AFREC
African Energy Commission

MINISTRY OF MINES AND ENERGY
REPUBLIC OF LIBERIA

DIAGNOSTIC REPORT AND ACTION PLAN

JULY 2025

Prepared for the Ministry of Mines & Energy of Liberia

Support program for African Union member states (MS) and regional economic communities (RECs) for the improvement or establishment of the national/regional energy information system (NEIS/REIS)

African Union

www.au-afrec.org

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 Republique, Djibouti, Eswatini, Ethiopia, Equatorial Guinea, The Gambia, Liberia, Mauritania, Mozambique, Senegal, Sierra Leone, Somalia, Togo, and Tunisa. 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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ACRONYMS

AEIS	African Energy Information System
AFREC	African Energy Commission
AU	African Union
DoE	Department of Energy
EBS	Energy Balance Studio
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
HDI	Human Development Index
HIES	Household Income and Expenditure Survey
IAEA	International Atomic Energy Agency
IMF	International Monetary Fund
IRENA	International Renewable Energy Agency
IRES	International Recommendations on Energy Statistics
IT	Information Technology
JEP	Jungle Energy Power
LEC	Liberia Electricity Corporation
LERC	Liberia Electricity Regulatory Commission
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LPRA	Liberia Petroleum Regulatory Authority
LPRC	Liberia Petroleum Refining Company
MME	Ministry of Mines and Energy
MOU	Memorandum of Understanding
MT	Metric tonnes
MW	GigaWatt (hours)
NDA	Non-Disclosure Agreement
NEIS	National Energy Information Systems
NFP	National Focal Point
NOCAL	National Oil Company of Liberia
REIS	Regional Energy Information Systems
REC	Regional Economic Communities
RREA	Rural and Renewable Energy Agency
SWOT	Strengths, Weaknesses, Opportunities, Threats
TEC	Totota Electric Cooperative
UN	United Nations

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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) in the Ministry of Mines and Energy (MME).

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

Liberia does not currently have a functioning NEIS. Despite having a data unit dedicated to energy statistics, the MME lacks technical support and to advance its work and produce more comprehensive and quality data outputs. The table below describes the primary characteristics of Liberia's energy statistics program as identified during the diagnostic assessment in Section 3 of this document.

Item	Diagnostic results
Institutions and legal environment	• Further collaboration and coordination between the stakeholders and the different institutions are needed to ensure the efficient sharing of relevant data flows. • No codified process allows stakeholders and data providers to engage and validate energy statistics. • The DoE faces difficulties to collaborate with the LISGIS regarding energy statistics. They have the expertise and would like to benefit from it.
Human and material resources	• Despite having a designated statistics team, additional training is required to gain confidence and ownership with energy-specific analytical methodologies and statistics. • Although they have skilled personnel, there is a need for more advanced technical expertise, especially in areas like data analytics, advanced energy modelling, and forecasting. This gap sometimes limits their ability to fully leverage modern tools and methodologies. Support from LISGIS could be set up. • Statistics officers are using an Excel template provided by AFREC. However, much of the statistics officers' time is spent on repetitive tasks that could be streamlined with more efficient data management or advanced Excel skills. • The DoE needs a centralised data management system and tools to facilitate the collection, analysis and dissemination of data.
Data collection	• No available data on the end-use subsector; only aggregated estimated data, surveys or other primary data are required to get additional data. • Lack of capacity and lack of awareness in partner institutions of the importance of collecting and processing energy data and turnover of focal points or management changes causes difficulties in collecting data, need for nominating and training for the main focal points. • Implement more advanced tools for data analysis and invest in capacity-building for the team.
Data processing	• The current Excel spreadsheets are not interlinked into a structured tool, so compilation and calculation must be done manually. The Ministry needs its proper system that can be centralized data from partners and be used for data manipulation. • The DoE team highlighted a need for improving internal skills on data processing and data management. • All data must be filled in one by one which takes a lot of time and can lead to some entry mistakes.
Quality assurance and validation	• Internal checks are time-consuming for statistics officers, as the lack of a structured tool limits the capacity for automated checks and error identification. • They need to implement a process, such as an annual workshop or technical committee, to ensure the active participation of institutions/agencies in a comprehensive validation process through a yearly meeting. This will allow them to benefit from various stakeholders' insights and further review, provide technical input, and validate.
Dissemination and analysis	• Limited knowledge of specific energy modelling/statistics areas at the DoE limits the team's capacity to enhance analysis by interpreting trends or data, effectively using available statistics to produce analytical output, or contributing to regular monitoring or decision-making. • MME does, however, deliver the annual energy balance to AFREC and, upon request, to partner organizations like ECREEE. • No analytical outputs or publications from MME.

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

1.2 RECOMMENDATIONS

Specifically, the diagnostic assessment concludes with five recommendations to reinforce energy statistics in Liberia to align with international recommendations and establish a NEIS:

1 – Set up an effective institutional environment

➜ **A. Formalize institutional relations and data sharing agreements with partners institutions**

the lack of understanding and interest in the provision of energy statistics for the DoE's team 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 understanding the challenges. These agreements could take the form of MoUs or NDAs.

➜ **B. The MME and the LISGIS must collaborate closer**

to harmonize data collection methodologies, integrate energy statistics into national surveys and censuses, and implement quality control mechanisms.

2 – Improve data quality and coverage

➜ **A. Reinforce data exchanges**

Over the short term, this consists of strengthening data-sharing mechanisms to improve the reliability and accessibility of information. This can be implemented by standardizing reporting protocols and developing standard templates and methodologies for data collection and reporting to ensure consistency.

➜ **B. Instate formal data verification and validation processes**

implementing quality control measures to ensure data accuracy before integration into the NEIS. This could be achieved by instating validation workshops that group all key stakeholders from national and institutional bodies to potential private sector actors to share finalized data outputs and relevant analyses, welcoming their feedback to help identify data gaps, inconsistencies, and areas of further improvement.

➜ **C. Integrating energy-specific questionnaires into national census and socio-economic surveys will provide detailed end-use data or reliable estimation assumptions.**

➜ **D. Set-up cross-institutions training / capacity sessions on energy Statistics/Economics, and data analysis to expand the analytical output of the team, in order to share best practices and skills**

The role of the LISGIS is to collect data, produce energy statistics, and analyse specific subjects. Currently, the DoE team reports a lack of time, resources, and skills to invest in using energy statistics to generate analytical output (sectoral policy analyses, forecasts, etc.) in support of policy making or public debate outside of contributing to specific MME projects.

3 – Upgrade statistical tools to the requirements of a NEIS

➜ **A. Develop data management capacity**

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

➜ **B. Elaborate a tool for MME to facilitate compiling and tracking statistics, including visualization and analytics**

Technical management of the tool should be housed in MME. Still, access should be granted to LISGIS and other identified end-users for improved cooperation and transparency with both organizations involved in the tool's specification.

➜ **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 is an important step in data overall consistency, validating manipulations and cross-checking data with other sources. Quality assurance reflets 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 senior planner.

➜ **D. Establishment of shared databases across involved institutions in the statistic process**

and automated data exchange protocols for real-time integration.

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 other national institutions. 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 MME's team 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 should include the leading public sector stakeholders, private sector, civil society, and press and be hosted by MME.

5 – Consolidate and perpetuate energy statistics processes

➜ **A. Review and evaluate 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. A review should be conducted every 3-5 years.

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

currently, there is no formalized processes. However, with the establishment of a National Team Working Group, it will be important to develop a user guide and manual for key tools and processes as training materials to ensure that knowledge and processes are institutionalized and perpetuated in the event of turnover in the team.

1.3 PRIORITY ACTIONS

FIVE-YEAR ACTION PLAN TO ESTABLISH A NEIS

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

- Finalization and dissemination of the action plan
- Participation in the AFREC training program short courses
- Implementation of initial “quick win” actions to improve data collection

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

- Infrastructure design and tool development
- Full integration of improved data from surveys
- In-depth training and full adoption of updated processes and infrastructure

PHASE 4: MONITORING AND UPDATE (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

Figure 1: Action plan overview with phases and primary activities

2 COUNTRY OVERVIEW

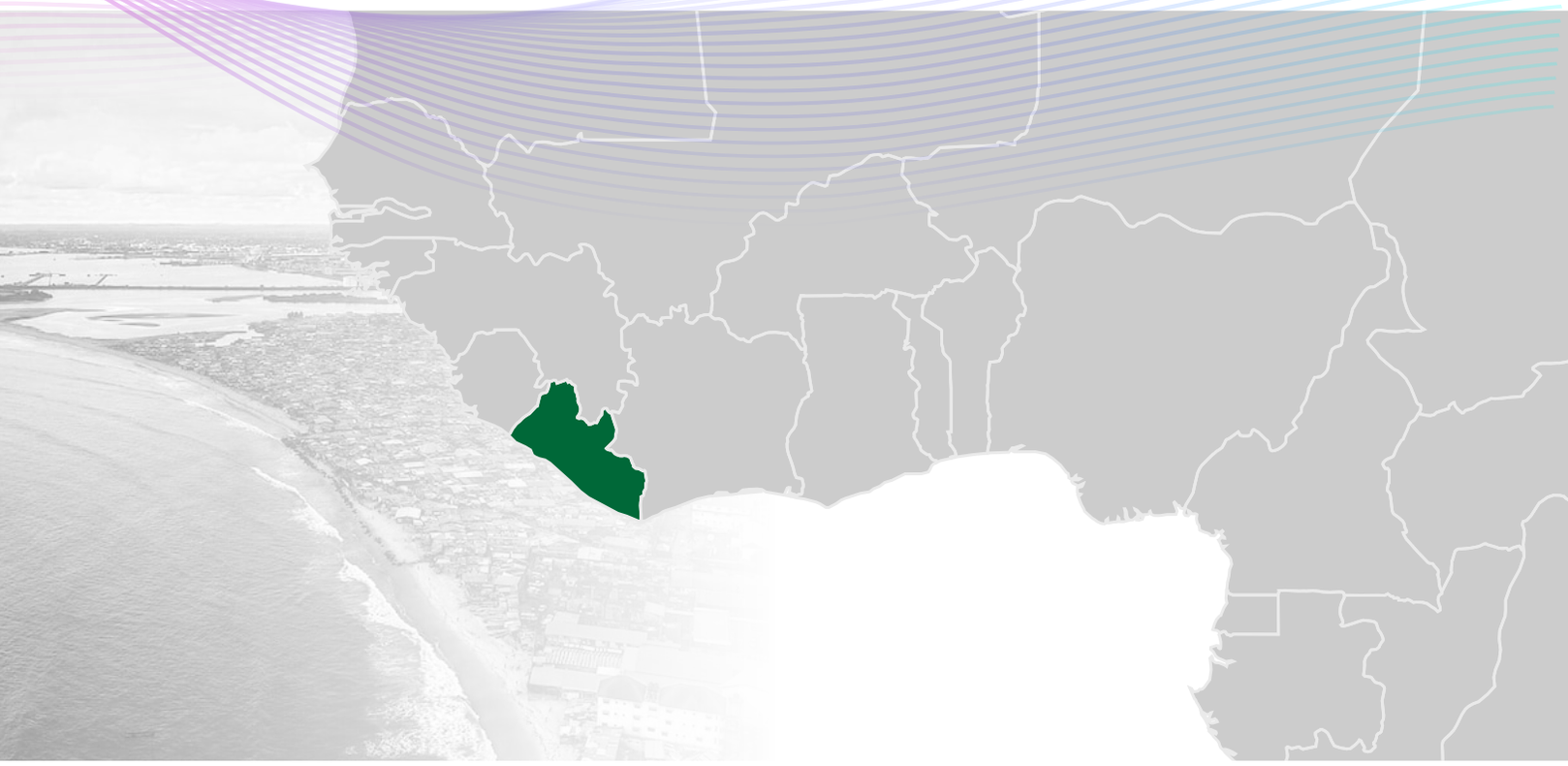

Figure 2: Regional Map - Liberia

2.1 DESCRIPTION

Liberia is a West African country bordered by Sierra Leone (Northwest), Guinea (North), Ivory Coast (East), and the 680 km of coastline to the Atlantic Ocean. Its total area is about 111,000 sq.km. Liberia population, estimated at about 5.5 million (2024, WB), is characterized by a young population and a trend toward urbanization with 49% people living in cities, especially in the capital, Monrovia (around 1.8 million people).

After several years of recession due to successive health crises (Ebola and Covid), Liberia is now back on the growth track. The country has enjoyed relative macroeconomic stability in recent years with real GDP growth averaging 5% per year since 2021 (WB), thanks mainly to the dynamism of mining and services, as well as implementation of the IMF program. However, the agriculture-forestry-fishing sector represent over 70% of the GDP and Liberia ranks 177th (out of 193 countries) in the 2022 Human Development Index (HDI) meaning that the socio-economic and humanitarian situation remains challenging.

According to statistics taken from the AFREC AEIS platform[1], biofuels are by far the dominant fuel with close to 90% of the primary energy supply, followed by imported oil products. The biofuels are traditional biomass fuels such as firewood and charcoal. Liberia also imports electricity from neighbouring countries through the interconnected Ivory Coast, Liberia, Sierra Leone, and Guinea (CLSG) transmission network.

Households account for more than 90% of the final energy consumption, followed by transport, industry, commercial and public services sectors.

1 - This report relies on the most recent published dataset from AFREC's AEIS covering all 15 countries in the NEIS & Capacity Building project cohort for ease of comparison and consistency (2022). Individual countries have submitted and/or published more recent data.

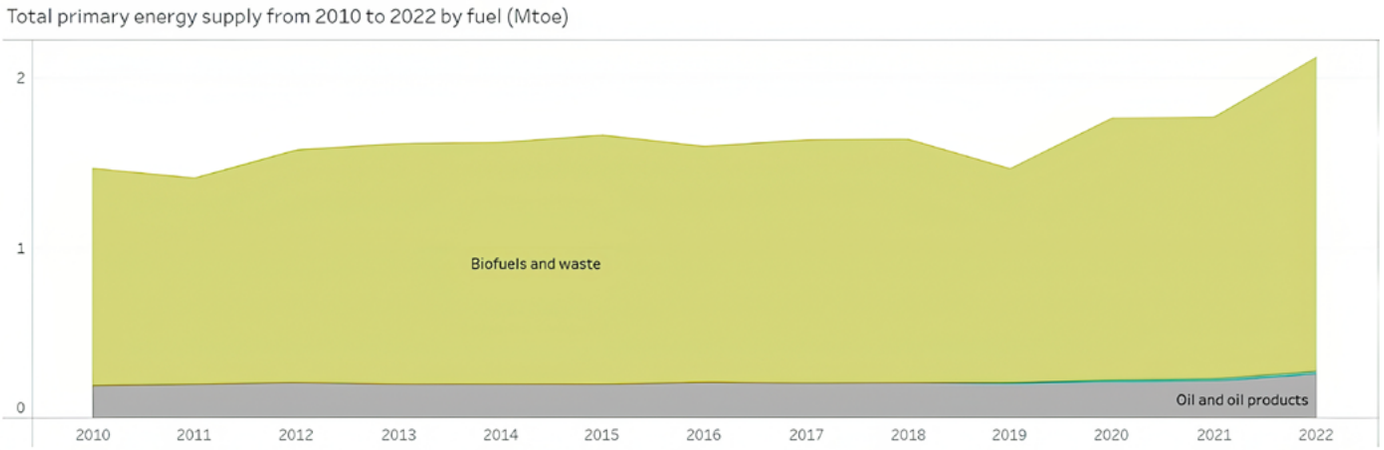

Figure 3: Total primary energy supply (Source: AFREC)

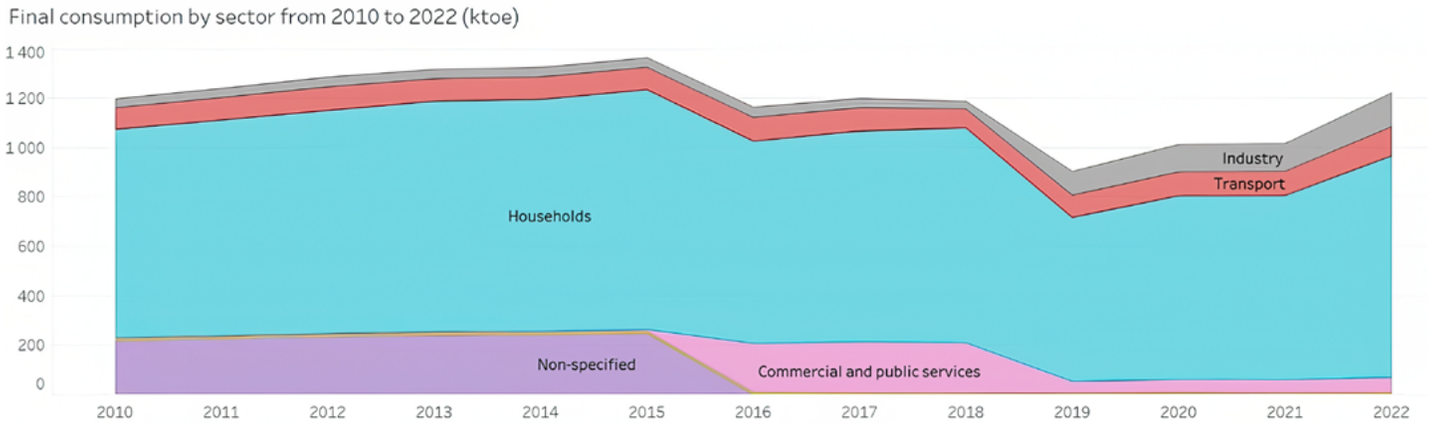

Figure 4: Final consumption by sector (Source: AFREC)[2]

Liberia faces serious challenges in expanding its electricity access, mainly in rural areas. According to the World Bank, the rate of access to electricity has grown from 10% in 2013 to 32% in 2023[3] (around 1.8 million people), which makes Liberia the 10th lowest country in the world for electricity access[4]. In rural area, the access to electricity rates reached 14% in 2022, which was much lower than in urban areas with 54%[5]. The Government committed to fast track the electricity access from 70,000 per year to 100,000 per year to reach an electricity access rate of 75% in 2030[6].

2.2 ENERGY STATISTICS

The Ministry of Mines and Energy (MME) is responsible for oversight of the energy sector, including the formulation of energy policies and master plans, as well as for energy statistics in Liberia. It oversees the collection, analysis, and dissemination of energy-related data at the national and local levels.

The MME supports the transmission of data from other affiliate institutions, such as:

2 - This section of the report relies on the most recently published data set on AFREC's website. Individual countries within the cohort may have submitted more recent energy statistics to AFREC or published them through their national processes

3 - https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=LR

4 - https://data.worldbank.org/indicator/eg.elc.accs.zs?most_recent_value_desc=false

5 - https://trackingsdg7.esmap.org/country/liberia

6 - https://www.emansion.gov.lr/media/press-release/president-boakai-reaffirms-liberias-commitment-universal-energy-access-mission

- **The Ministry of Mines and Energy (MME)**
- **The Liberia Electricity Regulatory Commission (LERC)** that is the independent regulator of the electricity sector,
- **The Liberia Electricity Corporation (LEC)** that is the government-owned vertically integrated national utility engaged in the generation, transmission, distribution, import, and sale of grid electricity.
- The privately-owned electricity distribution companies such as Jungle Energy Power (JEP), Libenergy and Energicity.
- **Totota Electric Cooperative (TEC)** that is a small micro utility operating a hybrid Solar PV system in Totota, Bong County.
- **The Rural and Renewable Energy Agency (RREA)** that is an autonomous agency of the Government of Liberia responsible to facilitate and accelerate the economic transformation of rural Liberia by promoting the commercial development and supply of modern energy products and services to rural areas.
- **TRANSCO CLSG** that is a regional transmission company owned equally by the national utilities of Ivory Coast, Liberia, Sierra Leone, and Guinea.
- **The Liberia Institute of Statistics and Geo-Information Services (LISGIS)** that is an authoritative agency of Government responsible for collecting, managing, coordinating, supervising, evaluating, analyzing and disseminating for statistical and associated geo-information for overall national socio-economic topics.
- **The National Oil Company of Liberia (NOCAL)** that manages hydrocarbon resources (oil and gas) although there is not yet any production of crude oil and natural gas.
- **The Liberia Petroleum Regulatory Authority (LPRA)** that is a regulatory body for the petroleum sector, dedicated to overseeing, regulating and licensing petroleum operation.
- **The Liberia Petroleum Refining Company (LPRC)** that is a state-owned entity with a mandate to procure and supply quality petroleum and petroleum related products to the internal market.

Along with the national institutions involved in the energy statistic processes, Liberia has received support from several international institutions, of which:

- The AFREC has provided training and technical assistance on energy balances.
- The International Atomic Energy Agency (IAEA): Liberia signed in 2018 the Revised Supplementary Agreement, enabling the country to benefit from the IAEA technical cooperation programme that has supported the establishment of the integrated National Energy Master Plan[7].
- The Economic Community of West African States (ECOWAS) Centre for Renewable Energy and Energy Efficiency (ECREEE) and the International Renewable Energy Agency (IRENA) have provided training on SPLAT-W model and Energy Balance Studio (EBS).

2.3 PARTICIPATION IN THE AEIS

MME does not disseminate energy statistics to other organizations on a systematic basis; this is only done upon request from the relevant organization. However, the Department of Energy at MME regularly shares data with AFREC and ECREEE on an ad hoc basis.

Liberia currently provides data to the African Energy Information System (AEIS) on an N-2 basis, as detailed in the table below. Liberia's most recently published energy balance data in the AEIS is for 2022.

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

Table 2: Data provided to AFREC

7 - https://www.iaea.org/sites/default/files/20/07/tc-liberia.pdf

3 ENERGY STATISTICS DIAGNOSTIC REPORT

This diagnostic was developed through close collaboration with the AFREC National Focal Points (NFPs) within the Ministry of Mines and Energy (MME). The results are based on structured interviews covering the institutions, resources, and statistical processes in place and 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 the significant steps for energy statistics processes (data collection, data processing, 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 thematic area and proposes recommendations and actions. These prioritized actions are then used to develop an Action Plan for enhancing the NEIS in Section 4 of this document.

3.1 INSTITUTIONAL & LEGAL ENVIRONMENT

3.1.1 CURRENT SITUATION

The Ministry of Mines and Energy (MME) is responsible for the development, regulation and management of minerals and energy resources in the country. The Ministry's role is promoting sustainable exploitation of these resources, ensuring environmental protection and formulating policies. The Department of Energy (DoE) relies on the MME through its Bureau of Electricity and Renewable Energy, Bureau of Hydrocarbons and Bureau of Energy Research and Policy was derived from the National Energy Policy as well as the Electricity Law of Liberia. It oversees the formulation and implementation of policies and strategies in the country.

The Liberia Institute of Statistics and Geo-Information Services (LISGIS) is the principal government agency responsible for the collection, analysis and dissemination of statistical data in Liberia. Established

to provide reliable and timely statistical information, LISGIS plays a significant role in supporting decision making, policy development and planning in different sectors in the country. It is mandated to coordinate all statistical activities and is responsible for conducting sectoral surveys and socio-economic censuses (Household Income and Expenditure Survey - HIES, 2017). The institute ensures the standardization and harmonization of statistical methods across different government agencies. LISGIS collaborates with international organizations, donor agencies and other partners to improve data quality and coverage of statistical data. They work closely with different government ministries such as the Ministry of Planning and Economic Affairs to ensure that statistical data are integrated into the planning and policy-making processes.

Many more institutions exist in Liberia:

- **The Liberia Electricity Regulatory Commission (LERC)** is the independent regulator of the electricity sector,
- **The Liberia Electricity Corporation (LEC)** is the government-owned vertically integrated national utility engaged in the generation, transmission, distribution, import, and sale of grid electricity.
- The privately-owned electricity distribution companies such as Jungle Energy Power (JEP), Libenergy and Energicity.
- **Totota Electric Cooperative (TEC)** is a small micro utility operating a hybrid Solar PV system in Totota, Bong County.
- **The Rural and Renewable Energy Agency (RREA)** is an autonomous agency of the Government of Liberia responsible to facilitate and accelerate the economic transformation of rural Liberia by promoting the commercial development and supply of modern energy products and services to rural areas. It is in charge of the off-grid electricity.
- **TRANSCO CLSG** is the regional transmission company owned equally by the national utilities of Ivory Coast, Liberia, Sierra Leone, and Guinea.
- **The Liberia Petroleum Regulatory Authority (LPRA)** is the regulatory body for the petroleum sector, dedicated to overseeing, regulating and licensing petroleum operations.
- **The National Oil Company of Liberia (NOCAL)** manages Liberia's hydrocarbon resources (oil and gas) although there is not yet any production of crude oil and natural gas.
- **The Liberia Petroleum Refining Company (LPRC)** is the State-owned entity with a mandate to procure and supply crude oil and petroleum related products to the internal market, therefore including imports.
- **The Liberia Institute of Statistics and Geo-Information Services (LISGIS)** is the authoritative agency of Government responsible for collecting, managing, coordinating, supervising, evaluating, analyzing and disseminating for statistical and associated geo-information for overall national socio-economic topics. Among other things, LISGIS produces the HIES.

The MME has no active National Energy Information System and the DoE faces difficulties regarding communication and data transparency at the national level. Data exchanges are limited between LISGIS, and the MME and too many contributors make it difficult for institutions to work together effectively to collect and manage energy data.

The diagram below illustrates the institutional environment in which the DoE operates.

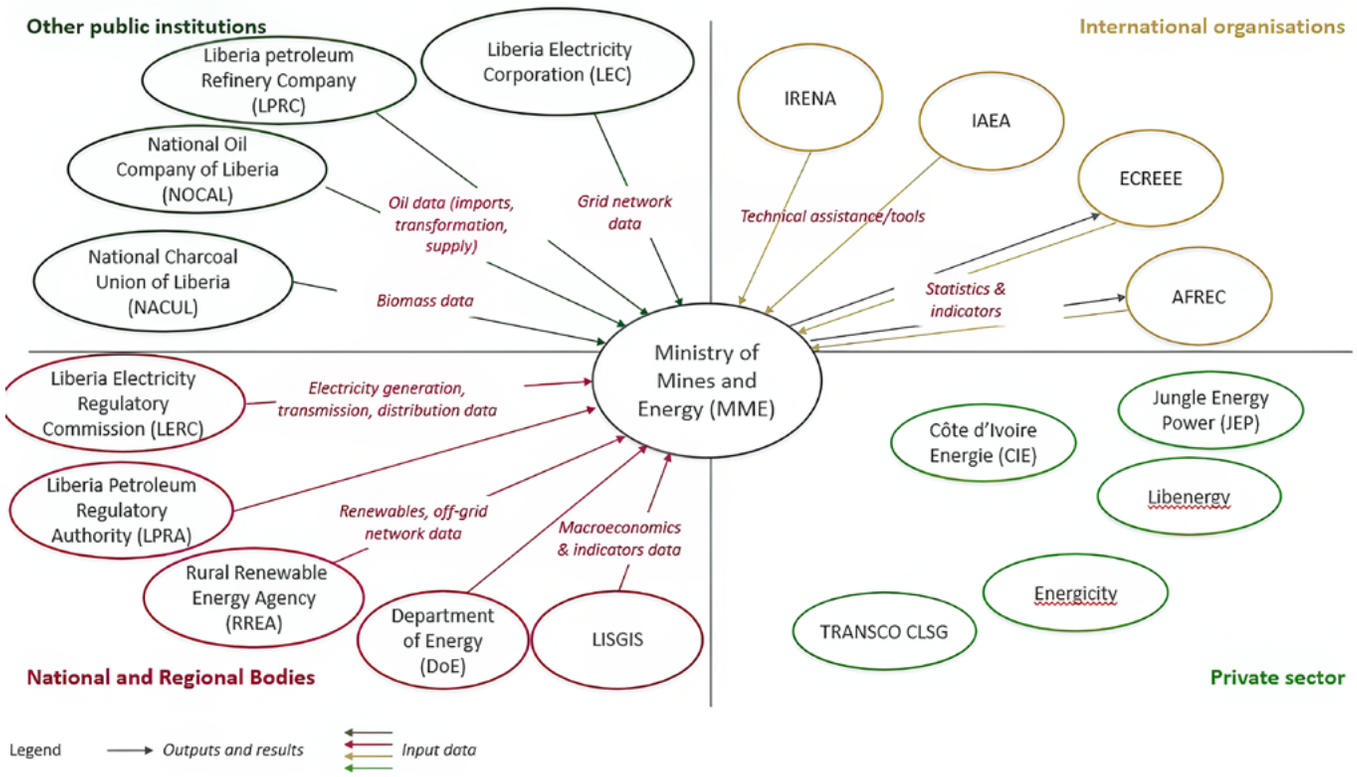

Figure 5: Institutional environment

There Is currently no data sharing agreement between the Liberia and the International Energy Agency (IEA).

3.1.2 ASSESSMENT AND GAP ANALYSIS

Three main limitations have been observed concerning the institutional & legal environment:

N°	Key issues/gaps	Description
1.1	Lack of coordination between stakeholders	Further collaboration and coordination between the stakeholders and the different institutions are needed to ensure the efficient sharing of relevant data flows.
1.2	Lack of stakeholder engagement	No codified process allows stakeholders and data providers to engage and validate energy statistics.
1.3	Lack of collaboration between the LISGIS and the MME	The DoE faces difficulties to collaborate with the LISGIS regarding energy statistics. They have the expertise and would like to benefit from it.

Table 3: Institutional environment gap assessment

3.2 HUMAN & MATERIAL RESOURCES

3.2.1 CURRENT SITUATION

HUMAN RESOURCES

The Department of Energy at the Ministry of Mines and Energy collects and produces energy-related statistical data in Liberia. The energy statistics staff is organised in two groups: on one hand, the core team of the DoE that is composed 40 people, and on the second hand, is composed of the representatives of each Institutions involved in the energy statistic process. There is a currently a project structure both teams in one single working group to improve and speed-up the production of energy statistics.

Seven members contribute to the mission's upkeep and, as AFREC NFPs, transmit statistics to AFREC.

MINISTRY OF WATER AND ENERGY

Name	Job title/ position & Institution	Role in the NEIS/EB	Time dedicated to NEIS/EB (%)	Training/background
Prince C. Wilson	Assistant Director for off-grid power and Renewable Energy, MME	AFREC NFPs Coordinator	30/50%	Master of Engineering Management, MSc. Environmental Sciences
Ckor Guzeh	Director for Electricity, MME	In charge of electricity data	20/50%	Electrical Engineering
Zahn Kotee	Assistant Director for Grid power electricity, MME	In charge of electricity data	20/50%	Electrical Engineering
Moyan K. Flomo	Assistant Director of Hydrocarbonés, MME	In charge of hydrocarbons data	30/50%	Geologist/ Statistic Specialist hydrocarbon
Kelvin Grubaye	Assistant Director for Energy Efficiency, MME	In charge of energy efficiency	30/50%	Geologist
Joebarline S.B Gbozee	Director for Policy and Development, MME	In charge of energy policies implementation	20/50%	Master of Arts Environmental Management
Danwin Hoff	Energy Data Officer, MME	In charge energy data collection	20/50%	N/A

Table 4: Human resources dedicated to AFREC energy statistics

MATERIAL & IT RESOURCES

The available material resources and IT infrastructure are:

- **Computers & Software:** the core team of the DoE have official personal laptops. No other software packages are used to manage data effectively at MME; desktop and/or laptop computers have access to Excel. Geo-spatial data management and geographical analysis software (ArcGis) and sectoral models and technical tools (LEAP) are not used by the team due to a lack of training.
- **Server & IT Infrastructure/Internet:** DoE does not have a specific IT department, nor a server to manage statistics. This is a need expressed by the DoE team.
- **Budget:** No information on the budget linked to energy statistics and activities was mentioned by the DoE.

3.2.2 ASSESSMENT AND GAP ANALYSIS

In terms of human resources, the DoE team is competent in their expertise areas. However, given the large number of players involved in energy statistics, not all stakeholders are able to understand the benefits of producing an energy balance, and this slows down the data transmission process. The DoE team stresses the need to provide specific support to all the players involved so that they can be trained in good data management practice and understand the issues involved in energy statistics.

Efforts have been made as LISGIS engages in capacity-building activities, including training programs for statisticians and other data professionals, to enhance the statistical capabilities within the government and other sectors. The DoE from the MME would benefit from it and require additional training in ArcGIS software and LEAP.

Regarding material resources, the DoE team reports a real need to develop centralized data management tools shared with the various stakeholders to facilitate the exchange and dissemination of data. Many players are involved in data collection, and given the amount of data it is not possible for a single department to compile all the information. The DoE team requires a centralized data sharing and collection system to be set up to enable all stakeholders to facilitate data feedback and access to all institutions. In addition, the core team requires 4 to 10 laptops to be dedicated to the energy statistics works to ease and speed up reporting processes.

The core team also Identifies need for trainings of two kinds: a) technical trainings to enhance data treatment skills on various software to provide high quality data; b) energy accounting training to better understand what data series to report to build the national energy balance and how to capture this data from the various data-holders and stakeholders.

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

N°	Key issues/gaps	Description
2.1	No tailored and specialized energy data management and software training for MME	Despite having a designated statistics team, additional training is required to gain confidence and ownership with energy-specific analytical methodologies and statistics.
2.2	Skills gap	Although they have skilled personnel, there is a need for more advanced technical expertise, especially in areas like data analytics, advanced energy modelling, and forecasting. This gap sometimes limits their ability to fully leverage modern tools and methodologies. Support from LISGIS could be set up.
2.3	Need for capacity building on advanced Excel/Data management skills	Statistics officers are using an Excel template provided by AFREC. However, much of the statistics officers' time is spent on repetitive tasks that could be streamlined with more efficient data management or advanced Excel skills.

2.4	There is a need for improved IT infrastructure at MME to manage energy data.	The DoE needs a centralised data management system and tools to facilitate the collection, analysis and dissemination of data.

Table 5: Human and material resources gap assessment

3.3 DATA COLLECTION

3.3.1 CURRENT SITUATION

The DoE consolidates annual data for the MME on an N-2 annual basis but has data available on a more regular basis (real-time data). All data is collected and processed using Excel with historical data since 2018.

The DoE team uses the AFREC questionnaires which are emailed to partners, organizes meetings and writes to the various ministries to share the documents to be completed and returned. The team expressed the need to adapt the AFREC questionnaires to the national situation in order to facilitate and target the data to be collected from data suppliers. The team wish that the AFREC questionnaire would include only relevant commodity in the country, e.g. the natural gas tab could be removed from the Liberia's questionnaire as because there is neither production no consumption of natural gas in the country.

Data collection within the DoE team is a time-consuming process that generally takes place from March to November of year N.

Due to the lack of collaboration with LISGIS, end-use data is estimated or projected because it is difficult to obtain from partners, in particular for charcoal. The DoE team uses the Household Income and Expenditure Survey (2017) as a base and derived annual consumption level using assumptions, taken from a methodology provided by the AFREC. In addition, certain data deemed confidential are not transmitted to the DoE, which leads to missing values in the data.

The DoE collects energy data from several data providers that are listed in the table below:

Sector	Description of data collected and sources	Data Quality and Limitations	Format & Frequency
Oil & gas	The oil and gas data at split in two sub-sectors, namely: • The upstream data is reported by the NOCAL The midstream and downstream segment are covered by the LPRC that coved imports and distribution of petroleum products.	• There is currently no crude oil and gas production, therefore no related data. • Unregular delivery of data from LPRC combined with significant delay	• Each semester, under Excel format
Electricity + Renewable energy - hydropower	The electricity sector is broken down in two sub-segments: • On-grid data is reported by LEC and LERC. • Off-grid data Is reported by RREA	• Noticeable delays have been recorded regarding the LEC data that has been reluctant to share the data	• Annually, under Excel format

Sector	Description of data collected and sources	Data Quality and Limitations	Format & Frequency
Biomass	The charcoal data is estimated from the Household Income and Expenditure Survey (2017) and derived from then to produce annual statistics	• Annual data is estimated using assumptions taken from a methodology provided by the AFREC	• Annually, under Excel format
Energy Efficiency	Energy consumption by sector (residential, commercial, industrial). Building characteristics (age, size, insulation, HVAC systems)	• Annual data is estimated using assumptions taken from a methodology provided by the AFREC	• N/A

Table 6: Sectoral data collection sources and procedures

3.3.2 ASSESSMENT AND GAP ANALYSIS

There are no contacts focal points with the partner organizations. The DoE team faces difficulties in obtaining information in real time, delays in validating official data from other institutions, a lack of responsiveness and different data formats on receipt of questionnaires.

More collaboration and the appointment of contact points will make data collection easier for the DoE. Combined with a centralized data reporting tool, the quantity, quality and accuracy of data could be greatly improved in Liberia.

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

N°	Key issues/gaps	Description
3.1	Lack of data on end-uses	No available data on the end-use subsector; only aggregated estimated data, surveys or other primary data are required to get additional data.
3.2	Challenges engaging with partner institutions for data collection	Lack of capacity and lack of awareness in partner institutions of the importance of collecting and processing energy data and turnover of focal points or management changes causes difficulties in collecting data; need for nominating and training for the main focal points
3.3	Upgrade tools and capacity	Implement more advanced tools for data analysis and invest in capacity-building for the team.

Table 7: Data collection gap assessment

3.4 DATA PROCESSING

3.4.1 CURRENT SITUATION

Data processing faces challenges, and the DoE team requires tools to facilitate data processing and manipulation. The collection questionnaires sent to the data suppliers are retrieved as they are by the team, which cannot carry out all the processing in the value chain. The data retrieved has different formats, many players are involved and there is no automated processing. Processing techniques are limited to data interpolation in the event of missing values. This situation is because the energy statistics team within the DoE has no legislative power, it cannot impose a single reporting standard to all its partners / data providers. Consequently, there are as many files of different formats as there are partners. Therefore, the data check process is mainly made of consistency checks. However, the team wish to use a single reporting standard to ease data collection and consolidation Processes. The team uses the AFREC methodology to prepare the energy balance but would like to be trained in data estimation methodologies.

3.4.2 ASSESSMENT AND GAP ANALYSIS

Liberia currently does not have an operational NEIS or a dedicated tool for data processing and intermediate calculations. Data is collected in various thematic Excel workbooks and then consolidated into the required indicators using the AFREC questionnaires for energy balance statistics.

While the DoE team has followed the AFREC training courses on the 2024 energy balance, the members would like to take the courses further, be supported by financial or technical partners and benefit from the expertise of LISGIS to process the data or do modelling.

The following table summarizes the principal issues and gaps that emerge from the diagnostic concerning data processing.

N°	Key issues/gaps	Description
4.1	Lack of a dedicated tool for tracking and compiling energy statistics	The current Excel spreadsheets are not interlinked into a structured tool, so compilation and calculation must be done manually. The Ministry needs its proper system that can be centralized data from partners and be used for data manipulation.
4.2	Lack of data processing skills	The DoE team highlighted a need for improving internal skills on data processing and data management.
4.3	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 8: Data processing gap assessment

3.5 QUALITY ASSURANCE AND VALIDATION

3.5.1 CURRENT SITUATION

Quality control is the responsibility of the MME. Operationally, the DoE team is carrying out the quality checks. Given the quantity of existing data, it is not possible for members of the team to carry out in-depth quality checks, even if the data received from the various institutions has already been officially validated upstream. The DoE team is not currently informed of the methods used to check and validate stakeholders' data.

Nevertheless, the DoE team carries out quality checks using surveys, real-time audits and key informant interviews. There is some back and forth with the data suppliers to correct any data errors, but this remains difficult because of the lack of collaboration with the institutions.

Due to a lack of finance, the DoE team faces major challenges because there is no internal validation process before the energy balance is consolidated. This process takes the team six to seven months and is completed in July of year N.

3.5.2 ASSESSMENT AND GAP ANALYSIS

The lack of external or broader internal validation is a vital drawback and directly affects data quality and robustness. Data validation ensures coherent and robust energy statistics through a collaborative and interactive process that groups all relevant stakeholders from data providers to policymakers and international partners. Engagement with stakeholders through bilateral or multilateral meetings should be vital in finalizing energy statistics before dissemination, as it generally adds value to the quality assurance process without generating significant delays.

In addition to including appropriate automated internal checks in whatever statistical tool is developed to support the NEIS, expanded top-down checks or historical comparisons are necessary to ensure consistency from year to year. The energy balance data presents significant statistical differences, and a system for reducing or explaining clearly the source of these differences is required.

The following table summarizes the principal issues and gaps that emerge from the diagnostic regarding quality assurance and data validation, and potential solutions for addressing each challenge.

N°	Key issues/gaps	Description
5.1	Limited internal checks in the Excel infrastructure	Internal checks are time-consuming for statistics officers, as the lack of a structured tool limits the capacity for automated checks and error identification.
5.2	Lack of an external validation process	They need to implement a process, such as an annual workshop or technical committee, to ensure the active participation of institutions/agencies in a comprehensive validation process through a yearly meeting. This will allow them to benefit from various stakeholders' insights and further review, provide technical input, and validate.
5.3	No information on indicator reliability or checks against international standards	Quality assurance processes remain relatively simple and do not include an accurate classification of indicators by "reliability" to indicate the confidence level concerning the accuracy of outputs or their compliance with international standards. Therefore, they do not highlight the areas where data should be improved over the long run. This is, thus, one of the areas needing improvement and/or upskilling.
5.4	Communication with other institutions regarding feedback on methodologies and data quality	Communicating with other institutions in Liberia regarding their own internal methodologies and the resulting quality/accuracy of data provided can be challenging.

Table 9: Quality assurance and validation gap assessment

3.6 DISSEMINATION AND ANALYSIS

3.6.1 CURRENT SITUATION

DATA DISSEMINATION

LISGIS is committed to making statistical data accessible to a wide range of users, including the public, researchers, and policymakers. Through various publications and an online portal (Liberia Data Portal), LISGIS ensures that data is available to inform decision-making, research, and public awareness.

The MME does not publish energy-related data either publicly on a platform or through specific analyses and reports. The DoE team would like to benefit from the expertise of LISGIS to be able to apply the same model in its institution. Due to financial and technical constraints, there are currently no structured internal mechanisms for dissemination across public and parastatals institutions. However, the MME delivers the annual energy balance for AFREC and upon requests to partner organizations like ECREEE on energy efficiency data.

Exchanges with AFREC have been positive since 2015, the MME also has good relations with other AU members at meetings and different institutions use data from the DoE team such as LISGIS, LEC, etc. However, the MME does not seem to be aware of the issues surrounding the use of energy statistics. For the time being, no means have been deployed to give visibility to the work and efforts made by the team to consolidate the national energy balance.

3.6.2 ASSESSMENT AND GAP ANALYSIS

The MME does not conduct any specific dissemination activities. Data supporting policy making is collected ad hoc for each new initiative. This parallel approach can lead to inconsistencies or a lack of robust information to contribute to decision-making promptly. There is a need to strengthen links between the DoE at the MME and other institutions like LISGIS and set up analytical tools and indicators to allow users to conduct analyses or feed into decision-making processes.

Dissemination could be further streamlined by establishing a standard dataset for analytical purposes for distribution by the DoE to potential institutional users within the MME or other institutions. This dataset could show detailed indicators for all energy sources with current and historical data. It could be delivered in a protected Excel format to allow users to feed the data directly into their analytical tools, thus avoiding manual re-entry from different report format.

Finally, there is a need to raise the profile of energy statistics internally at MME and amongst other public and para-public organizations and to raise awareness of the processes and energy statistics activities undertaken by the dedicated DoE. Among other means, dissemination could be via a national annual workshop jointly organized by the MME with involvement from all stakeholders, the private sector, civil society, and the press.

N°	Key issues/gaps	Description
6.1	Data/trend interpretation	Limited knowledge of specific energy modelling/statistics areas at the DoE limits the team's capacity to enhance analysis by interpreting trends or data, effectively using available statistics to produce analytical output, or contributing to regular monitoring or decision-making.
6.2	Limited internal dissemination of statistics and data across institutions	Limited data sharing across public and parastatals institutions to ensure that official statistics can be easily used as inputs for analytical purposes.
6.3	Low public and institutional profile of energy statistics and data collection work	Low visibility of energy statistics processes and outputs limits institutional and public awareness of the importance and use of energy data, hindering its use in decision-making processes, buy-in to support investments in improvements to energy statistics, and understanding and participation of partner institutions.

Table 10: Diagnosis of dissemination and analysis

3.7 ANALYSIS AND RECOMMENDATIONS

3.7.1 SWOT ANALYSIS

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

Strengths

- Strong willingness within the MME specialized team to improve and develop energy statistics
- Good relationship with AFREC since 2015, of which trainings session received from AFREC in 2024.
- Robust data supplier network within the country
- Strong partnership with international stakeholders like AFREC, ECREEE.

Weaknesses

- Limited expertise and time capacity on specific energy end-uses sub-sectors and advanced analytics skills and tools (energy modelling)
- No public dissemination of finalized data and energy balance
- Lack of official nomination of contact points in the institutions to facilitate communication and data collection
- Limited resources and time capacity within the MME to produce and disseminate detailed in-depth analyses on energy statistics

Opportunities

- Relationships with data providers are generally positive despite low collaboration
- Develop relationships with other AU members countries
- The work of LISGIS that can support the continued development of data collection

Threats

- No external validation from stakeholders or validation workshop in place to ensure data quality and robustness
- Limited primary data collection for all related fields to end-use consumption and requiring surveys
- Biased energy balance statistics due to weak data collection from data providers

Figure 6: SWOT Analysis

Based on the results of the diagnostic and gap assessment, we recommend that high-level energy statistics on consumption, transformation, and supply at the national, sectoral, or sub-national level is well-positioned to remain at the responsibility of the Department of Energy at the MME, which requires reinforcement of the systems and processes. The MME should expand and systematize its collaboration with relevant public institutions and stakeholders to ensure a strong two-way flow of information and inputs between the organizations regarding these statistics, and should retain responsibility for and develop capacity to manage, store, use and disseminate more detailed data required in energy planning and policy assessment processes (infrastructure locations/characteristics, planning data sets on electricity demand, technology costs, etc.) that are not currently covered.

Five key recommendations for strengthening Liberia's energy statistics emerge from the diagnosis and gap assessment. These recommendations are designed to build on the strengths of the statistics processes and team, address the primary weaknesses or threats identified in the SWOT analysis above, and align with the IRES recommendations where possible. The recommendations are classified according to their importance, and each bullet point in the list below represents a specific objective for developing energy statistics in Liberia.

3.7.2 RECOMMANDATIONS

1. Set up an effective institutional environment

➜ **A. Formalize institutional relations and data sharing agreements with partners institutions**

the lack of understanding and interest in the provision of energy statistics for the DoE's team 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 understanding the challenges. These agreements could take the form of MoUs or NDAs.

➜ **B. The MME and the LISGIS must collaborate closer**

to harmonize data collection methodologies, integrate energy statistics into national surveys and censuses, and implement quality control mechanisms.

2. Improve data quality and coverage

➜ **A. Reinforce data exchanges**

Over the short term, this consists of strengthening data-sharing mechanisms to improve the reliability and accessibility of information. This can be implemented by standardizing reporting protocols and developing standard templates and methodologies for data collection and reporting to ensure consistency.

➜ **B. Instate formal data verification and validation processes**

implementing quality control measures to ensure data accuracy before integration into the NEIS. This could be achieved by instating validation workshops that group all key stakeholders from national and institutional bodies to potential private sector actors to share finalized data outputs and relevant analyses, welcoming their feedback to help identify data gaps, inconsistencies, and areas of further improvement.

➜ **C. Integrating energy-specific questionnaires into national census and socio-economic surveys will provide detailed end-use data or reliable estimation assumptions.**

➜ **D. Set-up cross-institutions training / capacity sessions on energy Statistics/Economics, and data analysis to expand the analytical output of the team, in order to share best practices and skills**

The role of the LISGIS is to collect data, produce energy statistics, and analyse specific subjects. Currently, the DoE team reports a lack of time, resources, and skills to invest in using energy statistics to generate analytical output (sectoral policy analyses, forecasts, etc.) in support of policy making or public debate outside of contributing to specific MME projects.

3. Upgrade statistical tools to the requirements of a NEIS

➜ **A. Develop data management capacity**

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

➜ **B. Elaborate a tool for MME to facilitate compiling and tracking statistics, including visualization and analytics**

Technical management of the tool should be housed in MME. Still, access should be granted to LISGIS and other identified end-users for improved cooperation and transparency with both organizations involved in the tool's specification.

➜ **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 is 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. A number of indicators can be put in place to help facilitate this step for the senior planner.

➜ **D. Establishment of shared databases across involved institutions in the statistic process**

and automated data exchange protocols for real-time integration.

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 other national institutions. 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 MME's team 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 should include the leading public sector stakeholders, private sector, civil society, and press and be hosted by MME.

5. Consolidate and perpetuate energy statistics processes

➜ **A. Review and evaluate 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. A review should be conducted every 3-5 years.

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

currently, there is no formalized processes. However, with the establishment of a National Team Working Group, it will be important to develop a user guide and manual for key tools and processes as training materials to ensure that knowledge and processes are institutionalized and perpetuated in the event of turnover in the team.

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 32 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$159,000 to US$226,000 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 Liberia, integrating a data unit in the MME.

4.1 IDENTIFICATION AND PRIORITIZATION OF REQUIRED ACTIONS

The table below outlines the key actions necessary to implement each recommendation effectively. These actions are prioritized using an analytical framework that evaluates them based on two key criteria: their expected impact in achieving the primary objectives and the level of effort or resources required for execution. A project is classified as high effort if it entails significant financial costs, substantial human resource demands, or relies heavily on external factors beyond the direct control of the relevant stakeholders. The impact assessment considers the extent to which each action contributes to the goal of establishing a National Energy Information System (NEIS) and the specific objectives detailed in the second column of the table.

Based on this classification, the action items are grouped into four priority categories, as illustrated in the diagram below.

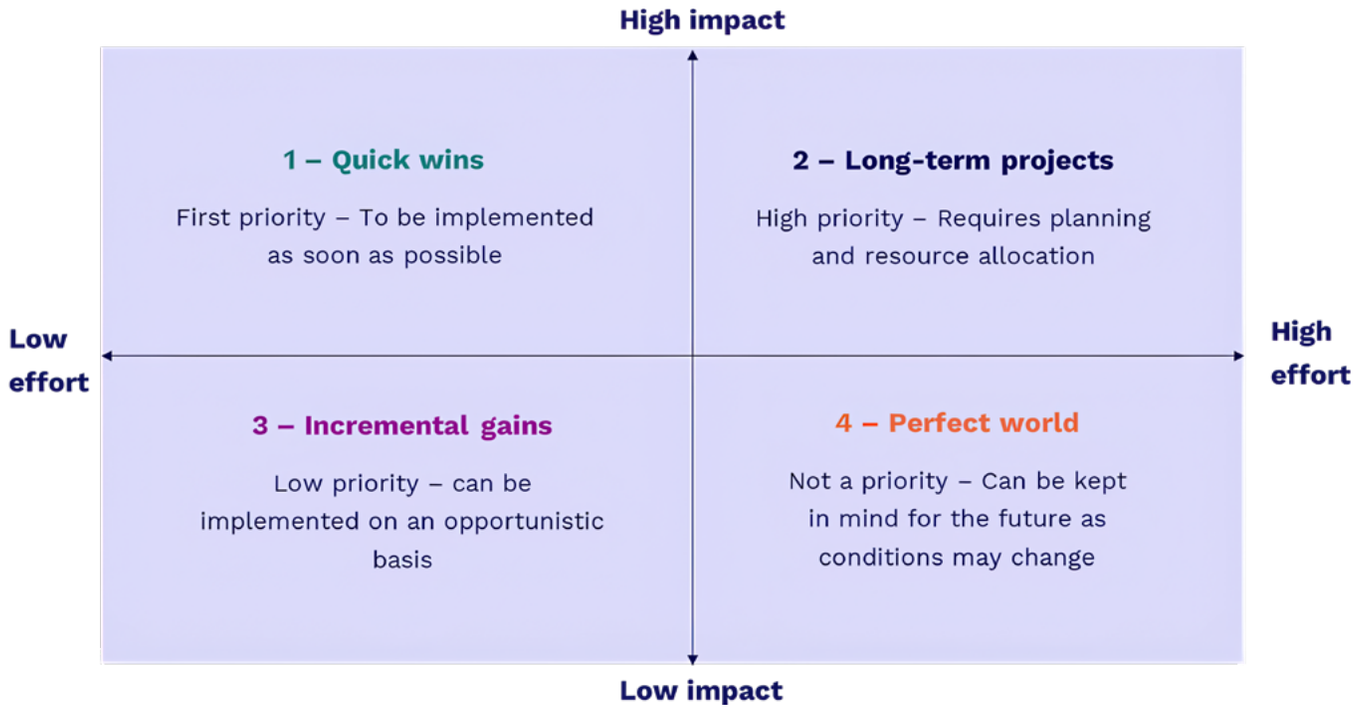

Figure 7: Prioritization matrix

Items classified with **"1"** are actions that can be undertaken with little planning and few resources but are expected to have a substantial impact. Items classified with **"2"** are projects expected to contribute to statistics development but require significant planning and resource allocation to bear fruit. Items classified with **"3"** or **"4"** are generally considered lower priority and can be addressed opportunistically.

Recommendations	Specific Objectives	N°	Action	Priority
1 Set up an effective institutional environment	**A. Formalize institutional relations and data sharing agreements with partners institutions**	1A.1	*Establish MoUs and NDAs to involve partners more closely in submitting data to the MME's team.*	**1**
		1A.2	*Set up an annual validation meeting and nominate focal points of each partner to define the Ministry's needs and the requirements for producing energy statistics.*	**1**
	B. The MME and LISGIS must collaborate closer to harmonize data collection methodologies	1B.1	*Involving DoE team members of MME in discussions with LISGIS to set the yearly production calendar.*	**1**
		1B.2	*Set up an annual validation meeting with LISGIS to define the Ministry's needs and the requirements for producing energy statistics. Improved collaboration and information sharing should enable the DoE team to understand the data processing methods used by LISGIS and to benefit from their expertise.*	**1**
2 Improve data quality and coverage	**A. Reinforce data exchanges**	2A.1	*Standardize reporting protocols by developing templates and methodologies for data collection and reporting to ensure consistency across different institutions.*	**1**
		2A.2	*Review the data collection questionnaires with the partners institutions to adapt them and obtain more disaggregated information.*	**1**
		2A.3	*At a later stage, an interagency data exchange platform can be developed. This digital platform gathers all relevant data providers and shares and validates data in real time.*	**3**

2 Improve data quality and coverage	**B. Instate formal data verification and validation processes**	2B.1	*Implement quality control measures to ensure data accuracy before integration into the NEIS. This could be achieved by establishing validation workshops gathering all key stakeholders from national and institutional bodies to potential actors from the private sector to share finalized data outputs and relevant analyses and welcome their feedback to help identify data gaps, inconsistencies, and areas of further improvement.*	**1**
	C. Integrating energy-specific questionnaires into national census and socio-economic surveys	2C.1	*Work with the LISGIS to improve primary data on end-uses.*	**1**
		2C.2	*Conduct updated surveys for biomass, end uses of electricity, energy end use, and EE (or other subjects) as necessary to update assumptions and data.*	**2**
	D. Set-up cross-institutions training / capacity sessions on energy Statistics/ Economics, and data analysis to expand the analytical output of the team, in order to share best practices and skills	2D.1	*Train the statistics team on basic energy data analysis and data visualization techniques.*	**1**
		2D.2	*Select a data analysis and modelling focal point in the team to receive more advanced training on energy statistics, energy economics and other analytical methodologies.*	**2**
		2D.3	*Generate a shared data repository that centralizes all training materials or relevant documents for the team.*	**2**
3 Upgrade statistical tools to the requirements of a NEIS	**A. Develop data management capacity**	3A.1	*Train the 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 or IT specialist, with more in-depth training on databases and data management techniques.*	**1**
	B. Elaborate a tool for MME to facilitate compiling and tracking statistics, including visualization and analytics	3B.1	*Identify the key requirements for an infrastructure design and develop functional specifications and a phased development plan.*	**1**
		3B.2	*Develop, test and operationalize statistical infrastructure design according to the plan.*	**2**
		3B.3	*Train the DoE energy statistics team on options for NEIS structure and design and on essential management of a tool development process.*	**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 monitoring data quality, regular monitoring to verify compliance of statistics outputs with international recommendations, etc.*	**2**
	D. Establishment of shared databases across involved institutions in the statistic process	3D.1	*Establishment of shared databases and automated data exchange protocols for real-time integration.*	**3**
		3D.2	*Involving data providers in discussions with the DoE to set the yearly production calendar.*	**3**

4 Structure and Facilitate Data Dissemination	**A. Publish an annual report and dataset for public dissemination**	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 (MME website, LISGIS website, new web platform etc.)*	**2**
		4A.3	*Train the team members in fundamental energy data analysis and visualization techniques through AFREC NEIS & Capacity Building Short Courses.*	**2**
		4A.4	*Gradually expand analytical outputs to publish 1-2 thematic analyses per year on relevant topics as resources allow.*	**3**
	B. Raise the profile of energy statistics by holding an annual national workshop to present the Energy Balance and headline statistics for energy	4B.1	*Hold annual workshops to present the data and report to key stakeholders from government, development partners, the private sector, and civil society to build understanding and cooperation and raise the visibility of statistics activity and analyses. This should include the leading public sector stakeholders, the private sector, civil society, and the press and be hosted by MME.*	**3**
5 Consolidate and perpetuate energy statistics processes	**A. Review and evaluate statistics process, outputs, and training needs on a regular basis**	5A.1	*Regular monitoring of statistics processes and outputs is conducted to identify necessary adaptations or improvements.*	**3**
	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	*Ensure that any new tool is delivered with appropriate user documentation.*	**1**
		5B.3	*Develop the National Energy Statistics guidelines to document the energy data processing steps.*	**3**

Table 11 : Recommendations

4.2 IMPLEMENTATION PLAN

The figure below summarizes the essential phases of implementation envisaged for the recommended actions to establish a NEIS in Liberia

In **Phase 1**, through December 2025, the focus is on the plan's finalization, raising awareness, and implementing an initial set of "quick win" actions (marked as priority **"1"**) to improve data quality and build capacity.

Starting in 2026, **Phase 2** sees the continued implementation of quick-win actions 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"**) must be prepared and resourced.

At the same time, **Phase 3** extends over two years in 2027-2028 and sees the implementation of the majority of the significant actions for improving energy statistics, including a statistics infrastructure design and surveys on the biomass and end-use sub-sectors. Given the nature of the actions in Phase 3, most financial resource requirements are concentrated during this period.

Phase 4, starting in 2029, focuses on monitoring and adapting the adopted processes and tools as necessary and on making incremental gains through the opportunistic implementation of actions labelled priority **"3"**.Table 11 includes a detailed implementation plan, estimated resources, indicators, and timelines.

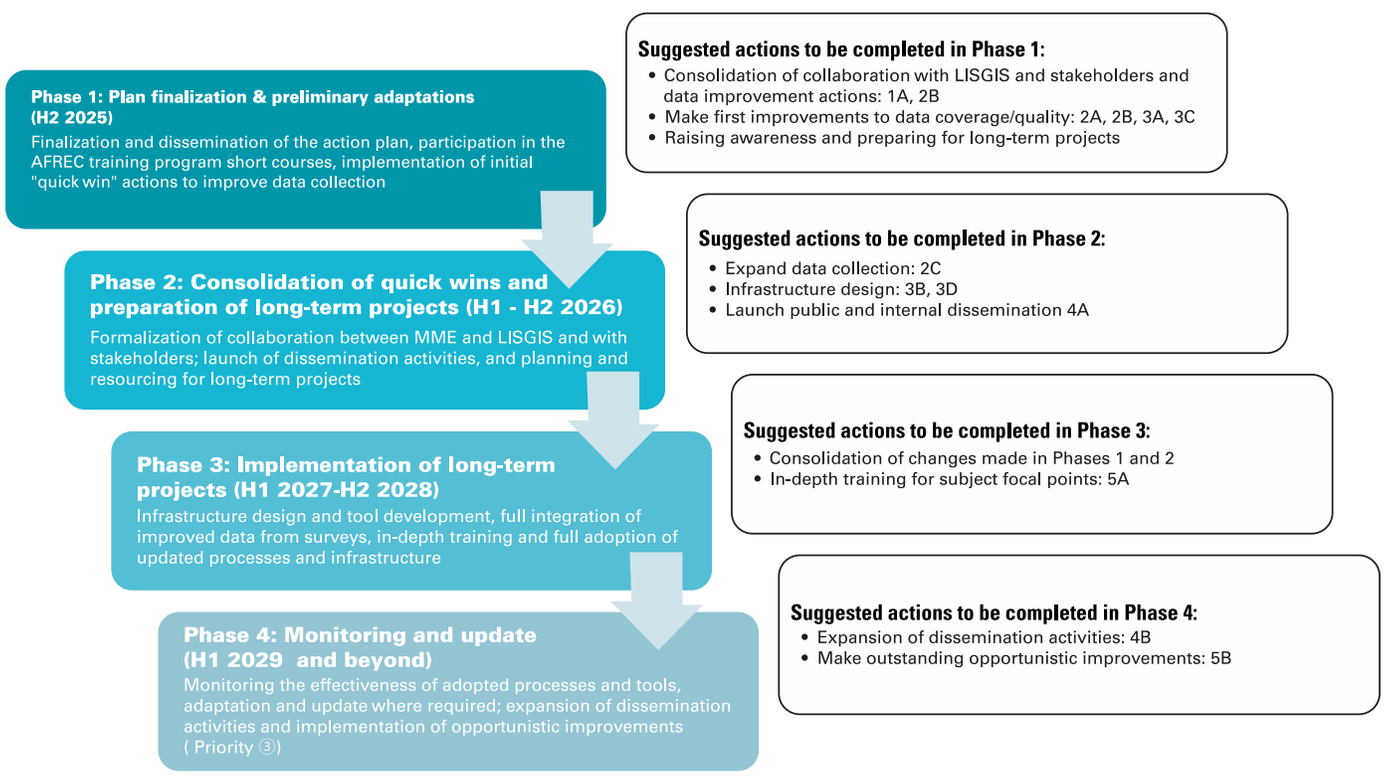

Figure 8: Indicative implementation phases

Recommendation / General objectives	Specific Objectives /Expected Results	N°	Action	Priority	Resources HR: Human Resources (FTE)[8] FR: Financial Resources (US$)	Indicators/Means of Verification	Implementation calendar (start date)
1 Set up an effective institutional environment	**1A. Reinforce data exchanges**	1A.1	*Establish MoUs and NDAs to involve partners more closely in submitting data to the MME's team.*	**1**	**HR: 8-10 weeks support from hierarchy department** **FR: Limited**	**HR: 8-10 weeks support from hierarchy department** **FR: Limited Clarify working relationships between institutions.** **Data submissions deadlines respected.**	**H1 2026**
		1A.2	*Set up an annual validation meeting and nominate focal points of each partner to define the Ministry's needs and the requirements for producing energy statistics.*	**1**	**HR: 3-4 weeks** **FR: Limited**	**Relevant stakeholders actively and regularly participate in working group meetings to validate statistics.** **Focal points are identified.**	**H2 2025**
	1B. Instate formal data verification and validation processes	1B.1	*Involving DoE team members of MME in discussions with LISGIS to set the yearly production calendar.*	**1**	**HR: 1-2 weeks** **FR: Limited**	**Assigned focal points from DoE and LISGIS to engage in an initial scoping meeting, followed by a signing of a formal collaboration charter that would envisage regular interactions in the framework of punctual group and ad hoc meetings.**	**H2 2025**
		1B.2	*Set up an annual validation meeting with LISGIS to define the Ministry's needs and the requirements for producing energy statistics.*	**1**	**HR: 1-2 weeks** **FR: Limited**	**Annual meeting is held each year.**	**H2 2026**

8 - Full-time equivalent is measured as the sum of the active time spent by each person across all involved members of the personnel. 2 people for 2 weeks = 4 weeks FTE; 1 person for 4 weeks = 4 FTE; 2 people for 1 week and 1 person for 2 weeks= 4 FTE. Does not reflect the total time required to complete the task (for example 4 weeks FTE may be spent over 6 months)

2 Improve data quality and coverage	**A. Reinforce data exchanges**	2A.1	*Standardize reporting protocols by developing templates and methodologies for data collection and reporting to ensure consistency across different institutions.*	**1**	**HR: Limited** **FR: Limited (internal work)**	**Produce Excel and Word templates for dissemination to data providers and detail reporting processes in a formal document.**	**H2 2025**
		2A.2	*Review the data collection questionnaires with the partners institutions to adapt them and obtain more disaggregated information.*	**1**	**HR: 3-4 weeks** **FR: $15,000/$20,000 is outsourced to an external consultancy**	**Questionnaires are developed to Liberia's energy specificities and widely share to relevant stakeholders.**	**H1 2026**
		2A.3	*At a later stage, an interagency data exchange platform can be developed. This digital platform gathers all relevant data providers and shares and validates data in real time.*	**3**	**HR: 1-2 weeks** **FR: Limited**	**Discussions are engaged and requirements specifications are defined.**	**H2 2025**
	B. Improve data collection for energy end-uses	2B.1	*Implement quality control measures to ensure data accuracy before integration into the NEIS. This could be achieved by establishing validation workshops.*	**1**	**HR: 4 weeks** **FR: Limited / $10,000 is outsourced to an external consultancy (2 weeks)**	**Data are accurate and quality is controlled. Questionnaires are updated with quality indicators.** **Initial mapping of relevant stakeholders appointed focal points to be inviting. The workshop is scheduled.**	**H2 2026**
	2C. Establish shared database and automated data exchange protocols in real time	2C.1	*Work with the LISGIS to improve primary data on end-uses.*	**1**	**HR: Continuously** **FR: Limited**	**The assigned FP requirements are identified.**	**H1 2026**
		2C.2	*Conduct updated surveys for biomass, end uses of electricity, energy end use, and EE (or other subjects) as necessary to update assumptions and data.*	**2**	**Varies by type and size of survey**	**New primary data are included in the current year's statistics.** **The assumptions for estimating the additional values are updated.**	**Continuously every 5 to 7 years**

2 Improve data quality and coverage	**2D. Integrating energy-specific questionnaires into pre-scheduled national census and socio-economic surveys**	2D.1	*Train the statistics team on basic energy data analysis and data visualization techniques.*	**1**	**HR: <1 week** **FR: Limited**	**At least one member of the team has attended the AFREC short course.**	**H2 2025**
		2D.2	*Select a data analysis and modelling focal point in the team to receive more advanced training on energy statistics, energy economics and other analytical methodologies.*	**2**	**HR: 2 weeks** **FR: Limited**	**Focal points have received at least 1 week of intensive training.**	**H1 2026**
		2D.3	*Generate a shared data repository that centralizes all training materials or relevant documents for the team.*	**2**	**HR: < 1 week for compiling and organizing documents** **FR: Limited**	**The statistics team has access to the shared drive.** **The drive contains all relevant documentation and training materials.** **The drive is regularly maintained and well-organized.**	**H2 2026**
3 Upgrade statistical tools to the requirements of a NEIS	**A. Develop data management capacity**	3A.1	*Train the team on basic data management principles and best practices focusing on Excel (AFREC Short Courses).*	**1**	**HR: 2 weeks** **FR: Limited**	**At least two members have been trained.** **Refer regularly to AFREC training courses and materials provided to focal points.**	**H2 2026**
		3A.2	*Select and train 1-2 team members as data management focal points or IT specialist, with more in-depth training on databases and data management techniques.*	**1**	**HR: 2 weeks** **FR: Depending on training format (in-person ~$5,000 for two-person weeks; online <$3,000)**	**The team has held a meeting on data management and statistics.** **Additional training opportunities are identified.**	**H2 2026**

3 Upgrade statistical tools to the requirements of a NEIS	**B. Elaborate a tool for MME to facilitate compiling and tracking statistics, including visualization and analytics**	3B.1	*Identify the key requirements for an infrastructure design and develop functional specifications and a phased development plan.*	**1**	**HR: 4-6 weeks** **FR: ~$20,000/$30,000 if outsourced to an external consultancy**	**Detailed terms of reference with the main features are defined.**	**H2 2026/ H1 2027**
		3B.2	*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.**	**H2 2026/ H1 2027**
		3B.3	*Train the DoE energy statistics team on options for NEIS structure and design and on essential management of a tool development process.*	**2**	**HR: <1 week** **FR: Limited**	**At least two members of the team from the team, ideally with an IT specialist.**	**H2 2026**
	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**	**HR: <1 week** **FR: Limited**	**Quality assurance checks are fully managed.**	**H2 2026**
		3C.2	*Add relevant tools in the statistical infrastructure to help monitoring data quality, regular monitoring to verify compliance of statistics outputs with international recommendations, etc.*	**2**	**HR: < 1 week** **FR: Limited**	**Control tools are validated, and team members are trained on international standards.**	**H1 2027**

3 Upgrade statistical tools to the requirements of a NEIS	**D. Establishment of shared databases across involved institutions in the statistic process**	3D.1	*Establishment of shared databases and automated data exchange protocols for real-time integration.*	**3**	**HR: 4 weeks** **FR: ~$20,000 if outsourced internally**	**Identified data are migrated to the tool.**	**2029 and beyond**
		3D.2	*Involving data providers in discussions with the DoE to set the yearly production calendar.*	**3**	**HR: Limited** **FR: Limited**	**Tool and user documentation are delivered**	**2029 and beyond**
4 Structure and Facilitate Data Dissemination	**A. Publish an annual report and dataset for public dissemination**	4A.1	*Identify indicators and metadata for inclusion in public dataset and report and generate templates.*	**1**	**HR: 4-8weeks** **FR: Limited**	**The DoE design a template with main indicators/figures and analyses and approve for dissemination to public.**	**H1 2027**
		4A.2	*Populate and publish the report and dataset on a regular basis on an appropriate platform (MME website, LISGIS website, new web platform etc.)*	**2**	**HR: 1 week per cycle** **FR: Web publishing limited (depending on the web platform used) or none if distribution limited**	**Dissemination mechanisms are identified.** **The dataset is available to institutions promptly supported by newsletter communication.**	**H1 2027**
		4A.3	*Train the team members in fundamental energy data analysis and visualization techniques through AFREC NEIS & Capacity Building Short Courses.*	**2**	**HR: < 1 week** **FR: None**	**Refer regularly to AFREC training courses and materials provided to focal points.**	**H2 2026**
		4A.4	*Gradually expand analytical outputs to publish 1-2 thematic analyses per year on relevant topics as resources allow.*	**3**	**HR: Variable (~2-8 weeks per thematic analysis depending on subject)** **FR: Limited depending on budget**	**At least 1 additional report is published each year.**	**2029 and beyond**

4 Structure and Facilitate 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**	4B.1	*Hold annual workshops to present the data and report to key stakeholders from government, development partners, the private sector, and civil society to build understanding and cooperation and raise the visibility of statistics activity and analyses. This should include the leading public sector stakeholders, the private sector, civil society, and the press and be hosted by MME.*	**3**	**HR: 3 weeks per workshop** **FR: ~$1,000 conference package**	**1 workshop per year is held to promote statistics activities** **Media coverage of event and statistics results.**	**H2 2027**
5 Consolidate and perpetuate energy statistics processes	**A. Review and evaluate statistics process, outputs, and training needs on a regular basis**	5A.1	*Regular monitoring of statistics processes and outputs is conducted to identify necessary adaptations or improvements.*	**3**	**HR: 2 weeks** **FR: Limited**	**The updated auto-evaluation report identified required process adaptations, training needs for the team, or areas of improvement.** **International methodologies and standards are part of the requirements.**	**On a rolling basis every 3-5 years**

5 Consolidate and perpetuate 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**	**HR: < 1 week FR: Limited**	**User manual and methodologies are used by team members.**	**H1 2026**
		5B.2	*Ensure that any new tool is delivered with appropriate user documentation.*	**1**	**HR: < 1 week FR: Limited**	**Training materials, relevant documents are centralized, stored internally and widely shared to the statisticians.**	**H1 2026**
		5B.3	*Develop the National Energy Statistics guidelines to document the energy data processing steps.*	**3**	**HR: 6-8 weeks FR: Limited**	**Written manual of procedures for data collection and compilation, and glossary of key indicators' definitions**	**Opportunistically**

Table 12: Action plan

5 APPENDICES

5.1 SUMMARY RESULTS OF THE DIAGNOSTIC & GAP ANALYSIS

N°	Key issues/gaps	Description
Institutional environment		
1.1	Lack of coordination between stakeholders	Further collaboration and coordination between the stakeholders and the different institutions are needed to ensure the efficient sharing of relevant data flows.
1.2	Lack of stakeholder engagement	No codified process allows stakeholders and data providers to engage and validate energy statistics.
1.3	Lack of collaboration between the LISGIS and the MME	The DoE faces difficulties to collaborate with the LISGIS regarding energy statistics. They have the expertise and would like to benefit from it.
Human & material resources		
2.1	No tailored and specialized energy data management and software training for MME	Despite having a designated statistics team, additional training is required to gain confidence and ownership with energy-specific analytical methodologies and statistics.
2.2	Skills gap	Although they have skilled personnel, there is a need for more advanced technical expertise, especially in areas like data analytics, advanced energy modelling, and forecasting. This gap sometimes limits their ability to fully leverage modern tools and methodologies. Support from LISGIS could be set up.

2.3	Need for capacity building on advanced Excel/Data management skills	Statistics officers are using an Excel template provided by AFREC. However, much of the statistics officers' time is spent on repetitive tasks that could be streamlined with more efficient data management or advanced Excel skills.
2.4	There is a need for improved IT infrastructure at MME to manage energy data.	The DoE needs a centralised data management system and tools to facilitate the collection, analysis and dissemination of data.
Data collection & quality		
3.1	Lack of data on end-uses	No available data on the end-use subsector; only aggregated estimated data, surveys or other primary data are required to get additional data.
3.2	Challenges engaging with partner institutions for data collection	Lack of capacity and lack of awareness in partner institutions of the importance of collecting and processing energy data and turnover of focal points or management changes causes difficulties in collecting data; need for nominating and training for the main focal points.
3.3	Upgrade tools and capacity	Implement more advanced tools for data analysis and invest in capacity-building for the team.
Data processing		
4.1	Lack of a dedicated tool for tracking and compiling energy statistics	The current Excel spreadsheets are not interlinked into a structured tool, so compilation and calculation must be done manually. The Ministry needs its proper system that can be centralized data from partners and be used for data manipulation.
4.2	Lack of data processing skills	The DoE team highlighted a need for improving internal skills on data processing and data management.
4.3	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.
Quality assurance & validation		
5.1	Limited internal checks in the Excel infrastructure	Internal checks are time-consuming for statistics officers, as the lack of a structured tool limits the capacity for automated checks and error identification.
5.2	Lack of an external validation process	They need to implement a process, such as an annual workshop or technical committee, to ensure the active participation of institutions/agencies in a comprehensive validation process through a yearly meeting. This will allow them to benefit from various stakeholders' insights and further review, provide technical input, and validate.
5.3	No information on indicator reliability or checks against international standards	Quality assurance processes remain relatively simple and do not include an accurate classification of indicators by "reliability" to indicate the confidence level concerning the accuracy of outputs or their compliance with international standards. Therefore, they do not highlight the areas where data should be improved over the long run. This is, thus, one of the areas needing improvement and/or upskilling.
5.4	Communication with other institutions regarding feedback on methodologies and data quality	Communicating with other institutions in Liberia regarding their own internal methodologies and the resulting quality/accuracy of data provided can be challenging.

Dissemination		
6.1	Data/trend interpretation	Limited knowledge of specific energy modelling/statistics areas at the DoE limits the team's capacity to enhance analysis by interpreting trends or data, effectively using available statistics to produce analytical output, or contributing to regular monitoring or decision-making.
6.2	Limited internal dissemination of statistics and data across institutions	Limited data sharing across public and parastatals institutions to ensure that official statistics can be easily used as inputs for analytical purposes.
6.3	Low public and institutional profile of energy statistics and data collection work	Low visibility of energy statistics processes and outputs limits institutional and public awareness of the importance and use of energy data, hindering its use in decision-making processes, buy-in to support investments in improvements to energy statistics, and understanding and participation of partner institutions.

Table 13: 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 14 : Costing assumptions

5.3 BIBLIOGRAPHY

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

- **National Energy Policy an Agenda for Action and Economic and Social Development, 2009 Liberia**
- **Project Concept Stage and Introduction, 2024**

5.4 LIST OF INTERVIEWS

The following interviews were held with stakeholders in support of the diagnostic and action plan development:

N°	DATE	ATTENDANCE	SUBJECT
1	20/12/2024	Badria MEGHEZI, Baptiste ALLAFORT, Thierry BADOUARD (Enerdata) **(Hon. Charles Umehai Team Lead)** Ckor GUZEH, Zahn KOTEE, Moyan FLOMO, Rufus borbor , Joebaline , Danwin HOFF (DoE, MME) Clayton Somwarbi, Rufus Borbor	Institution & Resources, processes
2	11/06/2025	Badria MEGHEZI, Thierry BADOUARD (Enerdata), **(Hon. Charles Umehai Team Lead)** Ckor GUZEH, Zahn KOTEE, Moyan FLOMO, Joebaline , Danwin HOFF (DoE, MME)	Institution & Resources, processes

Table 15: List of interviews

5.5 QUESTIONNAIRES

Included as separate files

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