including the use of better land near roads; (iv) use of shorter spans between poles; (v) raising the platform of new substations 1-2 meters above the ground;(vi) additional flood protection to existing substations. These lessons are being applied in the proposed project to prevent similar devastation in the future.



VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Southern Africa

Temane Regional Electricity Project

Project Development Objectives(s)

The Project Development Objective is to enhance transmission capacity for domestic and regional markets and increase electricity generation capacity through private sector participation.

Project Development Objective Indicators

Indicator Name	DLI	Baseline	End Target
Enhance transmission capacity			
Increased transmission capacity (MVA)		0.00	900.00
Increase generation capacity			
Increased generation capacity (MW)		0.00	400.00
Private Sector Participation			
Private and commercial capital mobilized (USD)		0.00	750,000,000.00
Electricity Trade			
Electricity exports attributable to the Project (MWh/year)		0.00	1,300,000.00



Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	End Target
Component 1 - Temane Transmission Project (TTP).			
TTP Project Implementation Contracts signed and effective (Number)		0.00	6.00
TTP Commercial Agreements executed. (Yes/No)		No	Yes
Transmission lines constructed (Kilometers)		0.00	563.00
Sub-stations constructed/rehabilitated (Number)		0.00	4.00
TTP RAP Implemented (Percentage)		0.00	100.00
Component 2 - Central Termica de Temane (CTT) Power Generation Plant.			
CTT Project Implementation Contracts signed and effective. (Yes/No)		No	Yes
All commercial contracts executed. (Yes/No)		No	Yes
Financial close for CTT (Yes/No)		No	Yes
Construction of CTT (Percentage)		0.00	100.00
Commercial Operation of the Power Plant. (Yes/No)		No	Yes
CTT RAP Implemented (Yes/No)		No	Yes
Component 3 - Implementation Support, Technical Assistance and Capacity Building			
SNTE fully functional and appropriately staffed. (Yes/No)		No	Yes
Grievances responded to and/or resolved within the stipulated service standards for response times. (Percentage)		0.00	80.00
Number of interactions per community per month as part of SHEP. (Number)		0.00	1.00
Percentage of females hired under the Young Professional Program at SNTE. (Percentage)		0.00	30.00



Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Increased Generation Capacity	Generation capacity in MW of gas energy constructed under the Project.	Semi-annually.	Progress Report prepared quarterly by the CTT OE	Review power plant construction progress report.	CTT Project Company.
Increased transmission capacity	Transmission capacity in MVA of the line constructed under the Project.	Semi-annually.	Progress Report prepared quarterly by the TTP OE.	Review transmission line construction progress report.	SNTE.
Private and commercial capital mobilized	Private Capital Mobilized for the construction of the Project.	At Financial close of CTT and at COD.	CTT Project Company and EDM.	Periodic meetings with project company.	SNTE.
Electricity exports attributable to the Project.	Electricity exports attributable to the Project.	Annually.	Annual EDM reports.	Company statistics.	EDM and SNTE.

**Monitoring & Evaluation Plan: Intermediate Results Indicators**

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
TTP Project Implementation Contracts signed and effective	Owner's Engineer for the Transmission Line is appointed by the PIU and contract is effective. EPC contracts signed for all Lots in TTP.	Semi-annually.	Project Progress Report and SNTEP.	Project meetings with SNTE, Review progress reports and procurement plans prepared by the OE. Periodic site visits.	SNTE.
TTP Commercial Agreements executed.	Transmission tariff methodology and tariff level for SNTE agreed. Transmission system connection agreement SNTE signed between SNTE and MOTRACO, for the 400kV connection at Maputo Substation. Connection agreement signed between SNTE and EDM.	Semi-annually.	SNTE and EDM.	Project meetings with SNTE.	SNTE.
Transmission lines constructed	Percentage of progress in the construction of the transmission line as evidenced by the progress of invoicing for the contract. 100 percent when tests for the commissioning of the lines have been completed successfully. Sub-indicators have been allocated for	Semi-annually.	Project Progress Report prepared by the Owner's Engineer.	Review Project Progress reports and periodic site visits.	SNTE, CTT Project Company.



	each section of the line.				
Sub-stations constructed.	Percentage of progress in the construction of the substations as evidenced by the progress of invoicing for the contract. 100 percent when tests for the commissioning of the substations have been completed successfully. Sub-indicators have been allocated for each substation.	Semi-annually.	Project Progress Report prepared by the Owner's Engineer.	Review Project progress reports and periodic site visits.	SNTE.
TTP RAP Implemented	Percentage of progress of the ESMP implementation based on percentage of plan implemented versus the entire scope of the plan. Percentage of progress of the RAP implementation based on percentage of plan implemented versus the entire scope of the plan. Project grievance redress mechanism established.	Semi-annually.	Project Implementation Report.	Review Project Progress Report and periodic site visits.	SNTE, CTT Project Company.
CTT Project Implementation Contracts signed and effective.	EPC contracts signed by the project company under Component 2.	Semi-annually.	CTT Project Company.	Project meetings with CTT Project Company.	CTT Project Company.
All commercial contracts executed.	CTT Project Company and EDM must sign the key commercial agreements for	AT CTT financial close.	CTT Project Company and EDM.	Project meetings with CTT Project Company.	CTT Project Company and EDM.



	the project, namely (i) Gas Supply Agreement, (ii) Tolling Agreement for CTT, (iii) Transmission Use of System Agreement, (iv) Concession Agreement, and (v) Shareholders Agreement between MPI (EDM and TEC) and Sasol.				
Financial close for CTT	Achievement of financial close for the power plant with private financing fully mobilized. This includes IDA guarantee agreements.	Once.	Discussions with CTT Project Company.	Review signed and fully executed financing commitments (and IDA guarantee agreements).	CTT Project Company.
Construction of CTT	Percentage of progress in the supply, erection and commissioning of equipment, as evidence by the progress of invoicing for contract. 100 percent when tests for the commissioning of the plant have been completed successfully.	Semi-annually.	Project Implementation Report.	Review Project implementation reports and periodic site visits.	SNTE, CTT Project Company.
Commercial Operation of the Power Plant.	Integration of the power plant to the EDM network.	Once.	Plant operation reports, Plant synchronization report, COD Certificate accepted by lenders.	Review monthly operational reports.	CTT Project Company.



CTT RAP Implemented	Capitalization of EDM implemented as per the Financial Strengthening Plan. Government of Mozambique makes financing available to EDM for electrification, as per the National Electrification Strategy and the Financial Strengthening Plan.	Semi-annually.	EDM.	Project meetings with EDM.	EDM.
Increased Electricity Exports	Energy exported by EDM per annum after commercial operation date of the plant.	Annually	EDM Market Operator Department.	Review Market Operator monthly reports.	SNTE.
SNTE fully functional and appropriately staffed.	Sociedade Nacional de Transporte de Energia (SNTE), the fully owned subsidiary of EDM, responsible for building and operating the transmission line is fully established under Mozambican law. SNTE PIU is appropriately staffed as described in the Project Implementation Manual.	Semi-annually.	EDM and SNTE.	Project meetings with EDM and SNTE.	SNTE.
Grievances responded to and/or resolved within the stipulated service standards for response times.	Grievances responded to and/or resolved within the stipulated service standards for response times.	Semi-annually.	Supervision consultant reports.	Supervision	SNTE.



Number of interactions per community per month as part of SHEP.	SNTE will report how many interactions it has with communities to receive feedback about the project as part of the Stakeholder Engagement Plan.	Semi-annually.	Supervision consultant reports.	Supervision.	SNTE.
Percentage of females hired under the Young Professional Program at SNTE.	Percentage of females hired under the Young Professional Program at EDM.	Annually.	Annual report.	EDM's Human Resource Directorate (POG) and project monitoring.	EDM and SNTE



VII. INDICATIVE TERMS AND CONDITIONS FOR THE GUARANTEES

170. Please refer to Annexes 6 and 7.



ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Mozambique Temane Regional Electricity Project

Project Institutional and Implementation Arrangements

1. The project will be implemented over a five-year period. SNTE, a wholly owned subsidiary of EDM, will implement the TTP (Component 1) and the corresponding elements of technical assistance (Component 3). CTT (Component 2) will be implemented by the CTT Project Company as a private sector project. EDM and MIREME will implement their respective elements of technical assistance (Component 3).

TTP Implementation

2. The TTP is being structured through SNTE, a subsidiary of EDM. SNTE was originally created to implement the SNTE Backbone Project, whose development is now phased, with TTP being its Phase 1. The SNTE structure facilitates fully ring-fenced revenues and costs for development, construction, O&M of TTP/SNTE, providing maximum transparency and flexibility for future SNTE development as a commercial structure with possible participation of the private sector in transmission financing.

3. SNTE will be appropriately staffed and resourced to take on the necessary scope of work to develop, implement, and operate the TTP infrastructure, using a combination of own resources, individual consultants, and contractual arrangements with an Owner's Engineer and other advisory entities as required. During project development and implementation, SNTE will be funded through project financing. Once the project is completed and in operation, SNTE will get its revenues through a transmission surcharge, paid for by users of SNTE's transmission infrastructure.

4. Oversight of the TTP development is currently provided by a Steering Committee that is tasked with approving all contracts before formal approval by the SNTE Board. In addition, the Steering Committee acts as a coordinating body between the TTP and the CTT Project, ensuring harmonization of project timelines and appropriate exchange of information and communication. The TTP Steering Committee comprises the following members: (a) EDM Executive Board Member – Planning, Business Development & Operations (Chair); (b) EDM Executive Board Member – Finance; (c) EDM Business Development Adviser; and (d) CTT shareholder representative (TEC/Globeleq consortium). In addition, the TTP Project Management team consisting of (e) TTP - Project Director; (f) TTP - Deputy Project Director; and (g) TTP - Project Coordinator attends all meetings of the Steering Committee.

5. EDM has established a PIU for the TTP—currently reporting to the TTP Steering Committee—which will be replaced by the SNTE Board of Directors when SNTE is fully operationalized. The EDM's PIU initially, and later as part of SNTE, will be responsible for the day-to-day project management and coordination of the TTP. SNTE will prepare a POM, which will govern project administration/implementation, monitoring, and evaluation activities.

6. The PIU will be supported by an Owner's Engineer in two key functions:

- General design review and procurement support up to award of contracts in line with the approved procurement strategy



- Owner's engineering services for the construction phase and the subsequent warranty period

7. Given the scale of works and the length of the TTP, SNTE, Owner's Engineer, and contractors will each be required to have a qualified Environmental Specialist, a Social Development Specialist/Resettlement Specialist, and a Health and Safety Officer/Specialist. These Environmental, Social, and Health and Safety Specialists will be responsible for implementing all the actions and management plans proposed and for ensuring compliance with requirements of the World Bank's environmental and social safeguards policies and ESHS guidelines, as well as with the requirements of the national environmental legislation and regulation.

8. The PIU is expected to remain in place throughout the different stages of TTP development and will migrate from being a PIU to becoming an Asset and O&M Management Unit on completion of commissioning and testing of the TTP infrastructure.

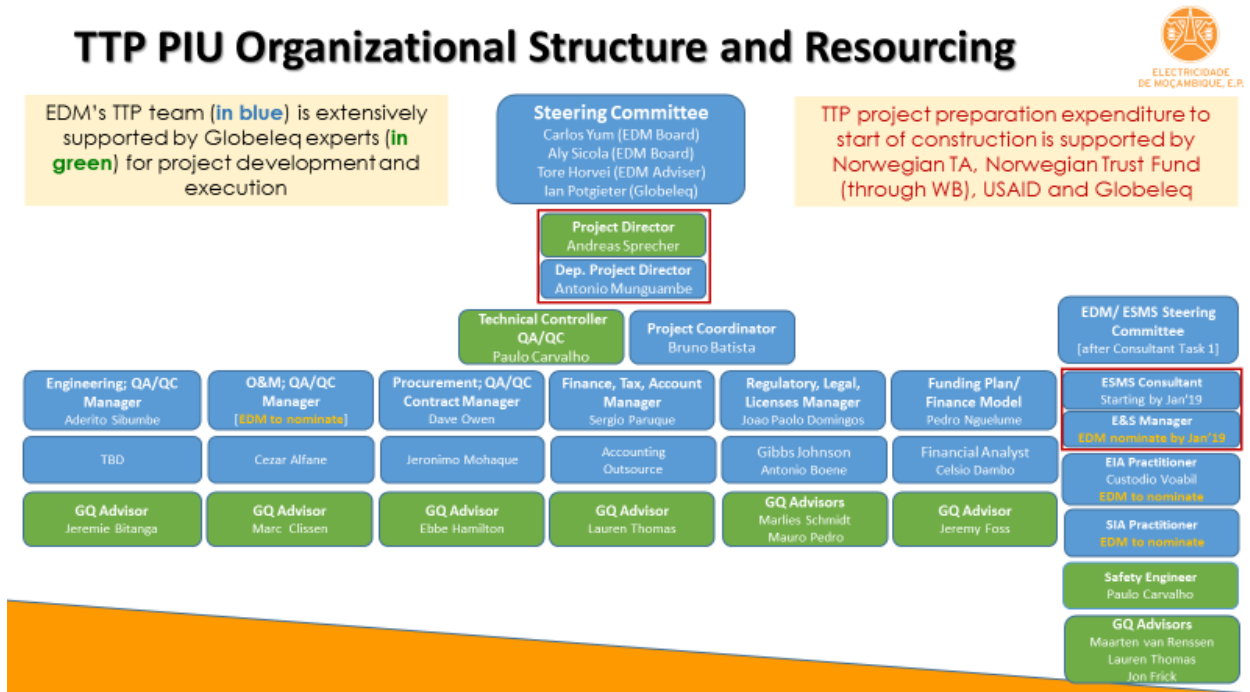
9. The PIU will manage the Owner's Engineer. Also, with support from the Owner's Engineer, the PIU will manage the procurement process and coordinate the approval of contracts during the implementation of the project. The PIU will also be responsible for approving disbursements, monitoring overall project progress, preparing reports for the SNTE Steercom (or the SNTE Board as the case may be) and the TTP funders utilizing data from Owner's Engineer deliverables, and ensuring that financial and reporting requirements are met and World Bank Procurement Procedures are followed. This will also include environmental and social management of the TTP as well as oversight over the complementary CTT Project, as required by World Bank rules and regulations.

10. EDM reinforced the development and implementation of the TTP by engaging the TEC consortium (also referred to as the 'Globeleq Consortium'), the development partner for CTT, in helping manage the TTP. The strategic deployment of experienced TEC resources within the TTP PIU team has provided significant additional capacity and competence in supporting TTP development and is considered a major project strength. The arrangement was formalized in June 2018 as part of the EDM-TEC Joint Development Agreement for the CTT Project.

11. The current PIU setup is shown in Figure 1.1.



Figure 1.1. TTP PIU Organization Structure



Source: EDM.

12. **O&M.** SNTE will contract out O&M of TTP substations to the equipment contractors and suppliers, initially under a three-year O&M contract, awarded as part of the selection of EPC contractors. Transmission line maintenance will be either subcontracted to EDM transmission directorate or to the EPC contractors (final decision will be made upon further analysis).

CTT Implementation

13. The CTT Project will be implemented by CTT, an SPV that will be incorporated under the laws of the Republic of Mozambique. CTT will be responsible for the overall design, financing, construction, O&M of the CTT Project. CTT will have an Owner's Engineer for project implementation. The power plant will be constructed through an EPC contractor, which will be responsible for detailed engineering design, supply and installation of equipment, construction of the plant, testing and commissioning.

14. The contractual framework of the CTT Project includes a suite of contracts ('Key Project Agreements') between CTT Project Company (Concessionaire), the GoM (Concedent), EDM (electricity offtaker and gas supplier to CTT), SNTE (TTP - Project Company and transmission service provider), SPM/ENH (gas producers and gas suppliers to EDM), and EPC contractor. The Key Project Agreement, to stay in force for 25 years after the project's COD (except for the EPC contract, of course), includes the Concession Agreement, the Tolling Agreement, the Transmission and Use of System Agreement, the Gas Supply Agreement, and the Connection and Operation Agreement.

15. **Project financing agreements.** A shareholder's agreement will govern the relationship between MPI (inclusive of EDM and TEC) and Sasol and injection of the required equity contributions to finance 30 percent of the project's total costs. Providers of long-term debt will enter into a common terms agreement



and parallel facility agreements with CTT to provide sufficient resources to finance the remaining 70 percent of CTT costs. An inter-creditor agreement will be signed between all the lenders (or their agents) governing administration of the parallel loans and the rights and responsibilities of each. Direct agreements will be required between the lenders and EDM or the GoM with respect to lenders' step-in rights to the CTT assets and contracts under certain events. Documentation regarding IDA's payment guarantees is described in Annex 2.

16. **O&M.** The CTT Project Company will be ultimately responsible for the O&M of the project throughout the duration of the concession. As part of the EPC evaluation process, CTT expects to procure long-term support services from the OEM providers of the equipment. These arrangements will be documented in a Long-Term Service Agreement, helping mitigate the O&M risks.

Implementation of Technical Assistance

17. SNTE, EDM, and MIREME will implement their respective parts of the technical assistance component (Component 3). The SNTE project implementation structure is explained earlier, under the TTP component. EDM and MIREME have established arrangements for implementing World Bank-financed projects, which will be used for implementing technical assistance under the TREP.

Monitoring and Evaluation

Temane Transmission Project

18. **The monitoring and evaluation of the TTP will be carried out by the PIU, consistent with the monitoring and evaluation requirements stipulated in the POM.** The PIU, assisted by the Owner's Engineer, will prepare quarterly reports, which will be submitted to SNTE Senior Management, the Board, MIREME, and project financiers, including the World Bank. Activities to be monitored include the procurement, construction progress, contractual payments, and other aspects of contract management and quality control. The reports will also include implementation of ESMPs, RAPs, health and safety aspect of the project (including a full reporting of incidents), GBV issues, and training activities. The reports will include project progress and results indicators, as per the project's Results Framework.

19. SNTE will prepare financial monitoring reports. Project financial reports and SNTE financial statements will be audited by an independent financial auditor.

20. EDM will share its annual independently audited financial statements, as well as its performance results under the Performance Agreement.

21. The World Bank will carry out regular implementation support missions at least twice a year, in coordination with other financiers. The World Bank will conduct reviews of the project reports, procurement, financial monitoring reports, financial audit reports, and other relevant project documents.

22. The World Bank will carry out a midterm project implementation review (about two years after project effectiveness). The midterm review will be coordinated with other project financiers. The World Bank will prepare an Implementation Completion and Results Report at the end of the project.

CTT Project

23. Information for the monitoring of results will be obtained from EDM and CTT, which will be responsible for preparing and submitting progress reports to IDA, as required under the relevant IDA Project Agreements. Key project performance information will be provided by CTT on the amount and costs of electricity generated, the commercial debt and equity financing mobilized, as well as detailed



information based on invoicing and payment records. The project's intermediate outcomes will be monitored through project reports prepared by CTT during the construction and operations phases of the project.

Technical Assistance

24. SNTE will report on implementation of technical assistance as part of reporting on implementation of the TTP. EDM and MIREME will prepare annual reports on implementation of their components of technical assistance.

Safeguard Implementation Support

25. **TTP:** EDM has established an ESU, which will be further supported under Component 3 technical assistance. This component will include development and implementation of a corporate ESMS for EDM/SNTE.

26. As part of the TREP, additional training is envisaged both for EDM and SNTE staff, customized to the project's specific requirements. EDM is in the process of hiring a team of consultants specialized in ESHS to design ESMS for EDM/SNTE and oversee its implementation. The strengthening of the ESU and implementation of the ESMS will ensure the availability of qualified safeguards and health and safety specialists and their capacity to handle the safeguards instruments that will guide the implementation of the project in full compliance with the World Bank Safeguards policies, applicable World Bank Safeguards Environmental, Health, and Safety Guidelines, and the applicable Mozambique environmental and social regulations.

27. In addition, engineering/safeguards/health and safety supervision and monitoring and evaluation consultants will be hired to support SNTE in the implementation of the safeguards instruments, ESMPs and Health and Safety Plans and the GBV/SEA prevention and response action plan. The ESMPs will include specific requirements for contractors, including, among others, the preparation and enforcement of a Labor Management Plan; Influx Management Plan; Camp Management Plan; GRMs for PAPs and for workers[code of conduct (including standards and sanctions against SEA/GBV, sexual abuse/exploitation of minors, child labor, forced labor, and discrimination based on gender, race, religion, and so on); and community and workers health and safety. The project ESAP (included in the ESMP) provides for updating the plans and hiring the personnel in accordance with relevant project milestones.

28. The Owner's Engineer will also supervise the implementation of ESMPs.

29. The CTT project sponsors will be responsible for the oversight and implementation of the environmental and social aspects of the project. The CTT project sponsors will hire specialist to finalize and implement key management plans as needed, such as the RAP and the Biodiversity Management Plan. The project ESAP (included in the ESMP and attached to the ESRS) provides for updating the plans and hiring the personnel in accordance with relevant project milestones.

Role of Partners

30. The proposed project will have five co-financing development partners for the TTP component. In addition to IDA and the Government of Norway (whose funds, deposited in the NTF, are administered by IDA), they are AfDB, DBSA, IsDB, and OFID. The project will be implemented through a number of EPC contracts financed, to the extent possible, by one of the project financiers ('parallel financing'), to simplify project implementation, although there may be a need for some EPC contracts to be financed by more than one financier ('joint financing' of contracts). Preparation of the TTP has been financed largely through



the NTF grant. A Project Coordinator for the TTP has been funded by USAID.

Strategy and Approach for Implementation Support

31. Implementation support will include the provision of capacity strengthening in procurement, FM and governance, and anticorruption. An annual fiduciary review will be conducted for the program. Adequate budget will need to be allocated for this review. This review will be supplemented by on-site visits done by the World Bank’s fiduciary staff at least once a year. In addition, desk reviews will be done for audit, financial, procurement, and any other reports received during the financial year. In-depth reviews may also be commissioned by the World Bank, whenever deemed necessary.

Implementation Support Plan and Resource Requirements

32. The proposed implementation plan will broadly consist of the following:

- Capacity-building activities to strengthen the national and local levels’ ability to implement the program, covering the technical, fiduciary, social, and environmental dimensions
- Provision of technical advice and implementation support geared to the attainment of the PDO
- Ongoing monitoring of implementation progress, including regularly reviewing key outcome and intermediate indicators and identification of bottlenecks
- Monitoring risks and identification of corresponding mitigation measures
- Impact evaluation activities
- Close coordination with other financiers to smooth supervision procedures.

Table 1.1. Implementation Support Plan and Resource Requirements

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First six months	<ul style="list-style-type: none"> • Supervision and technical review of procurement • Implementation of environmental and social safeguards • Technical review, FM/procurement systems • Negotiations of IDA guarantee agreements and related documentation. 	Technical, fiduciary, environment, financial, legal and social	US\$250,000	<p>TTP financiers will jointly review and clear relevant documents for Component 1.</p> <p>CTT financiers will progress on documentation for Component 2.</p>
6–35 months	<ul style="list-style-type: none"> • Implementation monitoring of works • Technical advice to support program implementation 	Technical, fiduciary, environment, financial, legal and social	US\$450,000	TTP financiers will jointly review and clear relevant documents for Component 1.



Time	Focus	Skills Needed	Resource Estimate	Partner Role
	<ul style="list-style-type: none"> • Implementation of environmental and social safeguards • Monitoring and support for capacity-building needs • Finalization of IDA guarantee agreements and related documentation. 			Financial close expected on CTT for Component 2.
Midterm review	Implementation progress review and identification of necessary midcourse adjustments	Technical (including monitoring and evaluation), fiduciary, environment, social, and operational	US\$75,000	Financiers will provide inputs on lessons learned
35–60 months	<ul style="list-style-type: none"> • Implementation monitoring • Technical advice to support program implementation 	Technical, fiduciary, environment, and social	US\$320,000	Financiers to carry out joint monitoring

Table 1.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Project management (task team leader)	Ongoing	15	—
Project management (co-task team leader)	Ongoing	15	—
Technical specialists/team members (Power, engineer, economist, power markets)	30	12	—
Guarantee finance specialist	15	3	Various locations in response to CTT financing progress.
Guarantee legal specialist	15	3	Various locations in response to CTT financing progress.
FM specialist	12	—	In Maputo
Procurement specialist	12	—	In Maputo
Environmental specialist	12	6	In Maputo
Social specialist	12	6	In Maputo



Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Administrative support	Ongoing	—	In Maputo

Table 1.3. Stakeholders

Partners		
Name	Institution/Country	Role
SNTE	Mozambique	Implementing agency
EDM	Mozambique	Implementing agency
MIREME	Mozambique	Implementing agency
Government of Norway	Norway	Co-financier
AfDB	Multilateral	Co-financier
DBSA	Development Bank of Southern Africa	Co-financier
IsDB	Multilateral	Co-financier
OFID	Multilateral	Co-financier
Private sector lenders and investors (including Sasol and Globeleq).	Various	Financiers of CTT



ANNEX 2: Sector and Project Description

COUNTRY: Mozambique

Temane Regional Electricity Project

A. Southern African Power Pool

1. **Recognizing the importance of regional energy integration, in 1995, three years after its establishment, SADC created the SAPP.** The SAPP is the first and the most advanced power pool on the continent.³³ Its main objectives are to promote cooperation in the regional electricity planning and operation, facilitate regional trading, increase access to electricity in rural areas, and ensure attractive investment environment through competitive tariffs. The SAPP has developed functioning multilateral competitive markets (intra-day, day-ahead, weekly, and monthly forward physical markets), the only power pool in Africa to do so. It has established a Coordination Center in Harare (Zimbabwe), which monitors the operation of the power pool and adherence to the operating rules, advises on feasibility of wheeling arrangements for bilateral trade, and operates the competitive markets. The SAPP has established a sound governance structure at the policy and operating levels. Currently there are 17 members in SAPP: 12 utilities, three private sector entities (Copperbelt Energy Corporation, Lunsemfwa Hydro, and Ndola Energy Company), and two publicly owned companies (HCB and MOTRACO).

2. **Electricity demand in the SAPP region is set for long-term growth as electrification programs have advanced in the region.** There is a general consensus that electricity demand in the Southern Africa region will keep growing in conjunction with increasing electrification and economic and social development. The average access to electricity in the SAPP region was only 37 percent in 2016 (27 percent if South Africa is taken out), with the level of access quite uneven across countries. South Africa is the only member where it exceeded 90 percent and only in three other countries it exceeded half of the population: Botswana (61 percent), Namibia (52 percent), and Swaziland (66 percent). In the remaining countries, it ranged between 11 percent (Malawi) and 41 percent (Angola). Electrification programs are a developmental priority in all the countries, with a shared objective of achieving near-universal electrification by 2030, consistent with the UN Sustainable Development Goals. Achieving this objective will require large investments across the electricity (and energy) supply chain, including in national and regional electricity infrastructure.

3. **The current regional demand-supply balance is strained due to regional demand outstripping available supply.** A recent study for the SAPP forecasts that, in the base case, electricity demand in the SAPP region at the level of net generation will, by 2040, reach about 700 TWh, with peak regional demand at 113 GW (coincidental or 'after diversity' peak,³⁴ see Figure 2.1), from the level of energy demand of 292 TWh in 2016 and 47 GW peak demand in 2016.³⁵ This contrasts with the available generation capacity of about 54.7 GW in 2017. To meet the projected demand with the requisite reliability of supply, generation capacity will need to expand to at least 130 GW.

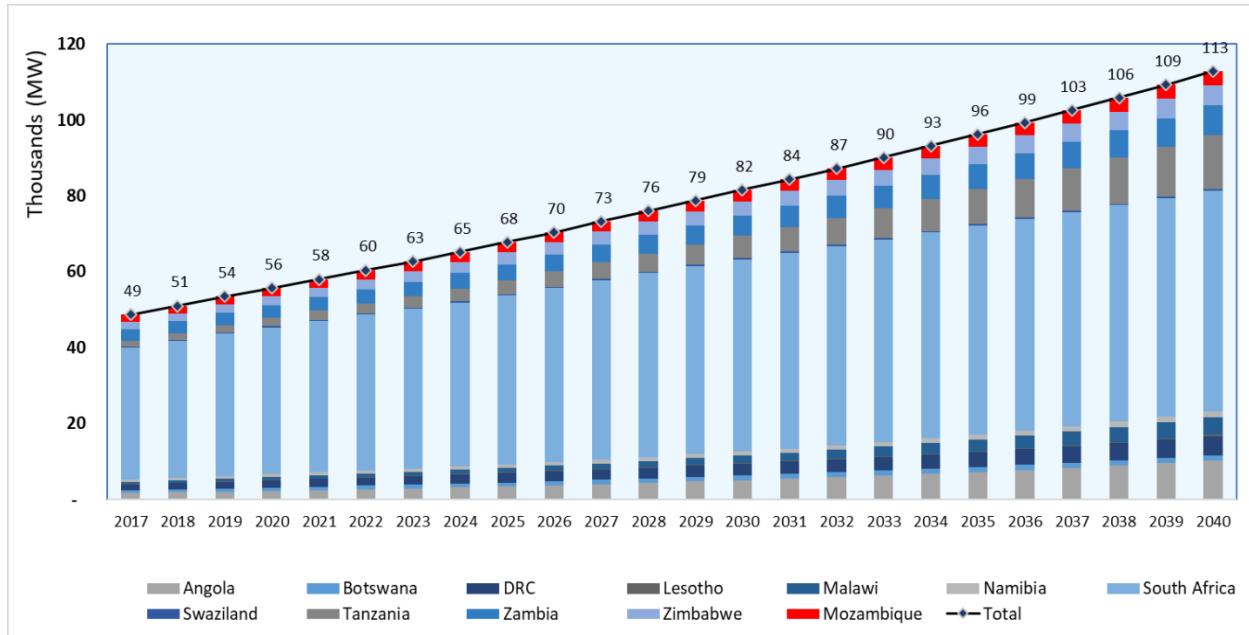
³³ Sub-Saharan Africa has three other power pools, listed here in the decreasing order of their institutional development and physical integration: WAPP, EAPP, and CAPP.

³⁴ A peak demand in an integrated market is generally lower than the sum of the peak demands of market members, as the timing of the peak demands in the individual markets generally differs. Therefore, integration of markets leads to a lowering of the integrated market-level peak demand, which is a major benefit of integration, as this reduces total investments needed to meet the peak demand.

³⁵ SAPP Pool Plan 2017, SAPP, December 2017. ('Net generation' of a plant is electricity generated by the plant and delivered at the point of its connection to the grid, that is, it excludes self-consumption of the plant).



Figure 2.1. Peak Demand Projections of the SAPP



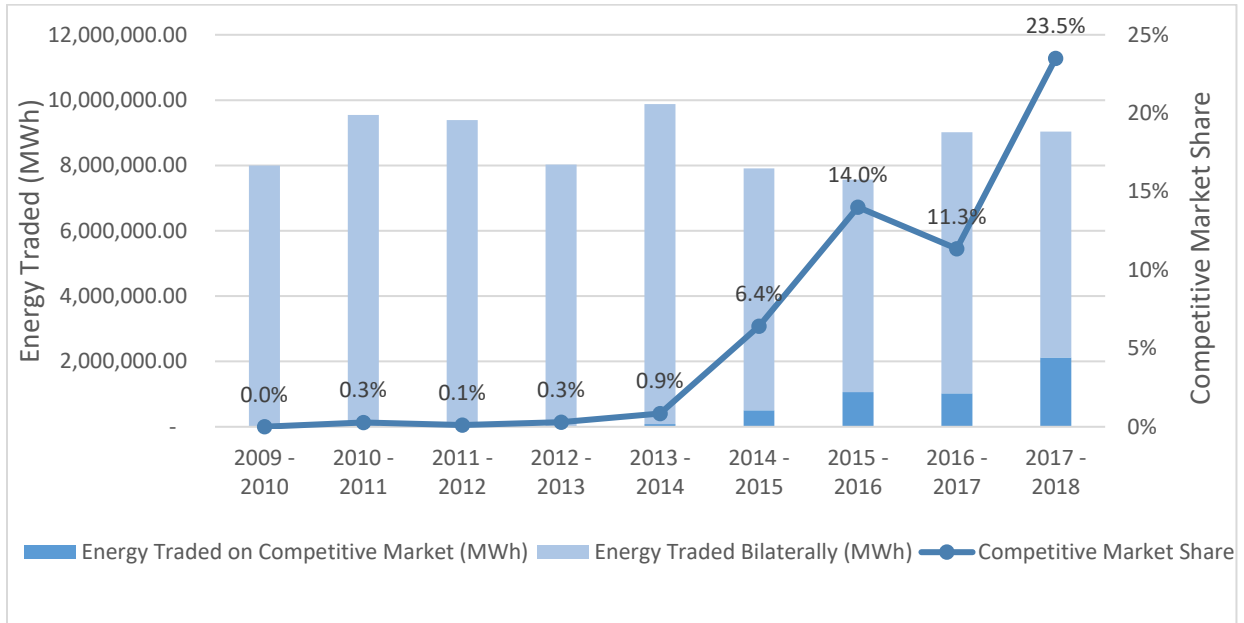
Source: SAPP Pool Plan 2017, SAPP, December 2017.

4. **Substantial savings can be obtained if the portfolio of new generation plants and transmission projects is optimized at the regional level, rather than for each country individually.** The SAPP study found significant savings in investments based on regional integration. A significant part of the savings comes from avoiding building excess generation capacity, that is, by strengthening regional interconnections and optimizing generation portfolio at the regional level. The study projects that Mozambique and the Democratic Republic of Congo should be the largest regional exporters of electricity.

5. **While energy trade through the SAPP competitive markets has increased, transmission constraints are keenly felt in the SAPP region.** The SAPP competitive markets have gained ground (Figure 2.2). In FY2018 (April 2017–March 2018), the total trade in the SAPP was about 9 TWh, of which 7 TWh was traded through bilateral contracts and about 2 TWh through the competitive short-term markets. In FY2017, the competitive trade would have been almost three times higher (from about 1 TWh to 2.8 TWh), if it were not for transmission constraints; in other words, about two-thirds of the matched bids and offers in the competitive market could not be executed due to transmission constraints. Transmission infrastructure investments are clearly needed to de-bottleneck in all SAPP countries to enable electrification and reliable and secure supply to the developing industrial and urban centers.



Figure 2.2. SAPP Bilateral and Market Trade Volumes



Source: World Bank.

B. Mozambique Power Sector

6. **The GoM is positioning its energy sector as a key engine of growth through regional energy exports and expanded domestic access to modern energy in an affordable manner.** Mozambique plays an important role in delivering low-cost, low-carbon energy to Southern Africa region. The 2,075 MW Cahora Bassa hydropower station in northern Mozambique (Tete region) exports about 70 percent of its electricity to South Africa, with EDM exporting additional amounts to the SAPP. About 85 percent of natural gas produced at the onshore gas fields at Pande and Temane, which stands at 197 million GJ per year, is exported to South Africa through a pipeline built in 2004. These electricity and gas exports are generating significant foreign exchange revenues to the country and have established Mozambique as an important regional energy hub. There are large untapped low-cost, low-carbon energy resources with the recent gas discoveries in the Rovuma basin; more than 5.6 GW of untapped hydropower potential, mainly in the Tete region; and other undeveloped renewable energy potential that far exceeds projected domestic demand. These prospects are also making accelerated expansion of domestic access to electricity (and gas) more realistic, removing a major barrier to the country’s economic and social development.³⁶

7. **Development of Mozambique’s power sector has been export driven from its inception.** A key milestone in the history of Mozambique’s energy sector has been construction of the 2,075 MW HCB in 1975. The plant was designed at the outset as a regional project, as the bulk of its production was destined for South Africa. The bulk of Cahora Bassa production—which totals between 14 and 17 TWh annually continues to be exported to South Africa under a long-term contract with ESKOM, through a dedicated 1,400 km long HVDC line built together with the plant. This was followed, more than two decades later,

³⁶ In 2018, the GoM adopted a NES 2018–2030, which envisages full electrification of the country by 2030, consistent with the UN Sustainable Development Goals. The NES was developed through a World Bank-implemented technical assistance funded through SE4ALL.



by the construction of two 400 kV transmission lines between South Africa and Maputo (one line passing through Eswatini) in 1998 to supply electricity to the aluminum smelter Mozal. The lines are owned and operated by the MOTRACO, jointly owned by the utilities of Mozambique (EDM), South Africa (ESKOM), and Eswatini (SEC). MOTRACO also wheels electricity to EDM network in southern Mozambique, as electricity generated by Cahora Bassa and destined for consumption in the southern EDM system cannot reach southern Mozambique other than through ESKOM's and MOTRACO's networks. Mozambique is also connected with Zimbabwe through a 400 kV line (operated at 330 kV) and a 110 kV line, diversifying the country's interconnections with the SAPP network. As a result, electricity trade has become a dominant feature of Mozambique's electricity balance (Table 2.1)—both electricity exports and electricity imports are larger than the domestic market (net of Mozal).³⁷

Table 2.1. Mozambique Power Sector Balance (GWh)

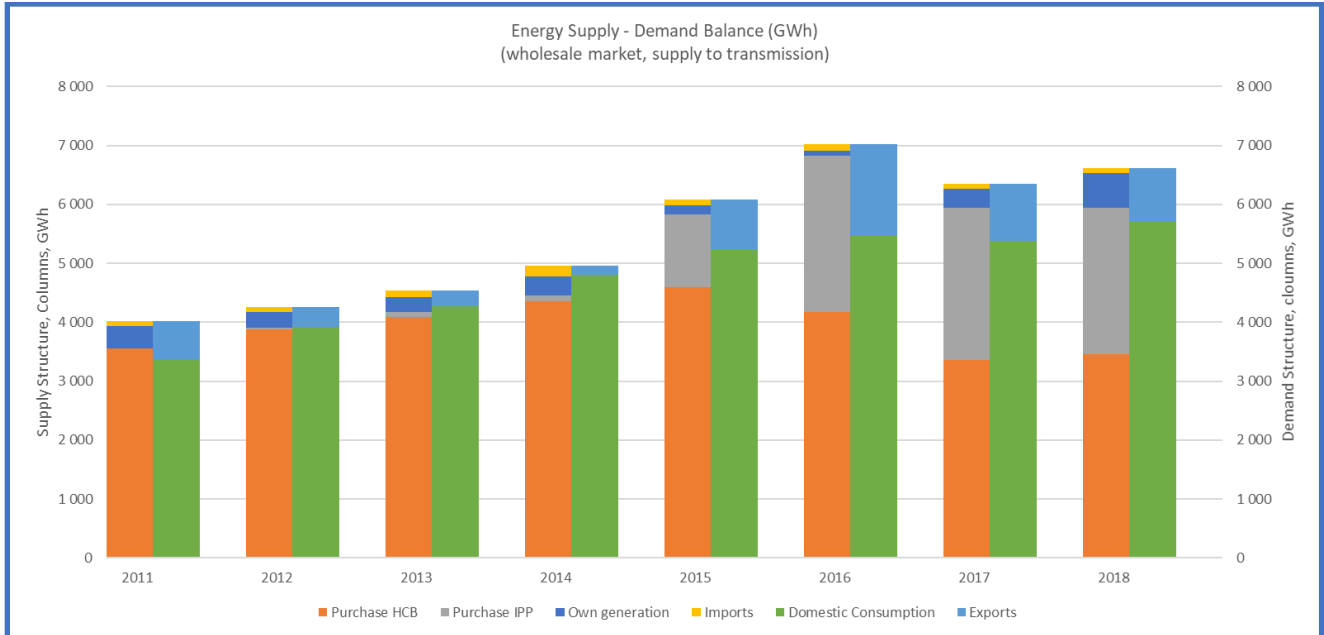
	2014	2015	2016	2017
Total net generation	16,312	18,138	18,122	16,665
Cahora Bassa	15,892	16,751	15,373	13,778
Mozambique IPPs	102	1,229	2,666	2,567
EDM own generation	318	158	83	320
Imports	8,425	8,261	8,380	8,349
of which Mozal	8,235	8,162	8,277	8,265
Total supply	24,737	26,399	26,502	25,014
Transmission losses	1,628	1,712	1,479	1,611
Exports	10,202	11,584	11,711	10,115
Cahora Bassa	10,042	10,722	10,170	9,154
of which to ESKOM	9,028	9,833	9,026	8,447
EDM	160	862	1,541	961
Domestic market	13,037	13,103	13,312	13,288
Mozal	8,235	8,162	8,277	8,265
Rest of the country (EDM)	4,802	4,941	5,035	5,023

8. **Access to grid electricity has expanded more than three times in past 10 years and is set to accelerate.** EDM has increased access to electricity services from 8 percent in 2006 to 31 percent in 2018, reaching all 128 administrative centers across the country through the grid. Domestic electricity consumption has been steadily increasing and is set for continued growth as the country strives to achieve full electrification by 2030 (Figures 2.3 and 2.4). Figure 2.4 demonstrates that if EDM's domestic peak demand continues to grow at about 5 percent annually—which is a rather conservative estimate—and no new generation is added, by 2023 the installed capacity will not be enough to meet the domestic demand and maintain the historical export levels. The proposed CTT Project is important to meet the growing demand and its completion by 2023 will ensure that EDM can meet domestic demand and continue to maintain exports to the region.

³⁷ Similarly, Mozambican gas sector development started with construction of the 865 km gas pipeline in 2004, for exporting gas from the Pande/Temane gas fields to South Africa. About 8 percent of gas produced (more than 183 PJ annually) is transported by an 865 km pipeline for consumption to South Africa, with several offtake points in Mozambique for the 20 percent.

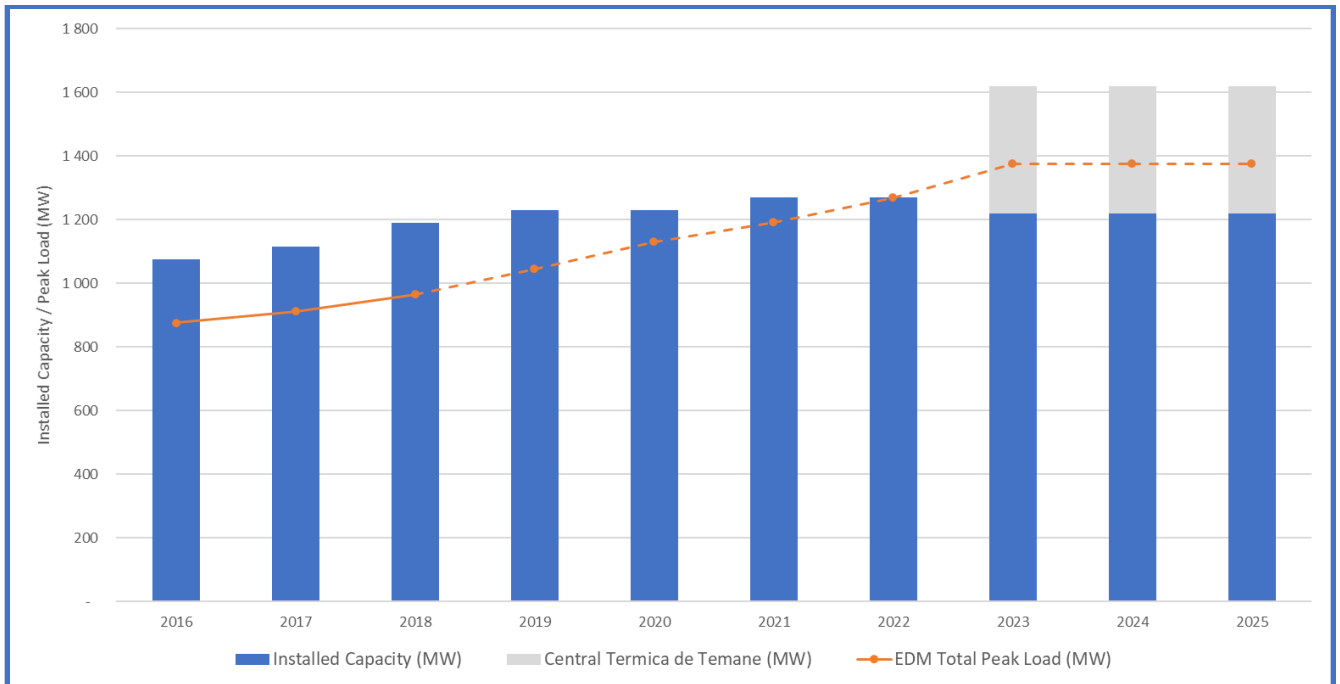


Figure 2.3. Energy Supply-Demand Balance (GWh)



Source: World Bank.3

Figure 2.4. Power Supply and Demand in Mozambique



Source: World Bank.

9. Mozambique needs to develop a high-capacity electricity transmission corridor connecting the country's northern, central, and southern systems and strengthening the interconnections with the SAPP. Mozambique's power system developed as three separate subsystems: northern, central, and



southern (Figure 2.5). The connection between the northern and the central subsystems is rather limited, and the southern subsystem is not connected with the other two at all. Therefore, electricity produced at the country's main generation plant, Cahora Bassa (hydro plant), cannot reach the southern areas of the country (including Maputo area) through the domestic network. The lack of interconnection constrains power supply to the southern subsystem and development of the hydropower resources in northern Mozambique as the existing domestic and regional interconnections are inadequate to handle large additional generation and domestic and regional trade. The country's existing high-voltage transmission is by far inadequate for Mozambique to meet its own demand and to facilitate integration of neighboring Tanzania and Malawi into the SAPP regional network.

10. **Mozambique's strategic direction is to construct the national 400 kV network.** The schematic diagram of Mozambique's planned 400 kV system is shown in figure 2.6 (red lines). Several pieces of the network are under construction (Chimuara-Namialo line) or under advanced preparation (Mozambique-Malawi interconnection, Maputo-Vilanculos/Temane line [the TREP], both proposed for financing by IDA) (Figure 2.7).

11. **North-south transmission backbone project (SNTE).** Mozambique's key planned transmission project is the north-south interconnection backbone between its northern subsystem—from the general area of Cahora Bassa plant (Cataxa/Matambo substations in figures 2.6 and 2.7)—and the southern subsystem built around Maputo area. SNTE includes two high-voltage lines: one with direct-current technology (HVDC) for large-scale point-to-point transmission of energy from the hydropower rich Tete region to Maputo and further on to the SAPP system and the other an alternating current (high-voltage alternate current [HVAC]) line between Tete region to Maputo through Vilanculos/Temane, which will integrate gas fields at Temane area into the Mozambican and SAPP systems through gas-to-power projects at Temane.

12. The SNTE backbone is designed as a phased capital-intensive investment program, which includes the following phases:

- **Phase 1: TREP.** This is the first phase of the SNTE Backbone Project, with two components:
 - **TTP.** Construction of the portion of the SNTE Backbone HVAC line, from Maputo to Vilanculos, to link with the SNTE 1 transmission project
 - **CTT IPP.** Temane IPP - construction of a 400 MW gas-fired power plant at Temane
- **Phase 2:** The second phase will include the following:
 - **Transmission.** Construction of the remainder of the SNTE Backbone Project—the HVDC line Cataxa-Maputo and the HVAC line Cataxa-Vilanculos—to link Mphanda Nkuwa plant at Cataxa
 - **Generation.** Construction of the Mphanda Nkuwa hydropower plant
- **Phase 3:** The third phase could include construction of Cahora Bassa North Bank hydropower plant and additional generation capacity in Temane area.



Figure 2.5. Mozambican Existing Transmission System

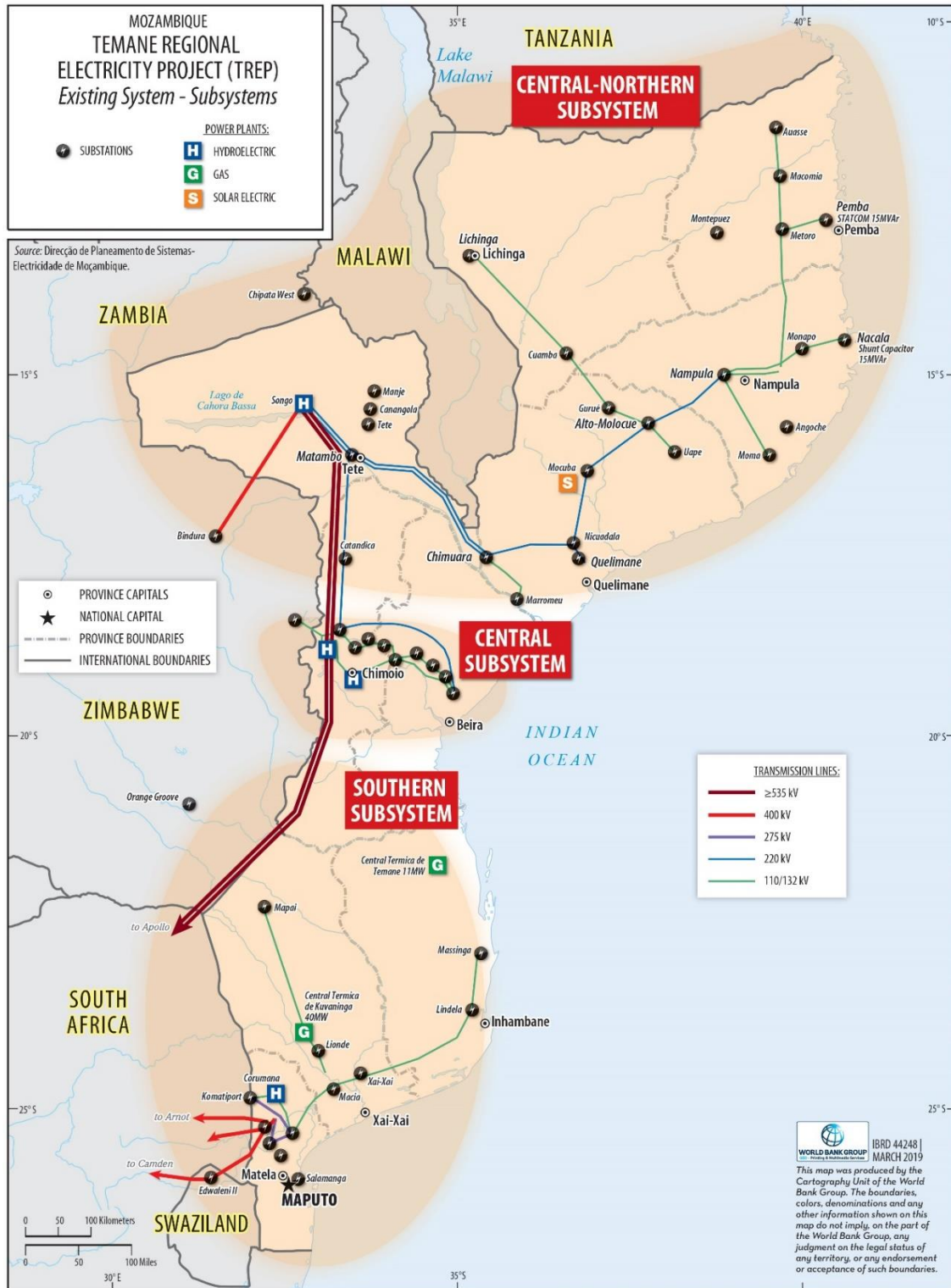
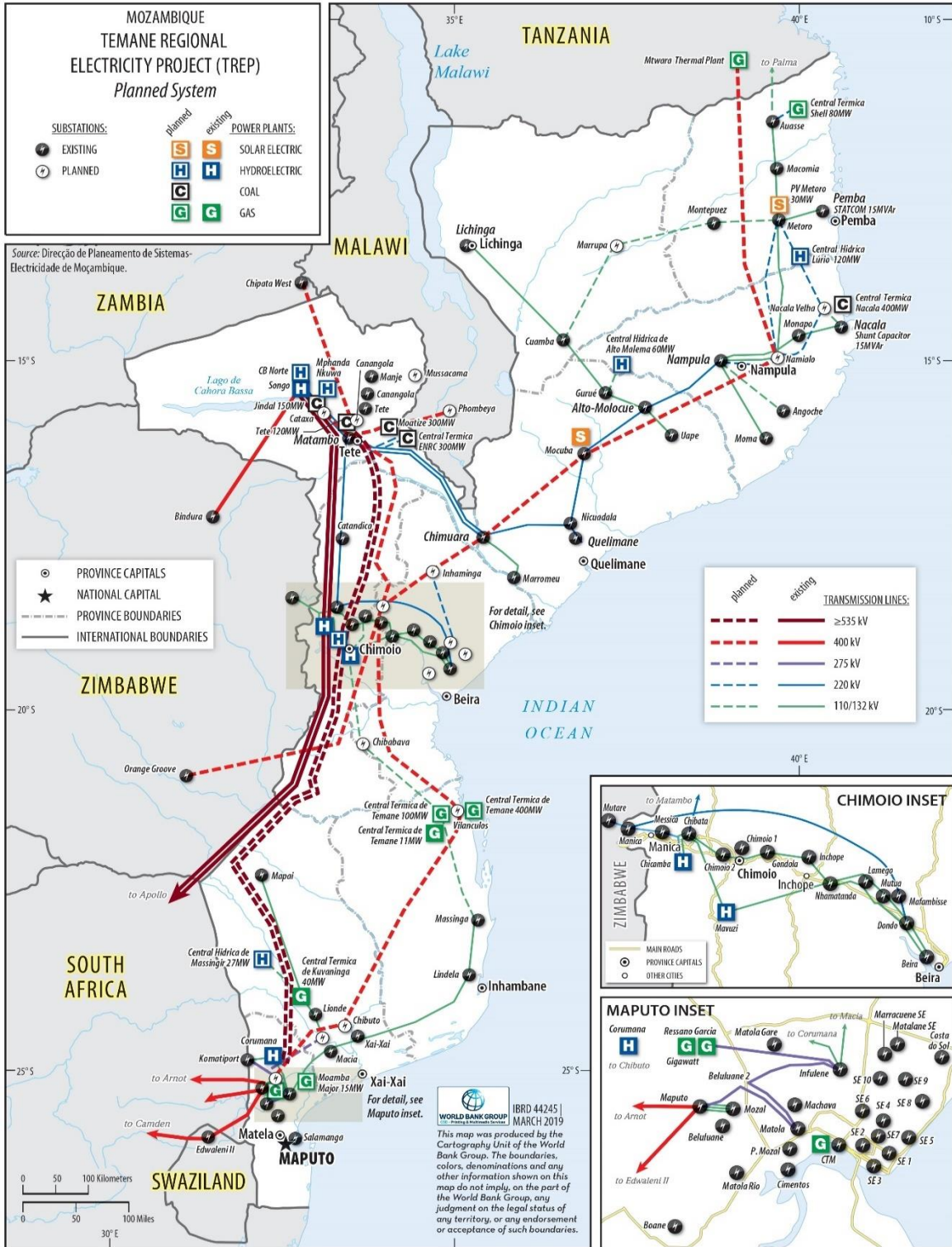




Figure 2.6. Mozambique Transmission Network Development Plan





C. Temane Regional Electricity Project

13. **The TREP is part of the GoM's least-cost power investment plan to meet the growing electricity demand in the country and the region.** The least-cost power development³⁸ plan prepared in 2018 by MIREME and EDM indicates that the TTP and CTT Project are the lowest-cost option for expanding the system, with the cost expected to be substantially below the current marginal cost of electricity generation in the country. The TREP will thus help drive down EDM's average bulk power cost and thereby improve its financial viability. Delaying the project would risk an energy supply crisis, which would require contracting costly short-term emergency generation, with significant adverse financial impacts for the sector. The TREP will also help Mozambique strengthen its position as a regional energy hub in the expanding SAPP market.

14. The proposed TREP, the first phase of the SNTE Backbone Project, includes the following investment components:

- **Component 1:** Temane Transmission Project
- **Component 2:** CTT Power Generation Plant
- **Component 3:** Implementation Support, Technical Assistance and Capacity Building

Component 1: Temane Transmission Project

15. The TTP will include the following scope:

- Vilanculos-Chibuto 400 kV line, 340 km long
- Chibuto-Matalane 400 kV line, 180 km long
- Matalane-Maputo 400 kV line, 43 km long

a. Transmission lines

16. The following design characteristics apply to the 400 kV transmission lines:

- **Line configuration:** Single circuit, horizontal conductor formation
- **Conductors:** ACSR 'Tern' per phase, with four sub-conductors per phase
- **Earth wires:** 1 × ACS '7 × No. 6 AWG'
- 1 × 48 core fiber OPGW to match ACS
- **Suspension towers:** Guyed-V and self-supporting, steel lattice (the latter only where tower site conditions do not allow for Guyed-V, which is found to be in few places where lines traverse mainly flat terrain)
- **Tension towers:** Self-supporting Y-towers, steel lattice
- **Foundations:** Reinforced concrete pad and chimney, special or piled, subject to varying geotechnical conditions along the line route

b. Three new substations

³⁸ Mozambique Power System Development, Draft Final Report, November 2017, JICA, JERA Co., Inc.; and SAPP Pool Plan, 2017.



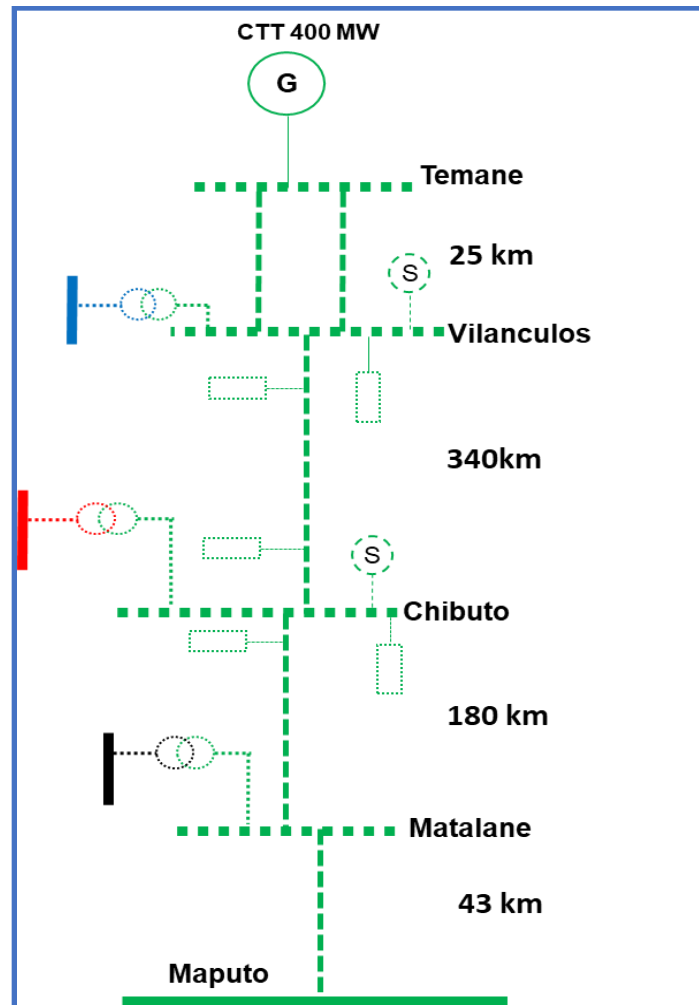
- i. Vilanculos 400/110 kV substation including the following:
 - 1 × 400 kV line bay for Chibuto feeder with associated secondary plant such as protection
 - 1 × 100 MVar bus reactor with associated bay and associated secondary plant such as protection
 - 1 × Vilanculos 400/110 kV 150 MVA transformer for connection of local load with associated bays at 400 kV and 110 kV bus bars with associated secondary plant such as protection
 - 1 × Vilanculos ±150 MVar 400 kV SVC/STATCOM with associated 400 kV bay with associated secondary plant such as protection
 - 1 × 110 kV line bay with associated secondary plant such as protection
 - Associated metering schemes
 - SCS/RTU with SCADA interface to EDM Control Center
 - 1 × 100 MVar line reactor for the Vilanculos-Chibuto 400 kV line at Vilanculos with associated secondary plant such as protection
- ii. Chibuto 400/275 kV substation including the following:
 - 1 × 400 kV line bay for Vilanculos feeder with associated secondary plant such as protection
 - 1 × 400 kV line bay for Matalane feeder with associated secondary plant such as protection
 - 1 × 100 MVar bus reactor with associated bay and associated secondary plant such as protection
 - 1 × Chibuto ±150 MVar 400 kV SVC/STATCOM with associated 400 kV bay and associated secondary plant such as protection
 - 1 × Chibuto 400/275 kV 150 MVA transformer for connection of local load with associated bays at 400 kV and 275 kV busbars with associated secondary plant such as protection
 - 1 × 275 kV line bay with associated secondary plant such as protection
 - Associated metering schemes
 - SCS/RTU with SCADA interface to EDM Control Center
 - 1 × 100 MVar line reactor for Vilanculos-Chibuto 400 kV line at Chibuto with associated secondary plant such as protection
- iii. Matalane 400/66 kV substation including the following:
 - 1 × 400 kV line bay for Chibuto feeder with associated secondary plant such as protection



- 1 × 400 kV line bay for Maputo feeder with associated secondary plant such as protection
 - 1 × Matalane 400/66 kV 400 MVA transformer for connection to EDM system with associated bays to 400 kV and 66 kV busbars with associated secondary plant such as protection
 - Associated metering schemes
 - SCS/RTU with SCADA interface to EDM Control Center
 - Integration of communications with EDM communications network (through fibers available)
- c. **Substation upgrade.** Upgrade of existing Maputo 400 kV substation to receive TTP 400 kV line, including the following:
- 1 × 400 kV line bay for Matalane feeder with associated secondary plant such as protection
 - 1 × 400 kV bus coupler bay at Maputo with associated secondary plant such as protection
 - Associated metering schemes
 - SCS/RTU with SCADA interface to EDM Control Center
 - Integration of communications with EDM communications network (through available fibers)
- d. **Other equipment**
- Fiber optic link with a digital PLC as backup is required to ensure good telecommunications capability
 - SCADA system to ensure visibility and controllability of new infrastructure in EDM Control Center
 - Inter-tripping scheme for loss of Vilanculos-Chibuto, Chibuto-Matalane, and Matalane-Maputo 400 kV lines
 - Coordinated protections schemes, control and metering systems at all interfaces
17. Figure 2.8 shows the single-line diagram of the TTP.



Figure 2.8. Single-line Diagram of the TTP



Component 2: CTT Power Generation Plant

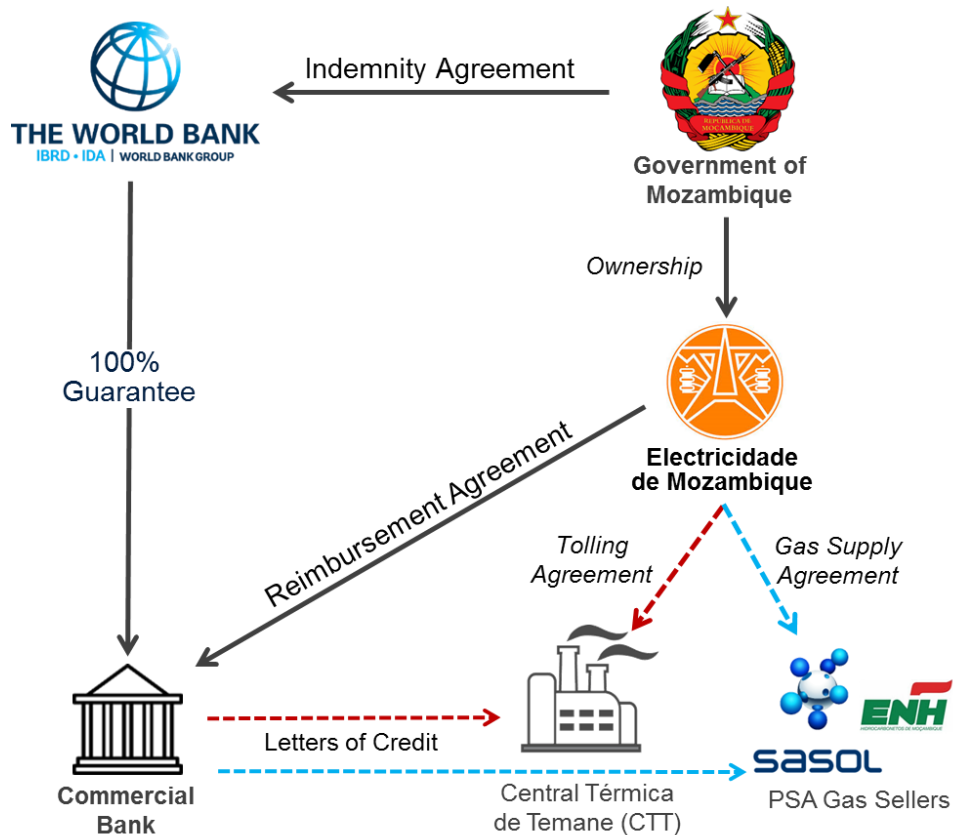
18. The CTT Project will have an installed capacity of approximately 400 MW with a double circuit 25 km 400 kV line connecting the plant to the TTP transmission system. In considering the technology selection, the project sponsors have sought to optimize an output profile that will provide maximum value to EDM in terms of meeting load profile requirements within the technical constraints for gas flow from the existing central processing facility. EDM is also seeking to maximize the energy production from the available gas. These requirements are driving the technology selection for the CTT Project toward a technical configuration mainly based on CCGTs for a minimum of 300 MW (which would be operating substantially as base load capacity), with the remaining part of the overall plant capacity of up to 100 MW based possibly on other technologies, such as OCGT. The decision of final configuration may be left to the procurement process.

19. This component includes two IDA payment guarantees for CTT 400 MW gas-to-power generation plant and the gas supply, which will provide risk mitigation to facilitate raising US\$750 million of commercial financing on a non-recourse basis.



20. The IDA guarantees in the total nominal value of about US\$120 million (requiring in aggregate about US\$30 million of IDA funds) will backstop Government payment obligations under the project-related agreements and will provide comfort to both lenders and investors (figure 2.9). The IDA payment guarantees will support the security package for EDM’s payments under (a) the Gas Supply Agreement with SPM and ENH (the PSA Gas Sellers) and (b) the Tolling Agreement with CTT. IDA has ensured the complementarity of both guarantees and has structured and sized them following the principle of minimum coverage necessary to make CTT bankable, in consultation with the investors and based on a market sounding carried out with private sector DFIs and commercial banks. Each of the two guarantees is structured considering the other guarantee’s risk coverage, triggering events, and beneficiaries. The design of the IDA guarantees was guided by a commercial market sounding carried out during the preparation of the project, based on similar power sector projects financed in the market and from consultations with private sector DFIs, commercial lenders, and investors regarding their appetite for investment in Mozambique. The guarantees would be finalized and signed at the same time as the commercial financing package for CTT, provided that EDM’s FSP is being implemented.

Figure 2.9. Proposed IDA Guarantee Structure for CTT



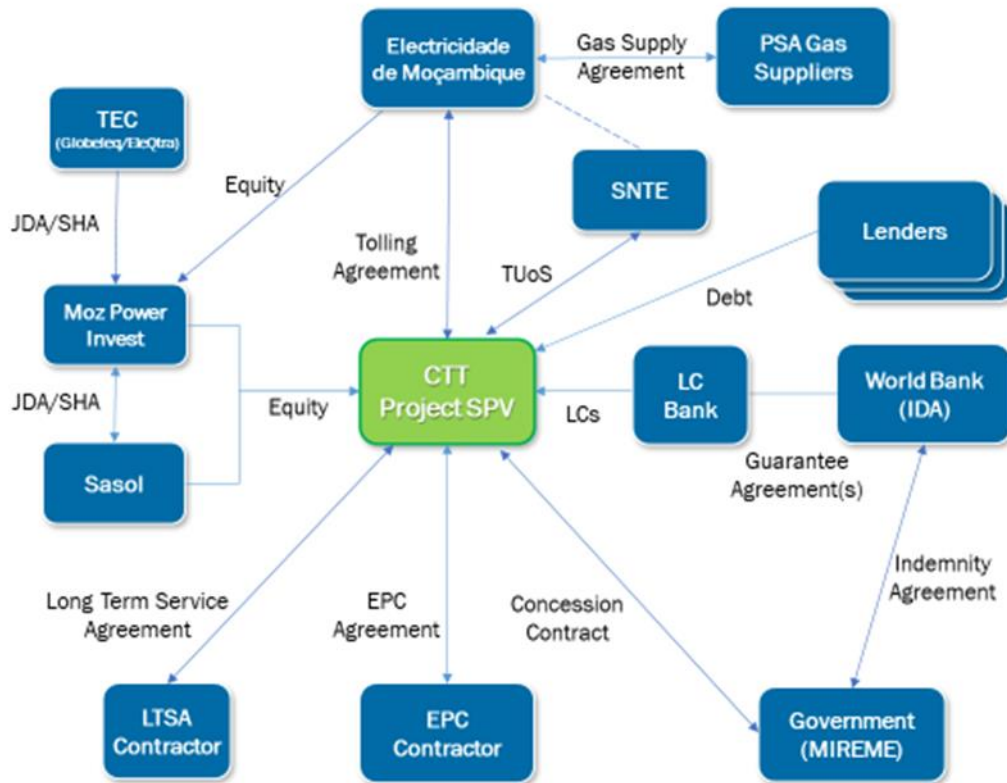
Source: World Bank.

21. Due to the configuration of the Mozambican national transmission network and the CTT Project being a major power generator within the system, the design of the CTT Project needs to offer a robust contribution to the national transmission network in terms of stability and reliability. As a result, the CTT



Project will mainly comprise power generators with high inertia, such as heavy or industrial gas turbines and steam turbines, expected to remain stable in the case of three-phase faults along the TTP transmission line. However, to keep the system sufficiently stable in case of a generation unit outage, the maximum power output for each gas turbine should be limited to 110 MW. The CTT Project will be designed with the ability for black start and islanding mode to comply with requirements of the Mozambique Grid Code.

Figure 2.10. CTT Project Structure



Legend: CTT – Central Térmica de Temane, EPC – Engineering, Procurement and Construction, JDA – Joint Development Agreement, LC – letter of credit, MIREME – Ministry of Mineral Resources and Energy; PSA – Production Sharing Agreement, SHA – shareholder’s agreement, SPV – Special Purpose Vehicle, TEC = Temane Electricity Consortium; TUoS = Transmission Use of System

22. The contractual framework (see Figure 2.10) of the CTT Project includes a suite of contracts between the CTT project SPV (Concessionaire), the GoM (Concedent), EDM (electricity offtaker and gas supplier to CTT), SNTTE (TTP - Project Company and transmission service provider), SPM/ENH (gas producers and gas suppliers to EDM), and EPC contractor. The Key Project Agreement, to stay in force for 25 years after the project’s COD (except for the EPC contract, of course), includes the Concession Agreement, the Tolling Agreement, the Transmission and Use of System Agreement, the Gas Supply Agreement, and the Connection and Operation Agreement.

- **The Concession Agreement**, between CTT Project Company and the Republic of Mozambique. A concession by the Republic of Mozambique to CTT Project Company to design, construct, operate, maintain, finance, insure, and manage CTT.



- **The Tolling Agreement**, between CTT Project Company (the seller) and EDM (the buyer). A contract for selling/buying the dependable power generation capacity and electric output of CTT, with the buyer being responsible for procuring and supplying the fuel (natural gas) free of charge to the plant. IDA will provide a payment guarantee covering the risks of nonpayment by EDM.
- **The Transmission and Use of System (TUoS) Agreement** is between CTT and SNTE to facilitate transparent cost recovery payments between EDM and SNTE. This agreement (a) sets out the terms and conditions upon which the Temane-Vilanculos transmission line will be financed and constructed by CTT, and then handed over to SNTE for operation; (b) stipulates that the electricity that is sold to EDM by CTT shall have priority access on the TTP; and (c) states that, on behalf of EDM, the CTT Project Company shall pay to SNTE the applicable transmission tariff (and then reimbursed by EDM to the CTT Project Company).
- **The Gas Supply Agreement**, between SPM/ENH (gas sellers) and EDM. The Gas Sales Agreement (GSA) sets the conditions and obligations for selling/buying natural gas by EDM for use by CTT, in support of energy access efforts. IDA will provide a payment guarantee to improve the terms of payment security required by the Gas Sellers and cover the risks of nonpayment by EDM.
- **Connection and Operation Agreement**, between CTT Project Company (network user), EDM (system operator), and SNTE (transmission company). It specifies the rights of the network user to connect to, and continue to be connected to, the national transmission network at the connection point and the technical conditions of the connections.
- **The EPC Contract**, between CTT Project Company and EPC contractor. The CTT Project will be constructed through a single responsibility EPC contract, procured competitively by the CTT Project Company.

23. **CTT risk allocation.** The risk allocation among the public and private parties is summarized in Table 2.2.

Table 2.2. CTT Risk Allocation

Phase	Risk	CTT	GoM	EDM	SNTE	Gas Sellers	EPC	IDA
Pre-construction	Project design	X					X	
	Debt and equity funding	X						
	Cost overrun	X					X	
	Delays in construction						X	
	Access to public infrastructure		X					
	Environment and social	X						



Phase	Risk	CTT	GoM	EDM	SNTE	Gas Sellers	EPC	IDA
Operation	Gas production					X		
	Gas supply and payment			X				X
	O&M	X						
	Performance	X						
	Power evacuation and transmission				X			
	Offtaker risk	X						X
	Environment and social	X						
Duration of Concession Agreement	Currency convertibility and transfer		X					
	Political force majeure (local)		X					
	Change in law		X					
	Expropriation		X					
	Natural force majeure	X	X					

24. **While the initial CTT project structure assumed a generation company owned 51 percent by the Government (through EDM), the Government ultimately decided to develop CTT as a majority private sector company (in line with the MFD agenda).** In May 2014, Sasol and EDM executed a Joint Development Agreement for CTT that initially suggested 51 percent stake in the project by EDM and 49 percent by Sasol (the same structure as executed in CTRG). Subsequently, EDM offered a sizable portion of its shares to a third private sector investor through a transparent and competitive selection, assisted by an external transaction adviser. The process resulted in the TEC, a joint venture of Globeleq and eleQtra (80/20 percent partnership), being selected as the preferred investor in CTT in December 2017. EDM and TEC subsequently executed a Joint Development Agreement in June 2018 and have successfully negotiated a Shareholders’ Agreement and formed a new Mozambican majority private sector-owned holding company - MPI. With the introduction of TEC’s expertise, MPI is presently leading all CTT development activities. On 25 April 2019, MPI entered into an Amended and Restated Joint Development Agreement with Sasol, which also confirmed Sasol’s decision to reduce its stake in CTT to a non-blocking minority position of 15 percent. MPI and Sasol will contribute the necessary equity to finance the project in a leverage ratio to the satisfaction of the CTT commercial lenders.

25. **In addition to shareholder equity, CTT will raise a significant portion of the funding (US\$525 million) needed for the investment from commercial debt providers, including export credit agencies (ECAs).** Power plants are typically constructed through a turnkey EPC contract, often supported by



Government-sponsored ECAs from their home countries. The CTT sponsors expect that ECAs will be able to arrange a significant portion of the long-term debt required in support of their national bidders for the EPC contract. ECAs will either provide direct lending or provide comprehensive insurance to commercial lenders, covering 95 percent of political risks and 80–90 percent of commercial risks, thereby insulating commercial banks from most of the lending risks. Due to Mozambique’s undisclosed sovereign debt and EDM’s continued financial difficulties, commercial banks are unlikely to consider any uncovered project finance lending for this project. Once the EPC contractor is selected, the associated ECA is expected to offer long-term debt at potentially cost-effective terms.

26. **Private sector arms of DFIs, including IFC, have also shown significant interest in providing debt finance for CTT.** Two IPP projects (with EDM as the sole offtaker) in Mozambique have closed long-term project finance in the last two years. The first project was a US\$189 million refinancing of the CTRG project,³⁹ which was lead-arranged by IFC and included a syndicated loan from the Emerging Africa Infrastructure Fund (EAIF)⁴⁰ and the Netherlands Financierings-Maatschappij voor Ontwikkelingslanden (FMO), both as B-lenders under IFC. The French private sector development agency (Proparco) and a commercial bank also participated with parallel loans. The second project, the 41 MW Mocuba Solar Project, with Scatec Solar and Norfund as the private investors (together with a 25 percent stake for EDM), reached financial close with lenders in March 2018. This included US\$55 million of financing from IFC and EAIF and IFC-administered blended finance from the concessional climate investment funds.

27. **These precedents provide the background for the market sounding activity IDA conducted to leverage additional sources of debt into the project and structure the payment guarantees appropriately.** The private sector arms of the DFIs that are likely to participate in the TTP financing have expressed interest in financing the CTT Project. This includes IFC, AfDB, IsDB, and OFID. With the ECA likely to arrange up to 50 percent of the debt for CTT and in case of low appetite from commercial banks for uncovered lending, it is expected that the balance (50 percent or more) of the funding would come from a combination of IFC and other private sector DFIs. MPI has held detailed discussions with IFC as potentially being one of the mandated lead arrangers for the project financing.

Component 3: Implementation Support, Technical Assistance and Capacity Building

28. Subcomponent 3.1: Support to SNTE for project

- **Project implementation support.** This includes financing project management expenses, Owner’s Engineer contract, assistance with contract management and procurement, and supervision of health and safety aspects during construction. Staff and resources will be partially seconded by EDM and CTT’s sponsor (Globeleq), but given the limited capacity and human resources available, additional specialized support will be required and financed through the project. The current setup of the TTP PIU is shown in Figure 1.1. The PIU is currently under the EDM structure and will be transferred to SNTE.

³⁹ The debt for CTRG was initially provided as a construction financing by Sasol Finance. This step was taken to expedite construction of the plant but was always intended to be refinanced with a long-term limited recourse structure once the plant was commissioned (that is, construction risk removed). Even after the refinancing, a portion (US\$50 million) of commercial bank debt remains from ABSA Bank with a Sasol corporate guarantee.

⁴⁰ EAIF is managed by Investec Asset Management and is part of the multi-donor Private Infrastructure Development Group. In the case of EAIF, support comes from the governments of the United Kingdom, the Netherlands, Sweden, and Switzerland, as well as private sector banks, the German DFI, KfW, and FMO.



- **Implementation of safeguards instruments and GBV mitigation and response.** The subcomponent will support strengthening the capacity of SNTE's ESU to ensure proper implementation and supervision of safeguard aspects during preparation and construction of the project. This subcomponent will also support establishing the capacity at SNTE to implement and supervise GBV mitigation and response measures, as well as preparing and implementing the GBV action plan.
29. **Subcomponent 3.2: Technical assistance to EDM.** This subcomponent will support the following:
- **Technical studies.** The project will support the preparation of technical background studies for enhancing regional power integration; and integration of renewable technologies in power system planning and operation.
 - **Strengthening market operator capabilities.** Strengthening EDM capacity for regional trading, optimal dispatch planning, and operations.
 - **Capacity building for corporate management.** Strengthening the capacity of EDM management.
 - **Increasing women workforce at EDM.** EDM's Young Professional Program aims to build a new generation workforce, with professional experience and enhanced leadership skills. The World Bank is supporting EDM's efforts to bring future talent to be trained through the project and after a time frame of 3–5 years to be transferred to EDM core business areas. The project will support EDM's Young Professional Program and the overall program coordination. Half of the selected professionals will directly support the implementation of the project. They will receive hands-on training, specialized short-term training, and exposure to all the elements of the project implementation and transmission system operation from the planning, procurement, safeguards, regional market, finance, and commercial aspects. The selection process will be done by EDM's HR directorate in coordination with the relevant departments hosting the professionals, and performance evaluation will be regular. At least 40 percent of the selected professionals will be women, which contributes toward closing gender gaps at the institutional level given that only 25 percent of women at EDM work in technical roles. The professionals will report directly to the hosting departments. The project is completed with activities financed under ProEnergia (P165453) aiming at implementing gender strategy in EDM.
30. **Subcomponent 3.3: Technical assistance to MIREME/ARENE.** This assistance will cover (a) studies on power sector investment plans, including Mozambique's role in regional energy trade and the integration of renewable technologies in power system planning and operation; (b) analysis of options for further strengthening of private sector investment in the sector; (c) support with advancing legal, institutional, regulatory, and governance framework for the energy sector; and (d) strengthening of the policy and regulatory capacity of MIREME and ARENE, respectively.

D. Gas Supply

Introduction

31. Since 2004, Sasol Petroleum Temane, *Companhia Mocambicana de Hidrocarbonetos*, and IFC have been producing gas from the Temane and Pande fields in the Inhambane region as an unincorporated joint venture under a petroleum production agreement) with the GoM. The petroleum



production agreement development comprises a central processing facility, where gas is treated and compressed for transport through an 865km long-distance pipeline to customers in the south, mainly for export to South Africa.

32. The CTT Project depends on gas supply from the first phase of the PSA development, given that (a) all gas resources in the PePA license area are presently allocated to other customers; (b) gas resources in the PSA license area beyond the first phase, such as gas in the Pande field, may only be developed in the future; and (c) opportunities to bring gas to the Inhambane region from elsewhere are extremely limited due to the large distances involved. Given that CTT depends heavily on the PSA, it is important to understand the security of gas supply from the new PSA license area to assess the risk that CTT may not have enough fuel to operate at capacity over its economic lifetime of 25 years.

Assessment of Gas Resources

33. In January 2016, the GoM approved SPM’s field development plan (FDP) for the first phase of the PSA development, which includes the following new discoveries in the Temane and Inhassoro fields:

- **Temane Main:** Reservoirs G8 and G8A
- **Teamane East:** Reservoirs G10, G11, G11A, G12, and G12A
- **Inhassoro:** G6 Oil Rim, and G6 Gas Cap

34. It should be noted that Temane Main and Temane East are gas fields, whereas Inhassoro is an oil field with an oil rim with associated gas and a gas cap.

35. Since then, SPM has identified additional gas resources in Temane Deep (reservoirs G6A, G10, G11 Sheet, and G11A). These resources will be included in an amended FDP to be submitted by SPM for approval by the GoM. Given the synergies between these additional resources and the original FDP, such approval will typically be granted.

36. SPM has commissioned an independent gas resource assessment from APR TRACS, which was recently completed. This study confirms the following recoverable gas volumes from the different reservoirs based on currently available reservoir data and based on an update of the current, approved FDP considering the additional resources in Temane Deep.

Table 2.3. Estimated recoverable gas volumes

Field	Reservoir	Recoverable (bcf)		
		Low (P75)	Mid (P50)	High (P25)
Temane Main	G8, G8A	97	174	260
Temane East	G10, G11, G11A, G12, G12A	1	6	78
Inhassoro	G6	232	377	659
Temane Deep	G6A, G10, G11 Sheet, G11A	16	59	174

37. This leads to the following estimated recoverable gas volumes on a portfolio basis:

- Low (P90): 510 bcf
- Mid: (P50): 688 bcf
- High (P10): 885 bcf

38. Under the assumption that the average gas demand from CTT is 60 mmscfd (million standard



cubic feet per day), the independent gas resource assessment suggests that with a probability of approximately 90 percent, there are sufficient recoverable gas resources in the first phase of the PSA development to fuel CTT for approximately 25 years. An important detail in the independent gas resource assessment is that even in the low portfolio case, gas production from the Inhassoro G6 gas cap would only be needed from 2028 onwards, that is, five years after the start of oil production. Note that these estimates are based on the assumption that the Temane Deep development will become an integral part of the first phase PSA development and that the GoM will approve the updated FDP accordingly. The independent gas resource study has given the World Bank the confidence to conclude that the risk of insufficient gas volumes for CTT is acceptable.

Gas Processing

39. According to the FDP for the first phase of the PSA development, gas production from the PSA license area would be commingled with legacy gas production from the PePA license area for treatment in the legacy petroleum production agreement central processing facility. The processing plant separates liquids from the gas, carries out both water and hydrocarbon dew pointing of the gas, and compresses the gas for pipeline export.

40. The central processing facility was originally designed to handle 305 mmscfd of gas when the petroleum production agreement development came onstream in 2004. Since then, the capacity of the facility has been expanded to 457 mmscfd in 2012, and further expanded to 492 mmscfd in 2016. For accommodating the PSA gas, the capacity of the central processing facility would have to be further expanded to handle up to 60 mmscfd of PSA gas on top of up to 492 mmscfd of legacy petroleum production agreement gas.

41. Instantaneous gas demand from the CTT could be ± 30 percent of the estimated average daily demand of 60 mmscfd, that is, ± 18 mmscfd. The central processing facility has the possibility to buffer up or down ± 10 percent of its current export capacity of 492 mmscfd into the legacy long-distance pipeline to the south, that is, ± 49 mmscfd, which would more than cover the anticipated swing in demand from the power plant. However, it would be important for this service to become part of a third-party gas processing agreement between the PSA partners and the PePA Unincorporated Joint Venture.

42. The central processing facility has been consistently designed and subsequently expanded with an $N + 1$ philosophy, whereby $N = 3$. This means that if any one of the four trains on any of the main processing steps in the plant fail, the facility would still be able to guarantee 100 percent of the required daily throughput. So far, this strategy has proven to be successful and has been a major factor to reach the current, high availability of the plant of 99.99 percent.

43. Sasol Petroleum Temane commissioned a de-bottlenecking study from Wood to assess whether the central processing facility could be modified to process $492 + 60 = 552$ mmscfd of feed gas while maintaining the $3 + 1$ philosophy. The results of this study were recently delivered. It would be technically feasible to modify the plant such that it would be able to process the higher throughput while upholding the current $N + 1$ standard. At the same time, some of the required modifications would be quite substantial and the debottlenecking itself would be challenging as it would take place while operating a “live” process plant. For example, the report concludes that all the four main processing steps—low pressure compression, dehydration, dew pointing, and high-pressure compression—need to be upgraded.

44. The de-bottlenecking study presented several solutions to the problem, including solutions that would no longer guarantee the current $+ 1$ redundancy of all main processes in the plant, solutions that

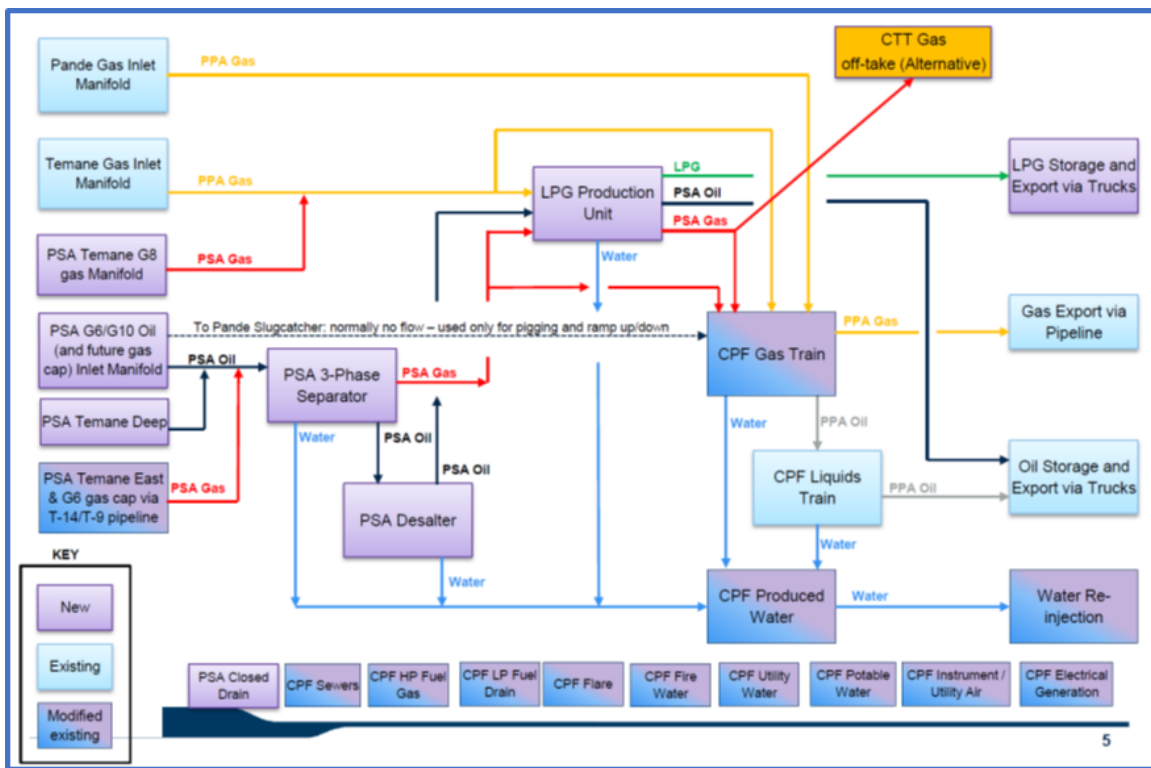


would potentially force the power plant to run at lower capacity in certain situations, and solutions that would force the power plant to take in untreated gas. Such solutions would not be acceptable from the point of view of the gas buyer, who should be able to receive gas at capacity under all normal operating conditions and even if any piece of equipment in the gas plant would fail.

45. Based on the results of the debottlenecking study, the parties agreed to explore the option where PSA provides gas at an Alternative Specification which would obviate the need to debottleneck the central processing facility, basically by providing gas through the new LPG facility to be constructed anyhow as part of the PSA development. This will save cost and time and reduce the challenges otherwise involved in debottlenecking a live operating facility but will require some investments at the CTT power plant side in terms of certain gas conditioning infrastructure. On balance it has been found that the additional CTT costs are significantly lower than the additional costs of debottlenecking the full CPF facility. EDM and the Gas Sellers are therefore intending to proceed with the gas supply arrangements on the basis of the Alternative Specification gas.

46. A preliminary block flow diagram illustrating the processing of PSA gas and the PSA gas supply offtake point for CTT gas based on supply through the PSA LPG plant and the Alternative Specification gas is included below for information.

Figure 2.11 – Preliminary Block Flow Diagram



Source: EDM

47. While gas supply to CTT will be processed and delivered through the new PSA LPG plant facility, the PSA is still expected to make use of certain utility facilities at the existing central processing facility, in particular related to power and water supply arrangements. The support to be provided from the CPF



Operator is expected to be formalized by the PSA Gas Sellers concluding a Shared Services Agreement (“SSA”) with the UJV. As between the Gas Sellers and EDM, the risk of non-performance by the UJV under the SSA will remain with the Gas Sellers. This risk is however considered low based on the excellent track record and very high reliability experienced at the central processing facility during 15 years of operation.



ANNEX 3: TREP Economic and Financial Analysis

COUNTRY: Mozambique

Temane Regional Electricity Project

Economic Analysis

Background

1. The TREP aims to increase electricity generation capacity with private sector participation and enhance transmission capacity for domestic and regional markets. The project will provide finance for the construction of the TTP (Component 1), an IDA guarantee to mitigate payment risks on the CTT power generation plant (Component 2), and technical assistance (Component 3). Due to the challenges in the quantification of the stream of economic benefits derived from the technical assistance component, Component 3 is not included in the economic analysis.

2. As part of the preparation activities, the developer commissioned a study to identify—among other things—the regional export potential of the project in relation to the evolution of the domestic market. IDA was able to review and comment on the reports prepared by the consultant during the study preparation.

3. At the domestic level, the report concludes that CTT's full capacity would be required under moderate and high demand growth scenarios, while the plant would be partially required under the low demand scenario in 2023–2039 (after that full capacity would be absorbed even in the low scenario). In addition, the study estimates that CTT will run at relatively high load factors (with some surplus energy available) under the moderate and high scenarios. In the low scenario, CTT's load factor fluctuates and would be negatively impacted by the commissioning of Mphanda Nkuwa hydropower plant, but CTT's load factor would increase to above 80 percent from 2036 onwards. Any energy and capacity surplus after meeting the domestic demand becomes an export opportunity for EDM in the regional market.

4. At the regional market, the results of the study show that there are several regional opportunities for EDM to benefit from CTT surplus. Countries such as the Democratic Republic of Congo, Namibia, Zambia, and Zimbabwe are identified as markets with good potential for bilateral contracts. In addition, bolstering trading in the SAPP Day Ahead Market (DAM) is envisaged as a viable opportunity for exports going forward (and Mozambique is already utilizing this option to sell excess energy). The analysis concludes that, in general, all markets will pay more than variable cost of production for surplus power during the period of analysis. The report highlights the importance of South Africa in driving SAPP prices; going forward, this is expected to be further affected by South Africa's policy decision on its future generation mix, which can have significant implications in terms of system variable costs (which drives the value of SAPP DAM).

5. **Project costs.** The TTP infrastructure is 400 kV single circuit alternating current transmission system running 563 km from Vilanculos to Maputo where the TTP will both deliver power into the Maputo distribution system and connect to the existing 400 kV export transmission system provided by MOTRACO. The TTP will consist of the following infrastructure components:

- **Substations.** (a) Construction of Vilanculos 400/110 kV substation; (b) construction of Chibuto 400/275 kV substation; (c) construction of Matalane 400/66 kV substation; and (d) upgrade of existing Maputo 400 kV substation.
- **Transmission lines.** (a) construction of Vilanculos-Chibuto line - 340 km long, (b) Chibuto-



Matalane line - 180 km long; and (c) Matalane-Maputo 400 kV line - 43 km long.

- **Other equipment.** (a) Fiber optic link with a digital PLC as backup is required to ensure good telecommunications capability; (b) SCADA system to ensure visibility and controllability of new infrastructure in EDM Control Center; (c) inter-tripping scheme for loss of Vilanculos-Chibuto, Chibuto-Matalane, and Matalane-Maputo 400 kV lines; and (d) coordinated protections schemes, control and metering system at all interfaces.

6. Table 3.1 presents a summary of the cost estimation for TTP.

Table 3.1. TTP - Investment Cost Estimation (US\$, millions)

Description	Investment Cost (including VAT) US\$, millions	Investment Cost (excluding VAT) US\$, millions
Substations	198.74	196.37
400 kV transmission line	180.16	160.86
Other costs (including physical contingencies)	68.93	66.18
Total	447.83	423.40

Note: VAT = Value added tax.

7. The operating expenditures (OPEX) of the TTP include management, staff, insurance, environmental license fee, vehicles maintenance, and spares and consumables. It is estimated that the OPEX would represent 3.5 percent of the investment cost per year.

8. The cost of the electricity to be transported through the TTP is the estimated (all energy) generation cost from CTT, including the cost of gas provided by EDM to CTT. The all-energy cost of CTT in economic (as opposed to financial terms) is estimated at US\$6 per kWh and assumes an 80 percent load factor. CTT is expected to generate 2,800 GWh per year (with a commissioning date of July 2023).

9. **Project benefits.** The economic benefits of the project derive from the possibility of selling the electricity generated at CTT to the domestic and regional market. These benefits are estimated by assessing the avoided costs of domestic and regional generation.

10. To estimate the avoided cost in the domestic market, the Mozambican Master Plan (*Plano Director Integrado de Infraestructuras de Electricidade*) and current power purchases by EDM were reviewed in addition to the independent market study commissioned by the developer. According to the Master Plan, the expansion of the system between 2018 and 2028 will be largely driven by thermal generation running on natural gas (with 65 percent of the forecasted additional capacity), followed by coal (28 percent), and renewable energy (7 percent). To estimate the avoided cost of generation, the model assumes that—if the project is not developed—Mozambique will need to rely (in the short term) on emergency generation (similar to the Karpower barge currently providing power in Nacala) while the subsequent power plants in the investment pipeline are developed; in the long term, the avoided cost it is assumed as the average generation costs of existing thermal power plants in the country.

11. To estimate the avoided cost of the regional market, the SAPP Pool Plan 2017 and the recent market outputs of the SAPP DAM have been reviewed, in addition to the independent market study commissioned by the developer. The SAPP Pool Plan provides an estimation of the short-run marginal costs (SRMC) of the system for 2017–2040. While useful for scenario comparison, this indicator fails to



provide guidance on the marginal generation cost of the system in the long run, which would be a more appropriate indicator for the avoided cost of electricity in the regional market. To bridge this gap, a capacity payment (in US\$ per kWh) for a gas thermal plant in the SAPP was estimated (using the figures included in the SAPP Pool Plan) and added to the SRMC as a proxy for the long-run marginal cost (LRMC) of the system. The LRMC is the avoided cost used for baseload electricity sales in the regional market.

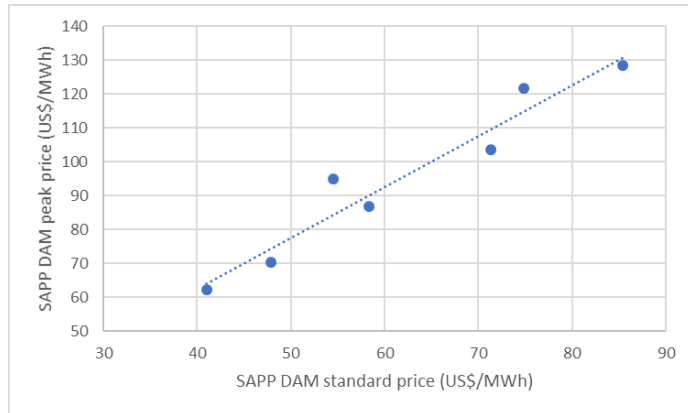
12. In addition to baseload sales, Mozambique is likely to try to maximize the economic (and financial) benefits for the project by trading electricity during peak hours. To estimate the peaking coefficient on SAPP prices, a simple correlation analysis was performed

for outcome of the DAM prices in SAPP during April–October 2018 (see figure 3.1). The analysis shows that, on average, peak prices are 54 percent higher than standard prices. The linear regression of this analysis was used to infer peak prices that are used for peak electricity sales in the regional market.

Other Assumptions

13. **Domestic and export sales.** Electricity produced by CTT will be used to serve the domestic market while the regional market will serve as an opportunity market to trade energy surplus that cannot be absorbed internally. Those surpluses are expected to be quite significant during the early stages of the project (where installed capacity will exceed additional domestic demand) and will decrease as domestic demand continues to grow in subsequent years. According to the Master Plan, Mozambique will have an excess capacity of 290 MW once CTT is commissioned. The export market is further divided between peak and off-peak sales. While the peak market is more attractive in terms of pricing, it may be possible that EDM will need to sell electricity at baseload to ensure commercial viability of the project, particularly during the initial years after commissioning. While the exact share of sales in each market is currently unknown, the base case scenario illustrated in Figure 3.2 is assumed.

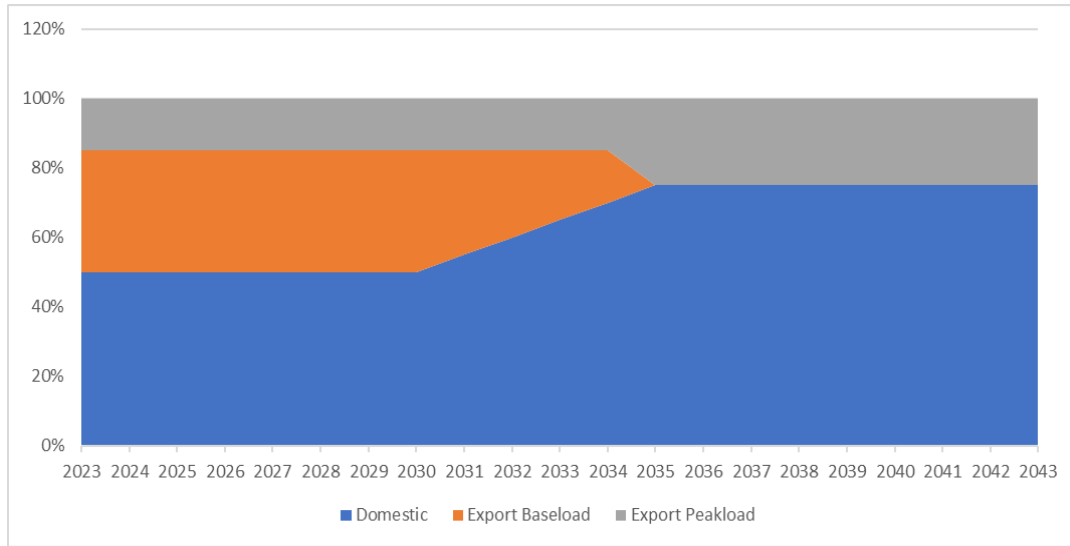
Figure 3.1. Correlation between Peak and Standard Prices in SAPP DAM (April–October 2018)



Source: World Bank.



Figure 3.2. Assumed Market Share for the Electricity Generated by CTT



Source: World Bank.

14. The discount rate has been determined based on the World Bank’s internal guidance, which recommends using the product of price elasticity of demand and the long-term real per capita GDP growth as a proxy of the discount rate. The price elasticity of demand is assumed as 2, which is the rule of thumb value of price elasticity recommended by the guidance. Mozambique’s per capita growth forecast between 2019 and 2023 averages about 4.9 percent according to the latest macroeconomic projection.⁴¹ On this basis, the discount rate of 10 percent is employed. The assumptions employed in the analysis are summarized in the following paragraphs.

15. The emission reduction of the project has been estimated using emission factors based on the World Bank’s GHG guidance and other reputable sources. The shadow price of carbon used for the valuation of GHG abatement is US\$39/78 in 2019 ascending to US\$64/128 in 2043, as per the World Bank’s guidance on the shadow price of carbon.

Results of Economic Analysis

16. The results of the economic analysis are summarized in table 3.2. The project demonstrated its economic viability with EIRR at 14.6 percent and NPV of US\$107 million. The results marginally improve when global environmental benefits through GHG abatement are included.

Table 3.2. Key Results from the Economic Analysis

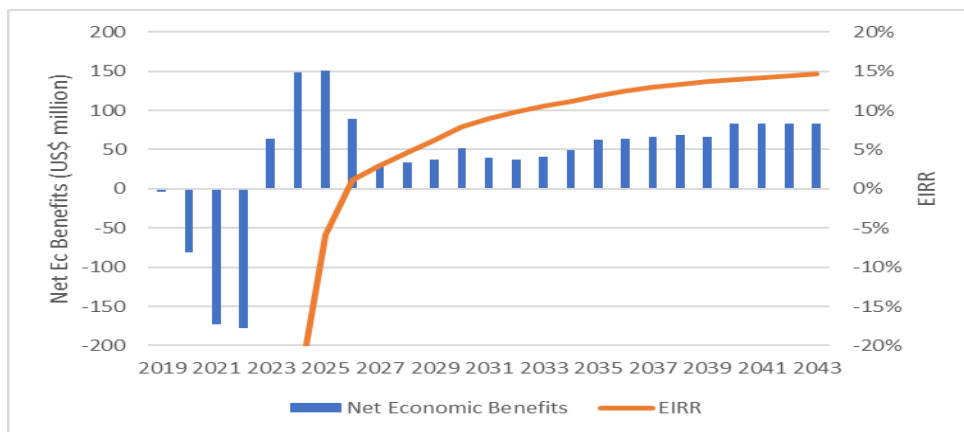
Composition of NPV	Net Value at Discount Rate of 10% (US\$, millions)
Total cost	1,349.5
OPEX	96.0
Generation cost	942.0
CAPEX	313.3

⁴¹ International Monetary Fund, World Economic Outlook Database, October 2018



Composition of NPV	Net Value at Discount Rate of 10% (US\$, millions)
Total benefit	1,456.5
Domestic sales	979.6
Exports	476.9
GHG abatement benefit	45.1
Net benefit without GHG	107.0
Net benefit with GHG	152.1
EIRR without GHG	14.6%
EIRR with GHG	17.0%

Figure 3.3. Project Net Economic Benefits and EIRR Evolution (excluding GHG)



Source: World Bank.

Sensitivity Analysis

17. A switching value analysis has been carried out to estimate the sensitivity of economic returns to the following key factors: (a) delays in the commissioning of the CTT Project; (b) decrease in the avoided cost of generation; and (c) cost overruns of the transmission line. Table 3.3 presents the results of the analysis.

Table 3.3. Switching Values

Scenario	Base Case	Sensitivity	Comments
CTT commissioning	July 2023	June 2026	A three-year delay in the commissioning of CCT would be required to affect the economic viability of the project.
Decrease in domestic avoided cost	—	-10.9 percent	An average decrease of 11 percent in the domestic avoided cost would be required to make the project economically unfeasible.
CAPEX (NPV)	US\$313.3 million	US\$395.2 million	Cost overruns above 26 percent of the project economic CAPEX would be required to make the project economically unfeasible.

Table 3.4. Economic Flows of the Project

		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Energy Balance																										
Energy injected	GWh					1400	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Transmission losses	GWh					70	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
Energy Av. for Dom. Consption	GWh					665	1330	1330	1330	1330	1330	1330	1330	1330	1463	1596	1729	1862	1995	1995	1995	1995	1995	1995	1995	1995
Distribution losses	%	19%	17%	16%	14%	13%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Distribution losses	GWh					89	165	161	161	161	161	161	161	177	193	209	225	241	241	241	241	241	241	241	241	241
Energy Distributed	GWh					576	1165	1169	1169	1169	1169	1169	1169	1286	1403	1520	1637	1754	1754	1754	1754	1754	1754	1754	1754	1754
Energy Av. for Exports	GWh					665	1330	1330	1330	1330	1330	1330	1330	1197	1064	931	798	665	665	665	665	665	665	665	665	665
						50%	50%	50%	50%	50%	50%	50%	50%	45%	40%	35%	30%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Economic Benefits																										
Domestic avoided cost	US\$/kWh					0.21	0.21	0.21	0.157	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103
Domestic benefits	US\$ M	0	0	0	0	120.9	244.6	245.5	183.0	120.4	120.4	120.4	120.4	132.5	144.5	156.6	168.6	180.6	180.6	180.6	180.6	180.6	180.6	180.6	180.6	180.6
SAPP SRMC	US\$/kWh	0.051	0.029	0.029	0.028	0.027	0.029	0.030	0.030	0.033	0.035	0.037	0.047	0.037	0.032	0.032	0.035	0.036	0.037	0.040	0.042	0.040	0.056	0.056	0.056	0.056
SAPP LRMIC	US\$/kWh	0.078	0.056	0.056	0.055	0.054	0.056	0.057	0.057	0.060	0.062	0.064	0.074	0.064	0.059	0.059	0.062	0.063	0.064	0.067	0.069	0.067	0.083	0.083	0.083	0.083
SAPP DAM Peak	US\$/kWh	0.119	0.087	0.087	0.086	0.083	0.086	0.088	0.088	0.092	0.096	0.099	0.113	0.099	0.091	0.091	0.096	0.097	0.099	0.103	0.106	0.104	0.128	0.128	0.128	0.128
DAM % sales	%					30%	30%	30%	30%	30%	30%	30%	30%	33%	38%	43%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Exports benefits	US\$ M	0	0	0	0	41.7	86.2	88.5	80.6	92.5	96.6	99.2	114.1	90.4	75.5	67.6	63.3	64.5	65.6	68.7	70.4	68.8	84.9	84.9	84.9	84.9
Total Economic Benefits	US\$ M	0	0	0	0	162.6	330.8	334.0	271.6	212.9	217.0	219.6	234.5	222.9	220.1	224.1	231.9	245.2	246.3	249.4	251.1	249.5	265.6	265.6	265.6	265.6
Economic Costs																										
CAPEX	US\$ M	4.2	80.4	169.4	169.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPEX	US\$ M	0	0.1	3.0	8.9	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
CTT cost	US\$/kWh					0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
Generation cost	US\$ M	0	0	0	0	84	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168
Total Economic Costs	US\$ M	4.2	80.6	172.3	178.3	98.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8	182.8
Net Economic Benefits																										
Excl Environmental Impacts	US\$ M	-4.2	-80.6	-172.3	-178.3	63.8	148.0	151.2	88.8	30.1	34.2	36.8	51.7	40.0	37.2	41.3	49.0	62.4	63.5	66.6	68.3	66.7	82.8	82.8	82.8	82.8
EIRR	%	14.6%																								
NPV (@10%DR)	US\$ M	\$107.01																								
CCGT emission factor	tCO2/MWh	0.354																								
CTT emissions	tCO2	-	-	-	-	495,600	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200	991,200
SAPP grid emission factor	tCO2/MWh	0.9488																								
SAPP avoided emissions	tCO2	-	-	-	-	630,952	1,261,904	1,261,904	1,261,904	1,261,904	1,261,904	1,261,904	1,261,904	1,135,714	1,009,523	883,333	757,142	630,952	630,952	630,952	630,952	630,952	630,952	630,952	630,952	630,952
MOZ grid emission factor	tCO2/MWh	0.067																								
Moza avoided emissions	tCO2	-	-	-	-	49,245	98,490	98,490	98,490	98,490	98,490	98,490	98,490	107,401	116,312	125,223	134,134	143,045	143,045	143,045	143,045	143,045	143,045	143,045	143,045	143,045
Net avoided emissions	tCO2	-	-	-	-	184,597	369,194	369,194	369,194	369,194	369,194	369,194	369,194	251,915	134,635	17,356	(99,924)	(217,203)	(217,203)	(217,203)	(217,203)	(217,203)	(217,203)	(217,203)	(217,203)	(217,203)
Social value of CO2	US\$/tCO2	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	55	56	57	58	60	61	63	64	65	67
Environmental Impacts	US\$ M	-	-	-	-	7.94	16	17	17	17	18	18	18	13	7	1	(5)	(12)	(12)	(13)	(13)	(13)	(14)	(14)	(15)	
Incl Env Impacts	US\$ M	(4.2)	(80.6)	(172.3)	(178.3)	71.7	164.2	167.8	105.8	47.4	51.9	54.9	70.1	52.9	44.2	42.2	43.5	50.2	51.1	54.0	55.2	53.4	69.1	68.9	68.7	
EIRR	%	17.0%																								
NPV (@10%DR)	US\$ M	\$152.13																								

Source: World Bank.



Financial Analysis of EDM

Historical Analysis

18. Historical analysis of the financial performance of EDM was carried out for 2014–2018. This was a period of difficult macroeconomic environment where the Mozambican metical versus the U.S. dollar dropped by nearly 85 percent between December 2014 and December 2018 while the accumulated inflation was close to 50 percent in the same period.

19. Table 3.5 presents key performance indicators of EDM.

Table 3.5. Key Performance Indicators of EDM

KPIs	Units	2014	2015	2016	2017	2018(p)
Average tariff (excluding exports)	US\$¢/kWh	8.04	6.78	6.25	8.20	10.11
Average export tariff	US\$¢/kWh	8.81	10.54	12.63	5.70	4.95
Average tariff (including exports)	US\$¢/kWh	8.08	7.46	8.05	7.68	9.16
Average energy fuel and purchase cost	US\$¢/kWh	3.17	5.15	6.74	6.36	7.87
Variable margin per unit	US\$¢/kWh	4.91	2.31	1.31	1.32	1.29
OPEX/kWh	US\$¢/kWh	3.75	2.66	1.93	1.95	2.48
Total losses	%	23.20	25.20	24.00	26.80	29.40
OPEX/customer	US\$/customer	103.30	87.20	71.60	63.20	76.35
Fixed assets/kW	US\$/kW	1,827	1,538	1,194	1,338	1,461
Fixed assets/kWh	US\$¢/kWh	41.20	31.90	26.90	28.80	27.31

Note: (p) provisional based on EDM management accounts dated March 3, 2019.

20. Since 2014, Mozambique’s generation capacity has expanded to 2,724 MW to serve local and regional demand, with significant participation from the private sector through IPPs. In February 2015, a 175 MW gas-fired IPP was commissioned at CTRG, a joint venture between EDM (51 percent) and Sasol (49 percent). In December 2015, a 120 MW IPP was also commissioned at CTRG. In October 2017, a 40 MW gas-fired IPP (Kuvaninga) was commissioned in Chokwe. All three IPPs have signed PPAs with EDM. The entry into operation of these plants transformed EDM’s energy balance, significantly modifying the unit cost of generation. Furthermore, in August 2018 EDM’s own CTM gas-fired plant (106 MW) entered into operation.

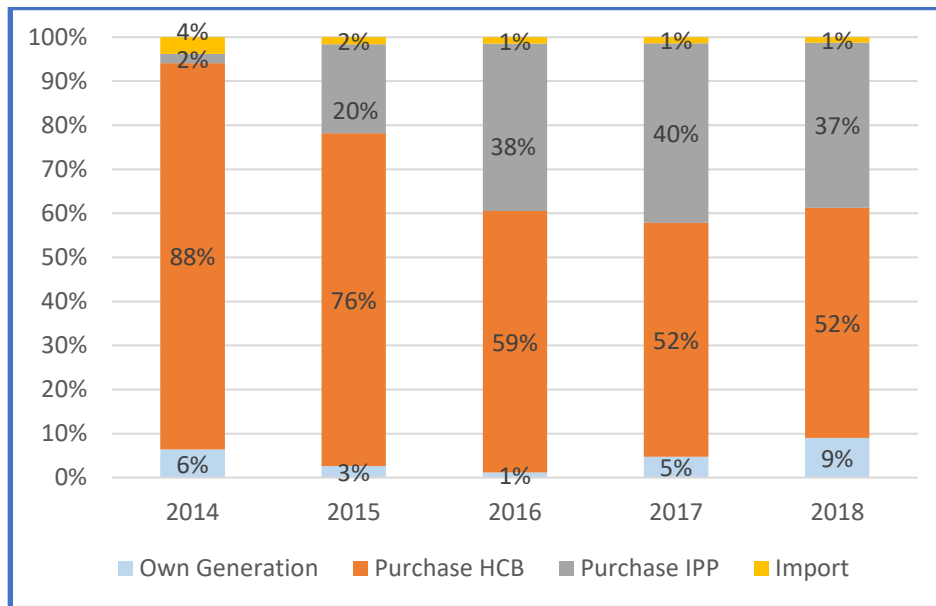
21. In 2018, EDM supplied a total of 6,613.7 GWh, a 4.5 percent increase compared to 2017 output largely driven by the increase in own generation. Power purchases from HCB improved marginally in 2018 but Cahora dam did not operate at full capacity due to low levels of water in the reservoir. In December 2016, the elevation of the reservoir fell to 312 m above sea level, the lowest recorded since the construction of the dam. There was a significant recovery in 2017 and by the end of the year the elevation had reached almost 318 m; however, this level is still way below the elevation of 326 m necessary for normal operation of HCB.



Table 3.6: EDM Energy Balance

EDM Energy Balance		2014	2015	2016	2017	2018 (p)
Own generation	GWh	318.0	158.0	82.7	297.6	595.1
Purchased from HCB	GWh	4,351.0	4,599.0	4,166.8	3,361.7	3,458.4
Purchased from IPPs	GWh	102.0	1,229.0	2,665.6	2,580.2	2,476.6
Import	GWh	190.0	98.8	102.9	87.0	83.6
Total supply	GWh	4,961.0	6,084.8	7,035.0	6,505.6	6,613.7

Figure 3.4. EDM Energy Mix - Percentage of Energy Supplied by Source (GWh)

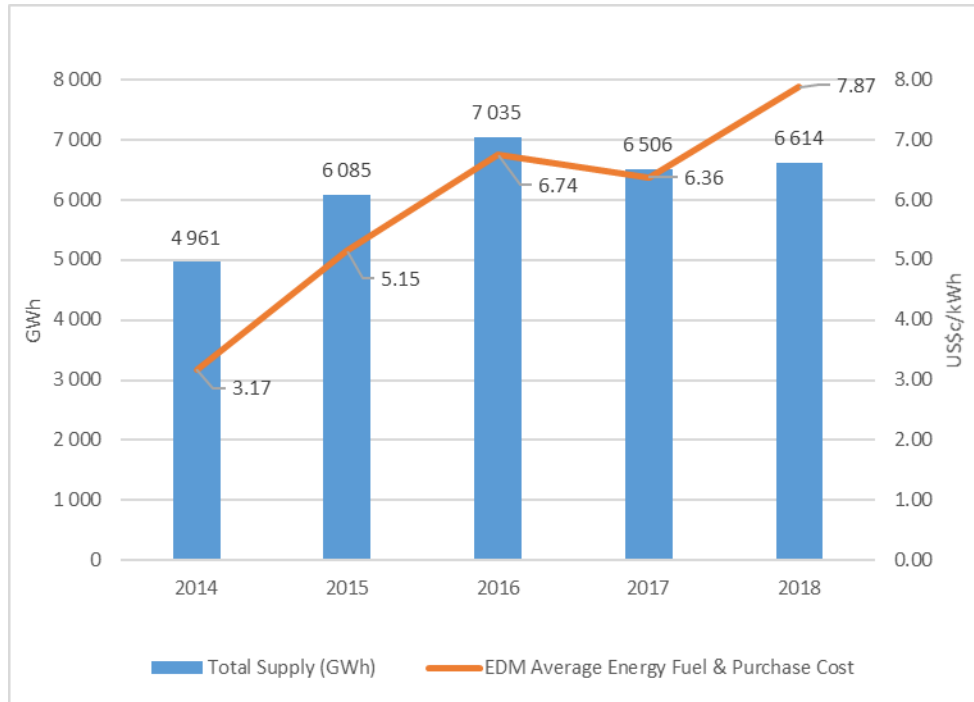


Source: World Bank.

22. The shift in the generation mix toward thermal generation and the fact that the energy acquisition prices are denominated in hard currency, as per the PPAs, exacerbated the negative impact of IPPs on EDM’s cost structure during the rapid devaluation of the Mozambican metical versus the U.S. dollar across the period analyzed. In 2018, the average unit energy fuel and purchase cost reached US\$ç7.87 per kWh.



Figure 3.5. Total Electricity Supplied and Average Unit Cost for Energy Purchases



Source: World Bank.

23. The increases in the energy purchase costs in 2014–2018 coupled with the negative impact of depreciation and inflation largely offset the increases in the average tariff during the same period. As a result, EDM’s financial situation deteriorated. Specifically, the EBITDA decreased during 2014–2016 and turned negative in 2017. The EBITDA remained negative in 2018 while improving from the 2017 level. Other indicators of profitability had a similar pattern in 2014–2018.

Table 3.7. EDM Financial Performance - Income Statement

Financial Income Statement (MZN, million)	2014	2015	2016	2017	2018 (p)
Domestic revenues	9,214	10,577	14,841	20,153	24,273
Exports	445	3,643	11,764	3,985	2,764
Electricity sales	9,659	14,220	26,605	24,138	27,037
Other revenues	1,081	2,129	2,517	2,934	3,352
Total revenues	10,740	16,349	29,122	27,073	30,389
<i>Growth</i>		52%	78%	-7%	12%
Total variable cost	-3,792	-9,810	-22,269	-20,876	-23,207
<i>Growth</i>		159%	127%	-3%	9%
Gross profit	6,947	6,538	6,852	6,205	7,182
<i>Growth</i>		-6%	5%	-9%	15%
Total fixed costs	-4,486	-5,697	-6,381	-6,593	-7,320
<i>Growth</i>		27%	12%	3%	11%
EBITDA	2,461	842	472	-387	-138
<i>Growth</i>		-66%	-44%	-182%	-64%



Financial Income Statement (MZN, million)	2014	2015	2016	2017	2018 (p)
Total non-operating items	-2,360	-3,047	-2,901	-2,810	-2,573
Earnings Before Interest and Tax (EBIT)	101.2	-2,205	-2,429	-3,195	-2,711
Total interest - gain (loss)	-173	-1,132	1,417	406	-819
Income tax - revenue (expense)	11	770	28	598	0
Net profit after tax	-61	-1,945	-983	-2,191	-3,530

24. EDM's cash position has also worsened in the period examined. The OCF remained positive during 2014–2018 largely due to the accumulation of payables.

Table 3.8. EDM Financial Performance - Cash Flow Statement

Cash Flow Statement (MZN, millions)	2014	2015	2016	2017	2018 (p)
EBITDA	2,461	842	472	-387	-138
Taxes	11	770	28	598	0
Working Capital change	3,842	9,179	2,487	-792	2,065
Other assets/liabilities change	211	1,228	791	2,197	275
(=) Net cash from operating activities	6,525	12,019	3,778	1,615	2,202
Net cash from investing activities	-7,151	-9,833	-18,197	-14,979	-6,096
Net cash from capital increase	0	0	0	7,029	663
Net cash from financing activities	462	-1583	15343	5818	-315
(=) Net increase in cash and cash equivalent	-164	603	925	-517	-3,546
(+) Cash at beginning of the year	2,680	2,844	3,447	4,372	3,855
(+) Cash at end of the year	2,844	3,447	4,372	3,855	309

25. During the period of analysis, the OCF was insufficient to cover the CAPEX, indicating a gap between financial needs of EDM due to higher investments and internal self-financing capabilities, which has been growing almost every year. In 2017, the EDM financial situation, which was under distress, required MZN 7 billion equity injection. As a consequence, there was an increase in fixed assets and accounts receivables, which were financed by loans from multilateral development banks, donations and grants, and accounts payable.

Table 3.9. EDM Financial Performance - Balance Sheet

Balance Sheet - IFRS	2014	2015	2016	2017	2018(p)
Accounts receivable - net	996	3,170	9,753	6,960	7,954
Inventory	1,393	1,366	1,307	1,617	3,123
Income tax receivable	0	209	0	0	0
Other financial current assets	386	1,194	2,157	2,107	5,472
Other current assets	838	1,273	4,954	5,648	7,176
Cash	2,844	3,447	4,372	3,855	309
Total current assets	6,456	10,659	22,543	20,188	24,034
Land	27,688	25,416	24,508	24,103	24,103
PPE	13,568	22,600	38,682	50,666	54,189
Others	1,528	2,066	3,159	2,288	2,288



Balance Sheet - IFRS	2014	2015	2016	2017	2018(p)
Total fixed assets	42,784	50,082	66,348	77,057	80,580
Total assets	49,241	60,741	88,891	97,245	104,614
Accounts payable	4,760	10,018	23,952	20,523	25,087
Accrued liabilities, interco and other	320	399	567	569	1,374
Donations and grants	395	338	414	187	
Other Financial Liabilities	1,466	2,636	324	1,527	2,713
Short Term Borrowings	415	1,046	7,331	7,033	4,669
Total Current Liabilities	7,356	14,437	32,588	29,840	33,843
Donations and grants	6,852	7,685	8,697	9,912	10,762
Other Financial Liabilities	8,211	14,982	509	483	134
Long Term Borrowings	2,684	1,501	25,758	31,468	37,611
Accounts payable	102	0	0	0	0
Deferred tax	3,248	2,666	2,429	1,831	2,127
Provisions	6,168	6,696	6,789	6,993	6,949
Total Long-Term Liabilities	27,265	33,529	44,182	50,687	57,583
Total Capital and Reserves	14,619	12,775	12,121	16,718	13,188
Total Liabilities and Equity	49,241	60,741	88,891	97,245	104,614

26. The historical financial ratios measuring the profitability, liquidity, and leverage of EDM are presented in Table 3.10.

Table 3.10. EDM Financial Ratios

Main Financial Ratios	2014	2015	2016	2017	2018(p)
Profitability and cash generation ratios					
Gross profit/Revenue	64.7%	40.0%	23.5%	22.9%	23.6%
OPEX/Gross profit	41.8%	34.8%	21.9%	24.4%	24.1%
CAPEX/Gross profit	66.6%	60.1%	62.5%	55.3%	20.1%
EBITDA/Fixed asset	5.8%	1.7%	0.7%	-0.5%	-0.2%
EBITDA/Depreciation and amortization	104.3%	27.6%	16.3%	-13.8%	-5.4%
EBITDA/CAPEX	34.4%	8.6%	2.6%	-2.6%	-2.3%
OCF/CAPEX	88.8%	110.7%	28.6%	13.5%	-31.0%
Liquidity ratios					
Current ratio	0.88	0.74	0.69	0.68	0.71
Acid test	0.69	0.64	0.65	0.62	0.62
Days Sales Outstanding (DSO)	33.85	70.77	122.24	93.84	95.53
Leverage ratios					
Debt to equity	1.87	3.13	5.58	4.21	6.12
Debt to asset	56%	66%	76%	72%	77%

27. Debt—fueled by the need to keep up with the investment plan for transmission, and distribution activities—grew significantly during the period. EDM closed in 2018 with a debt/equity ratio of 6x compared with a maximum typically accepted range in the industry of between 3.5x and 4x. The debt/asset ratio at the end of 2018 was 77 percent, slightly above the maximum typically accepted range



of between 60 percent and 70 percent.

Financial Strengthening Plan

28. Cognizant of this situation, EDM, with support from the World Bank, initiated the preparation of a Cost of Service Study in 2017 that provided the analytical foundations for the development of a comprehensive FSP. Based on the recommendations of this study, the GoM, MIREME, and EDM have initiated the implementation of the FSP. The FSP includes (a) increase of electricity tariffs followed by adjustments in line with domestic inflation and changes in electricity purchase costs that should be passed through; (b) improvement of EDM's operational efficiency through reduction of technical and commercial losses; (c) ensuring of sustainable funding for electrification; and (d) a recapitalization of EDM's debt in line with the recommendations of the Cost of Service Study (50 percent recapitalization).

29. The overall implementation progress of the FSP has been good. Specifically, the GoM enacted 25 percent increase in end user tariffs in two phases: on December 1, 2018, for high and medium voltage customers and on March 1, 2019, for low voltage customers (which includes residential customers). The GoM approved an NES in 2018, which limits EDM's responsibility for funding new connections to a service area of 100 m around the existing distribution lines, with the GoM being responsible for financing expansion of access outside the EDM's servitude boundaries. The NES established a National Electrification Account that would pool the funding for the Government's electrification plan to be implemented by EDM (on-grid) and FUNAE (off-grid) electrification. The funding is to be provided by contribution from the GoM's budget, generation concessions fees, taxes on electricity exports, concessional financing from development partners, and contribution from existing electricity consumers through an electrification levy.

30. The World Bank supports the implementation of the FSP through the ongoing investment financing operations and technical assistance. Specifically, the PERIP supports EDM with operational efficiency improvement measures and, particularly, the loss-reduction action plan that has been agreed with EDM (see Box 3.1). The recently negotiated ProEnergia Project will support electrification efforts of the GoM. In addition, the GoM and EDM receive sizable technical assistance (including, for implementation of the FSP) as part of investment financing projects and the ongoing ESMAP.

31. Projections of EDM's financial performance have been carried out assuming that the key measures of the FSP will be implemented as planned. These assumptions include (a) implementation of PERIP's Component 2 to reduce system losses, from 29 percent in 2018 (based on provisional accounts) to 20 percent in 2024; (b) financing of electrification according to the NES; and (c) adjustment of electricity tariffs in line with domestic inflation and full pass-through of generation costs. Since the discussions between the GoM and EDM for recapitalization of EDM's onlent debt are ongoing, this measure of the FSP is not factored in the financial projections. If implemented, this measure will strengthen the balance sheet of EDM and improve its solvency ratios.



Box 3.1. Power Efficiency and Reliability Improvement Project - PERIP

The project objective is to improve the operational capacity of the electricity network in the project areas and the operational efficiency of EDM. The proposed project supports the rehabilitation and upgrade of key sections of the network infrastructure, enhances the operational and commercial efficiency of EDM, and provides capacity building and implementation support to EDM and the GoM in several areas, including power sector reform, electricity access, and power sector planning.

In terms of enhancing the commercial and operational efficiency of EDM, the project supports the following activities:

- **Consolidation of Integrated Management System (*Sistema Integrado de Gestão*)** to ensure full permanent use of the functionalities provided by the management information system. Activities in this subcomponent involve incorporation of additional system functionalities, such as a geographic information system, an asset management system, and a new package to optimize management of purchases by prepaid customers.
- **Revenue protection program** - Phase II to protect the revenues that EDM receives from sales to large and medium customers, ensuring that all users in that high-value segment are systematically billed according to accurately metered consumption, thus eliminating nontechnical losses (unmetered consumption) in supply to those customers.
- **Upgrade of information systems** including upgrades and acquisition of information system (hardware and software). All regions in the country, where EDM provides electricity services to its customers, need to have strong, reliable communication links with the data center where the information system are hosted.

Profitability

32. Under the assumption of FSP implementation, EDM is expected to start becoming operationally profitable in 2019 with negative but improved profitability. EDM’s return on invested capital (RoIC) is expected to recover to around 4 percent in 2021–2024. EDM’s return on equity (RoE) is expected to improve to 6 percent in 2021 and maintain positive figures in 2023–2024.

Table 3.11. EDM Income Statement: Projections of Key Items

(US\$, millions)	2019	2020	2021	2022	2023	2024
Net revenues	630.6	688.6	746.9	835.2	965.3	1146.2
EBITDA	66.9	110.8	159.3	173.9	218.6	205.3
EBIT	22.7	64.1	107.0	113.6	152.9	131.8
Net profit	-51.8	-17.1	20.6	29.5	60.4	49.7



Table 3.12. EDM Profitability Ratios

	2019	2020	2021	2022	2023	2024
EBITDA margin (%)	11	16	21	21	23	18
Operating margin (%)	4	9	14	14	16	11
Net margin (%)	-8	-2	3	4	6	4
RoE (%)	-23	-6	6	7	9	6
Return on Assets - ROA (%)	-3	-1	1	1	2	2
RoIC (%)	1	3	4	4	5	4

Liquidity and Leverage

33. EDM’s liquidity position remains weak as long as EDM continues to have sizable payables, including to IPPs. The quick ratio is expected to remain in the range of 0.4× to 0.5× within the forecasting period, substantially below the required 1:1. However, this level of liquidity should allow EDM to meet its recurrent payment obligations and increasingly settle its accumulated arrears, including to IPPs.

Table 3.13. Liquidity and Solvability Ratios

	2019	2020	2021	2022	2023	2024
Quick ratio - (cash + current receivables)/current liabilities	0.42	0.41	0.42	0.43	0.47	0.53
Current ratio - current assets/current liabilities	0.64	0.64	0.67	0.70	0.78	0.92
Leverage - long-term debt/equity	2.7	2.8	2.6	2.3	1.7	1.5
Total liabilities/Total assets	88%	86%	84%	81%	75%	71%
ICR (EBITDA/Interest expenses)	90%	136%	208%	247%	341%	350%
DSCR (excluding CAPEX)	1.07×	1.05×	1.53×	1.55×	1.57×	2.28×
CFO/Debt ^a	5%	4%	6%	6%	7%	7%

Note: CFO = Cash flow from operations.

a. Debt = Short-term borrowings + long-term borrowings + current portion of long-term borrowings.

34. EDM’s debt is largely concessional. As a result, the ICR becomes adequate from 2020 onwards as EDM becomes profitable. The DSCR will also improve substantially reaching a comfortable level of above 1.25× by 2021.

Sensitivity Analysis



35. A sensitivity analysis was performed to EDM's FSP to test how the financial situation of EDM will change in response to several key factors as described below:

- Scenario 1: 10 percent higher depreciation on foreign exchange with no additional tariff increase
- Scenario 2: Domestic demand growth of only 3 percent per annum, instead of 5 percent⁴²
- Scenario 3: Loss reduction program only achieving 5 percent reduction over next 5 years, instead of 10 percent
- Scenario 4: 20 percent additional capex for electrification per annum, which has to be funded by EDM
- Scenario 5: US\$40 million annual capex for electrification per annum, similar to the level of capex spent in 2018.

36. The table below presents the outcomes of the sensitivity analysis. Scenarios 1, 3 and 5 have the largest negative impact on EDM's financial sustainability, with a substantial impact on two key liquidity indicators: quick ratio and current ratio. At the same time, financial projections show that Scenarios 2 and 4 will affect EDM financial situation in a more limited manner.

⁴² It is assumed that the resulting excess supply will be sold in the SAPP market consistent with the current practices.



Table 3.14 – Results of the sensitivity analysis on selected indicators

		2020	2021	2022	2023	2024
EBITDA Margin	Base case	16%	21%	21%	23%	18%
	S1 - Devaluation	13%	18%	17%	19%	15%
	S2 – Low demand	15%	20%	27%	22%	17%
	S3 – Loss reduction	13%	14%	11%	18%	13%
	S4 – Capex 20% more	16%	21%	21%	23%	18%
	S5- Capex as in 2018	16%	21%	21%	23%	18%
Net Margin	Base case	-2%	3%	4%	6%	4%
	S1 - Devaluation	-13%	0%	0%	3%	1%
	S2 – Low demand	-3%	2%	7%	5%	3%
	S3 – Loss reduction	-6%	-5%	-6%	1%	-1%
	S4 – Capex 20% more	-3%	3%	3%	6%	4%
	S5- Capex as in 2018	-3%	2%	3%	5%	3%
Quick Ratio	Base case	0.41	0.42	0.43	0.47	0.53
	S1 - Devaluation	0.40	0.38	0.37	0.37	0.37
	S2 – Low demand	0.41	0.41	0.44	0.47	0.52
	S3 – Loss reduction	0.40	0.37	0.34	0.34	0.35
	S4 – Capex 20% more	0.41	0.42	0.42	0.45	0.50
	S5- Capex as in 2018	0.38	0.37	0.36	0.37	0.39
Current Ratio	Base case	0.64	0.67	0.70	0.78	0.92
	S1 - Devaluation	0.62	0.60	0.60	0.62	0.66
	S2 – Low demand	0.63	0.65	0.71	0.78	0.90
	S3 – Loss reduction	0.61	0.58	0.55	0.56	0.60
	S4 – Capex 20% more	0.64	0.66	0.68	0.76	0.88
	S5- Capex as in 2018	0.59	0.59	0.59	0.62	0.68
DSCR	Base case	1.05x	1.53x	1.55x	1.57x	2.28x
	S1 - Devaluation	0.82x	1.24x	1.25x	1.28x	1.73x
	S2 – Low demand	1.00x	1.46x	1.68x	1.58x	2.15x
	S3 – Loss reduction	0.84x	0.98x	0.83x	1.10x	1.47x
	S4 – Capex 20% more	1.05x	1.51x	1.53x	1.56x	2.24x
	S5- Capex as in 2018	1.01x	1.43x	1.43x	1.45x	1.98x

37. World Bank’s engagement in the power sector of Mozambique helps implementation of the FSP and mitigation of the impact of scenarios that affect EDM financial situation. World Bank funded ProEnergia Project supports implementation of NES while PERIP supports loss reduction efforts of EDM. Also, World Bank technical assistance will support introduction of automatic tariff adjustments for exogenous factors, including depreciation. The proposed project by supporting the increase of EDM’s foreign currency denominated export revenues should also help limit the impact of local currency depreciation.

Financial Analysis of the TTP

38. The financial analysis of the TTP is based on the TTP financial model prepared by EDM, which the World Bank team has reviewed and found satisfactory. The TTP financial model is developed to determine the transmission tariff required for financial viability of the TTP, as the transmission tariff for TTP will only be determined after the EPC contractor for the project is procured. The financial model calculates a levelized tariff required to meet a 2 percent internal rate of return (nominal in U.S. dollar and after tax – basically equal to the weighted average cost of financing to SNTE).



39. The financial model is based on the following assumptions:
- Total TTP funding requirements: US\$533 million (excluding technical assistance).
 - Construction period: 34 months.
 - 400 MW transfer capacity (from CTT) on the TTP infrastructure with an estimated annual energy transfer of approximately 2,800 GWh (80 percent load factor).
 - EDM is expected to provide an equity contribution of US\$13 million.
40. Indicative terms for loan facilities and NTF grant supporting the TTP are provided in table 3.15.

Table 3.15. Indicative Terms for Loan Facilities and NTF Grant Supporting TTP

Facility Name		WB	OFID	DBSA	AfDB	IsDB	Shareholder	NTF
Maximum Funding	USD '000	296 000	36 000	50 000	33 000	100 000	13 000	24 000
Loan Tenor - Post COD	years	30.0 yr	17.0 yr	12.0 yr	30.0 yr	17.0 yr	5.0 yr	n/a
Loan End Date	dd/mm/yy	30-Apr-53	30-Apr-40	30-Apr-35	30-Apr-53	30-Apr-40	30-Apr-28	n/a
Base Interest Rate (BIR)		IDA - no base rate	IDA - no base rate	6 Mo Libor rate	IDA - no base rate	6 Mo Libor rate	IDA - no base rate	Grant

Source: EDM

41. The financial model shows, by design, that the TTP is financially viable and derives a levelized cost of transmission of US\$¢1.31 per kWh. However, the actual tariff in the Transmission Use of System agreement will be in the form of a fixed charge for the required transmission capacity, expressed as US\$ per kW per month. The financial model indicates a required capacity charge of US\$7.75 per kW per month (in January 2018 terms).

42. Table 3.16 presents a summary of key debt sustainability ratios included in the financial model: DSCR with a minimum required value of 1.25, ICR with a minimum value of 1.10, and LLCR with a minimum required value of 1.25. The values from the model show that for the proposed tariff these ratios are met with good margin.

Table 3.16. TTP Key Ratios

Financial Covenants	Target	Min. Value
DSCR (senior debt)	1.25 x	1.85 x
ICR (senior debt)	1.10 x	5.69 x
LLCR (senior debt)	1.25 x	1.25 x

Source: EDM.



ANNEX 4: Procurement

COUNTRY: Mozambique

Temane Regional Electricity Project

Procurement

1. **Applicable procedures.** Procurement for the proposed operation will be carried out in accordance with the 'World Bank Procurement Regulations for IPF Borrowers', dated July 1, 2016, revised August 2018, and the provisions stipulated in the Financing Agreement. Further, 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 July 2016, will apply.
2. **Procurement strategy.** EDM has commissioned a PPSD for the project, with support from the World Bank. The PPSD has thoroughly reviewed the market for the proposed project and informed the most appropriate methods to approach the market and be able to achieve value for money with the intended procurement packages. While the project is co-financed by other financiers, the market approaches to be used by the other financiers are consistent with the recommendations laid out in the PPSD.
3. Risks identified in the PPSD include the following: (a) a risk of delays in concluding the procurement phase of the TTP caused by slow response times for contract approvals from government agencies together with delays arising from differing procurement requirements from donor funding agencies in a multi-donor funded project environment; (b) the potential for contractors to not have sufficient resources to efficiently construct substations in multiple locations simultaneously; (c) a low threshold of decision making within EDM causing delays in the approval process in the various phases of TTP procurement; (d) lack of a coherent internal operational strategy with respect to the management of critical spare parts and the standardization of key equipment specifications such as transformers, reactors, switchgear, insulators, and so on; (e) high levels of bureaucracy in government agencies and in particular customs clearance, company registration with respect to enabling timely payment of advance payments, and labor permitting; (f) unknown subsurface ground conditions for substations and static compensator units that will cause EPC contractors, in a competitive bidding environment, to pass this risk back to the TTP resulting in probable claims for time and cost; and (g) project risk with respect to unknown subsurface conditions for OHL that is unavoidable until such time as line designs are completed by the OHL contractor. Mitigation measures were recommended to reduce the likelihood of occurrence of these risks.
4. Mitigation measures recommended to offset these risks are the following: (a) EDM Project Coordinating Committee should be established to coordinate EDM's implementation strategy for the project with that of other major projects undertaken within EDM and currently under development with respect to equipment specification standardization, internal PIU resourcing and contractor resourcing, and performance evaluation; (b) ensure that EDM's project resources are supplemented by external consultants together with an Owner's Engineer team during the procurement and construction phases; (c) experienced substation static compensator equipment engineers will need to be sourced from the Owner's Engineer team for technical evaluation of bid packages to alleviate the burden on operating and systems planning personnel; (d) prequalification of contractors, where appropriate, will be necessary to ascertain contractor's capacity to execute contracts in an efficient manner with respect to application of sufficient management and labor resources, construction equipment, and the contractor's financial resources; and (e) limits of authority drafted in this PPSD require formal approval by EDM and incorporation into a project procedure manual.



5. **Activities to be financed by the World Bank funding.** The TTP has a much larger financing envelope, that amounts to US\$552 million, of which the World Bank has a share of US\$296 million (with another US\$9 million being provided as Technical Assistance to EDM and MIREME/ARENE). The other financiers are (a) AfDB; (b) Government of Norway; (c) IsDB; (d) OFID; and (e) DBSA. While the funding from the Norwegian Government is administered by the World Bank through a trust fund, the NTF, and will be using the World Bank Procurement Regulations, the other financiers have advised that the packages to be financed by them will follow their respective procurement requirements. Some of the financiers have agreed to jointly co-finance some of the packages, including the World Bank along with AfDB and DBSA. AfDB and DBSA have expressed their acceptance for the use of World Bank’s procurement documents and procedure in the co-financed contracts. The tentative packages are described in Table 4.1.

Table 4.1. TTP cost and funding⁴³

US\$, million	Costs per Lot	Gov. of Norway	IDA	AfDB	IsDB	OFID	DBSA	EDM
Lot 1 – Substations	139	14	125					
Lot 2 - STATCOM/SVCs	69		36	33				
Lot 3 - Transformers and reactors	42		42					
Lot 5 - Vilanculos-Chibuto Line	138				96	36		6
Lot 6 - Chibuto-Matalane-Maputo Line	91		44				47	
Environmental and Social compensation	39		39					
Owner's costs to be funded	34	10	10		4		3	7
	552	24	296	33	100	36	50	13

6. **Procurement arrangements.** The proposed procurement activities for the project have been managed by EDM, but this function is being transferred to SNTE, a wholly owned subsidiary of EDM. EDM has extensive experience with the implementation of World Bank-funded operations as well as from other bilateral and multilateral agencies. At present there are two other World Bank-funded operations under implementation. The project has an implementing agency with all required core competencies for the project management, including fiduciary. With the establishment of the SNTE, these competencies are being transferred to SNTE.

7. **Procedures for selection of consultants.** Quality and Cost-Based Selection will be the main method for the selection of firms for assignments such as (a) Owner’s Engineer and (b) environmental and safeguards studies. Occasionally, consulting services may be procured through Consultants’ Qualifications based Selection and Least-Cost Selection procedures, whenever its complexity justifies the adoption of such methods in accordance with the PPSD, such as for the selection of (a) geotechnical surveys and (b) heavy haul route survey.

8. **Procedures for procurement of works.** Works—including (a) supply and installation of substations; (b) supply and installation of static compensators; (c) supply and installation of power transformers and reactors; (d) supply and installation of overhead transmission lines—will be procured through open international procedures, with the adoption of the World Bank’s Procurement Regulations, to ensure adequate competition and value for money, in accordance with the PPSD. Other minor works

⁴³ Lot 4 is not included in the table as this lot, being the 25-km transmission line from the power plant at Temane to Vilanculos substation, will be funded by the CTT project.



contracts, if later identified, will be procured through Open Competitive Procedure, the Request for Bids (RFB), consistent with the Mozambique Procurement Regulation (Decree 5/2016 of March 8, 2016) and limited to the local market.

9. **Procedures for goods and services.** Goods, including office equipment and IT equipment, among others, will be procured generally through Request for Quotations. When the estimated amount exceeds US\$100,000, procurement may be done through an Open Competitive Procedure, the RFB, consistent with the Mozambique Procurement Regulation (Decree 5/2016 of March 8, 2016) and limited to the local market. International competition is not anticipated.

10. **Procurement Manual.** A project Procurement Manual has been prepared, as part of the POM. The manual will provide guidance on the implementation of the project, and it summarizes the main procurement aspects applicable to the project. The manual will be updated from time to time to incorporate lessons throughout the implementation.

11. **The Procurement Plan** for the project is informed by the PPSD. EDM will manage the procurement activities through the World Bank’s tracking system, Systematic Tracking of Exchanges in Procurement, which will provide for an environment for the submission of prior review requests to the World Bank and minimal contract implementation monitoring.

12. **Contract management capability.** With the support from the Owner’s Engineer, the required capacity to adequate contract management will be made available. This will also strengthen the capacity of EDM personnel through on-the-job technical assistance. The risk of contractual issues during implementation is therefore minimized.

13. **Review by the World Bank of procurement decisions.** Table 4.2 indicates the initial values for prior review by the World Bank. All activities estimated to cost below these amounts shall be treated as post review and will be reviewed by the World Bank during the implementation support mission under a post-procurement review exercise. Direct Contracting/Single Source Selection will be subject to prior review only for contracts estimated to cost more than the amounts indicated in the Table 4.2. The World Bank may, from time to time, review the amounts, based on the performance of the implementing agencies.

Table 4.2. Prior Review Thresholds

Procurement Type	Prior Review (US\$)
Works and supply and installation	10,000,000
Goods and non-consulting services	2,000,000
Consultants services (Firms)	1,000,000
Individual consultants	300,000

14. **Assessment of national procedures.** The Mozambique Procurement Regulation, Decree 5/2016 of March 8, 2016, has been assessed as required under the World Bank’s Procurement Framework. The assessment indicated that the country’s regulations are generally consistent with international best practice for the following reasons: (a) there is adequate advertising in national media; (b) the procurement is generally open to eligible firms from any country; (c) contracts documents have an appropriate allocation of responsibilities, risks, and liabilities; (d) there is publication of contract award information in



local newspapers of wide circulation; (e) the national regulations do not preclude the World Bank from its rights to review procurement documentation and activities under the financing; (f) there is an acceptable complaints mechanism; and (g) records of the procurement process are maintained.

15. However, the RFB/Request for Proposals document shall require that bidders/proposers submitting bids/proposals present a signed acceptance at the time of bidding, to be incorporated in any resulting contracts, confirming application of, and compliance with, the World Bank's Anti-Corruption Guidelines, including without limitation the World Bank's right to sanction and the World Bank's inspection and audit rights.

16. With the incorporation of the above provision, the Mozambique Procurement Regulation will be acceptable to be used under those procurements not subject to the World Bank's prior review, as the thresholds indicated in Table 4.2, or any updates indicated by the World Bank in the Procurement Plan.



ANNEX 5: Financial Management

COUNTRY: Mozambique

Temane Regional Electricity Project

Background

1. A Financial Management Assessment was undertaken to evaluate the adequacy of the proposed project FM arrangements. The assessment was carried out in accordance with the World Bank Directives and Policy for Investment Project Financing (IPF) and the World Bank Guidance on FM in World Bank IPF Operations issued on February 28, 2017. The proposed project will be implemented by MIREME, EDM, and SNTE. MIREME and EDM have gained experience over time in implementing the following World Bank-financed operations: Energy Reform and Access Project (P069183, closed on March 31, 2011), Energy Development and Access Project (P108444, closed on June 15, 2017), and PERIP (P158249, ongoing). Concerning SNTE, the arrangements (accounting staff and systems, internal control produces, and project external auditors) are not yet in place as it is a newly established implementing agency and it is not yet operational. However, this entity is completely owned by EDM, which has experience in managing World Bank-financed operations. The overall FM arrangements once the mitigation measures are implemented would be considered adequate. The FM risk rating was assessed as Substantial. Some mitigation measures are proposed accordingly.

Risk Assessment and Mitigation Measures

Table 5.1. Risk Assessment Matrix

Risk Factors/Description of Risk	Risk Rating	Risk Mitigating Measures Incorporated into the Project Design	Conditions of Effectiveness (Yes or No)	Residual Risk Rating
Inherent Risk				
Country level: Shortage of human resources and limited capacities for key FM functions and weak internal controls and auditing may negatively affect the implementation of this proposed project expenditures.	S	The GoM is committed to implement further reforms of the country’s Public Financial Management (PFM) with support from the World Bank and other development partners. The PFM for results is supporting PFM reforms at education and health support. The World Bank is also supporting the Administrative Tribunal (the country’s supreme audit institute)	No	S



Risk Factors/Description of Risk	Risk Rating	Risk Mitigating Measures Incorporated into the Project Design	Conditions of Effectiveness (Yes or No)	Residual Risk Rating
Entity level: The newly established SPV (SNTE) for the implementation of the project may not be able to meet the FM requirements of World Bank-financed operations.	H	SNTE will be supported by EDM, which has experience with World Bank-financed operations. In addition, SNTE will be staffed with qualified and experienced financial manager and two accountants.	Yes. Appointment of project financial manager within SNTE is a condition of effectiveness.	S
Project level: The resources of the project may not be used for the purpose intended in an economic and efficient way.	S	Clearly defined FM procedures and funds flows, accountability and reporting will be documented in the POM. EDM internal audit will continuously review adequacy on internal controls and make improvement recommendation. In addition, the project will be periodically supervised by the FM Specialist as well as government institutions.	Yes. Approval of POM is a condition of effectiveness.	S
Control Risk				
Budgeting: Weak budget monitoring system, which can lead to budget overrun	S	MIREME, EDM, and SNTE will produce periodic financial reports comparing planned and actual project expenditures. The budget monitoring procedures will be documented in the POM. Qualified FM staff will be recruited. The software would allow monitoring of commitments.	No	M
Accounting: SNTE may fail to maintain adequate project accounts and records of financial information as SNTE may fail to implement adequate automated accounting software.	S	SNTE will recruit a financial manager capable of performing his/her duties and he/she will be supported by two accountants. An automated accounting software will be purchased and installed within three months after the project effectiveness. The SNTE will be supported by EDM and it	Yes. Recruitment of a financial manager.	S



Risk Factors/Description of Risk	Risk Rating	Risk Mitigating Measures Incorporated into the Project Design	Conditions of Effectiveness (Yes or No)	Residual Risk Rating
		may make use of EDM's automated accounting package.		
<p>Internal control: The risk of noncompliance with key internal control procedures because the project will be implemented by newly established entity.</p> <p>SNTE may fail to establish an adequate internal function.</p>	S	<p>A POM including FM procedures will be developed. It will include internal control processes pertaining to the various project activities. In addition, the EDM internal audit will continuously review the adequacy of internal controls and make recommendations for improvements.</p> <p>An internal audit unit will be established at SNTE within 12 months after the project effective date</p>	Yes. Develop and adopt POM with FM procedures.	S
<p>Funds flow: Delays in funds flow may affect implementation of the project as it has tight schedules.</p>	S	<p>The disbursement arrangements will be documented in the POM. SNTE will be supported by EDM on FM and disbursement matters. In addition, the World Bank team will provide support to through the implementation.</p>	Yes. Develop and adopt POM with disbursement procedures. No	M
<p>- Financial reporting: Delays in submission of reports because of the accounting system FM staff may lack capacity and experience in World Bank funded projects.</p>	S	<p>MIREME will make use of government integrated FM information system, known as e-SISTAFE and EDM and SNTE will make use of automated accounting package that will enable the efficient and timely generation of financial information.</p>	No	M
<p>Auditing: Audit not concorded in accordance with internal standard Delays in submission of audit reports and delays in implementing the auditor's recommendations.</p>	S	<p>Draft terms of reference and proposed short-listed audit firms will be reviewed by the FMS.</p> <p>Qualified FM staff and computerized accounting system would enable timely</p>	No	S



Risk Factors/Description of Risk	Risk Rating	Risk Mitigating Measures Incorporated into the Project Design	Conditions of Effectiveness (Yes or No)	Residual Risk Rating
		production of the project financial statements (PFS) and then the audit. Follow-up of audit findings will be done by MIREME, EDM, and SNTE as well as World Bank FM staff during implementation support mission.		
Overall FM Risk	S			S

Note: H = High; S = Substantial; and M = Moderate.

2. **FM action plan.** To establish an acceptable control environment and to mitigate FM risks, the measures described in Table 5.2 should be taken by the due dates indicated in the FM action plan.

Table 5.2. FM Action Plan

No.	Action	Responsibility	Completion date
1	Appointment of qualified and experienced project financial manager	SNTE	By effectiveness
2	Development of the POM including FM procedures	SNTE	By effectiveness
3	Appointment of one qualified and experienced project accountants	SNTE	No later than three months after project effectiveness
4	Purchase and installation of automated accounting software for the project	SNTE	Within three months after effectiveness
5	Appointment of the project external auditors	SNTE	No later than four months after effectiveness
6	Establishment of an internal audit department within the company	SNTE	Within 12 months after project effectiveness

Budgeting

3. Budget preparation and monitoring will follow the procedures to be documented in the POM. MIREME, EDM, and SNTE will prepare annual budgets based on annual work plans and Procurement Plan approved by the World Bank. The implementing agencies will prepare variance analysis reports comparing planned expenditures with actual expenditures that will be part of the semiannual unaudited IFR.

Staffing

4. MIREME, EDM, and SNTE will be responsible for fiduciary management of the project. MIREME and EDM have experience in managing World Bank-financed operations, and the respective Directorates of Administration and Finance will have overall responsibility for the project FM matters. SNTE will be staffed with a financial manager and two accountants. The overall responsibility of project FM matters rests with the project SNTE financial manager to be appointed in a competitive basis by the project



effectiveness. Two accountants should be recruited within three months after project effectiveness to augment the FM capacity within the FM unit.

Accounting

5. MIREME will account for all project funds, expenditures, and resources using the Government's integrated FM information system (e-SISTAFE). The e-SISTAFE is used for most World Bank-financed operations in the Mozambique portfolio; the World Bank is comfortable with e-SISTAFE, which can generate financial information for preparation of the IFR and PFS. The project will follow e-SISTAFE's internal control procedures laid down in the Government's FM regulations. EDM will make use of the existing automated accounting software and SNTE will account for funds, expenditures, and resources of the proposed project using the automated accounting package to be purchased. The package should be computerized accounting software that enables key controls, records project transactions, and can produce timely and reliable financial reports required to effectively monitor and manage the progress of the project. The accounting software will be installed, and staff will be trained within three months after the project effective date. The technical specification of the accounting software should be submitted to the World Bank for a review by an FMS. In addition, the project implementing agencies should maintain adequate accounting records of the transactions related to the resettlement compensation.

Internal Controls and Internal Audit

6. The finance and administrative procedures to be adhered to during the project implementation will be documented in the POM, which will include FM procedures. The FM procedures will cover at least the following aspects: budget and budgetary control, disbursement procedures and banking arrangements, receipt of goods and payment of invoices, internal control procedures, accounting system and transaction records, financial reporting, and external audit arrangements. The FM procedures manual should also describe the payments related to the resettlement compensation, including the required accounting records and supporting documentation.

Internal Audit

7. The project may also be subject to the review of the General Inspectorate of Finance (*Inspecção Geral das Finanças*) based at the Ministry of Economy and Finance. However, SNTE should establish an internal audit department within 12 months after the project effectiveness, to help it achieve its objectives and at the same time to give assurance that the funds allocated to the project are used for the purpose intended. While SNTE will be establishing its internal audit department, the EDM internal audit department will continuously review adequacy on internal controls and recommend improvements. The internal auditors will prepare an annual risk-based audit program that should include review of the operations of the project and a report will be issued on a quarterly basis. These reports should be shared with the World Bank not later than 60 days after the end of calendar quarter.

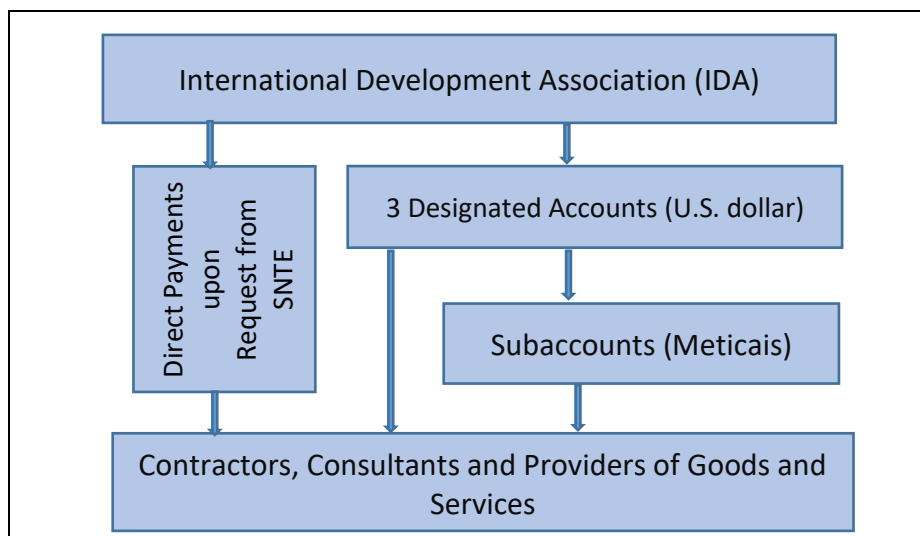
8. **Financial reporting.** The implementing agencies will prepare semiannual IFRs for the project (these should include costs related to resettlement compensation), in form and content satisfactory to the World Bank, which will be submitted to the World Bank within 45 days after the end of the calendar semester to which they relate. At the end of each fiscal year, the agencies will also produce annual PFS in accordance with financial reporting under cash basis of accounting. The formats and contents of the IFRs and PFS will be discussed and agreed with the agencies during the appraisal mission.



Disbursement

9. **Funds flow.** To facilitate the project implementation, three DAs will be opened and maintained. MIREME, EDM, and SNTE will open segregated DAs in U.S. dollars with the Bank of Mozambique (Central Bank) to receive funds from IDA. From the DAs, the agencies will (a) make payments to contractors, consultants, and suppliers of goods and services and (b) transfer funds to the DA subaccount in local currency to facilitate payments of local eligible project expenditures. All payments to local resident suppliers and consultants will be made strictly in local currency in compliance with Mozambique rules and regulations. Figure 5.1 depicts the funds flow mechanism for the proposed project. From the DA to be managed by the MIREME, funds will be transferred to the Single Treasury Account as they make use of e-SISTAFE.

Figure 5.1. TREP flow of funds



Disbursement Arrangements

10. Disbursements of IDA funds will be done on a transaction basis. An initial advance will be made into the DAs upon the effectiveness of the Financing Agreement, based on the DA ceiling and at the request of the implementing agencies. The advances will be based on the estimated cash requirements to meet the project expenditure for the first four months.

11. The option of disbursing the IDA funds through direct payment, reimbursement, and special commitment will also be available. The World Bank will issue the Disbursement and Financial Information Letter, which will specify the additional instructions for withdrawal of the proceeds of the IPF.

12. Funding for cash compensation to PAPs related to TTP will be channeled through the designated account for the proposed Project. Compensation payment cheques will be processed by the SNTE's Project Implementation Unit (PIU). The PIU announces to the individual PAPs the dates and time for issuing the payment cheques. The PIU will have a safeguards team who have experience in payment of compensation and provision of another resettlement support to PAPs. Before the effectiveness of the Project, a Project Implementation Manual will be prepared to clarify the administrative process and accountabilities and responsibilities for use of IDA funds to pay cash compensation and assistance under the TTP RAP. The Project team will ensure there is a detailed record of all cash payments being made by



IDA under the Project, including the identification of PAPs and the specific land-based economic or physical losses for which they are being compensated and/or the assistance allowances they receive. Each PAP will sign a document, which shall detail their entitlements under the TTP RAP and will be provided an original copy of that signed document. The other original copy will be retained by the PIU and a scanned version will be shared with the Association.

Table 5.3. Eligible Expenditure under IDA Grant

Category	Amount of the Grant Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services, and consulting services for Part 1 of the Project	196,941,000	Up to 100%
(2) Goods, non-consulting services, consulting services, Training and Incremental Operating Costs for 3.1. of the Project	3,609,000	33%
(3) Goods, non-consulting services, consulting services, Training and Incremental Operating Costs for 3.2. of the Project	2,165,000	100%
(4) Goods, non-consulting services, consulting services, Training and Incremental Operating Costs for 3.3. of the Project	1,444,000	100%
(5) Resettlement Expenditures for Part 1 of the Project	12,341,000	100%
TOTAL AMOUNT	216,500,000	

Auditing

13. The PFS will be audited annually by private audit firm acceptable to the World Bank, in accordance with International Standards on Auditing as issued by the International Auditing and Assurance Standards Board. This is in line with current practices, where the World Bank-financed operations are managed by the Mozambican state-owned enterprises and the audits are conducted by private audit firms. The audit report together with Management Letter will be submitted to the World Bank within six months after the financial year-end, that is, June 30 of each following fiscal year.

Governance and Anticorruption*Effectiveness Condition*

14. SNTE should, by effectiveness, (a) appoint a financial manager with skills and experience acceptable to the World Bank and (b) develop and adopt the POM, including FM procedures.



Dated Covenants

15. SNTE should, within three months after project effectiveness, (a) appoint two project accountants with skills and experience acceptable to the World Bank and (b) purchase and install automated accounting package. The external auditors acceptable to the World Bank should be appointed within four months after the effective date and the internal audit department should be established with 12 months after the project effectiveness.

Implementation Support Plan

16. Based on the current overall FM risk of this operation, the project will be supervised twice a year. In addition to desk-based reviews, the FM specialist will undertake field visits to ensure that the project's FM arrangements operate as intended and funds are used efficiently for the purpose intended.



ANNEX 6: Term Sheet - Gas Supply Agreement

COUNTRY: Mozambique

Temane Regional Electricity Project

MOZAMBIQUE: Temane Regional Electricity Project Guarantee Term Sheet (Gas Sales Agreement)

This term sheet contains a summary of indicative terms and conditions of a proposed guarantee ("Guarantee") by the International Development Association ("IDA") for discussion purposes only and does not constitute an offer to provide a Guarantee. The provision of a Guarantee is subject, inter alia, to satisfactory appraisal by IDA of the Temane Regional Electricity Project, in particular the Central Térmica de Temane component ("CTT Project"), compliance with all applicable policies of the World Bank, including those related to environmental and social safeguards, review and acceptance of the ownership, management, financing structure (including in connection with CTT shareholders, suppliers, equipment and CTT Project design, and contracts), review and acceptance of project/transaction documentation by IDA, and the approval of the management and Executive Directors of IDA in their sole discretion. Without limiting the generality of the foregoing, IDA is highly selective with regard to the clients and beneficiaries it works with and is diligent with Know Your Customer requirements for all CTT Project participants (equity investors, ultimate shareholders, lenders, contractors, advisors) and will undertake an appraisal of the Project and the Project Company including an assessment on these parameters. This guarantee term sheet is based on the indicative terms and conditions of the Gas Supply Agreement to be entered into between EDM and the Gas Sellers for the purpose of providing gas to the CTT Project.

IDA Guaranteed Letter of Credit ("L/C")	
L/C Applicant:	Electricidade de Moçambique, E.P. ("EDM"), the "Buyer" under the Gas Supply Agreement ("GSA") entered into with the Sellers.
L/C Beneficiary:	Sasol Petroleum Mozambique Limitada ("Sasol") and Empresa Nacional de Hidrocarbonetos, E.P. ("ENH"), collectively the Sellers ⁴⁴ , which carry out petroleum Operations in the PSA license pursuant to a Production Sharing Agreement between the Sellers and the Government of Mozambique (facilities generally referred to as the "PSA Gas Fields").
L/C Bank:	A commercial bank competitively selected by the Buyer, and acceptable to IDA, the L/C Applicant and the L/C Beneficiary. [If necessary given the size of the L/C, the L/C Bank could act as agent of a syndicate of commercial banks that could have a participation in the L/C.]
Maximum L/C Amount:	The maximum amount available for draw under the L/C shall not exceed US\$XX ⁴⁵ million. The Maximum L/C Amount may be reduced from time to time in accordance with the terms of the L/C and the Guarantee Agreement.

⁴⁴ The contractual relationship between these two entities is not yet entirely clear to IDA. Notwithstanding Sasol is holding 100 percent of the equity investment under the PSA framework, Sasol and ENH are joint sellers of PSA Gas with ENH essentially responsible for selling the Government's 5 percent royalty share of the gas. We need to fully understand their roles and responsibilities before this term sheet can be finalized.

⁴⁵ This amount is redacted at Recipient's request, but the aggregate amount of IDA guarantees for the Project will not exceed US\$120 million equivalent.



L/C Effective Date:	A date to be agreed between the L/C Applicant and L/C Beneficiary (and acceptable to IDA), which is expected to be the Commercial Operations Date of the 400-MW gas-fired Central Térmica de Temane power plant ("CTT").
L/C Validity Period	Up to the term of the GSA 25 ⁴⁶ years plus six (6) months to cover any post termination payment obligations.
L/C features:	<p>Revolving standby irrevocable letter of credit issued in favor of the L/C Beneficiary by the L/C Bank at the request of the L/C Applicant to backstop certain payment obligations of the L/C Applicant under the GSA [and Government Support Agreement].</p> <p>Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by the L/C Applicant to the L/C Bank within the L/C Reimbursement Period (as defined below) would be reinstated.</p> <p>The obligation of the L/C Applicant to repay the L/C Bank amounts drawn under the L/C would be guaranteed by IDA up to the Maximum Guaranteed Amount.</p> <p>Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by IDA to the L/C Bank under the Guarantee would not be reinstated. That is, any principal amount repaid by IDA would be deducted from the Maximum L/C Amount.</p>
Permitted Drawdown under L/C:	A default by EDM [or the Government] to fulfill certain payment obligations to the Sellers arising under the GSA [or Government Support Agreement]
L/C Fees:	A fee acceptable to IDA, the L/C Applicants and L/C Beneficiary as determined during the L/C Bank competitive procurement and payable to the L/C Bank by the L/C Applicant.
L/C Reimbursement & Credit Agreement (RCA)	
The Borrower:	EDM
The Lender:	L/C Bank, as lender.
L/C Reimbursement Period:	<p>Following a draw under the L/C by the L/C Beneficiary, the Borrower would be obligated to repay the L/C Bank the amount drawn under the L/C together with accrued interest thereon within a period of twelve (12) months (the "L/C Reimbursement Period") from the date of each draw pursuant to a Reimbursement and Credit Agreement to be concluded between the L/C Applicant and the L/C Bank.</p> <p>In the event of a timely repayment, the L/C will be reinstated by the amount of such repayment.</p> <p>In the event of a non-payment on the due date, the L/C Bank would have</p>

⁴⁶ This term assumes an extension of the relevant concession is granted by the Government of Mozambique. To be finalized.



	the right to call on the Guarantee for principal amounts plus accrued interest due by the L/C Applicant under the Reimbursement and Credit Agreement.
Principal Amount of the L/C Bank Credit	Amounts drawn down under the L/C not to exceed the Maximum L/C Amount.
Interest Rate Charged by the L/C Bank:	An appropriate spread above [LIBOR] acceptable to the L/C Bank and the L/C Applicant and agreed by IDA. The maturity of the selected [LIBOR] base rate should ideally be 1 month.
IDA Guarantee Agreement	
Guarantor:	IDA
Guaranteed Beneficiary:	L/C Bank, as guaranteed lender
Guarantee Face Value:	US\$ XX ⁴⁷ million
Guarantee Support:	IDA would backstop the payment obligations of the L/C Applicant under the Reimbursement and Credit Agreement to the extent that said obligations result from Permitted Drawdown under the L/C and the L/C Applicant has failed to repay the L/C Bank in respect of such Permitted Drawdown in accordance with the Reimbursement and Credit Agreement. That is, if the amount remains unpaid after the expiry of the L/C Reimbursement Period, the L/C Bank would have the right to call on the Guarantee for the principal amount (equal to the amount drawn under the L/C) plus accrued interest due from the L/C Applicant.
Maximum Guaranteed Amount:	Maximum Guaranteed Principal plus Maximum Guaranteed Interest as below
Maximum Guaranteed Principal:	The Maximum L/C Amount. Any principal amount paid by IDA to L/C Bank under the IDA Guarantee would be deducted from the Maximum Guaranteed Principal and those amounts would not be reinstated.
Maximum Guaranteed Interest:	Scheduled interest due and payable on amounts drawn under the L/C in accordance with the Reimbursement and Credit Agreement. IDA may cover compound interest, but IDA will not cover penalty interest, default interest or charges of similar nature.
Maximum Guarantee Period:	The L/C Validity Period plus 14 months, not to exceed 27 years
Signing:	If the Guarantee-related legal agreements are not signed within 24 months following approval by the Board of Executive Directors of IDA, IDA may withdraw the offer of the Guarantee.
Exclusions, Withholding, Limitation/Suspension & Termination Events:	Standard exclusion, withholding, limitation/suspension and termination events for transactions of this nature.
Substitution of Guarantee:	If IDA exercises remedies against the L/C Bank under the Guarantee Agreement for reasons attributable to the L/C Bank, then IDA may enter into a new Guarantee Agreement with a substitute L/C Bank in

⁴⁷ This amount is redacted at Recipient’s request, but the aggregate amount of IDA guarantees for the Project will not exceed US\$120 million equivalent.



	substantially the same terms and conditions as the Guarantee Agreement and for the remaining term of the Maximum Guarantee Period.
Conditions Precedent to Signing of the IDA Guarantee:	Including but not limited to conditions that demonstrate to the satisfaction of IDA that EDM and Government of Mozambique continue to implement the agreed Financial Strengthening Plan for EDM.
Conditions Precedent to Effectiveness of the IDA Guarantee:	Usual and customary conditions for financing of this type, including but not limited to the following: (a) Firm commitment for sufficient financing to complete the construction of the CTT Project, including satisfactory contribution of equity; (b) Execution, delivery and effectiveness of all Project and financing agreements, in form and substance satisfactory to IDA, including the Indemnity Agreement and the Project Agreement; (c) Delivery of all relevant host country environmental approvals required for the operation of the CTT Project, and compliance with all applicable World Bank requirements relating to Sanctionable Practices and environmental and social safeguards, including the World Bank Performance Standards; (d) [Effectiveness of all required insurance (to include IDA as an additional insured on third-party liability insurance);] (e) Satisfaction of all conditions precedent for first disbursement under the financing documents, save for any condition that requires the effectiveness of the Guarantee Agreement to have occurred; (f) Provision of satisfactory legal opinions; (g) Payment in full of the [Initiation Fee] and [Processing Fee], the first installment of the Guarantee Fee (if applicable) [and the reimbursement of IDA's outside legal counsel expenses]; and (h) Satisfactory integrity due diligence of Project Company (and related parties) and guaranteed parties.
Subrogation:	If and to the extent IDA makes any payment under the Guarantee, IDA will be subrogated immediately to the extent of such unreimbursed payment to the L/C Bank's rights under the Reimbursement and Credit Agreement.
Governing law:	English law or New York Law.
Indemnity Agreement	
Parties:	IDA and the Republic of Mozambique (the "Member Country")
Indemnity:	The Member Country will reimburse and indemnify IDA on demand, or as IDA may otherwise direct, for all payments under the Guarantee and all losses, damages, costs, and expenses incurred by IDA relating to or arising from the Guarantee.
Covenants:	Usual and customary covenants included in agreements between member countries and IDA. Additional covenants to be discussed
Remedies:	If the Member Country breaches any of its obligations under the Indemnity Agreement, IDA may suspend or cancel, in whole or in part, the rights of the Member Country to make withdrawals under any credit or grant under any development credit or financing agreement with IDA,



	and may declare the outstanding principal and interest of any such credit to be due and payable immediately. A breach by the Member Country under the Indemnity Agreement will not, however, discharge any guarantee obligations of IDA under the Guarantee.
Governing Law:	The Indemnity Agreement will follow the usual legal regime and include dispute settlement provisions customary for agreements between member countries and IDA.
Project Agreement	
Parties:	IDA and Sellers
Representations and Warranties:	Sellers will represent, among other standard and project-specific provisions, as of the effective date of the Guarantee, that: (a) the PSA Gas Fields have been developed in accordance with international best practices and the environmental and social management systems (ESMS); (b) the ESMS for PSA Gas Fields are compliant with all applicable environmental and other laws; and (c) neither it (nor its direct and indirect shareholders and any other relevant project participants, as determined by IDA), nor any of its affiliates has engaged in any Sanctionable Practices ⁴⁸ in connection with the GSA.
Covenants:	Sellers will covenant, among other things, that it will: (a) comply with applicable laws, including environmental laws, and they maintain environmental and social management systems; (b) provide annual monitoring reports on the Seller’s implementation of the environmental and social management plans in respect of the PSA Gas Fields; (c) provide certain notices and other information as requested to IDA; (d) cooperate in determining if a covenant violation has occurred; (e) not engage in (or authorize or permit any affiliate or any other Person acting on its behalf to engage in) any Sanctionable Practices in connection with the GSA; (f) comply with World Bank requirements relating to Sanctionable Practices regarding individuals or firms included in the World Bank Group list of firms debarred from World Bank Group-financed contracts; and (g) obtain IDA’s consent prior to agreeing to any change in the GSA which would affect the rights or obligations of IDA under the Guarantee Agreement or any other guarantee related agreement.
Payment of Fees to IDA:	Payment of fees due to IDA is the obligation of [L/C Beneficiary (L/C Beneficiary to charge back such L/C Fees to EDM)].
Initiation Fee:	15 bps of the Guarantee Face Value (but not less than US\$ 100,000).
Processing Fee:	50 bps of the Guarantee Face Value. {In exceptional cases, projects can be charged over 50 bps of the guarantee amount.}

⁴⁸ ‘Sanctionable Practices’ include corrupt, fraudulent, collusive, coercive, or obstructive practices, as defined in IDA’s Anti-Corruption Guidelines.



Guarantee Fee:	75 basis points per annum, payable semi-annually in advance on any committed and outstanding financial exposure under the Guarantee. The Guarantee will terminate in the event of nonpayment of any installment of the Guarantee Fee.
Governing Law	English law or New York Law.
Cooperation Agreement	
Parties:	IDA and EDM
Cooperation agreement:	EDM will covenant, among other things, that it will: (i) comply with all its obligations under the transaction documents; (ii) obtain IDA’s consent prior to agreeing to any change to any transaction document which would materially affect the rights or obligations of IDA under the Guarantee Agreement or the GSA; (iii) provide certain notices to IDA; (iv) Facilitate access from the Sellers for IDA to the PSA Gas Fields related to the CTT Project, if so required; (v) take all action necessary on its part, in accordance with and as required by the terms of the project-related agreements to which it is a party, to enable the L/C Beneficiary to perform all of the L/C Beneficiary’s obligations under the Project Agreement and GSA; and (vi) cooperate with IDA and furnish to IDA all such information related to such matters as IDA shall reasonably request; and promptly inform IDA of any condition which interferes with, or threatens to interfere with, such matters.



ANNEX 7: Term Sheet - Tolling Agreement

COUNTRY: Mozambique

Temane Regional Electricity Project

MOZAMBIQUE: Temane Regional Electricity Project Guarantee Term Sheet (Tolling Agreement)

This term sheet contains a summary of indicative terms and conditions of a proposed guarantee ("Guarantee") by the International Development Association ("IDA") for discussion purposes only and does not constitute an offer to provide a Guarantee. The provision of a Guarantee is subject, inter alia, to satisfactory appraisal by IDA of the Temane Regional Electricity Project, in particular the Central Térmica de Temane component ("Project"), compliance with all applicable policies of the World Bank, including those related to environmental and social safeguards, review and acceptance of the ownership, management, financing structure (including in connection with shareholders, suppliers, equipment and Project design, and contracts), review and acceptance of project/transaction documentation by IDA, and the approval of the management and Executive Directors of IDA in their sole discretion. Without limiting the generality of the foregoing, IDA is highly selective with regard to the clients and beneficiaries it works with and is diligent with Know Your Customer requirements for all Project participants (equity investors, ultimate shareholders, lenders, contractors, advisors) and will undertake an appraisal of the Project and the Project Company including an assessment on these parameters. [This term sheet is based on the draft versions of the agreements (Concession Agreement, Tolling Agreement, Transmission Use of System Agreement), and is designed to support obligations in such documents].

IDA Guaranteed Letter of Credit ("L/C")	
L/C Applicant:	Electricidade de Moçambique, E.P. ("EDM"), the "Buyer" under the Tolling Agreement ("TA") entered into with the Seller.
L/C Beneficiary:	The "Seller" under the TA, that is Central Térmica de Temane, S.A. (CTT), the Project Company
L/C Bank:	A commercial bank competitively selected by the Buyer, and acceptable to IDA, the L/C Applicant and the L/C Beneficiary. [If necessary given the size of the L/C, the L/C Bank could act as agent of a syndicate of commercial banks that could have a participation in the L/C.]
Maximum L/C Amount:	The maximum amount available for draw under the L/C shall not exceed US\$XX ⁴⁹ million. The Maximum L/C Amount may be reduced from time to time in accordance with the terms of the L/C and the Guarantee Agreement.
L/C Effective Date:	A date to be agreed between the L/C Applicant and L/C Beneficiary (and acceptable to IDA), which is expected to be the ["Commercial Operations Date"] as defined in the TA.
L/C Validity Period	A term up to twenty-five years (plus some additional months to cover any post termination payment obligations).
L/C features:	Revolving standby irrevocable letter of credit issued in favor of the L/C Beneficiary by the L/C Bank at the request of the L/C Applicant to backstop certain payment obligations of the L/C Applicant under the TA

⁴⁹ This amount is redacted at Recipient's request, but the aggregate amount of IDA guarantees for the Project will not exceed US\$120 million equivalent.



	<p>and the [Concession Agreement] entered into between CTT and the Republic of Mozambique.</p> <p>Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by the L/C Applicant to the L/C Bank within the L/C Reimbursement Period (as defined below) would be reinstated.</p> <p>The obligation of the L/C Applicant to repay the L/C Bank amounts drawn under the L/C would be guaranteed by IDA up to the Maximum Guaranteed Amount.</p> <p>Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by IDA to the L/C Bank under the Guarantee would not be reinstated. That is, any principal amount repaid by IDA would be deducted from the Maximum L/C Amount.</p>
Permitted Drawdown under L/C:	<p>Buyer's failure to make a payment pursuant to articles [] and [] of the TA when due and payable (but excluding any non-payments relating to transmission services as set forth in article [] of the TA, separately invoiced and paid); and</p> <p>If the TA is terminated, the Government's failure to make the termination payment under the terms of the Concession Agreement, <i>provided</i> that (i) such payment is undisputed or if such payment is disputed, such dispute has been finally resolved; and (ii) such termination payment obligation is due as a result of the occurrence of certain events agreed between the L/C Applicant(s) and the L/C Beneficiary (and acceptable to IDA).</p>
L/C Fees:	A fee acceptable to IDA, the L/C Applicants and L/C Beneficiary as determined during the L/C Bank competitive procurement and payable to the L/C Bank by the L/C Beneficiary.
L/C Reimbursement & Credit Agreement (RCA)	
The Borrower:	EDM
The Lender:	L/C Bank, as lender.
L/C Reimbursement Period:	<p>Following a draw under the L/C by the L/C Beneficiary, the Borrower would be obligated to repay the L/C Bank the amount drawn under the L/C together with accrued interest thereon within a period of twelve (12) months (the "L/C Reimbursement Period") from the date of each draw pursuant to a Reimbursement and Credit Agreement to be concluded between the L/C Applicant and the L/C Bank.</p> <p>In the event of a timely repayment, the L/C will be reinstated by the amount of such repayment. In the event of a non-payment on the due date, the L/C Bank would have the right to call on the Guarantee for principal amounts plus accrued interest due by the L/C Applicant under the Reimbursement and Credit Agreement.</p>
Principal Amount of the	Amounts drawn down under the L/C not to exceed the Maximum L/C



L/C Bank Credit	Amount.
Interest Rate Charged by the L/C Bank:	An appropriate spread above [LIBOR] acceptable to the L/C Bank and the L/C Applicant and agreed by IDA. The maturity of the selected [LIBOR] base rate should ideally be 1 month.
IDA Guarantee Agreement	
Guarantor:	IDA
Guaranteed Beneficiary:	L/C Bank, as guaranteed lender
Guarantee Face Value:	US\$XX ⁵⁰ million
Guarantee Support:	IDA would backstop the payment obligations of the L/C Applicant under the Reimbursement and Credit Agreement to the extent that said obligations result from Permitted Drawdown under the L/C and the L/C Applicant has failed to repay the L/C Bank in respect of such Permitted Drawdown in accordance with the Reimbursement and Credit Agreement. That is, if the amount remains unpaid after the expiry of the L/C Reimbursement Period, the L/C Bank would have the right to call on the Guarantee for the principal amount (equal to the amount drawn under the L/C) plus accrued interest due from the L/C Applicant.
Maximum Guaranteed Amount:	Maximum Guaranteed Principal plus Maximum Guaranteed Interest as below. Any amount paid by IDA to L/C Bank under the Guarantee would be deducted from the Maximum Guaranteed Amount and would not be reinstated.
Maximum Guaranteed Principal:	The Maximum L/C Amount.
Maximum Guaranteed Interest:	Scheduled interest due and payable on amounts drawn under the L/C in accordance with the Reimbursement and Credit Agreement. IDA may cover compound interest, but IDA will not cover penalty interest, default interest or charges of similar nature.
Maximum Guarantee Period:	The L/C Validity Period plus 14 months.
Signing:	If the Guarantee-related legal agreements are not signed within 24 months following approval by the Board of Executive Directors of IDA, IDA may withdraw the offer of the Guarantee.
Exclusions, Withholding, Limitation/Suspension & Termination Events:	Standard exclusion, withholding, limitation/suspension and termination events for transactions of this nature.
Substitution of Guarantee:	If IDA exercises remedies against the L/C Bank under the Guarantee Agreement for reasons attributable to the L/C Bank, then IDA may enter into a new Guarantee Agreement with a substitute L/C Bank in substantially the same terms and conditions as the Guarantee Agreement and for the remaining term of the Maximum Guarantee Period.
Conditions Precedent to	Including but not limited to conditions that demonstrate to the

⁵⁰ This amount is redacted at Recipient's request, but the aggregate amount of IDA guarantees for the Project will not exceed US\$120 million equivalent.



Signing of the IDA Guarantee:	satisfaction of IDA that EDM and Government of Mozambique continue to implement the agreed Financial Strengthening Plan.
Conditions Precedent to Effectiveness of the IDA Guarantee:	Usual and customary conditions for financing of this type, including but not limited to the following: (a) Firm commitment for sufficient financing to complete the construction of the Project, including satisfactory contribution of equity; (b) Execution, delivery and effectiveness of all Project and financing agreements, in form and substance satisfactory to IDA, including the Indemnity Agreement and the Project Agreement; (c) Delivery of all relevant host country environmental approvals required for the operation of the Project, and compliance with all applicable World Bank requirements relating to Sanctionable Practices and environmental and social safeguards, including the World Bank Performance Standards; (d) [Effectiveness of all required insurance (to include IDA as an additional insured on third-party liability insurance);] (e) Satisfaction of all conditions precedent for first disbursement under the financing documents, save for any condition that requires the effectiveness of the Guarantee Agreement to have occurred; (f) Provision of satisfactory legal opinions; (g) Payment in full of the Initiation Fee and Processing Fee, the first installment of the Guarantee Fee [and the reimbursement of IDA's outside legal counsel expenses]; and (h) Satisfactory integrity due diligence of Project Company (and related parties) and guaranteed parties.
Subrogation:	If and to the extent IDA makes any payment under the Guarantee, IDA will be subrogated immediately to the extent of such unreimbursed payment to the L/C Bank's rights under the Reimbursement and Credit Agreement.
Governing law:	English law or New York Law.
Indemnity Agreement	
Parties:	IDA and the Republic of Mozambique (the "Member Country")
Indemnity:	The Member Country will reimburse and indemnify IDA on demand, or as IDA may otherwise direct, for all payments under the Guarantee and all losses, damages, costs, and expenses incurred by IDA relating to or arising from the Guarantee.
Covenants:	Usual and customary covenants included in agreements between member countries and IDA. Additional covenants to be discussed.
Remedies:	If the Member Country breaches any of its obligations under the Indemnity Agreement, IDA may suspend or cancel, in whole or in part, the rights of the Member Country to make withdrawals under any credit or grant under any development credit or financing agreement with IDA,, and may declare the outstanding principal and interest of any such credit to be due and payable immediately. A breach by the Member Country under the Indemnity Agreement will not, however, discharge



	any guarantee obligations of IDA under the Guarantee.
Governing Law:	The Indemnity Agreement will follow the usual legal regime and include dispute settlement provisions customary for agreements between member countries and IDA.
Project Agreement	
Parties:	IDA and the L/C Beneficiary
Representations and Warranties:	The L/C Beneficiary will represent, among other standard and project-specific provisions, as of the effective date of the Guarantee, that: (a) it is in compliance with applicable environmental laws and the applicable World Bank guidelines, environmental and social safeguard requirements, including the World Bank Performance Standards and other applicable requirements; and (b) neither it (nor its direct and indirect shareholders and any other relevant project participants, as determined by IDA), nor any of its affiliates has engaged in any Sanctionable Practices ⁵¹ in connection with the Project.
Covenants:	The L/C Beneficiary will covenant, among other things, that it will: (a) comply with applicable laws, including environmental laws, and the applicable environmental and social safeguards requirements under the World Bank Performance Standards; (b) provide annual audited financial statements and other reports; (c) provide certain notices and other information to IDA; (d) provide access to the Project; (e) not engage in (or authorize or permit any affiliate or any other Person acting on its behalf to engage in) any Sanctionable Practices in connection with the Project; (f) comply with World Bank requirements relating to Sanctionable Practices regarding individuals or firms included in the World Bank Group list of firms debarred from World Bank Group-financed contracts; and (g) obtain IDA’s consent prior to agreeing to any change to any transaction document which would affect the rights or obligations of IDA under the Guarantee Agreement or any other guarantee related agreement.
Payment of Fees to IDA:	Payment of fees due to IDA is the obligation of the Project Company. However, if the Project Company fails to pay any installment of the fees due to IDA in full or when due, [the Government] [the lenders to the Project] can elect to pay the unpaid amount of the fees and seek reimbursement from the Project Company.
Initiation Fee⁵²:	15 bps of the Guarantee Face Value (but not less than US\$ 100,000).
Processing Fee:	50 bps of the Guarantee Face Value. {In exceptional cases, projects can be charged over 50 bps of the guarantee amount.}

⁵¹ ‘Sanctionable Practices’ include corrupt, fraudulent, collusive, coercive, or obstructive practices, as defined in IDA’s Anti-Corruption Guidelines

⁵² All fees will be updated based on the pricing applicable at the time of approval by IDA’s board of directors.



Guarantee Fee:	75 basis points per annum, payable semi-annually in advance by the L/C Beneficiary, on any committed and outstanding IDA financial exposure under the Guarantee. The Guarantee will terminate in the event of nonpayment of any installment of the Guarantee Fee.
External Legal Costs:	Reimbursement of IDA external legal counsel expenses by CTT.
Governing Law	English law or New York Law.
Cooperation Agreement	
Parties:	IDA and EDM
Cooperation agreement:	EDM will covenant, among other things, that it will: (i) comply with all its obligations under the transaction documents; (ii) obtain IDA’s consent prior to agreeing to any change to any transaction document which would materially affect the rights or obligations of IDA under the Guarantee Agreement or any other transaction document; (iii) provide certain notices to IDA; (iv) take all action necessary on its part, in accordance with and as required by the terms of the project-related agreements to which it is a party, to enable the L/C Beneficiary to perform all of the L/C Beneficiary’s obligations under the Project Agreement, and other relevant transaction document; and (v) cooperate with IDA and furnish to IDA all such information related to such matters as IDA shall reasonably request; and promptly inform IDA of any condition which interferes with, or threatens to interfere with, such matters.



ANNEX 8: Status of GBV Risk Rating and Recommended Actions

COUNTRY: Mozambique

Temane Regional Electricity Project

The project was assessed according to the World Bank Good Practice Note Addressing Gender Based Violence in Investment Project Financing involving Major Civil Works. The risk was rated as Substantial. The recommended actions and activities have been incorporated in the various safeguards instruments. This includes the development and implementation of the final GBV Action Plan prior to initiation of construction activities.

Project Rating	GPN recommended activities	GPN recommended activities already in project Yes/No	Planned/ Ongoing/ Implemented	Budgeted for Yes/ No/ Not applicable (N/A)	Comments & Required Actions
SUBSTANTIAL	GBV Risk Assessment in ESIA	Yes	Planned	Yes	Not yet available but TDRs to hire a specific GBV assessment have been prepared and a consultant hired. <i>The assessment should be finalized before any construction work starts.</i>
	Inform project affected communities about GBV risks	Yes	Planned	Yes	Consultations have not focused on GBV issues, however the risks of STDs, prostitution and other risks that may be exacerbated by the expected labor influx were raised during general consultations. <i>Community awareness is planned, and additional consultations will be conducted by a specialized consultant before civil works begin.</i>
	Map out GBV Prevention and Response Service Providers	Yes	Planned	Yes	Mapping of services and providers is part of tasks included in the TDR prepared for the GBV Consultant. <i>It should be carried out before any civil works begin and the information gathered presented in a user-friendly format and disseminated and discussed with project beneficiaries, PIU and the project team.</i>
	Reflect risks and identify mitigation measures in	Yes	Planned	Yes	Not all documents are available yet, however the ISDS is comprehensive and mentions the need to



Project Rating	GPN recommended activities	GPN recommended activities already in project Yes/No	Planned/ Ongoing/ Implemented	Budgeted for Yes/ No/ Not applicable (N/A)	Comments & Required Actions
	key safeguards instruments (ESMP, C-ESMP, etc.)				incorporate risks and measures. GBV is an integral part of the CHSS plans.
	Assess and strengthen implementing agency's capacity to prevent and respond to GBV	Yes	Planned	Yes	The capacity of the implementing agency to address GBV has been assessed by the team as low. Capacity building activities to be carried out by a specialized consultant prior to and during project implementation will be incorporated in the ESMS.
	GBV-sensitive channels for reporting in GRM	Yes	Planned	Yes	The inclusion of GBV-sensitive channels has been planned and should be specified in detail in the GBV Action Plan. Personnel to be in charge of the GRM should be appropriately trained.
	Define GBV requirements in the bid documents	Yes	Planned	Yes	Bidding documents will include the need to present Codes of Conducts specifying behavior related to GBV rules
	Budget for GBV activities in relevant documents	Yes	Planned	Yes	Budget for activities will be provided based on the GBV Action Plan to be prepared by the specialized consultant in coordination with the project team.
	Ensure CoCs are signed and understood	Yes	Ongoing	Yes	The need for all contractor workers to sign a Code of Conduct which specify rules and sanctions related to GBV is included in ESMPs. Ensure that all are signed and that rules are well understood before civil works begin.
	Separate facilities for men and women and GBV-free zone signage	Yes	Planned	Yes	GBV action plan will include separate facilities as appropriate.
	GBV action plan with accountability and response framework as	Yes	Planned	Yes	GBV Action Plan has been included as a requirement in the ISDS, PAD and ESMP.



Project Rating	GPN recommended activities	GPN recommended activities already in project Yes/No	Planned/ Ongoing/ Implemented	Budgeted for Yes/ No/ Not applicable (N/A)	Comments & Required Actions
	part of ESMP				
	GBV Specialist in IA (Moderate Risk=consider, Substantial and High risk=recommended)	Yes	Planned	Yes	The IA will be initially supported by a GBV specialized consultant. The GBV Action plan (to be prepared by the consultant) will recommend a specialist in the implementing agency if found appropriate.
	GBV Specialist in Supervision Consultant team (Moderate Risk=consider, Substantial and High risk=recommended)	Yes	Planned	Yes	According to the results of the risk assessment and service mapping being conducted by the specialized consultant, the GBV action plan will include the necessary actions to ensure that the Borrower's team has the necessary skills for supervision of GBV related issues (through training, specialized consulting services, etc.)
	Evaluate GBV Response protocol in C-ESMP prior to finalizing contract	Yes	Planned	Yes	This activity is planned for the bidding process. GBV specialized consultant hired by the client should provide support reviewing this documentation, in coordination with the Bank team.
	Third Party Monitoring (Substantial Risk=consider, High risk=recommended)	No	[TBD]	Yes	To be considered later in the context of preparing the GBV Action Plan based on the results of the final assessment being carried out by the specialized consultant.
	IA to recruit GBV Services Provider (Substantial Risk=consider, High risk=recommended)	No	[TBD]	Yes	To be considered later in the context of preparing the GBV Action Plan based on the results of the final assessment being carried out by the specialized consultant.



Project Rating	GPN recommended activities	GPN recommended activities already in project Yes/No	Planned/ Ongoing/ Implemented	Budgeted for Yes/ No/ Not applicable (N/A)	Comments & Required Actions
	Separate GBV-specific GRM	No	[TBD]	Yes	To be considered later in the context of preparing the GBV Action Plan based on the results of the final assessment being carried out by the specialized consultant.

Note: The ESMP budget provides for \$120,000 to develop and implement the GBV action plan. Many related costs are also mainstreamed in related activities such cost of awareness campaigns, stakeholder engagement and GRM implementation. The ESMP budget also includes a \$400,000 contingency, part of which can be used to cover any additional costs depending on the results of the final assessment and design of the Action Plan, all of which will have to receive Bank no-objection according to the ESAP. The contractors' budgets will also include budget for GBV prevention, especially as they relate to the Code of Conduct, worker awareness campaigns, camp management and community health and safety.