MISSION 300
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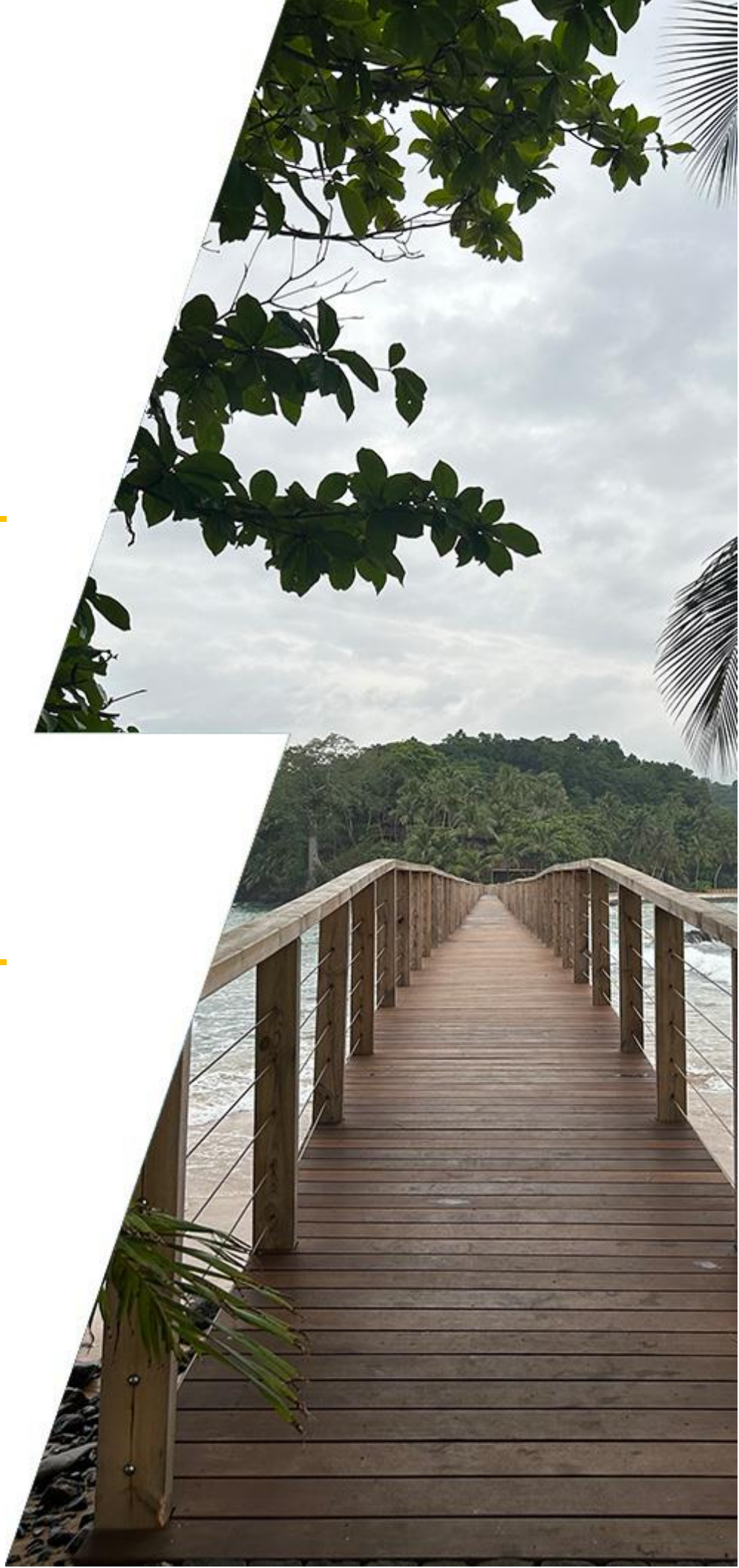
NATIONAL ENERGY COMPACT
FOR SAO TOME AND PRINCIPE



Preamble

The transition to a low-carbon economy represents one of the most significant challenges, as well as one of the greatest opportunities to São Tomé and Príncipe. On one hand, global climate change poses a direct threat to our way of life; on the other, continued reliance on outdated fossil energy sources, such as imported diesel, is no longer sustainable. At present, the energy expenditures of São Tomé and Príncipe consume a substantial portion of the national budget, while debt servicing hampers our ability to prioritize other critical sectors, such as healthcare and education for the youth. Poor quality of electricity supply hampers opportunities to develop tourism and agribusiness which are expected to be the core sectors for job creation. Given the exorbitant cost of electricity generation, we are unable to establish a model of economic growth that is both sustainable and inclusive.

The National Energy Compact of São Tomé and Príncipe is fully aligned with the United Nations Sustainable Development Goal (SDG 7) and the National Vision 2030. It has been carefully designed to steer this transition in a responsible, sustainable, and innovative manner. The Compact provides a comprehensive and forward-thinking framework through 2030, establishing the necessary guidelines for a clean and sustainable energy future. This future will serve as the bedrock for the nation's transformation into a resilient economy in the medium term. The Compact is a national plan with clear timelines, outlining specific governmental priorities for shifting from diesel reliance to adopting more cost-effective, sustainable, and environmentally friendly electricity sources, while simultaneously aiming to reduce carbon emissions in both the electricity generation and cooking sectors.

For São Tomé and Príncipe, this Compact is not only a response to its international climate commitments but also a strategic opportunity to reconfigure its energy infrastructure, ensuring a future characterized by energy security, climate resilience, and enhanced economic and social prosperity. We will explore innovative business models that enable the use of solar energy and battery storage to meet the electricity needs of the Sao Tomean population. We will leverage emerging technologies to minimize energy losses and will responsibly develop small-scale hydroelectric resources. Additionally, we will expand the availability of clean and healthy cooking options, while promoting the widespread adoption of energy efficiency practices.

This Compact embraces a holistic and integrated approach, organized into four primary pillars:

1. Achieving Universal Access to Electricity and Clean Cooking
2. Expanding Clean Energy Infrastructure and Reducing Costs
3. Ensuring the Financial Sustainability of the Sector and Enhancing the Operational Performance of Utilities
4. Unlocking Private Investment and Strengthening Institutions

This National Energy Compact was developed through extensive engagements and consultations with various stakeholders, including development partners, private sector, and civil society, to foster partnerships crucial for achieving the ambitious goals of the Compact.

The Government invites development partners, philanthropists, and stakeholders from the private sector to support São Tomé and Príncipe in gaining access to reliable, sustainable, inclusive, and clean energy. These efforts will promote economic growth, create jobs and income opportunities, and contribute to the country's development goals.

Investment needs

	Generation	Transmission/Distribution	Clean Cooking	Technical Assistance	Total
Public	64	31	8	5	108
Private	167	-	23		190
Total	231	31	30	5	297

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1

Declaration of Commitment

The Government of the Republic of São Tomé and Príncipe is committed to ensuring reliable, affordable, sustainable, inclusive, and clean energy for all, which will transform the country into a prosperous, middle-income nation by 2030. To this end, the Government aims to:

- Increase access to electricity: Raise the national electricity access rate from the current 84% to 100%, focusing on rural electrification through the expansion of the grid and/or off-grid mini-grids.
- Simplified procedures established: Provide tax exemptions/reductions for renewable energy and energy efficiency equipment.
- Increase the share of renewable energy: Increase the contribution of renewables in the generation mix from 5% to 50% by 2030, primarily driven by investments in solar and hydroelectric energy.
- Create an enabling environment for attracting private investment: Mobilize at least USD 190 million in private investment to support São Tomé and Príncipe's energy transition and development goals, representing approximately 64% of the total required investment.

To achieve the goals outlined in the National Energy Compact, the Government of São Tomé and Príncipe is committed to addressing critical bottlenecks throughout the energy value chain, as described in the Action Plans. Specifically, the Government commits to:

PILLAR I
REHABILITATE AND EXPAND ENERGY INFRASTRUCTURE AT COMPETITIVE COSTS

- The Government commits to periodically updating the energy sector plans starting from 2026, to guide future public and private investments in electricity generation, transmission, and distribution, and to redefine institutional roles and responsibilities.
- The Government commits to implementing a transparent and competitive procurement framework for the energy sector by 2026 and to establish and operationalize a dedicated procurement unit for the tendering of renewable energy projects, encouraging private sector participation with the goal of maximizing solar and hydro capabilities by 2030.
- The Government is committed to improving the efficiency of existing generation assets through audits and modernization, and to increasing generation capacity by 60 MW by 2030, from the current installed capacity of 38 MW.

PILLAR II
ADOPT DISTRIBUTED RENEWABLE ENERGY (DRE) AS A NECESSARY ELEMENT OF THE ACCESS AGENDA

- a) The Government recognizes the crucial importance of intensive investments in electrification solutions to achieve its ambitious access goals and commits to implementing off-grid electrification strategies from 2025 through distributed renewable energy (DRE).
- b) To facilitate the expansion of off-grid renewable energy mini-grids, a Mini-Grid Regulatory Framework will be adopted by 2026 to enable a lighter governance structure for mini-grids with capacities of up to 5 MW.

PILLAR III
ENCOURAGE PRIVATE SECTOR PARTICIPATION TO UNLOCK ADDITIONAL RESOURCES

- Recognizing the crucial role of the private sector in mobilizing the necessary resources and encouraging its participation in both grid-connected and off-grid energy sectors, the Government commits to reviewing and facilitating the update of Decree-Law 26/2014, with a focus on creating an enabling environment for private investments and facilitating the secure implementation of the open access regime through standardized and financeable documents that allow private generation to be transferred via the national electricity grid to end customers.

PILLAR IV
ENSURE FINANCIALLY VIABLE PUBLIC SERVICES THAT GUARANTEE ENERGY SECURITY AND PROVIDE RELIABLE AND AFFORDABLE SERVICES

- Strengthening the financial and operational performance of EMAE is a critical priority for the Government, which will be achieved through a combination of measures, including tariff adjustments, debt restructuring, and operational reforms, with the goal of achieving full cost recovery by 2030.
- The Government is committed to developing institutional capacity within EMAE, the General Regulatory Authority (AGER), and the Directorate General of Natural Resources and Energy (DGRNE) to ensure the effective implementation of energy projects and policies.

Key Policy Frameworks

The energy sector of São Tomé and Príncipe is guided by transformative policies, including:

- **Decree-Law 4/2023:** This decree provides for the exemption of customs duties on the importation of photovoltaic solar panels, inverters, and other system components, directly incentivizing both grid-connected and off-grid renewable energy production. Legislation has also been approved to increase import duties on inefficient light bulbs while eliminating duties and taxes on the importation of LPG.
- **Tariff Review:** Implementation of the approved tariff methodology to gradually adjust energy tariffs to better reflect the actual costs of production and transmission, while simultaneously redirecting subsidies to ensure affordability for consumers.
- **Review of the Electricity Sector Legal Code:** The update of Decree-Law 26/2014 (Legal Framework for the Electricity Sector) aims to attract private investment, with a focus on renewable energy, thereby enhancing legal certainty, reducing risks, and facilitating the integration of new technologies and business models.
- **Decree-Law on Self-Generation and Mini-Grids:** Establishes the rules for individuals, companies, and communities to generate and consume their own renewable energy, with the option to export excess energy to the grid, aiming to diversify the energy mix and reduce dependence on fossil fuels.
- **Regulation for Independent Power Producers (IPPs):** Defines the legal and operational framework for IPPs, ensuring transparency and fairness in power purchase agreements and government support. It specifies the conditions for private sector participation, including economic aspects such as investment protection, licensing and compliance processes, financial incentives, and technical requirements for grid access and connection standards.
- **Technical Standards and Grid Code:** Ensures the safe and reliable operation and expansion of Low-Voltage (LV) and Medium-Voltage (MV) networks based on international best practices.
- **Regulation of the Importation of Light Bulbs, Refrigerators, and Air Conditioners:** Establishes energy efficiency standards to reduce consumption while ensuring functionality and price accessibility, in line with international best practices and regional initiatives.
- **Study on Gas Supply Options:** Conducts a study to determine the feasibility, potential volumes, and a roadmap for the development of gas supply infrastructure.
- **National Action Plan for Clean Cooking:** Adopts this plan to ensure that access goals are met efficiently, promoting the use of clean cooking technologies.

To achieve its goals and implement the actions and commitments outlined in this National Energy Compact, a Mission 300 Task Force will be established, in coordination with the World Bank and the African Development Bank, which will include other development partners and accelerate the implementation of activities to achieve energy access goals.

The Government is committed to ensuring rigorous and transparent monitoring of the National Energy Compact through a structured monitoring and evaluation (M&E) framework, supported by the Ministry of Infrastructure and Natural Resources and other stakeholders. Data collection and feedback mechanisms will guide policy adjustments and monitor progress towards achieving universal energy access. Monitoring efforts will be integrated into the program's budget.

Call for Partnerships

The Government invites development partners, philanthropists, and stakeholders from the private sector to support São Tomé and Príncipe's ambitions for a modern energy system based on renewable energy sources, universal access, and the widespread adoption of clean cooking solutions. These efforts will promote economic growth, create income and employment opportunities, and contribute to the country's low-carbon development objectives.

Public and Private Sector Financing Needs by 2030 [millions of USD]

	Generation	Transmission and Distribution	Clean Cooking	Technical Assistance	Total
Public	64	31	8	5	108
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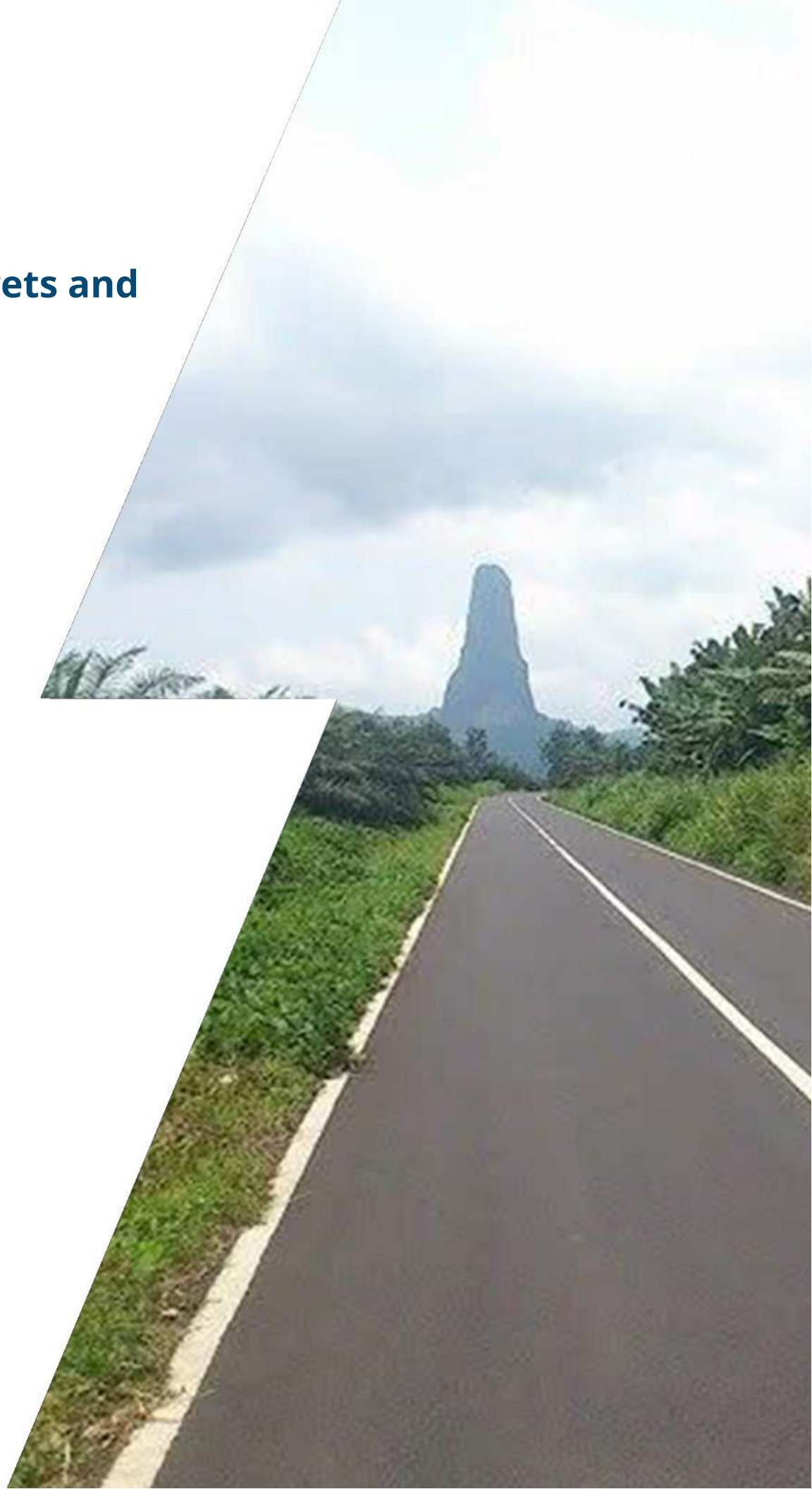
Compact Targets and Action Plan



This Energy Compact presents high-level commitment actions, with specific targets and timelines to drive progress towards the achievement of universal access to energy in a reliable, affordable, and sustainable manner.

There are several initiatives under implementation with development partners that address the four pillars of the compact providing a solid basis for timely implementation of the Compact. The timelines in the action plan reflect the ongoing initiatives.

Indicator	Current (2024)	Objective (2030)
Electricity Access Rate	84%	100%
Share of renewable energy in the electricity mix	3% Solar PV 2MWp Hydro 1.8MW	50% Solar PV 18MWp Hydro 10,1MW
Access to clean cooking rate	62%	75%
Private Capital Mobilization (USD)	0	USD 190M

Action Plan and implementation roadmap

Code/ Reform Area	Reference Base (2024)	Objective (2030)	Key Actions
I: Capacity Expansion and Cost Reduction			
Adopt the planning and implementation of the updated integrated electricity system	YES	YES	• Finalize the protocol for collecting geo-referenced data of customers to be supplied with new meters (2025). • Form a multi-agency technical team and launch a tender for updating the master plan (2026). • Obtain software for the geo-referenced database for EMAE, including details of the distribution network and generators (2026). • Publish technical standards and grid codes for safe and viable operation, as well as for the expansion of low voltage (LV) and medium voltage (MV) networks (2026). • Consult, approve, and publish the master plan to include production, transportation, and distribution, taking into account the climate resilience considerations of the Country's Climate Development Report (CCDR) (2027). • Update the electricity sector master plan to include the production, transportation, and distribution of energy (2029
Increase photovoltaic solar capacity	2MWp	30MWp	• Hire a transaction advisor for the solar IPP (completed in 2025) • Prepare a site in São Tomé (Água Casada) to accommodate up to 20 MWp of solar capacity (2025) • Sign contract for 5-year lease agreement for a 11 MWp photovoltaic solar plant (2026) with 8 MWh of BESS to support solar integration to immediately reduce diesel use (2026) • Select an IPP with support of transaction advisor for a 20MWp solar PV plant (2026) • Approve regulations on self-generation of energy, establishing rules for individuals, businesses, and communities to produce and consume their own renewable energy, with the option to export excess energy to the grid (2025) • Publish the network measurement formula and licensing processes (2026) • Design and adopt a financial incentive scheme (based on the principles of the feed-in tariff mechanism) for rooftop systems (2026) • Sign contract for construction of a 2-3 MWp photovoltaic plant and a 2-4 MWh BESS on Príncipe Island (2026) • Inaugurate and begin operation of a more efficient system control center, with system protection to support high penetration of VRE (2027)

			• Reach financial close for 20MWp solar PV plant (2027) • Develop and sign an agreement with an intermediary bank to manage a financial incentive scheme (based on the feed-in tariff principle) for rooftop systems (2027) •
Increase hydroelectric capacity	1.8MW	9MW	• Install data collection system for hydrometeorological measurements along the Bombaim River (2025) • Develop and adopt regulations on water rights and usage (2026) • Complete the ESIA for Io Grande and Bombaim (2026) • Sign the PPA and begin construction of 6.9 MW Io Grande (2027) • Identify a strategic partner for the development of Io Grande and Bombaim (2027) • Identify a strategic partner for the rehabilitation of the Agostinho Neto and Guegue hydroelectric plants (2027) • Commission the 3.2 MW Contador Hydroelectric Plant (2028) • Sign the PPA and begin the rehabilitation of the Agostinho Neto and Guegue hydroelectric plants (2029) •
Switch diesel-based electrical capacity to alternative thermal fuel sources	0MW	10MW	• Conduct a study on gas or HFO supply options to determine feasibility and potential volumes; and adopt a plan for its development (2025). • Identify and hire a strategic partner for the development of alternate fuel (HFO or gas) handling facility. • Conduct a feasibility study to quantify the potential of biomass and waste-to-energy conversion (2026). • Inaugurate and begin operation of a 10 MW bi-fuel thermal power plant (2028).
Adopt energy efficiency standards	NO	YES	• Approve and publish import regulations that impose minimum energy standards for light bulbs, refrigerators, and air conditioning units (2025) • Identify and hire partner laboratories (e.g., in Ghana) to certify (2026) • Implement appliance labeling standards in collaboration with laboratories in Ghana (2027) • Install 1,000 LED street lighting poles to reduce pressure on electricity production and further reduce energy consumption for street lighting (2027) • Review the implementation of the energy efficiency labeling program (2029)
III: Universal Energy Access			
Achieve universal electricity access	84%	100%	• Complete technical specifications to rehabilitate and expand the distribution network (2026) • Provide 2,000 additional grid connections (2026) • Develop and adopt regulated specifications for off-grid systems (2026)

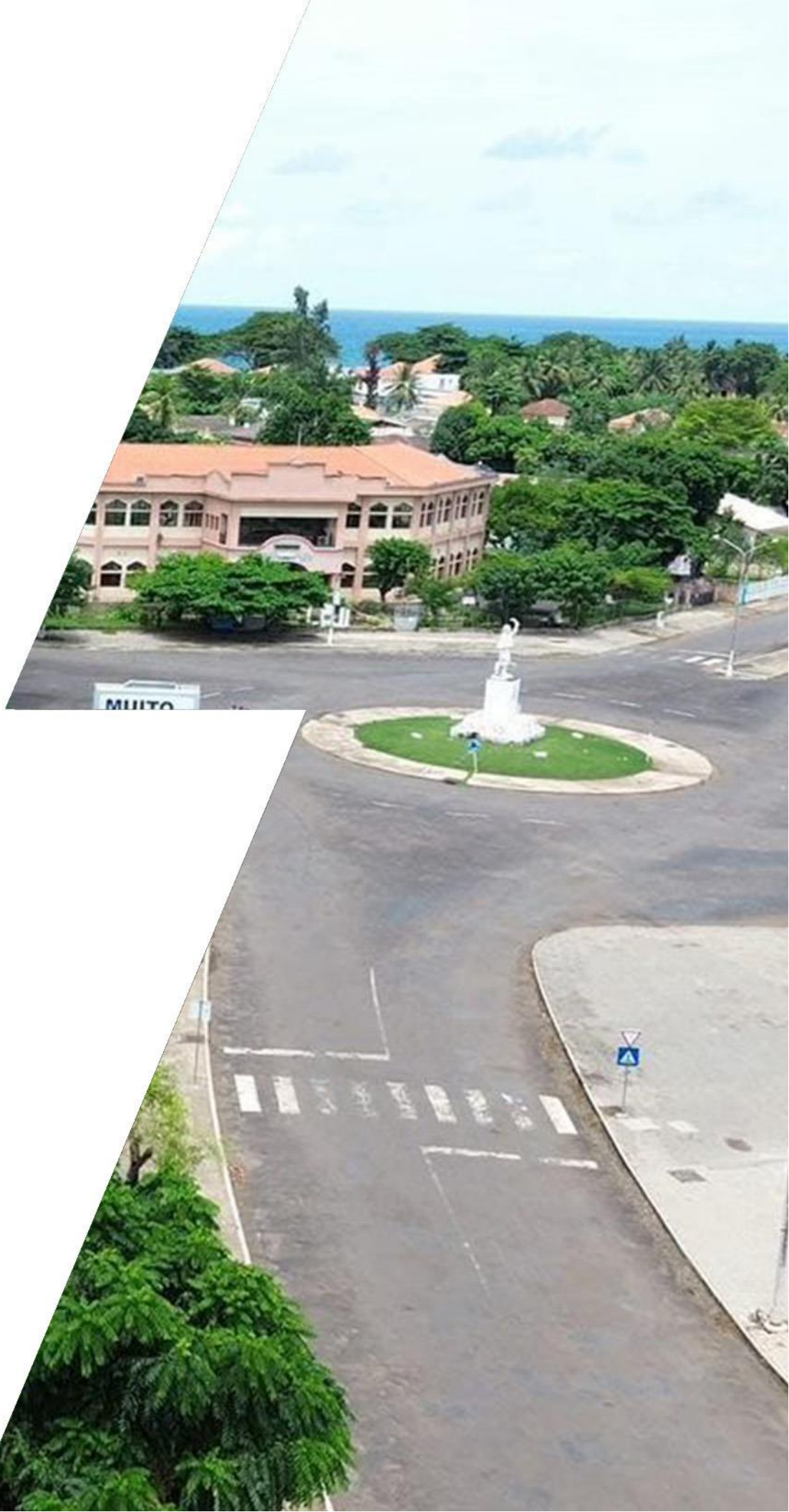
		(Increase female headed households and women owned/led enterprises with access to energy, clean cooking, and productive use technologies by 30%.)	• Approve subsidy levels for off-grid systems based on an accessibility analysis (2026) • Publish standards for photovoltaic solar energy service providers (2026) • Rollout 800 off-grid systems (2026) • Select up to 3 private service providers through a competitive process to distribute and maintain off-grid household solar systems (2026) • Provide 6,000 additional grid connections (2027-2028) • Upgrade and rehabilitate the Príncipe Island grid to improve supply quality and ensure the network is suitable for the installation of prepaid meters (2027) • Conduct an annual review of the off-grid program (2027+)
Increase access to clean cooking technologies	62%	75%	• Adopt the National Clean Cooking Action Plan to ensure that access goals are met more efficiently (2026) • Develop and publish standards for different types of clean cookstoves (2026) • Approve subsidy levels for clean cookstoves based on an accessibility analysis (2026) • Implement the recommendations of the pilot program for the production of sustainable charcoal with at least two producers through financial and technical assistance (activity plan preparation, capital support) (2026) • Develop a communication and awareness campaign focused on changing behavior related to clean cooking (2026) • Enforce the forest code with sanctions in case of non-compliance (2026) • Launch a communication and awareness campaign (2027-2028) • Approve governance structures for a clean cookstove subsidy fund (2027) • Select, through a competitive process, a financial intermediary to manage the clean cookstove subsidy program, as well as to manage the capitalization of the fund (2027) • Expand financial and technical assistance (activity plan preparation, capital support) to startups for the production of sustainable charcoal (2027) • Review and update the National Clean Cooking Action Plan (2029)
III: Private Sector Participation			
Mobilize additional private capital	US$0	USD190 M	• Promote active engagement of both traditional and non-traditional partners with the private sector • Review the Legal Framework for the Electricity Sector (Decree-Law 26/2014) to clarify the activities allowed for the private sector and the access rights of independent power producers (2026)

Improve transparency and predictability of energy sector revenues	Lack of clarity on energy sector revenues	Energy sector revenues are clearly distributed among stakeholders	• Approve the governance structure to manage the centralized energy sector revenue account (cash waterfall mechanism), through which all sector revenues are channeled and distributed to stakeholders (including IPPs), (2026) • Operationalize the centralized account (2027)
Increase transparency in licensing and authorization processes	Licenses and authorizations with unclear language	Objective and clear licenses and authorizations	• Publish licensing and authorization processes (technical, legal, and environmental) on the regulator's website (2025)
IV: Financially Viable and Operationally Competent Energy Utilities			
Improve the operational performance of EMAE	Limited data transparency	Publication of key performance indicators	• Carry out assessment of EMAE systems to identify requirements towards improving grid flexibility (completed). • Publish audited annual financial statements (unqualified) for the financial year within 6 months after the end of the financial year - annually (starting from 2026). • Install, use, and align EMAE operations with the new Management Information System (MIS) (2026). • Approve EMAE's training and requalification program for technicians focused on the operation and maintenance of photovoltaic solar systems and the use of the new MIS (2026). • Review the implementation of EMAE's training program (annually). • Geo-reference EMAE's main assets and customers in a database (2027).
Reduce aggregate technical and commercial losses in the sector	34%	18%	• Approve the concession framework for EMAE's commercial operations (2025). • Install 3,000 smart meters for customers still without meters (2025). • Grant the commercial operation of EMAE to the private sector (2026). • Approve designs and sign contracts for distribution network reconfiguration to off-load overloaded transformers and separate generation network from transmission to reduce outages and technical losses (2026). • Install 4,000 smart meters for EMAE's high-consumption customers (2026). • Replace 15,000 postpaid meters with smart meters (2026). • Replace postpaid meters for all non-critical customers with smart meters (2027). • Based on the financial inclusion project, implement the purchase of electricity credits via mobile phones (2028).

Reduce gap between production and revenue through tariff adjustments	NO	YES	• Adjust tariffs annually based on the approved tariff methodology .(ongoing).
Increase gender equity in the energy sector		30% increase in technical and leadership positions	• Implement training program on technical, leadership and management skills for women employed in the workforce.

3

Country and Sector Context



The Democratic Republic of São Tomé and Príncipe (STP) is an island state with untapped potential, consisting of two small islands and several islets. Its land area is 1,001 km², with São Tomé Island and its adjacent islets covering 859 km², and Príncipe Island, including its adjacent islets, covering 142 km². The country includes an Exclusive Economic Zone with a maritime extension of 170,000 km². Given its characteristics, STP is part of the group of Small Island Developing States (SIDS).

STP faces an acute macroeconomic and fiscal crisis marked by weak growth, high inflation, and depleted foreign exchange reserves. The economy is estimated to have contracted by 0.5 percent in 2023 (unlike in 2022, which saw 0.2 percent growth). The contraction is due to an aggravated fuel shortage and energy crisis, together with delays in the disbursement of external financing, which historically has fuelled growth, accounting for an estimated 6.2 percent of gross domestic product (GDP) and 95 percent of capital expenditures in 2023. The fuel shortages were brought about by changes in the sources of fuel supply. Successive external shocks, coupled with the recurrent energy crisis, have led to severe macroeconomic imbalances, with a 2023 domestic primary fiscal deficit of 1.7 percent of GDP.

Structurally, the energy sector in São Tomé and Príncipe is governed by the Ministry of Infrastructure and Natural Resources (MIRN), through the Directorate General of Natural Resources and Energy (DGRNE), which provides guidance on sector policy. DGRNE, as a service of MIRN, implements policy for natural resources (Water, Minerals, and Energy). Additionally, DGRNE/DE, as the technical institution representing the granting authority, is the body responsible for approving investment plans and sector projects, including those of EMAE. Regarding the regulation of the electricity sector, AGER is a public legal entity with technical, administrative, financial, and patrimonial autonomy. EMAE is the public company, future concessionaire, responsible for providing public services related to the production, transportation, distribution, and commercialization of electricity across the entire national territory. EMAE, under the technical supervision of MIRN and the financial oversight of MEEF, enjoys administrative, financial, and patrimonial autonomy.

The government has completed some hard reforms toward addressing challenges in the energy sector. Fuel prices were adjusted in 2023, removing explicit subsidies even though automatic price adjustment is yet to be applied. Actions to improve financial sustainability and operational efficiency in the electricity sector include: adopting a methodology for establishing and periodically adjusting EMAE's revenue requirements; mandating EMAE to publish key performance indicators (KPIs); establishing import tariffs on incandescent light bulbs and import tariff exemptions for materials and equipment to be used in the production of renewable energy; and regularizing the commercial status of consumers without electric energy service contracts. The government announced tariff adjustments effective January 1, 2025 resulting in an average increase of 15% across categories with a 5-year trajectory towards full cost recovery.

The energy sector of São Tomé and Príncipe is responsible for the largest share of greenhouse gas emissions at the national level, with the majority of electricity production coming from diesel-fired thermal power plants (approximately 95%), and the remaining 5% from hydroelectric and photovoltaic solar sources. In this context, and in light of national development, the country is committed to adopting emerging and urgent policies and practices aimed at decarbonizing the energy mix.

Despite a series of studies and investment projects developed since 2001 by various national and international development support entities to reduce production costs and improve the electricity sector, the improvements introduced have not yet reached the expected levels and objectives and remain far below expectations.

There is a commitment to accelerate the implementation of various initiatives being financed by different development partners, with particular emphasis on the World Bank and the African Development Bank. The main activities include capacity building for institutions in terms of technical and material resources. It is essential to remove the regulatory and organizational barriers that currently hinder the rapid development of this sector. A specific issue is EMAE, whose credibility is currently low. Ongoing actions aim to improve the integrated information management system, electricity distribution, and commercialization from a broader perspective, focusing on reducing losses, protecting and increasing revenue, and creating a safe environment for private sector participation in electricity services.

It is expected that the demand for energy in São Tomé and Príncipe will grow substantially, driven by the following factors:

- **Agriculture & Fisheries:** The trend of increasing agricultural production and fish catch has led to the industrialization of agricultural and fish product processing, driving growing energy demand for both irrigation and processing.
- **Tourism:** Despite the challenges posed by the COVID-19 pandemic, the tourism sector has been recovering and is expected to experience significant growth, particularly in services related to the sector, thereby increasing energy demand in comparison to previous levels.

- **Infrastructure:** With the need to expand the port and airport in São Tomé and Príncipe, and given the country's strategic location as a gateway to millions of people along the African coast, as well as South America and parts of Europe, the Government has focused on expanding these infrastructures to meet the growing needs of the country.
- **Population Growth:** The population of São Tomé and Príncipe is expected to increase from 210,000 in 2020 to 258,000 by 2030, and the resulting urbanization and electrification efforts will further increase energy demand.

The improvement of macroeconomic indicators and the sustainable economic growth of the country will depend on successfully catalyzing growth in key sectors, including agriculture, manufacturing, and tourism, for which energy is a critical enabler.

The Government's vision for the energy sector, enshrined in Vision 2030, is to achieve "universal access to clean, reliable, and affordable energy at the lowest economic, financial, social, and environmental total cost, consistent with national development goals by 2030." To realize the energy sector goals of Vision 2030, the Government is implementing a short, medium, and long-term program.

Recently, the Government adopted the Decarbonization and Resilience Action Plan for the energy sector - PADRES (2024-2035), which outlines a low-cost, forward-looking plan for the development of the country's energy sector, including both grid-connected and off-grid solutions. PADRES recognizes the Government's priorities, such as increasing industrial development, agricultural and fishery transformation, a modern transportation system, and achieving universal electricity access by 2030.

The energy matrix is predominantly diesel-fired thermal, with renewable energy contributing more than 5% of total electricity generation. In recent years, significant progress has been made in diversifying renewable energy sources, particularly solar energy. Recently, the 1.2 MWp Santo Amaro Sul Solar Park was commissioned, and notable projects such as the 11 MWp SCATEC Solar Park in Água Casada, , and a 15 MWp solar plant in Água Casada through an independent producer under the Access to Clean and Sustainable Energy project under the ASCENT MPA financed by the World Bank, among other initiatives in hydro, solar, and biomass, are expected to come online. These developments will increase the share of renewable energy, particularly photovoltaic solar, in the energy matrix, contributing to energy security and reducing the reliance on diesel thermal energy, the price of which is subject to market fluctuations.

The role of the private sector in São Tomé and Príncipe's energy sector is in its early stages, particularly in power generation and the provision of off-grid solutions. Independent Power Producers (IPPs) will become important contributors to diversifying the energy matrix of STP. Despite this progress, challenges such as regulatory barriers, financing constraints, the low credibility of the utility, and lengthy approval processes hinder greater private sector participation. Therefore, strengthening project financing capacity, improving the regulatory framework, and providing incentives for private investment are crucial to unlocking the potential for private sector involvement in the energy value chain.

There are opportunities to invest in Distributed Renewable Energy (DRE), both in mini-grids and off-grid renewable energy alternatives, as the cost of extending the national grid is expected to be higher due to the very low population density, especially in rural areas of São Tomé and Príncipe. However, in urban areas where the grid is more widely covered, grid connections would be a more cost-effective option.

There are initiatives to harness the benefits of digital connectivity to improve service delivery and improve efficiency (through smart meters, geospatial planning, utility digitalization etc.) The government will examine entry points for increasing energy access through effective use of digital enablers, technologies while enhancing cross sector deployment synergies between energy and digital to accelerate service delivery in both sectors through its financial inclusion program. The adopted strategy will examine how digital connectivity and digital solutions can be integrated across interventions for the M300 Energy Compact including pay-go services through mobile payments.

São Tomé and Príncipe has developed a and National Strategy for Gender Equality and Equity (*Estratégia Nacional para a Igualdade e Equidade de Género*) under the authority of the National Institute for the Promotion of Gender Equality (*Instituto Nacional para Promoção da Igualdade Equidade de Género – INPIEG*). However, several gender gaps are present in STP including in employment opportunities, with only 60 percent of women active in the labor market, with their majority in the informal sector. In the main energy sector public institutions, women representing less than 15 percent of the workforce on average and only occupying 8 percent of technical positions within the utility, mainly due to the lack of study- and career opportunities. In addition, women's access to productive factors is impeded, with very low asset ownership and financial inclusion, owing to lacking opportunities to undertake income-generating activities. These gaps can be narrowed through increased participation of women in renewable energy operations to provide new opportunities for them in the energy sector, for example with training-to-work program and a scholarship-internship programs, as based on the most

critical needs in training and employment, as well as through the promotion of productive uses of energy.

Access to clean cooking solutions remains a significant challenge in São Tomé and Príncipe, with only around 18.97% of households using clean energy sources for cooking and heating, namely LPG (18.89%) and electricity (0.08%) in 2020. The majority of households still rely on wood (62.26%) and charcoal (18.77%). Furthermore, according to the PNAECLM, families use various types of equipment for cooking and heating, such as three-stone stoves, traditional stoves, LPG stoves, and electric stoves.

4

Current Situation and Challenges

PILLAR V
GENERATION EXPANSION AND INVESTMENT

The total installed capacity in São Tomé and Príncipe (STP) is 38 MW (19 MW available), and the energy matrix is predominantly diesel-fired thermal, with renewable energy contributing less than 5% of total electricity generation. The electrical system consists of five thermal power plants, namely the Santo Amaro 1, Santo Amaro 2, Santo Amaro 3, Bobô-Foro 2, and Tesla plants, as well as two photovoltaic solar plants and one hydroelectric plant.

The government has been implementing the expansion of generation in recent years, with progress made in diversifying renewable energy sources, particularly photovoltaic solar energy. Recently, the sector saw the commissioning of the Santo Amaro South Solar Park (1.2 MWp) under the Energy Transition and Institutional Support Program funded by the African Development Bank. Notable projects include the upcoming commissioning of the 11 MWp solar park in Água Casada under lease with SCATEC, as well as the 15 MWp solar plant in Água Casada through an IPP as part of the Access to Clean and Sustainable Energy project, funded by the World Bank, along with other initiatives in hydro, solar, and biomass energy.

In terms of challenges, the sector faces issues across administrative, financial, legal, and technical areas, as outlined below:

- **High Production Costs:** Electricity production is predominantly diesel-fired thermal, which results in high production costs. This leads the country to incur significant debts due to diesel purchases and generator maintenance.
- **Supply-Demand Imbalance:** Due to the high costs of purchasing diesel and maintaining generators, production capacity is often limited. This, in turn, leads to a supply-demand imbalance that is resolved either through load shedding or results in blackouts.
- **Inadequate Network Structure:** The lack of a clear distinction between the transmission and distribution networks complicates the implementation of a coherent and effective electrical protection plan. As a result, faults are not isolated at their point of occurrence, propagating to the source and causing disruptions in the system, which in turn leads to significant reductions in service quality.
- **Transmission Capacity:** The capacity of the existing transmission system is severely limited. This problem is partly due to inadequate reactive power at the major load centers and transmission constraints.
- **Frequent Interruptions:** The network was not designed to meet the redundancy level required to meet the desired N-1 reliability criteria. Occasional blackouts occur, typically caused by the sudden loss of large generation sources or transmission lines, which compromises the system's resilience.
- **Losses:** The high losses within the system are due to both technical and non-technical factors, reducing the overall efficiency of the grid. This impacts electricity costs, as the level of losses is factored into the determination of retail tariffs. However, the efforts made by EMAE and the Government to reduce these losses through strategically designed policies have been effective, though further progressive improvements are still needed.
- **Technical Capacity Constraints:** There is a need for more technical expertise in planning, operations, and maintenance of the system, as well as gender balance in the energy sector. Challenges in succession planning and staff retention have a negative impact on knowledge management and skill development, affecting the overall development and stability of the grid.

PILLAR VI
LAST MILE ACCESS

Electricity Access

São Tomé and Príncipe has one of the highest electrification rates in Sub-Saharan Africa, at approximately 84.7%, and an access rate of about 70.4%, despite the production still being highly costly. However, the national electricity system suffers from high losses due to both technical and non-technical factors, which leads to overall inefficiency. In this context, the country has made significant progress in expanding electricity access, driven by strong political commitment and sustained investment through the development program. Between 2018 and 2024, the national access rate increased significantly, positioning São Tomé and Príncipe well above the Sub-Saharan Africa average. This acceleration has been made possible by a combination of grid expansion, specific policy measures, and support from development partners.

Despite these advancements, São Tomé and Príncipe continues to face fundamental challenges. Access to electricity remains unequal, especially in rural areas. Affordability continues to be a barrier, particularly for poorer households. Financing gaps are a persistent issue, and the country still relies heavily on donor funding for last-mile infrastructure. To address these issues, the Government is implementing strategic plans that focus on cost-effective energy access solutions and is committed to institutionalizing regular updates of strategic documents.

Despite the challenges, electrification in São Tomé presents numerous opportunities that can significantly improve the country's socioeconomic landscape. There is untapped potential for private sector engagement, allowing businesses to invest in standalone solar systems, mini-grids, and the productive use of energy solutions. Community awareness campaigns and consumer education can increase adoption, especially in rural electrification areas. These initiatives should focus on educating the public about the benefits of off-grid solar solutions and clean cooking technologies. Civil society organizations can play a crucial role in supporting dialogues with stakeholders and providing civic education on the benefits of energy solutions. Their involvement can ensure that the voices of local communities are heard and that their needs are addressed in policy formulation and implementation processes. Various approaches, including the establishment and enforcement of quality standards for solar products, will build consumer trust and improve system performance. Pilot programs focused on off-grid solar solutions and clean cooking initiatives aim to reach around 9,000 to 10,000 households, potentially paving the way for future expansion and long-term effectiveness.

Clean Cooking

To achieve the clean cooking goals outlined in the National Action Plan and Clean and Modern Cooking Strategy (PNACLM), the government aims to develop a solid policy and regulatory framework to ensure affordable cooking fuels at reasonable prices. This includes the creation of a dedicated clean cooking unit within the Ministry of Infrastructure and Natural Resources (MIRN), composed of domestic energy specialists or trained professionals. This unit will manage clean cooking initiatives, monitor related data, and coordinate with sectors such as health, gender, industry, and relevant stakeholders. From a fiscal policy perspective, the government will promote the adoption of LPG for cooking. Subsidies will be directed to LPG as well as the associated equipment (gas stoves), ensuring that vulnerable and low-income households can adopt this technology. The Government is also committed to promoting the use of sustainable charcoal and wood, as well as high-quality improved and efficient wood and charcoal stoves.

In São Tomé and Príncipe (STP), the main challenge in improving access to clean cooking is the predominant use of kerosene in both urban and rural areas. Kerosene and solid fuels are deeply rooted in domestic practices, requiring a strategic approach to transition kerosene users to LPG, which is cheaper and safer. This strategy must also focus on increasing the efficiency of solid fuel appliances, such as Improved Cookstoves (ICS), while promoting the sustainable production of wood fuel and ecological charcoal.

Another significant challenge is aligning LPG supply with household income, avoiding substantial initial costs, and allowing families to benefit from the affordability and health advantages of using LPG over kerosene. Furthermore, ensuring a reliable supply of LPG is crucial, particularly in an island context, where logistical challenges can be more pronounced. Supply disruptions must not hinder sustained use and adoption. Additionally, there is a low level of awareness among households about health, climate, and other benefits of clean cooking options (including ICS). Addressing this lack of awareness is essential to promote the adoption of cleaner cooking technologies.

Finally, political will and leadership to accelerate access to clean cooking are prerequisites for the success of the policy actions described for the clean cooking sector. Despite these advances, the sector continues to face substantial obstacles. Funding remains fragmented and largely dependent on donors. Consumer awareness and price accessibility also present ongoing challenges.

PILLAR VII

PRIVATE SECTOR PARTICIPATION INCENTIVES FOR ADDITIONAL FINANCING

Private investor interest has grown significantly in recent years, particularly in power generation. Among them, promoters are presenting development projects in gas, photovoltaic solar, ocean energy, biomass, and hydroelectric power. The legal and regulatory framework has improved with the approval of the Legal Framework for the Electricity Sector, DL-26/2014, and the development of its specific regulations, which will help reduce investment risks. Complementary reforms, such as a new Public-Private Partnership (PPP) law and the Economic Acceleration Measures Package (PAE), along with fiscal and customs incentives, will further strengthen the favorable investment environment.

PILLAR VIII

FINANCIALLY SUSTAINABLE AND RELIABLE PUBLIC UTILITIES

EMAE, the public utility company, is making efforts to improve its financial sustainability; however, it still faces many challenges. Only 30% of electricity consumers are considered customers in good standing that regularly pay bills on time. About 30% have no contract with EMAE and additional 10%, though metered, do not pay for electricity. 20% - 30% of consumers pay with delays, some significant. Tariffs were not revised between 2018-2024, and a new tariff methodology was approved in 2024, which is now being operationalized with the first adjustment of

approximately made in January 2025. The peg of the Dobra, the local currency, to the Euro provides stability in revenue to the sector.

However, the utility still faces significant challenges. In this regard, the Government is committed to implementing the necessary institutional reforms to clarify roles and responsibilities. To ensure sustainable service delivery and attract more investments, EMAE, in collaboration with the Government, aims to strengthen its financial position, reduce losses, and ensure transparency through regular audited reports. Broader institutional reforms and capacity building across the sector will be key to meeting future demand and implementing São Tomé and Príncipe's ambitious energy transition agenda. The Government remains committed to improving the sector's performance and has contracted the services of a consulting firm to assist with the outsourcing of EMAE's commercial functions, with the process expected to be completed by December 2025.

Effective Implementation of the Energy Compact

The DGRNE will lead coordination of the implementation of the Compact and will be strengthened to be the Compact Delivery and Monitoring Unit (CDMU) with a direct reporting line to the Minister of MIRN and the Energy Crisis Committee which reports directly to the Prime Minister. The CDMU will be chaired by the Minister of Energy who will liaise with the Council of Ministers to mobilize support from various parts of the government for implementation of the compact. The CDMU will have representation from key implementing ministries including from ministry of economy and finance, the ministry of energy, and EMAE and AGER. The CDMU will proactively facilitate inter-agency coordination and ensure fast response to emerging challenges. This dedicated unit will be supported by the Government's budget as well as by development partners for the implementation of its work plan and monitoring activities.

Effective communication is essential for the Ministry overseeing the energy sector to successfully implement the Energy Compact. Sharing clear and consistent information with stakeholders will ensure alignment, understanding of the project objectives, and smooth collaboration at all levels. By establishing robust communication channels, the Ministry will promote transparency and create a framework where feedback loops are effectively used to refine implementation strategies. Furthermore, communication and stakeholder engagement play key roles in the transition process. Active collaboration with stakeholders, including international agencies, development partners, private sector participants, and civil society organizations, is crucial to maintaining the momentum of the Pact.

Objective	Actions
Strengthen the technical capacity of the Ministry for implementation and monitoring	• Strengthen DGRNE with experienced consultant to support the preparation and implementation of the generation, off-grid and clean cooking programs – 2025 • Recruit three junior engineers to expand MIRN's capacity for execution, monitoring, and evaluation of the COMPACT - 2026
Effective reports on COMPACT implementation	• Update the MIRN and AGER websites to include reports on COMPACT progress – 2026 • Collect information on the number of electricity connections from EMAE and UNDP (for off-grid) - annually starting from 2026 • Publish and update sector statistics (production, transportation, distribution) and EMAE key performance indicators every 6 months - starting from 2025 • Develop communication reports on the progress of COMPACT implementation - annually starting from 2026
Objective impact assessment	• Update the framework for various levels of access to electricity and clean cooking and track indicators every three years - 2027

ANNEX I
ONGOING ACTIVITIES AND DEVELOPMENT PARTNERS

Partner	Project	Calendar	Objetives / Project Scope	Total Budget (USD)	Contributions for the target			
					Electricity Access	Clean Cooking	Installed Renewable Energy	Targets and Indicators
AfDB	Energy Transition and Institutional Support Program (ETISP)	2021-2027	The Program is designed around three components aimed at: i) initiating the energy transition to renewable energy sources; ii) providing institutional support while simultaneously strengthening financial governance and the business climate; and iii) supporting the Government of São Tomé and Príncipe (GoSTP) in implementing the ETISP and enhancing institutional capacity.	13,275,000.00		N/A	1.3MW Solar PV	Pillar 1: Expand generation and invest in infrastructure at competitive costs.
BM/ EIB	Electricity Sector Recovery Project of São Tomé and Príncipe (PRSE)	2016-2025	Support: i) Availability of cheaper production capacity through reducing losses in the grid while simultaneously improving the overall system security and supply security (see co-financing from GBM above for more details); ii) Increasing the quality and reliability of electricity supply from the transmission and distribution network; iii) Implementation of a revenue protection program to improve EMAE's financial performance; iv) Implementation of a Management Improvement Plan to enhance EMAE's operational performance; v) Deployment of LED lighting as part of a demand-side management program. The project also supported the development of a Low-Cost Energy Development Plan (LCPDP) and a tariff study report with recommendations on a	33,720,000.00				Pillar 1: Rehabilitation of the grid and investment in infrastructure

			realigned tariff structure, aiming for the progressive recovery of costs.				
UNIDO	Strengthening Institutional Capacities for a Renewable Energy and Energy Efficiency Investment Program for São Tomé and Príncipe.	2022-2025	Create and foster an environment conducive to investments in renewable energy and energy efficiency.	1,000,000.00			
UNDP	African Mini-Grids Program STP	2025-2028	Support access to clean energy by increasing technical and financial viability and promoting the growth of commercial investment in low-carbon mini-grids in São Tomé and Príncipe, focusing on cost-reduction levers and innovative business models.	2,018,349.00			
UNDP	Infraestrutura Verde para Saúde e Educação em STP	2023-2025	O programa conjunto contribuirá para melhorar o acesso à energia nas unidades de saúde, contribuindo ainda para a melhoria da qualidade dos serviços públicos de saúde	700,000.00			
UNDP	Solarization and Green Cooling Solutions for Health Facilities in São Tomé and Príncipe	2024-2025	Support the Ministry of Health (MoH) of São Tomé and Príncipe in solarizing health facilities and implementing resilient and green cold chains and refrigeration.	1,300,000.00			
BM	Access to Clean and Resilient Electricity (ACRE)	2023-2028	Support: i) Availability of cheaper production capacity through financing the expansion of the Contador hydropower plant; / 800 households, located in remote areas, will benefit from small solar systems by 2028. / At least 26 MWp, with 11 MWp + 15 MWp mobilized and installed through private financing. / Pillar 1: Expand generation and invest in infrastructure at competitive costs.	47,700,000.00	800 households, located in remote areas, will benefit from small solar systems by 2028.	At least 26 MWp, with 11 MWp + 15 MWp mobilized and installed through private financing	Pillar 1: Expand generation and invest in infrastructure at competitive costs. Pillar 3: Last Mile Access Pillar 4: Private Sector Participation

ANNEX II
METRICS FOR KEY INDICATORS

Pillars	Metrics /Indicators	Data (latest available)
Pillar 1 –Expand Generation and T&D Networks	• **Generation Capacity Installed / Available** (MW) • % Thermal, % Renewable (including BESS)	• Total capacity: 38 MW[1] • Energy mix: 95% thermal (diesel), 5% renewable (hydro + solar)
	• **Energy Produced Annually** (MWh) – Total • % Thermal, % Renewable (including VRE/BESS)	• Total generation: 106,3 GWh • Energy mix: 5% renewable (hydro + solar), 95% diesel
	• **Transmission Network (MV)**, Total: Length (km); Voltage (kV): Transfer Capacity – MW/MVA	• 275 km transmission line[2] – 30kV: 200 km – 6kV: 75 km
	• **Access to energy (electricity and clean cooking)**	Electricity: 84% Clean cooking: 62% (2024)
	• Number of new on-grid connections (by customer[3] type) in 2023	9866[4]
	• Total (Private) investment needs by 2030 (USD, percentage) - split (by Grid, mini-grid, off-grid) and clean cooking); spilt (by generation, transmission, distribution and access) (Domestic and International)	• Total: USD 23 Million out USD190 Million representing 12,1% of the total investment • Grid: USD 0,00 Million of the private sector investment • Clean cooking: 23 Million
Pillar 5: Sector Reforms and Sustainable Utilities	• Utility financial profitability (per audited accounts) – Net income/loss (US$ amount and US$/kWh) for Discos, Transcos, Gencos	Information not available
	• (Regulator) Tariff policy, average end-user tariffs (per kWhr) and trajectory to full cost reflectivity (current % of recovered costs to achieve 2030 target)	Information not available
	• Total Subsidy Amount (USD); Path/Timelines to full cost reflectivity (estimate);	Information not available
	• Aggregate Technical Commercial & Collection (ATCC) Losses: % reduction targets per year. • Number of metered / unmetered customers • Number of prepayment meters	Information not available

		• Metered: 3,861,557[5] • Prepaid: 3,861,557[6]
	• Load shedding (e.g. average number of hours per day and/or estimated lost MWhrs per annum).	3-7 hours per day
Additional - Cross-Cutting for consideration	• Capacity Building requirements (US$) (at all levels)	• Information not available
	• Alignment of Power Sector Least Cost Expansion Plans to country Long Term Strategies and NDCs /Paris Agreement – Yes/No	• Yes
	• Household Affordability (i.e. % level of household disposable income available to be spent on energy services and/or % of Households Receiving Energy Subsidies)	• Information not available
	• Jobs or gender % in energy sector	• 0.3%[7]

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