

# ENERGY

## SECTOR REPORT

### 2024



2024



## **VISION**

To be the benchmark of excellence in energy regulation in Africa by 2026



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Efficiently regulate the energy sector and be responsive to stakeholder needs to achieve sustainable, reliable, and quality energy products and services.



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## ABBREVIATIONS

<b>BESS</b>	Battery Energy Storage System
<b>BPS</b>	Bulk Petroleum Supply
<b>BSA</b>	Bulk Supply Agreement
<b>CBD</b>	Central Business District
<b>CEC</b>	Copperbelt Energy Corporation Plc
<b>ESI</b>	Electricity Supply Industry
<b>ERB</b>	Energy Regulation Board
<b>GRZ</b>	Government of the Republic of Zambia
<b>HFO</b>	Heavy Fuel Oil
<b>INDENI</b>	INDENI Energy Company Limited
<b>IPP</b>	Independent Power Producer
<b>IDC</b>	Industrial Development Corporation
<b>KNB</b>	Kariba North Bank
<b>KNBEPC</b>	Kariba North Bank Extension Power Corporation Limited
<b>KPI</b>	Key Performance Indicator
<b>LPG</b>	Liquefied Petroleum Gas
<b>LHPC</b>	Lunsemfwa Hydropower Company Limited
<b>MD</b>	Maximum Demand
<b>MoE</b>	Ministry of Energy
<b>NECL</b>	Ndola Energy Company Limited
<b>NFT</b>	Ndola Fuel Terminal
<b>NWEC</b>	Northwestern Energy Corporation Limited
<b>OMC</b>	Oil Marketing Company
<b>PPA</b>	Power Purchase Agreement
<b>PQD</b>	Power Quality Directives
<b>PQMS</b>	Power Quality Management System
<b>PSA</b>	Power Supply Agreement
<b>PCP</b>	Public Consultation Paper
<b>REA</b>	Rural Electrification Authority
<b>SADC</b>	Southern Africa Development Community
<b>SAPP</b>	Southern Africa Power Pool
<b>TPPL</b>	TAZAMA Petroleum Products Limited
<b>TAZAMA</b>	TAZAMA Pipelines Limited
<b>UPP</b>	Uniform Pump Price
<b>ZABS</b>	Zambia Bureau of Standards
<b>ZEMA</b>	Zambia Environmental Management Agency
<b>ZSA</b>	Zambia Statistics Agency
<b>ZPL</b>	Zengamina Power Company Limited
<b>ZESCO</b>	ZESCO Limited

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- National Airports Corporation
- Ndola Energy Company Limited
- Northwestern Energy Corporation Limited
- Office for Promotion of Private Power Investment
- Oil Marketing Companies
- Road Transport and Safety Agency
- Rural Electrification Authority
- Southern African Power Pool
- TAZAMA Pipelines Limited
- TAZAMA Petroleum Products Limited
- Zambia Atomic Energy
- Zambia Revenue Authority
- Zengamina Power Limited
- ZESCO Limited

# FOREWORD



The 2024 Energy Sector Report presents an in-depth review of Zambia's energy landscape, highlighting key developments, challenges, and policy interventions undertaken during the year. As Zambia continues its transition towards a more sustainable and diversified energy sector, this report provides critical insights into the performance of the electricity, petroleum, and renewable energy sub-sectors.

In 2024, the energy sector experienced significant challenges, particularly due to the effects of the severe drought, which impacted hydropower generation and led to a national power deficit of approximately 1,300 MW. In response, the Government declared a National Disaster and implemented emergency measures, including tariff adjustments and increased power imports, to mitigate the effects of load shedding.

The key regulatory developments in the energy sector during the period under review included the promulgation of the Electricity (Open Access) Regulations, No. 40 of 2024. The Open Access framework is designed to facilitate non-discriminatory access by eligible consumers and sellers to the national transmission and distribution system. It also enables independent power

producers to participate directly in electricity trading. This is expected to attract private sector investment in generation, particularly from renewable energy sources.

Additionally, the Electricity (Net-Metering) Regulations, No. 38 of 2024, were promulgated. These regulations allow owners of solar electricity generating systems ("prosumers") with a capacity of up to 5MW to inject excess power into the grid and receive compensation.

The Energy Regulation (General) (Amendment) Regulations, 2024 were also promulgated. These amendments deregulated small-scale renewable energy projects by exempting mini-grid systems up to 5MW from licensing requirements. This was aimed at lowering entry barriers for private developers and facilitates cost-effective off-grid electrification solutions, especially in rural areas.

In the petroleum sub-sector, the Energy Regulation Board (ERB) approved the revised TAZAMA Open Access Guidelines for the transportation of low sulphur gasoil in December 2024. These guidelines will allow private-sector Oil Marketing Companies (OMCs) to access available capacity on the TAZAMA Pipeline. This development is expected to promote equitable participation, reduce logistics costs, enhance operational efficiency, and foster a more competitive petroleum supply chain.

Furthermore, in December 2024, the Energy Regulation (Petroleum Products Price Setting) Regulations of 2024 were enacted. These Regulations are intended to govern the pricing of petroleum products, thereby promoting transparency and improving predictability for business planning. In addition, the Regulations seek to encourage investment by addressing efficiency concerns, ultimately fostering a competitive market that attracts capital and supports the growth of the petroleum sub-sector.

The petroleum sub-sector experienced notable growth, with total consumption increasing by 17.14 percent compared to 2023. LPG and Diesel experienced the largest growth of 51.8 percent and 25.1 percent, respectively. The rise in LPG consumption occurred mainly due to the power deficit as a result of the drought that was



experienced in 2024. These shortages prompted many households and businesses to seek alternative energy sources, with LPG emerging as a preferred option. Similarly, the rise in the national demand for diesel was mainly driven by an increase in demand from retail, electricity generation and mining sub-sectors

As we reflect on the sector's achievements and challenges, it is clear that collaboration among stakeholders remains vital to achieving our national energy goals. ERB remains committed to ensuring a robust regulatory framework that supports sustainable energy development, enhances investment opportunities, and ensures energy

security for all Zambians.

We extend our gratitude to all stakeholders, including government agencies, private sector participants, and development partners, for their invaluable contributions to the sector's growth. It is our hope that this report serves as a valuable resource for policymakers, industry players, and researchers seeking to drive Zambia's energy sector towards a resilient and sustainable future.

We welcome stakeholder feedback on this report, as your insights are key to shaping future energy policies and ensuring the sector meets Zambia's needs. Please share your views through ERB's communication channels.



Eng. Elijah C. Sichone  
**DIRECTOR GENERAL**

A glowing lightbulb is the central focus, encased within a black wire cage. The lightbulb emits a warm, yellowish glow. The background is a dark, out-of-focus night scene with various city lights, including some red and green lights, creating a bokeh effect. The overall mood is mysterious and intriguing.

# INTRODUCTION

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# 1 INTRODUCTION

## 1.1 Global macroeconomic performance in 2024

The global economy was projected to grow by 3.2 percent in 2024, according to the International Monetary Fund (IMF)<sup>1</sup>. This growth was stable compared to 3.3 percent recorded in 2023<sup>2</sup>. Disinflation supported household spending and enabled monetary policy to ease in most major economies, helping offset the uncertainty created by geopolitical and regional tensions and lingering cost-of-living concerns<sup>3</sup>. Additionally, the United States' projected growth for 2024 was revised upward to 2.8 percent, which was 0.2 percentage points higher than the July forecast, due to stronger-than-expected consumption and nonresidential investment. Despite this, risks which could tighten financial conditions, dampen investment and growth, particularly in developing economies leading to capital outflows and debt distress, remained inherent. Further, disruptions to the disinflation process possibly driven by renewed spikes in commodity prices amid ongoing geopolitical tensions hindered central banks from loosening monetary policy, posing significant challenges for fiscal policy and financial stability<sup>4</sup>.

The IMF projected a 5.3 percent growth in Emerging and Developing Asia in 2024 from 5.7 percent in 2023, while growth in China was expected to decline to 4.8 percent in 2024 from 5.2 percent in 2023. The Organization for Economic Co-operation and Development (2024) indicated that economic trends in emerging-market economies were mixed. In China, GDP growth remained stable in the third quarter, supported by robust industrial production and strengthening exports. However, consumer demand remained weak, and the prolonged downturn in the real estate sector persisted. In contrast, domestic demand continued to drive economic expansion in India and Indonesia. Meanwhile, Brazil maintained solid growth, fueled by stronger private consumption and increased government spending.

In Sub-Saharan Africa, growth was projected at 3.6 percent in 2024, like the growth attained in 2023. According to the IMF, resource-intensive countries continued to grow at about half the rate of the rest of the region, with oil exporters struggling the most. Factors dampening growth included conflict, insecurity, drought, and electricity shortages. Secondly, both domestic and external financing conditions continued to be tight, with many countries unable to access or afford financing.

## 1.2 Overview of Domestic Economic Performance

In 2024, preliminary annual Gross Domestic Product (GDP) figures indicated that economic activity grew by 4.0 percent, compared to 5.4 percent in 2023. Despite the lower growth in 2024, the outcome exceeded earlier projections of 1.2 percent by both the IMF and the Bank of Zambia, demonstrating resilience in the face of drought related challenges<sup>5</sup>. The Information and communication sector had the highest growth rate (17.4%); followed by the Arts, Entertainment and Recreation (15.4%); and Accommodation and Food Service Activities (11.1%). Other notable contributors included Financial and Insurance Activities (10.3%); Public Administration and Defence (9.5%); and Mining and Quarrying (8.8%). In contrast, sectors such as Electricity Supply (-28.9%); Administrative and Support Service Activities (-23.9%); Water Supply (-12.2%); and Agriculture, Forestry and Fishing (-9.2%) experienced contractions in 2024<sup>6</sup>.

Annual inflation increased to 16.7 percent in December 2024, up from 13.1 percent in 2023, driven by elevated maize grain prices resulting from drought-induced supply shortages, higher energy prices, sustained electricity load shedding, and the depreciation of the Kwacha against major currencies. The monthly interbank Kwacha-to-Dollar mid-rate exchange averaged K20.21/US\$ in 2023, compared to K26.17/US\$ in 2024. The Bank of Zambia attributed the depreciation of the Kwacha to persistently low foreign exchange supply amid rising demand.

<sup>1</sup><https://www.imf.org/en/Publications/WEO/Issues/2024/10/22/world-economic-outlook-october-2024>

<sup>2</sup><https://www.imf.org/en/Publications/REO/SSA/Issues/2024/10/25/regional-economic-outlook-for-sub-saharan-africa-october-2024>

<sup>3</sup>[https://www.oecd.org/en/publications/2024/12/oecd-economic-outlook-volume-2024-issue-2\\_67bb8fac.html](https://www.oecd.org/en/publications/2024/12/oecd-economic-outlook-volume-2024-issue-2_67bb8fac.html)

<sup>4</sup><https://www.imf.org/en/Publications/WEO/Issues/2024/10/22/world-economic-outlook-october-2024>

<sup>5</sup><https://www.boz.zm/November2024MonetaryPolicyReport.pdf>

<sup>6</sup><https://www.zamstats.gov.zm/wp-content/uploads/2025/03/Vol-264-of-2025-The-Monthly-March.pdf>



Exchange rates and inflation have a significant impact on the energy sector. For instance, oil is priced in U.S. Dollars globally. A weaker Dollar makes oil cheaper for other countries, increasing demand and potentially pushing prices up. Similarly, high inflation increases production and transportation costs, which can drive oil prices higher.

According to the Bank of Zambia, the monthly average prices of copper increased by 8.90 percent from US\$ 8,505.62/MT in 2023 to US\$ 9,261.32/MT in 2024. This was attributed to growing demand from renewable energy sources, electricity grids, electric vehicles, and data centers<sup>7</sup>. Copper production also increased from 732,583.45 MT in 2023 to 820,676.34 MT in 2024. The increase in copper production was associated with an increase in consumption of diesel at 17.4 percent in 2024 compared to 2023.

### 1.3 Overview of Global Energy Performance

According to the International Energy Agency (2025)<sup>8</sup>, global energy use rose by 2.2 percent in 2024, outpacing the 1.3 percent annual average recorded between 2013 and 2023. Electricity consumption increased even more rapidly, growing by 4.3 percent in 2024. This overall rise in energy use was the largest ever recorded, apart from the sharp increases observed during economic recoveries. Renewables comprised the largest share of the growth in global energy supply (38%), followed by natural gas (28%), coal (15%), oil (11%), and nuclear (8%)<sup>9</sup>.

This jump reflects long-term changes in how people and businesses use energy. More homes now have energy-hungry appliances like air conditioners. At the same time, industries are shifting towards electricity-powered processes, and growing demand is coming from data centres, digital services, and artificial intelligence. As a result, electricity accounted for about 60 percent of the total increase in global energy demand.

Global oil demand grew more slowly in 2024, increasing by just 0.8 percent, compared to 1.9 percent in 2023. This slowdown came as post-pandemic travel demand levelled off, industrial activity slowed, and electric vehicles became more common. The 0.8 percent growth was lower than the yearly average of over 1 percent seen before the pandemic and closely matched early forecasts. For the first time, oil's share of total energy use dropped below 30 percent.

China, which had previously seen fast growth in oil use, recorded a sharp slowdown in 2024, with demand rising just 0.8 percent. Other developing countries saw around 1 percent growth. Among different sectors, the biggest increases came from petrochemicals and aviation, while demand for road transport fuel slightly declined.

### 1.4 Performance of the Domestic Energy Sector

This section presents the performance of the domestic energy sector namely the electricity, petroleum and renewable energy sub-sectors.

#### 1.4.1 Performance of the Electricity Sub-sector

In 2024, Zambia's national installed electricity capacity increased to 3,885.86MW from 3,812.06MW in 2023, driven by the Copperbelt Energy Corporation Plc's commissioning of the 60MW Itimpi Solar Photovoltaic Power Plant and installation of 23 by 750kVA standby diesel generators across various markets with a total installed capacity of 13.8MW. Despite this, hydropower generation remained the dominant source, accounting for 81.43 percent of total installed capacity. Total electricity generation sent out declined by 31.26 percent to 13,324.38 GWh in 2024 from 19,372.92 GWh in 2023, primarily due to the severe drought that resulted in reduced water levels in major reservoirs, significantly affecting hydro power generation. Similarly, total national electricity consumption declined by 28.72 percent, from 14,642.2GWh in 2023 to 10,436.3GWh in 2024.

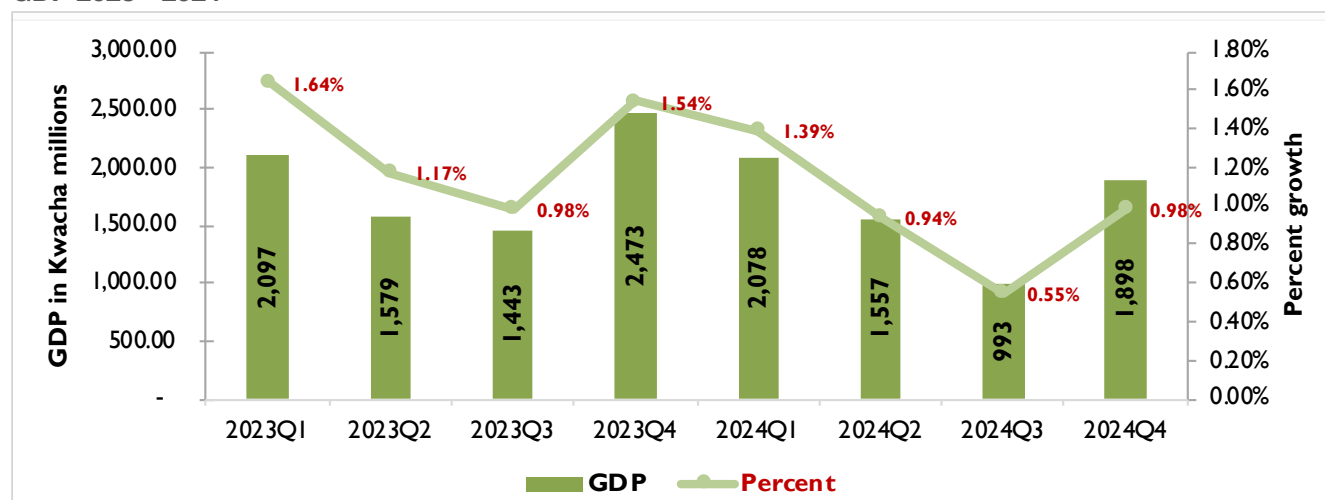
<sup>7</sup> <https://blogs.worldbank.org/en/opendata/metal-prices-set-to-remain-high-in-2024-25>

<sup>8</sup> Global Energy Review 2025

<sup>9</sup> <https://iea.blob.core.windows.net/assets/5b169aa1-bc88-4c96-b828-aaa50406ba80/GlobalEnergyReview2025.pdf>

According to ZAMSTATS, the gross value added and percentage share of the electricity sub-sector contribution to the GDP in 2024 averaged 0.97 percent compared to 1.34 percent in 2023. This decline was associated with the decreased electricity generation in 2024 as depicted in Figure 1.1.

**Figure 1.1: Gross value added and Quarterly percentage share of electricity sub-sector contribution to GDP 2023 - 2024**



During the period under review, the ERB approved a 9 percent upward adjustment in retail electricity tariffs. This was in line with the pre-approved five (5) year ZESCO multi-year tariff plan. However, in October 2024, the ERB approved emergency tariffs which became effective on 1<sup>st</sup> November 2024. The emergency tariffs translated into a further average upward adjustment in retail consumer tariffs by 40.7 percent. The emergency tariff application followed the ERB's declaration of an emergency on ZESCO because of the Utility's inability to meet electricity demand as a result of the country's drought situation in 2024.

Several regulatory and legislative measures were introduced to address challenges in the electricity sub-sector and promote investment. In June 2024, Cabinet approved the Electricity Open Access Market Structure, followed by the promulgation of Statutory Instrument No. 40 of 2024 in July, ensuring non-discriminatory access to the transmission and distribution network for third-party users at a transparently determined fee. Additionally, the Electricity (Net-Metering) Regulations, Statutory Instrument No. 38 of 2024, was enacted to allow renewable energy owners ("Prosumers") with capacities of up to 5MW to inject excess electricity into the grid and receive compensation, encouraging a shift to renewable energy and contributing to generation capacity. Furthermore, through Statutory Instrument No. 52 of 2024, the Government deregulated mini-grids of up to 5MW, exempting them from licensing requirements by the ERB, a move aimed at accelerating renewable energy mini-grid technologies and projects and increasing electricity access in rural areas.

#### 1.4.2 Performance of the Petroleum Sub-sector

In 2024, Zambia's petroleum sub-sector witnessed notable growth, marked by a steady increase in fuel consumption. However, the sector also faced challenges, including fluctuations in fuel prices and intermittent supply disruptions. Despite these hurdles, there was significant progress in the development and implementation of regulatory and policy frameworks. These efforts were strategically aimed at enhancing competition, improving sector efficiency, and fostering an environment conducive to increased investment.

##### Consumption of petroleum products

The overall consumption of petroleum products at the national level saw an increase compared to 2023. The aggregate national consumption of all petroleum products grew by 17.1 percent, rising from 1,627,405.87MT in 2023 to 1,906,383.21MT in 2024. LPG and Diesel experienced the largest growth of 51.8 percent and 25.1 percent, respectively.

The rise in LPG consumption occurred mainly due to the power deficit as a result of the drought that was experienced in 2024. These shortages prompted many households and businesses to seek alternative energy sources, with LPG emerging as a preferred option. Similarly, the rise in the national demand for diesel was mainly driven by an increase in demand from retail, electricity generation and mining sub-sectors.

## Fuel Pricing

During 2024, the ERB continued to determine fuel prices monthly in line with the supply structure for the private Oil Marketing Companies (OMCs). The wholesale and retail prices of petrol, diesel, and kerosene were adjusted based on the Import Parity Pricing (IPP) model. For Jet A-1, this model also was utilized to determine both the wholesale price and the Posted Airfield Price (PAP) at key international airports. The wholesale and retail price build ups were uploaded on the ERB website on a monthly basis.

## Fuel Shortages

In the fourth quarter of 2024, some parts of the country experienced sporadic fuel shortages. These isolated fuel shortages were mainly attributed to logistical challenge. Additionally, the introduction of a new customs law in Zimbabwe prompted fuel transporters to suspend imports through that country and opting for other routes such as Chanida Boarder Post, resulting in extended transit times due to increased routing distances.

## Regulatory Reforms – Open Access

In the fourth quarter of the year, the ERB approved the Open Access Guidelines for the utilization of TAZAMA pipeline. The purpose of these Guidelines was to promote equitable access, allowing all eligible stakeholders to benefit fairly from the use of the pipeline.

## Petroleum Pricing Regulations

In 2024, the petroleum sub-sector underwent significant reforms to enhance market efficiency and transparency. The ERB introduced the Energy Regulation (Petroleum Products Price Setting) Regulations, 2024, to enhance the petroleum pricing mechanism and predictability.

### 1.4.3 Performance of the Renewable Energy Sub-sector

Generally, the country saw an increase in renewable energy entrepreneurial and non-entrepreneurial activities mainly due to the electricity deficit experienced in 2024. The ERB granted 251 licences for the 'Manufacture, Supply, Installation, and Maintenance of Renewable Energy Generating Equipment' representing an increase of 178.9 percent from 90 in 2023 to 251 in 2024. Further, 18 PPAs were approved by the ERB in 2024 with a contracted total capacity of 2,459 MW.

In collaboration with ZABS and support from the United States Agency for International Development (USAID), the ERB developed standards for the quality of biogas for cooking purposes. This initiative aimed to promote the steady growth and utilisation of bioenergy.

Further, the ERB developed comprehensive guidelines for determining electric vehicle (EV) charging services. These guidelines encompass various critical aspects, including the existing infrastructure, the regulatory framework, and future prospects for the development of EV charging in Zambia.

## 1.5 Energy Sector Outlook

According to the Economist Intelligence unit global energy consumption is forecast to grow by 1.6% in 2025. Developed countries will see little, if any, growth within the sector, while developing countries will spearhead demand as their economies expand. However, geopolitical risks threaten investment, environmental regulations and infrastructure.



At the domestic level, the pre-approved multi-year tariff adjustment, which proposes a 15 percent increase in electricity tariffs, is expected to take effect in May 2025. Additionally, it is expected that the Electricity Open Access framework will be operationalised to enhance competition, enhance power trading and attract new investment in the sector.

In the petroleum sector, the full implementation of the Open Access Guidelines for the use of TAZAMA pipeline is expected to take effect in April 2025 to enhance the security of supply for LSG. Further, ERB with support of the UK governments Foreign, Commonwealth and Development Office plans to contract an independent consultant to undertake a study in 2025 to determine the petroleum industry margins for downstream players.

In the renewable energy sub-sector, a 100MW solar power plant in Chisamba is expected to be commissioned to increase the renewable energy mix. The project is being developed by Kariba North Bank Extension Power Company Limited (KNBEPC).

Additionally, with the growth of the renewable energy sub-sector the ERB plans to develop standards for lithium batteries to enhance battery safety.

## **1.6 Structure of the report**

The 2024 Energy Sector Report has seven sections. Each section gives detailed information about respective aspects of the energy sector in 2024. Section 1: Introduction gives a short summary of the global and domestic economy and an overview of the energy sector. Section 2: Developments in the Sector highlights key changes in the energy industry. Section 3: Petroleum Sub-sector looks at fuel supply, usage, and how the sub-sector performed. Section 4: Electricity Sub-sector covers power generation, distribution, and overall performance. Section 5: Renewable Energy Sub-sector provides an update on the growth and progress of renewable energy. Section 6: Licensing in the Energy Sector shows the number of licenses issued, key developments, and outlook. Section 7: Stakeholder Engagements and Complaints Handling are covered in this section. Each section gives detailed information about respective aspects of the energy sector in 2024.



# DEVELOPMENTS IN THE ENERGY SECTOR

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## 2 DEVELOPMENTS IN THE ENERGY SECTOR

Over the years, Zambia's energy sector has evolved in response to new challenges and opportunities. This section outlines the key developments that took place in 2024 in the energy sector.

### 2.1 Key regulatory developments in electricity sub-sector

#### i. Open access

During the period under review, the Electricity (Open Access) Regulations, No. 40 of 2024 were promulgated. The initiative will facilitate non-discriminatory access of eligible consumers and eligible sellers to the national transmission and distribution system. It will further enable independent power producers to participate directly in electricity trading. This is expected to transform the sub-sector through enhanced consumer choice, cost-reflective pricing, and increased private sector investment in generation, particularly in renewable energy. The overall impact will be improved supply reliability, innovation in service delivery, and sustainable electricity market in Zambia.

#### ii. Net-metering

The Electricity (Net-Metering) Regulations No. 38, 2024 were promulgated. The Regulations allow owners of solar electricity generating systems ("Prosumers") with a capacity up to 5MW to inject their excess power into the grid and be compensated for it. Further, in order to support investment and competition in the sector, the ERB introduced the Energy Regulation (General) (Amendment) Regulations, 2024, deregulating small-scale renewable energy projects. This regulation exempted mini-grid systems up to 5MW from licensing requirements, lowering entry barriers for private developers and facilitating cost-effective off-grid electrification solutions in rural areas.

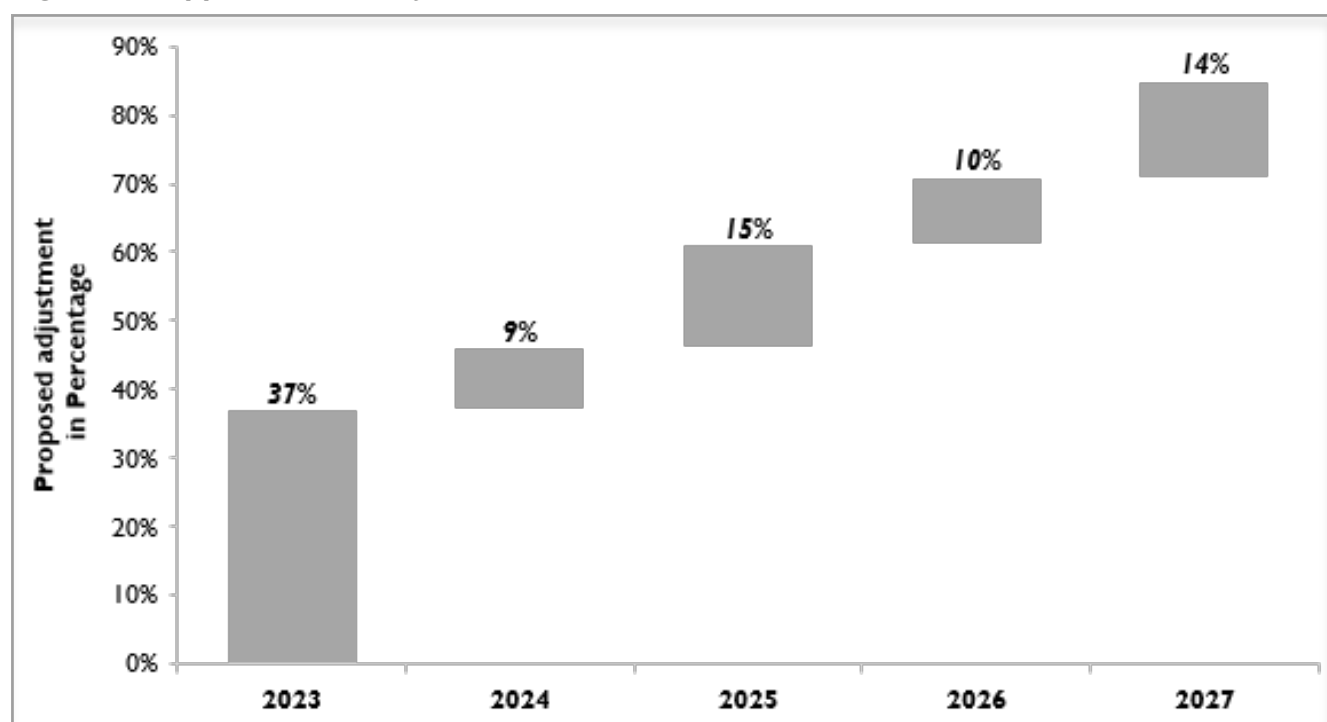
#### iii. EV Guidelines

The ERB, developed comprehensive guidelines for determining electric vehicle (EV) charging services. These guidelines cover various aspects of EV charging in Zambia, including existing infrastructure, regulatory frameworks, and prospects. The aim of the guidelines is to offer regulatory guidance to EV charging service providers and EV owners on various considerations and practices in pricing EV charging services.

#### iv. Multi-Year Tariff Framework

In line with the approved multi-year tariffs for the period 2023-2027 as presented in Figure 2.1., the pre-approved 2024/25 tariffs which adjusted all customer categories by nine (9) percent on average took effect on 1<sup>st</sup> May 2024. The adjustments were effected after an annual true-up exercise which accounted for changes in inflation, fuel costs, exchange rate movement and other unavoidable costs necessary to provide the service.



**Figure 2.1: Approved MYT adjusted tariffs, 2023-2027**

## 2.2 Key regulatory developments in petroleum sub-sector

### i. Petroleum products pricing framework

In December 2024, the Energy Regulation (Petroleum Products Price Setting) Regulations of 2024, were promulgated. The Regulations aim to regulate petroleum products pricing, thereby enhancing transparency and predictability for business planning. Additionally, the Regulations aim to stimulate investment while addressing concerns over efficiency, ultimately fostering a competitive market that draws in investment and contributes to the growth of the petroleum sub-sector.

### ii. Open access guidelines for TAZAMA Pipeline

To further promote efficiency and competition, the ERB approved the Revised TAZAMA Open Access Guidelines for the Transportation of Low Sulphur Gas Oil in December 2024. These Guidelines will enable private-sector OMCs to access the available capacity on the TAZAMA Pipeline. This shift is anticipated to facilitate equitable participation, lowered logistics costs, and enhance efficiency and support a more competitive supply chain in the petroleum sub-sector.

### iii. Fiscal incentives

As part of policy measures to enhance private sector participation, the Government complemented these efforts by driving policy initiatives to attract private investment, including the suspensions of customs duty and zero-rating VAT on the supply of generators and other components and auxiliary items for solar power equipment for the period 1<sup>st</sup> July 2024 to 31<sup>st</sup> December 2027.

A large offshore oil rig is silhouetted against a bright, orange-hued sunset sky. The rig's complex structure, including its derrick and various platforms, is clearly visible. The sun is a large, glowing orb on the left side of the frame, casting a warm light over the entire scene. The ocean surface is dark and textured, with some whitecaps visible in the foreground.

# **PETROLEUM SUB-SECTOR**

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## 3 PETROLEUM SUB-SECTOR

This section provides an overview of the petroleum sub-sector's performance in 2024, covering key aspects such as fuel supply, national consumption trends, market share of OMCs, and pricing dynamics. Additionally, it highlights the regulatory activities undertaken by the ERB to ensure efficiency and sustainability within the sector. The section concludes with an analysis of challenges faced and an outlook on the future of the petroleum sub-sector in Zambia.

The petroleum sub-sector plays a crucial role in Zambia's energy landscape, encompassing both upstream and downstream activities. Key upstream players include TAZAMA Pipelines Ltd and TAZAMA Petroleum Products Limited (TPPL), while the downstream segment consists of Oil Marketing Companies (OMCs), retailers (dealers), transporters, and consumers.

### 3.1 Importation of fuel

In 2024, Zambia's petroleum product imports included Unleaded Petrol, Low Sulphur Gasoil (Diesel), Jet A-1, Heavy Fuel Oil, and Kerosene. The imports were primarily transported by road, with a percentage Low Sulphur Gasoil being moved by pipeline. These imports, handled exclusively by OMCs, are vital for maintaining a steady fuel supply for economic activities. This section reviews the trends and transport modes for these imports from 2023 to 2024.

#### 3.1.1 Importation of refined petroleum products

Table 3.1 presents an overview of petroleum product import trends in Zambia for 2023 and 2024, detailing the import volumes, their percentage share of total imports, and the year-on-year percentage change.

**Table 3.1: Imports of Petroleum products, 2023-2024**

Product (MT)	2023	2024	Share of 2024 imports (%)	Change (%)
Diesel	1,128,719.09	1,500,764.73	73.8	33.0
Unleaded Petrol	418,163.33	447,366.34	22.0	7.0
Jet A-1	52,145.29	59,586.08	2.9	14.3
LPG	9,432.48	15,521.69	0.8	64.6
Heavy Fuel Oil	12,745.65	8,100.46	0.4	(36.4)
Kerosene	2,174.96	1,043.17	0.1	(52.0)
<b>Grand Total</b>	<b>1,623,380.80</b>	<b>2,032,382.47</b>	<b>100.0</b>	<b>25.2</b>

Overall, the total volume of petroleum imports rose by 25.1 percent, from 1,623,380.80 MT in 2023 to 2,032,382.47 MT in 2024. Imports for Diesel, Unleaded Petrol, LPG and Jet A-1 increased from 2023 to 2024 while imports of kerosene and HFO declined. Imports for diesel were by either road or TAZAMA pipeline while the other products were all imported by road transport. Prior to 2023 Zambia's needs for diesel were met through road importation of refined diesel and from refined diesel from INDENI Refinery. In 2021, INDENI refinery was shut down and government started to convert TAZAMA pipeline from carrying crude, to carrying finished diesel. The conversion was completed in 2023. All imports of diesel are now transported either by road or by pipeline. Of the imported diesel (1,128,719.09 MT) in 2023, TAZAMA accounted for 363,365.93 MT from Dar es Salaam, Tanzania, while road transportation accounted for 765,353.16 MT from mainly Beira, Mozambique and Dar es salaam, Tanzania.

In 2024, diesel accounted for 73.8 percent of Zambia's total fuel imports. Between 2023 and 2024 diesel imports increased by 33.0 percent reaching 1,500,764.73 MT. The use of the pipeline increased significantly, with imports through TAZAMA rising by 102.0 percent. This shift towards pipeline transport demonstrates a growing reliance on the TAZAMA pipeline, and reducing dependency on road transport.



### 3.1.2 Liquefied Petroleum Gas (LPG)

Liquefied Petroleum Gas (LPG) imports accounted for the highest growth, increasing by 64.6 percent from 9,432.48 MT in 2023 to 15,521.69 MT in 2024. In 2024, Zambia experienced a climate change-induced drought that affected the country's hydro generating capacity. This led to loadshedding, hence some consumers of electricity opted to use LPG as an alternative energy source for cooking and heating.

### 3.1.3 Jet A-1

In the period under review, Jet A-1 imports recorded a 14.3 percent increase, rising from 52,145.29 MT in 2023 to 59,586.08 MT in 2024. According to the Zambia National Airports Corporation, the main drivers of this increase were growth in tourism and business travel, Government's implementation of visa waivers and upgrades to airport infrastructure.

### 3.1.4 Other fuel imports

The 36.4 percent reduction in HFO imports was compounded by reduced industrial usage and shift towards alternative fuels especially by the mines. Further, Ndola Energy Company Limited which could have contributed to more imports was successfully recommissioned and reconfigured the plant to operate on diesel in 2024.

The reduction in kerosene imports was mainly on account of readily available alternative sources of energy for lighting and heating.

## 3.2 Consumption of petroleum products

This section examines the consumption trends of petroleum products in Zambia for 2023 and 2024. It highlights key changes in product demand, including petrol, diesel, and other fuels, as well as the possible factors influencing the observed consumption patterns.

### 3.2.1 National annual consumption of petroleum products

Generally, national consumption of petroleum products grew by 17.1 percent year-on-year, rising from 1,627,405.87 MT in 2023 to 1,906,383.21 MT in 2024. The increase was primarily driven by higher consumption of Diesel (25.1%), Jet A-1 (12.0%), LPG (51.8%), and Unleaded Petrol (0.6%).

LPG recorded the highest growth rate at 51.8 percent. One of the factors that led to this increase is increased electricity load shedding, which led households and businesses to seek alternative energy sources. Conversely, significant declines were observed in Heavy Fuel Oil (-60.1%), Kerosene (-46.8%), and Avgas (-27.2%), with Heavy Fuel Oil recording the sharpest decline at 60.1 percent. Table 3.2 below highlights the national consumption of petroleum products in 2023 and 2024 while Table 3.3 depicts the same information in terms of average daily consumption. The figures in Table 3.3 are in Litres and Kgs which are derived using the respective product mass and density.

**Table 3.2: Annual national Consumption of petroleum products, 2023-2024**

Product (MT)	2023	2024	% Change
LPG	9,489.32	14,400.20	51.8
Diesel	1,107,067.22	1,385,321.77	25.1
Jet A-1	44,146.91	49,433.51	12
Unleaded Petrol	445,044.58	447,807.83	0.6
Avgas	756.1	550.21	(27.2)
Kerosene	3,918.72	2,085.19	(46.8)
Heavy Fuel Oil	16,983.03	6,784.50	(60.1)
<b>Grand Total</b>	<b>1,627,405.87</b>	<b>1,906,383.21</b>	<b>17.1</b>

**Table 3.3: Daily average consumption of petroleum products, 2023-2024**

Product	2023	2024	% Change
LPG (Kg)	25,998.13	39,344.80	51.3
Gasoil (L)	3,610,786.76	4,505,990.66	24.8
Jet A-1 (L)	151,188.04	168,830.29	11.7
Unleaded Petrol (L)	1,625,733.62	1,631,358.22	0.3
Avgas (L)	2,071.51	1,503.31	(27.4)
Kerosene (L)	13,420.27	7,121.56	(46.9)
Heavy Fuel Oil (Kg)	46,528.85	18,536.89	(60.2)

### 3.2.2 National annual consumption of petroleum products by sector

#### 3.2.2.1 Diesel Consumption

Diesel consumption increased by 25.1 percent between 2023 and 2024. This is depicted in Table 3.4.

**Table 3.4: National Consumption of Diesel by sub-sector and growth, 2023-2024**

Sub Sector	2023	2024	% Consumption 2024	% Change from 2023
Agriculture	30 440.72	28 828.98	2.1	(5.3)
Aviation	29.90	35.47	0.0	18.6
Construction	16 882.07	24 606.25	1.8	45.8
Electricity	5 116.28	75 611.26	5.5	1 377.9
Government	3 484.52	4 538.88	0.3	30.3
Manufacturing	29 785.80	35 709.43	2.6	19.9
Mining	362 638.47	425 689.64	30.7	17.4
Other	104 643.25	107 807.65	7.8	3.0
Retail	436 033.42	551 090.99	39.8	26.4
Transport	118 012.80	131 403.23	9.5	11.3
<b>Grand Total</b>	<b>1 107 067.22</b>	<b>1 385 321.77</b>	<b>100.0</b>	<b>25.1</b>

In terms of shares of consumption, in 2024, the mining and retail sectors accounted for a total of 70.5 percent diesel consumption. This was followed by Transport and Electricity sectors at 9.5 percent and 5.5 percent respectively. The sector that experienced the most growth was electricity mainly on account of energy deficit and the use of diesel generators by industry and households. Conversely, agriculture consumption declined by 5.3 percent.

#### 3.2.2.2 Unleaded Petrol Consumption

Unleaded petrol consumption remained relatively stable between 2023 and 2024. It only increased by 0.6 percent, rising from 445,044.58 MT in 2023 to 447,807.83 MT in 2024. This is depicted in Table 3.5.

**Table 3.5: National Consumption of Petrol by sub-sector and growth, 2023-2024**

Sub Sector	2023	2024	% Consumption 2024	% Change from 2023
Agriculture	1,123.90	243.06	0.1	(78.4)
Construction	25.87	68.89	0.0	166.3
Electricity	32.01	16.29	0.0	(49.1)
Government	870.81	888.88	0.2	2.1
Manufacturing	420.32	219.19	0.0	(47.9)
Mining	618.55	768.94	0.2	24.3
Other	14,242.52	5,263.65	1.2	(63.0)
Retail	426 749.24	439,727.21	98.2	3.0
Transport	961.38	611.71	0.1	(36.4)
<b>Grand Total</b>	<b>445,044.58</b>	<b>447,807.83</b>	<b>100.0</b>	<b>0.6</b>

The retail sector continued to dominate the share of consumption and accounted for 98.2 percent in 2024 of total consumption. The rest of the sectors only accounted for 1.8 percent of the consumption of Unleaded petrol. In terms of growth, the retail sector was fairly stable between 2023 and 2024 at 3 percent only.

### 3.2.2.3 Kerosene Consumption

Between 2023 and 2024, Kerosene consumption decreased by 46.8 percent on account of the use of alternative energy sources. As depicted in Table 3.6 the demand from major users of kerosene such as the Agriculture and retail sub-sectors dropped significantly between 2023 and 2024. Meanwhile, there was an increase in the Transport and mining sub-sectors

**Table 3.6: National consumption of kerosene by sub-sector and growth, 2023-2024**

Sub Sector	2023	2024	% share Consumption 2024	% Change from 2023
Agriculture	25.60	0.00	0.0	(100.0)
Manufacturing	0.00	5.04	0.2	0.0
Mining	136.00	332.14	15.9	144.2
Other	146.40	146.34	7.0	(0.0)
Retail	3,602.72	1,542.94	74.0	(57.2)
Transport	8.00	58.73	2.8	634.1
<b>Grand Total</b>	<b>3,918.72</b>	<b>2,085.19</b>	<b>100.0</b>	<b>(46.8)</b>

### 3.2.2.4 Other fuel products

The demand for Jet A-1 fuel in Zambia increased on account of growth in the aviation industry.

Meanwhile, LPG consumption increased by 51.8 percent, rising from 9,489.32 MT in 2023 to 14,400.20 MT in 2024. This growth is partly attributed to the increased use of LPG as an alternative energy source due to electricity loadshedding induced by the drought.

On the other hand, Heavy Fuel Oil (HFO) consumption fell sharply by 60.1 percent. The significant drop was on account of shift to alternative sources of energy.

“Avgas,” short for aviation gasoline, is a specialized fuel used in aircraft with spark-ignited internal combustion engines, particularly small piston-engine aircraft, and is distinguished from jet fuel and motor gasoline.

Avgas imports decreased from 756.10 MT in 2023 to 550.21 MT in 2024, representing a 27.2 percent decline. Avgas is restricted to operators of small aircrafts whose market is small.

## 3.2.3 Consumption by Retail and Commercial sectors

This section discusses the consumption of petroleum products disaggregated into retail, mining and non-mining sectors only. This is restricted to Low Sulphur Gasoil, Unleaded Petrol, Kerosene and LPG.

### 3.2.3.1 Consumption of Low sulphur gasoil

As depicted in Table 3.7, in 2024 most of the LSG is consumed by the commercial sector comprising mining and non-mining at 60.2 percent. The balance is accounted for by consumption by the retail sub-sector. This configuration remained fairly the same as 2023.



**Table 3.7: Percentage distribution of Low Sulphur Gasoil by sub-sector, 2023-2024**

Year	Mining	Non-mining	Retail
2023	32.8%	27.9%	39.4%
2024	30.7%	29.5%	39.8%

**3.2.3.2 Consumption of unleaded petrol**

In 2024, the retail sector accounted for the largest consumption of unleaded Petrol at 98.2 percent while the rest was consumed by the mining and non-mining customers. Similar to LSG, the pattern of consumption remained the same as that of 2023.

**Table 3.8: Percentage distribution of Unleaded petrol by sub-sector, 2023-2024**

Year	Mining	Non-mining	Retail
2023	0.1%	4.0%	95.9%
2024	0.2%	1.6%	98.2%

**3.2.3.3 Consumption of Kerosene**

The majority of kerosene is consumed by the retail sector, as illustrated in Table 3.9. However, retail consumption declined from 91.9 percent in 2023 to 74.0 percent in 2024. During the same period, consumption by both mining and non-mining sectors increased. Overall, only a limited number of Oil Marketing Companies (OMCs) import kerosene for the retail market. The bulk of imports are undertaken by industrial users and mining companies, which may account for the observed increase in their consumption share between 2023 and 2024.

**Table 3.9: Percentage distribution of Kerosene by sub-sector, 2023-2024**

Year	Mining	Non-mining	Retail
2023	3.5%	4.6%	91.9%
2024	15.9%	10.1%	74.0%

**3.2.3.4 Consumption of LPG**

Retail consumers accounted for most consumption of LPG followed by non-mining customers. This is depicted in Table 3.10. The proportion of retail consumers is expected to grow based on awareness of LPG as an alternative source of energy for cooking and heating.

**Table 3.10: Percentage distribution of LPG by sub-sector, 2023-2024**

Year	Mining	Non-mining	Retail
2023	0.5%	41.2%	58.3%
2024	0.3%	45.5%	54.2%

**3.3 Market share for petroleum products****3.3.1 Market share for LSG, Kerosene and Unleaded Petrol**

This section discusses the market share of OMCs based on combined sales volumes of LSG, Kerosene and Unleaded Petrol. This is depicted in Table 3.11.

**Table 3.11: Market share for LSG, Kerosene and Unleaded Petrol, 2023-2024**

Oil Marketing Company	2023	2024
Puma Energy Zambia PLC	19.8%	22.0%
Mount Meru Petroleum (Z) Ltd	19.1%	17.9%
TotalEnergies Zambia Limited	15.3%	13.5%
Engen Petroleum	6.6%	5.7%
Oryx Energies Zambia Limited	4.1%	4.0%
Ndola Energy Company Limited	0.0%	3.7%
Rubis Energy Zambia Ltd	4.0%	3.6%
Lake Petroleum Ltd	2.7%	2.9%
Karan Petroleum Zambia Limited	2.8%	2.8%
Petroda Zambia Ltd	2.6%	2.7%
Uno Energies Zambia Limited	0.0%	2.6%
Oasis Oil Zambia	2.4%	2.3%
Zhongkuang Zambia Services Co. Ltd	0.9%	1.4%
Hass Petroleum Zambia Ltd	1.2%	1.4%
Eco Petroleum Limited	0.0%	1.3%
SGC Investments Ltd	1.7%	1.3%
Korridor Zambia Fuel Limited	1.0%	1.3%
Harvest	0.7%	1.2%
Spectra Oil Zambia	3.6%	1.0%
Dalbit Petroleum Limited	0.9%	1.0%
Others	10.6%	6.4%

Puma Energy Zambia Plc, Mount Meru Petroleum (Z) Ltd and TotalEnergies Zambia Limited had a combined market share of 54.3 percent similar to 2023. The rest of the OMCs held shares of less than 6 percent each. Puma Energy Zambia Plc leads the market share (22%) followed by Mount Meru Petroleum (Z) Ltd (17.9%) and TotalEnergies Zambia Limited (13.5%). Apart from the top three, the OMCs that are considered large and critical to the distribution network of petroleum products in Zambia are: Engen Petroleum, Oryx Energies Zambia Limited; Rubis Energy Zambia Ltd; Lake Petroleum Ltd; Karan Petroleum Zambia Limited; Petroda Zambia Ltd and Uno Energies Zambia Limited.

### 3.3.2 Market share for LPG

The market share for LPG is based on sales volumes and is shown in Table 3.12. In 2024, the top five (05) LPG marketers, in descending order were Mount meru, Oryx Gas, Afrox, Falcon Gas and Puma Energy Zambia Plc. Collectively these companies account for 76.5 percent of the market. The rest of the LPG marketers hold shares of less than 8 percent each.

**Table 3.12: Market share for LPG, 2023-2024**

Oil Marketing Company	2023	2024
Mount Meru Petroleum (Z) Ltd	25.18%	20.68%
Oryx Gas Zambia Limited	15.24%	15.68%
Afrox Zambia Ltd	13.36%	15.23%
Falcon Gas Zambia Ltd	13.24%	12.97%
Puma Energy Zambia PLC	1.91%	11.91%
Exclusive Brands Africa	6.73%	7.93%
Rubis Energy Zambia Ltd	6.08%	7.70%
Lake Gas Z Limited	0.00%	2.82%
Minegases Co. Ltd	4.35%	2.19%
Chingases Company Limited	3.46%	1.72%
Oxyzam Zambia Limited	0.00%	1.14%
Oilbay Zambia	0.06%	0.02%
Ogaz Zambia Limited	10.36%	0.00%
Surya Energy	0.03%	0.00%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>

### 3.3.3 Market share for Jet A-1

In 2024, Puma Energy Zambia PLC held the largest market share at 60.35 percent similar to 2023. During the period 2023-2024 the market share for Puma Energy Zambia PLC increased while that for TotalEnergies Zambia Limited decreased. This is depicted in Table 3.13.

**Table 3.13: Market share for Jet A-1, 2023-2024**

Oil Marketing Company	2023	2024
Puma Energy Zambia PLC	56.70%	60.35%
TotalEnergies Zambia Limited	43.30%	39.65%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>

## 3.4 Distribution and Storage of Petroleum products

### 3.4.1 Retail Sites Network

In 2024, the number of retail sites operated by OMCs in Zambia rose to 619, up from 568 in 2023, marking an increase of 51 sites. This growth reflects the increasing demand for petroleum products across the country.

Table 3.14 provides a breakdown of the number of operational retail sites and their market share by OMCs in Zambia as at 31<sup>st</sup> December 2024.

**Table 3.14: Operational retail service stations by OMC as at 31st December 2024**

No.	OMC	No. of Site	% Share
1	Mount Meru Petroleum Zambia Ltd	84	13.57%
2	Totalenergies Zambia	67	10.82%
3	Puma Energy Zambia	65	10.50%
4	Vivo Energy Zambia	60	9.69%
5	Rubis Zambia Ltd	42	6.79%
6	Lake Petroleum Ltd	38	6.14%
7	Sgc	34	5.49%
8	Oryx Energies Zambia Limited	29	4.68%
9	Petroda Zambia Ltd	28	4.52%
10	Uno Energies	22	3.55%

No.	OMC	No. of Site	% Share
11	Oasis Oil Ltd	20	3.23%
12	Karan Petroleum Z Ltd	16	2.58%
13	Harvest Group	15	2.42%
14	Eco Petroleum Ltd	12	1.94%
15	Surya Energy	11	1.78%
16	Hass	6	0.97%
17	Lbm Investments Limited	6	0.97%
18	Korridor Zambia Fuel Ltd	5	0.81%
19	Spectra Oil Corporation	5	0.81%
20	Petrolink	4	0.65%
21	Energybelt Zambia Limited	3	0.48%
22	Simba Oil Company	3	0.48%
23	Admire Energy Ltd	2	0.32%
24	Alfa Energy Limited	2	0.32%
25	Boma Energy Limited	2	0.32%
26	Endrone Petroleum	2	0.32%
27	Heba Petroleum Ltd	2	0.32%
28	Meladen Energy	2	0.32%
29	Quality Petroleum	2	0.32%
30	Refuel	2	0.32%
31	Tribute Investments	2	0.32%
32	Acm Petroleum	1	0.16%
33	Apex Energies Ltd	1	0.16%
34	Asharami Energy Resources Zambia	1	0.16%
35	Benzol Petroleum	1	0.16%
36	Cale Energy	1	0.16%
37	Collum Lunm Tian Petroleum	1	0.16%
38	Fa Fuel Ltd	1	0.16%
39	Fastrack Petroleum	1	0.16%
40	Hamdi Investment & Trading Ltd (Hitco Petroleum)	1	0.16%
41	Japawa	1	0.16%
42	Jokap	1	0.16%
43	Luapula Oils Ltd	1	0.16%
44	Lushomo	1	0.16%
45	Ngucha Energy Corp Ltd	1	0.16%
46	Oilbay (Z) Ltd	1	0.16%
47	Ordodoil Company Limited	1	0.16%
48	Ravasia	1	0.16%
49	Sino Petroleum Limited	1	0.16%
50	Star Oil Company Ltd	1	0.16%
51	Stream Energy	1	0.16%
52	Time Petroleum Ltd	1	0.16%
53	Ufuel	1	0.16%
54	United Metro	1	0.16%
55	WWW Investments	1	0.16%
56	Zeekna Investment Company Ltd	1	0.16%
57	Zhongkuang Zambia Services Co. Ltd	1	0.16%
<b>Total</b>		<b>619</b>	<b>100%</b>



Mount Meru Petroleum Zambia Ltd holds the largest share with 84 sites (13.57%), followed by TotalEnergies Zambia and Puma Energy Zambia with 67 (10.82%), 65 (10.50%) sites and Vivo Energy Zambia 60 (9.69%) respectively. A total of 11 OMCs had retail sites that ranged from 11 to 42. The rest of the OMCs own 6 sites and below.

The general increase in number of retail sites is attributed to several factors. A research study conducted by the ERB in 2024 identified key factors driving the establishment of filling stations, that include some of the following: urbanisation, increase in vehicle ownership and reduction in minimum siting distances. There is ongoing debate on the impact of profitability or business margins in the expansion of filling stations. This is a matter which the ERB has committed to investigate by undertaking a study in 2025.

### 3.4.2 Capacity of Existing Storage Facilities

#### 3.4.2.1 Petrol, Diesel, Kerosene, Jet A-1 and LPG Storage Facilities

In 2024, the total national storage capacities for petrol, diesel, Jet A-1, and kerosene were 116,254 m<sup>3</sup>, 317,549 m<sup>3</sup>, 10,458 m<sup>3</sup>, and 10,632 m<sup>3</sup>, respectively. TAZAMA Petroleum Products Limited held the highest storage capacities for these products, with 91,000 m<sup>3</sup> for petrol, 179,900 m<sup>3</sup> for diesel, 7,400 m<sup>3</sup> for kerosene, and 4,780 m<sup>3</sup> for Jet A-1. This is depicted in Table 3.15.

**Table 3.15: TAZAMA Petroleum products Limited storage capacities**

Operator	Location	Petrol (m <sup>3</sup> )	Diesel (m <sup>3</sup> )	Jet A-1 (m <sup>3</sup> )	Kerosene (m <sup>3</sup> )
Tazama Petroleum Products Limited	Ndola	28,000	79,400	4,200	2,400
Tazama Petroleum Products Limited	Lusaka - Buyantanshi	10,000	14,000	-	1,000
Tazama Petroleum Products Limited	Lusaka - Kasupe <sup>10</sup>	40,000	60,000	-	2,000
Tazama Petroleum Products Limited	Solwezi	5,000	10,500	-	-
Tazama Petroleum Products Limited	Mpika	2,000	4,000	-	500
Tazama Petroleum Products Limited	Mongu	2,000	4,000	-	500
Tazama Petroleum Products Limited	Mansa	2,000	4,000	-	500
Tazama Petroleum Products Limited	Chipata	2,000	4,000	580	500
<b>Total- TAZAMA</b>		<b>91,000</b>	<b>179,900</b>	<b>4,780</b>	<b>7,400</b>

TAZAMA Petroleum Products Limited operates storage depots in Ndola, Lusaka (Buyantanshi and Kasupe), Solwezi, Mansa, Mpika, Mongu, and Chipata. The largest petrol storage capacity is located in Lusaka at the Kasupe depot, with 40,000 m<sup>3</sup>, although it is yet to be commissioned. This is followed by Ndola, which has a capacity of 28,000 m<sup>3</sup>. For diesel, the largest storage facility is in Ndola at 79,400 m<sup>3</sup>, followed by Lusaka's Kasupe depot with 60,000 m<sup>3</sup>.

In addition to TAZAMA facilities, petroleum product storage is also provided by various private sector operators, as shown in Table 3.16. The total private sector storage capacity stands at 25,254 m<sup>3</sup> for petrol and 137,649 m<sup>3</sup> for diesel. Jet A-1 and kerosene storage capacities amount to 5,678 m<sup>3</sup> and 3,232 m<sup>3</sup>, respectively. Indeni Energy Company Limited holds the largest private storage capacity for both petrol (11,400 m<sup>3</sup>) and diesel (106,700 m<sup>3</sup>). Among the other OMCs, petrol storage capacities range from as low as 13.5 m<sup>3</sup> to 3,000 m<sup>3</sup>, while diesel storage ranges from 249 m<sup>3</sup> to 5,400 m<sup>3</sup>.

<sup>10</sup> This Depot is not yet operational

**Table 3.16 : Privately Owned Petroleum Products storage facilities and capacities**

Operator	Location	Petrol (m³)	Diesel (m³)	Jet A-1 (m³)	Kerosene (m³)
Indeni Energy Company Limited	Ndola	11,400	106,700	4,000	2,100
Copperbelt Energy Company	Chingola		5,400		
Copperbelt Energy Company	Chililabombwe		3,000		
Puma Energy (Z) Plc	Lusaka	2,121	3,410	1,500	388
Puma Energy (Z) Plc	Kitwe	-	3,100		-
Puma Energy (Z) Plc	Ndola	13.5	700.5		-
Puma Energy (Z) Plc	Livingstone			150	
Total Energies	Lusaka	2,000	2,000		
Total Energies	Ndola	2,300	-		
Vivo Energy	Lusaka	1,200	1,900		83
Rubis Energy (Z) Limited	Lusaka	3,000	3,000		
Asharami	Lusaka	800	2,729		81
Mount Meru Petroleum (Z) Limitd	Lusaka	170	1500		170
Petroda (Z) Limited	Lusaka	400	600		-
Oryx Oil (Z) Limited	Ndola	-	1000		
Zamfuel	Ndola		530		
SGC Investments	Ndola	840	840		330
Hass Petroleum	Ndola	660	740		80
Oasis Oil Zambia Limited	Lusaka	249	249		
Air Mafuta Aviation Services	Mfuwe			28	
Collum Lumn Tian	Lusaka	100	250		-
<b>Total- Privately owned</b>		<b>25,254</b>	<b>137,649</b>	<b>5,678</b>	<b>3,232</b>

The total national LPG storage capacity increased to 2,466 MT in 2024, up from 2,436 MT in 2023. INDENI owned the largest LPG storage capacity at 1,600 MT. The rest of the capacities for LPG ranged from 12MT to 125MT. This is depicted in Table 3.17.

**Table 3.17 : LPG storage facilities and capacities**

Operator	Location	Capacity (MT)
Indeni Energy Company Limited	Ndola	1,600
Minegases Company Limited	Ndola	125
Puma Energy (Z) Plc	Lusaka	100
Meru Gas Zambia Limited	Ndola	100
Exclusive Brands	Lusaka	90
Afrox Zambia Limited	Lusaka	85
Oryx Gas Limited	Ndola	72
Chinagases Company Limited	Lusaka	55
Falcon Gas Zambia Limited	Lusaka	50
Gastec Trading & Supply	Lusaka	50
Rubis Energy (Z ) Limited	Lusaka	40
Lake Gas Limited	Ndola	35
Afrox Zambia Limited	Ndola	30
Oxyzam Limited	Lusaka	22
Meru Gas Zambia Limited	Chibombo	12
<b>TOTAL:</b>		<b>2,466</b>

### 3.5 Pricing of Petroleum Products

The ERB draws its mandate to regulate wholesale and retail prices of Diesel, Petrol, Kerosene and Jet A-1 from section 4 of the Energy Regulation Act No. 12 of 2019.

Further, the ERB developed regulations for pricing petroleum products in 2024, to govern the pricing of petroleum products. These were enacted as a Statutory Instrument (SI), the Energy Regulation (Petroleum Products Price Setting) Rules of 2024. The prices that the ERB sets are maximum capped prices for each product.

#### 3.5.1 The Uniform Pump Pricing Mechanism

Petroleum prices in Zambia are uniform and are kept so through the Uniform Pump Pricing (UPP) mechanism which was introduced in the year 2010 in Zambia. The UPP ensures that fuel prices are uniform across the nation, no matter how far the locations are from fuel depots or distribution centers. The UPP is supported by a fund that enables OMCs to either claim or pay back the difference between the transportation costs they incur when delivering products across the country and the transportation costs included in the pump price calculation.

Therefore, OMCs that incur higher transportation costs from the cost that is included in the pump price build up are allowed to claim the variance from the UPP Fund. Similarly, OMCs that incur lower transportation costs than the cost in the price build up are allowed to remit the variance between the actual transport cost incurred and the transport cost in the price build up into the UPP Fund.

##### 3.5.1.1 Determinants of petroleum prices in Zambia

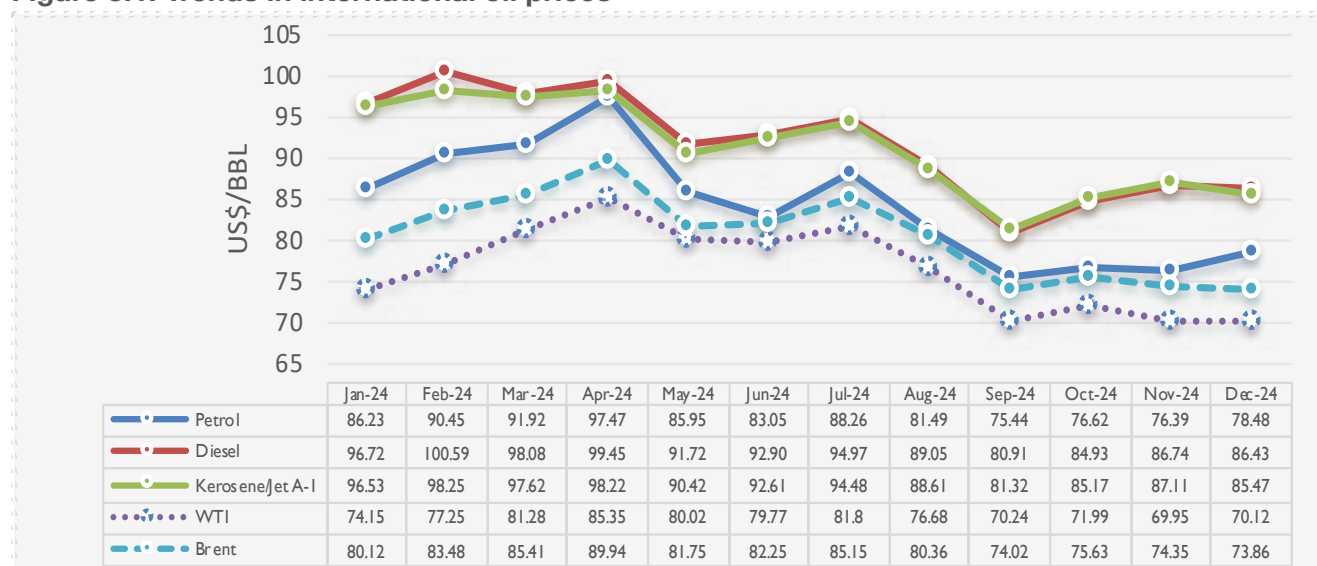
The pricing of petroleum products in Zambia is influenced by several factors. Key among these is the price of oil on the international market and the exchange rate of the Kwacha to the United States Dollar. This is because 100% of the petroleum that is consumed by the country is wholly imported. The other standard costs that influence the price of petroleum products for the domestic Zambian market include transportation and logistical costs, Government policy in terms of taxes or levies/duties as well as other charges and fees such as the pumping fees.

In the fourth quarter of 2021, Government pronounced reforms for the petroleum sub-sector. Under the pronounced reforms, Government disengaged from the procurement of fuel into the country and handed over this role to the private sector who were to take up the responsibility of importing finished petroleum products. Secondly, the TAZAMA pipeline was converted to a transporter of finished petroleum products (Low Sulphur Gasoil) in March 2023 whereas INDENI refinery was reconfigured to an OMC.

Consequent to this change in fuel supply for the country, in the year 2022, the ERB adopted an Import Parity Pricing (IPP) Model in order to align the pricing mechanism to the supply of finished petroleum products by private OMCs. At the same time, the fuel pricing cycle was also revised from sixty (60) to thirty (30) days. Petroleum product prices are not adjusted if the changes in the computed/proposed wholesale prices are less than the set 2.50% threshold. The IPP model operates on the principle that the final price of petroleum products should be equal to the cost of the product at points of production plus the cost of transport to the point of sale plus other attendant costs.

##### 3.5.1.2 Trends in International Oil Prices

Figure 3.1 shows the trend in international crude oil prices, for both crude oil (i.e. WTI and Brent) and finished petroleum products, namely petrol, diesel and Kerosene/Jet A-1, during the period January to December 2024.

**Figure 3.1: Trends in international oil prices**

In 2024, crude oil prices generally declined. WTI declined by 5.43% from US\$74.15/bbl in January 2024 to US\$70.12/bbl in December 2024. Brent crude declined by 7.81% from US\$80.12/bbl in January 2024 to US\$73.86 in December 2024. This decline was primarily driven by a global oversupply of oil largely from increased output by non-OPEC producers like the United States as noted in OPEC's Monthly Oil Market Reports<sup>11[1]</sup>, weakened demand due to slower economic activity in major consuming countries such as China and India<sup>12[2]</sup> and a stronger U.S. dollar that resulted in reduced purchasing power for oil-importing nations<sup>13[3]</sup>. In addition, easing geopolitical risks also helped stabilize supply expectations and contributed to the overall price decline.

Similarly, the prices of refined petroleum products, namely petrol, diesel and kerosene, declined in the year 2024. Petrol declined by 8.99% from US\$86.23/bbl to US\$78.48/bbl. Diesel declined by 10.64% from US\$96.72/bbl to US\$86.43/bbl while kerosene declined by 11.46% from US\$96.53/bbl to US\$85.47/bbl. The decline was similarly caused by a combination of factors that include global oversupply, weakened demand, a strong U.S. dollar, and easing geopolitical tensions. According to Reuters, increased production particularly from the U.S. contributed to a supply surplus, while economic slowdowns in China and other major markets reduced consumption. The appreciation of the U.S. dollar made oil products more expensive globally, further dampening demand. Additionally, improved geopolitical stability lowered fears of supply disruptions, reinforcing the downward trend in prices.

### 3.5.1.3 Trend in the Exchange Rate

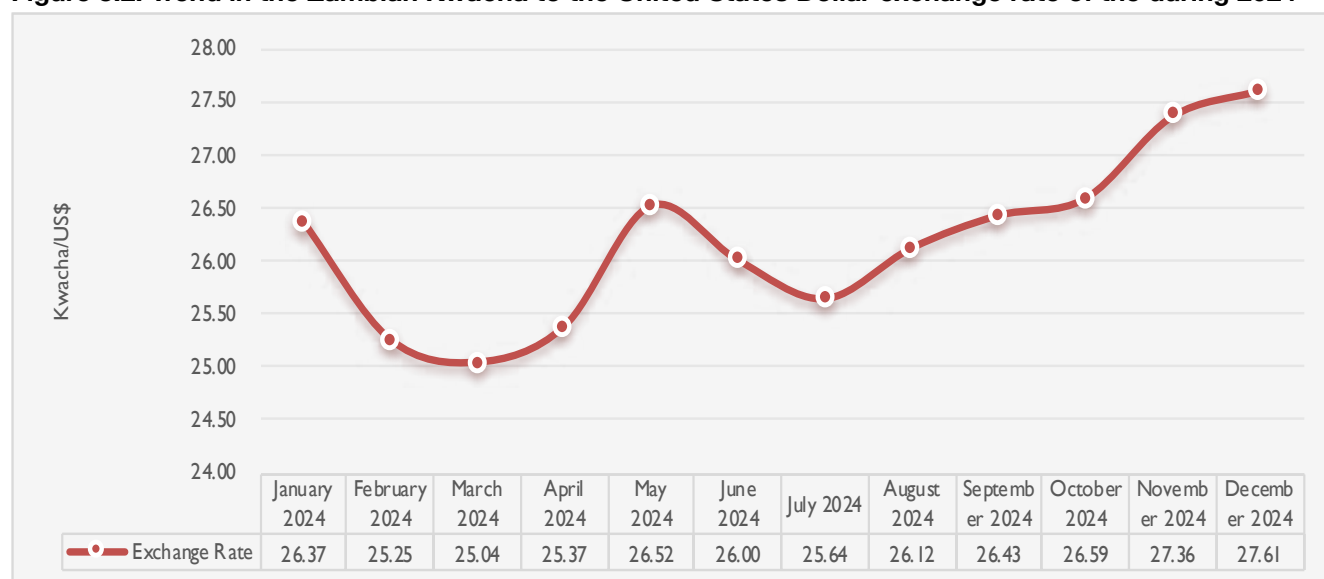
Figure 3.2 shows the trend in the exchange rate between the kwacha and the United States Dollar from January 2024 to December 2024.

<sup>11 [1]</sup> OPEC Monthly Oil Market Report – October 2024

<sup>12 [2]</sup> International Energy Agency – September 2024

<sup>13 [3]</sup> Energy News Africa Plus – March 2024



**Figure 3.2: Trend in the Zambian Kwacha to the United States Dollar exchange rate of the during 2024**

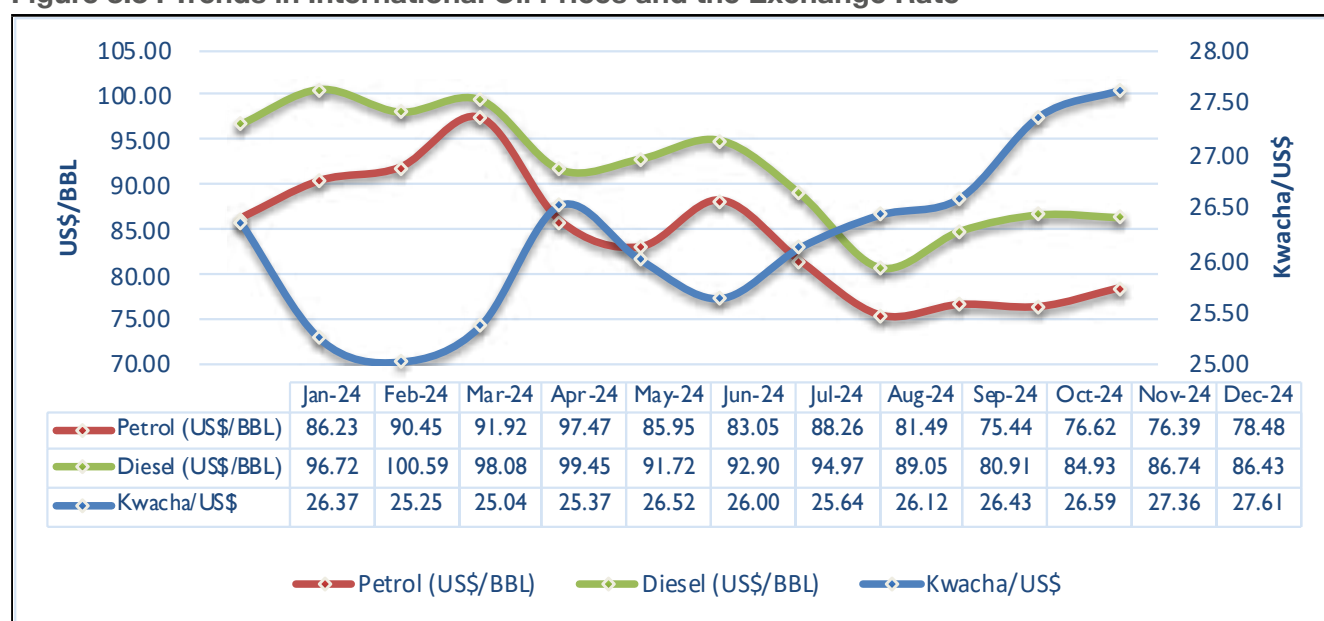
During 2024, the Zambian Kwacha declined by 4.7 percent from a monthly average of K26.37/US\$ in January to K27.61/US\$ in December. In-between there were periods of appreciation and depreciation against the United States Dollar. Specifically, the Kwacha appreciated in the first quarter, while it generally depreciated in the second quarter to the fourth quarter.

The appreciation of the Kwacha during the first quarter of 2024 was partly supported by the Bank of Zambia's monetary policy measures, including increases in reserve ratios and policy interest rates aimed at curbing inflation and stabilizing the currency.

Meanwhile, the currency depreciation in the latter part of the year was caused by a sustained shortage of foreign exchange amid elevated demand for food and energy, following drought-induced declines in domestic production. The Kwacha also faced additional pressure from the global strengthening of the U.S. Dollar.

### 3.5.1.4 Trends in International Oil Prices and the Exchange Rate

Figure 3.3 shows the trends in international oil prices and the exchange rate during the year 2024.

**Figure 3.3 : Trends in International Oil Prices and the Exchange Rate**

Fuel prices in Zambia, are primarily influenced by two key factors: international oil price movements and the exchange rate between the Zambian Kwacha and the United States Dollar. When the Kwacha appreciates against the U.S. Dollar and international oil prices decline, a reduction in domestic fuel prices is generally expected. Conversely, when the Kwacha depreciates and international oil prices rise, fuel prices are likely to increase.

However, there are instances where these two fundamentals move in opposite directions, for example, when the Kwacha depreciates while international oil prices fall. In such cases, the impact of the declining oil prices is offset by the adverse exchange rate movement, resulting in minimal or no change in domestic fuel prices during the review period

During 2024, petrol, and diesel prices on the international market generally declined, while the Kwacha depreciated against the United States Dollar. The fluctuations in petrol and diesel prices were driven by various global factors, including production adjustments, geopolitical tensions, and shifting demand patterns. Consequently, domestic fuel prices were adjusted in line with these movements in international oil prices and the exchange rate. The pump price build up is presented in Table 3.18.

**Table 3.18 : Pump price build up**

No.	Details	Unit Costs	Workings
1.	Wholesale Price to OMC	K22.75, K23.10 & K26.19 per litre each for Petrol, Diesel and Kerosene, respectively.	a
2.	Terminal Fee	K0.063/litre	b
3.	Marking Fee	K0.20/litre	c
4.	Excise Duty (incl.) road levy	K2.07 for Petrol, K0.66 for Diesel and K0 for Kerosene	d
5.	<b>Ex NFT Gate</b>		<b>E=(a+b+c+d)</b>
6.	Transport Cost	K0.52 for Petrol, K0.52 for Diesel and K0.09 for Kerosene.	f
7.	OMC Margin	K1.83/litre	g
8.	<b>TOTAL (Excl VAT)</b>		<b>h=(e+f+g)</b>
9.	Dealer Margin	K1.24/litre	i
10.	<b>PRICE TO DEALER</b>		<b>j= (h+i)</b>
11.	ERB Fees	0.7%	k
12.	Strategic Reserves Fund	K0.15/litre for Petrol, Kerosene and Diesel	l
13.	<b>Price before VAT</b>		<b>m=(j+k+l)</b>
14.	VAT	16%	n
15.	<b>Uniform Pump Price</b>	<b>K/litre</b>	<b>o=(m+n)</b>

### 3.6 Import Parity Pricing Model

The ERB continued to review the prices of petroleum products every thirty days in the year 2024. The prices were determined using the IPP Model. The components that make up the IPP model are categorized into two groups of elements, namely:

- Wholesale price build up; and
- Pump price build up.

These cost elements are explained in detail in subsequent sections.

#### 3.6.1 Components of pricing for petroleum products

##### 3.6.1.1 Wholesale Price Build-up

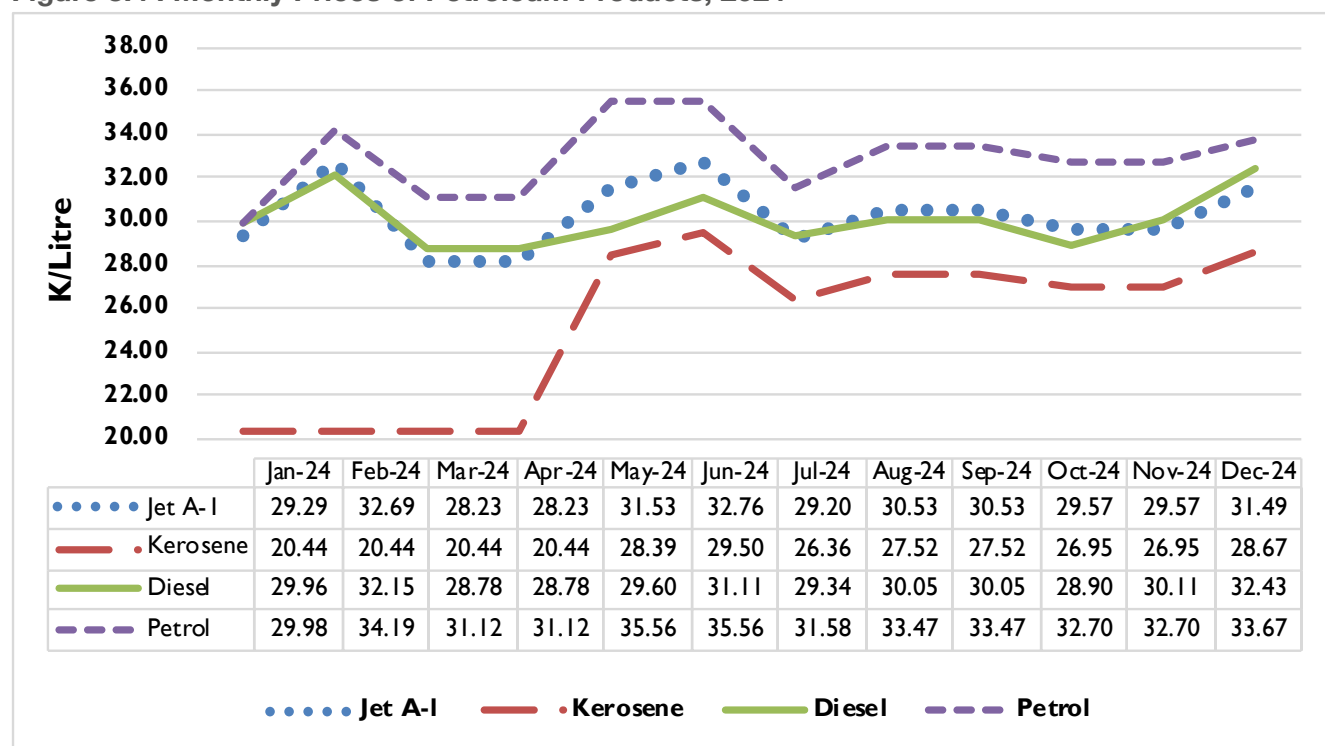
The cost elements that constitute the wholesale price build-up are presented in Table 3.19 and a detailed exposition of these cost elements is provided in Appendix 8.

**Table 3.19: Wholesale price build up**

Cost Element	Unit Measure	Basis
Platts Arab Gulf	US\$/BBL	Platts Referencing
Conversion Factor		Industry Best Practice
<b>FOB Price</b>	<b>US\$/MT</b>	
Traders Margin	US\$/MT	Standard Cost
<b>FOB &amp; Traders margin</b>	<b>US\$/MT</b>	
Ocean Freight	US\$/MT	Referenced to Worldscale Rates
<b>C &amp; F (Dar/Beira)</b>		
Storage	\$/MT	Standard Cost
Ocean Insurance	0.15% of C & F	Standard Cost
Ocean losses	0.3% of C & F	Standard Cost
Wharfage	\$3.00/M <sup>3</sup> which is equivalent to \$4.05/MT for petrol & \$3.57/MT for Diesel & \$3.75/MT for Kerosene	Port Authority Charge
BPS Premium	\$/MT	Bulk Procurement System of Tanzania
<b>CIF (Dar/Beira)</b>		
Transportation Fee	US\$/MT	standard cost
Transportation Losses	0.5% petrol & 0.3% diesel, 0.3% kerosene/Jet A-1	Standard Cost
Importers cost plus Margin	US\$/MT	Standard cost
<b>CIF (Lusaka)</b>	<b>\$/MT</b>	
Storage losses	0.5% petrol & 0.3% diesel, 0.3% kerosene/Jet A-1	Standard Cost
<b>Wholesale Price to OMC</b>	<b>\$/MT</b>	
Conversion factors		industry best practice
<b>Wholesale Price to OMC</b>	<b>\$/M<sup>3</sup></b>	
Exchange Rate	K to \$	Bank of Zambia
New Wholesale Price to OMC	K/M <sup>3</sup>	

### 3.6.1.2 Domestic Petroleum Products Price Trends in 2024

In line with global price trends, petroleum product prices in Zambia experienced notable fluctuations throughout 2024. These variations were primarily influenced by international crude oil price movements, exchange rate volatility, supply chain disruptions, and adjustments in domestic regulatory frameworks. During the review period, the ERB continued to revise petroleum prices every month in line with the import cycle for OMCs, reflecting changes in the key determinants of fuel pricing. Figure 3.4 shows the monthly prices for Jet A-1, Kerosene, Low Sulphur Gasoil (Diesel), and Unleaded Petrol in 2024.

**Figure 3.4 : Monthly Prices of Petroleum Products, 2024**

During 2024, the ERB adjusted the pump price of petrol upward on four occasions in February, May, August, and December, while price reductions were recorded in March, July, and October. The price remained unchanged in April, June, September, and November.

For diesel, price increases occurred six times in February, May, June, August, November, and December. The ERB revised diesel prices downward three times in March, July, and October and maintained them in April and September.

Jet A-1 fuel experienced five upward price adjustments in February, May, June, August, and December, while downward adjustments occurred in March, July, and October. Prices were held constant in April, September, and November.

With respect to kerosene, prices remained unchanged from January through April 2024 due to sufficient national stock levels and therefore no new stocks were deemed to have been imported. Subsequently, the ERB raised kerosene prices in May, June, August, and December, and reduced them in July and October. In addition to the January to April pricing periods, prices of kerosene were also maintained in September and November.

These pricing decisions were primarily informed by movements in the exchange rate and international oil prices, which are the principal drivers of domestic fuel pricing. Additionally, the ERB took into account the 2.5% trigger band threshold in determining price adjustments.

### 3.6.1.3 Frequency of fuel Price reviews

Most of Zambia's neighboring countries, including South Africa, have monthly fuel price reviews to stay aligned with global trends and local economic realities. Botswana stands out with a more flexible or irregular schedules. Even though Botswana doesn't always change prices monthly, the "pricing slate" (that is, the internal calculation of whether a price adjustment is needed) is prepared and reviewed on the first working day of each month. Table 3.20 shows a comparison of fuel price reviews from selected countries.



**Table 3.20: Frequency of Fuel Price Adjustment by Country**

No.	Country	Coastline	Price Review Date
1.	Botswana	Land linked	Not fixed, however, pricing slate due on first working day of the month
2.	Malawi	land linked	Monthly - First Tuesday of every month
3.	Mozambique	Coastline	Monthly – Every third Thursday of every month
4.	Namibia	Coastline	Monthly – Last working day of every month
5.	South Africa	Coastline	Monthly - First Wednesday of every month
6.	Tanzania	Coastline	Monthly - First Wednesday of every month
7.	Zambia	land linked	Monthly - Last working day of every month
8.	Zimbabwe	land linked	Monthly – Every Monday of a new month

### 3.7 Performance of State-owned enterprises in Petroleum sub-sector in 2024

Zambia's petroleum sub-sector is comprised of the following State- Owned Enterprises (SOEs):

- i. TAZAMA Pipelines Limited;
- ii. INDENI Energy Company Limited; and
- iii. TAZAMA Petroleum Products Limited.

In line with section 4 of the Energy Regulation Act No.12 of 2019 which mandates the ERB to monitor the efficiency and performance of licensed enterprises, the ERB developed and implemented an incentive based regulatory framework that uses Key performance Indicators (KPIs) for SOEs to ensure efficiency, financial sustainability and quality service provision. The purpose of the incentive based regulatory framework is to provide motivation to the SOEs to achieve the set KPIs. The KPI framework also enables the ERB to link the KPI performance of the SOEs to the award of a tariff adjustment by using it to either award or penalize the SOEs whenever they make an application for a tariff adjustment.

#### 3.7.1 TAZAMA Pipeline Limited

TAZAMA is a State-owned Enterprise jointly owned by the Government of the Republic of Zambia and the United Republic of Tanzania. Zambia owns 66.7 percent of shares, while 33.3 percent is owned by Tanzania.

TAZAMA owns and operates the 1,710-kilometer TAZAMA pipeline which runs from the port of Dar-Es-Salaam in Tanzania to Ndola Fuel Terminal (NFT) in Zambia. The company holds a licence for pipeline transportation of petroleum products issued by the ERB. In addition to pipeline transportation, TAZAMA also holds a licence to import, distribute and export petroleum products.

#### 3.7.2 Key developments

The four (04) key developments that took place at TAZAMA during 2024 include: the implementation of the Drag Reducing Agent (DRA) project, the rehabilitation of the storage tank T6 and the contracting of consultancy services for the feasibility study for the construction of the new multi-product pipeline.

##### i. Implementation of DRA project

TAZAMA commenced the installation of injection skids for the Drag Reducing Agent (DRA) on 17<sup>th</sup> December 2024 and concluded the process on 29<sup>th</sup> December 2024.

The implementation of the DRA project on the TAZAMA pipeline was expected to increase the pipeline's throughput from an average of 2,800 m<sup>3</sup> per day to 3,600 m<sup>3</sup> per day, thereby enhancing the security of supply for LSG into the country.

##### ii. Rehabilitation of the Tank T6

In 2024, TAZAMA successfully completed the rehabilitation of storage tank T6 at Kigamboni in Dar es Salaam. The rehabilitation works involved the replacement of the tank's bottom and roof plates, culminating in the successful commissioning of the storage facility.

### iii. Consultancy Services for feasibility study of the New Petroleum Products pipeline

In 2024, TAZAMA engaged a consultant to undertake a feasibility study for the proposed multi-product pipeline. The study was expected to be completed, with the final report submitted, by the first quarter of 2025.

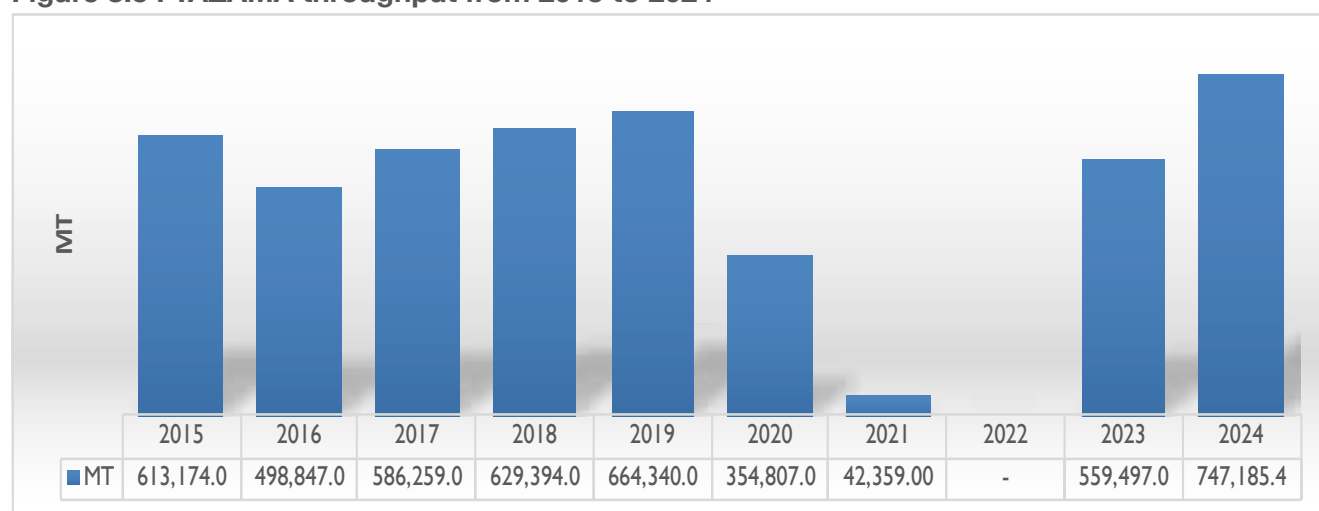
### iv. Commissioning of the Interconnection to TAZAMA Pipeline at Mpika Fuel Depot

The TAZAMA-Mpika inter-connector was commissioned during the period under review. This inter-connector at the Mpika fuel depot is expected to support the effective implementation of the Open Access framework for pipeline usage. OMCs in the northern parts of the country will be able to transport LSG through the pipeline and collect the product at the Mpika fuel depot. This will help to reduce on transportation and turn around costs from enterprises based in the northern parts.

### 3.7.3 TAZAMA Throughput

TAZAMA's annual throughput increased by 33.55% in 2024, rising from 559,497.00 MT in 2023 to 747,185.44 MT. The improvement was primarily attributed to enhanced pump-over rates in pipeline operations. Figure 3.5 illustrates TAZAMA's throughput trend from 2015 to 2024.

**Figure 3.5 : TAZAMA throughput from 2015 to 2024<sup>14</sup>**



### 3.7.4 Technical KPIs

During the year, the ERB monitored and assessed TAZAMA's performance against five (5) set technical KPIs as presented in Table 3.21. Of the five (5), TAZAMA achieved three of the KPIs namely pumping rate, product quality and consumption and losses. Meanwhile TAZAMA fell short on throughput and operational days targets. The shortfall in throughput was primarily due to ullage constraints at the Ndola Fuel Terminal (NFT) and spillage incidents that resulted in pipeline shutdowns. Table 3.21 show the TAZAMA pipeline Limited performance against the KPIs in 2024.

**Table 3.21 : TAZAMA Pipeline Limited Performance against KPIs**

No.	Indicator	2023 Performance	2024 Performance	KPI Target	Remarks
1	Throughput (MT)	557,446.30	747,185.45	800,000	Not Achieved
2	Operational days	275 days	339.4 days	350 days	Not Achieved
3	Pumping Rate (m <sup>3</sup> /h)	101.84	110.78	110	Achieved
4	Consumption and Loss (%)	0.92	0.95	≤1.2	Achieved
5	Product Quality (%)	One incident	100	100	Achieved

### 3.7.5 Financial KPIs - TAZAMA

The agreed financial KPIs for TAZAMA are trade debtor days and current ratio. Table 3.22 shows the financial KPI performance of TAZAMA, during 2024.

**Table 3.22 :TAZAMA's KPI performance in 2024**

Indicator	Target	Actual Performance 2023	Actual Performance 2024	Remarks
Current ratio	≥1.20	3.14	2.93	Achieved
Debtor days	≤15 days	60.38	46.97	Not Achieved

During 2024, TAZAMA achieved the KPI target for the current ratio but failed to meet the target for debtor days. This is similar to the results attained in 2023.

### 3.7.6 Challenges faced by TAZAMA during 2024

The following were the challenges faced by TAZAMA during 2024:

#### i. Pipeline Vandalism leading to Product and Business loss:

In 2024, a total of eight cases of pipeline vandalism were recorded on the Tanzanian side, resulting in product losses and disruption to business operations.

#### ii. Pipeline shut down due to lack of ullage at the Ndola Fuel Terminal:

During 2024, the pipeline experienced a total of 17 days of shutdown due to insufficient ullage, which was attributed to low product uplifts at the Ndola Fuel Terminal.

### 3.7.7 Outlook for TAZAMA

#### i. Completion of the study on the multi petroleum product pipeline

The Zambian and Tanzanian governments are working towards laying a new multi petroleum product pipeline with the capacity to transport at least five million tons of petroleum products every year. Once the new pipeline comes in place it will have a significant impact on the reduction of pump prices in Zambia. It is expected that the feasibility study on the multi petroleum product pipeline will be completed in 2025.

#### ii. Open access implementation

The full implementation of the Open Access Guidelines for use of TAZAMA pipeline to allow multiple OMCs to import petroleum products is expected to take place in 2025. Imports of LSG by pipeline using the Open Access Guidelines are expected to commence in April 2025 resulting in enhanced security of supply for LSG.

### 3.7.8 Tazama Petroleum Products Limited (TPPL)

TPPL, a subsidiary of TAZAMA, is responsible for managing the Government's bulk petroleum storage depots located in Ndola, Lusaka, Mpika, Mansa, Mongu, Solwezi, and Chipata. TPPL holds licences for both wholesale marketing and terminal storage of petroleum products.

Table 3.23 presents the quantities of petroleum products uplifted from each operational fuel depot during 2024.

**Table 3.23 : Petroleum Product uplifts at TPPL in 2024**

Product (m³)	Fuel Terminal/ Depot				Total
	Lusaka	Mpika	Ndola	Solwezi	
Domestic Kerosene	-	-	1,670.09	-	1,670.09
Low Sulphur Diesel	52,763.39	16,399.13	942,217.96	115,887.88	1,127,268.36
HFO	-	-	-	-	-
Industrial Kerosene	-	-	364.85	-	364.85
Diesel	-	-	1,042.67	-	1,042.67
Petrol	127,047.61	31,249.44	50,853.60	5,881.64	215,032.29
<b>Total</b>	<b>179,811.00</b>	<b>47,648.57</b>	<b>996,149.16</b>	<b>121,769.53</b>	<b>1,345,378.26</b>

During 2024, a total of 1,345,378.25m³ of finished petroleum products were uplifted from Lusaka, Mpika, Ndola, and Solwezi depots compared to 983,574.93m³ in 2023. This increase can be attributed to the importation of LSG via the TAZAMA Pipeline by OMCs, following the pipeline's conversion to transport finished products. Similar to 2023, Mansa, Chipata and Mongu depots were operational but not active as there was no petroleum product delivered and stored by TPPL.

The agreed financial KPIs for TPPL are asset turnover ratio, trade debtor days, current ratio and trade creditor days. Table 3.24 shows the financial KPI performance of TPPL during 2024.

**Table 3.24 : TPPL's KPI performance in 2024**

Indicator	Target	Actual Performance 2023	Actual Performance 2024	Remarks
Asset Turnover	≥2.00	0.85	0.32	Not Achieved
Current Ratio	≥1.20	7.94	17.92	Achieved
Trade Debtor days	≤30 days	2.71	12.38	Achieved
Trade Creditor days	≤90 days	45.24	45.68	Achieved

TPPL achieved the KPI targets for current ratio, debtor days and creditor days but did not achieve the target for asset turnover ratio in the year 2024.

### 3.7.10 Technical KPIs – TPPL

In 2024, as part of performance monitoring, the ERB reviewed KPI reports for all seven bulk fuel depots operated by TPPL. TPPL achieved two (2) out of the five (5) monitored KPIs. TPPL continued to experience losses, particularly petrol and kerosene. Further, TPPL recorded two quality incidents in 2024, which required attention to prevent recurrence and ensure consistent quality standards. Table 3.25 presents TPPL's KPI performance in 2024.

**Table 3.25 : TPPL's Performance against KPIs, 2023 and 2024**

Indicator	Product	Target	Actual performance (Total/Average)		Comment on 2024 performance
			2023	2024	



Technical KPIs					
Unaccountable Losses	Diesel	≤0.30%	0.16%	0.17%	Achieved
	Petrol	≤0.50%	1.76%	1.75%	Not achieved
	Kerosene	≤0.30%	0.06%	0.34%	Not Achieved
No. of Petroleum Product Quality Incidents	-	0	1	2	Not achieved
No. of Safety Health and Environmental incidents	-	0	0	0	Achieved

### 3.7.11 INDENI Energy Company Limited

INDENI was founded in 1973 with the primary goal of processing petroleum feedstock into final petroleum products. In 2022, the business model of INDENI was changed from being a refinery to an OMC under the new name of INDENI Energy Company Limited. This transformation was aligned with the Government policy changes. In 2024, INDENI's sales volume were 77.12 million litres.



### 3.7.12 INDENI Key developments in 2024

In 2024, INDENI completed the modification of the loading gravity from use for HFO to LSG. This enabled the logistical transfer of LSG from TAZAMA fuel depot to Ndola Energy Company Limited (NECL), thus ensuring that NECL received the necessary LSG supply for electricity generation in the year 2024.

### 3.7.13 Financial KPIs - INDENI

The ERB performed audits on financial KPIs for INDENI focusing on two indicators in the year 2024, namely, debtor days and current ratio. Table 3.26 highlights the financial KPI results for INDENI during the reviewed period.

**Table 3.26 : INDENI's financial KPIs performance, 2024**

Indicator	KPI Target	Actual Performance	Remarks
Current ratio	≥1.0	0.34	Achieved
Debtor days	≤15	139.89	Not Achieved

INDENI achieved the KPI target for current ratio but did not meet the target for trade debtor days in the year 2024.

### 3.7.14 Challenges faced by INDENI in 2024

INDENI continued to face challenges in raising funding to meet the high capital cost required for it to fully operate as an OMC.

### 3.7.15 Outlook for INDENI

Beyond 2024, INDENI intends to carry out the following:

- i. Construct new loading facilities to boost its bulk storage capabilities, enhance logistics, and improve operational efficiency.
- ii. The company intends to explore investments opportunities in LPG in order to further diversify its portfolio and enhance its positioning for future growth;
- iii. Enhance loading activities by leveraging the current refinery infrastructure, which will boost efficiency and resource utilization to satisfy the rising demand for petroleum products while ensuring effective operations;
- iv. Explore opportunities to enter the retail sector or the downstream petroleum segment; and
- v. Explore new suppliers of petroleum products in order to satisfy the needs of its clientele.

### 3.8 Annual review of petroleum downstream margins

In May 2024, the ERB, in collaboration with the Margins Committee<sup>15</sup>, undertook an assessment of the margins applicable to OMCs, dealers, and transporters. This review was conducted to ensure that the margins reflected the variations in inflation and exchange rates as these are the major factors that impact financial sustainability.

Consequently, on 30<sup>th</sup> September 2024, the ERB considered an adjustment in the margins of petroleum downstream players to cater for increased operational costs. The margins of OMCs, Dealers, and Transporters were revised as shown in Table 3.27.

**Table 3.27: 2024 Margins Review**

No.	Downstream Players	Unit Measure	Old Margins	New Margins	Absolute Variance
1	Oil Marketing Companies	K/Litre	1.58	1.82	0.24
2	Dealers	K/Litre	1.07	1.24	0.17
3	Transporter (above 50km)	K/m3/Km	1.62	1.87	0.25
4	Transporter (below 50km)	K/litre	0.24	0.28	0.04

### 3.9 Compliance in the Petroleum sub-sector

One of the functions of the ERB as stipulated in section 4 of the Energy Regulation Act No. 12 of 2019, is to monitor the efficiency and performance of a licensee, having regard to the purposes for which the licensee and the enterprise were licensed or established. This is achieved by conducting audits of the licensed enterprise, aimed at establishing their compliance to relevant Zambian Petroleum Technical Standards to ensure the provision of quality, safe and reliable energy products and services.

In 2024, the ERB executed Risk-Based Audit, which aims to integrate risk management into the licensees and processes at all levels. This framework requires licensees to undertake self-audits of their systems and infrastructure which are submitted to the ERB for review, and or validation.

#### 3.9.1 Petroleum Product Quality Monitoring

In the year 2024, the ERB collected 345 samples from Government and OMCs owned depots for laboratory quality testing. Out of these, 324 fully complied with the respective product quality specifications representing compliance rating of 94 percent of the samples meeting the specifications against a target of 98 percent for the year 2024. The overall results for the tests are shown in Table 3.28.

**Table 3.28: Test results for petroleum product samples collected in 2024**

Product	Quality Compliance (%)	
	2023	2024
Unleaded Petrol	94	93
Diesel (AGO)	100	100
Low Sulphur Diesel	98	94
Kerosene	100.0	100.0
Jet A-1	100.0	100.0
<b>Total/Average</b>	<b>97.0</b>	<b>94</b>
<b>Regulatory target</b>	<b>98.0</b>	<b>98.0</b>

### 3.9.2 Petroleum Infrastructure Compliance

The ERB validated the self-audit of petroleum infrastructure, initially conducted by licensees. A total of 449 retail sites, 30 bulk fuel depots and 12 LPG depots and filling sites were sampled. Table 3.29 details the 2024 performance against the set regulatory targets for the year in comparison with the 2023 performance.

**Table 3.29 : Results of petroleum infrastructure compliance monitoring**

Facility	Regulatory target	Average compliance	
	2024	2023	2024
Retail Service Stations	95%	89%	89%
Fuel Depots	95%	94%	89.0%
LPG Depot/ Filling Plant	90%	94%	92.0%
Refinery <sup>16</sup>	N/A	N/A	N/A
Pipeline	95%	96%	94%

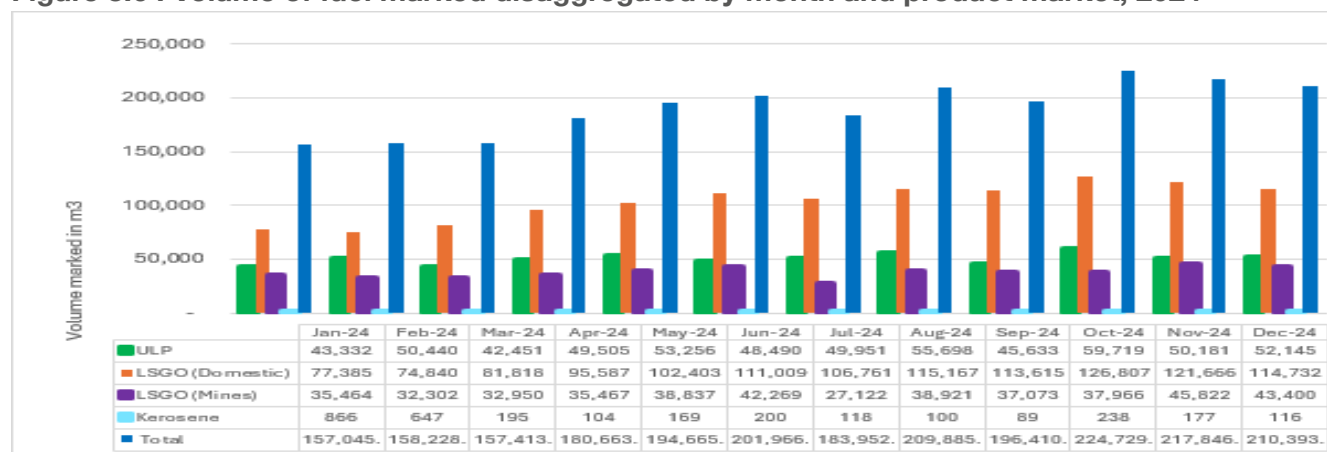
As presented in Table 3.25, the average compliance rate for all the facilities except LPG depots and filling plants did not meet the regulatory target for 2024. The ERB will engage the licensees whose performance failed to meet the target through technical hearings in 2025.

### 3.10 Fuel Marking Programme

Fuel marking involves the dosing of all petroleum products meant for consumption within the borders of Zambia with small, predetermined quantities of a unique biochemical substance, referred to as “marker”, thereby giving the fuel a distinctive identification or “fingerprint”. This was done to provide means of detecting and curbing adulteration, smuggling and dumping of fuel, vices that compromise the quality of fuel and competition in the petroleum sub-sector contrary to the Energy Regulation Act No. 12 of 2019..

In the period under review, the ERB continued with the implementation of fuel marking which resumed on 16<sup>th</sup> December 2023 under a new contract with Petrol (Z) Limited in partnership with TraceTag International. The total volume of fuel marked under this period was 2,293,201.16m<sup>3</sup> as detailed in Figure 3.6.

<sup>16</sup> The refinery has been under care and maintenance since 2022; therefore, no regulatory inspection was undertaken.

**Figure 3.6 : Volume of fuel marked disaggregated by month and product market, 2024**

### 3.10.1 Compliance in Fuel Marking

During the period under review, the ERB undertook sampling and testing to ascertain whether marker levels were in compliance with the provisions of S.I. No. 69 of 2017. A total of 1,513 samples were collected and tested on portable filed testing equipment from retail sites, consumer facilities and mines. The results indicated that of these, 1,392 samples were conforming, thereby representing an overall compliance rate of 92.00%. Table 3.30 provides a summary of the samples tested in each province and the corresponding provincial compliance rate. By December 2024, all samples that did not pass the field tests were undergoing confirmatory tests using Gas Chromatography Mass Spectroscopy (GCMS).

**Table 3.30 : Results of the Fuel Marking exercise by Province**

Province	Total	Field Results				Total	Off-Site Testing	%Pass
		Pass	Fail	Suspect	Overdose			
Central	148	129	11	4	4	148	0	87.16
Copperbelt	353	310	13	10	3	336	17	92.26
Eastern	94	90	3	1	0	94	2	95.74
Luapula	37	33	3	1	0	37	0	89.19
Lusaka	619	567	23	21	1	612	7	92.65
Muchinga	35	34	1	0	0	35	0	97.14
Northwestern	84	53	8	1	1	63	21	84.13
Northern	35	33	0	1	1	35	4	94.29
Southern	118	111	5	2	0	118	1	94.07
Western	35	32	0	2	1	35	0	91.43
<b>Total</b>	<b>1558</b>	<b>1392</b>	<b>67</b>	<b>43</b>	<b>11</b>	<b>1513</b>	<b>52</b>	<b>92%</b>

### 3.10.2 Illegal Fuel Vending

In the year 2024, the ERB in conjunction with other Law Enforcements Agencies (LEA) conducted raids on illegal fuel vending hotspots in Lusaka, Kafue, Chilanga, Chikankata, Ndola, Kapiri Mposhi, Kabwe, Manyinga, Solwezi and Kabompo. Following the raids, 50 suspects were arrested and scheduled to appear in court for illegally vending a combined total of 26,585 litres of fuel, valued at an estimated 798,455 ZMW based on ERB-approved pump prices.

### 3.11 Challenges in the Petroleum sub-sector in 2024

During the period under review, the petroleum sub-sector encountered a number of challenges.

#### i. Unequal distribution of Retail Sites

In the year 2024, Zambia's petroleum sub-sector continued to encounter challenges related to the lack of service stations in some remote parts of the country. This ongoing problem posed difficulties for the consumers, resulting in risks linked to illegal fuel sales and safety and quality concerns.



## ii. **Fuel Supply disruptions**

In the last quarter of 2024, the petroleum sub-sector encountered a fuel supply disruption due to logistical challenges faced by transporters delivering petroleum products into the country via the Zimbabwe route. These logistical challenges resulted from the implementation of refundable transit taxes in that nation. Consequently, these logistical difficulties ultimately caused supply shortages, particularly for petrol, which is completely imported by road. The ERB collaborated with industry participants and other stakeholders to alleviate the impact of these fuel supply disruptions.

### **3.12 Outlook for the petroleum Sub-sector**

Generally, the petroleum sub-sector presents a positive outlook in 2025 and beyond. The positive outlook is driven by the policy reforms initiated by government in 2024.

#### i. **Finalisation of feasibility study for construction of the multi petroleum product pipeline**

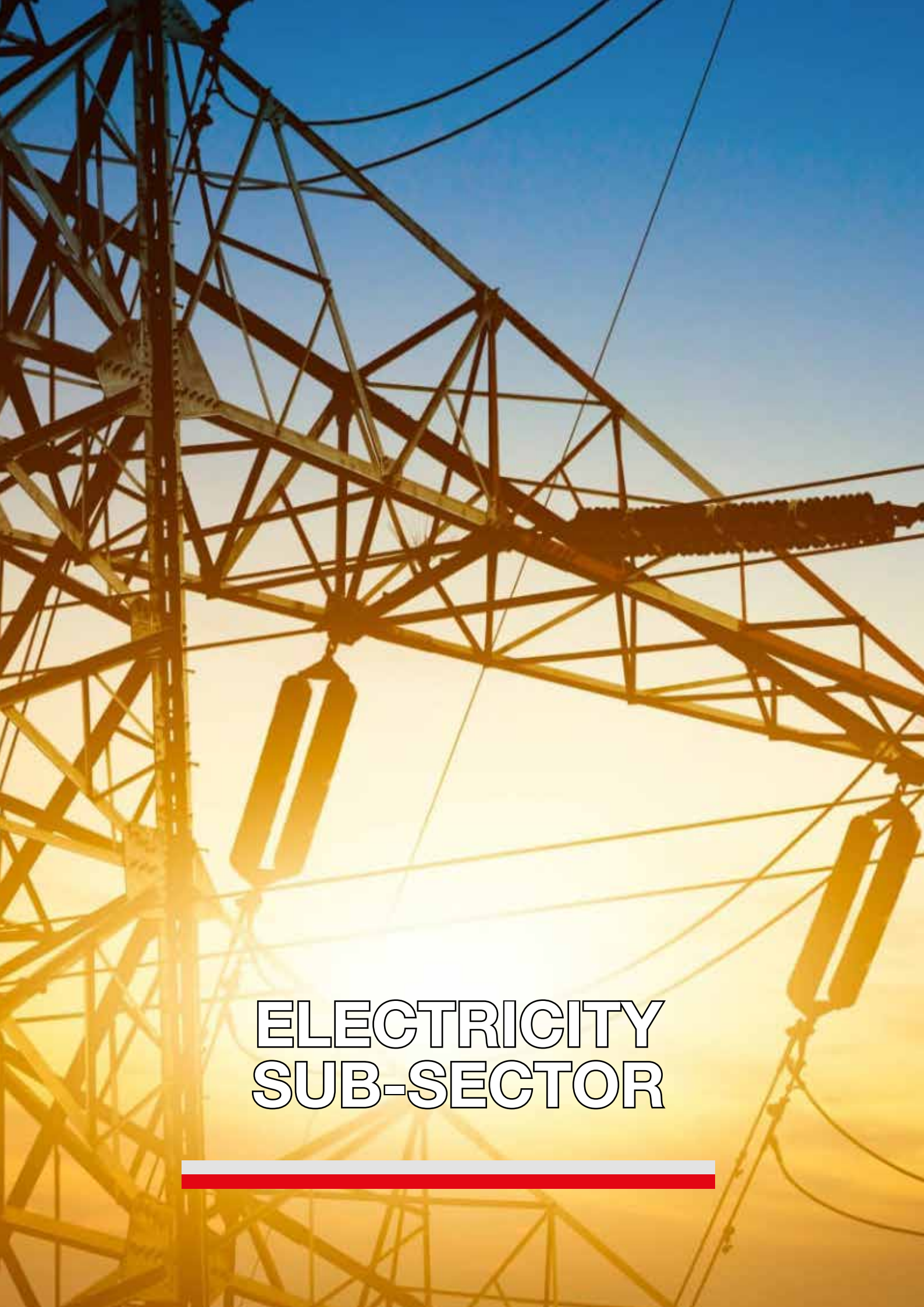
The Governments of Zambia and Tanzania are collaborating on the development of a new multi-product petroleum pipeline, designed to transport a minimum of five million tonnes of petroleum products annually. Once operational, the pipeline is expected to significantly contribute to the reduction of pump prices in Zambia. The feasibility study for this project is anticipated to be completed in 2025.

#### ii. **Implementation of TAZAMA Open Access Guidelines**

The full implementation of the Open Access Guidelines governing the use of the TAZAMA pipeline aimed at enabling multiple OMCs to import petroleum products is scheduled for 2025. Pipeline imports of LSG under these guidelines are expected to commence in April 2025, thereby enhancing the security of LSG supply in the country.

#### iii. **Enhanced National Petroleum Storage Capacity - commissioning of New Lusaka Fuel Depot**

The construction of the new Lusaka (Chilanga) fuel depot is scheduled for completion and commissioning in 2025. Upon its completion, the total number of government-owned fuel storage depots across the country will increase to eight. This expansion is expected to significantly enhance the national petroleum reserve storage capacity. Currently, seven government depots are operational in Lusaka, Chipata, Ndola, Mpika, Mansa, Mongu, and Solwezi.



# ELECTRICITY SUB-SECTOR

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## 4 ELECTRICITY SUB-SECTOR

The electricity sub-sector in Zambia plays a crucial role in the country's economic growth, supplying power to various economic sub-sectors, essential services and households. Predominantly dependent on hydropower, Zambia has faced challenges due to droughts that have negatively affected hydroelectric power generation, resulting in power deficits leading to prolonged hours of loadshedding. In response, the government has focused on diversifying energy sources, including solar, and thermal power.

During 2024, the electricity sub-sector was largely made up of the following categories of licensed enterprises:

- a) ZESCO Limited, a vertically integrated public utility involved in generation, transmission, distribution and supply of electricity.
- b) Independent Power Producers which include; CEC Renewables Limited, Lunsemfwa Hydro Power Company Limited, Bangweulu Power Company Limited, Ngonye Power Company Limited, Ndola Energy Company Limited, Maamba Energy Limited, Itzhi-tezhi Power Company Limited, Kafue Gorge Lower Power Development Corporation Limited, Kariba North Bank Extension Power Corporation Limited and Dangote Cement Zambia Limited.
- c) Distribution and supply enterprises which include; Northwestern Energy Corporation Limited and Copperbelt Energy Corporation Plc.
- d) Power Traders such as; GreenCo Power Services Limited, Petrodex Energy Trading Limited Enterprise Power Zambia Limited and Kanona Power Company Limited
- e) Mini-grid enterprises such as; Zengamina Power Company, Engie Power Corner, Solera Power Vending Machine, Rural Electrification Authority (Kasanjiku Mini-grid)

This chapter discusses the key players, the key developments, challenges, and strategies within Zambia's electricity sub-sector, with a focus on improving the reliability of supply and expanding sustainable energy production capacity.

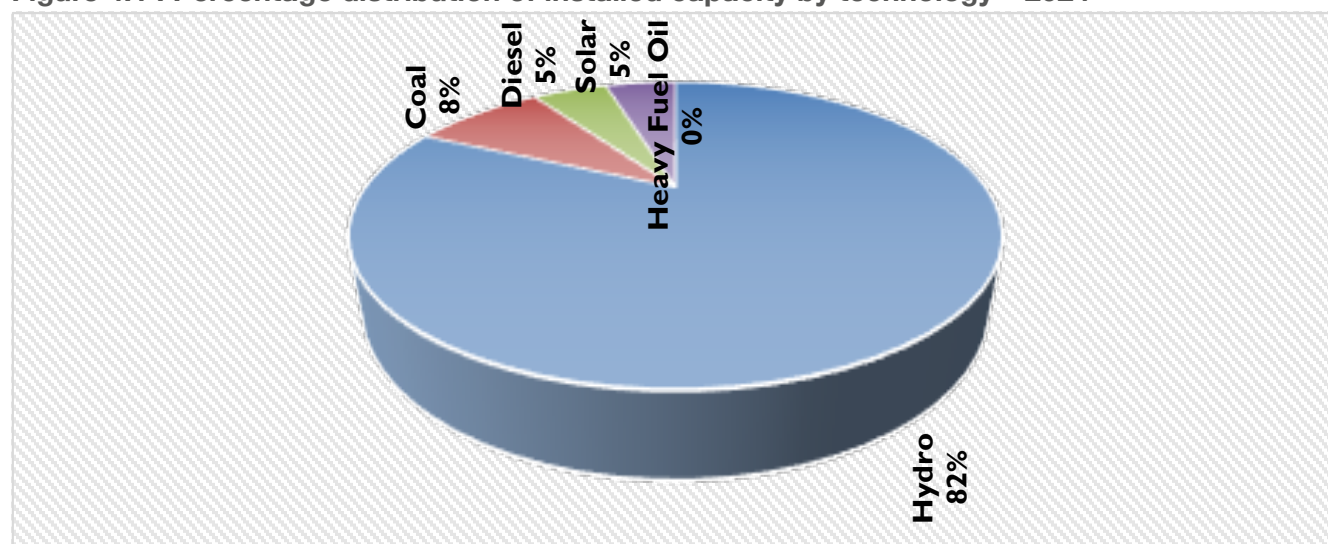
### 4.1 Zambia's installed electricity generation capacity

Zambia's total installed electricity capacity stood at 3,885.86MW in 2024, representing an overall increase of 1.94 percent compared to the 3,812.06MW in 2023. The increase in the 2024 installed capacity was largely attributed to the addition of a 60MW solar power station in Itimpi, Copperbelt province, by CEC, and installation of 23 by 750kVA standby diesel generators across several trading markets with a total approximate installed capacity of 13.8MW.

The installed capacity of diesel thermal power plants increased by more than two and half times the capacity recorded in 2023, and this was mainly due to the installation of 23 by 750kVA standby diesel generators referred above, and the reconfiguration of the 110MW HFO thermal power plant at Ndola Energy Company Limited to run on diesel. Consequently, the installed capacity of HFO based thermal power plant reduced from 110MW in 2023 to zero in 2024.

Figure 4.1 presents the proportion of installed capacity by technology while Table 4.1 presents the installed capacity by technology in 2024 compared to 2023.



**Figure 4.1 : Percentage distribution of installed capacity by technology – 2024****Table 4.1 : Installed Capacity by technology, 2023 and 2024**

Technology	2023	2024	% Change
Hydro (grid-tied)	3,162.80	3,162.80	0.00
Solar (grid-tied)	123.00	183.00	48.78
Thermal (coal, grid-tied)	330.00	330.00	0.00
Thermal (diesel, grid-tied)	80.00	203.80	154.75
Thermal (HFO, grid-tied)	110.00	0.00	-100
<b>Sub-total (grid-tied)</b>	<b>3,805.80</b>	<b>3,879.60</b>	<b>1.94</b>
Hydro (off-grid)	1.34	1.34	0.00
Solar (off-grid) <sup>17</sup>	0.12	0.12	0.00
Thermal (diesel, off-grid)	4.80	4.80	0.00
<b>Sub-total (off-grid)</b>	<b>6.26</b>	<b>6.26</b>	<b>0.00</b>
<b>Total (grid and off-grid)</b>	<b>3,812.06</b>	<b>3,885.86</b>	<b>1.94</b>

## 4.2 Hydrological situation in Zambia

The major hydropower generation reservoirs in the country, along with their storage design capacities, are presented in Table 4.2.

**Table 4.2: Design characteristics of some major hydropower power generation water bodies**

S.N	Hydro Station	Reservoir type	Designed maximum water level asl (m)	Designed minimum water level asl (m)	Effective water height for max. generation (m)
1.	Kafue Gorge	Dam	976.60	974.00	2.60
2.	Kariba Dam	Dam	487.71	475.50	12.21
3.	Vic Falls	Run-off-river	883.20	881.50	1.70
4.	ITPC	Dam	1030.50	1006.00	24.50
5.	KG Lower	Dam	579.75	530.00	49.75

### 4.2.1 Water Level Trends at Generation Stations in 2024

In 2024, none of the main hydropower reservoirs, namely, Kafue Gorge, Kariba dam, Victoria Falls, Itezhi-tezhi dam and Kafue Gorge Lower dam, exceeded 55 percent of the water needed for full power generation during the peak water period, which usually happens between April and June. Kafue Gorge and Kariba dam only reached 17 percent and 15 percent of the maximum dam capacity respectively. The performance of the main reservoirs for hydro power generation is summarised in Table 4.3 and detailed in Appendix 5.

<sup>17</sup> does not include solar installations done by consumers at their premises under netmetering and SI 52



**Table 4.3 : Maximum percentage of water levels recorded by water bodies, 2023-2024**

Water Bodies	Maximum percentage of water levels recorded	
	2023 (%)	2024 (%)
Kafue Gorge	100	17
Kariba dam	36	15
Victoria Falls	93	38
Itezhi-tezhi	100	55

This pattern shows that there was an unabating problem of low water levels in 2024, which affected electricity production in the country leading to a deficit of 1,300MW in electricity generation. The deficit resulted in prolonged load-shedding of up to 20 hours per day between March and December 2024 for domestic consumers.

### 4.3 National electricity generation

The national electricity generation refers to the electricity sent out by power stations across the country comprising the public Utility (ZESCO) and Independent Power Producers (IPPs). Overall, the national electricity generation in 2024 declined by 31.23 percent from 19,372.92GWh in 2023 to 13,324.38 GWh in 2024. This is the largest decline in generation experienced in the last 10 years on account of a reduction in water levels due to low rain fall during the 2023/2024 season. Table 4.4 presents the national electricity generation by source in 2024 and 2023.

**Table 4.4 : National electricity generation by source 2023 and 2024.**

Source	Electricity generated (GWh)		Percentage change in the 2024 generation (using 2023 base)
	2023	2024	
ZESCO's large stations	11,272.49	7,282.57	-35.40
Independent Power Producers	7,893.74	5,848.01	-25.92
ZESCO's mini stations	204.65	185.97	-9.13
ZESCO's diesel stations	2.05	7.83	282.10
<b>Grand Total</b>	<b>19,372.93</b>	<b>13,324.38</b>	<b>-31.22</b>

#### 4.3.1 Electricity Generated from Large Hydro Power Plants Owned by ZESCO

Table 4.5 presents the electricity generation from large hydro power plants in 2024, and compares to the generation in the previous year, 2023.

**Table 4.5 : Net electricity generated from ZESCO's large hydro power plants, 2023 and 2024<sup>18</sup>**

Name of Station	Electricity generated (GWh)		Percentage change in the 2024 generation (using 2023 base)
	2023	2024	
KFG	7,497.97	4,783.50	-36.20
KNBPS	2,955.17	1,730.74	-41.43
Victoria Falls	819.35	768.33	-6.23
<b>Grand Total</b>	<b>11,272.49</b>	<b>7,282.57</b>	<b>-35.40</b>

#### 4.3.2 Electricity Generated from Mini-Hydro Power Plants Owned by ZESCO

Table 4.6 presents the electricity generation from small and mini-hydro power plants in 2024, and compares to the generation in the previous year, 2023.

**Table 4.6 : Net electricity generated from ZESCO's mini-hydro power plants, 2023 and 2024**

Name of Station	Electricity generated (GWh)		Percentage change in the 2024 generation (using 2023 base)
	2023	2024	
Lusiwasi Lower	17.38	10.51	-39.53
Lusiwasi Upper	60.83	26.18	-56.96
Chishimba	16.00	13.66	-14.63
Musonda	56.83	55.06	-3.11
Lunzua	53.04	79.61	50.09
Shiwang'andu	0.57	0.95	66.67
<b>Grand Total</b>	<b>204.65</b>	<b>185.97</b>	<b>-9.13</b>

### 4.3.3 Electricity Generation from Independent Power Producers

The electricity generation from Independent Power Producers in 2024 is presented in Table 4.7, which also compares with the generation in 2023.

**Table 4.7 : Electricity generated from Independent Power Producers, 2023 and 2024.**

Name of Station	Electricity generated (GWh)		Percentage change in the 2024 generation (using 2023 base)
	2023	2024	
Lunsemfwa	218.71	58.20	-73.39
Ndola Energy	6.65	339.46	5004.66
ITPC	828.68	400.53	-51.67
MCL	2,126.33	2,133.45	0.33
Bangweulu	86.97	89.81	3.27
Ngonye	60.32	39.58	-34.38
KGL	4,038.54	2,337.12	-42.13
KNBE	527.54	449.86	-14.72
<b>Grand Total</b>	<b>7,893.74</b>	<b>5,848.01</b>	<b>-25.92</b>

### 4.3.4 Electricity Generated from Diesel Power Plants

Table 4.8 presents the electricity generated from licensees' diesel generators across the country in 2024, and compares to the generation in the previous year, 2023. As presented in Table 4.8, in 2024, Lundazi and Chama districts' diesel power plants did not operate, and this was due to the successful connection of the two districts to the national grid by ZESCO which facilitated electricity supply from the grid.

**Table 4.8 : Net Electricity generated from diesel power plants, 2023 and 2024**

Name of Station	Electricity generated (GWh)		Percentage change in the 2024 generation (using 2023 base)
	2023	2024	
Shang'ombo	1.22	1.23	0.82
Lundazi	0.75	0.003	-99.60
Chama	0.08	0.00	-100.0
CEC Emergency generators	-	5.95	100.0
ZESCO Market generators	0.00	0.65 <sup>19</sup>	100.0
<b>Grand Total</b>	<b>2.05</b>	<b>7.83</b>	<b>282.10</b>

<sup>19</sup> The figure does not include September 2024 energy values as meters were not configured

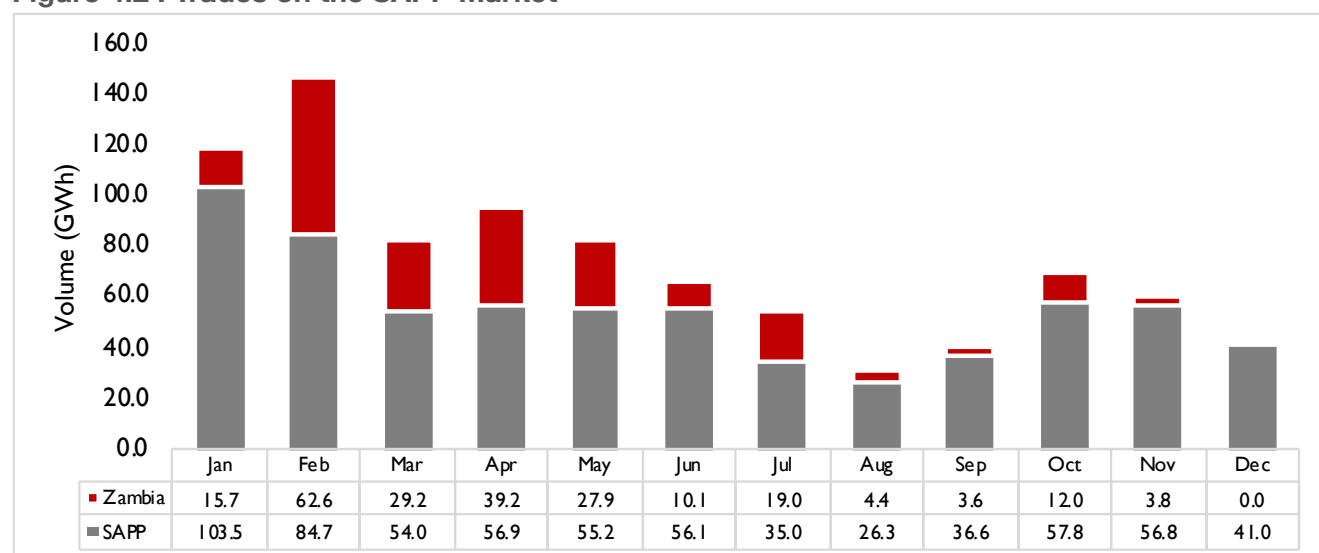
## 4.4 Domestic and regional power trading

In 2024, Zambia's electricity sector remained actively engaged in cross-border power trading through bilateral agreements and the Southern African Power Pool (SAPP) spot-market.

### 4.4.1 Trading on the SAPP Spot Market

Figure 4.2 shows Zambia's total trade volumes, by ZESCO and third-party traders through the ZESCO network, in proportion to other trades on the SAPP spot market.

**Figure 4.2 : Trades on the SAPP Market**



### 4.4.2 Electricity Imports

ZESCO recorded total imports of 2,467GWh of electricity during the period January to December 2024. These imports were driven by the need to supplement domestic generation, largely impacted by hydrological constraints. The sources of imported power were as follows:

- 45 percent from Electricidade de Moçambique (EDM) of Mozambique;
- 41percent from the Eskom Holding SOC Limited (Eskom) of South Africa;
- 9 percent through the SAPP Day Ahead Market; and
- 5 percent from Zimbabwe Power Company (ZPC).

### 4.4.3 Electricity Exports

In 2024, Zambia exported a total of 3,057.47 GWh through ZESCO, CEC and GreenCo.

#### 4.4.3.1 ZESCOs exports

ZESCO exported a total of 2,555 GWh during the year. Key export destinations included Namibia, Zimbabwe, the SAPP Market, Botswana, the Democratic Republic of Congo (DRC), Tanzania, Mozambique, and Malawi. The distribution of exports was as follows:

- 37% to Namibia Power Corporation (NamPower) of Namibia;
- 22% to Botswana Power Company (BPC) of Botswana;
- 21% to various buyers in Democratic Republic of Congo through the Société Nationale d'Électricité Sa (SNEL); and
- 14% to Zimbabwe Platinum mines in Zimbabwe through ZPC.

#### 4.4.3.2 GreenCos' exports

In 2024, GreenCo exported 17.97GWh through the SAPP spot market.

#### 4.4.3.3 CECs' exports

During the period under review CEC Plc exported 484.50GWh to its bilateral customers in the Democratic Republic of Congo.

#### 4.4.4 Power Purchase and Supply agreements

As the regulator of Zambia's energy sector, the ERB is mandated to review and approve agreements relating to the sale and purchase of power which govern the terms under which electricity is traded.

In 2024, the ERB approved a total of 70 agreements, reflecting heightened activity in the sector. Notably, the number of PPAs for energy supply into the Zambian market surged from seven (7) in 2023 to 23 in 2024 as summarised in Table 4.9.

**Table 4.9 : Summary of Approved Electricity Supply Agreements**

Agreement Type	No. Approved	
	2024	2023
Power Supply Agreement	32	32
Power Purchase Agreement	23	7
Wheeling Agreement	8	2
Addendum to Power Supply Agreement	4	1
Addendum to Power Purchase Agreement	2	3
System Operation Agreement	1	1
Balancing Agreement	-	1
Addendum to Transmission Agreement	-	1
<b>Total</b>	<b>70</b>	<b>48</b>

The increase is attributed to the energy crisis that Zambia faced in 2024, which exposed the need for diversified and increased electricity generation. The crisis spurred an influx of investment proposals from both local and international players looking to expand Zambia's generation capacity and address power shortages.

The rise in PPAs signals growing investor interest in Zambia's energy market and presents an opportunity for:

- Enhanced energy security as increased power generation capacity will help stabilise supply and reduce the impact of future energy deficits;
- Diversification of generation sources paving the way for renewable energy projects; and
- Market growth and competition driven by the expansion of power producers fostering greater competition, potentially leading to more competitive tariffs for consumers.

#### 4.5 Electricity consumption

The total national electricity consumption declined by 28.7 percent, from 14,642.2 GWh in 2023 to 10,436.3 GWh in 2024, with reductions observed across all sectors except transport.

The mining sector recorded a decline of 34.0 percent from 6,956.5 GWh in 2023 to 4,589.2 GWh in 2024. The residential services sector also saw a 21.3 percent decrease, from 4,387.7 GWh to 3,454.8 GWh, while manufacturing consumption dropped by 26.4 percent, from 354.5 GWh to 261.0 GWh.

Other sectors also recorded declines, including agriculture (-19.9%), energy and water (-24.1%), construction (-23.7%), trade (-17.5%), and finance and property (-20.3%). In contrast, the transport sector was the only one to experience growth, with electricity consumption increasing 31.1 percent, from 38.9 GWh in 2023 to 50.9 GWh in 2024.



This is presented in Table 4.10.

**Table 4.10 : Comparison of national electricity consumption by economic sector, 2023 and 2024**

Sector	Electricity consumption (MWh)		Percentage change (using 2023 base)
	2023	2024 (affected by the power deficit)	
Other	44,150.03	30,565.49	-30.8%
Agriculture	312,197.22	250,048.47	-19.9%
Mining (Distribution)	694,355.45	60,918.14	-91.2%
Manufacturing	354,541.95	260,956.12	-26.4%
Energy And Water	119,524.94	90,752.94	-24.1%
Construction	6,856.72	5,229.59	-23.7
Trade	91,001.99	75,099.08	-17.5
Transport	38,852.94	50,938.26	31.1
Finance And Property	907,374.82	723,546.31	-20.3
Residential Services	4,387,653.62	3,454,825.95	-21.3
PPA	729,202.21	844,244.12	15.8
Mines Total (Transmission)	6,956,509.68	4,589,183.59	-34.0
<b>Total (National Demand less losses)</b>	<b>14,642,221.57</b>	<b>10,436,308.06</b>	<b>-28.7</b>

## 4.6 Operational performance of electricity utilities

### 4.6.1 ZESCO Limited

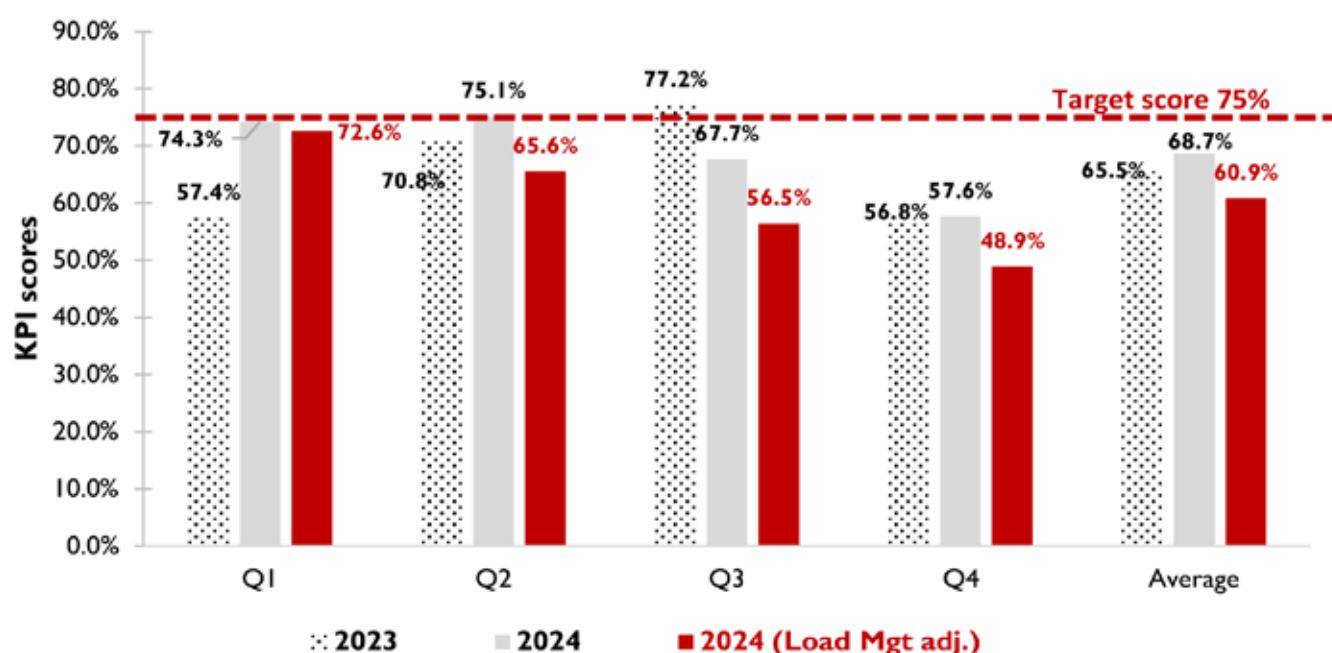
#### 4.6.1.1 ZESCO KPI Performance

The ERB monitors the performance of ZESCO Limited (ZESCO) through the Key Performance Indicator (KPI) Framework, focusing on quality of supply, customer service, financial management, commercial and technical operations to ensure efficiency and compliance with regulatory standards.

The KPI framework covers a three-year period from January 2023 to December 2025 and comprises 11 thematic areas. In 2024, the Utility attained an average score of 69 percent compared to 66 percent in 2023, against a required KPI minimum target of 75 percent. Meanwhile, if the effects of loadshedding were taken into account in the assessment, this score reduces to 61 percent.

Figure 4.3 presents a summary of ZESCO's scores for the year 2023 and 2024.

**Figure 4.3 : ZESCO's scores for the year 2023 and 2024**



#### 4.6.1.2 Technical performance

In 2024, the ERB implemented risk-based compliance audit approach for electricity infrastructure and inspected 432 ZESCO sites. The 2024 audits focused on distribution infrastructure supplying critical<sup>20</sup> installations and facilities which scored below the ERB's 2023 regulatory target of 74 percent. The average compliance was 79 percent, which met the regulatory KPI target of 78 percent compliance to electricity distribution infrastructure by 31st December 2024.

#### 4.6.1.3 Copperbelt Energy Corporation Plc

CEC is a privately owned Transmission Network Service Provider (TNSP) and Distribution Network Service Provider (DNSP). CEC owns and operates over 300km of transmission lines and 700km of distribution lines around the Copperbelt Province.

#### 4.6.1.4 Technical performance

As part of implementing the risk-based audit in 2024, no compliance inspections were undertaken by the ERB on CEC electricity infrastructure in 2024. This was because in the years 2021-2023, CEC's average compliance was 97 percent which was above the 74 percent compliance for electricity infrastructure.

#### 4.6.1.5 Challenges

The nation-wide load management affected CEC in the following two main aspects:

- (a) high voltage on its network because of light system loading; and
- (b) vandalism of conductors and copper cables.

#### 4.6.2 Northwestern Energy Corporation Limited

Northwestern Energy Corporation Limited (NWECL) is a private electricity distribution company that primarily distributes and supplies electricity to customers within Kabitaka, Kalumbila and Lumwana in Northwestern Province.

NWECL purchases power in bulk from ZESCO for distribution and supply to its customers. The power supplied to Kabitaka is bought at the ERB-approved distribution tariff, while power for Kalumbila and Lumwana is obtained through a negotiated Power Purchase Agreement with ZESCO.

The company served a total of 3,589 customers, which included: 3,489 residential customers, eight (08) social customers, 91 commercial customers and one (01) industrial customer. Further, in 2024, NWECC sold 37.15 GWh of electricity, reflecting a 21.7 percent decrease from the previous year's 47.4 GWh. Table 4.11 shows the distribution of customers of NWECC in 2023 and 2024.

**Table 4.11 : Breakdown of NWECCs' customers, 2023 and 2024**

Customer category	Number of Customers		Adjustment
	2023	2024	
Residential	3,395	3,489	94
Commercial	69	91	22
Social Services	10	8	-2
Industrial	1	1	0
Total	3,475 <sup>21</sup>	3,589	77

NWECC's infrastructure includes 69.7 kilometers of overhead 33KV lines, 0.47 kilometers of underground 33KV lines, 7.9 kilometers of overhead 11KV lines, and 14 kilometers of 0.4KV overhead lines.

#### 4.6.2.1 Key Developments in 2024

In 2024, NWECC connected 240 domestic houses and four (04) non-residential units, including a clinic and a butchery in Kalumbila. Further, to address the prolonged load-shedding hours caused by inadequate power generation on the national grid, NWECC installed two (02) 1,250kW generator sets as backup supply. Additionally, NWECC secured a 7.5MW PPA with GreenCo Power Company for the supply of emergency power.

#### 4.6.2.2 Major Projects Status

In 2024, NWECC undertook several key capital projects. It continued with the construction of a 33kV distribution line and a 33kV substation feeder bay for Kalumbila township, with an expected completion in the fourth quarter of 2025. Additionally, the distribution network capacity in Lumwana is set to be increased by 1MW to accommodate a new housing project, planned for 2025. The company also completed and commissioned a new head office building in Lusaka in September 2024, diversifying their revenue through rental income and other opportunities.

#### 4.6.2.3 Outlook

In 2025, NWECC plans to become a member of the SAPP, enabling them to trade on the international spot market. As part of its business diversification efforts, NWECC has embarked on alternative power generation projects through the development of solar power plants. The company has collaborated with international firms to supply energy storage solutions and solar equipment to both residential and commercial customers.

Further, NWECC indicated that it intends to participate in energy trade on the open market following the enactment of SI.40 of 2024. This SI allows a qualifying third party to access spare transmission and distribution capacity on non-discriminatory terms.

Furthermore, NWECC plans to complete the construction of a 33kV dedicated line to the industrial park which was scheduled to be commissioned in 2024. This will support expansion projects and ensure a reliable supply to industrial customers in Kalumbila. The additional sub-station will connect the new 33kV line and support existing infrastructure, securing the supply to the industrial park. The company projects a 30 percent increase in direct revenues, a 10 percent increase in indirect revenue generation, and a 35 percent revenue increase from additional connections.

With the Multi year tariff framework, NWECC is expected to submit its tariff true up report to the ERB in 2025. This is expected to provide for a possible revision to the approved tariff for 2025.

<sup>21</sup> Note the correction of the 2023 total number of customers

#### 4.6.2.4 Challenges

In 2024 NWEK faced several challenges mainly due to ZESCOs' power mitigation measures and the subsequent introduction of load shedding that started in March 2024. As a result the utility experienced several unplanned outages. The utility stated that this negatively affected their revenues resulting in losses and challenges in meeting their financial obligations.

#### 4.6.3 Rural Electrification Authority

The Rural Electrification Authority (REA) is a statutory body created in 2003 to facilitate increased access to electricity in rural areas. The aim is to contribute to the improved productivity and quality of life for the rural population in Zambia. REA facilitates and implements rural electrification through grid extension, solar home systems, solar mini-grids, mini-hydro and other renewable energy sources. The projects are implemented in line with the Rural Electrification Master Plan (REMP) which has a target of achieving universal access to electricity by the year 2030. Once a grid has been extended by REA all its assets are transferred to ZESCO Limited.

##### 4.6.3.1 Projects Implemented by the REA in 2024

In 2024 REA implemented 114 Grid Development Projects (GDPs) and 29 Off-grid Projects (OGPs) distributed across all the ten provinces of Zambia. A total of 27,920 beneficiaries were recorded in 2024. Below are the major projects undertaken by REA in 2024;

##### a) Electricity Services Access Projects (ESAP)

REA, with the financial support from the World Bank commenced the implementation of the Electricity Services Access Project (ESAP) in 2018. The aim of the project was to provide for last-mile subsidy connections. In 2024, the implementation of the project was concluded.

Under this project a total of 70,554 connections were attained.

##### b) The Increased Access to Electricity and Renewable Energy Program (IAEREP)

During the year REA implemented a total of 22 Solar mini grids under the Increased Access to Electricity and Renewable Energy Program (IAEREP) project out of which 9 completed and commissioned under while the remaining 13 are expected to be completed in due course.

##### 4.6.3.2 Challenges faced by REA in 2024

REA imports most of its equipment from outside the country. It was therefore affected by exchange rate volatility as well as delays in the lead time.

##### 4.6.3.3 Prospects for 2025

Beyond 2024, REA has planned to implement the Accelerating Sustainable & Clean Energy Access Transformation (ASCENT) project funded by the World Bank. The ASCENT project aims to increase access to sustainable and clean energy in Eastern and Southern Africa, with the focus on expanding grid electrification and scaling distributed renewables and clean cooking solutions. Furthermore, it plans to implement the National Energy Advancement and Transformation (NEAT) program funded by the World Bank. The NEAT aims to increase access to renewable energy and enhance the reliability of electric supply.

#### 4.6.4 Lunsemfwa Hydro Power Company

LHPC, the first Independent Power Producer (IPP) in Zambia, operates two hydro power plants with a combined installed capacity of 56MW. The power plants, which are fed by water from the Mulungushi and Lunsemfwa rivers, are jointly owned by a Norwegian investor and a Zambian company, holding 51% and 49% shares respectively. LHPC holds licences for the generation and transmission of electricity issued by the ERB and has two (2) Power Purchase Agreements (PPAs) with ZESCO and Copperbelt Energy Corporation PLC (CEC). The company further has two (2) wheeling agreements with ZESCO for LHPC's use of the ZESCO network to deliver power to CEC as well as ZESCO's use of the LHPC network.



The generated electricity is distributed along the 45km 66KV power evacuation lines owned by LHPC. The Company delivers electricity to the Kabwe Stepdown Sub-station which is the main delivery point to the national grid. Further, the Company also wheels power on behalf of ZESCO to Kabwe town and the surrounding community.

In 2024, LHPC sold 90,188MWh, with an average capacity of 10.31 MW to its customers namely, ZESCO, CEC and Sable Zinc. This represented a decline of 58.76 percent from 218,710MWh sold in 2023. The decline was attributed to the low water levels arising from the poor rainfall during the 2023/2024 season. In 2024, LHPC also purchased 18,925.90 MWh from the SAPP market and sold 9,716.80 MWh to the SAPP market.

#### 4.6.4.1 Technical performance

During the period 2023/24, no technical audit was undertaken by the ERB because LHPC's compliance rating in the years 2019-2022 was above the regulator's minimum compliance threshold for electricity infrastructure of 74 percent.

#### 4.6.4.2 Challenges experienced during the year

The period 2023/24 and 2024/25 in Zambia, marked by below-average rainfall and prolonged droughts, had significantly reduced water availability, impacting energy production. Further, the low reservoir levels were caused by upstream water abstraction.

LHPC looks forward to attracting more investment for expansion and participation in the open access power market in Zambia under S.I. 40.

#### 4.6.4.3 Outlook

LHPC has embarked on a project to raise its Dam to capture the run-off water between Mita Hills and Lunsemfwa Diversion Dam to take advantage of the runoff water during the rainy season which has not been utilized.

In 2024 LHPC commenced negotiations for the 20MW Solar PV project which is yet to be commissioned.

LHPC completed the process of upgrading one of the transmission lines and replacing the copper cables, which was carried out over a two (2) year period. The second transmission line will also be upgraded in due course.

Harnessing the potential of the Muchinga escarpment – LHPC intends to increase its installed capacity by taking advantage of the Muchinga escarpment, downstream of Lunsemfwa river, as the escarpment has the potential to generate over 500MW of electricity.

#### 4.6.5 Maamba Energy Limited

Maamba Energy Limited (MEL), formerly known as Maamba Collieries Limited<sup>22</sup>, is jointly owned by Nava Bharat and ZCCM Investment Holding Plc (ZCCM-IH) with a shareholding of 65 percent and 35 percent respectively. The plant accounts for about eight (8) percent of the country's capacity making it one of Zambia's largest IPPs providing base load power and enhancing energy security and diversification. MEL operates a 300MW coal-powered thermal plant in Sinazongwe District, with 268.5MW capacity available for sale, while the remaining 31.5MW is used for the plant's auxiliary consumption. MEL has a long-term PPA supplying 208MW to ZESCO. MEL owns a 1000MVA, 46 km, 330kV double-circuit transmission line through which electricity generated at Maamba is transmitted to the national grid via Muzuma substation in Choma district.

In 2024, the total gross generation was 2,386.66 GWh compared to 2,174.53 GWh in 2023 representing 9.76 percent increase. Further, MEL sent out 2,133.45GWh of electricity to ZESCO compared to 2,160.68GWh in 2023.

<sup>22</sup> The name was changed in July 2024 to reflect the company's diversification into other energy portfolio's including renewable energy

#### 4.6.5.1 Technical Performance

On the basis of the risk-based audit framework no audit was undertaken at MEL in 2024 since the utility had scored above the ERB's 2023 regulatory target of 74 percent compliance for electricity infrastructure during the preceding two (02) years.

#### 4.6.5.2 Key Developments

In 2024, MEL commenced the expansion of its thermal power generation with an additional 300MW (2 x 150 MW) under Phase II expected to be completed in 2026 at an estimated cost of US\$400 million<sup>23</sup>. Additionally, MEL is actively exploring renewable energy investments.

#### 4.6.5.3 Challenges

Generation from MEL plant was affected by several grid disturbances, including one major incident that led to a total station tripping. These disruptions underscored the need for enhanced system security to maintain reliability of supply from MEL.

#### 4.6.5.4 Outlook

In 2025, planned maintenance outages for Unit 1 and Unit 2 will take place in February-March and August-September, ensuring continued plant efficiency and reliability.

### 4.6.6 Itezhi-Tezhi Power Corporation Limited

Itezhi Tezhi Power Corporation (ITPC) operates a 120MW hydro power station. ITPC is a special purpose vehicle owned by ZESCO and Tata Africa at 50 percent each share holding. The company has a 25-year concession and 25-year power offtake agreement through a PPA with ZESCO.

In 2024, ITPC generated a gross output of 410GWh against 828.68GWh in 2023 representing a reduction of 50.52 percent. This was the lowest annual energy production on record which was driven by historically low reservoir water levels. This further reflected the impact of drought conditions on Zambia's hydro-dependent power sector.

#### 4.6.6.1 Technical Performance

On the basis of the risk-based audit framework no audit was undertaken at JTPC in 2024 since the utility had scored above the ERB's 2023 regulatory target of 74 percent compliance for electricity infrastructure during the preceding two (02) years.

#### 4.6.6.2 Key Developments

To bolster plant efficiency and reliability the company undertook infrastructure upgrades and maintenance projects in 2024. This included the partial overhaul of Unit 1 and installation of external diesel tank to increase emergency fuel storage capacity. Other developments were the procurement, installation, and commissioning of a new 10MVA distribution transformer to enhance the plant's power evacuation capacity and partial upgrade of the SCADA system to enhance plant monitoring and reliability.

#### 4.6.6.3 Challenges

ITPC's primary challenge during the year was the unfavourable hydrological conditions which resulted in the reservoir hitting its lowest water levels since commercial operations began.

#### 4.6.6.4 Outlook

ITPC intends to improve the reliability and safety of the plant by taking several improvement projects and continuing to deliver value to its stakeholders.

<sup>23</sup> <https://www.napsa.co.zm/napsa-board-chairperson-shipango-muteto-on-the-signing-of-the-financing-agreement-between-maamba-collieries-limited-and-napsa-for-the-construction-of-a-300-mw-power-plant-16th-july-2024/>

#### 4.6.7 Ndola Energy Company Limited

Ndola Energy Company Limited (NECL), a 110 MW thermal power plant located in Ndola, Zambia, is wholly owned by GL Africa Energy (GLAE) Ltd, an Independent Power Producer investing in energy solutions across Africa. Initially fuelled by Heavy Fuel Oil (HFO) supplied by the Indeni Oil Refinery, the facility ceased operations in 2021 following the refinery's closure. In June 2024, NECL successfully recommissioned and reconfigured the plant to operate on Low Sulphur Gasoil (LSG), thereby restoring its contribution to the national grid. NECL is also a member of the Southern African Power Pool (SAPP), which enables it to trade electricity on the regional spot market.

During the reporting period, NECL supplied a total of 339,462.740 MWh of electricity to ZESCO Limited under a PPA.

##### 4.6.7.1 KPI Performance

On the basis of the risk-based audit framework no audit was undertaken at NECL in 2024 since the utility had scored above the ERB's 2023 regulatory target of 74 percent compliance for electricity infrastructure during the preceding year.

##### 4.6.7.2 Challenges

The reconfiguration of the power plant by switching from HFO to diesel led to an increase in production costs. In addition, the company faced operational challenges as a result of intermittent supply of LSG. Since its inception, the plant relied on relatively cheaper HFO which was sourced from the Indeni Refinery. The conversion of TAZAMA pipeline to carry LSG disrupted the supply of HFO.

##### 4.6.7.3 Outlook

NECL has plans to invest in a 200MW solar project. The Ministry of Energy has approved the feasibility study, and the company is now moving forward with grid connection agreement and conducting Environmental and Social Impact Studies. This solar initiative aims to blend its generation with the existing thermal plant, helping to reduce overall production costs.

#### 4.6.8 GreenCo Power Services Limited

GreenCo Power Services Limited (GreenCo) is a power trader established in Zambia in 2018. It serves as the Southern African regional head office and trading hub for Africa GreenCo. Africa GreenCo is the first trader to be licensed in Zambia. It was also the first trader to join SAPP and operates in Zambia, Zimbabwe, South Africa, and Namibia. Its purpose is to facilitate increased generation and growth of renewable energy markets by addressing creditworthiness challenges, experienced by most energy utilities, through partnerships and innovative solutions. GreenCo is supported by financing from Development Financing Institutions (DFI), philanthropic organisations and private capital.

GreenCo's primary focus is on facilitating the trade of renewable energy within SAPP and sourcing electricity from both renewable and emergency power imports to supply local industries and consumers. The energy crisis of 2024 presented the Company an opportunity to support the provision of emergency power to mitigate the energy deficit.

##### 4.6.8.1 Power Trading

In 2024, GreenCo purchased electricity from various suppliers, including the Southern African Power Pool (SAPP), bilateral imports, and emergency power imports. A total of 473.01GWh was purchased during the year, while 193.64GWh was sold. Of the 193.64 GWh, 17.97 GWh was sold on the SAPP market while 175.67 GWh was sold to other clients. The remaining 279.37GWh was banked with ZESCO as part of an energy banking arrangement.

GreenCo's customer base during the reporting period comprised two (02) mining companies, three (03) Commercial and Industrial (C&I) consumers, and one (01) distribution company. Most of GreenCo's electricity trading activities were conducted through the SAPP platform. In addition, the company maintained several emergency Power Supply Agreements (PSAs) with C&I customers to address short-term energy needs.

#### 4.6.8.2 Challenges

During 2024, GreenCo relied mostly on emergency imports, which were more expensive and less reliable. Further, the company also faced limitations on the ability to import enough electricity due to capacity constraints with the interconnectors, making it harder to get the power needed timely.

#### 4.6.8.3 Outlook

GreenCo plans to invest in Battery Energy Storage Supply (BESS) to ensure more reliable power supply. It also plans to invest in better infrastructure to improve energy imports and the distribution of power across Zambia.

#### 4.6.9 Kanona Power Company Limited

Founded in 2023, Kanona Power Company Limited (Kanona) is a private power company registered in Zambia, specialised in developing and investing in large-scale power opportunities, particularly for the mining sector in Zambia and Southern Africa.

As a licensed operator, Kanona holds an Electricity Trading licence from the ERB, and government permits for power import and export. With access to the Zambian grid through wheeling and banking agreements with ZESCO, it is actively engaged in regional power sourcing, within Zambia and across the region.

The company recorded over 510GWh of trades in 2024, supplying power to Zambia and the DRC, including emergency power for mining companies.

Looking ahead, the company is strategically focused on expanding trading volumes, developing generation assets, and advancing interconnector projects to position Zambia as a regional power trading hub.

#### 4.6.10 Kafue Gorge Lower Power Development Corporation Limited

The Government of the Republic of Zambia initiated the construction of the 750MW Kafue Gorge Lower (KGL) on the Kafue River in November 2015. Located in Chikankata district of Southern province, KGL is the first major investment funded using Public-Private Partnership (PPP) model. ZESCO was appointed to develop the project. The company is co-owned by SinoHydro and ZESCO each with a shareholding of 50 percent. The project was financed by the Zambian Government and foreign financial institutions including the Exim Bank of China.

In 2024, the plant generated gross energy of 2,079.03GWh and the net energy sent out was 2,060.23GWh compared to 4,038.54GWh in 2023 representing a 49.0 percent reduction in energy sent out.

Key Developments during the period under review included the successful completion of the two 6MW Units for the 12MW Mini Hydro Power Plant, showcasing progress in expanding the power station's capacity.

However, the year 2024 presented a major challenge for the KGL Power Station: a significant reduction in power generation due to the reported poor rainfall in the 2023/24 season which resulted in poor inflows in the KGL dam.

Looking ahead to 2025, the corporation aims to initiate a feasibility study for a 50MW floating Solar Power Plant on the KGL reservoir. Additionally, there are plans to update the 2018 feasibility study for a potential 100MW Solar Plant, located approximately 15 kilometers from the hydro power plant.

#### 4.6.11 Kariba North Bank Extension Power Corporation Limited

Kariba North Bank Extension Power Corporation Limited (KNBE) is a wholly owned subsidiary of ZESCO that owns the 360MW Kariba North Bank Extension Hydro Power Plant in Siavonga. In 2024, KNBE supplied 449.82GWh of electricity to ZESCO via its PPA compared to 527.54GWh in 2023. This represents a reduction of 17.28 percent. KNBE stated that the hydrological situation throughout 2024 negatively impacted its ability to generate more electricity.



### 4.6.11.1 Developments

In a quest to contribute to the electricity generation mix diversification agenda, KNBE embarked on the development of the 100MWac Solar Power Plant in Chisamba. The project will be commissioned in 2025.

### 4.6.11.2 Challenges

Lake Kariba experienced historically low water levels, dropping to below 25 percent of usable storage capacity by mid-2024 and further declining to a critical 1.93 percent by December 2024. The reduced inflows to the reservoir posed severe challenges for KNBE and other hydroelectric operators in maintaining consistent power generation.

## 4.7 Operational performance of the interconnected power system

The performance of the Zambia interconnected power system (IPS) is reported in terms of four characteristics, namely, disturbances experienced, power quality and reliability, power balance, and system constraints.

### 4.7.1 System Disturbances

The system disturbance reported are those classified in the Zambia Standard for Power Quality and Reliability (ZS 387 Part 2) as “major supply interruptions”, defined as:

- (a) Any single event that leads to loss of supply to at least 1,000 customers, or large end-use consumer; or,
- (b) Forced interruption index greater than five system minutes,

where system minutes = (energy not supplied in MWh) ÷ (power at peak).

A total of 45 disturbances were experienced on the IPS in 2024, as detected by System Operator (ZESCO) and 21 of these disturbances were a result of internal (in country) causes, while the remaining 24 were as a result of external factors emanating from power systems within the Southern Africa Power Pool. As shown in table 4.12, 2024 saw a slight increase in the number of system disturbances on the IPS, compared to 2023 where 41 system disturbances were recorded.

**Table 4.12 : Number of system disturbances recorded on the IPS (2023 and 2024)**

Number of disturbances	Q1	Q2	Q3	Q4	Total
Year - 2024	9	6	7	23	45
Year - 2023	13	9	14	8	44

### 4.7.2 Power Quality Management System

In accordance with the regulatory Power Quality Management System (PQMS) Framework, the ERB in 2024 continued to enforce power quality and reliability requirements to facilitate for a technically and economically efficient Zambian Interconnected Power System (IPS).

Based on the PQMS Framework, the ERB directed electricity licensees to install power quality recorders at required number of locations on their respective networks to adequately monitor power supply quality and reliability on the IPS and to report system performance. The required number of locations for each licensee and the entire IPS are detailed in Table 4.13. Further, the ERB in its 2024 Institutional KPI Framework set a minimum target of 78 percent compliance to electricity quality standards by licensed entities by 31<sup>st</sup> December 2024.

Table 4.13 reveals that as of 31<sup>st</sup> December 2024, 90 percent of the required locations on the IPS were installed with power quality recorders and monitored for power quality and reliability. The average compliance to power quality standards for these locations was, as shown in Table 4-18, 81 percent which met the Regulatory target of 78 percent.

**Table 4.13 : Progress on Installation of PQ Recorders as of 31st December 2024**

Licensee	Number of Sites required to be monitored	Number of sites installed with PQR	Number of sites monitored with sufficient data for reporting	% of the required sites monitored
ZESCO	161	136	131	81%
CEC	172	175	175	100%
NECL	4	4	4	100%
ITPC	2	2	2	100%
LHPC	11	8	4	36%
MCL	2	2	2	100%
BPC	1	1	1	100%
Entire IPS	353	328	319	90%

**Table 4.14 : Summary of Power Quality Performance of the Zambia Interconnected Power System as of 31st December 2024**

Power Quality/Reliability parameter on the IPS	2024-Q4 (IPS)	
	Number of parameters	Average score
Voltage Harmonics	304	92%
Voltage Unbalance	319	95%
Voltage Dips	304	62%
Supply Interruptions	319	88%
Voltage Regulation	319	68%
Frequency	15	86%
Total datasets/ avg. score	<b>1580</b>	<b>81%</b>

#### 4.8 Summary of challenges in the Electricity sub-sector

During the period under review, the electricity sub-sector in Zambia faced a number of both strategic and operational challenges. These included the following:

- **Over-reliance on Hydropower:** Zambia's heavy dependence on hydropower made it vulnerable to climate variability, droughts, and low water levels in reservoirs, exacerbating load shedding.
- **Load Shedding and Power Shortages:** Frequent load shedding, with some areas experiencing up to 20 hours of power outage per day, affecting economic productivity and daily life.
- **Financial Constraints and Debt:** The sector remains on course to achieve cost reflectivity in tariffs, a critical step toward ensuring the financial sustainability of both the utility and the broader energy sector;
- **Slow rate of diversification:** Limited investment in alternative energy sources, such as solar and wind power, to reduce dependence on hydropower.
- **Transmission Constraints:** Limitations in transmission infrastructure, including interconnectors with neighbouring countries, hinder power imports and exports, particularly to Tanzanian interconnectors. This limited potential for power trading with the East African power pool.
- **Slow project implementation:** Although the ERB approved a number of PPA projects, only two (02) have actually started construction.

#### 4.9 Outlook of the Electricity sub-sector

Generally, in 2025 and beyond, the Electricity sub-sector shows great potential driven by the key sector reforms implemented by the Government and the ERB regulatory interventions as presented under key developments of this report.

#### 4.9.1 Development of standards in renewable energy

Generally, the country is expected to see an influx of renewable energy products on the market for entrepreneurial and non-entrepreneurial purposes, owing to the increased number of grid power outages. In this regard, the increased adoption of solar photovoltaic (PV) systems in Zambia will require establishment of standards to ensure the safe, efficient and reliable use of renewable energy appliances.

#### 4.9.2 EV Charging methodology

There will be need to develop a code of practice for electric vehicle charging equipment infrastructure. This is expected to complement the EV charging methodology that was approved by the board in 2024. This is also expected to trigger investment and increased use of electric vehicles in the country and provide a predictable charging methodology.

#### 4.9.3 KPI Framework

The continued use of the KPI framework will enable energy security by ensuring that all licensed enterprises remain financially and economically viable. Consumers will be assured of quality energy services and address consumer complaints and resolutions.

#### 4.9.4 Net metering

The Electricity (Net Metering) Regulations (S.I. No. 38 of 2024) will enable commercial and domestic electricity customers to implement renewable energy power generation systems such as solar PV systems for their own use and sale the excess electricity generated from their system to the national grid. The initiative is anticipated to promote distributed generation and enhance reliability of supply for prosumers.

#### 4.9.5 Open Access

The introduction of Electricity Open Access is expected to have a transformative impact on the sub-sector by promoting competition and investment. The initiative will facilitate non-discriminatory access of eligible customers and independent power producers to the national transmission and distribution system. It will further enable independent producers to participate directly in electricity trading, breaking the traditional monopoly model. This is expected to transform the sub-sector through enhanced consumer choice, cost-reflective pricing, and increased private sector investment in generation, particularly in renewable energy. The overall impact will be improved supply reliability, innovation in service delivery, and a liberalised and sustainable electricity market in Zambia.

#### 4.9.6 Multi-year tariff

The Multi-year tariff covering the period 2023 to 2027, which is in its second year of implementation will enable electricity utilities attain cost reflectivity. Further, the tariffs will be transparent and predictable which will encourage investment in the electricity sector.

#### 4.9.7 Investment in alternative sources of energy

The electricity sub-sector is undergoing significant strides driven by investments in solar power, battery storage, and infrastructure development. Key projects, including 100MW and 200MW solar plants and Battery Energy Storage Supply (BESS) from major players in the sector, will contribute to further diversifying the energy mix and improve supply reliability in the country. Additional efforts focused on enhancing energy imports and expanding distribution networks through increased membership by Zambian companies in the Southern African Power Pool will also improve regional power trade and ultimately translate into a more efficient electricity sub-sector.



# **RENEWABLE ENERGY SUB-SECTOR**

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## 5 RENEWABLE ENERGY SUB-SECTOR

Zambia is experiencing climate change which requires that it adopts reliable and clean energy. One key component to achieving the above is through expansion of the energy mix by utilizing more renewable energy technologies, given the abundant renewable resources available locally.

This section highlights the status of the renewable energy sector in Zambia, including the System Performance Report for Grid-Connected Solar Photovoltaic (PV) Plants, the challenges faced, and the outlook for 2025 and beyond.

### 5.1 Performance of grid connected solar photovoltaic (PV) plants

Within 2024, the grid connected solar power plants were assessed, with a focus on Generation, Outages, Power Quality and Safety. This is in relation to Bangweulu, Ngonye and CEC Renewables solar plants. With an aggregate installed capacity of 182MW, the total net electricity sent out from the PV generation plants was 46,949.95 MWh within quarter one, 75,769.24 MWh within quarter two, 80,420.41 MWh within quarter three and 76,847.82 MWh within quarter four. The significant increase between the first and the preceding quarters was necessitated by the inclusion of the 60 MW Riverside power plant by CECRL.

This infrastructure forms a significant portion of Zambia's renewable energy landscape.

#### 5.1.1 Bangweulu Power Company Limited (BPCL)

Bangweulu Power Company Limited (BPCL) is an Independent Power Producer jointly owned by Neoen Energy of France and the Industrial Development Corporation of Zambia. BPCL owns a 54MW solar plant located at the Lusaka South Multi facility zone. The plant was commissioned in 2019. The sole off-taker is ZESCO under a PPA with a contracted capacity of 47.5MW.

In 2024, BPCL generated a total of 89.78 GWh of electricity in comparison to 86.97GWh in 2023 representing an increase of 3.23 percent.

##### 5.1.1.1 Key Developments

No significant developments or major capital projects were reported by BPCL during the year. BPCL has indicated that beyond 2024 there are no major planned investments.

##### 5.1.1.2 Challenges

The company faced several challenges, including poor quality and erratic water supply to the power plant. Additionally, BPCL experienced system disturbances which resulted in grid outages and affected power generation from the solar power plant.

#### 5.1.2 Ngonye Power Company Limited Performance in 2024

Ngonye Power Company Limited is an Independent Power Producer jointly owned by Enel Green of Italy and the Industrial Development Corporation of Zambia. Ngonye owns a 34MW solar plant located at the Lusaka South Multi facility zone, commissioned in 2019. The sole off-taker is ZESCO under a PPA with a contracted capacity of 28MW.

In 2024, Ngonye generated a total of 39.6GWh of electricity in comparison to 60.3GWh in 2023 representing a decrease of 34% percent.

### 5.1.3 CEC Renewables Limited

CEC Renewables Limited is a wholly owned subsidiary of CEC Plc, incorporated in 2022. The company's principal activity is renewable energy generation. CEC Renewables currently has an installed capacity of 94MW of Photovoltaic (PV) solar broken down as follows: 34MW from Riverside, Kitwe and 60 MW Plant in Itimpi, Kitwe.

#### 5.1.3.1 Key Developments

- Copperbelt Energy Corporation plans to construct an additional power plant under Phase II of the Itimpi Solar Power Development. The plant will have a nameplate DC rating capacity of 136MW and will be constructed adjacent to the existing Itimpi Solar Power Plant. Construction is expected to commence in quarter one of 2025 and Commercial Operation Date (COD) is planned for December of 2025.
- Under the GETFiT Initiative, CEC is further implementing the 40MW solar power project in Garneton, Kitwe.
- Copperbelt Energy Corporation (CEC), in partnership with China Copper Mines (CCM) seeks to develop a 10MWac solar power plant to be located on the Copperbelt.

#### 5.1.3.2 Challenges

In 2024, CEC Renewables experienced lower generation than projected in quarters 2 and 3 due to soiling of the panels and lower than expected levels of irradiation.

## 5.2 Performance of the Off grids

### 5.2.1 Zengamina Power Limited

Zengamina Power Limited (ZPL) is a rural power utility company focusing on generating and distributing electric power. ZPL was founded in 2004 as a trust that was originally funded by European and African donors through the Northwest Zambia Development Trust.

ZPL is privately owned and operates an off-grid mini-hydro power plant located in Ikelenge District of Northwestern Province with an installed capacity of 0.75 MW. The company owns generation and distribution infrastructure to provide clean and reliable electricity to communities and businesses in its service area.

The tariffs that ZPL charges are regulated by the ERB. The bulk of the customers are residential who comprise 80.6 percent of 1,694 customers across various categories as shown in Table 5.1. This is an improvement of 29.51 percentage in comparison to 2023 for total customers.

**Table 5.1 : Distribution of customers per category, 2024**

Category	2023	2024
Community Service	20	3
Large Enterprises & Institutions	35	82
Priority Commercial Users	3	3
Residential Customers	1,060	1,366
Small Enterprises	190	240
<b>Total</b>	<b>1,308</b>	<b>1,694</b>

Electricity is distributed through a network consisting of 56 km of 33kV medium-voltage distribution lines and 79 km of 400V low-voltage lines.

#### 5.2.1.1 Challenges

The company faces challenges with distribution losses, with technical losses estimated at 8% and non-technical losses at 12%.

### 5.2.1.2 Key Developments

To meet increasing demand and improve service delivery, ZPL has embarked on several major projects as presented below:

### 5.2.1.3 Renewable energy expansion

ZPL is diversifying its energy mix by incorporating solar power, ensuring a more sustainable and stable supply. The Utility plans to commence construction of a 1.2MW solar PV plant in the fourth quarter of 2025 and install an additional 700kW turbine to double its hydro plant's generation capacity, enhancing reliability and efficiency.

### 5.2.1.4 Distribution Network Expansion

The Utility plans to interconnect its network to the national grid in the first quarter of 2025. This will enhance reliability of supply to ZPL's customers and open opportunities for power exchange.

ZPL projects an increase in its customer base by approximately 3,000 by end of 2026. This entails grid extension and strengthening the high voltage backbone lines.

ZPL signed PSAs, PPAs, and Connection Agreements with ZESCO. It also enhanced customer service standards and corporate social responsibility.

## 5.3 Outlook for the renewable energy sub-sector

Generally, the renewable energy sub-sector presents a positive outlook in 2025 and beyond. This is underpinned by several policy and regulatory frameworks that have been earmarked for development and completion in 2025. Some notable ones include the following:

- For the year 2025, the ERB plans to develop standards for lithium ion and lithium phosphate batteries. This is due to the increasing adoption of solar photovoltaic (PV) systems in Zambia, coupled with the growing use of lithium-ion and lithium phosphate batteries for energy storage. The establishment of a standard will ensure the safe, efficient and reliable use of these batteries. The standard will further provide specifications, requirements, and test methods for lithium-ion batteries used in solar PV systems, ensuring safety, compatibility and performance across different systems.
- Further, the Regulator intends to develop a code of practice for electric vehicle charging infrastructure. The adoption of Electric Vehicles (EVs) in Zambia necessitates the establishment of a robust regulatory framework to ensure the safe, efficient and reliable installation of EV charging equipment. This code will provide guidelines and best practices for the design, installation, operation and maintenance of EV charging infrastructure, ensuring compatibility, safety and interoperability across different EV models and systems.
- Following the development of energy efficiency guidelines in 2024 targeting small and medium enterprises in Zambia, the ERB with the support of the Zambia Energy Efficiency and Sustainable Transformation Program (ZEEST) with the support of the European Union, plans to convert the existing guidelines into a legal framework, giving it a force of law.



# LICENSING IN THE ENERGY SECTOR

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## 6 LICENSING IN THE ENERGY SECTOR

Section 2 of the Energy Regulation Act No. 12 of 2019 mandates the ERB to issue licences across the Electricity, Petroleum, and Renewable Energy sub-sectors, while Section 22 grants the ERB the authority to issue construction permits for the development of energy infrastructure. Additionally, the ERB also employs the use of regulatory instruments, in relation to licensing of enterprises operating within the sector which include:

- a) The Energy Regulation (General) Regulations, 2023, S.I. No. 41 of 2023;
- b) The Energy Regulation (General) (Amendment) Regulations, 2024, S.I. No. 42 of 2024; and
- c) The Electricity (Open Access) Regulations, 2024 S.I. No. 40 of 2024.

This section highlights developments in the licensing frameworks, number of licences and permits issued in the period under review and the outlook.

### 6.1 Developments in the Licensing Framework

The ERB streamlined and enhanced the licensing process by issuing revised checklists for construction permit and licence applications. This follows the promulgation of S.I. No. 41 of 2023 in September 2023 that introduced new licensing requirements which necessitated changes to the licensing framework in 2024. Further, the ERB reviewed licence conditions to ensure their alignment with the new regulatory framework. The licensing framework was revised to align with new legislative requirements which removed the listing of licensing requirements from regulations and instead empowered the ERB to determine and revise application requirements for licences and permits as required. These changes resulted in a reduced turnaround time for processing permits and licences.

Furthermore in 2024, The Energy Regulation (General) (Amendment) Regulations, S.I. No. 52 of 2024 was enacted, amending specific provisions of S.I. No. 41 of 2023. The amendment resulted in the deregulation of “qualifying off-grid activity” and “qualifying on-grid activity.” Under the new regulatory approach, the construction and operation of generating stations with installed capacities of up to 5 MW were exempted from the requirement to obtain a permit or licence under the Act. Additionally, S.I. No 52 of 2024 exempted the importation of renewable energy equipment from regulation under the Act.

### 6.2 Licences and Permits

In accordance with Section 2 of the Energy Regulation Act, 2019, the ERB requires any individual or enterprise intending to establish or operate a business to apply for a licence in the prescribed manner and upon payment of the required fee. Furthermore, any enterprise planning to construct an energy facility, installation, or common carrier must first obtain a construction permit before a licence can be issued under the Act.

#### 6.2.1 Licences

During the period under review, a total of 515 licences were issued against 382 issued in 2023, translating in an increase of 34.8 percent. The license to ‘Manufacture, Supply, Installation, & Maintenance of Renewable Energy Generating Equipment’ accounted for the largest increase at 178.9 percent from 90 in 2023 to 251 in 2024 mainly due to the increased demand for alternative energy sources following the drought induced power deficit.

**Table 6.1 : License types issued by the ERB in each sub-sector**

Sector	License type	2023	2024
<b>Electricity</b>	Distribution of Electricity	3	2
	Generation of Electricity for Own Use	1	1
	Supply of Electricity	0	3
	Trading of Electricity	0	5
	Generation of Electricity	2	0
	Generation, Distribution and Supply of Electricity to an Off-grid	3	0
	System Operator	1	0
<b>Petroleum</b>	Distribution, Importation & Exportation of Liquefied Petroleum Gas	3	2
	Distribution, Importation & Exportation Petroleum Products (Oil Marketing Companies)	140	118
	Importation, Packaging & Blending, Distribution & Export of lubricants	37	41
	Retail of Liquefied Petroleum Gas	4	3
	Retail of Petroleum Products	14	17
	Terminal Storage of Petroleum Products	2	1
	Transportation of Petroleum Products by Road	87	69
	Transportation of Petroleum Products by Pipeline	1	0
	Wholesale Marketing of Petroleum Products	1	0
<b>Renewable</b>	Manufacture, Supply, Installation, & Maintenance of Renewable Energy Generating Equipment	90	251
	Production of Biofuels	3	1
	Storage and Blending of Biofuels	0	1
<b>Grand Total</b>		<b>382</b>	<b>515</b>

### 6.2.2 Construction Permits

The purpose of a Construction Permit is to ensure regulatory compliance in the siting and development of energy infrastructure for which the permit has been granted. In 2024, a total of 59 Construction Permits were approved, representing a 59% decrease from the 100 issued in 2023, as shown in Table 6.2.

**Table 6.2 : Number of Construction permits issued by sub-sector, 2024 and 2023**

Sub-sector	2023	2024
Petroleum	97	54
Electricity	3	5
Renewable Energy	0	0
<b>Total</b>	<b>100</b>	<b>59</b>

### 6.3 Outlook

The enactment of the Electricity (Open Access) Regulations, 2024 has necessitated further revisions to the licensing framework to ensure alignment with the key provisions of this legislation. These amendments will facilitate the entry of new market participants to assume the roles of “Market Operator” and “Public Service Trader,” thereby enhancing competition and operational efficiency within the sector. These initiatives form part of a comprehensive market reform agenda aimed at advancing the implementation of the open access regime.

Moving forward, the ERB will strengthen its regulatory strategy by reviewing and refining the guidelines for issuing an Investment Endorsement (IE) in the electricity and renewable energy sub-sectors. This initiative will reinforce regulatory compliance while fostering investment by enhancing certainty and predictability within the sector.



# **STAKEHOLDER ENGAGEMENT AND COMPLAINT HANDLING**

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## 7 STAKEHOLDER ENGAGEMENT AND COMPLAINT HANDLING

Stakeholder engagement is essential for effective information dissemination and collaboration within the energy sector. It helps inform the public on policy matters, licensee operations, and regulatory functions while also facilitating the resolution of consumer complaints.

In accordance with Section 4 of the Energy Regulation Act No. 12 of 2019, the ERB is responsible for sharing information, promoting public participation in the energy sector, and addressing consumer concerns. During the period under review, the ERB carried out various sensitization activities to enhance consumer awareness and update stakeholders on key sector developments. This section outlines the ERB's key stakeholder engagements, awareness initiatives, and efforts in handling consumer complaints in 2024.

### 7.1 Consumer Awareness Programmes

During the year under review, the ERB conducted a range of awareness activities across various platforms, which among them included town hall meetings, public hearings, industry meetings, exhibitions, workshops, and radio and television programmes. Additionally, the Mobile Office was deployed to high-traffic areas such as traditional ceremonies, markets, bus stations, taxi ranks, schools, and shopping malls. These efforts were aimed at raising awareness on the ERB's mandate and its operations.

#### 7.1.1 Stakeholder engagement

In 2024, the ERB significantly expanded its stakeholder engagement and consumer awareness initiatives, conducting 173 engagements - an increase of 28.1 percent from 135 in 2023. This growth reflects the ERB's strengthened commitment to informing and involving stakeholders in key energy sector developments.

The most notable increase was in awareness meetings, which more than doubled from 38 in 2023 to 75 in 2024. Additionally, the Mobile Office continued its outreach efforts with 98 programmes. Table 7.1 shows the distribution of awareness activities in 2023 and 2024.

**Table 7.1: Awareness Activities in 2024**

No.	Description	2023	2024
1	Awareness Meetings	38	75
2	Mobile Office	97	98
<b>3</b>	<b>TOTAL</b>	<b>135</b>	<b>173</b>

#### 7.1.2 Media Engagements

Media engagements play a vital role in information dissemination, providing effective channels for reaching target audiences through both traditional and digital platforms. These interactions enable timely communication of key updates, press releases, and industry developments.

In 2024, the ERB conducted 588 media engagements, a 25.5 percent decline from 789 in 2023, due to a strategic shift towards traditional media channels such as print, television, and radio. Of these, 60 engagements involved press statements, newspaper articles, and queries, while 528 focused on advertisements and broadcast programmes covering topics such as fuel pricing, electricity connection charges, Net-Metering, LPG usage, and consumer sensitisation. To enhance inclusivity, the ERB also collaborated with media outlets to disseminate information in local languages. Table 7-2 shows the distribution of media activities undertaken in 2024 by the ERB.



**Table 7.2: Media activities undertaken in 2024**

S/N	ACTIVITIES	2024
1	Television and Radio programmes	134
2	Radio Adverts	394
3	Press Statements and Briefings	44
4	Newspaper Articles	16

### 7.1.3 Digital Platforms

The ERB's Communication and Visibility Strategy (CVS) utilizes digital and social media platforms to engage with stakeholders, catering to their unique information needs. Recognizing the growing popularity of digital tools, the ERB is active on Facebook, X (formerly Twitter), and LinkedIn. A detailed breakdown of the ERB's presence on these platforms is provided in Table 7.3.

**Table 7.3: Followers on the digital platforms for 2024**

S/N	Platform	2023	2024
1	Facebook	47,000	58,000
2	X (Formerly Twitter)	235	483
3	LinkedIn	1,624	5, 254
4	<b>TOTAL</b>	<b>48,859</b>	<b>63,737</b>

### 7.1.4 Annual Media Tours

The ERB organised three (03) Media Tours in 2024 to selected energy infrastructure. The tours aimed to familiarise the media with key energy infrastructure which included Copperbelt Energy Corporation (CEC) 60 MW Itimpi Solar PV plant and the Afrox LPG depot. Additionally, a tour of the Kasanjiku Mini Hydro Power Station was conducted.

## 7.2 Publications

As an information dissemination tool, ERB publications provide a snapshot of the energy sector in Zambia. The publications include Energy Sector Report, Annual Report, Newsletter, Statistical Bulletin, and brochures. The ERB also publishes newspapers articles that respond to topical issues and overall information sharing.

## 7.3 Consumer Complaints

Consumer protection, via the receipt, investigation, and resolution of complaints, is a core function of the ERB. To safeguard consumer interests, the ERB handles complaints from consumers which relate to quality of service, pricing of energy products and services, and location of energy infrastructure. This function has been reinforced by the development of a Complaints Handling Procedure. Further, it is a Licence Condition for a licensee to have in place internal Complaints Handling Procedures for streamlined processing of cases.

Complaints typically arise from the delivery of products and services that fail to meet minimum quality standards or from non-compliance with service level agreements by licensees. In 2024, the ERB addressed complaints originating from the electricity, petroleum, and renewable energy sub-sectors.

### 7.3.1 Complaint Handling

In 2024, the ERB received 507 complaints across the electricity, petroleum, and renewable energy sub-sectors, achieving an overall resolution rate of 81.9 percent by addressing 415 cases. The electricity sub-sector accounted for most complaints, with 433 cases primarily related to delayed service connections and power outages of which 356 were resolved. The petroleum sub-sector recorded 67 complaints, resolving 53, while the renewable energy sub-sector received seven complaints, resolving six.

Some cases remained unresolved at the end of the reporting period, including 14 petroleum related complaints pending due to ongoing fuel sample testing by independent laboratories. Additionally, 77 electricity-related complaints remained open, mainly concerning non-standard service connections in non-serviced areas, which typically require up to 90 days for resolution due to material mobilisation by service providers.

**Table 7.4: Complaints received and Resolved by Sub-Sector – 2024**

	Sub-sector	Received	Resolved	Pending	Resolution Rate (%)
2024	Electricity	433	356	77	82.2%
	Petroleum	67	53	14	79.1%
	Renewable Energy	7	6	1	85.7%
	<b>TOTAL</b>	<b>507</b>	<b>415</b>	<b>92</b>	<b>81.9%</b>
2023	Electricity	489	296	193	60.5%
	Petroleum	51	45	6	88.2%
	Renewable Energy	6	3	3	50.0%
	<b>TOTAL</b>	<b>546</b>	<b>344</b>	<b>202</b>	<b>63.0%</b>

### 7.3.2 Complaints Meetings

Complaint meetings play a crucial role in ensuring complaints are resolved promptly, fairly, and objectively. These meetings provide a structured platform where complainants and licensees can engage in open discussions, presenting both verbal and written submissions to facilitate an objective resolution.

As part of its complaint-handling process, the ERB conducted Complaint Meetings to specifically address cases that remained unresolved beyond the agreed Service Level Agreements (SLAs).

Based on the above, in 2024 44 Complaints Meetings were held. From the said meetings, 352 complaints were discussed.

**Table 7.5 : 2024 Complaints Meetings**

SUB-SECTOR	NUMBER OF MEETINGS	NUMBER OF COMPLAINTS
Electricity	34	323
Petroleum	8	26
Renewable Energy	2	3
<b>TOTALS</b>	<b>44</b>	<b>352</b>

### 7.4 Outlook for the sub-sector

The ERB remains committed to proactively addressing stakeholder needs by ensuring timely information dissemination, efficient complaint resolution, and enhanced transparency and accountability within the energy sector. By leveraging its diverse platforms, the ERB aims to create a positive and sustainable stakeholder experience, while adapting to the evolving expectations of consumers, industry players, and other key stakeholders.



# APPENDICES

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## 8 APPENDICES

### Appendix 1: Development and Review of Technical Standards, Frameworks and Guidelines, 2024

Type of document developed and the sub-sector	Name of document	Status as of 31 <sup>st</sup> December 2025
<b>Standards</b>		
Electricity sub-sector	ZS 691: Safety in AC Substation Earthing	The standard was published by ZABS through the Zambia Gazette Notice no. 983 of 13 <sup>th</sup> September 2024.
	ZS 690 - Design, Construction and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility	The standard was published by ZABS through the Zambia Gazette Notice no. 983 of 13 <sup>th</sup> September 2024.
	ZS 397 2023 (Revision 1): Electricity Supply – Quality of Consumer Service – Specification	The standard was published by ZABS, through the Zambia Gazette Notice no. 983 of 13 <sup>th</sup> September 2024.
	Revision of ZS <sup>24</sup> 418 (Revision)– Electrical Safety Code – Code of Practice (Parts 1 & 2) Standard  1. DZS 418 <sup>25</sup> – 1: 2024 Electrical Safety Code – Code of Practice Part 1: Construction, installation and commissioning rules  DZS 418 - 2: 2024 Electrical Safety Code – Code of Practice Part 2: Operations and maintenance	The ERB submitted the standards to ZABS for publication.
	Development of the following EV Standards:  1. Electrically propelled road vehicles — Safety specifications — Part 1: Rechargeable energy storage system (RESS) – ISO 6469-1  2. Electrically propelled road vehicles — Safety specifications — Part 2: Vehicle operational safety – ISO 6469-2  3. Electrically propelled road vehicles — Safety specifications — Part 3: Electrical safety- ISO 6469-3  4. Electrically propelled road vehicles — Safety specifications — Part 4: Post crash electrical safety – ISO 6469-4  5. Electrically propelled road vehicles — Conductive power transfer — Safety requirements – ISO 17409  Electrically propelled road vehicles — Vocabulary – ISO/TR 8713	The ERB submitted the standards to ZABS for publication.

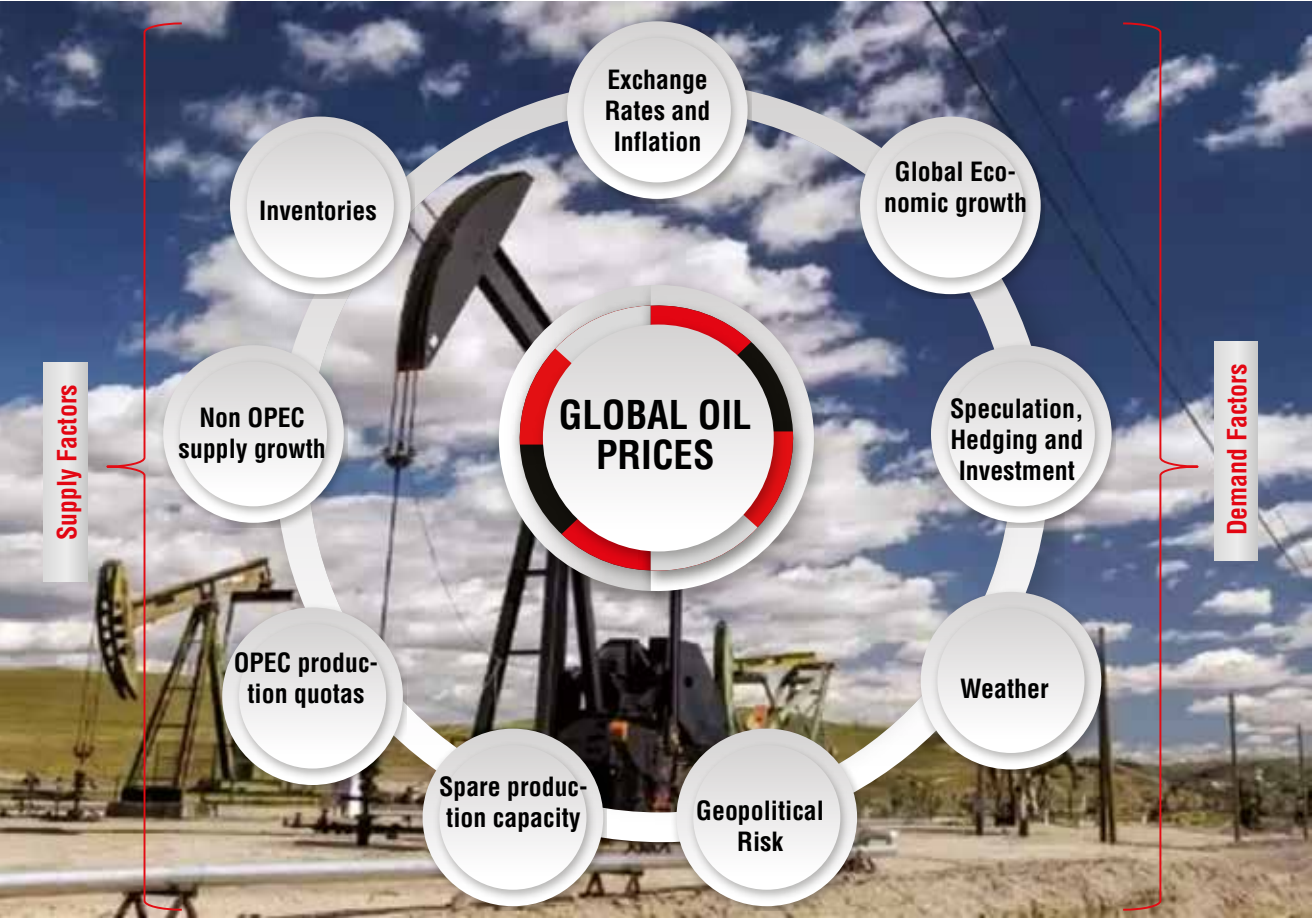
<sup>24</sup> ZS: Zambian Standard

<sup>25</sup> DZS : Draft Zambian Standard

Type of document developed and the sub-sector	Name of document	Status as of 31 <sup>st</sup> December 2025
Petroleum sub-sector	Regulations for Liquefied Petroleum Gas (LPG)	Layman’s draft developed, awaiting Regulatory Impact Assessment and onward submission to Ministry of Justice.
	Curriculum for LPG Installers	The curriculum was launched on 28 <sup>th</sup> October 2024
	National Petroleum Stock Management System Regulations	Layman’s draft developed, awaiting Regulatory Impact Assessment and onward submission to Ministry of Justice.
	Review of ZS 372 (Revision): operational requirements of road tank vehicles	Draft Standard submitted to ZABS for publication.
	Development of Licensing framework for bulk retailing of petroleum products	The framework was finalized and approved on 2 <sup>nd</sup> December 2024.
Renewable energy sub-sector	Development of Standards for Biogas for cooking purposes as supported by USAID	The ERB submitted the standards to ZABS for publication.
	DZS 908 – 2: Biogas Systems - Biogas Grids	
	DZS 1273: Biogas (Biomethane) – Specification.	
Guidelines		
Petroleum sub-sector	Quality Control and Monitoring Guidelines for the Zambian Petroleum Fuel Industry	Published in the Republic of Zambia Gazette Notice



## Appendix 2 : Global determinants of petroleum products prices



## Appendix 3 : Retail sites network by Province

OMC	Central	Copperbelt	Eastern	Luapula	Lusaka	Muchinga	Northern	Northwestern	Southern	Western	Total
Acm Petroleum									1		1
Admire Energy Ltd					2						2
Alfa Energy Limited	1	1									2
Apex Energies Ltd					1						1
Asharami Energy Resources Zambia					1						1
Benzol Petroleum					1						1
Boma Energy Limited		2									2
Cale Energy					1						1
Collum Lunm Tian Petroleum					1						1
Eco Petroleum Ltd		4		1	1	1	3	1	1		12
Endrone Petroleum							2				2
Energybelt Zambia Limited	2				1						3
Fa Fuel Ltd		1									1
Fastrack Petroleum				1							1
Hamdi Investment Ltd (Hitco Petroleum)		1									1
Harvest Group	2				13						15
Hass		3			2					1	6
Heba Petroleum Ltd					1				1		2
Japawa						1					1
Jokap				1							1
Karan Petroleum Z Ltd	2	2		1	8			1	2		16
Korridor Zambia Fuel Ltd	1	1			1				2		5
Lake Petroleum Ltd	5	12	2		14	1		1	3		38
LBM Investments Limited		1				1	4				6
Luapula Oils Ltd				1							1
Lushomo	1										1
Meladen Energy				2							2
Mount Meru Petroleum Zambia Ltd	10	11	4	2	31	4	2	7	10	3	84
Ngucha Energy Corp Ltd					1						1

OMC	Central	Copperbelt	Eastern	Luapula	Lusaka	Muchinga	Northern	Northwestern	Southern	Western	Total
Oasis Oil Ltd	6		5		6	2	1				20
Oilbay (Z) Ltd	1										1
Ordodoil Company Limited					1						1
Oryx Energies Zambia Limited		7	3	1	16				2		29
Petroda Zambia Ltd		6			20			1	1		28
Petrolink	1	1						2			4
Puma Energy Zambia	3	15	5	3	25	1	2	3	5	3	65
Quality Petroleum					2						2
Ravasia					1						1
Refuel									1	1	2
Rubis Zambia Ltd	5	14	3		13				6	1	42
SGC	2	11	3	1	11	1	3	1	1		34
Simba Oil Company	1				2						3
Sino Petroleum Limited					1						1
Spectra Oil Corporation	1				4						5
Star Oil Company Ltd		1									1
Stream Energy					1						1
Surya Energy	1	1			9						11
Time Petroleum Ltd						1					1
TotalEnergies Zambia	7	20	1	1	29	2	1	2	3	1	67
Tribute Investments								2			2
Ufuel	1										1
United Metro		1									1
Uno Energies	4	2	3		9			1	3		22
Vivo Energy Zambia	1	10	3	1	34		2	2	6	1	60
WWW Investments	1										1
Zeekna Investment Company Ltd					1						1
Zhongkuang Zambia Services Co. Ltd		1									1
<b>Grand Total</b>	<b>59</b>	<b>129</b>	<b>32</b>	<b>16</b>	<b>265</b>	<b>15</b>	<b>20</b>	<b>24</b>	<b>48</b>	<b>11</b>	<b>619</b>

## Appendix 4 : Storage Capacity of Operational Depots in Zambia by Location

Operator	Location	Petrol (m³)	Diesel (m³)	Jet A-1 (m³)	Kerosene (m³)	LPG (MT)
Tazama Petroleum Products Limited	Ndola	28,000	79,400	4,200	2,400	
Tazama Petroleum Products Limited	Lusaka - Buyantanshi	10,000	14,000	-	1,000	
Tazama Petroleum Products Limited	Lusaka - Kasupe	40,000	60,000	-	2,000	
Tazama Petroleum Products Limited	Solwezi	5,000	10,500	-	-	
Tazama Petroleum Products Limited	Mpika	2,000	4,000	-	500	
Tazama Petroleum Products Limited	Mongu	2,000	4,000	-	500	
Tazama Petroleum Products Limited	Mansa	2,000	4,000	-	500	
Tazama Petroleum Products Limited	Chipata	2,000	4,000	580	500	
Indeni Energy Company Limited	Ndola	11,400	106,700	4,000	2,100	1,600
Copperbelt Energy Company	Chingola		5,400			
Copperbelt Energy Company	Chillilabombwe		3,000			
Puma Energy (Z) Plc	Lusaka	2,121	3,410	1,500	388	100
Puma Energy (Z) Plc	Kitwe	-	3,100		-	
Puma Energy (Z) Plc	Ndola	13.5	700.5		-	
Puma Energy (Z) Plc	Livingstone			150		
Total Energies	Lusaka	2,000	2,000			
Total Energies	Ndola	2,300	-			
Vivo Energy	Lusaka	1,200	1,900		83	
Rubis Energy (Z) Limited	Lusaka	3,000	3,000			40
Asharami	Lusaka	800	2,729		81	
Mount Meru Petroleum (Z) Limited	Lusaka	170	1500		170	
Petroda (Z) Limited	Lusaka	400	600		-	
Oryx Oil (Z) Limited	Ndola	-	1000			
Zamfuel	Ndola		530			
SGC Investments	Ndola	840	840		330	
Hass Petroleum	Ndola	660	740		80	
Oasis Oil Zambia Limited	Lusaka	249	249			
Air Mafuta Aviation Services	Mfuwe			28		

Operator	Location	Petrol (m <sup>3</sup> )	Diesel (m <sup>3</sup> )	Jet A-1 (m <sup>3</sup> )	Kerosene (m <sup>3</sup> )	LPG (MT)
Collum Lumn Tian	Lusaka	100	250		-	
Meru Gas Zambia Limited	Chibombo					12
	Ndola					100
Minegases Company Limited	Ndola					125
Afrox Zambia Limited	Ndola					30
	Lusaka					85
Exclusive Brands	Lusaka					90
Oryx Gas Limited	Ndola					72
Chinagases Company Limited	Lusaka					55
Falcon Gas Zambia Limited	Lusaka					50
Lake Gas Limited	Ndola					35
Oxyzam Limited	Lusaka					22
Gastec Trading & Supply	Lusaka					50
<b>TOTAL:</b>		<b>116,254</b>	<b>317,549</b>	<b>10,458</b>	<b>10,632</b>	<b>2,466</b>



## Appendix 5 : Actual water availability for power generation in the major reservoirs in 2023 and 2024

Power Station and hydro generation characteristic		1-Jan	29-Jan	26-Feb	24-Mar	29-Apr	26-May	30-Jun	27-Jul	31-Aug	29-Sep	29-Oct	30-Nov	30-Dec
KG - Designed water height for max. generation (m)		2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
	KG - Actual available water in 2024 (m)	1.97	1.75	1.09	0.22	0.72	0.44	0.29	0.32	0.26	0.3	0.42	0.36	0.41
	KG - Actual available water in 2023 (m)	0.27	1.67	2.58	2.67	2.72	2.54	2.73	2.67	2.74	2.64	2.34	1.74	2.07
KNB - Designed water height for max. generation (m)		12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21	12.21
	KNB - Actual available water in 2024 (m)	1.74	2.37	2.26	2.06	1.94	1.87	1.78	1.47	0.77	0.97	0.62	0.49	0.28
	KNB - Actual available water in 2023 (m)	0.11	1.01	1.93	2.55	3.48	3.89	4.42	4.08	3.76	3.2	2.53	2.15	1.71
Vic Falls - Designed water height for max. gen. (m)		1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
	Vic Falls - Actual available water height in 2024 (m)	0.27	0.48	0.57	0.54	0.45	0.64	0.39	0.06	0.00	0.00	0.00	0.06	0.09
	Vic Falls - Actual available water height in 2023 (m)	0.36	0.64	1.49	1.52	1.22	1.58	1.09	0.3	0.09	0.02	0.09	0.21	0.24
ITPC - Designed water height for max. generation (m)		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.5	24.50	24.50	24.50
	ITPC - Actual available water in 2024 (m)	15.4	16.25	16.01	15.39	13.99	13.56	12.67	11.12	10.1	8.34	6.03	4.27	2.47
	ITPC - Actual available water in 2023 (m)	13.3	17.11	22.12	23.61	24.48	24.48	24.01	22.28	21.19	19.75	18.38	16.89	15.47
KGL - Designed water height for max. generation (m)		49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75	49.75
	KGL - Actual available water in 2024 (m)	37.0	37.1	33.0	43.2	41.0	39.2	40.5	42.30	41.6	42.4	41.7	41.40	31.2
	KGL - Actual available water in 2023 (m)	30.9	35.2	32.2	35.7	34.4	36.2	48.6	44.07	34.4	34.5	35.66	36.70	35.6

## Appendix 6 : Detailed Exposition of cost elements in the IPP wholesale price build up

### i. **Platts FOB Average**

Platts is the globally accepted publication for pricing of petroleum products. Supply contracts for petroleum products between oil companies are based on the Platts publication. The publication is proprietary and the petroleum price information is sent on a daily basis only to those who have subscribed. The Platts Free on Board price for petrol, diesel and kerosene/jet A-1 are derived from the monthly average Platts quotation on the Arabian Gulf Market. Platts Arab Gulf market is very liquid and representative of most sourcing areas. It is the reference used on most quotations for regional imports.

For monthly fuel price reviews using the IPP, the ERB covers a 30 day window using month minus 1 or M-1. Meaning the recommended prices for the current month are based on the prices that prevailed one month ago. The current Platts reference prices are for the period 25<sup>th</sup> day of the previous month to the 24<sup>th</sup> day of the month in which the price review is being carried out.

### ii. **Conversion factor**

The conversion factors used to convert US\$/bbl to \$/MT for petrol, diesel and kerosene are 8.42, 7.50 and 7.56 respectively.

### iii. **Trader's Margin**

The trader's margin is the margin that suppliers of OMCs in Dar-es-Salaam, Beira and other supply ports or sources charge the OMCs for supplying petroleum products to them.

### iv. **Storage**

The storage cost is the cost for storing petroleum products in Dar-es-salaam, Beira and or other ports.

### v. **Wharfage**

The Harbour Authority levies a statutory charge on the importation of petroleum products at various ports in countries with ocean fronts. The current charge is \$3.00/M<sup>3</sup> on all petroleum products.

### vi. **BPS Premium (Cash Premiums)**

The Bulk Petroleum Supply (BPS) premium is a cash premium that is charged by oil traders for the petroleum products at the various ports. The cash premiums are an additional cost for the products and have been moving in tandem with the supply and demand shift in the market.

Presently the BPS premiums used in the market is referenced to the Tanzanian BPS platform and this is the source adopted by the ERB. The BPS premium includes freight, insurance and ocean losses.

### vii. **Freight**

Freight covers the amount paid by the supplier to the transporter of the petroleum products from the point of origin (Dubai/Oman) to Dar-es-salaam. The freight charge is calculated based on the mode of transportation and the distance between the pickup place and the

The freight is normally based on *Worldscale* rates for the current year, from Arab Gulf to East Africa (i.e. Dar es Salaam and Beira). Just like *Platts*, the *Worldscale* publication is also proprietary and is the globally accepted standard publication for determination of freight charges for petroleum products.

### **Insurance**

*Insurance* covers the cost of insuring the finished petroleum products from the Middle East to the ports in Africa i.e. Dar-es-Salaam, Beira etc. The insurance rate adopted in the model is the standard cost in line with prevailing rates in petroleum insurance contracts.

### **ocean loss**

The 0.3 percent *ocean loss* is based on international best practice. This is the normally acceptable loss incurred in the loading and offloading of petroleum products from a vessel.

### **Transportation Fees**

These are the transportation charges for delivering a volume of product from Ocean ports to inland fuel depots. The rate adopted in the pricing is a standard cost and is sufficient for covering the transport cost for each product.

### **Transportation Losses**

These are transportation losses as prescribed by international norms. A loss level of 0.5 percent is allowed for petrol, 0.3 percent for diesel and 0.3 percent for kerosene.

### **Importers Margin**

This is a margin set in for the importation of petroleum products into the country. This is a standard cost and offers reasonable return to companies providing a service of supplying petroleum products into the country.

### **Storage Losses**

The storage losses cover the product losses for handling and storage and are set as prescribed by international norms. A loss level of 0.5% is allowed for petrol, 0.3% for diesel and 0.3% for kerosene.

### **Conversion factor**

The conversion factors used to convert MT to m<sup>3</sup> for petrol, diesel and kerosene are 0.74, 0.84 and 0.8 respectively.

### **Exchange Rate**

The exchange rate applied in the formula is the monthly average Interbank Commercial Selling Rate as published by the Bank of Zambia. The applied rate is the monthly average rate within the month in which the price review is being carried out.

## Appendix 7 : Types of Licences and Permits Issued by the ERB

No	Description of Licence/Permit	(Years)
<b>Petroleum Licences</b>		
1.	Export of Liquefied Petroleum Gas (Butane)	5
2.	Import, Distribute & Export Petroleum Products (Oil Marketing Companies)	5
3.	Import, Distribute & Export of Liquefied Petroleum Gas	5
4.	Importation, Packaging & Blending, Distribution & Export of Lubricants	5
5.	Refining of Petroleum Products	15
6.	Retail of Liquefied Petroleum Gas	5
7.	Retail of Petroleum Products	5
8.	Terminal Storage of Petroleum Products	10
9.	Storage of Petroleum Products - Consumer Facility	3
10.	Transportation and Marketing of Coal <sup>26</sup>	3
11.	Transportation of Petroleum Products – Liquefied Petroleum Gas	3
12.	Transportation of Petroleum Products by Rail	3
13.	Transportation of Petroleum Products by Road	3
14.	Transportation of Petroleum Products by Pipeline	15
15.	Wholesale Marketing of Petroleum Products	1.5
<b>Electricity Licences</b>		
1.	Distribution of Electricity	15
2.	Embedded Generation of Electricity	25
3.	Embedded Generation of Electricity for Own Use	5
4.	Generation of Electricity	30
5.	Generation of Electricity for Own Use	5
6.	Generation, Distribution and Supply of Electricity to an Off-grid	20
7.	Supply of Electricity	5
8.	System Operator	5
9.	Trading of Electricity	20
10.	Transmission of Electricity	30
<b>Renewable Energy Licences</b>		
1.	Manufacture, Supply, Installation, & Maintenance of Renewable Energy Generating Equipment	5
2.	Production of Biofuels	15
3.	Storage and Blending of Biofuels	5
4.	Transportation of Biofuels	3
5.	Import, Distribution & Export of Biofuels	5
<b>Construction Permits</b>		
1.	Electricity	2
2.	Petroleum	2
3.	Renewable Energy	2

26 Not a petroleum-based fuel but a fossil fuel



## Appendix 8 : Online licence application process

Initial Licence Application	
<b>Step 1</b> Registration	i. Access the portal using <a href="mailto:portal@erb.org.zm">portal@erb.org.zm</a> ii. Select the account type (personal or corporate account) and click continue iii. Complete application form
<b>Step 2</b> Login	i. Log into ERB portal by entering your email and password, then, click the “sign in” button ii. Update your password (if need be) and click the reset password button
<b>Step 3</b> Licence Application	i. Fill out the application by opening the tab section and by providing the information requested ii. Enter details in the applicant business information tab iii. Fill in the details for the business contact person iv. Select the business and licence type and provide the application details v. Select the relevant attachments tab and attach documents as per licence checklist vi. Select the general attachments tab and attach documents vii. Tick the check boxes and save in order to progress to the next viii. Once you save the progress, click on the tab to fill out financials. ix. Once financials have been filled in, save the changes and your application is ready for submission x. Complete the declaration by ticking the check boxes and click the submit licence application button at the top of the page.
Licence Renewal Application	
<b>Step 1</b> Registration	i. Access the portal using <a href="mailto:portal@erb.org.zm">portal@erb.org.zm</a> ii. Select the account type (personal or corporate account) and click continue iii. Complete application form
<b>Step 2</b> Login	i. Log into ERB portal by entering your email and password, then, click the “sign in” button ii. Update your password (if need be) and click the reset password button iii. Click on my licence tab, then iv. Click on the licence renewal button to access renewal application
<b>Step 3</b> Licence Renewal Application	i. Fill out the application by opening the tab section and by providing the information requested ii. Enter details in the applicant business information tab iii. Fill in the details for the business contact person iv. Select the business and licence type and provide the application details v. Select the relevant attachments tab and attach documents as per licence checklist vi. Select the general attachments tab and attach documents vii. Tick the check boxes and save in order to progress to the next viii. Once you save the progress, click on the tab to fill out financials. ix. Once financials have been filled in, save the changes and your application is ready for submission x. Complete the declaration by ticking the check boxes and click the submit licence application button at the top of the page.

## Appendix 9: Roles of the players in the petroleum supply chain

Role (before reforms)	Role (after reforms)
<b>MoE</b>	
<ul style="list-style-type: none"> <li>i. Give policy guidance to the petroleum sub sector.</li> <li>ii. Float import tenders based on requirements of Petroleum products.</li> <li>iii. Opening of tender, evaluation and awarding of supply Contract.</li> <li>iv. Coordinate the determination of quantity requirements/projection for a specified period.</li> <li>v. Ensure that the quantities from the supplier are delivered.</li> <li>vi. Monitor and manage strategic reserves.</li> <li>vii. To procure petroleum products to meet market demand.</li> </ul>	<ul style="list-style-type: none"> <li>i. Give policy guidance to the petroleum sub sector.</li> <li>ii. Monitor and manage strategic reserves.</li> </ul>
<b>ERB</b>	
<ul style="list-style-type: none"> <li>i. Regulate the petroleum sub sector.</li> <li>ii. Determine, regulate and review tariffs and charges</li> <li>iii. Ensure compliance by Suppliers and OMCs to operational requirements as per licence conditions.</li> <li>iv. Facilitate fuel marking process and product quality monitoring.</li> <li>v. Project national demand of petroleum products in collaboration with MoE, OMCs and other stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>i. Regulate the petroleum sub sector.</li> <li>ii. Determine, regulate and review tariffs and charges</li> <li>iii. Ensure compliance by Suppliers and OMCs to operational requirements as per licence conditions.</li> <li>iv. Facilitate fuel marking process and product quality monitoring.</li> <li>v. Project national demand of petroleum products in collaboration with MoE, OMCs and other stakeholders.</li> </ul>
<b>TAZAMA</b>	
<ul style="list-style-type: none"> <li>i. Transport petroleum feedstock via pipeline to INDENI from Dar-es-salaam.</li> <li>ii. Ensure receipt of imported products of Supplies in designated GRZ depots.</li> <li>iii. Participate in procurement of petroleum products.</li> </ul>	<ul style="list-style-type: none"> <li>i. To be responsible for transporting LSG.</li> <li>ii. To continue offering hospitality for fuel importers at designated GRZ Depots.</li> </ul>
<b>Indeni</b>	

Role (before reforms)	Role (after reforms)
<ul style="list-style-type: none"> <li>i. Process petroleum feedstock to finished petroleum products.</li> <li>ii. Participate in procurement of petroleum feedstock in collaboration with TAZAMA.</li> </ul>	<ul style="list-style-type: none"> <li>i. To Operationalise the company as an OMC.</li> <li>ii. To offer storage space to OMCs through hospitality.</li> </ul>
<b>TPPL</b>	
<ul style="list-style-type: none"> <li>i. Offer handling and storage facilities for petroleum products received in the country.</li> <li>ii. Offer storage services to OMCs.</li> <li>iii. Wholesale of petroleum products produced by INDENI from Ndola Fuel Terminal (NFT) and Government Depots to OMCs</li> </ul>	<ul style="list-style-type: none"> <li>i. Offer handling and storage facilities for petroleum products received in the country.</li> <li>ii. Offer storage services to OMCs.</li> <li>iii. Wholesale of petroleum products for OMCs in the market who would wish to utilize TPPL's wholesaling licence.</li> <li>iii. To operationalize blending of biofuels</li> <li>iv. To operate as a biofuels blending centre.</li> </ul>
<b>OMCs</b>	
<ul style="list-style-type: none"> <li>i. Importation of petroleum products (OMCs with import waivers).</li> <li>ii. Distribute petroleum products to Consumers, Retailers (Dealers) and Government.</li> </ul>	<ul style="list-style-type: none"> <li>i. Importation of petroleum products.</li> <li>ii. Distribute petroleum products to Consumers, Retailers (Dealers) and Government.</li> </ul>
<b>Petroleum Transporters</b>	
Transport petroleum products to OMCs, Retailers (Dealers) and Government.	Transport petroleum products to OMCs, Retailers (Dealers) and Government.
<b>Retailers (Dealers)</b>	
Selling of petroleum products at filling stations to consumers.	Selling of petroleum products at filling stations to consumers.
<b>Consumers</b>	
Buy petroleum products at prices regulated by the ERB.	Buy petroleum products at prices regulated by the ERB.

## Appendix 10 : REA Projects Completed as at 31<sup>st</sup> December 2024

No.	Project Name	District	Province	Technology
1.	Keezwa	Mumbwa	Central	Grid Extension
2.	Kambilombilo	Lufwanyama	Copperbelt	Grid Extension
3.	Mutaba	Masaiti	Copperbelt	Grid Extension
4.	Kampambe	Sinda	Eastern	Grid Extension
5.	Mbozi	Vubwi	Eastern	Grid Extension
6.	Kamwenge Farm Block	Samfya	Luapula	Grid Extension
7.	Kapete	Chongwe	Lusaka	Grid Extension
8.	Mulopa	Shiwangandu	Muchinga	Grid Extension
9.	Masamba Lyanda	Senga Hills	Northern	Grid Extension
10.	Nsama - Phase I	Nsama	Northern	Grid Extension
11.	Pambashe - Phase I	Kawambwa	Northern	Grid Extension
12.	Samuteba	Mwinilunga	North-Western	Grid Extension
13.	Chiefs in Itezhi Tezhi B	Itezhi-tezhi	Southern	Grid Extension
14.	Chiyobola/Chisuwo	Monze	Southern	Grid Extension
15.	Siakasipa GEP	Kazungula	Southern	Grid Extension
16.	Nyawa RGC GEP	Kazungula	Southern	Grid Extension
17.	Mbanyutu	Luampa	Western	Grid Extension
18.	Kandole	Lufwanyama	Copperbelt	Grid Intensification
19.	Mfulubunga	Mpongwe	Copperbelt	Grid Intensification
20.	Matonje	Petauke	Eastern	Grid Intensification
21.	Kamulaseni	Chipata	Eastern	Grid Intensification
22.	Chikontha	Nyimba	Eastern	Grid Intensification
23.	Mano/ Chinwenshiba	Samfya	Luapula	Grid Intensification
24.	Kasanse	Samfya	Luapula	Grid Intensification
25.	Chieftainess Kanyembo	Nchelenge	Luapula	Grid Intensification
26.	Mutwe Walupwa	Kanchibiya	Muchinga	Grid Intensification
27.	Mutachi village	Nakonde	Muchinga	Grid Intensification
28.	Chilubula	Kasama	Northern	Grid Intensification
29.	Menga	Luwingu	Northern	Grid Intensification
30.	Isandulula	Luwingu	Northern	Grid Intensification
31.	Kalundwana/Nakato	Mongu	Western	Grid Intensification
32.	Shimano	Nkeyema	Western	Grid Intensification
33.	Nambala	Mumbwa	Central	Grid Intensification
34.	Chilumba	Kapiri Mposhi	Central	Grid Intensification
35.	Kamabaya	Mpongwe	Copperbelt	Grid Intensification
36.	Chieftainess Mwasemphan-gwe	Lumezi	Eastern	Grid Intensification
37.	Chief Bunda Bunda	Chongwe	Lusaka	Grid Intensification
38.	Mukungule	Shiwangandu	Muchinga	Grid Intensification
39.	Musaka	Mushindamo	North-Western	Grid Intensification
40.	Lutende	Mongu	Western	Grid Intensification
41.	Nsobe-Chalubemba	Masaiti	Copperbelt	Grid Intensification
42.	Janeiro	Luangwa	Lusaka	Grid Intensification
43.	Tapo	Limulunga	Western	Grid Intensification
44.	Nkandazovu SMG	Kalomo	Southern	Solar Mini Grid
45.	Natukoma SMG	Shangombo	Western	Solar Mini Grid



## Appendix 11 : REA Grid Extension Projects under implementation as of 31<sup>st</sup> December 2024

No.	Project Name	District	Province	Technology
1.	Shingwa/Nkumbo	Mpongwe	Copperbelt	Grid Extension
2.	Chief Kambombo	Chama	Eastern	Grid Extension
3.	Matanda Chembe	Mansa	Luapula	Grid Extension
4.	Katongo Kapala	Lupososhi	Luwingu	Grid Extension
5.	Matipa	Chilubi	Northern	Grid Extension
6.	Mwinyilamba	Ikelenge	North-Western	Grid Extension
7.	Chinyingi	Zambezi	North-Western	Grid Extension
8.	Maheba Phase I	Kalumbila	North-Western	Grid Extension
9.	Simaubi Phase I	Namwala	Southern	Grid Extension
10.	Mitete Lot 1	Mitete	Western	Grid Extension
11.	Mitete Lot 2	Mitete	Western	Grid Extension
12.	Mulilima	Serenje	Central	Grid Extension
13.	Muchenje	Chibombo	Central	Grid Extension
14.	Fibanga/Katemo	Mkushi	Central	Grid Extension
15.	Kasamanda	Mambwe	Eastern	Grid Extension
16.	Mchereka	Lundazi	Eastern	Grid Extension
17.	Naviruli	Chadiza	Eastern	Grid Extension
18.	Sonkontwe	Millenge	Luapula	Grid Extension
19.	Chishi Island Marine Cable	Chifunabuli	Luapula	Grid Extension
20.	Vitondo	Chinsali	Muchinga	Grid Extension
21.	Lavushimanda CBD	Lavushimanda	Muchinga	Grid Extension
22.	Ilendela	Nakonde	Muchinga	Grid Extension
23.	Tungati	Luwingu	Northern	Grid Extension
24.	Chinyungulu/ Mululwe	Mpulungu	Northern	Grid Extension
25.	Chief Ishima	Zambezi	North-Western	Grid Extension
26.	Bowwood/ Kauwe	Kalomo	Southern	Grid Extension
27.	Nachibanga	Pemba	Southern	Grid Extension
28.	Sinafala	Gwembe	Southern	Grid Extension
29.	Chibunze	Namwala	Southern	Grid Extension
30.	Ngabo	Namwala	Southern	Grid Extension
31.	Kaeya_Seyi	Senanga	Western	Grid Extension
32.	Kashamu	Kaoma	Western	Grid Extension
33.	Kanyama	North-Western	Mwinilunga	Grid Intensification
34.	Chipepo	Southern	Gweembe	Grid Intensification
35.	Shinengene	North-Western	Kalumbila	Grid Intensification
36.	Changilo	Chibombo	Central	Grid Intensification
37.	Mkanda	Chipangali	Eastern	Grid Intensification
38.	Chieftainess Kawaza	Sinda	Eastern	Grid Intensification
39.	Shabo	Chienge	Luapula	Grid Intensification
40.	Mufwaya	Kawambwa	Luapula	Grid Intensification
41.	Watopa	Kabompo	North-Western	Grid Intensification
42.	Ikwichi/Makapaela	Limulunga	Western	Grid Intensification
43.	Kawama	Shibuyunji	Central	Grid Intensification
44.	Chikupili	Luano	Central	Grid Intensification
45.	Munga	kabwe	central	Grid Intensification

## Appendix 12: REA Off-grid Renewable Energy Projects under implementation as of 31<sup>st</sup> December 2024

No.	Project Name	District	Province	Technology
1.	Chief Chama SMG	Kawambwa	Luapula	Solar Mini Grid
2.	Chief Moyo SMG	Pemba	Southern	Solar Mini Grid
3.	Chilubi Boarding SMG	Chilubi	Northern	Solar Mini Grid
4.	Ninge Boarding SMG	Samfya	Luapula	Solar Mini Grid
5.	Macuu SMP SMG	Limulunga	Western	Solar Mini Grid
6.	Kelongwa SMP SMG	Kasempa	North-Western	Solar Mini Grid
7.	Luumba SMP  SMG	Zimba	Southern	Solar Mini Grid
8.	Tomu-Ntambu-Sailunga Distribution Network	Mwinilunga	North-Western	Mini Grid Distribution Network
9.	Solar for Agriculture	Various	Various	Standalone Solar System
10.	Solar for Health	Various	Various	Standalone Solar System
11.	2024 Solar for Chiefs	Various	Various	Standalone Solar System
12.	Smart Ready Board	Various	Various	Standalone Solar System
13.	2023 Biogas Project	Various	Various	Biogas
14.	2024 Biogas Project	Various	Various	Biogas
15.	Chief Chama SMG	Kawambwa	Luapula	Solar Mini Grid

## Appendix 13 : REA Grid Extension Projects under implementation as of 31<sup>st</sup> December 2024

No.	Project Name	District	Province	Technology
1.	Matala	Mumbwa	Central	Grid Extension
2.	Butikili-Elena	Mpongwe	Copperbelt	Grid Extension
3.	Mtilizi	Petauke	Eastern	Grid Extension
4.	Mukupa Katandula	Kaputa	Northern	Grid Extension
5.	Nalwei/Lui Phase I	Nkeyema	Western	Grid Extension
6.	Chambulumina_Matuka_B wiingi	Kapiri Mposhi	Central	Grid Intensification
7.	Kambila	Lufwanyama	Copperbelt	Grid Intensification
8.	Chizenje	Kasenengwa	Eastern	Grid Intensification
9.	Kaunga B	Luangwa	Lusaka	Grid Intensification
10.	Muyombe-Thendere	Mafinga	Muchinga	Grid Intensification
11.	Kalungu-Sansamwenge Phase II	Isoka	Muchinga	Grid Intensification
12.	Kyangandu	Manyinga	North-Western	Grid Intensification
13.	Kamono	Kasempa	North-Western	Grid Intensification
14.	Kakhikasa	Mufumbwe	North-Western	Grid Intensification
15.	Siakasipa Phase II	Kazungula	Southern	Grid Intensification

## Appendix 14 : REA Projects Planned for in 2025

No.	Project Name	District	Province	Technology
1.	Matala	Mumbwa	Central	Grid Extension
2.	Butikili-Elena	Mpongwe	Copperbelt	Grid Extension
3.	Mtilizi	Petauke	Eastern	Grid Extension
4.	Mukupa Katandula	Kaputa	Northern	Grid Extension
5.	Nalwei/Lui Phase I	Nkeyema	Western	Grid Extension
6.	Chambulumina_Matuka_B wiingi	Kapiri Mposhi	Central	Grid Intensification
7.	Kambila	Lufwanyama	Copperbelt	Grid Intensification
8.	Chizenje	Kasenengwa	Eastern	Grid Intensification
9.	Kaunga B	Luangwa	Lusaka	Grid Intensification
10.	Muyombe-Thendere	Mafinga	Muchinga	Grid Intensification
11.	Kalungu-Sansamwenge Phase II	Isoka	Muchinga	Grid Intensification
12.	Kalyangandu	Manyinga	North-Western	Grid Intensification
13.	Kamono	Kasempa	North-Western	Grid Intensification
14.	Kakhikasa	Mufumbwe	North-Western	Grid Intensification
15.	Siakasipa Phase II	Kazungula	Southern	Grid Intensification

## Appendix 15 : Off-grid Projects to be procured under the 2025 Work Plan & Budget

No.	Project Name	District	Province	Technology
1.	REA HQ Solar Power System	Lusaka	Lusaka	Standalone Solar System
2.	Kasoma Lunga Island SMG (4 systems)	Lunga	Luapula	Solar Mini Grid
3.	Solar for Agriculture	Various	Various	Standalone Solar System
4.	Kalimankonde Island SHS	Lunga	Luapula	Standalone Solar System
5.	Communal Bio-digesters	Various	Various	Biogas
6.	Biogas Reserve Tanks	Various	Various	Biogas





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