



AFREC

African Energy
Commission



DIAGNOSTIC REPORT AND ACTION PLAN

JULY 2025

*Prepared for the Ministry of Natural
Resources and Energy of the Kingdom
of Eswatini*



**Support program for African Union
member states (MS) and regional
economic communities (RECs) for
the improvement or establishment
of the national or regional energy**

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MESSAGE OF ACKNOWLEDGMENT FROM THE EXECUTIVE DIRECTOR OF AFREC —

The initiative of the African Energy Commission (AFREC) to support African Union (AU) Member States in establishing and strengthening National Energy Information Systems represents a strategic milestone for the sustainable development of Africa's energy sector. Reliable, credible, timely, and comprehensive energy data are indispensable for effective policy formulation, sound investment planning, and the successful implementation of national, regional and continental energy strategies.

This five-year diagnostic report and action plan provides a comprehensive overview of the national energy information system and proposes strategic actions for strengthening human resources capital, infrastructure and the financial requirements to modernise energy information systems. By enhancing national energy information systems, AFREC seeks to empower Member States with modern tools that support evidence-based decision-making and improve the monitoring and evaluation of energy policies, programmes, and projects.

Strengthened energy information systems will play a critical role in accelerating progress toward universal access to modern, affordable, and reliable energy services in line with Sustainable Development Goal 7 of the 2030 Agenda for Sustainable Development and African Union agenda 2063. They will also contribute to advancing Africa's broader aspirations for energy security, regional integration, and economic transformation.

On this note, the African Energy Commission expresses its sincere appreciation to the Ministries of Energy from the 16 Member States which include: Chad, Cameroon, Central African Republic, Djibouti, Eswatini, Ethiopia, Equatorial Guinea, The Gambia, Liberia, Mauritania, Mozambique, Senegal, Sierra Leone, Somalia, Togo, and Tunisia. AFREC further extends its appreciation to the national coordinators, institutions, experts, and relevant stakeholders from the participating Member States whose engagement, cooperation, and commitment was invaluable throughout the preparation of this report.

With strong political commitment and sustained collaboration among Member States, regional institutions, and development partners, the coming years present a unique opportunity to modernize and harmonize energy data systems and advance evidence-based energy planning across Africa.

The African Energy Commission (AFREC) is a specialised energy agency of the African Union (AU), mandated to develop the African energy sector through the facilitation, coordination, harmonization, protection, conservation, development, promotion of rational exploitation, commercialization, and integration of energy resources in Africa.

It engages actively with a broad network of experts and partners in the 55 AU member states, ensuring that all energy initiatives align with the future development of the energy sector in Africa and the pursuit of building 'the Africa We Want'.

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AFREC	African Energy Commission
AU	African Union
COMESA	Common Market for Eastern and Southern African Development Community
CSO	Central Statistical Office
EB	Energy Balance
FTE	Full-time equivalent
FY	Fiscal Year
GW(h)	GigaWatt(hours)
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
IRES	International Recommendations on Energy Statistics
ISIC	International Standard Industrial Classification
IT	Information Technology
J	Joules
ktoe	Thousand tons of oil equivalent
l	Liters
MAED	Model for Analysis of Energy Demand
MESSAGE	Model for Energy Supply Strategy Alternatives and their General Environmental Impact
MNRE	Ministry of Natural Resources and Energy
MoU	Memorandum of Understanding
MT	Metric tons
Mtoe	Million tons of oil equivalent
NDA	Non-Disclosure Agreement
NEIS	National Energy Information Systems
OLADE	The Latin American Energy Organization
REC	Regional Economic Communities
REPN	Regional Energy Planning Network
SADC	South African Development Community
SIEC	Standard International Energy Classification
SPLAT	System Planning Test
SWOT	Strengths, Weaknesses, Opportunities, Threats
UN	United Nations
UNSD	United Nations Statistics Division

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1 EXECUTIVE SUMMARY



The **National Energy Information System (NEIS) Diagnostic Report and Action Plan** was developed with the support of AFREC and in close collaboration with the AFREC National Focal Points (NFPs) at the Energy Department of the Ministry of Natural Resources and Energy (MNRE).

The objectives of the support are to (1) conduct a diagnostic analysis of energy statistics, (2) recommend specific activities to improve energy statistics and reinforce or establish a NEIS, and (3) generate a high-level action plan that identifies the resources and timelines required for implementation of the recommended actions. The program also provides a support at regional level to encourage the emergence of an efficient cooperation between AFREC and Regional Economic Communities (REC).

1.1 RESULTS OF THE DIAGNOSTIC

Eswatini does not currently have a proper NEIS. Although the first energy balance was produced in 1994, the Ministry through the Energy Department started to consistently produce energy balance since 2010. **The energy statistics process is a work in progress in Eswatini;** MNRE uses AFREC questionnaires and IEA balance builders to generate energy balance statistics. The Central Statistical Office (CSO) is not involved in compiling the energy balance but is active in the energy sector in terms of surveys and data provision. The table below describes the primary characteristics of Eswatini's energy statistics program as identified during the diagnostic assessment in Section 3 of this document.

Item	Diagnostic results
Institutions and legal environment	• Formalize the institutional relationships and data sharing arrangements with partner institutions (formal regulation or Memorandum of Understanding). • Formalize official legislation for the MNRE to conduct energy-related activities.
Human and material resources	• In the MNRE, the personnel allocated to energy statistics is insufficient to conduct all the work on energy statistics in terms of available time and skill; training is required.
Data collection	• Lack of responsiveness and delays from data providers. • There are no formal institutional agreements that bind the data suppliers to provide data to the MNRE.
Data processing	• There is no tool to compile energy statistics; the Ministry needs a formal consistent system.
Quality assurance and validation	• A dedicated technical team is in place to validate data officially.
Dissemination and analysis	• MNRE does not currently publish or disseminate reports or energy statistics outputs to the public or stakeholders. It is done only through requests. • MNRE delivers the annual energy balance to AFREC but also IEA and UNSD.

Table 1 : Summary of the main results of the diagnostic assessment

1.2 RECOMMENDATIONS

The diagnostic assessment concludes with five recommendations to reinforce energy statistics in Eswatini to align with international recommendations and establish a NEIS:

1 – Set up an effective institutional environment

→ Formalize an official legislation on energy-related data collection for the MNRE

Although the MNRE has a mandate to collect energy data, it uses sector-specific legislations to conduct its activities in the energy sector. They are responsible for all the steps involved in collecting, processing, and analysing these data. Clarifying and formalising the Energy Department's activities by establishing a legislation would give more credibility to data collection with partners but could also lead to a specific budget allocated to these activities.

→ Formalize institutional relations and data sharing agreements with partners institutions:

The lack of understanding and interest by stakeholders in the provision of energy statistics for the Energy Department is an obstacle to successful data collection (delays, lack of disaggregated data). The introduction of official agreements mandated by the Ministry would commit data providers to becoming more involved in the data collection process and to understand the challenges. These agreements could take the form of MoUs or NDAs.

2 – Improve data quality and coverage

→ Develop data inputs for other energy-related analysis

Data on energy efficiency, key indicators and details of prices and taxes in the country need to be improved. These efforts need to be backed up by training, starting with AFREC's training in the use of its questionnaires. In a second phase, primary data collection activities can be undertaken based on adapted questionnaires produced jointly with the CSO or Eswatini Revenue Services to combine efforts.

→ Improve data collection for energy end uses, in particular for fuelwood and coal imported

by adding or adapting relevant questions on energy consumption to the CSO industries surveys.

3 – Adapt statistical tools to the requirements of a NEIS

→ Upgrade equipment and data security

Install a robust back-up system and procedures to ensure that data and tools are securely stored and retrievable by all the members of the team. This could take the form of a cloud storage service or external hard drive in the short term and could ultimately be transferred to a shared server at the Ministry level when possible. In addition to the technical solution for backup, a system for classifying and archiving the source data and outputs of the Energy Department team will also be required.

→ Develop data management capacities

As the quality and coverage of data expands, the statistics team at the Energy Department will need to manage ever larger and more complex datasets. All members of the team should receive basic training in the best practices and techniques for data management in Excel, and one member of the team should be selected as a focal point for more in-depth training in database management and tools to anticipate potential changes in the statistical infrastructure in the future.

→ Expand quality checks

The quantity of data will continue to grow depending on the needs and analysis to be carried out. Quality control checks are an important step in data overall consistency, validating manipulations and cross-checking data with other sources. Quality assurance reflects the work carried out by all the stakeholders involved at the various stages. Several indicators can be put in place to help facilitate this step for the Principal Energy Officer.

→ Elaborate a tool for the MNRE to facilitate compiling and tracking statistics

including visualization and analytics. Technical management of the tool should be housed in the Energy Department, but access should be granted to CSO and other identified end-users to improve cooperation and transparency with both organizations involved in the tool's specification.

4 – Structure and facilitate data dissemination

→ Publish an annual report and dataset for public dissemination

Currently, dissemination of energy statistics occurs only through data provision to international organizations including AFREC, and ad hoc contributions to projects in the Ministry and interest stakeholders. Dissemination of energy statistics will raise the visibility of the team to external stakeholders, facilitate users' access to statistics and information on the energy sector, and reduce the time spent by the team preparing responses to ad hoc internal data requests. The preparation of an annual report and dataset by the Energy Department should be seen as a "first-step" opportunity for building out a more ambitious program of data dissemination.

→ Raise the profile of energy statistics by holding an annual national workshop to present the Energy Balance and headline statistics for energy

This workshop should be hosted jointly by MNRE and CSO and should include the leading public sector stakeholders, private sector, civil society, and press.

5 – 5. Perpetuate and formalize energy statistics processes

→ Review and evaluate the statistics process, outputs, and training needs on a regular basis

This process should aim to identify any bottlenecks or challenges that require action in the statistics process, assess the compliance of statistical outputs with international standards and the requirements of national policymakers, and identify any training or capacity-building needs in the team that should be addressed.

→ Ensure continuity in statistics activities with written processes and user manuals

Currently, the senior members of Eswatini's statistics team understand the procedures and tools in use without formalized processes. However, with the expansion of the team's human resources, it will be important to develop a user guide and manual for key tools and processes as training materials for new hires to ensure that knowledge and processes are institutionalized and perpetuated in case of turnover in the team. Dedicating a full-time position to energy statistics may be considered as each member of the energy department does not devote 100% of their time to this exercise. Having dedicated personnel will help to consolidate skills and the transmission of expertise.

1.3 PRIORITY ACTIONS

PHASE 1: PLAN FINALIZATION & PRELIMINARY ADAPTATIONS (H2 2025)

Finalization and dissemination of the action plan, Strengthen the institutional environment, participation in the AFREC training program short courses, implementation of initial "quick win" actions to improve data collection

PHASE 2: CONSOLIDATION OF QUICK WINS AND PREPARATION OF LONG-TERM PROJECTS (H1- H2 2026)

Formalization of collaboration with new stakeholders on biomass, coal or EE data; launch of dissemination activities, and planning and resourcing for long-term projects

PHASE 3: IMPLEMENTATION OF LONG-TERM PROJECTS (H1 2027-H2 2028)

Infrastructure re-design, integration of improved data from surveys and data collection, in-depth training and full adoption of updated processes and infrastructure

PHASE 4: MONITORING AND UPDATE (H1 2029 AND BEYOND)

Monitoring the effectiveness of adopted processes and tools, adaptation and update where required; expansion of dissemination activities and implementation of opportunistic improvements (Priority 3)

2 COUNTRY OVERVIEW

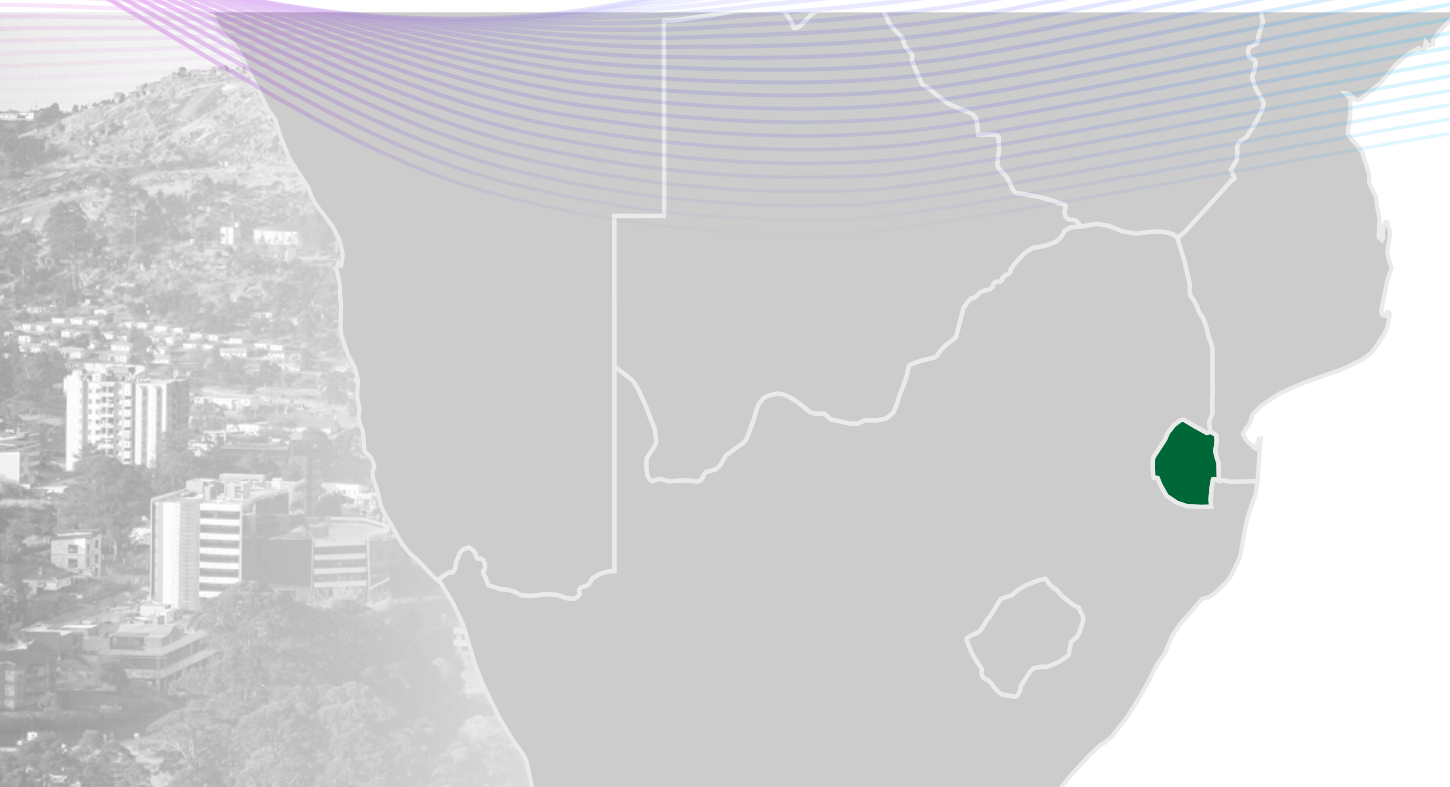


Figure 1 : Regional map - Eswatini

2.1 OVERALL DESCRIPTION

The Kingdom of Eswatini is a Southern African country that covers 17,000 km² and is populated by an estimated 1.22 million people as of 2024. Previously referred to as Swaziland, it changed its name to Eswatini in 2018. Surrounded by Mozambique and South Africa, Eswatini is a land-locked country.

Eswatini is a member of the African Union, a member state of the United Nations (UN), the Southern African Development Community (SADC), the Common Market for Eastern and Southern African Development Community (COMESA) and the Commonwealth of Nations. The official languages are English and Swazi.

Eswatini's economy is primarily based on tourism, industry (particularly manufacturing), agriculture and regional trade. The country attracts visitors for its natural landscape, including mountains, waterfalls, and wildlife reserves. Agriculture also plays a significant role in the economy, with exports of sugar. GDP per capita increased consistently between 2002 and 2012 (+8.3%/year) and has declined from 2012 to 2023 reaching the value of 3,610 USD in 2023¹.

Eswatini's energy sector structure relies heavily on regional trades. The country faces challenges in terms of infrastructure, which means that the energy sector is still in a development stage. Efforts to develop sustainable energy solutions and improve access to electricity demonstrate a willingness to continue developing its energy structure.

There are no known oil reserves, and most of the country's electricity comes from neighbouring countries.

¹ - Source: Worldbank [online]

<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2023&locations=SZ&start=1980>

Eswatini's most recent energy balance statistics published on the AFREC AEIS date from 2022². In 2022, the total primary energy supply for Eswatini was 8.5 Mtoe while the final energy consumption is 7.8 Mtoe as shown in the figures below. Energy production in Eswatini is largely dominated by domestic biomass followed by oil, coal and hydroelectricity.

As per the graphs from the AIES extracted from AFREC's website, Eswatini's energy consumption is almost entirely dominated by domestic biomass which accounted for 96% of all energy consumed in 2022, while oil accounted for 3% and coal for some 0.6%. The share of biomass in the final consumption is very high and may result from a lack of sufficient data on consumption by end-uses in the residential sector. Regarding electricity, Eswatini imports are, in average, roughly 80% of its electricity consumption from neighbouring countries.

From a sectoral perspective, Eswatini's energy statistics show a strong share of industry and residential in final consumption accounting for 90% on total final consumption. Transport and agriculture consumption, by contrast, is very low.

Primary production from 2010 to 2022 by fuel (Mtoe)

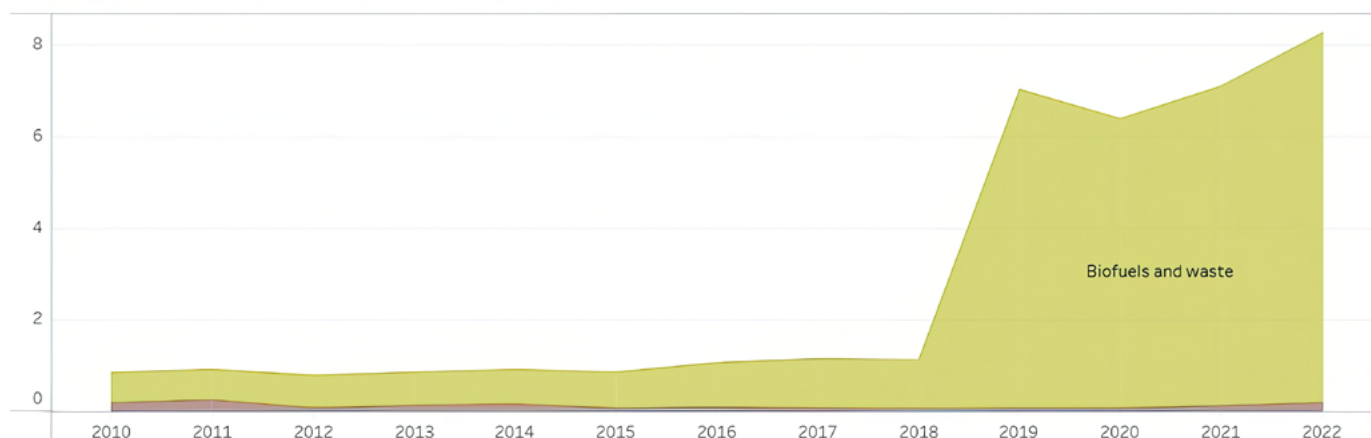


Figure 2 : Primary production (Source: AFREC)

Final consumption by fuel from 2010 to 2022 (ktoe)

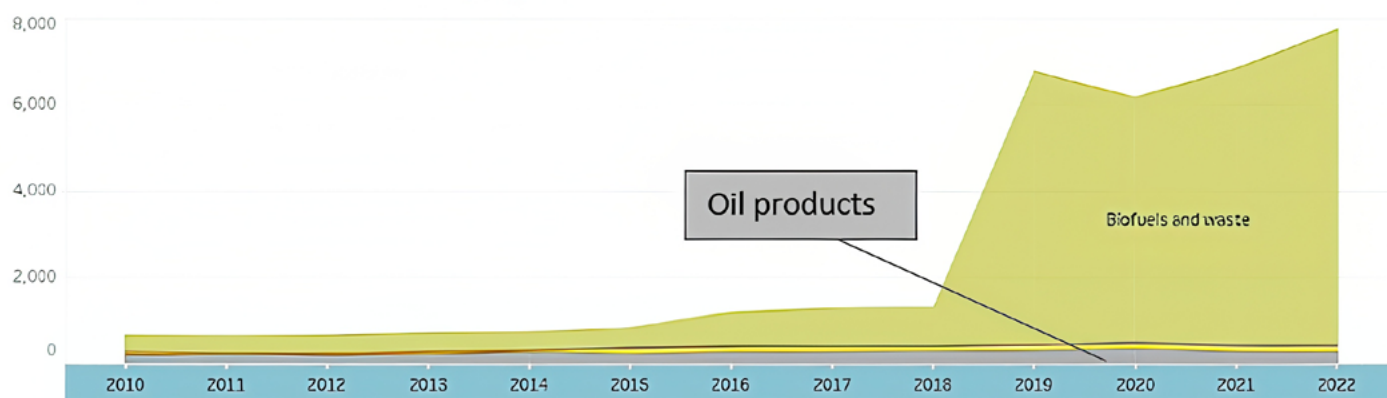


Figure 3 : Final consumption by fuel (Source: AFREC)

Final consumption by sector from 2010 to 2022 (ktoe)

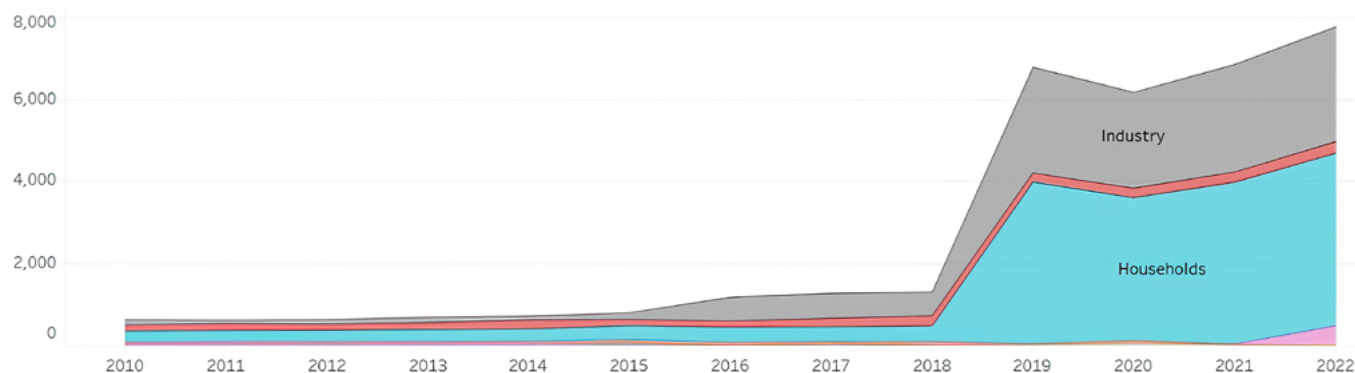


Figure 4 : Final consumption by sector (Source: AFREC)

² - This report relies on the most recent published dataset from AFREC's AEIS website.

2.2 ENERGY STATISTICS

The Central Statistical Office (CSO) of Eswatini is the central statistical authority responsible for the production and dissemination of all official statistics. However, CSO does not generate statistics related to energy but collaborates with the Ministry for energy surveys. Energy balance production in Eswatini is managed by the Ministry of Natural Resources and Energy (MNRE) through the Energy Department.

To date, Eswatini does not have a formalised National Energy Information System (NEIS). The Ministry has collected energy-related data in the past, but these initiatives were mostly insular and non-systematic containing data gaps between 1994 and 2010. Since then, the Ministry started to consistently produce energy balances. Currently, the Ministry uses AFREC's questionnaires as well as energy balance builders from IEA to generate annual energy balance statistics.

Within the Energy Department, the process of producing energy statistics is an exercise carried out by the team over a period of around 8 months.

The production of the national energy balance can be divided into the following phases:

	Description
Data collection October – February	The data collection questionnaires are sent by the Ministry to the different institutions and companies. There is some follows-up with the partners to complete/specify data or remind them to submit their data.
Processing and validating February – June	The team processes and checks the data. They match the input data with the AFREC questionnaire and the energy balance builders to produce a consolidate national energy balance. During this period, the team make some data manipulation, corrections or use proxies in case of lack of data.
Data validation One day	A dedicated technical team is formed to officially validate the data during a meeting.
Dissemination to institutions	The consolidated energy balance is sent to various institutions: AFREC, IEA, UNSD.

Table 2 : Energy balance statistics process in Eswatini

2.3 PARTICIPATION IN THE AEIS

The MNRE of Eswatini currently provides data to the African Energy Information System (AEIS) on an N-2 basis, as shown in the table below. The most recent energy balance provided to AFREC is for the year 2022.

	Energy Balance	Energy Efficiency	Power Plant Capacity	Prices and Taxes
Supplied to AFREC	YES	NO	YES	YES

Table 3 : Data provided to AFREC

3 ENERGY STATISTICS DIAGNOSTIC REPORT



This diagnostic was developed in close collaboration with the AFREC National Focal Points (NFPs) at the MNRE. The results of the diagnosis are based on structured interviews covering the institutions, resources, and statistical processes in place, as well as on a detailed review of the data and documentation shared by the AFREC NFPs. The appendices to this document contain a bibliography and further details on the structured interviews.

The diagnostic report is organised into six thematic sections covering the institutional environment, human and material resources, and each of the major steps for energy statistics processes (data collection, data processing, and quality assurance and validation, and dissemination). Each thematic section describes the current situation and key challenges or gaps that must be addressed to improve energy statistics and align with the International Recommendations for Energy Statistics (IRES) standards. The final section of the diagnostic report takes a transversal view of the challenges faced across each of the thematic areas and proposes recommendations and actions. These prioritized actions are then used to develop an Action Plan for the Establishment of a NEIS in Section 4 of this document.

3.1 INSTITUTIONAL & LEGAL ENVIRONMENT

3.1.1 CURRENT SITUATION

STATISTICS IN THE CSO:

Under the Statistics Act³ the CSO is the central statistical authority officially mandated for the production and dissemination of all Eswatini official statistics. However, in practice the CSO does not generate statistics related to energy. CSO manages all surveys including population, households, economy and other sectors upon request by the relevant Ministries and Organization.

³ - The Statistics Act, 1967, Eswatini

ENERGY STATISTICS IN THE MNRE:

The MNRE, through the Energy Department, collects and produces energy statistics. AFREC's focal points are appointed in this department of the MNRE. The Energy Department is responsible for activities relating to policy and operations in the energy sector. Its mission is to effectively manage the country's energy resources, promote an accessible and sustainable approach to energy for everyone in the country, and ensure that the energy sector is internationally competitive. The MNRE is also responsible to produce energy balance although there is no specific legislation that mandates the Ministry to collect data. However, the Ministry derives the mandate from sector-related legislations. It collaborates closely with the CSO in terms of sampling methodologies and analysis used in energy surveys.

In 2018 Eswatini has unveiled its Energy MasterPlan 2034 which is a comprehensive strategic document, co-produced with IAEA, designed to guide the nation's energy sector into the future with a focus on sustainability and long-term planning. This document covers various aspects of energy policy, demand, renewable resources, and sustainability. The MNRE is finalizing the review on the Energy MasterPlan 2050 using MESSAGE and MAED's tools.

In the MNRE, the activities achieved by the officials include collection of all energy data from various institutions and compiling energy balance from AFREC's questionnaire. The team continue to provide energy data to international organisation such as IEA, UNSD and collaborate with local institutions such as the Ministry of Tourism and Environmental Affairs for calculation of the GHG and compilation of NDC.

The Energy Department is engaged in various activities aimed at collecting, analysing, and disseminating energy statistics but is not fully dedicated to this activity. The Department conducts annual surveys to gather primary data from major industries such as sugar production, timber and mining industries, Eswatini Electricity Company, oil companies and Eswatini Regulatory Authority. National energy statistics are shared internally and with external partners but are not widely published to the public.

The diagram below illustrates the institutional environment in which the Ministry of Natural Resources and Energy operates.

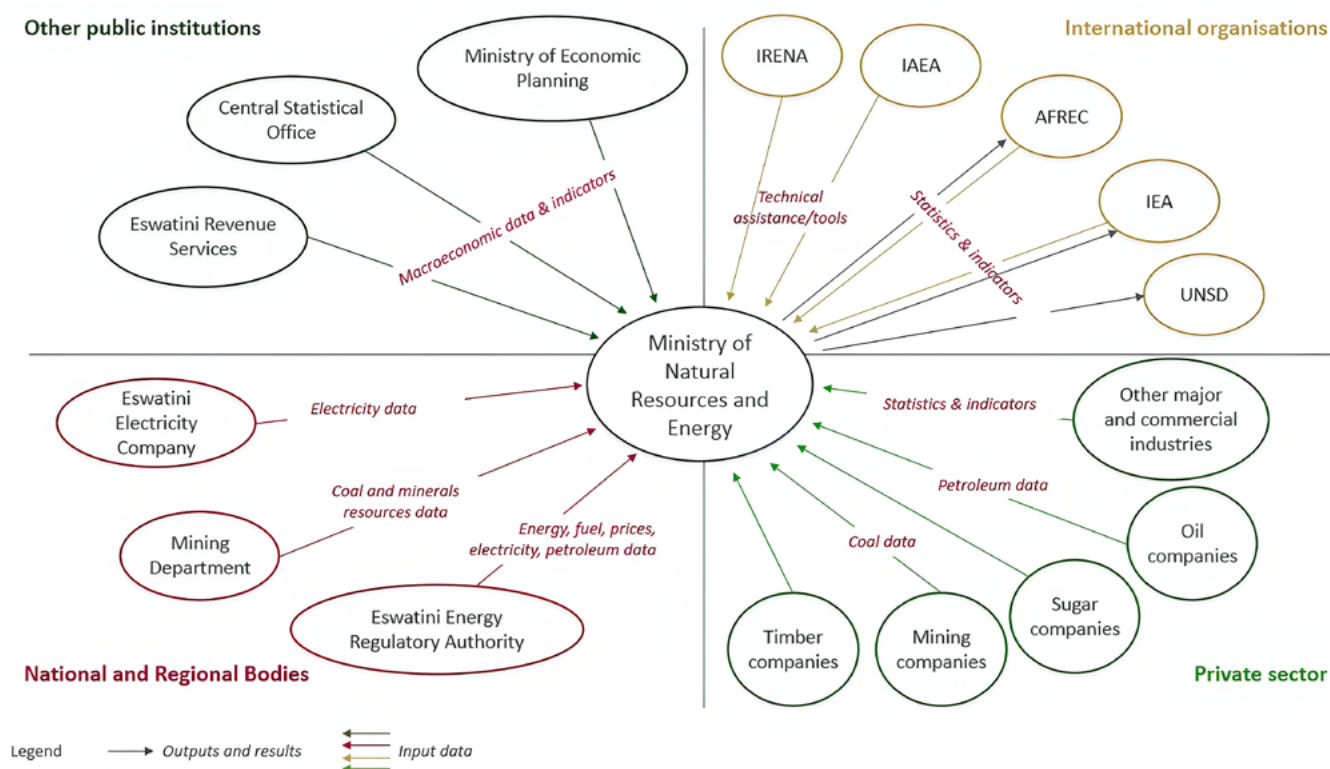


Figure 5 : Institutional environment

3.1.2 ASSESSMENT AND GAP ANALYSIS

The Department faces several difficulties in completely using the energy tools effectively although it received training on IEA builder and SADC's Regional Energy Planning Network (REPN). It therefore took more time and experience to fully understand how to use them. In addition, new officers joined the team with no previous experience on these tools, highlighting the need for more comprehensive training for all staff.

Although the Energy Department has been successful in using the energy balance tools, it has encountered difficulties with the other AFREC's questionnaires (energy efficiency, prices & taxes). These difficulties resulted from its limited technical and financial capacity to conduct surveys, which affected the effectiveness of data collection and analysis. Also, the Energy Department does not have a specific budget for energy statistics. The budget is usually provided through support for specific projects.

For the Government department and sector related parastatals, there are no challenges in data collection, however other entities require Memorandum of Understanding (MoU) and signing of Non-Disclosure Agreements (NDAs) for them to provide the data. The Ministry has no official legislation to collect energy statistics but has developed a rapport with other companies on data provision, however it is worth mentioning that the Ministry do have challenges with other companies in terms of the response rate, which is low.

To address these issues, it is important that the Ministry strengthens its capacity with additional resources, support and training. This will be essential to improve policy implementation and decision-making processes.

The following table summarizes the principal issues and gaps that emerge from the diagnostic with respect to the institutional environment.

N°	Key issues/gaps	Description
1.1	More official cooperation with certain entities to provide data	The Ministry is facing data feedback problems (response time, return rate). Memorandum of Understanding and Non-Disclosure Agreements are required.
1.2	Lack of capacity for the Energy Department managing energy statistics	The Energy Department has knowledge and capacity regarding energy statistics but have challenges with biomass data as we rely on the OLADE Biomass Estimation tool. The Ministry still has to conduct a biomass survey to establish a baseline. However, due to limited technical and financial capacities the activity is delayed.
1.3	No clear legislation specific on energy-related data collection activities.	There is no existing official legislation for the MNRE to collect energy statistics.
1.4	No specific budget for energy statistics activities	There is no dedicated budget to undertake data collection activities the Energy Department.

Table 4 : Institutional environment gap assessment

3.2 HUMAN & MATERIAL RESOURCES

This section describes the resources, capacities and expertise of the people, material and IT hardware involved in the generation and management of energy statistics, with the objective of identifying gaps or obstacles to (i) establishing a NEIS, (ii) completing the AFREC questionnaires.

3.2.1 CURRENT SITUATION

HUMAN RESOURCES

In the MNRE, the personnel involved in energy statistics is composed of 5 officials from the Energy Department. The team is not dedicated full-time to energy statistics but ensure all steps from data collection to data validation and dissemination.

MNRE PRINCIPAL TEAM DEDICATED TO ENERGY STATISTICS:

Job title/position & Institution	Role in the NEIS	Time dedicated to NEIS/EB	Training/background
Principal energy officer, MNRE	AFREC Focal Point/Quality assurance	Two months in a year	Trained in energy balance, modelling and energy planning (MAED, SPLAT, MESSAGE)
Energy Officer, MNRE	Data analysis, validation and dissemination	Six months	Trained in energy balance, modelling and energy planning (MAED, SPLAT, MESSAGE)
Assistant Energy Officer, MNRE	Supervise data collection and analysis	Seven months	New, no training undertaken
Energy data clerk, MNRE	Data collection	Eight months	No training
Energy data clerk, MNRE	Data collection	Eight months	Energy balance training

Table 5 : Human resources dedicated to energy statistics, principal team in MNRE

The Principal Energy Officer is responsible for Energy Planning. She worked in data collection, compilation and assessment and currently playing the supervisory role. She's part of a technical team responsible for the development of an Energy Masterplan in Eswatini.

Some team members are comfortable with the tools, but others need training to make them their own. The team is sufficiently stable to ensure that training is institutionalised at all levels, and that expertise is guaranteed to ensure a proper handover.

MATERIAL & IT RESOURCES

The available material resources and IT infrastructure are:

- **Computers & Software:** Each official has office personal computers; the Ministry is working on the installation of a server.
- **Budget:** There is no dedicated budget allocated to statistics in the MNRE; the budget is usually provided through support for specific projects.

3.2.2 ASSESSMENT AND GAP ANALYSIS

With all the efforts made by the institutions and the tools used, the energy balance is an exercise that works for the Ministry. The main challenge is training, technical skills and a consistent system that helps the Department to handle the energy statistics from data collection to dissemination.

The Ministry's vision is to guarantee the integrity of the data by developing a system that can analyse and store the data. It is a major challenge for the Ministry to improve data accessibility throughout the value chain.

A system needs to be put in place to allow all users access to the data, so that the work carried out can be further enhanced and disseminated.

The following table summarizes the principal issues and gaps that emerge from the diagnostic with respect to human and material resources.

N°	Key issues/gaps	Description
2.1	Insufficient human resources dedicated to energy statistics in the MNRE	The time available per officials do not allow them to develop all the work on energy statistics, thus the team focuses on energy balance.
2.2	Need of capacity building on specific energy sub-sectors and issues	Statistics officers are more comfortable with oil and Electricity; however, there is limited data on biomass, less experience with prices and energy efficiency statistics are still at a nascent stage. Specific training on sub-sector value chains, statistical calculations and methodologies for estimation of indicators on this subject may be required for MNRE.
2.3	Material resources	The Ministry is working on the installation of a server, but for now the team is storing data on their personal computers.

Table 6 : Human and material resources gap assessment

3.3 DATA COLLECTION

This section describes the general process of data collection to address (1) the process in place as it exists today (2) identify key stakeholders outside of the department responsible for providing data, (3) the relationship with data providers and (4) identify any bottlenecks or limitations in the process that could be targeted for improvement.

3.3.1 CURRENT SITUATION

The CSO is mandated to collect all statistics however, the MNRE collects data relating to energy. The Principal Energy Officer relies on sector regulations to collect data. Further the Ministry also rely on the Statistics Act in collecting data.

For each sector, the raw data (Production, Import/Export, Transformation, End Uses) used for generating energy statistics is collected as follows:

Sector	Description of data collected	Demand/End uses	Problems/challenge
<i>Oil & gas</i>	All petroleum products are imported into the country (unleaded petrol, diesel 50 ppm S, illuminating paraffin, LPG, heavy fuel oil, lubricants)	Industry processes, mining, consumers, road machinery, generators	The country occasionally faces outages due to unplanned shutdowns
<i>Coal</i>	Coal products are anthracite (exported) and bituminous (imported)	Bituminous	The country faces difficulties to get the actual quantities of the bituminous coal imported
<i>Electricity</i>	Electricity is generated from many sources (hydro, solar, coal, bagasse, woodchips, wood waste, diesel)	Electricity generation	It seems some companies do not maintain records of their consumption and generation.

Sector	Description of data collected	Demand/End uses	Problems/challenge
<i>Biomass</i>	The country collects data on bagasse, woodchips, charcoal and wood waste	Firewood	The country faces difficulties to track actual firewood used in the residential area
<i>Renewable Energy</i>	Included in the data collection of electricity data	Cf electricity data collection	N/A
<i>Energy Efficiency</i>	Limited data available for energy efficiency	N/A	Limited technical and financial capacity to conduct surveys.
<i>Economic and Demographic</i>	Data are collected by CSO from Surveys.	Eswatini Household Income and Expenditure, Multi Indicator Cluster Survey and Census and other specific surveys	N/A

Table 7 : Sectoral data collection and procedures

The annual data collection process lasts 4 months, generally between October and February. Data is collected at N-1 and the dedicated team uses questionnaires to collect data from partners and uses published statistics.

Questionnaires are sent to:

- Electricity, Oil industry
- Mining companies
- IPPs
- Eswatini Revenue Service
- Other major industries or commercial companies in the country.

Through these stakeholders, focal contacts are defined to facilitate the communication and data collection within these organisations.

In addition to energy balances, other types of data are collected on a more regular basis, such as fuel volumes and prices. The table below describes the key indicators collected:

Sector	Indicators	
<i>Downstream Oil & gas</i>	• Total diesel consumption • Total unleaded petrol consumption • Total illumination paraffin consumption	• LPG consumption • Total Aviation
<i>Coal</i>	• Quantities/ton transformation • Quantities/ton industry processes	• Quantities imported into the country • Quantities mined and exported
<i>Electricity</i>	• Production • Capacities • Renewable energy generation • Coal generation	• Solar generation • Hydro production • Total energy consumption • Energy consumption per sector
<i>Biomass and RES</i>	• Bagasse transformed • Woodchips	• Fuelwood

The CSO collects data on population, economic growth (last census in 2017).

3.3.2 ASSESSMENT AND GAP ANALYSIS

In the MNRE, the team in charge of energy statistics faces difficulties in obtaining detailed information or precise quantities of resources used for end uses. In particular, fuelwood, used in the residential sector, but also in small businesses such as butcheries.

As a result, the MNRE is facing difficulties in completing questionnaires, a lack of responsiveness and delays in validation to finalise the data collection phase.

The following table summarizes the principal issues and gaps that emerge from the diagnostic with respect to data collection and potential solutions for addressing each challenge.

N°	Key issues/gaps	Description
3.1	No formal data sharing agreement with partner institutions	There are no formal institutional agreements that bind the data suppliers to provide data to the MNRE, leaving the Energy Department dependent on the active engagement of partner institutions.
3.2	Limited data availability/quality for biomass (fuelwood) and imports of bituminous coal	Although data on co-generation transformation processes for biomass products is available from the IPPs (bagasse, woodchips, wood waste), there is a lack of current quantities of fuelwood in the country as well as bituminous coal imported.

Table 8 : Data collection gap assessment

3.4 DATA PROCESSING

3.4.1 CURRENT SITUATION

TECHNIQUES & TOOLS FOR DATA PROCESSING

In the Ministry, the Energy Department, collects data using a questionnaire.

Currently, the team is using the AFREC and IEA balance builders for compiling the energy balance, historically the Department used the REPN tool developed by SADC.

For the preparation of energy statistics, the Ministry uses the IEA and IRES manuals as a methodological guide.

In addition, the MNRE has received training on the IEA balance builder, AFREC questionnaires and the SADC REPN. However, the training has not been sufficient due to a lack of time and experience to consolidate knowledge. New arrivals at the Ministry also need to be trained in these subjects.

The data processing process runs from February to June depending on responsiveness from stakeholders. The team faces some challenges in submission thus causing delays in the process. Once they get the data, they do some data manipulations, interrogations and use proxies in case of lack of data.

The table below describes the calculation/data treatment:

Sector	Data treatment
<i>Downstream Oil & gas</i>	- Consolidation of data, monthly/yearly - Determination and calculation of fuel prices - Calculation of the industry margins - Conversion of the raw data using densities
<i>Coal</i>	Conversions of the raw data to energy statistics data, using CVs ultimately to any required energy units
<i>Electricity</i>	Conversions of the units to any required energy units
<i>Biomass and RES</i>	Conversions of the raw data to energy statistics data, using CVs ultimately to any required energy units Electricity policy

During this period, they cross-check the data before validating the energy balance.

As there is no proper EIS to produce consolidated statistics for energy sources, the Energy Department fills in the AFREC questionnaires manually from the raw data collected to generate the national energy balance.

COMPLETION OF AFREC QUESTIONNAIRES AND OTHER ENERGY STATISTICS MODELS

The Ministry is able to complete the energy balance tools and is quite comfortable to make modifications internally. They benefit from the OLADE Biomass Estimation Tool to estimate fuel wood consumed in households.

The energy balance questionnaire, Power Plants questionnaire and Price and Taxes questionnaires were submitted to AFREC annually in 2022.

3.4.2 ASSESSMENT AND GAP ANALYSIS

There is not an existing tool used to compile energy statistics from partners within the Energy Department. The team plays the role of compiling data, making data manipulation and fill in the questionnaires for the different organisations.

The process is dependent on the responsiveness of partners and can be time-consuming as there is lack of submission and feedback in time.

The Ministry uses tools from International/regional organisations and relies on manuals developed by them (AFREC, IEA, IRENA, SADC, OLADE). However, the training is not sufficient as it takes time to use, manipulate and being comfortable with them. Also, there is a need to systematically train the newcomers on tools and consolidate the skills internally.

The following table summarizes the principal issues and gaps that emerge from the diagnostic with respect to data processing and potential solutions for addressing each challenge.

N°	Key issues/gaps	Description
4.1	Lack of data processing skills	The MME officials highlighted a need for improving internal skills on data processing and data management
4.2	Formal consistent system	The Ministry needs its proper system that can be centralized data from partners and be used for data manipulation.
4.3	Lack of internal training	The Ministry needs to train newcomers and consolidates skills to fill in all the AFREC's questionnaires.
4.4	Labour intensive process for data entry	All data must be filled in one by one which takes a lot of time and can lead to some entry mistakes

Table 9 : Data processing gap assessment

3.5 QUALITY ASSURANCE AND VALIDATION

3.5.1 CURRENT SITUATION

In the MNRE there is a specific team dedicated to validating the energy statistics, called the technical team. It is made up of officials from the Ministry. The validation carries out the electricity, coal, biomass, petroleum and financial data. The validation process takes place during meetings and can take one day or more depending on the follows-up.

3.5.2 ASSESSMENT AND GAP ANALYSIS

The Energy Department energy statistics processes provide relatively good quality assurance through internal quality assurance and validation.

At this stage, there is no challenges as data have been interrogated several times during the collection and processing phases.

3.6 DISSEMINATION AND ANALYSIS

3.6.1 CURRENT SITUATION

DISSEMINATION TO PUBLIC

Despite that the responsible section of the Energy Department is aware about the potential uses for energy balance or national energy statistics, there is currently no dissemination of the energy statistics to the public domain, however, data is disseminated on request. Later on, the Energy Department plans to use the Government website to publish its data. Even if the CSO is mandated to publish statistics, there is no dedicated platform to disseminate statistics in Eswatini, they disseminate through the Government website and share data with stakeholders. Energy balance and other statistics are disseminated through request using letter and e-mails.

DISSEMINATION TO INTERNATIONAL INSTITUTIONS/ORGANIZATIONS

The Energy Department disseminates each year the energy balance to several institutions like AFREC, IEA, UNSD through the questionnaires and energy balance builders.

DISSEMINATION TO INTERNAL PARTNERS

Energy balance and or other statistics are disseminated through request using letter and e-mails. These statistics are used on a regular basis by:

- The Energy Department
- The Ministry of Economic Planning and Development
- The Ministry of Tourism and Environmental Affairs,
- The Ministry Public works and Transport, and other ministries

In Eswatini's energy statistics, different key indicators are produced, and the table below describes for which monitoring purposes:

Sector	Purposes	
<i>Downstream Oil & gas</i>	• Energy policy • Regulation purposes	• Interested parties (scholars and investors)
<i>Coal</i>	• Energy policy	
<i>Electricity</i>	• Energy policy • Electricity policy	• Regulatory policy • Interested parties
<i>Biomass and RES</i>	• Energy policy and planning	

3.6.2 ASSESSMENT AND GAP ANALYSIS

Dissemination is key in all energy statistics policies. The MNRE currently collects and disseminate data on requests. However, without sufficient resources to conduct analysis for dissemination, the MNRE do not have a structured dissemination process in place.

Disseminating data to proper users should be a priority including comprehensive data, quality check with appropriate frequency. Improving dissemination can also be an important lever for future development of statistics in MNRE, as it raises the visibility of the team.

Beyond the lack of time and tools to support analysis and dissemination, officials at the MNRE have also highlighted a need for additional training on energy statistics and other subjects like energy efficiency or prices & taxes in order to improve the quality of the team’s analytical output.

Furthermore, public dissemination could be improved by the establishment of a standard dataset for analytical purposes for distribution to potential institutional or other users. This dataset could show key indicators for all energy sources with current and historical data and could be delivered in a protected Excel format to allow users to directly feed the data into their analytical tools.

N°	Key issues/gaps	Description
6.1	Lack of a clear agenda, report or standard dataset for distribution purpose	There is no existing disseminating plan which could include standard dataset for analytical purposes showing key indicators for all energy sources with current and historical data. The dissemination is only available through requests.

Table 10 : Diagnosis of dissemination and analysis

3.7 ANALYSIS AND RECOMMENDATIONS

The table below assesses the Strengths, Weaknesses, Opportunities and Threats (SWOT) that emerge from the diagnostic assessment.

Strengths - Strong willingness within the MNRE specialized team to improve and develop energy statistics - An existing developed process for data collection that involves all stakeholders - Strong data validation process with a dedicated Technical team - Trainings received from AFREC, IEA, IAEA - Uses of IEA and IRES as methodological guidelines - Strong partnership with international stakeholders like AFREC, IEA or IAEA	Weaknesses - Limited expertise and time capacity on specific energy sub-sectors : prices & taxes, energy efficiency and end-uses - Lack of understanding of the importance of the data with data providers and relevant stakeholder regarding feedbacks resulting of the validation and control for data quality - No public dissemination of finalized data and energy balance
Opportunities - Full-time dedicated personnel to focused on energy statistics - Develop relationships with other AU members countries	Threats - No specific budget for energy-related activities - Biased energy balance statistics due to weak data collection on end-uses (fuelwood quantities) and bituminous coal imported

Figure 6 : SWOT Analysis

RECOMMENDATIONS

1 – Set up an effective institutional environment

→ A. Formalize an official legislation on energy-related data collection for the MNRE

Although the MNRE has a mandate to collect energy data, it uses sector-specific legislations to conduct its activities in the energy sector. They are responsible for all the steps involved in collecting, processing, and analysing these data. Clarifying and formalising the Energy Department's activities by establishing a legislation would give more credibility to data collection with partners but could also lead to a specific budget allocated to these activities.

→ B. Formalize institutional relations and data sharing agreements with partners institutions

The lack of understanding and interest by stakeholders in the provision of energy statistics for the Energy Department is an obstacle to successful data collection (delays, lack of disaggregated data). The introduction of official agreements mandated by the Ministry would commit data providers to becoming more involved in the data collection process and to understand the challenges. These agreements could take the form of MoUs or NDAs.

2 – Improve data quality and coverage

→ A. Develop data inputs for other energy-related analysis

Data on energy efficiency, key indicators and details of prices and taxes in the country need to be improved. These efforts need to be backed up by training, starting with AFREC's training in the use of its questionnaires. In a second phase, primary data collection activities can be undertaken based on adapted questionnaires produced jointly with the CSO or Eswatini Revenue Services to combine efforts.

→ B. Improve data collection for energy end uses, in particular for fuelwood and coal imported

by adding or adapting relevant questions on energy consumption to the CSO industries surveys.

3 – Adapt statistical tools to the requirements of a NEIS

→ A. Upgrade equipment and data security

Install a robust back-up system and procedures to ensure that data and tools are securely stored and retrievable by all the members of the team. This could take the form of a cloud storage service or external hard drive in the short term and could ultimately be transferred to a shared server at the Ministry level when possible. In addition to the technical solution for backup, a system for classifying and archiving the source data and outputs of the Energy Department team will also be required.

→ B. Develop data management capacities

As the quality and coverage of data expands, the statistics team at the Energy Department will need to manage ever larger and more complex data sets. All members of the team should receive basic training in the best practices and techniques for data management in Excel, and one member of the team should be selected as a focal point for more in-depth training in database management and tools to anticipate potential changes in the statistical infrastructure in the future.

→ C. Expand quality checks

The quantity of data will continue to grow depending on the needs and analysis to be carried out. Quality control checks are an important step in data overall consistency, validating manipulations and cross-checking data with other sources. Quality assurance reflects the work carried out by all the stakeholders involved at the various stages. Several indicators can be put in place to help facilitate this step for the Principal Energy Officer.

→ D. Elaborate a tool for the MNRE to facilitate compiling and tracking statistics

including visualization and analytics. Technical management of the tool should be housed in the Energy Department, but access should be granted to CSO and other identified end-users to improve cooperation and transparency with both organizations involved in the tool's specification.

4 – Structure and facilitate data dissemination

→ A. Publish an annual report and dataset for public dissemination

Currently, dissemination of energy statistics occurs only through data provision to international organizations including AFREC, and ad hoc contributions to projects in the Ministry and interest stakeholders. Dissemination of energy statistics will raise the visibility of the team to external stakeholders, facilitate users' access to statistics and information on the energy sector, and reduce the time spent by the team preparing responses to ad hoc internal data requests. The preparation of an annual report and dataset by the Energy Department should be seen as a "first-step" opportunity for building out a more ambitious program of data dissemination.

→ B. Raise the profile of energy statistics by holding an annual national workshop to present the Energy Balance and headline statistics for energy

This workshop should be hosted jointly by MNRE and CSO and should include the leading public sector stakeholders, private sector, civil society, and press.

5 – Perpetuate and formalize energy statistics processes

→ A. Review and evaluate the statistics process, outputs, and training needs on a regular basis

This process should aim to identify any bottlenecks or challenges that require action in the statistics process, assess the compliance of statistical outputs with international standards and the requirements of national policymakers, and identify any training or capacity-building needs in the team that should be addressed.

→ B. Ensure continuity in statistics activities with written processes and user manuals

Currently, the senior members of Eswatini's statistics team understand the procedures and tools in use without formalized processes. However, with the expansion of the team's human resources, it will be important to develop a user guide and manual for key tools and processes as training materials for new hires to ensure that knowledge and processes are institutionalized and perpetuated in case of turnover in the team. Dedicating a full-time position to energy statistics may be considered as each member of the energy department does not devote 100% of their time to this exercise. Having dedicated personnel will help to consolidate skills and the transmission of expertise.

4 ACTION PLAN TO ESTABLISH A NEIS



The action plan covers five years and aims to improve energy statistics and establish a fully functional NEIS by the end of the period in accordance with international standards recommendations.

The plan comprises 35 prioritized actions spread across four implementation phases from 2025 to 2029. While many actions can be achieved by the existing team with few additional resources, implementing the entire action plan is expected to require approximately US\$404,000 to US\$436,000 in financial resources. These are primarily service costs to develop the statistical infrastructure and tools and a budget for in-depth training for thematic focal points. The plan also identifies approximately US\$1000 to US\$2000 in annual recurring costs, primarily to cover the cost of holding annual data validation and dissemination/sensitization workshops. Additional human resources are, however, expected to be required to support the development of a NEIS in Eswatini.

4.1 IDENTIFICATION AND PRIORITIZATION OF REQUIRED ACTIONS

The table below identifies the specific actions required to support each recommendation. Action items are prioritized using an analytical matrix that assesses actions based on their expected impact in achieving the main objectives and on the effort or resources they require. A project is considered high effort if it has a high financial cost, high human resource requirements, or if it is highly dependent on an action outside the direct control of the concerned stakeholders. Impact is considered in terms of contribution to achieving the overall objective of the plan, to establish a NEIS, as well as to the specific objectives detailed in the second column of the table. Classified in this way, the items are prioritized across four categories as shown in the diagram below.

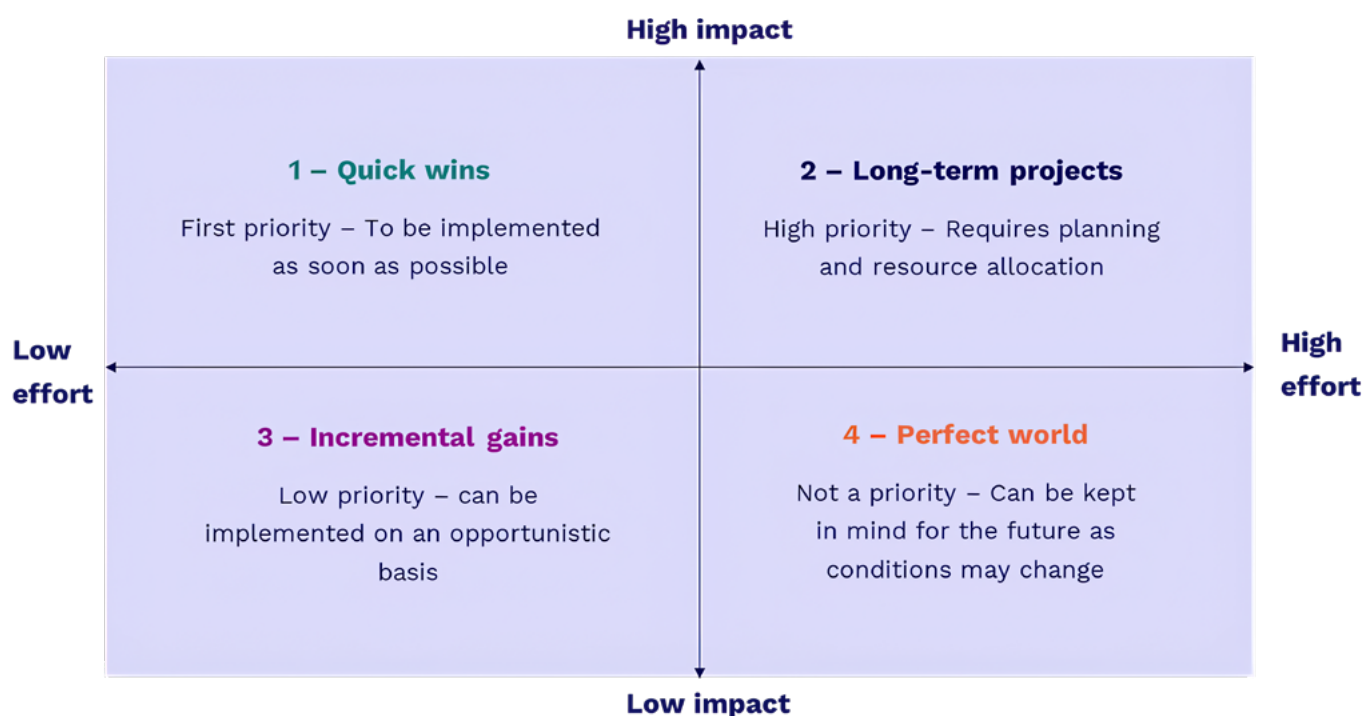


Figure 7 : Prioritization matrix

Items classified with a “1” are actions that can be undertaken with little advance planning and few resources, but which are expected to have a strong impact. Items classified with a “2” are projects that are expected to make a major contribution to statistics development, but which require substantial planning and resource allocation to bear fruit. Items classified with a “3” or “4” are generally considered lower priority, and can be addressed opportunistically or not at all.

Recommendations	Specific Objectives		Action	Priority
1 Set up an effective institutional environment	A. Formalize an official legislation on energy-related activities for the MNRE	1A.1	Advocate for the development of an Energy Act which will include the energy statistics issues that clarifies the requirements for energy statistics production and the roles and responsibilities of each contributing institution.	1
		1A.2	Clarify and formalise activities within the Energy Department to define activities linked to energy accounting and the production of energy balances and energy-climate policies.	1
		1A.3	Allocate a specific budget for energy statistics-related activities.	1
	B. Formalize institutional relations and data sharing agreements with partners institutions	1B.1	Establish MoUs and NDAs to involve partners more closely in submitting data to the Energy Department team.	1
		1B.2	Review the data collection questionnaires with the partners institutions to adapt them and obtain more disaggregated information.	2
		1B.3	Set up an annual validation meeting with the focal points of each partner to define the Ministry's needs and the requirements for producing energy statistics.	3

2 Improve data quality and coverage	A. Improve and expand secondary data collection	2A.1	Work with the Mining Department, to raise awareness on energy statistics requirements, and identify appropriate levels of disaggregation or additional data items to improve calculation of stocks and quality of coal and other information related to mining activities	1
		2A.2	Conduct stakeholder outreach to include secondary data sources in data collection and validation/review processes.	1
	B. Étendre l'usage aux partenaires	2B.1	Train the Energy Department statistician(s) on AFREC Questionnaire to improve understanding of data requirements, sector structure, level of taxes and potential methodologies for estimation (follow AFREC Questionnaire courses).	1
		2B.2	Work with Eswatini Revenue Services and CSO to improve primary data on end-uses (fuelwood).	2
		2B.3	Develop and communicate basic procedures and calendars for data collection to partner institutions.	2
	C. Reinforce coal data collection from existing sources and identify complementary sources	2C.1	Identify and reach out to potential secondary data sources for coal products to discuss data availability and potential contributions to energy statistics (ERS, mines and other private entities, etc)	1
		2C.2	Conduct stakeholder outreach to include secondary data sources in data collection and validation/review processes.	1
		2C.3	Develop and communicate basic procedures, templates, and calendars for data collection to partner institutions	2
	D. Develop basic data inputs for energy efficiency analysis	2D.1	Train the Energy Department team on energy efficiency to improve understanding of data requirements, key indicators, and potential methodologies for estimation (AFREC Questionnaire Courses)	1
		2D.2	Work with AFREC to identify priority indicators and determine how best to include this data in statistics processes	1
		2D.3	Conduct stakeholder outreach to include secondary data sources in data collection and validation/review processes.	1
		2D.4	Identify and reach out to potential secondary data sources to discuss data availability and potential contributions to energy statistics (private sector, Eswatini Revenue Service, CSO, Eswatini Energy Regulator Authority, etc)	1

3 Adapt statistical tools to the requirements of a NEIS	A. Develop capacity on data management and data processing	3A.1	Train the Energy Department team on basic data management principles and best practices focusing on Excel (AFREC Short Courses)	1
		3A.2	Select and train 1-2 team members as data management focal points, with more in-depth training on databases and data management techniques so that they are able to manage tool development.	1
	B. Engage the statistical infrastructure development	3B.1	Train the Energy Department team and IT expert(s) on options for NEIS structure and design process (AFREC Short Courses)	1
		3B.2	Identify the key requirements for an infrastructure design and develop functional specifications and a phased development plan.	2
		3B.3	Develop, test and operationalize statistical infrastructure design according to the plan.	2
	C. Expand quality checks	3C.1	Make top-down or comparative checks for statistical outputs to ensure that estimated figures by sector are consistent based on previous years trends and are broadly aligned with peer countries and that any potential anomalies can be explained.	1
		3C.2	Add relevant tools in the statistical infrastructure to help monitor quality, including a colour code to indicate the level of confidence for various indicators, regular monitoring to verify compliance of statistics outputs with international recommendations, etc.	3
4 Structure and facilitate dissemination	A. Publish an annual report and standard dataset on a regular basis	4A.1	Identify indicators and metadata for inclusion in public dataset and report and generate templates	1
		4A.2	Populate and publish the report and dataset on a regular basis on an appropriate platform (MNRE website, CSO Website, etc.)	1
		4A.3	Train the Energy Department team members in fundamental energy data analysis and visualization techniques through AFREC NEIS & Capacity Building Short Courses.	1
	B. Hold an annual national workshop	4B.1	Hold annual workshops to present the data and report to key stakeholders from government, development partners, private sector and civil society to build understanding and cooperation and raise the visibility of statistics activity and analyses	3
5 Perpetuate and formalize energy statistics processes	A. Review and evaluate statistics process, outputs, and training needs on a regular basis	5A.1	Conduct regular monitoring of statistics processes and outputs. A review should be conducted every 3-5 years.	1
		5A.2	Conduct updated surveys for biomass end uses and EE (or other subjects) as necessary to update assumptions and data	1

5 Perpetuate and formalize energy statistics processes	B. Ensure continuity in statistics activities with written processes and user manuals	5B.1	Generate written summary of key processes and contacts for data collection, compilation and verification that can be compiled into a user manual for energy statistics preparation.	1
		5B.2	Generate a shared data repository that centralizes all training materials or relevant documents for the team.	1
		5B.3	Ensure that any new tool is delivered with appropriate user documentation.	2
		5B.4	Dedicate full-time job position to consolidate skills and the transmission of expertise.	2

4.2 IMPLEMENTATION PLAN

The figure below summarizes the basic phases of implementation envisaged for the recommended actions to establish a NEIS in Eswatini.

In **Phase 1**, through December 2025, the focus is on the finalization of the plan, awareness raising and on the implementation of an initial set of “quick win” actions to improve data quality and build capacity. Starting in 2026,

Phase 2 sees the continued implementation of quick win actions (marked as priority “1”), primarily to improve data quality and launch the public dissemination of an annual report and standard data set. In parallel, long-term actions (marked as priority “2”) will need to be prepared and resourced.

Phase 3 extends over two years in 2027-2028, and sees the implementation of the majority of the major actions for improving energy statistics, including a statistics infrastructure re-design and surveys on the biomass and petroleum sub-sectors.

Phase 4, starting in 2029, focuses on monitoring and adapting the adopted processes and tools as necessary, as well as on making continued incremental gains through the opportunistic implementation of actions labelled priority “3”.

A detailed implementation plan, including estimated resources, indicators and timelines is included in table 11.

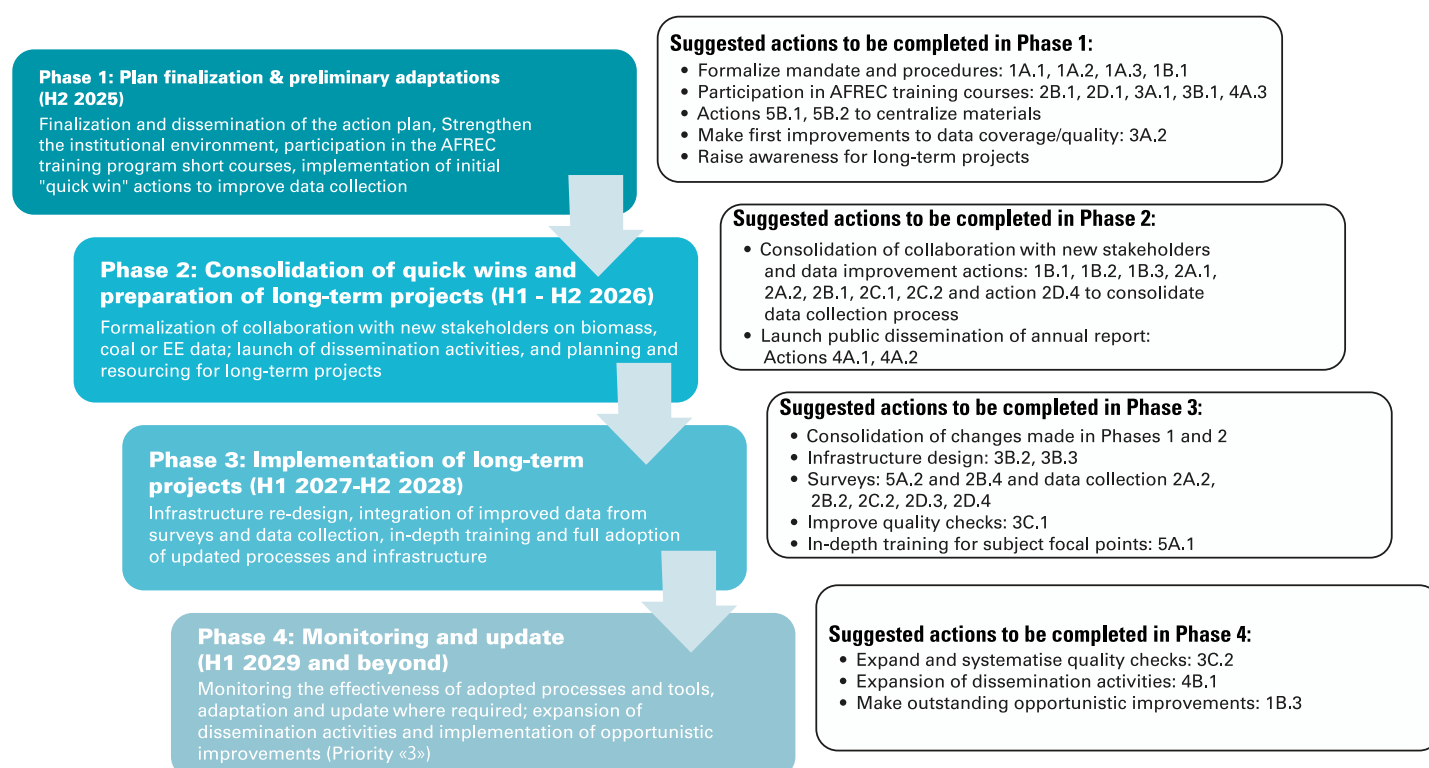


Figure 8 : Indicative implementation phases

Recommendation/ general objectives	Specific Objectives /Expected results	N°	Action	Priority	Resources HR: Human Resources (FTE) FR: Financial Resources (US\$)	Indicators/Mean of Verification	Implementation calendar (start date)
1 Set up an effective institutional environment	1A. Formalize an official legislation on energy-related activities for the MNRE	1A.1	Advocate for the development of an Energy Act which will include the energy statistics issues that clarifies the requirements for energy statistics production and the roles and responsibilities of each contributing institution.	1	HR: 3-4 weeks support from hierarchy department FR: Limited	Key elements/ requirements of the mandate are identified. Draft decree or legal framework prepared, finalized, and adopted.	H2 2025
		1A.2	Clarify and formalise activities within the Energy Department to define activities linked to energy accounting and the production of energy balances and energy-climate policies.	1	HR: 2 weeks FR: Limited, support from hierarchy department	Energy statistics and energy-policy activities are defined.	H2 2025
		1A.3	Allocate a specific budget for energy statistics- related activities.	1	HR: 1 week FR: Limited	A dedicated annual budget is approved.	H2 2025
	B. Formalize institutional relations and data sharing agreements with partners institutions	1B.1	Establish MoUs and NDAs to involve partners more closely in submitting data to the Energy Department team.	1	HR: 8-10 weeks, support from hierarchy/legal department FR: limited	Clarify working relationships between institutions Respect data submission deadlines	H1 2026
		1B.2	Review the data collection questionnaires with the partners institutions to adapt them and obtain more disaggregated information.	2	HR: 3-4 weeks FR: Limited	Data collection questionnaires are updated according to the Energy Department needs.	N/A

2 Improve data quality and coverage	2 A. Improve and expand secondary data collection	2A.1	Work with the Mining Department, to raise awareness on energy statistics requirements, and identify appropriate levels of disaggregation or additional data items to improve calculation of stocks and quality of coal and other information related to mining activities.	1	HR: 2 weeks FR: Limited	The Energy Department requirements are identified.	H2 2026
		2A.2	Conduct stakeholder outreach to include secondary data sources in data collection/ and validation/ review processes.	1	HR: 2 weeks FR: Limited	Stakeholders are involved and secondary data sources are identified.	H2 2026
	2B. Reinforce prices data collection from existing sources and identify complementary sources	2B.1	Train the Energy Department statistician(s) on AFREC Questionnaire to improve understanding of data requirements, sector structure, level of taxes and potential methodologies for estimation (follow AFREC Questionnaire courses).	1	HR: 1 week FR: Limited	All the team members are trained using the AFREC courses and materials provided to focal points.	H2 2025
		2B.2	Work with Eswatini Revenue Services and CSO to improve primary data on end-uses (fuelwood).	2	HR: Limited FR: Limited	Data are widely shared between institutions.	H1 2027
		2B.3	Develop and communicate basic procedures and calendars for data collection to partner institutions.	2	HR: < 1 week FR: Limited	Procedures and data calendars are widely shared to partners and respected.	H1 2027

2 Improve data quality and coverage	2C. Reinforce coal data collection from existing sources and identify complementary sources	2C.1	Identify and reach out to potential secondary data sources for coal products to discuss data availability and potential contributions to energy statistics (customs, mines and other private entities, etc)	1	HR: 2 weeks FR: Limited	Data accuracy is improved.	H2 2026
		2C.2	Conduct stakeholder outreach to include secondary data sources in data collection/ and validation/ review processes.	1	HR: 2 weeks FR: Limited	Data are widely shared between partners.	H2 2026
		2C.3	Develop and communicate basic procedures, templates, and calendars for data collection to partner institutions	2	HR: 1 week FR: Limited	Procedures and data calendars are widely shared to partners and respected.	H1 2027
	2D. Develop basic data inputs for energy efficiency analysis	2D.1	Train the Energy Department team on energy efficiency to improve understanding of data requirements, key indicators, and potential methodologies for estimation (AFREC Questionnaire Courses)	1	HR: 1 week FR: Limited	All the team members are trained using the AFREC courses and materials provided to focal points.	H2 2025
		2D.2	Work with AFREC to identify priority indicators and determine how best to include this data in statistics processes	1	HR: Limited FR: Limited	AFREC Energy Efficiency questionnaire is completed.	H1 2026
		2D.3	Conduct stakeholder outreach to include secondary data sources in data collection/ and validation/ review processes.	1	HR: 2 weeks FR: Limited	Data are widely shared between partners.	H1 2027

2 Improve data quality and coverage	2D.4	Identify and reach out to potential secondary data sources to discuss data availability and potential contributions to energy statistics (private sector, Eswatini Revenue Service, CSO, Eswatini Energy Regulator Authority, etc)	1	HR: 1 week FR: Limited	Stakeholders are involved and secondary data sources are identified.	H2 2026
	3A.1	Train the Energy Department team on basic data management principles and best practices focusing on Excel (AFREC Short Courses)	1	HR: 1 week FR: Limited	Refer regularly to AFREC training courses and materials provided to focal points.	H2 2025
	3A.2	Select and train 1-2 team members as data management focal points, with more in-depth training on databases and data management techniques so that they are able to manage tool development.	1	HR: 4 weeks FR: Depending on training format (in person ~\$5,000 for two persons; online ~\$3,000)	Team members received 1 week of intensive training. Additional training opportunities are identified.	H2 2025
3 Adapt statistical tools to the requirements of a NEIS	3B.1	Train the Energy Department team and IT expert(s) on options for NEIS structure and design process (AFREC Short Courses)	1	HR: 2 weeks FR: Limited	The team received the AFREC courses and had been involved in the design principles of the NEIS structure.	H2 2025
	3B.2	Identify the key requirements for an infrastructure design and develop functional specifications and a phased development plan.	2	HR: 6-8 weeks FR: ~\$30,000/\$40,000 if outsourced to an external consultancy	Detailed terms of reference with the main features	H1 2027
	3B.3	Develop, test and operationalize statistical infrastructure design according to the plan.	2	HR: 24-28 weeks FR: ~\$120,000/\$140,000 if outsourced to an external consultancy	Tool and user manual are delivered. The team is autonomous in using, updating and modifying the tool.	H2 2027

3 Adapt statistical tools to the requirements of a NEIS	3C.1	<i>Make top-down or comparative checks for statistical outputs to ensure that estimated figures by sector are consistent based on previous years trends and are broadly aligned with peer countries and that any potential anomalies can be explained.</i>	1	HR: < 1 week FR: Limited	Quality assurance checks are fully managed.	H1 2027
	3C.2	<i>Add relevant tools in the statistical infrastructure to help monitor quality, including a colour code to indicate the level of confidence for various indicators, regular monitoring to verify compliance of statistics outputs with international recommendations, etc.</i>	2	HR: < 1 week FR: Limited	Control tools are validated, and team members are trained on international standards.	H1 2029
4 Structure and facilitate dissemination	4A.1	<i>Identify indicators and metadata for inclusion in public dataset and report and generate templates</i>	1	HR: 4-8 weeks FR: Limited	The Energy Department design a template with main indicators/figures and analyses, the MNRE approves for dissemination to public.	H2 2026
	4A.2	<i>Populate and publish the report and dataset on a regular basis on an appropriate platform (MNRE website, CSO Website, etc.)</i>	1	HR: 1 week per publication FR: Limited (depending on the dissemination platform)	Dissemination mechanisms are identified. The dataset is available to institutions promptly supported by newsletter communication.	H2 2026
	4A.3	<i>Train the Energy Department team members in fundamental energy data analysis and visualization techniques through AFREC NEIS & Capacity Building Short Courses.</i>	1	HR: < 1 week FR: None	Refer regularly to AFREC training courses and materials provided to focal points.	H2 2025

Structure and facilitate dissemination	4B. Hold an annual national workshop	4B.1	Hold annual workshops to present the data and report to key stakeholders from government, development partners, private sector and civil society to build understanding and cooperation and raise the visibility of statistics activity and analyses	2	HR: 3-4 weeks FR: ~\$1,000 conference package	1 workshop per year to promote statistics activities.	H1 2029
	5A. Review and evaluate statistics process, outputs, and training needs on a regular basis	5A.1	Conduct regular monitoring of statistics processes and outputs. A review should be conducted every 3-5 years.	1	HR: 2 weeks FR: Limited	Training needs and area of improvement are identified.	H1 2027
5 Perpetuate and formalize energy statistics processes		5A.2	Conduct updated surveys for biomass end uses and EE (or other subjects) as necessary to update assumptions and data	1	HR: ~30 weeks FR: ~\$250,000	Assumptions are updated and based on most recent data.	H1 2028
		5B.1	Generate written summary of key processes and contacts for data collection, compilation and verification that can be compiled into a user manual for energy statistics preparation.	1	HR: < 1 week FR: Limited	User manual and methodologies are used by team members.	H2 2025
	5B. Ensure continuity in statistics activities with written processes and user manuals	5B.2	Generate a shared data repository that centralizes all training materials or relevant documents for the team.	1	HR: < 1 week FR: Limited	Training materials, relevant documents are centralized, stored internally and widely shared to the statisticians.	H2 2025
		5B.3	Ensure that any new tool is delivered with appropriate user documentation.	2	HR: < 1 week FR: None	User manual and recommendations are available to each team member.	H1 2026
		5B.4	Dedicate full-time job position to consolidate skills and the transmission of expertise.	2	HR: 1-2 weeks support from hierarchy department FR: Depending on energy statistics budget	Skills are internalized.	H1 2026

Table 11 : Action plan



5.1 SUMMARY RESULTS OF THE DIAGNOSTIC & GAP ANALYSIS

N°	Key issues/gaps	Description
Institutional environment		
1.1	More official cooperation with certain entities to provide data	The Ministry is facing data feedback problems (response time, return rate). Memorandum of Understanding and Non-Disclosure Agreements are required.
1.2	Lack of capacity for the Energy Department managing energy statistics	The Energy Department has knowledge and capacity regarding energy statistics but have challenges with biomass data as we rely on the OLADE Biomass Estimation tool. The Ministry still has to conduct a biomass survey to establish a baseline. However, due to is more complicated, and they have few capacities regarding other energy sector due to limited technical and financial capacities the activity is delayed.
1.3	No clear legislation specific on energy-related data collection activities.	There is no existing official legislation for the MNRE to collect energy statistics.
1.4	No specific budget for energy statistics activities	There is no dedicated budget to undertake data collection activities the Energy Department.

Human & material resources		
2.1	Insufficient human resources dedicated to energy statistics in the MNRE	The time available per officials do not allow them to develop all the work on energy statistics, thus the team focuses on energy balance.
2.2	Need of capacity building on specific energy sub-sectors and issues	Statistics officers are more comfortable with oil and Electricity; however, there is limited data on biomass, less experience with prices and energy efficiency statistics are still at a nascent stage. Specific training on sub-sector value chains, statistical calculations and methodologies for estimation of indicators on this subject may be required for MNRE.
2.3	Material resources	The Ministry is working on the installation of a server, however currently the team is storing data on their personal computers.
Data collection & quality		
3.1	No formal data sharing agreement with partner institutions	There are no formal institutional agreements that bind the data suppliers to provide data to the MNRE, leaving the Energy Department dependent on the active engagement of partner institutions.
3.2	Limited data availability/quality for biomass (fuelwood) and imports of bituminous coal	Although data on co-generation transformation processes for biomass products is available from the IPPs (bagasse, woodchips, wood waste), there is a lack of current quantities of fuelwood in the country as well as bituminous coal imported.
Data processing		
4.1	Lack of data processing skills	The MME officials highlighted a need for improving internal skills on data processing and data management
4.2	Formal consistent system	The Ministry needs its proper system that can be centralized data from partners and be used for data manipulation.
4.3	Lack of internal training	The Ministry needs to train newcomers and consolidates skills to fill in all the AFREC's questionnaires.
4.4	Labour intensive process for data entry	All data must be filled in one by one which takes a lot of time and can lead to some entry mistakes
Dissemination		
6.1	Lack of a clear agenda, report or standard dataset for distribution purpose	No existing disseminating plan which could include standard dataset for analytical purposes showing key indicators for all energy sources with current and historical data. The dissemination is only available through requests.

Table 12 : Summary results for diagnostic & gap analysis

5.2 COSTING ASSUMPTIONS

ITEM	COMMENTS	ASSUMED UNIT COST (US\$)
CONFERENCE PACKAGE	24 pax x \$25 + \$400 venue fee per day	\$1000
CONSULTING FEES	Price per week FTE	\$5000
TRAINING	In-person training, price per person-week including travel and accommodation	\$2500

Table 13 : Costing assumptions

5.3 BIBLIOGRAPHY

The following documents were shared with the consulting team for review and inclusion in the diagnostic report:

The Statistics Act 1967, Eswatini
National Energy Policy of Eswatini 2018
Energy MasterPlan 2018 - 2034

5.4 LIST OF INTERVIEWS

The following documents were shared with the consulting team for review and inclusion in the diagnostic report:

N°	DATE	ATTENDANCE	SUBJECT
1	09/01/2025	Badria MEGHEZI (ENERDATA) Geoffrey RADIGOIS (ENERDATA) Thandazile Dlamini (Energy Department)	Resources and institutional environment Processes

Table 14 : List of interviews

5.5 QUESTIONNAIRES

Included as separate files



AFREC
African Energy
Commission

African
Union



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