Eswatini Country Window

Energy System Transformation Outlook (ESTO)

GET.transform
Transforming Energy Sectors Globally

GET.transform is co-funded by

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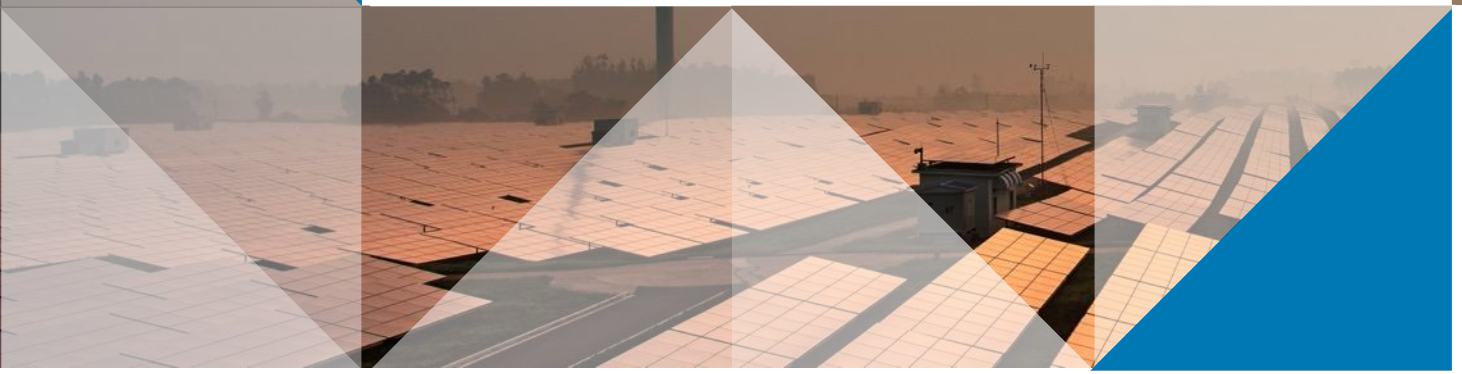
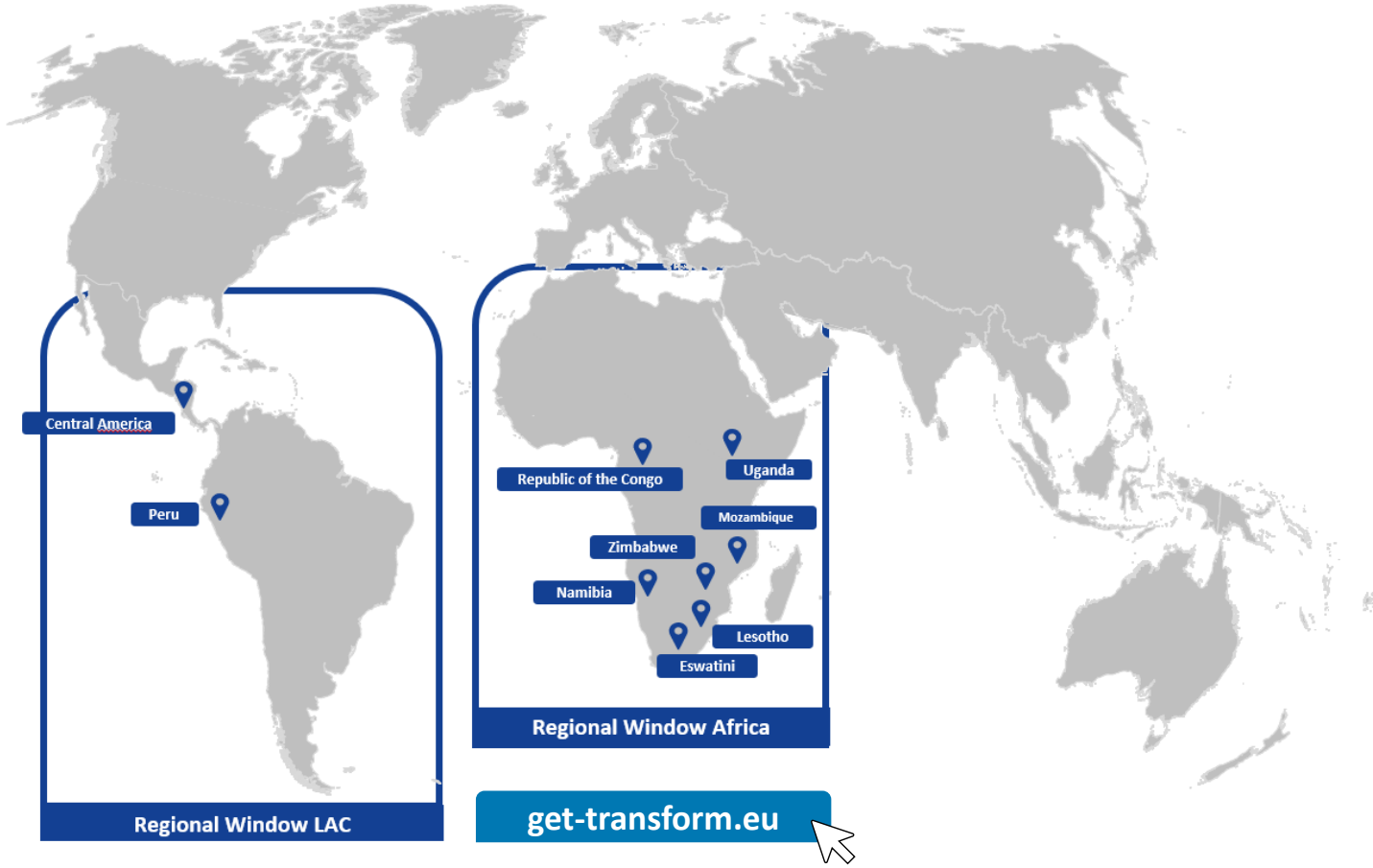


What is GET.transform?

- Technical assistance (TA) and capacity building for the **public sector** to establish conducive policy and investment frameworks for the transition of the energy sector
- Hub of expertise with **> 50 renowned (inter)national energy experts**
- Implementation through **regional** and **country windows** with expert staff on the ground incl. secondments
- **Scaling across countries** through collaboration with regional institutions and other TA initiatives



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GET.transform Workstreams

LONG TERM ENERGY PLANNING

Developing integrated energy and power system investment plans, outlining development paths for energy sector transformation

RENEWABLE ENERGY GRID INTEGRATION

Updating of technical power system planning and operational procedures that enable the operation of renewable energy dominated power systems

ON-GRID REGULATION & MARKET DEVELOPMENT

Supporting institutional reforms that allow for new market actors and renewable energy participation: market model design, non-discriminatory grid access, cost-reflective services

Design and management of solicited auctions as well as market-driven mechanisms for procuring on-grid energy

OFF-GRID REGULATION & MARKET DEVELOPMENT

Supporting off-grid electrification planning and data management frameworks

Developing mini-grid regulatory frameworks and technical standards and designing award mechanisms for procuring off-grid energy

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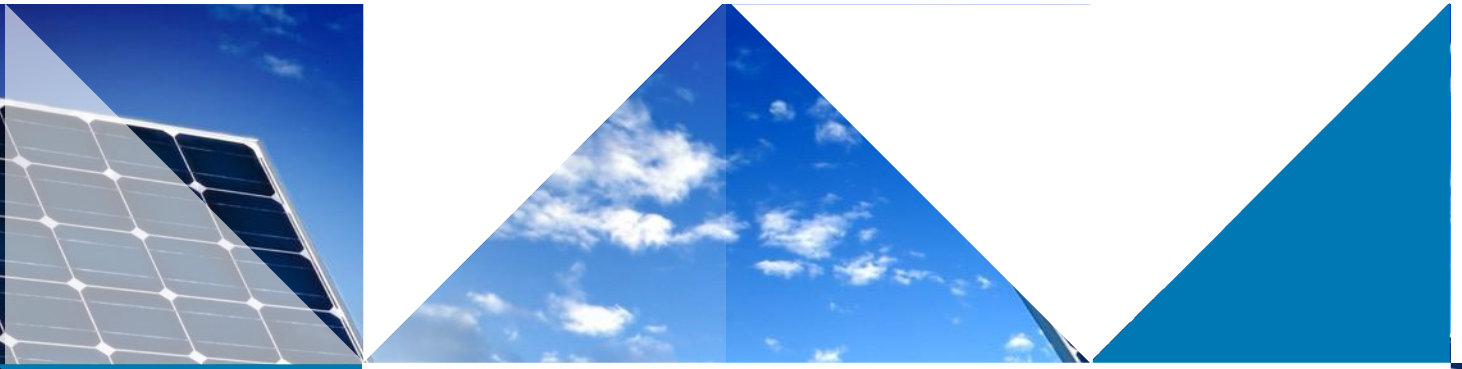

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ESWATINI ESTO

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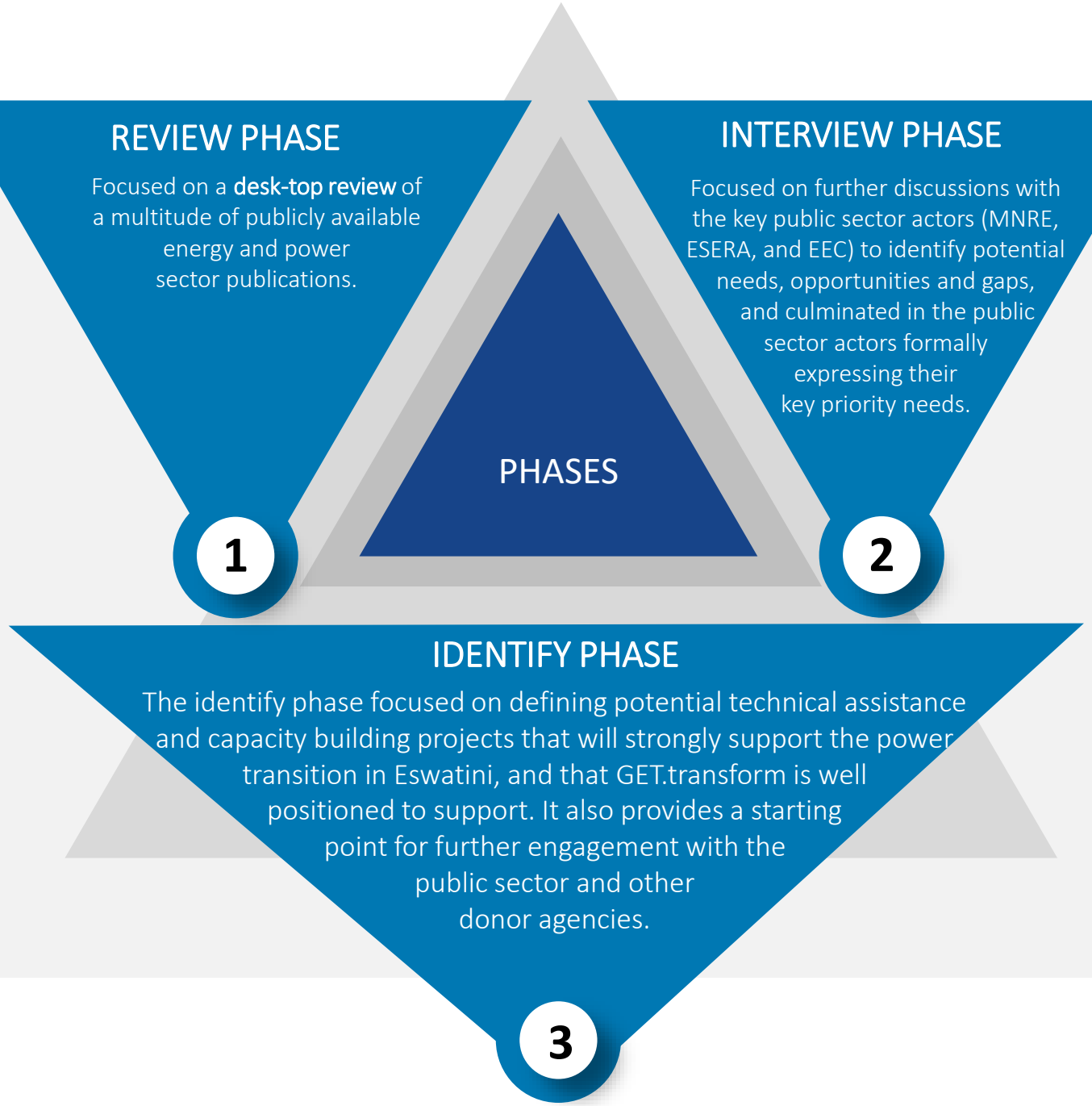
Foreword

The purpose of the Energy System Transformation Outlook (**ESTO**) is to document a high-level summary of the electricity landscape in Eswatini and to present the outcome of a high-level overview and assessment that followed a 'review, interview, identify' approach.



The ESTO is not a formula of what should be done by the country or the public sector actors.

The ESTO is a means of obtaining feedback to enrich our understanding of the power sector in Eswatini and to identify support activities and synergies with other donor and development agencies.

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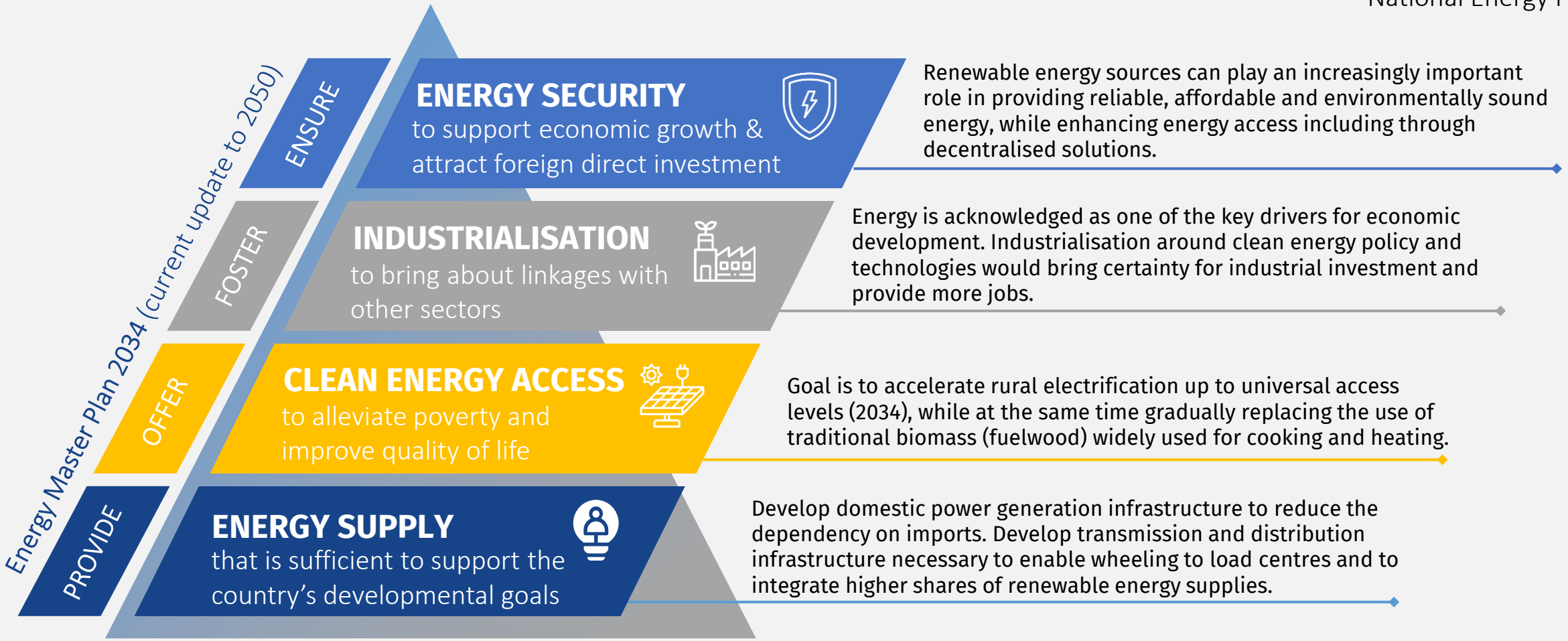
Eswatini's Energy Vision

"To meet the energy needs of the country in a sustainable manner that contributes to economic growth and well-being of the population".
National Energy Policy



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Status of Energy Sector Transformation in Eswatini (updated)

The electricity supply industry in Eswatini has undergone changes both from a policy and regulatory point of view.

Changing global trends towards liberalised energy markets, security of supply, achieving efficiencies, affordability, and access to electricity supply are the most important factors that introduced a change in the Eswatini policy trajectory.

Overall, the electricity supply industry in Eswatini can be broadly defined as an industy in transition, informed both by policy imperatives and regulatory reform.

Key policy instruments includes the ' Independent Power Producer Policy' of 2016 and the 'National Energy Policy' of 2018. (For more details see slide on Regulation and Energy Policy Instruments)

Work is underway on a range of regulations and frameworks, which includes inter alia:

- Review of the three key enabling legislation documents in the Energy sector, (project underway)
- Wheeling framework (near completion),
- SSEG regulations (near completion),
- Reviewal of Tariff Methodology (new support request),
- Reviewal of Grid Codes (near completion),
- and Mini-grid and Off-grid regulatory framework (issued, to be gazetted).

Eswatini issued an updated 'Long-term Energy Masterplan of 2034' to a 2050 version (draft). This will be formalised in 2024 together with an updated Short-term Generation Expansion Plan.

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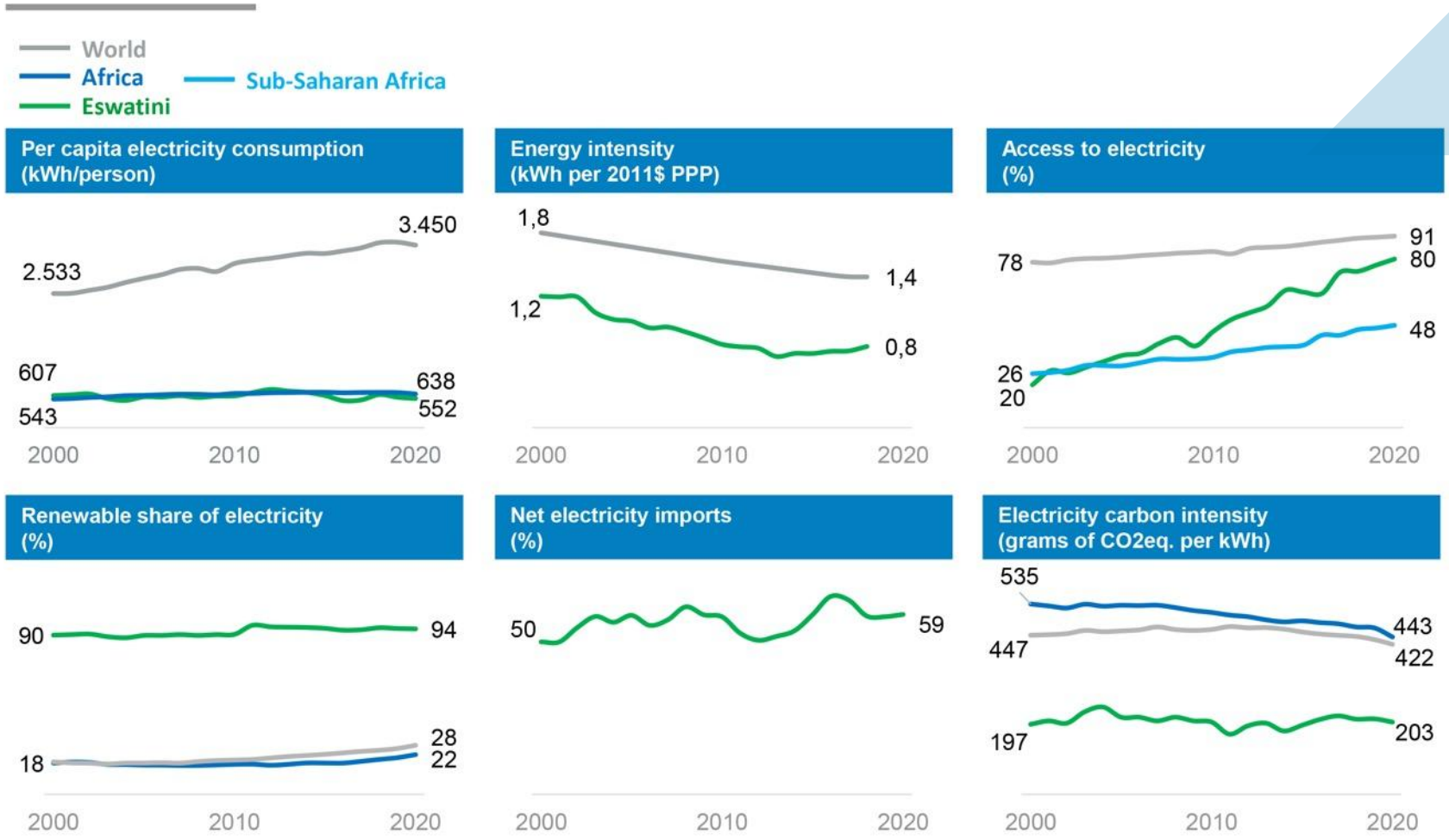
Energy Snapshot



Source: OurWorldInData.org and data.worldbank.org

Key figures Economy

Population: 1.17 million
GDP per capita (current US$): 4,214.9
GDP growth: 7.4%

Environmental

CO2 emissions: 0.8 metric tons per capita
Electricity carbon intensity: 203 grams of CO2eq. per kWh

Energy

Per capita electricity consumption:
552 kWh/person
Access to electricity: 79.7%

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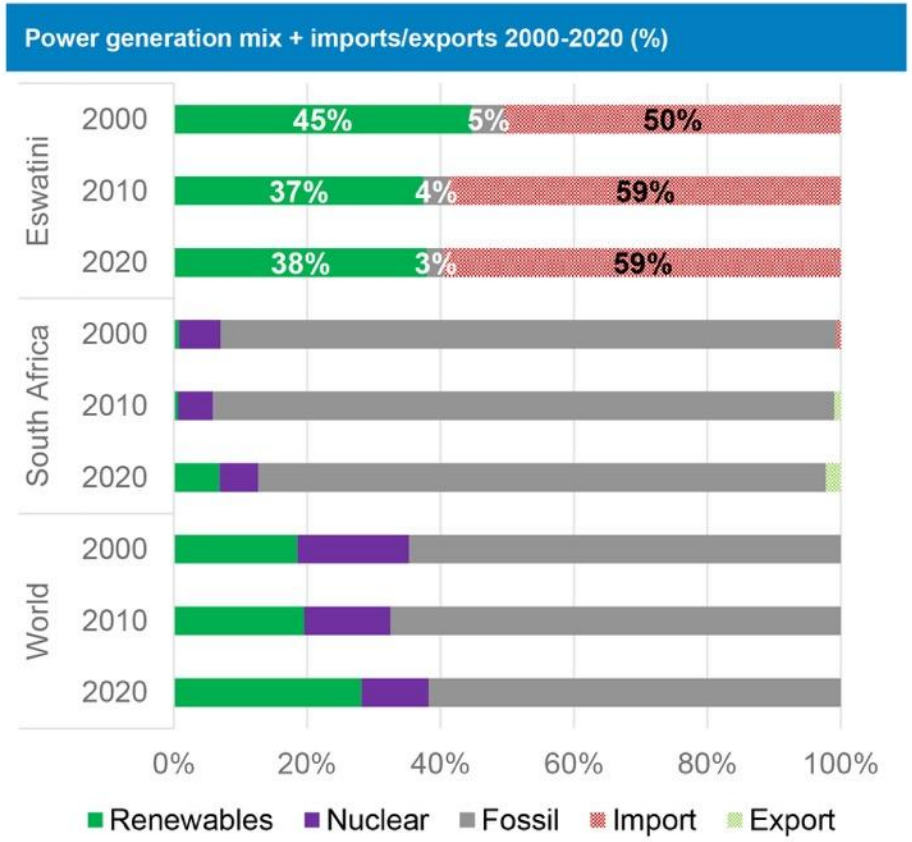
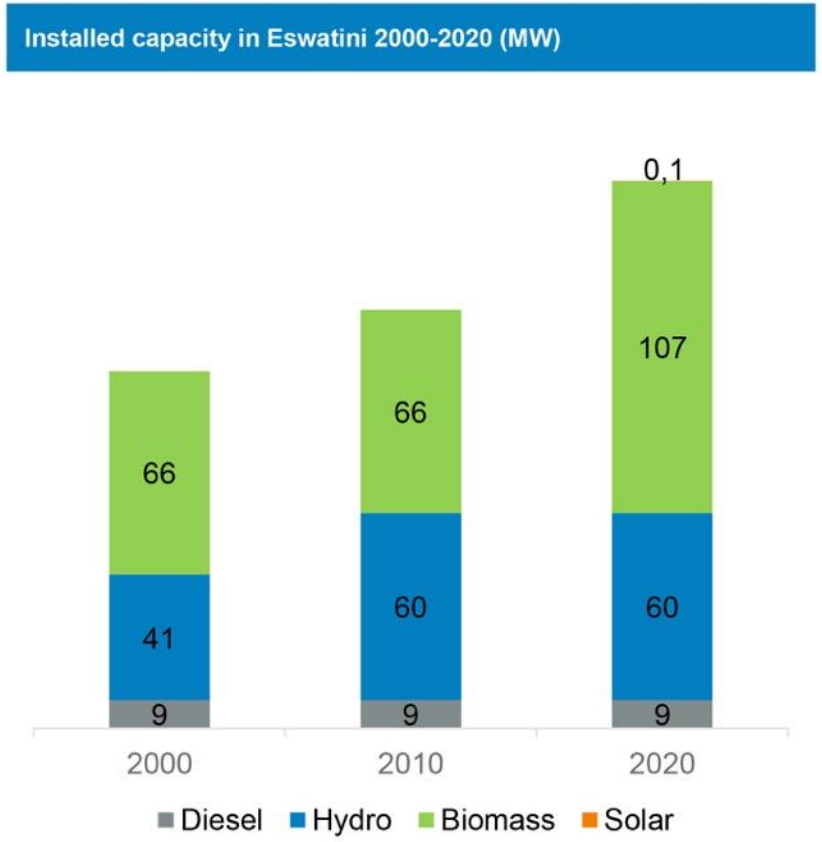
Generation Mix & Installed Capacity



Source: own elaboration based on OurWorldInData.org



Source: own elaboration based on Eswatini's Short-term Generation Expansion Plan (2018) and
Energy Master Plan 2034 (2018)

Key statistics for Eswatini (2021/22)

Electricity demand: 233 MW
Energy sales: 1 225 GWh
Local generation: 302,9 GWh
Imported energy: 913,4 GWh

Installed capacity:

EEC (Eswatini Electricity Company)
- Hydro: 60.4 MW
- Diesel: 9 MW (mothballed)
- Solar PV:10 MW (comm 2021)
- BESS: 1 MWh (testing)

USL (Ubombo Sugar Limited)
- Thermal Biomass: 40.5 MW
- Hydro: 1 MW

RES (Royal Eswatini Sugar)
- Thermal Biomass: 65.5 MW

USA Distillers
- Coal: 2.2 MW

Wundersight
- Solar PV: 100 kW

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Key stakeholders in Current Power Supply Market

Institution		Description
Ministry of Natural Resources and Energy (MNRE)		The Energy Department of the Ministry of Natural Resources and Energy (MNRE) is the custodian of policy and activities pertaining to the energy sector. Its mission is to effectively manage the national energy resources and to work towards affordable and sustainable energy provision for all people in the country, while ensuring the international competitiveness of the energy sector.
Eswatini Energy Regulatory Authority (ESERA)		The Eswatini Energy Regulatory Authority (ESERA), is a statutory body established through the Energy Regulatory Act, 2007. The Authority is mandated to administer the Electricity Act, 2007 (Act No. 3 of 2007), with the primary and core responsibilities of exercising control over the electricity supply industry (ESI) and ensuring the security of supply of electricity through the issuance of licenses and the regulation of electricity tariffs and quality of supply and services.
Eswatini Electricity Company (ECC)		Eswatini's electricity is mainly supplied by the Eswatini Electricity Company (ECC), who is engaged in the business of generation, transmission and distribution of electricity. EEC is governed by the following legislations: (i) Eswatini Electricity Company Act, 2007. (ii) the Electricity Act, 2007, (iii) the Companies Act, (2009), (iv) the Eswatini Energy Regulatory Act, 2007, (v) the Public Enterprises Unit Act, 1989, and the (vi) the Procurement Act, 2011. EEC is the successor to the Swaziland Electricity Board (SEB) which was established in terms of the Electricity Act, 1963 (Act No. 10 of 1963). EEC is subject to regulation by ESERA.

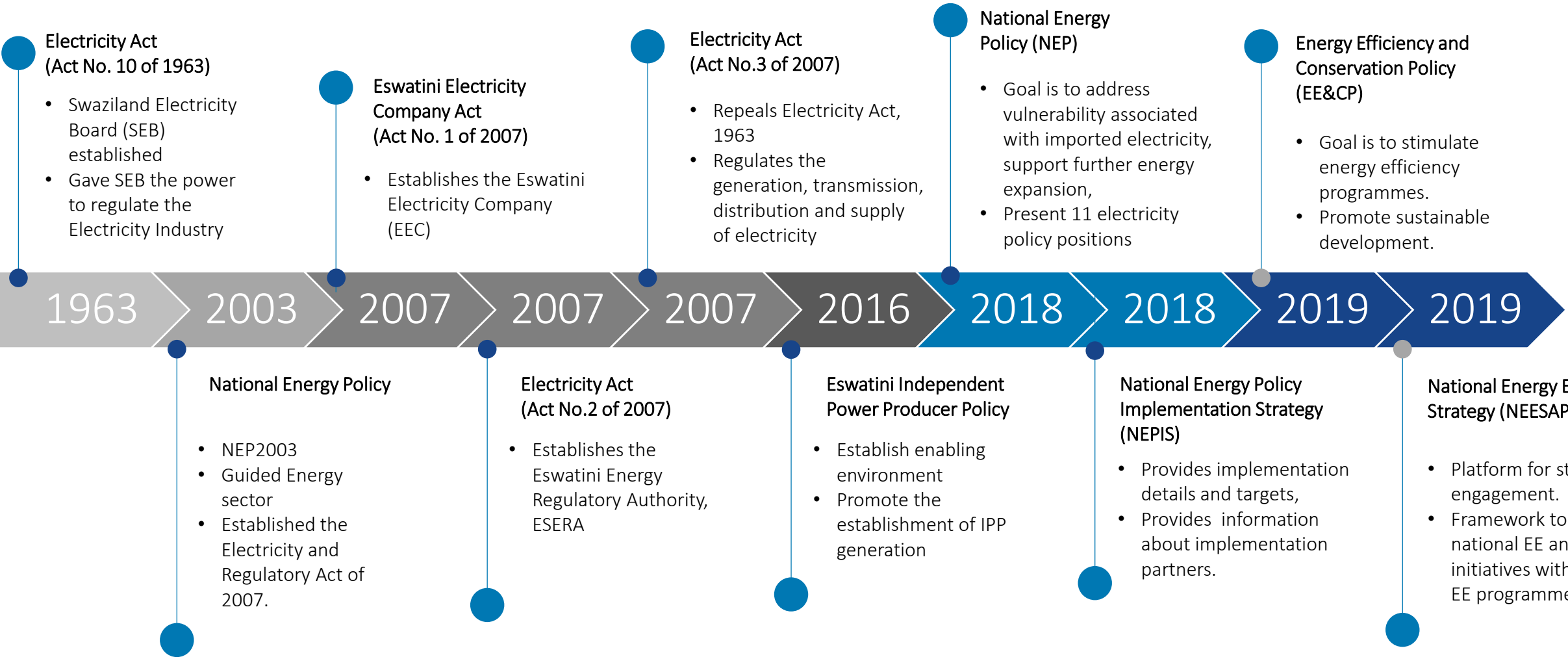
Source: own elaboration based on esera.org.sz and gov.sz

Key Stakeholders in Current Power Supply Market

Institution		Description
Private Sector Self-Generators and/or IPP's	UBOMBO SUGAR LIMITED AN ILLOVO SUGAR AFRICA COMPANY; RES CORPORATION	Key private sector players include co-generators in the sugar industry at Umbombo Sugar Limited (USL) and the Royal Eswatini Sugar Corporation (RES) which use bagasse and wood chips as fuel. USL has an installed capacity of 41.5 MW which is utilized for self-consumption and export to EEC. RES's 65.5 MW generation is currently limited to self-consumption.
Import Partners	Eskom; ELECTRICIDADE DE MOÇAMBIQUE, E.P.; SAPP	Eskom is a South African electricity utility that is a member of SAPP and has entered into a long-term agreement with EEC for the supply of electricity. EEC imports bulk of its electricity from Eskom. The current import agreement lapsed in 2025, and re-negotiation of the agreement is taking place. EDM is a Mozambican electricity utility that is a member of SAPP and currently supply Eswatini with up to 20 MW of power on an agreed 17-month power purchase agreement. Eswatini also buys electricity from the SAPP Day Ahead market from time to time.

Source: own elaboration based on esera.org.sz and gov.sz

Regulation and Energy Policy Instruments



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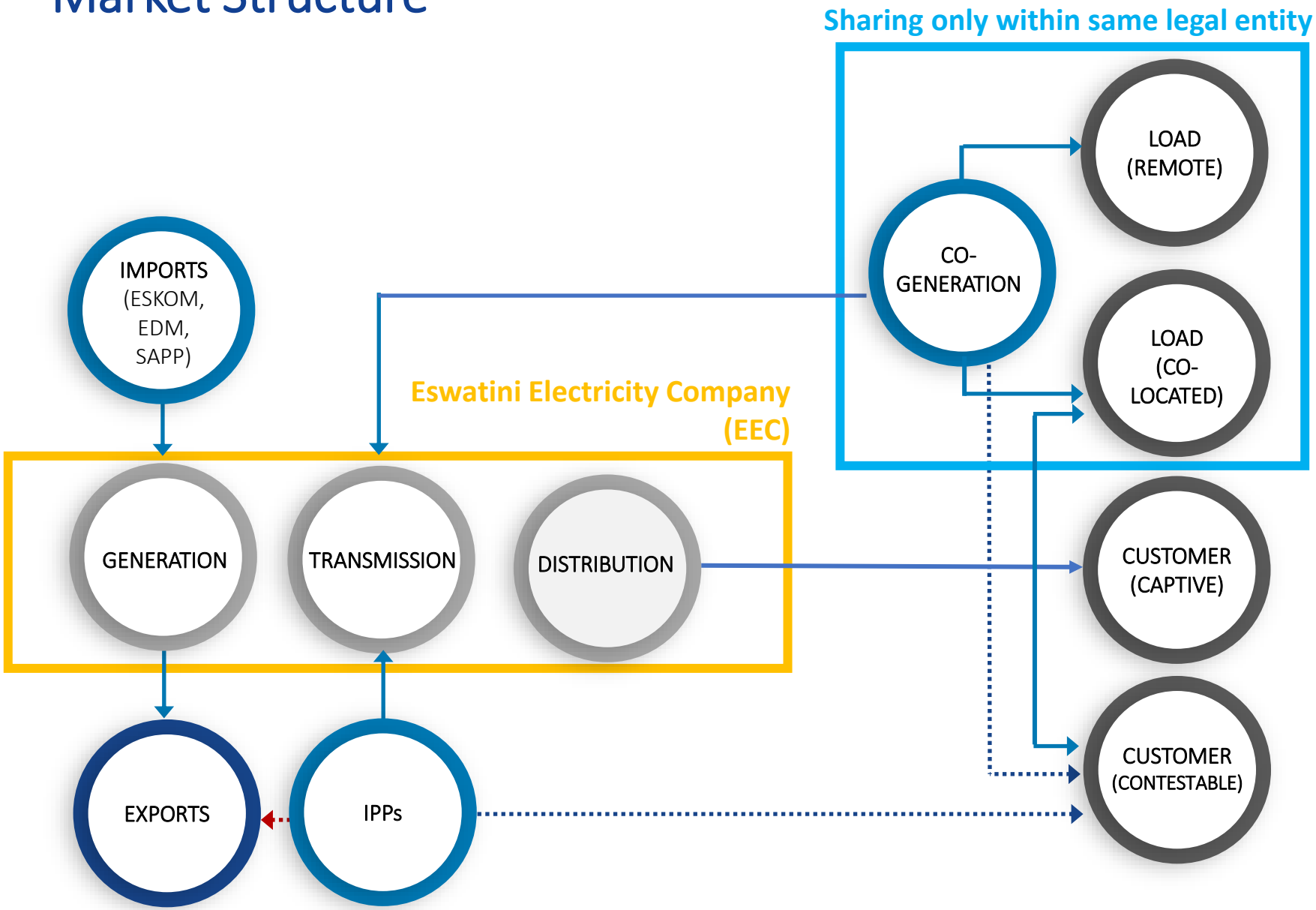
Market Structure



LEGEND (POWER FLOWS)

- CURRENT ALLOWED TRANSACTIONS
- STAGE I ALLOWED TRANSACTIONS
- STAGE II ALLOWED TRANSACTIONS
- STAGE III ALLOWED TRANSACTIONS

Source: Market Structure from IPP Policy Document (p.31-32)

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GET.transform Advisory Services

Overarching	Capacity Building			
	Technical Assistance			
	Gender Equality and Inclusion			
Work Packages	Governance & Consultation	Grid Codes	Renewable Energy Competitive Procurement	Electrification Planning & Siting
	Scenarios & Modelling	Transmission System Planning and Operation	Renewable Energy Distributed Generation (DG)	Mini-Grid Frameworks
	Adoption & Communication	Distribution System Planning and Operation	Power Market Design	Standalone Systems Frameworks

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RENEWABLE ENERGY GRID INTEGRATION

ON-GRID REGULATION & MARKET DEVELOPMENT

OFF-GRID REGULATION & MARKET DEVELOPMENT

Energy Masterplan 2034, 2018 (MRNE)
The International Atomic Energy Agency (IAEA), in conjunction with IRENA and MNRE, EEC, ESERA, CSO and UNISWA, is updating the masterplan up to year 2050. The draft of the updated Energy Masterplan 2050 is published and will seek Cabinet approval in Q1 of 2024.

Short-term Generation Expansion Plan (SGEP), 2018 (MNRE)
Under the Eswatini Country Window an activity is underway to update the SGEP. The new plan will be published in Q1 of 2024 and will seek Cabinet approval in the same period.

IPP auctions
To date two IPP auctions were concluded:
- A 40MW Solar PV auction around 2020 is still not awarded due to legal proceedings. A negotiated settlement to this is expected in HY1 of 2024.
- A 40MW Biomass auction closed in November 2023 and is currently under adjudication.

ESERA are planning further Biomass and Wind auctions.

Priority support projects identified by Public Sector Actors in June 2022:

- Short-term Generation Expansion Plan aligned to Energy Masterplan (2050)
- Assessment of biomass for purposes of maximizing local power generation
- Assistance with a Feasibility study for the Ngwempisi Multipurpose Hydro Scheme
- Assistance with Feasibility studies on wind energy resource assessment in Eswatini

Priority support projects identified by Public Sector Actors in December 2023:

- Energy Access Survey for Eswatini Cities and Towns.
- Capacity building on Energy Efficiency.
- The promotion of clean cooking energy for Institutional Stoves in Education Institutions in Eswatini.

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LONG TERM ENERGY PLANNING

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ON-GRID REGULATION & MARKET DEVELOPMENT

OFF-GRID REGULATION & MARKET DEVELOPMENT

Grid Codes

The Eswatini grid codes were developed in 2014/2015. Part of these codes was the release of the "Grid Connection Code for Renewable Power Plants (RPPs) connected to the electricity Transmission System (TS) or the Distribution System (DS)". The updated grid code for RPPs is expected to be updated by December 2022. Under the Eswatini Country Window an assignment is underway to update the other Grid Codes and integrate them with each other. This will be concluded in Q1 if 2024.

EG / SSEG codes and procedures

Considering the activity in the EG (SSEG) space within the Eswatini electricity industry, no formal standards or codes exist to regulate integration of SSEG. Under the Eswatini Country Window an assignment is underway to inter alia achieve the following: rules and guidelines for EG applications, a streamlined application processes, capacity building in RE installation testing, an updated MV network model and capacity building on RE application assessment. Further support on SSEG capacity building is also under implementation through the GET.transform Policy Catalyst.

Priority support projects identified by Public Sector Actors (June 2022):

- Develop a standard for grid integration for Embedded Generation (EG) above 1MW
- Develop regulatory framework for Energy Storage Systems
- Capacity Building on Renewable Energy Integration
- Defining the ancillary services market for Eswatini
- Review of Grid Codes
- Capacitation on combined demand/load forecasting with generation

Priority support projects identified by Public Sector Actors (December 2023):

- Operationalisation of the Grid Code.

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National Energy Policy, 2018 (MNRE)

The MNRE published a National Energy Policy (NEP) and National Energy Policy Implementation Strategy (NEPIS) in 2018. The NEP replaced the NEP 2003 which has driven energy sector development up to 2018. The NEP (2018) provides 11 electricity policy positions.

Independent Power Producer (IPP) Policy

The Independent Power Producer Policy document was prepared by the USAID Southern Africa Trade Hub in close collaboration with the Department of Energy under the Ministry of Natural Resources and Energy.

The goal of the IPP Policy is "ensuring that the development goals of the country as set out in the Vision of the National Development Strategy are met, through the establishment of an enabling environment to promote the establishment of sustainable renewable energy and IPP generation sources for the benefit of all the citizens of the country". The IPP Policy present 28 policy positions.

Priority support projects identified by Public Sector Actors (June 2022):

- Structuring of bidding process for procuring wind and small hydro Power from IPP's
- Develop Guidelines for market reform to accommodate Contestable Customers
- Develop a Business case for small hydro in Eswatini
- Support the Small-Scale Embedded Generation (SSEG) working group (Various items)

Priority support projects identified by Public Sector Actors (June 2023):

- Review and update of the energy sector enabling legislation.

Priority support projects identified by Public Sector Actors (December 2023)

- Development of Contestable Customer Guideline.
- Electric Vehicle Framework.
- Embedded generation Feed-In Tariff (already passed on the SEA for PolCat window).
- Electricity multi-year price determination Tariff Methodology for the regulation and approval of Tariffs, Prices, and Charges in the Eswatini Electricity Supply Industry.
- Transactional Advisory Support for third Tranche 80MW Biomass Procurement.
- Transactional Advisory Support for Wind Power Procurement.

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RENEWABLE ENERGY GRID INTEGRATION

ON-GRID REGULATION & MARKET DEVELOPMENT

OFF-GRID REGULATION & MARKET DEVELOPMENT

ESERA published 'Mini-Grid and Micro-Grid Guidelines' in March 2022. These Guidelines shall come into force on the date of publication in the gazette.

MNRE commissioned the World Bank for a Least-Cost Electrification Study of which the draft report was published in October 2022. An assessment into the potential for mini-grids and off-grids in Eswatini forms part of this study.

The UNDP presented a Programme Framework for Affordable Renewable Energy in Swaziland (PARES). One of the strategic objectives of this program was focused on “Promoting off-grid solutions and formulation of pro poor Investment Support Program for Decentralized Renewable Energy (DRE)”.

EEC implemented in August 2020 the Sigcineni Off-Grid Solution Project as a stand-alone mini-grid which consists of a centralised 35kW solar PV generation plant complete with 200kWh battery storage system and an AC LV reticulation network designed to service about 26 rural homesteads through an advanced smart metering system for billing. The customers are charged for electricity usage through the standard domestic tariff.

Priority support projects identified by Public Sector Actors: (June 2022)

- Capacity Building on off-grid Renewable Energy market

Priority support projects identified by Public Sector Actors (December 2023)

- None.

Technical Assistance Options

LONG TERM ENERGY PLANNING

- Develop a Short-term Generation Expansion Plan aligned to Energy Masterplan (2050)
- Assessment of biomass for purposes of maximising local power generation
- Assistance with a Feasibility study for the Ngwempisi Multipurpose Hydro Scheme
- Assistance with Feasibility studies on wind energy resource assessment in Eswatini
- Energy Access Survey for Eswatini Cities and Towns
- Capacity building on Energy Efficiency
- The promotion of clean cooking energy for Institutional Stoves in Education Institutions in Eswatini

RENEWABLE ENERGY GRID INTEGRATION

- Review of Grid Codes
- Support to the SSEG workgroup, with a focus on:
  - Recommendation on best options to achieve application process efficiencies and oversight on the implementation thereof
  - Improved competency and confidence to promote high quality installations.
  - Updated EG framework.
  - An integrated MV network with geospatial viewing on PowerFactory.
  - A balanced network that effectively utilises available internal generation from EG/SSEG
- Operationalisation of the Grid Codes
- Defining the ancillary services market for Eswatini
- Develop regulatory framework for Energy Storage Systems

ON-GRID REGULATION & MARKET DEVELOPMENT

- Review and update of the three key energy sector enabling legislation documents
- Structuring of bidding process for procuring wind and small hydro Power from IPPs
- Develop Guidelines for market reform to accommodate Contestable Customers
- Develop a Business case for small hydro in Eswatini
- Develop an Electric Vehicle Framework
- Embedded Generation Feed-In Tariff (delivered with SEA within the Policy Catalyst DG Window)
- Electricity multi-year price determination Tariff Methodology for the regulation and approval of Tariffs, Prices, and Charges in the Eswatini Electricity Supply Industry
- Transactional Advisory Support for third Tranche 80MW Biomass Procurement
- Transactional Advisory Support for Wind Power Procurement

OFF-GRID REGULATION & MARKET DEVELOPMENT

- Capacity building on off-grid renewable energy market

Activities supported by GET.transform: Ongoing | Planned | Completed | Not Covered

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COUNTRY WINDOW SETUP

Alignment with Other Development Partners

GET.TRANSFORM	WORLD BANK	UNDP	USAID ESA Program	AFDB
Energy Sector Reform	Electrification Planning Energy Access Survey Transmission Project Studies	Mini-Grids Small Fund Community Grant System	Empower Southern Africa (ESA) Program	Project (Development) Funding
<u>Long-Term Energy Planning</u> • Update of the Short-term Generation Expansion Plan (SGEP). <u>Renewable Energy Grid Integration</u> • Support to the Small-Scale Embedded Generation (SSEG) workgroup. <u>On-Grid Regulation and Market Development</u> • Review and update of the Eswatini Grid Codes • Review and update of the Energy sector enabling legislation.	Sharing overview of technical assistance projects with each other on an annual basis to avoid duplication in effort	Sharing overview of technical assistance projects with each other on an annual basis to avoid duplication in effort	New USAID program started in January 2024. Formal interaction to be established.	Provide information on possible projects of the utility that may need financing AfDB conducted an Energy system assessment for the Ministry of Finance
TECHNICAL ASSISTANCE			GRANTS / LOANS	

Country Window Setup

Country

- The EUD funded Eswatini Country Window was completed in September 2024.
- Limited global funding is allocated for additional GET.transform support activities.

GET.transform HQ

- As required.

Technical Assistance Partners

Sourcing as required based on available funds and activity demand from:

- Expert Consulting Pool for Long-Term Energy Planning and Renewable Energy Grid Integration.
- Expert Consulting Pool for On- and Off-Grid Regulation and Market Development.

Thank You for Your Attention

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