



Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 07-Aug-2018 | Report No: PIDISDSC19195



BASIC INFORMATION

A. Basic Project Data

Country Mozambique	Project ID P160427	Parent Project ID (if any)	Project Name Temane Regional Electricity Project (P160427)
Region AFRICA	Estimated Appraisal Date Dec 03, 2018	Estimated Board Date Feb 28, 2019	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance	Implementing Agency Ministry of Mineral Resources and Energy, Electricidade de Mozambique	

Proposed Development Objective(s)

The Project Development Objectives are to increase electricity generation capacity with private sector participation and to enhance transmission capacity for domestic and regional market.

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	1,180.00
Total Financing	960.00
of which IBRD/IDA	300.00
Financing Gap	220.00

DETAILS

Private Sector Investors/Shareholders

Equity	Amount	Debt	Amount
Government Contribution	33.66	IFI Debt	300.00
Government Resources	33.66	IDA (Credit/Grant)	300.00
Non-Government Contributions	131.34	Commercial Debt	220.00



Private Sector Equity	131.34	Unguaranteed	220.00
		Other Debt	165.00
		Trust Funds	30.00
Total	165.00		715.00

Payment/Security Guarantee

Financed by Commercial Loans/LC and with IDA Guarantee	80.00
Total	80.00

Environmental Assessment Category

A - Full Assessment

Concept Review Decision

Track II-The review did authorize the preparation to continue

B. Introduction and Context

Country Context

1. **Mozambique is a low-income country with a Gross National Income of USD470 per capita and a population of 28 million people.** It occupies an area of about 800,000 square kilometers and stretches almost 2,000 kilometers from north to south, with more than 2,500 kilometers of coastline and three deep water seaports along the southwestern rim of the Indian Ocean. About 70 percent of the population live and work in rural areas. The country is strategically located in Southern Africa, bordering six countries, four of which are landlocked and dependent on Mozambique as a conduit to global markets. Mozambique is a member of the Southern African Development Community (SADC), a regional economic community comprising 15 member states, whose goal is to further socio-economic cooperation and integration, as well as political and security cooperation among the member states.

2. **Mozambique has experienced a long period of sustained growth, however its macroeconomic stability has been compromised in an untenable debt situation.** Real GDP growth averaged around 8 percent over the past two decades, but contracted 3.3 percent in 2016. Despite the record of economic growth, the country currently faces significant macroeconomic challenges due to the recent disclosure of additional sovereign debts, lower commodity prices, drought, internal conflict, and governance. The disclosure of USD 1.4 billion of previously undisclosed commercial debt contracted by state-owned enterprises, undermined investors' confidence and resulted in the suspension of the IMF program and direct budget support by development partners. Public debt stood at 127 percent of GDP in 2016 (of which 112 percent is external) and Mozambique



defaulted on its sovereign bond on payments that were due in January 2017. The Government of Mozambique (GoM) responded to the economic slowdown and debt accumulation with a revised budget, restructured spending program, and overtures to creditors to begin restructuring talks. The authorities have started tackling difficult reforms such as fuel subsidies and state-owned enterprise (SOE) reform, and are also developing a new state-owned enterprise law to strengthen the management of the sector, with assistance from the World Bank and IMF.

3. **Mozambique's five-year Government Plan (2015-19) highlights agricultural and industrial development as the basis for socio-economic development of the country.** Gazetted in April 2015, the Five-year Government Plan presents five strategic pillars to achieve acceleration economic growth and social development, and targets expanded infrastructure as a key element in achieving such government objectives. The upgrade of infrastructure includes rehabilitation of electricity infrastructure expansion of access to electricity service, which are recognized as important conditions for the delivery of other basic social services, such as health, education, and sanitary services. Lack of electricity services is also identified as factor of inequality and exclusion within the society. Increased economic diversification requires addressing weaknesses in the electricity sector, which affect the cost competitiveness of firms. Thus, higher levels of electricity service reliability and quality are necessary to enable economic growth and increased competitiveness in Mozambique.

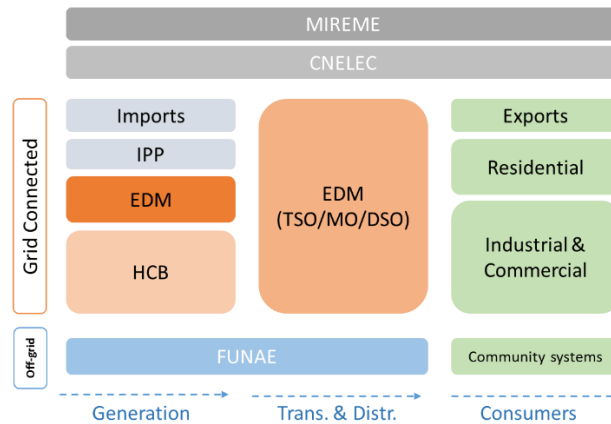
Sectoral and Institutional Context

4. **The current legislative and institutional structure of the power sector in Mozambique was established in the 1997 Electricity Law, with Electricidade de Moçambique (EdM) as a cornerstone of the sector.** The Ministry of Mineral Resources and Energy (MIREME) is the government agency responsible for energy policy and planning, as well as for monitoring sector performance. In May 2017, Parliament passed a bill setting up an independent regulator, the Autoridade Reguladora de Energia (ARENE), which replaces the National Electricity Council, CNELEC (Conselho Nacional de Electricidade), with considerably wider powers. *Electricidade de Moçambique* (EdM) is the state-owned, vertically integrated power utility in charge of electricity generation, transmission, and distribution countrywide. The Energy Fund (*Fundo de Energia*, FUNAE) is a public entity which promotes development of low cost power options for off-grid electrification, with particular focus on new and renewable energy. *Hidroeléctrica de Cahora Bassa* (HCB) operates the 2,075-MW Cahora Bassa power plant and the associated transmission system. HCB is 92.5 percent owned by EdM (through its subsidiary *Companhia Electrica do Zambeze* (CEZA)), and 7.5 percent by Redes Energeticas Nacionais (REN), a Portuguese Government owned entity. In addition to the Electricity Law, private investment in the electricity sector is also governed by the PPP Law (2011). Private sector participation has materialized in the power generation segment of the sector, through some independent power producers (IPPs) with power purchase agreements (PPA) with EdM¹.

¹ Central Termica de Ressano Garcia (CTRG), a 175-MW gas fired IPP, was commissioned in August 2015. Gigawatt, a 120-MW IPP, also gas fired, was commissioned in December 2015.

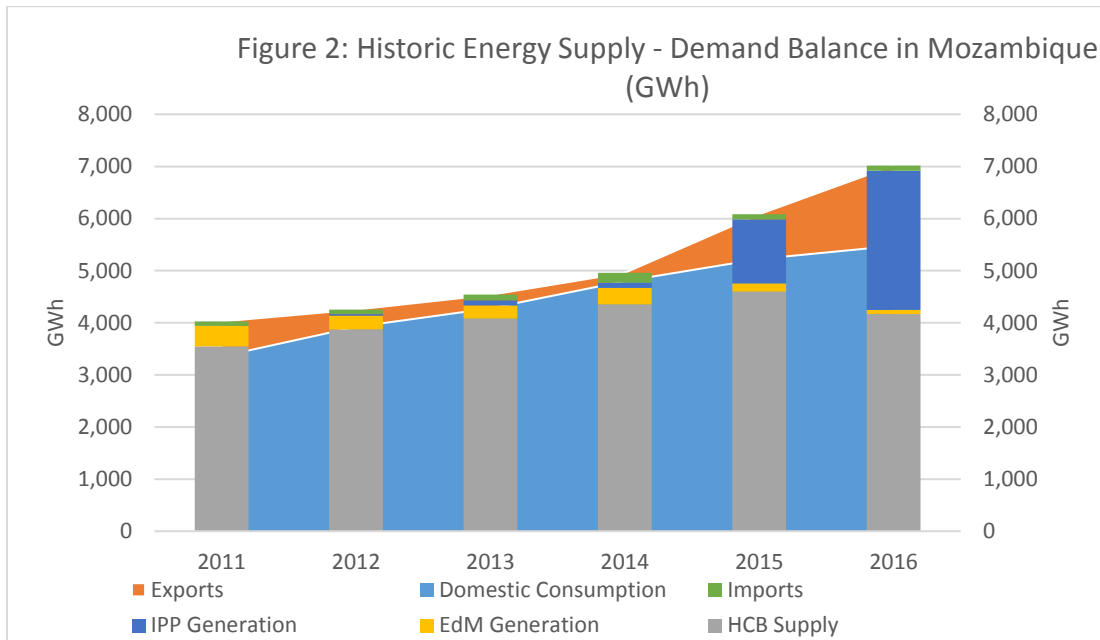


Figure 1. Power Sector Structure in Mozambique



5. **Mozambique is endowed with substantial primary energy resources and aspires to become a regional energy hub while expanding domestic access as only one of four Mozambicans have access to electricity.** Mozambique has significant primary energy resources and is pursuing aspirations to become a regional energy hub. The resources include renewable energy (solar, hydropower, wind), of which 7.5 Gigawatts (GW) have been identified as priority projects -- 5.6 GW of hydropower, 1.1 GW of wind power, 0.6 GW of solar, and some smaller quantities of biomass and geothermal.² The country has large natural gas reserves, with offshore reserves in the Rovuma basin estimated at over 130 trillion cubic feet (Tcf), complemented by 3.5 Tcf of on-shore gas reserves at already producing fields in Pande and Temane. These resources notwithstanding, electricity consumption in the entire country in 2016 was 5,477 GWh and peak demand 876 MW, with electricity access of only 26 percent, although the distribution network has reached all 128 district administrative centers. This is low even in comparison with Sub-Saharan Africa of 37 percent. The pace of electrification slowed down in 2016 to less than 43,000 new connections, compared to almost 90,000 in 2015 and over 120,000 in previous years. Figure 2 presents electricity supply-demand balance for the last six years.

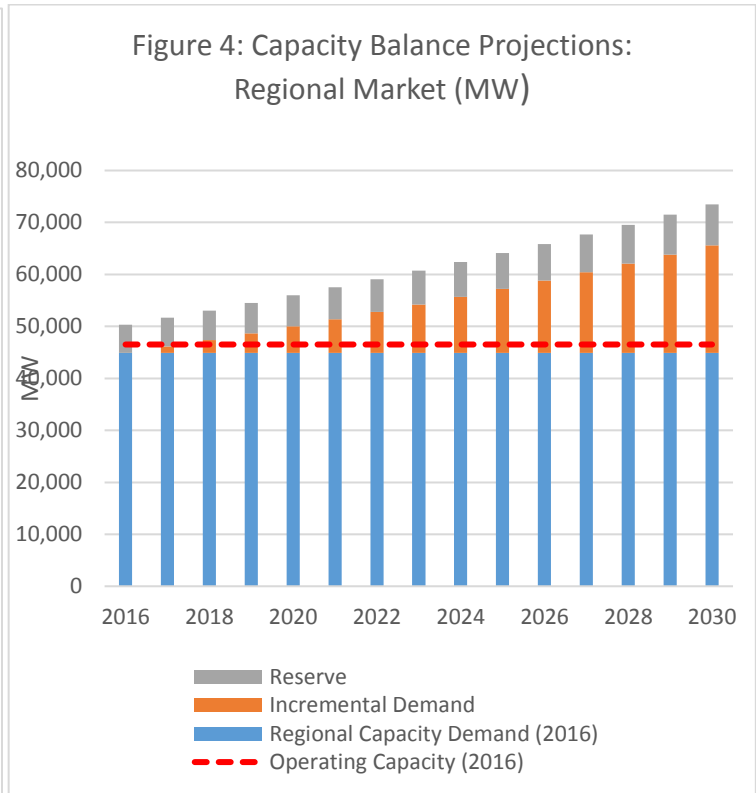
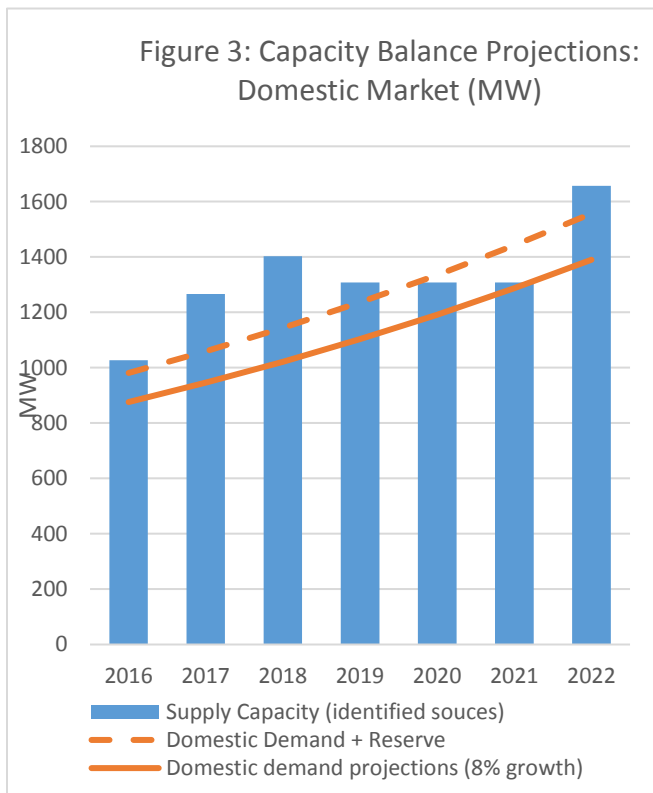
² Renewable Energy Atlas of Mozambique, 1st edition 2014.



6. **Going forward, Mozambique needs to keep increasing power generation to keep pace with domestic demand and enable access expansion and to capture export opportunities in the regional market.** Mozambique, as of end 2016, had about 880 MW of grid-connected generation capacity available from HCB and EdM plants and IPPs contracted by EdM. With 7-8 percent demand growth in the coming years, Mozambique clearly needs to keep adding more generation capacity to ensure adequate supply to the growing domestic market (Figure 3). Electricity access in the Southern Africa region, home to more than 300 million people, is only about 36 percent (25 percent if South Africa is excluded). Increasing access is an important objective for all countries in the region, which means that regional electricity demand is bound to grow. Conservative projections show that the peak demand in the region will exceed 73 GW by 2030, an increase of more than 50 percent relative to the current level (Figure 4). This will require adding more than 26 GW in new generation capacity to the existing 47 GW that was operational in 2016. Taking into account the need to retire a number of old power plants, the need for new capacity additions is likely to be closer to 40 GW. Mozambique is well



positioned to benefit from these regional developments, given its large endowments of carbon-free or low-carbon primary energy resources and relatively advanced level of regional integration in Southern Africa.



7. **Mozambican electricity transmission system needs to be integrated and significantly expanded as part of the Government’s strategic objectives to expand electricity access and regional trade.** The Mozambique power system developed as three separate systems: northern, central and southern. The northern and the central systems are connected, albeit with a relatively weak link, while there is no internal connection with the southern system, where the most of demand is. Electricity from Cahora Bassa, Mozambique’s main power plant, which is located in the northern system, is routed to the southern system through the South Africa’s grid. Mozambique transmission network is generally weak, lacks resilience, and is not sufficiently spread out to allow development of the lower voltage networks in all areas where access expansion is needed. New transmission lines are also needed to connect Mozambique’s sites for new hydropower plants and gas-fired plants to domestic and regional markets.

8. **The power sector is faced with a number challenges that constrain its ability to meet the Government’s objectives.** The key challenges include:

- i. overcoming difficulties in financial position of EdM;
- ii. reducing inefficiencies in operation, capacity constraints and substandard reliability of the network;
- iii. expanding access and integrating domestic network;



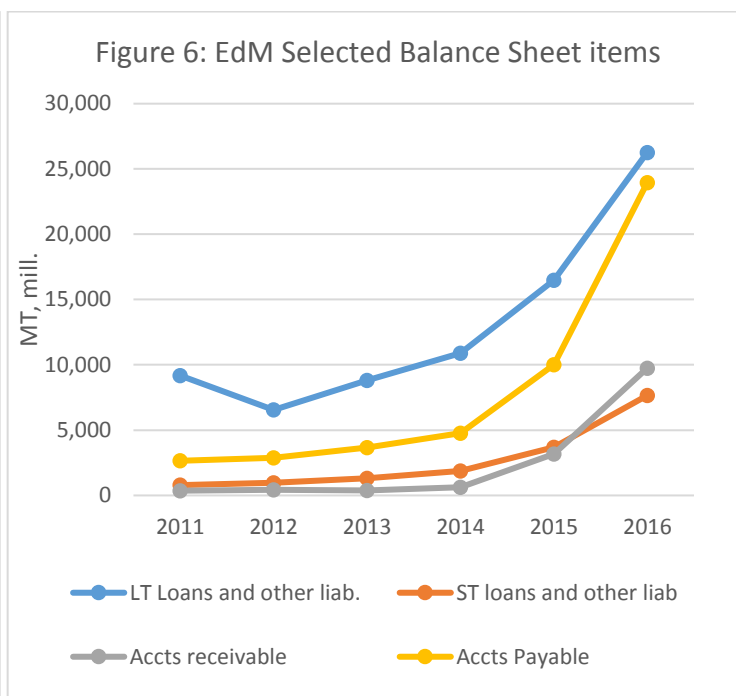
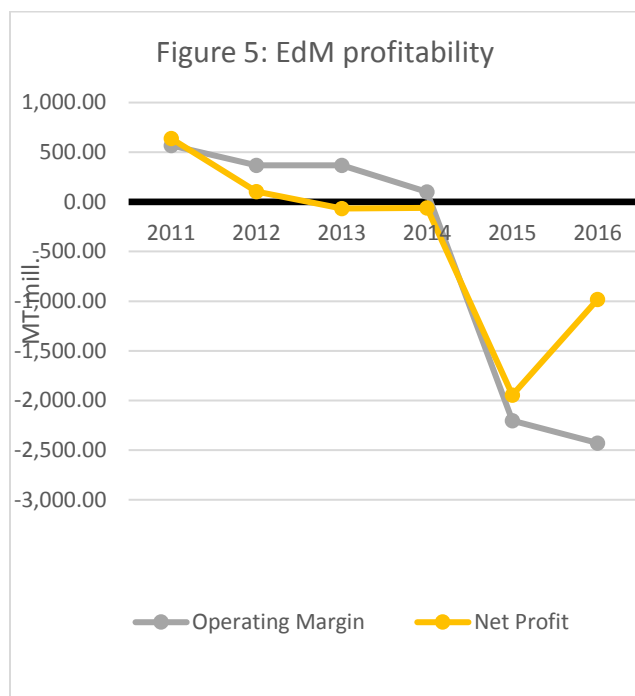
- iv. addressing barriers and risks to regional electricity trade, including transmission constraints, and demand, price, and payment risks; and
- v. improving investment planning and implementation of investment projects.

9. **Difficulties in EdM's financial position.** EdM's financial position has gotten progressively eroded due to a combination of factors, including: (i) the macroeconomic crisis and depreciation of metical over 2015-2016 period, exacerbating EdM's exposure to foreign currency liabilities; (ii) high level of electricity losses in the system (27 percent in 2016); (iii) increasing use of new and more expensive thermal-based IPPs (compared to the cost of supply from Cahora Bassa plant, EdM's main supplier); (iv) retail tariffs not recovering the cost of power purchases and operations; (v) difficulties in collecting payments from some external customers, notably from Zambia's ZESCO; and (vi) the capital expenditures for rehabilitation of the network and increasing energy access not being adequately funded³. Despite average retail tariff increase of 27 percent in 2015 and 40 percent in 2016, the average electricity sale price actually declined in hard currency terms, from 8.45 USc/kWh in 2011 to 6.29 USc/kWh in 2016, whereas the total supply costs during the same period increased from 8.46 USc/kWh to 9.55 USc/kWh in 2015 before falling to 7.42 USc/kWh in 2016 (in part reflecting large depreciation of metical in 2016). As a result, EdM started to experience significant net losses in 2015 and 2016 (MT1.95 billion and MT0.98 billion respectively). The divergence between the costs and revenues and EdM's obligation to maintain supply, resulted in higher borrowing and accumulation of payment arrears to suppliers. Between 2011 and 2016, EdM's short-term debt and accounts payables to its suppliers increased from about MT3.4 billion (about USD127 million) to MT31.6 billion in 2016 (about USD444 million), of which payables to suppliers were MT24 billion (about USD336 million). EdM's increasing payment arrears to the IPPs (CTRG and Gigawatt), if not resolved in a timely manner, could put at risk the ability of the plants to keep operating, and would be detrimental to EdM's reputation, jeopardizing its strategy to attract private sector investments. The problem with payments to the suppliers is in part explained by EdM's difficulties in collecting receivables from some of the exports clients, especially from Zambia's ZESCO, which owes EdM in excess of USD60 million, with total accounts receivable at the end of 2016 standing at MT9.8 billion (USD137 million). While the GoM and EdM are making sustained efforts to recover these arrears, at this stage it remains unclear when and how EdM could recover them. In the near term, EdM's financial problems may even worsen, as Cahora Bassa appears to be set for a reduction in generation due to low level of water in its reservoir, which EdM will have to compensate from more expensive sources. Figures 5 and 6 present selected highlights from its audited financial statements. EdM will need to

³ IDA is financing a Power Efficiency and Reliability Improvement Project (PERIP) (P158249), which includes: (i) urgent investments in rehabilitation and upgrade of electricity transmission and distribution infrastructure; (ii) support for EdM internal transformation and improved corporate management and operations; (iii) a revenue protection program (improved metering, billing, and collections); and (iv) technical assistance for electrification strategy and project management.



regain a firm financial footing if it is to become a credible partner in investment projects and a creditworthy off-taker of electricity from IPPs.



10. **Inefficiencies in operation and problems with reliability continue to plague the power system.**

Operational losses, measured by the amount electricity not billed to end consumers relative to the amount of electricity injected into the transmission network was 27 percent in 2016, equivalent to about USD50 million in foregone revenues. The implementation of the Integrated Management System (Sistema Integrado de Gestã – SIGEM), installed under World Bank-financed EDAP project, has made it possible to obtain some improvements in EdM’s operations, but SIGEM is yet to be fully integrated in all business areas and some processes need to be reengineered and organization structure adopted for its use. Transmission network lacks redundancy and is overloaded, resulting in poor reliability. It also does not extend to many area of the country where access needs to be expanded. On the distribution side, medium and low voltage networks in the large demand centers have been expanded, but have not been dimensioned for such rapid growth of electricity demand. As a result, the distribution networks in the main load centers of the country are overloaded, compromising the reliability of electricity service.

11. **Expanding access and integrating domestic network.**

As of mid-2017, electricity access in Mozambique was about 26 percent. The Government is targeting to achieve full access by 2030. The draft National Electrification Strategy estimates that this would require increasing annual households connections from about 135,000 in in 2018, to 300,000 in 2020 and 450,000 in the years between 2025 and 2030, averaging over 370,000 connections over the 2018-2030 period. Implementation of the strategy will require substantial adjustments in institutional arrangements, funding sources, and technical approaches. Mozambique’s national grid remains disjointed, with the northern and central regions disconnected from southern region, which hampers both



electrification and security and reliability of the nation-wide power supply, as well as regional integration.

12. **Regional electricity trade in SAPP currently faces a flat demand and softened prices.** Regional transmission infrastructure is constraining trade. SAPP reported, for example, that only 29.8 percent of matched offers to buy and sell in the SAPP day-ahead market was traded between April and October 2016 because of transmission constraints. The behavior of regional demand has been influenced most heavily by development of demand in South Africa, which was expected to grow but remained flat and even slightly declined over the last ten years. Although demand elsewhere grew at more than 4.1 percent since 2003, the overall regional demand growth remained under 2 percent. South Africa expects the long-term average annual demand growth to recover to a sustained 2.3 percent. The flat demand allowed Eskom to recover generation capacity margin in recent years through construction of new power plants and rehabilitation of the older ones, which has led to a softening in regional prices during the last nine months, after a sharp growth in the previous few years. Most of the trade in the region is done through shorter-term contracts, from several months to about a year in duration, with shorter-term trade done through SAPP trading platforms (day-ahead and intra-day competitive markets, and weekly and monthly forward markets)⁴. It is expected that supply-demand balance will eventually start tightening again, as the demand starts growing and some older coal plants retire. Non-payment risks in bilateral trade is another challenge that has become prominent in the last few years. This is illustrated by the EdM's experience with electricity exports to Zambia in 2016, with ZESCO not being able to honor its financial obligation and accumulating over USD60 million in payment arrears to EdM. This had a knock-on adverse effect on EdM's ability to pay for electricity acquired from its suppliers (HCB, CTRG, Gigawatt), undermining investment environment in Mozambique's power sector.

13. **Investment planning and implementation of investment projects.** GoM has been actively pursuing investments in generation, both through public and private financing. However, these decisions do not appear to be emerging from an integrated investment planning that would ensure that the selected projects were part of least cost solutions in terms of the technology, the role in the system, sequencing, etc. The processes of awarding concessions for private development have tended to be conducted through direct negotiations and unsolicited offers rather than competitively, raising the question whether the outcomes have been optimal in terms of costs. The process of awarding EPC contracts, both for private and public projects, may also need to be examined with a view of ensuring that it leads to optimal selection in terms of the quality and price.

14. **The GoM and EdM are making substantive efforts to promote the GoM strategic objectives on expanding domestic access and regional trade and addressing the challenges that constrain such efforts.** These include:

- a. *Implementation of a corporate transformation plan*, to overhaul the organizational structure of EdM, fully implement the Management Information System (SIGEM), improve the various corporate processes, strengthen the integrity of the various systems (billing, collection, procurement, etc.), and

⁴ One exception is the contract between HCB and Eskom, which runs through 2029.



improve financial management, reporting and transparency (supported by the Bank's Power Efficiency and Reliability Improvement Program – PERIP);

- b. *Improvement of the efficiency and reliability of electricity services*, by undertaking the priority investments in transmission and distribution to de-bottleneck the system and improve service and operational efficiency (supported by the proposed PERIP);
- c. *Development and implementation of a large scale investment program to expand generation and transmission for domestic and regional markets (supported by the proposed TREP);*
- d. *Development and implementation of a financial restructuring and consolidation plan for EdM*, to balance costs and revenues, restructure the debts and short term liabilities, develop sustainable investment strategies, etc., to achieve profitability and financial sustainability (supported by an ESMAP technical assistance and to be further developed and implemented as part of the proposed TREP);
- e. *Development of the National Electrification Strategy*, followed by its implementation, to achieve national electrification targets in an efficient and financially feasible manner (supported by an ESMAP funded technical assistance);
- f. *Strengthening regulation and investment planning and financing*: implementation of the new law on regulation and establishment of ARENE; preparation of the investment Master Plan; development of investment strategies for access; attracting the private sector; etc. (supported by the proposed PERIP and TREP).

15. **The proposed Temane Regional Energy Project (TREP) is part of the GoM's plans to harness large gas finds in Temane to meet the rising domestic demand and for regional exports, as well as to create an integrated transmission corridor within Mozambique.**

16. **The Temane 400-MW power plant, called Mozambique Gas-to-Power (MGtP) – also, interchangeably, Central Termica Temane (CTT) plant -- is to be developed as an IPP.** Several years ago, Sasol made additional discoveries of gas in the Temane area amounting to about 0.56 Tcf, which the GoM wants to use for electricity generation. Gas fields will be developed by Sasol Petroleum Mozambique Lda., which operates the Pande/Temane gas fields. The plant is planned for commercial operation in early 2023. The MGtP plant, in conjunction with other investments and capacity acquisitions, is needed to help provide adequate electricity supply to the country and initiate building some structural surplus for exports, to exploit both short-term and long-term trading opportunities in the SAPP.

17. **The GoM wants to develop a transmission corridor connecting the country's northern, central and southern systems and the broader SAPP network.** The Temane Regional Electricity Project (TREP) is a part of the country's regional electricity development program, whose backbone is development of the transmission system known as "Sociedade Nacional de Transporte de Energia (STE)". STE comprises construction of two high-voltage (HV) transmission lines from the Tete region in the north to the Maputo area in the south (Figure 7).



One line would be a direct-current (DC) line for bulk transmission of electricity to the SAPP network (giving the regional importance to the STE system), and the other an alternating current (AC) line that would add more offtake points in Mozambique along the way. The STE lines would enable phased development of large hydropower plants on the Zambezi river (including Mphanda Nkuwa and Cahora Bassa North Bank) and gas-based plants at Temane gas fields. The STE system would significantly contribute to positioning the country as a regional energy hub, as well as enable expansion of access and more efficient and reliable electricity services to domestic consumers.

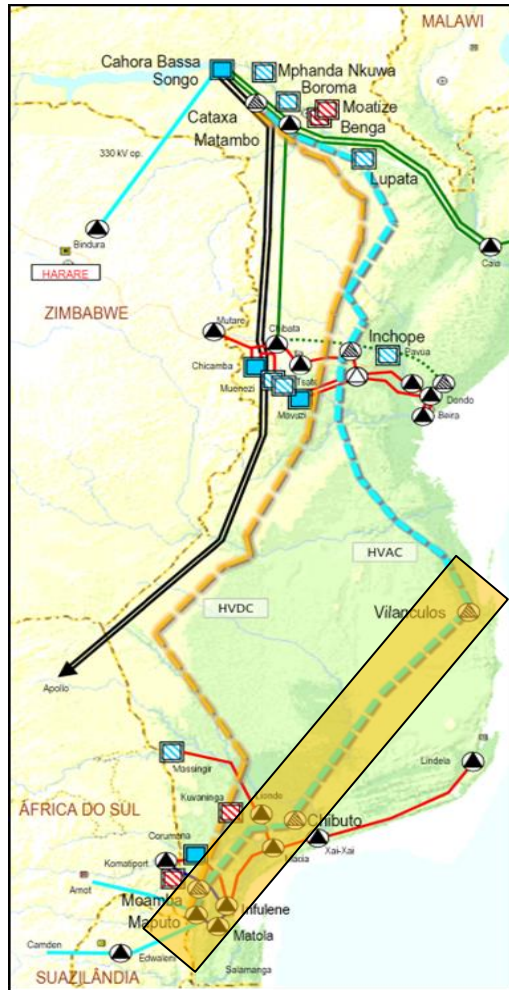
18. **The Temane Transmission Line (TTP) is the first phase of the STE program, connecting the MGtP plant with Maputo area and further on to the SAPP system.** Currently, there are no high-voltage lines that would allow evacuation of electricity from the MGtP plant into the Mozambican power system. The evacuation will be accomplished by a new 560-km long 400-kV line from Temane to Maputo – Temane Transmission Project (TTP) -- which will represent the first phase of the STE program, whose second phase will include construction of the remaining portion of the STE HVAC line, from Temane to the Tete region, and of the STE HVDC line. This will be accompanied by construction of 1,500-MW Mphanda Nkuwa hydropower plant, to be developed as a separate but associated project with the STE transmission corridor.

19. **The benefits of the TTP go beyond connecting the MGtP plant.** In addition to the important objective connecting the MGtP plant, the TTP will serve the broader purpose of integrating the national power system



through the STE transmission lines, enabling expansion of electricity access, and strengthening regional integration and Mozambique’s objective of becoming a regional energy hub.

Figure 7: STE System



Yellow dotted line: HVDC line of the STE

Blue dotted line: HVAC line of the STE

Yellow rectangular: Temane Transmission Project (Phase 1 of the STE Program)

Relationship to CPF

20. The proposed project is consistent with WBG Country Partnership Framework for Mozambique for FY17-FY21 (CPF).⁵ One of the objectives of the CPF is to help expand access and improve reliability of electricity

⁵ International Development Association, International Finance Corporation, and Multilateral Investment Guarantee Agency: Country Partnership Framework for the Republic of Mozambique for the Period FY17–FY21, Report No. 104733-MZ March 30, 2017.



supply, in support of promoting diversified growth and enhanced economic productivity. The project is explicitly included in the CPF as an operation that supports the above-stated objective, along with operations to help Mozambique with grid rehabilitation and reinforcement and strengthening of the financial and operational functioning of the utility (through PERIP), and expanding electricity access.

21. **The CPF acknowledges the need for investments in electricity transmission to facilitate expanded power trade in the Southern Africa Region and boost EdM’s revenues and Mozambique’s hard-currency earnings through electricity exports.** The CPF appreciates that investment in the transmission grid will enable expansion in access as well as allow better integration of the power system and transmission of power around the country. Developing new transmission will also enable private sector investment in large generation projects that are dependent on transmission for evacuation of power.

22. **The CPF also recognizes the need to involve the private sector in developing the potentially large energy sector projects.** CPF envisages that IDA and IFC will work jointly, through the Joint Implementation Plan (JIP), to improve the enabling environment for private sector investments in the power sector and that IFC investments and MIGA guarantees will support private sector-driven generation and supply investments (on-grid and off-grid). The World Bank Group could also deploy concessional resources through the Risk Mitigation or MIGA Guarantee Facility under the IDA18 Private Sector Window to support complex high-impact projects in energy generation, supported by World Bank involvement in policy reforms aimed at improving the primary and secondary legislations affecting the investment environment. Developing institutional arrangements for improving performance of the utility and ensuring the sector is financially viable is an important part of the CPF.

C. Proposed Development Objective(s)

23. The Project Development Objectives are to increase electricity generation capacity with private sector participation and to enhance transmission capacity for domestic and regional market.

Key Results

24. The project is expected to achieve the following results:
- (i) Increased generation capacity (MW)
 - (ii) Increased transmission capacity (MVA)
 - (iii) Increased electricity exports (kWh)
 - (iv) Commercial capital mobilized (USD million)

PROJECT CONTEXT

D. Concept Description

25. The proposed project includes the following components:



- **Component 1:** Construction of Temane Transmission Project (TTP);
- **Component 2:** Construction of privately-funded Mozambique-Gas-to-Power (MGtP) generation project;
- **Component 3:** EdM financial strengthening;
- **Component 4:** Technical assistance and project implementation support.

26. **Component 1 (the TTP project):** This component includes construction of:

- three 400-kV substations (Vilanculos, Chibuto, and Matalane) and expansion of Maputo substation;
- 560-km, 400-kV single-circuit transmission line Vilanculos-Chibuto-Matalane-Maputo; and
- other equipment (busbar and line reactors, telecommunications, SCADA with control center).

27. **The TTP is intended to be implemented by a wholly government owned company.** The project will be structured as a special purpose vehicle (SPV), wholly owned by EdM. The physical asset (the Temane-Vilanculos transmission line) will be an integral part of the country's integrated transmission network. The project is expected to be funded by multilateral and bilateral grants and concessional loans.

28. **Component 2 (the MGtP project):** This component includes construction of:

- a 400-MW gas-fired power plant at Temane (near Vilanculos); and
- a 25-km, double circuit, 400-kV transmission line from the MGtP plant at Temane site to a 400-kV substation at Vilanculos, linking the power plant to the national transmission grid.

29. The technology for the plant has been narrowed to gas engines or combined-cycle gas turbines, with selection between the two to be made at a later stage. The location of the project has been driven by the proximity of gas fields at Temane (being developed under a petroleum production agreement by Sasol Petroleum Mozambique Lda.) and system analysis of trade-offs between gas transport and electricity transmission.

30. **The MGtP project will be implemented by Central Termica Temane (CTT) company.** The ownership structure of the CTT at this stage is as follows: Sasol: 49 percent; Temane Energy Consortium (TEC)⁶: 30.6 percent; and EdM: 20.4 percent. The project is being developed on the basis of the Joint Development Agreement (JDA) between Sasol and EdM signed in 2014, by which Sasol owned 49 percent of shares and EdM 51 percent. Following the recent acquisition of 60 percent of EdM's shares by TEC⁷, the JDA between Sasol and EdM is expected to be revised in the coming months and subsequently CTT is to be established as a legal entity. EdM will acquire the entire electricity production of MgTP under a tolling agreement (EdM will be responsible

⁶ Globeleq is the lead partner in the Temane Energy Consortium, which also includes eleQtra.

⁷ A Joint Development Agreement between EdM and TEC was signed in June 2018.



for contracting and supplying natural gas to MgTP). EdM intends to use the plant as part of its generation portfolio for domestic supply and exports. While much of the MGTP capacity will be needed for domestic market, under the current investment scenario, it will create some structural surplus for exports, at least in the initial years. EdM may need to put in place longer-term power sales contracts with credible/creditworthy off-takers for the exportable output of the plant to make the project bankable, or possibly allow the MGtP to have PPAs directly with third party off-takers. The MGtP will also contribute to EdM’s capacity to export power through shorter-term trade in the Southern Africa Power Pool (SAPP) exploiting seasonal or daily surpluses. This very important issue of commercial arrangement for the offtake and marketing of plant’s output will be addressed and finalized during project preparation, with the objective of enhancing commercial viability of the project.

31. Component 3 (EdM financial strengthening): EdM is in the process of developing a financial strengthening plan, that is likely to include measure for efficiency improvements (reduction of losses), supply cost optimization, tariff adjustments, recapitalization (possibly to include converting some long-term on-lent loans into Government equity, possible equity injection), reducing the accounts payable and accounts receivable, readjustment in investment financing (especially for expansion of access), etc. This component could include credit enhancement to EdM to help restructure or refinance some of its obligations, and/or technical assistance to help implement the financial strengthening plan.

32. Component 4 (Technical Assistance): This component will include funding to support MIREME in advancing legal, institutional, and regulatory framework in the sector, strengthening the capacity of the key sectoral institutions (policy and regulatory), and strengthening/supporting EdM in implementing the financial strengthening plan, and to manage implementation of the project.

Table 1: Project Cost and Financing (USD million)

	Cost	Financing					
		IDA		Non-IDA			
		IDA Grant	IDA-Guarantees	Trust Fund Grant	Shareholder's equity	Commercial Debt*	Funding Gap**
Component 1 (TTP)	540	300		20			220
Component 2 (MGtP)	550				165	385	
Component 3 (EdM Financial Strengthening) ***							
Component 4 (TA and Implementation Support)	10			10			
Payment Security****	80		80				
TOTAL	1180	300	80	30	165	385	220

* Commercial debts for Component 2 could include financing from Export Credit Agencies, private sector arms of DFIs, and commercial banks



** The funding gap for Component 1 is expected to be covered by concessional loans from DFIs

*** At this stage, is uncertain whether any financing will be needed for Component 3; it may include just Technical Assistance for implementation of EdM financial strengthening plan

**** A payment security is envisaged for Component 2

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The MGtP power plant is located in the Temane/Mangugumete area, about 30 km southwest of the town of Inhassoro, approximately 20 km inland of the coastline. The site belongs to the coastal plane of Mozambique. Electricity generated by the plant will be evacuated via a 25-km, 400-kV electricity transmission line to Vilanculos. Natural gas will be delivered from the Central Processing Facility (CPF) of the nearby Temane gas fields via a 2-km gas pipeline. Water for the plant will be abstracted from underground. All project components and associated facilities in its area of influence covered under OP 4.03 will be mapped and evaluated in the ESIA, and included in risk and impact management plans, as applicable, as further detailed in the discussion of OP 4.03 below.

The Temane Transmission Project involves construction of a 560 km long, 400-kV single-circuit transmission line from Vilanculos via Chibuto and Matalane to Maputo, and three 400-kV substations at Vilanculos, Chibuto, and Matalane. It is anticipated that the selected project corridors will pass mostly through agricultural land or bushland and semi-urban areas of low biodiversity value. It is not expected that the project corridor will cross conservation areas, including Important Bird Areas (IBA). In terms of natural habitats or forests potentially affected by the project, none is expected to have critical or high conservation value (such as mangroves, wetlands, unique forests, etc.). The proposed transmission lines may, however, impact communities along the route, as the line routes may cause some loss of land and assets or may adversely affect access to land and other resources, including possibly access to natural resources.

B. Borrower's Institutional Capacity for Safeguard Policies

EdM has established an Environmental and Social Unit (ESU), whose staff has attended WBG safeguards policies training. The capacity and management systems of EDM need further strengthening.

A capacity building program and staffing for the TTP will need to be agreed upon and budgeted and integrated with the ongoing EdM Transformation Program. As part of TREP project, additional training is envisaged, customized to the project's specific requirements. An experienced Environmental and Social Consultant, as well as an experienced Health and Safety Consultant (a firm or several individuals) will be hired to (i) assess the specific training needs for the ESU and provide capacity building; and (ii) provide independent oversight of the project. In addition, safeguard staffing, capacity and ESMS of the MGtP project will also be assessed and staffing and capacity building program, if and where needed, agreed upon.

EdM is employing qualified consultants to prepare the necessary safeguards instruments: Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), and Resettlement Action Plan (RAP) for TTP. The consortium for MGtP is expected to do the same, covering also Environmental and Social Action Plan for the



Associated Facilities, and any specific management plans and method statements. The strengthening of the ESU will include ensuring the availability of the 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 WBG safeguards policies and applicable national environmental and social regulations. The ESIA, ESMPs, RAPs and any other safeguard instruments, such as a Health & Safety Plan, will also delineate the environmental and social management responsibilities of the contractors and the supervising engineers and will be integrated in the bidding documents and construction contracts. In addition, engineering/safeguards/health and safety supervision and monitoring and evaluation consultants will be hired to support the EDM-ESU in the implementation of the safeguards documents, ESMPs and Health & Safety Plans. The ESMPs will include specific requirements for contractors with respect to management of labor influx, hiring of local labor, codes of conduct and their enforcement, and community health and safety.

C. Environmental and Social Safeguards Specialists on the Team

Robert A. Robelus, Environmental Safeguards Specialist
 Paulo Jorge Temba Sithoe, Environmental Safeguards Specialist
 Maria Do Socorro Alves Da Cunha, Social Safeguards Specialist

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>This project is expected to be a Category A project owing to the nature and scale of the project (560 km transmission line; 400-MW power plant) as well as to the magnitude of the environmental and social risks during construction, including workers as well as community health and safety, and the need to conduct a robust assessment of potential cumulative and wider area impacts or longer term environmental and social impacts. A Full Environmental and Social Impact Assessment (ESIA) is being prepared for the Transmission Line Component (TTP) including a social impact assessment (SIA) aiming to adequately identify and manage potential environmental and social issues. The SIA will be included in the ESIA and may be complemented by additional studies as part of development of specific mitigation plans or project implementation if needed. The ESIA is being prepared by independent consultants different from those involved in the feasibility study and project design.</p> <p>The ESIA (including the SIA component) will be subject to a sound public participation process and will be disclosed both in-country and in the World Bank website. Resettlement of households is expected (see OP 4.12 below). Furthermore, the magnitude of the</p>



TTP Component requires detailed social assessment and management to address labor and population influx, construction and operation impacts (including traffic and construction related) on neighboring populations, loss of land for agricultural production, impacts on cultural heritage and related stakeholder engagement. Based on the results of the social assessment, including cumulative impacts, a set of social impact management instruments will be developed and implemented. In addition to a labor influx management plan, a code of conduct (including zero tolerance for SEA/GBV) and a detailed construction phase ESMP including detailed H&S and Emergency management plans, the following plans need to be prepared: Land compensation, livelihood restoration (see OP 4.12 below) and community development plan, RAP for the TTP, stakeholder engagement plan, grievance redress mechanism, local labor hiring plan, SEA/GBV prevention and response plan, cultural heritage management plan, including specific elements if applicable and a chance find procedure (see OP 4.11 below). Plans, including the ESMP(s), must include all activities and components that are part of the facilities related to the TTP (as described in para. A.1 above. ESHS management plans and guidelines for the operations phase will also be required).

This safeguards policy applies to Component 2 of the Project (construction of privately-funded Mozambique-Gas-to-Power generation plant). The various Performance Standards apply as described below.

PS1 Assessment and Management of Environmental and Social Risks and Impacts): Applicable

Performance Standards for Private Sector Activities OP/BP 4.03

Yes

The MGtP is expected to be a Category A project owing to the nature and scale of the project, the magnitude of the environmental and social risks during construction, including workers as well as community health and safety, and the need to conduct a robust assessment of potential cumulative and wider area impacts or longer term environmental and social impacts. The magnitude of the MGtP requires detailed environmental and social assessment and management



to address, among others, labor and population influx, construction and operation impacts (including traffic and construction related) on the local environment and neighboring populations, loss of land for agricultural production, impacts on cultural heritage and related stakeholder engagement. Based on the results of the environmental and social assessment, including cumulative impacts, a set of environmental and social impact management instruments will be developed and implemented. In addition to a detailed construction phase ESMP including detailed Health & Safety and Emergency management plans, a labor influx management plan, and a code of conduct (including zero tolerance for SEA/GBV). The following plans might need to be prepared: Land compensation, livelihood restoration and community development plan for the MGtP, stakeholder engagement plan, grievance redress mechanism, local labor hiring plan, SEA/GBV prevention and response plan, cultural heritage management plan, including specific elements if applicable and a chance find procedure (see PS 8 below). All project activities related to the MGtP need to be addressed in the ESIA/ESMP. ESHS management plans and guidelines for the operations phase will also be required.

All MGtP components and associated facilities in its area of influence covered under OP 4.03, including the upstream gas wells and processing facility (with particular focus on new wells and CPF expansions), beach landing for transporting equipment, jetty and offshore anchoring and barge routes, access roads and bridges, transmission lines, water pipelines, any new flow lines/gas pipelines, borrow pits and quarries, waste disposal sites, worker camps, equipment staging areas, etc., are being treated as part of the project for purposes of the ESIA, mapped, evaluated and will be included in the ESMP and related plans and method statements as appropriate. Specific provisions for site selection, management and decommissioning of new ancillary facilities (access roads, borrow pits, disposal areas, camps, etc.) will be included, as appropriate. With respect to gas fields and the CPF and any expansions, the ESIA will include information already available from existing ESIA's and management plans. Taking into account the different stages of each



project component and the different entities responsible for their management, the ESMP will include differentiated reporting structures, during the life of the Project, for: (i) impact assessment and management of the MGtP and all new facilities as described above; (ii) and risk management and monitoring of upstream facilities to the extent they are confirmed to be associated or contribute to cumulative impacts.

To enable its compliance with the requirements of the Performance Standards, the client shall put in place and implement an Environmental and Social Management System (ESMS) that will – as required by PS1 - incorporate the following key elements: (i) an overarching Environmental and Social (E&S) policy; (ii) organizational capacity, competency, and process to build internal capacity on E&S matters; (iii) a process to identify the E&S risks and impacts associated with the project over the life of the project ; (iv) management programs to define mitigation and performance improvement measures and actions that address identified E&S risks and impacts; and (v) a process to engage with affected communities.

PS2 Labor and Working Conditions: Applicable

Since the project is focuses on executing substantial works during construction and operation, Occupational Health and Safety (OHS) has been identified as one of the principal risk areas. Care must be taken to ensure that operators as well as other contractors and sub-contractors involved in the works have OHS policies and Health and Safety Plans in place in compliance with international standards, as well as qualified and certified H&S personnel. Contractors should put in place an internationally acceptable Health & Safety system, including employee training and toolbox talks, handbooks, warning signs, adequate Personal Protective Equipment (PPE), etc. A grievance mechanism for workers will also need to be in place.

PS3 Resource Efficiency and Pollution Prevention: Applicable



Air, water, soil pollution impacts will be present during construction and operation. These impacts will be managed through the ESMP. Contractors will be required to prepare their own Construction ESMP and employ qualified Environmental and Social Specialists. For the Operational Phase a specific Operational ESMP will be prepared. The ESMPs and the processes for their implementation will be incorporated in the ESMS.

PS4 Community Health, Safety, and Security:
Applicable

Adjacent communities could experience safety issues related to increased traffic causing accidents and fatalities during the construction period. Other impacts may include community-related issues associated with migrant workers/labor influx during construction, improper management of security forces by the private client. An HIV/AIDS prevention campaign for workers and nearby communities will be carried out. Local hiring and stakeholder engagement plans, as well as community awareness and development programs covering, among other things, SEA/GBV issues and community access to services will also be part of the assessment and management processes. A Community Health and Safety Plan will be prepared to manage health and safety risks to communities during construction and operation.

PS5 Land Acquisition and Involuntary Resettlement:
Applicable

For the MGtP power plant, no resettlement is expected to be required for the plant site, which has been cleared and remains unoccupied; a social audit will be conducted on the recent history of the site. Land acquisition and livelihoods impacts for the plant's transmission lines, traffic routes, access roads and ancillary sites are yet to be determined. Impacts on fishermen in the temporary jetty area, vendors and farmers along transport routes and in ancillary sites are expected. Limiting these impacts will be a consideration in siting these facilities. The ESIA will need to address the issues of partial protection zones that may arise in relation to the MGtP project and its



associated facilities under the Mozambican Land Law and the associated issues of land acquisition and compensation and/or the physical displacement of people (See description under OP/BP 4.12 below). A Resettlement Policy Framework (RPF) will be prepared to enable the preparation of the respective RAPs (if needed) once the sites for these facilities are identified. The RPF will include specific provisions to guide the borrower in screening and site selection and in the preparation and implementation of site specific Resettlement Action Plans (RAPs) prior to implementation of any construction works in the respective specific sites.

To the extent information about the location of the projects (including transmission lines, pipelines, substations and ancillary sites) is known by appraisal, the Borrower will prepare one or more RAPs (or Abbreviated RAPs- in case of limited impacts that do not require permanent relocation, compensation or livelihood restoration plans) to address land, resource and livelihood impacts of the MGtP.

The RPF (and each RAP when required) will be duly consulted upon, cleared by the Bank and appropriately disclosed both in-country, and on the World Bank website prior to appraisal. Any RAPs prepared for specific ancillary sites during Project implementation under the RPF, will also be consulted upon, cleared by the Bank and disclosed prior to their implementation.

PS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources: Applicable

The application of this policy seeks to ensure that all activities to be financed under the project take into account the conservation of biodiversity, as well as the numerous environmental services and products that natural habitats provide to human society.

Most gas fields are located on land, but marine exploration has been done in the past. The Bank will carry out due diligence on the present status of the gas wells and the plans for the construction of new gas wells. The ESIA for the MGtP will include a map with the sensitive ecological areas, such as the Govuro



wetlands and the Bazaruto National Park and the location of the gas wells, onshore, as well as offshore. In addition, the ESIA will assess any impacts to marine habitat and fauna as a result of barge traffic and beach landings for heavy equipment.

PS7 Indigenous Peoples: Not applicable

There are no indigenous people in the MGtP area as defined by PS7.

PS8 Cultural Heritage: Applicability to be determined.

The policy is applied based on the likelihood of encountering physical cultural resources during project implementation, since project activities will involve civil works and movements of earth in areas that may contain sites deemed physical cultural resources by the communities living in such areas (e.g. graves, holy sites such as sacred groves, sacred forests, etc.). The ESMP will include measures to address any ESIA findings and to ensure due diligence, Chance Find Procedures will be included in the ESIA and ESMP and all contractor contracts to address PS 8 basic requirements to adequately handle unexpected physical cultural resources finds. Community concerns regarding cultural heritage and community cultural sites will be addressed in the ESMP and Stakeholder Engagement Plan.

Natural Habitats OP/BP 4.04

Yes

The application of this policy seeks to ensure that all activities to be financed under the TTP Component take into account the conservation of biodiversity, as well as the numerous environmental services and products that natural habitats provide to human society. The TTP will cross areas of natural habitats; however, according to the proposed transmission line corridor (including substations proposed sites) and the early environmental assessment studies undertaken, no conservation area will be affected (these are located far away) and no critical natural habitats are expected to be affected.

Forests OP/BP 4.36

Yes

The 560-km Temane transmission line is expected to cross forested areas, therefore the policy is triggered in order to adequately safeguard forest values.



Pest Management OP 4.09	No	Herbicides or other kind of pesticides will not be used for vegetation clearance or weed control, either during construction or in operational phases of the TTP.
Physical Cultural Resources OP/BP 4.11	Yes	The policy is triggered based on the likelihood of encountering physical cultural resources during TTP implementation, since TTP activities will involve civil works and movements of earth in areas that may contain sites deemed physical cultural resources by the communities living in such areas (e.g. graves, holy sites such as sacred groves, sacred forests, etc.). The ESMP will include measures to address any ESIA findings and to ensure due diligence, Chance Find Procedures will be included in the ESIA and ESMP and all contractor contracts to address OP/BP 4.11 basic requirements to adequately handle unexpected physical cultural resources finds. Community concerns regarding cultural heritage and community cultural sites will be addressed in the ESMP and Stakeholder Engagement Plan.
Indigenous Peoples OP/BP 4.10	No	There are no indigenous people in the project area as defined by OP/BP 4.10.
Involuntary Resettlement OP/BP 4.12	Yes	The TTP component of the project will involve a 50 meter wide land corridor (Right-of-Way -- ROW), which will necessitate involuntary land acquisition resulting in loss of assets, and/or means of livelihoods or resources, and in involuntary resettlement of people. It is estimated that at least 332 households will lose at least one asset, and for 200 of these this includes their house. (The Mozambican Land Law establishes a special "partial protection zone" (PPZ) of 100 meters (50 m on each side) of every transmission line, in which land use is subject to special permits and land use rights (DUATs) cannot be obtained. However, the additional 25m on either side the 50-m ROW are not needed for safety or technical reasons and reducing the PPZ would reduce impacts on PAPs and also be consistent with current practice in Mozambique. EDM is working with MITADER and others to clarify the status of this area so that a final determination can be made as to whether or not it must be included in the RAP for the TTP.



To ensure proper due diligence and management of land acquisition and livelihood impacts, the Borrower will prepare a Resettlement Action Plan for the TTP to deal adequately with issues of land acquisition and compensation and/or the physical displacement of people.

If locations of camps, access roads or other ancillary facilities are not known at the time of appraisal , a Resettlement Policy Framework (RPF) component will be prepared to enable the preparation of the respective RAPs (if needed) once the sites are identified, and will be included in the RAP. The RPF component will include specific provisions to guide the borrower in screening and site selection, and in the preparation and implementation of site specific Resettlement Action Plans (RAPs) prior to implementation of any construction works in the respective specific sites.

Each RAP (and if required the RPF) will be duly consulted upon, cleared by the Bank and appropriately disclosed both in-country, and in the World Bank website prior to appraisal. Any RAPs prepared for specific ancillary sites during Project implementation under the RPF, will also be consulted upon, cleared by the Bank and disclosed prior to their implementation.

Safety of Dams OP/BP 4.37	No	There are no new or existing dams involved in the proposed project.
Projects on International Waterways OP/BP 7.50	No	The Temane-Maputo transmission line will cross Limpopo river, however it is not expected that the project will create any impacts affecting the quality, quantity and integrity of this international waterway.
Projects in Disputed Areas OP/BP 7.60	No	This policy is not triggered. The area in which the Project will be implemented is not known to include any disputed areas.

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Jan 17, 2018



Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

ESIA & RAP studies for the Transmission Line Project (TTP) are under way and will follow WBG Safeguard policies and ESHS guidelines. The ESIA/ESMP and a RAP covering the project activities will be disclosed prior to appraisal.

An Environmental Scope Definition Report and ToR for MGtP have been completed. Safeguards studies for MGtP, which are to follow WBG Performance Standards (OP 4.03) and ESHS guidelines, are planned for early Q4 2018. The ESIA, ESMP, RPF and where possible RAP/ARAPs for MGtP will be prepared, consulted upon and disclosed prior to appraisal; the Bank will conduct an ESRS and disclose it prior to appraisal.

ESIAs will include a social impact assessment (including cumulative impacts), based on which social impact management instruments will be developed and implemented. In addition to the RAP (and RPF if needed), labor influx management plans and codes of conduct (including zero tolerance for SEA/GBV and related prevention and response measures), H&S and Emergency management plans will be included in the ESMP(s). Social instruments will include plans for: Land & resource access compensation, livelihood restoration (to the extent not covered by a RAP due to its indirect nature) and community development, stakeholder engagement, grievance redress mechanism, local labor hiring, community development, cultural heritage management including any specific elements and a chance find procedure. If any further specific social studies are required, their nature and timing will be specified in the PAD-stage ISDS. For land acquisition impacts, the Borrower will complete a RAP prior to appraisal for each component with a known footprint. Where exact locations and PAPs affected cannot be known at the appraisal stage, special provisions in the RAPs or RPF may be needed. In those cases, at an early stage of implementation (timing to be specified in the RAP/RPF) a site assessment will be conducted to select the location of the project component involved (including minimizing resettlement and livelihood impacts), and once selected the site will be managed according to the respective RAP/RPF.

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APPROVAL

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