Energy & Petroleum Regulatory Authority

BI-ANNUAL

ENERGY AND PETROLEUM STATISTICS REPORT

FINANCIAL YEAR 2023/2024

ABOUT EPRA

The Energy and Petroleum Regulatory Authority (EPRA) is established under the Energy Act, 2019 as the regulatory agency responsible for economic and technical regulation of the electricity, renewable energy, petroleum and coal sectors.

Our Mission

To facilitate sustainability in the energy and petroleum sectors through regulation, for improved livelihoods.

Our Vision

A leading energy and petroleum regulator.

Our Rallying Call

Quality energy, quality life.

Our Core Values

Integrity

Responsiveness

Accountability

Innovativeness

Professionalism

ABOUT THIS REPORT

This report presents key statistics on the performance of the electricity, petroleum, and renewable energy subsectors in the first half of the Financial Year 2023/2024.

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ACKNOWLEDGEMENTS

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The team expresses gratitude to the Director General, the Senior Management team, and all staff members for their invaluable support, which made the preparation of this report possible.

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ABBREVIATIONS AND ACRONYMS

AGO	Automotive Gas oil
ETIP	Energy Transition Investment Plan
EPRA	Energy and Petroleum Regulatory Authority
EV	Electric Vehicle
FEC	Fuel Energy Cost
FERFA	Foreign Exchange Rate Fluctuation Adjustment
FDP	Field Development Plan (FDP)
GWh	Giga-Watt hour
HHI	Herfidahl Hirschman Index
IK	Illuminating Kerosene
IPP	Independent Power Producer
LPG	Liquefied Petroleum Gas
LTWP	Lake Turkana Wind Power
MWh	Mega-Watt hour
OMCs	Oil Marketing Companies
KPC	Kenya Pipeline Company
PMS	Premium Motor Spirit
PPA	Power Purchase Agreement
VAT	Value Added Tax
WHRC	Waste Heat Recovery Cycle
WRA	Water Resources Authority

DIRECTOR GENERAL'S MESSAGE

I am delighted to extend a warm invitation to this edition of the Energy and Petroleum Statistics report, covering the first half of the Financial Year 2023/2024.

Despite its brevity, the period under review has been marked by significant developments in the energy and petroleum subsectors. In the electricity sector, renewable energy sources continued to dominate the generation mix, constituting an impressive 84.93% of the total energy generated. Notably, the Sossian geothermal power plant, commencing full commercial operations in October 2023, added 35MW further strengthening power supply to the Central Rift region and enhancing reliability in the area.

Conversely, thermal energy generation has been on a decline since 2022. This is attributed to a reduction in thermal installed capacity and the prioritization of renewable energy generation.

The Kenya-Ethiopia 200MW HVDC link commenced full commercial operations on 1st December 2023, boosting Kenya's power import and energy exchange with neighboring countries.

Captive power generation continued to gain popularity among commercial and industrial consumers, with additions in captive solar PV generation reaching an installed capacity of 196.2 MW. This pushed the captive capacity to 449.5 MW, constituting 12.18% of the country's total installed capacity.

The introduction of a special tariff category for electric mobility in the March 2023 tariff review led to an increase in energy consumed by electric vehicles reaching 0.32 GWh, accounting to 0.01% of the overall energy consumption during the period. To accelerate electric vehicle adoption, the Authority released the Electric Vehicle Charging & Battery Swapping Infrastructure Guidelines on 14th September 2023. The guidelines outline essential considerations for establishing reliable and affordable charging infrastructure.

Liquefied Petroleum Gas (LPG) demand rose by 8% to 360,594 metric tonnes credited to Government initiatives, case in point, the removal of VAT on LPG through the Finance Act 2023. The consumption of LPG has been on an upward trajectory with per capita consumption reaching 7kg. Kenya aims to double per capita consumption by 2030 as part of our commitment to advancing modern and clean cooking solutions.

Fuel quality monitoring in petroleum retail facilities demonstrated a commendable 98.6% compliance rate. Non-compliant stations faced appropriate penalties in accordance with relevant legislation.

This report also highlights the various trends and innovations that have kept the sector vibrant. Green hydrogen is emerging as an alternative and sustainable source of energy and Kenya has been quick to explore this source. Kenya's Green Hydrogen Strategy and Road Map was unveiled in September 2023 at the Africa Climate Summit, with the country's first green hydrogen plant commissioned in November 2023 in Morendat, Nakuru County.

These highlights are a preview of the significant developments contained in this report. I encourage you to immerse yourself in the comprehensive details so as to appreciate the sector's advancements.

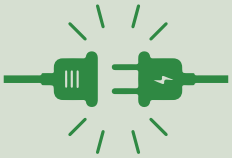
I would like to thank the Board for offering strategic direction, and extend my gratitude to the EPRA staff for their efforts in ensuring the Authority effectively executes its mandate. Special thanks to the Statistics Report Committee for compiling this report. Last but certainly not least, I want to express my appreciation to our stakeholders, as their support is integral to the growth of our industry.

Daniel Kiptoo Bargoria, O.G.W, M.B.S
Director General

THE YEAR IN NUMBERS

6,805.28

GWh energy generated



253,480

new customers connected to the grid

84.93%

renewable energy contribution to the generation mix

Ksh. **947.3m**

amount saved by Time of Use tariff beneficiaries

↑8%

increase in demand for LPG

98.6%

fuel quality compliance in retail stations

2,170.56 MW

peak demand

1 ELECTRICITY

This section presents a summary of the performance of the various segments of the electricity supply chain, including electricity generation, transmission, distribution and retail. It also covers the evolution of tariffs, competition analysis, reliability indices and emissions.

1.1 Electricity supply and demand

1.1.1 Installed capacity

Installed capacity encompasses the total maximum power generation capability of a country's power plants, including grid-connected, captive, and off-grid generation units. Table 1.1 provides an overview of the country's cumulative installed capacity as of December 2023.

Technology	Interconnected Capacity (MW)		Captive Capacity (MW)	Off- grid Capacity	Total Installed Capacity	% Total Installed
	Installed	Effective				
Hydro	839.3	810.4	33.0	0.1	872.4	25.00%
Geothermal	940.0	841.1	3.7		943.7	27.04%
Thermal	572.8	562.4	21.3	35.6	629.7	18.05%
Wind	435.5	425.5	-	0.6	436.1	12.50%
Solar	210.3	210.3	196.2	3.9	410.4	11.76%
Bioenergy	2.0	2.0	111.8	-	113.8	3.26%
Imports	200.0	200.0	-	-	200.0	-
WHRC	-	-	83.5	-	83.5	2.39%
Total	**3, 199.9**	**3,051.7**	**449.5**	**40.1**	**3,689.5**	**100.00%**

Table 1.1: Installed, Effective and Captive Power Capacity as at 31st December 2023

Kenya experienced a decrease of 73.5 MW in its interconnected capacity, settling at 3,199.9 MW, primarily attributed to the expiration of the power purchase agreement for the Kipevu 1 power plant. Notably, no new grid-interconnected power generation plants were commissioned during this review period.

The captive power capacity increased to 449.5 MW, constituting 12.18% of the country's installed capacity. Captive power plants refer to embedded electricity generation units utilized by commercial or industrial consumers to fulfill their internal electricity requirements.

Captive power generation has been popular among commercial and industrial consumers due to its cost competitiveness, ease of set up and supportive government policy. The period under review observed additions in captive solar PV generation to an installed capacity of 196.2 MW.

1.1.2 Energy generated

Generated energy refers to the electricity delivered to the national grid by various power producers, measured in GWh. In the reviewed period, a total of 6,805.28 GWh was generated.

Renewable energy sources dominated, constituting 84.93% of the total energy generated. Geothermal held its position as the primary source, contributing 44.6% to the overall energy generated. Hydro followed with 22.5%, while wind and solar accounted for 14.3% and 3.5%, respectively. Electricity imports contributed 6.2% (419.13 GWh) to the total energy mix. Table 1.2 below provides a detailed breakdown of energy generated by technology.

Technology	Energy generated (GWh)	
Hydro	1,534.01	22.5%
Thermal	606.09	8.9%
Wind	972.82	14.3%
Geothermal	3,032.03	44.6%
Biomass	0.21	0.0%
Imports	419.13	6.2%
Solar	240.99	3.5%
	6,805.28	**100%**

Table 1.2: A summary of energy generated by each technology between June and December 2023

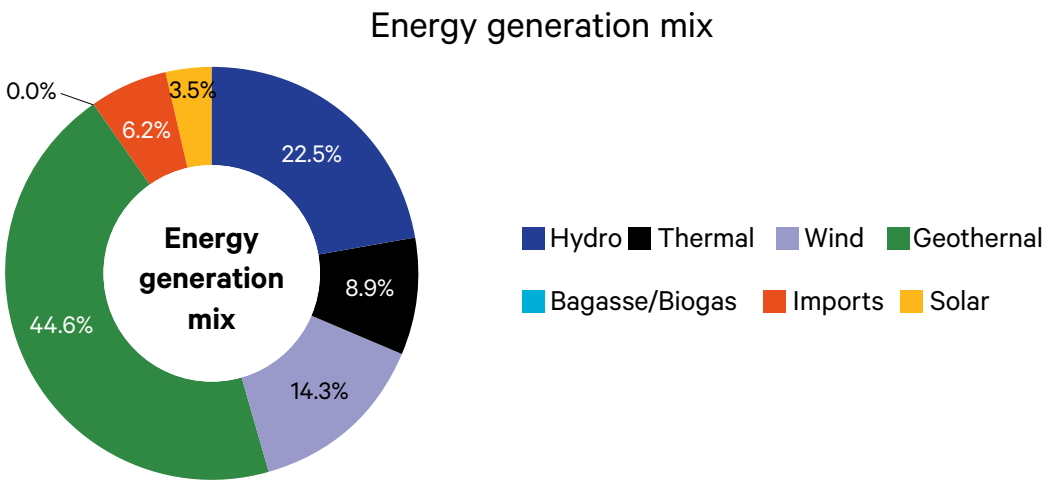


Figure 1.1: A visualisation of the energy generation mix as of December 2023

The highest monthly energy generated was 1,158.9 GWh and 1,154.2 GWh recorded in July and August 2023 respectively. Conversely, the lowest figures during the review period were 1,114.3 GWh in November and 1,109.5 GWh in December 2023. The decline in November is attributed to two national blackouts on November 11th and 24th, while the lower figure in December is linked to reduced industrial activities during the festive period. The monthly trend of energy generation is shown in figure 1.2.

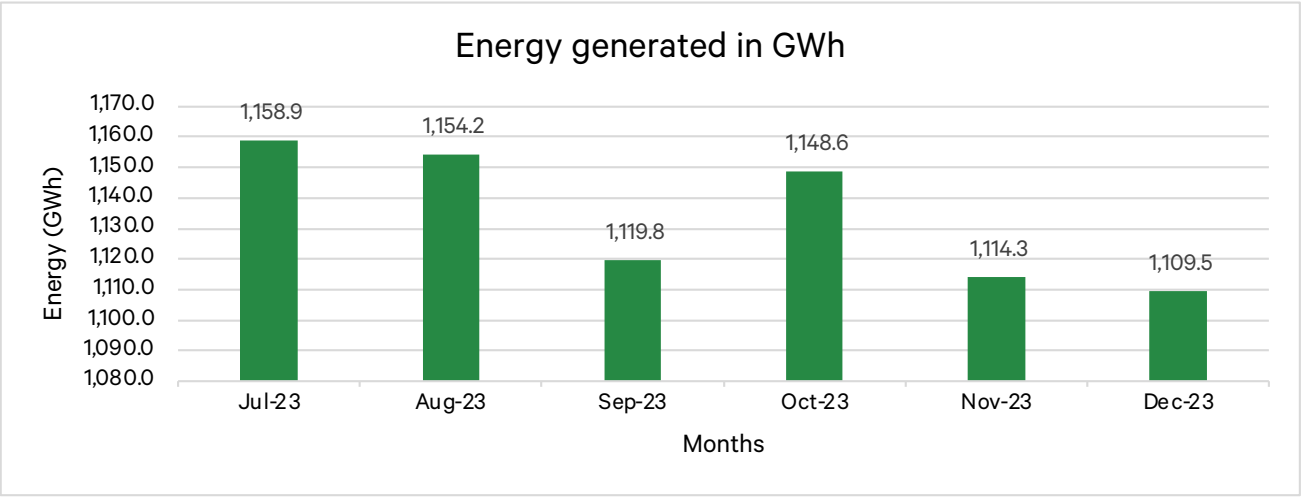


Figure 1.2: Trend in monthly electricity generation from July to December 2023

1.1.3 Energy Curtailment

In the review period, 236.21 GWh of electrical energy was curtailed. This involves reducing the power output of a producer, which typically occurs between 0000hrs-0430hrs when demand is at its lowest, coinciding with the peak output from must-run sources like wind.

Curtailment of geothermal energy constituted 71.86% of the total curtailed energy. December witnessed the highest curtailment, driven by increased hydro energy uptake due to heavy rains, displacing geothermal energy during nighttime.

Wind curtailment in December was as a result of Lake Turkana and Kipeto wind power plants reaching must-run thresholds. Table 1.3 provides a summary of energy curtailment between July 2023 and December 2023.

Month	Geothermal (MWh)	Wind (MWh)	Total (MWh)
Jul 2023	23,712	-	23,712
Aug 2023	27,600	-	27,600
Sep 2023	16,000	-	16,000
Oct 2023	19,900	-	19,900
Nov 2023	31,900	-	31,900
Dec 2023	50,630	66,470	117,100
Total	**169,742**	**66,470**	**236,212**

Table 1.3: A summary of energy curtailment between July and December 2023

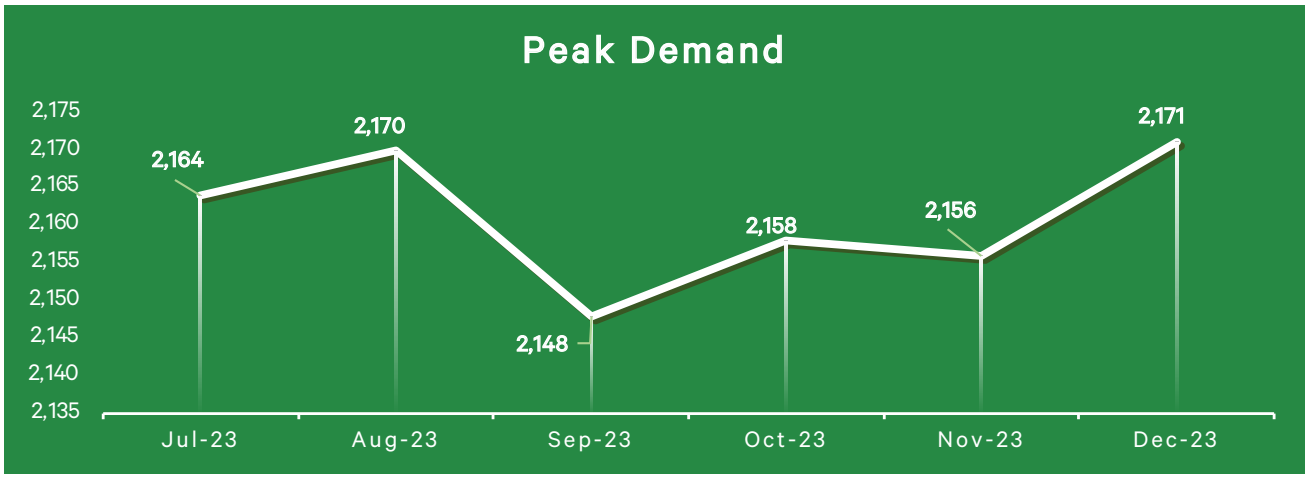


Figure 1.3: A trend in peak demand between July 2023-December 2023

1.1.5 Electricity access

Between July and December 2023, a total of 253,480 new customers were connected, contributing to a cumulative grid-connected customer base of 9,456,158. This marks a significant increase in new customer connections compared to the first half of the year, which saw a total of 161,499 new connections. Figure 1.4 presents a summary of the cumulative connections during the reviewed period.

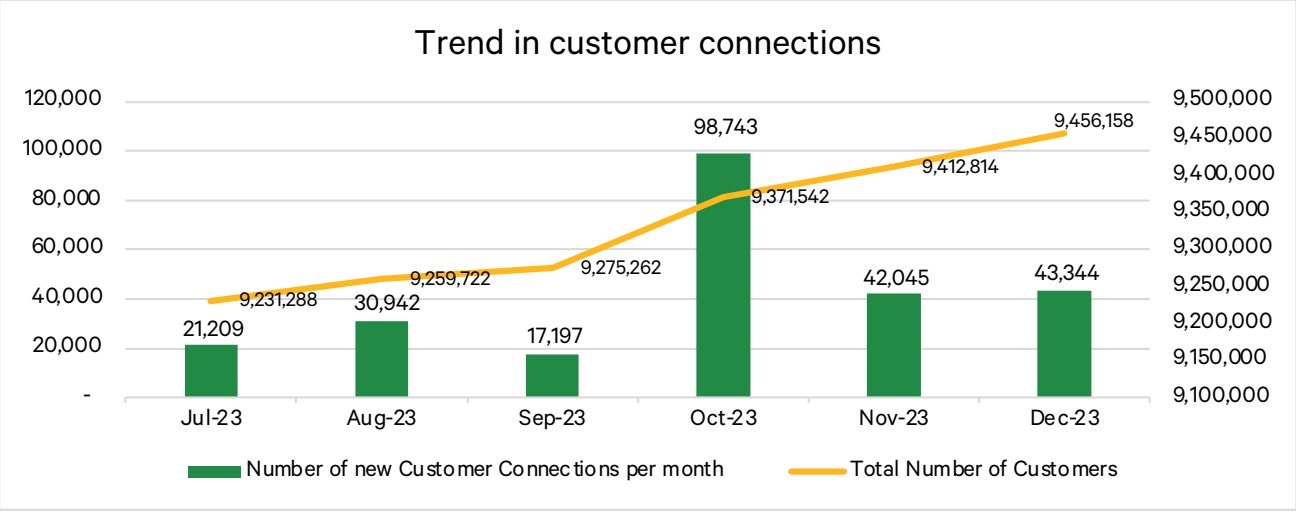


Figure 1.4: Trend in customer connections between July to December 2023

1.1.6 Energy consumption per customer category

In the period under review, 2,706.62 GWh of electrical energy were consumed by large commercial and industrial customers accounting for 51.99% % of total consumption. This category consists of consumers supplied at medium and high voltage or at low voltage with a monthly usage surpassing 15,000 kWh. These include large and medium industries and factories, high rise buildings, warehouses and public infrastructure installations such as airports, ports and railway stations. These are energy intensive undertakings which makes this category the largest consumer category.

Domestic consumers followed consuming 1,599.33 GWh. This accounted for 30.72% of total energy consumption edging out small commercial enterprises which utilized 843.04 GWh, accounting for 16.19% of the overall electrical consumption.

Street lighting utilized 56.48 GWh of electrical energy, representing 1.09% of the total energy consumption. Electric mobility is a new consumer category developed to encourage electric vehicle adoption. In the review period, 0.32 GWh powered electric vehicles, constituting 0.01% of the total energy consumption. Table 1.4 and figure 1.5 presents a summary of energy consumption by each customer category.

Customer category	Energy consumption (GWh)	Percentage
Industrial	2,706.62	51.99%
Domestic	1,599.33	30.72%
Electric Mobility	0.32	0.01%
Small commercial (SMEs)	843.04	16.19%
Street lighting	56.48	1.08%
Total	**5,205.79**	**100.00%**

Table 1.4: A summary of energy consumption by each customer category.

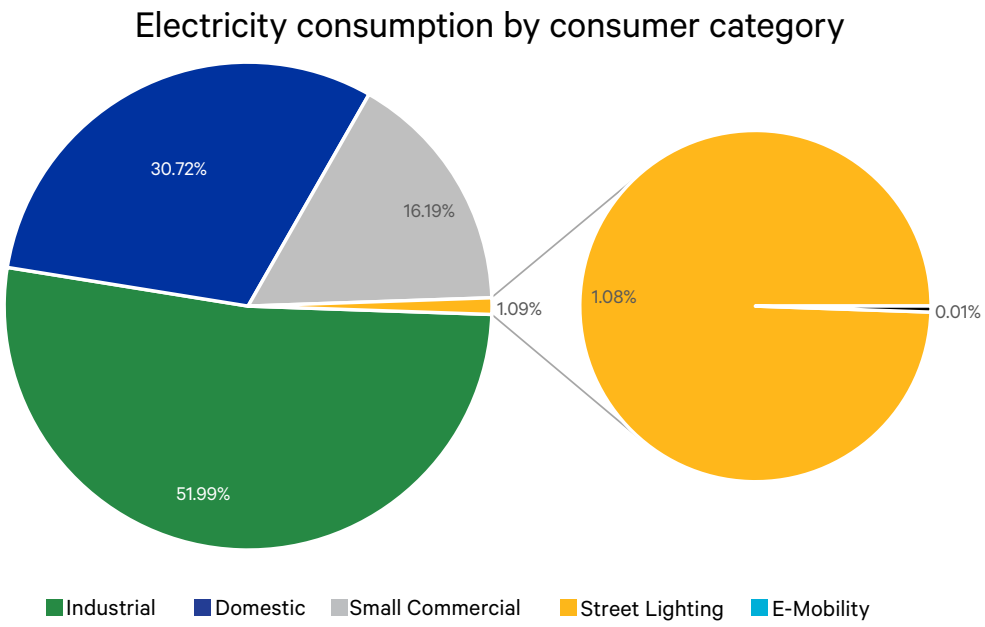


Figure 1.5: A visual representation of energy consumption by each customer category

1.1.7 Energy consumption by region

During the review period, Nairobi was the highest consumer of electrical energy, utilizing 2,293.95 GWh. This constituted 44.07% of the country's total energy consumption. Covering parts of Kajiado, Machakos, and Makueni Counties, the region stands out with its dense concentration of large and medium industries, micro and small enterprises, making it the commercial hub of both the country and the East African Community (EAC) region.

The Coast region ranked second in energy consumption, utilizing 930.05 GWh, which constituted 17.87% of the country's total energy consumption. The Rift Valley region accounted for 13.55% of the total consumption, utilizing 705.48 GWh of electrical energy, followed by North-Eastern and Mt. Kenya regions contributing 10.78% and 6.47% to the overall consumption respectively. West Kenya and South Nyanza regions reported the lowest consumption percentages, representing 5.35% and 1.92% of the total consumption, respectively.

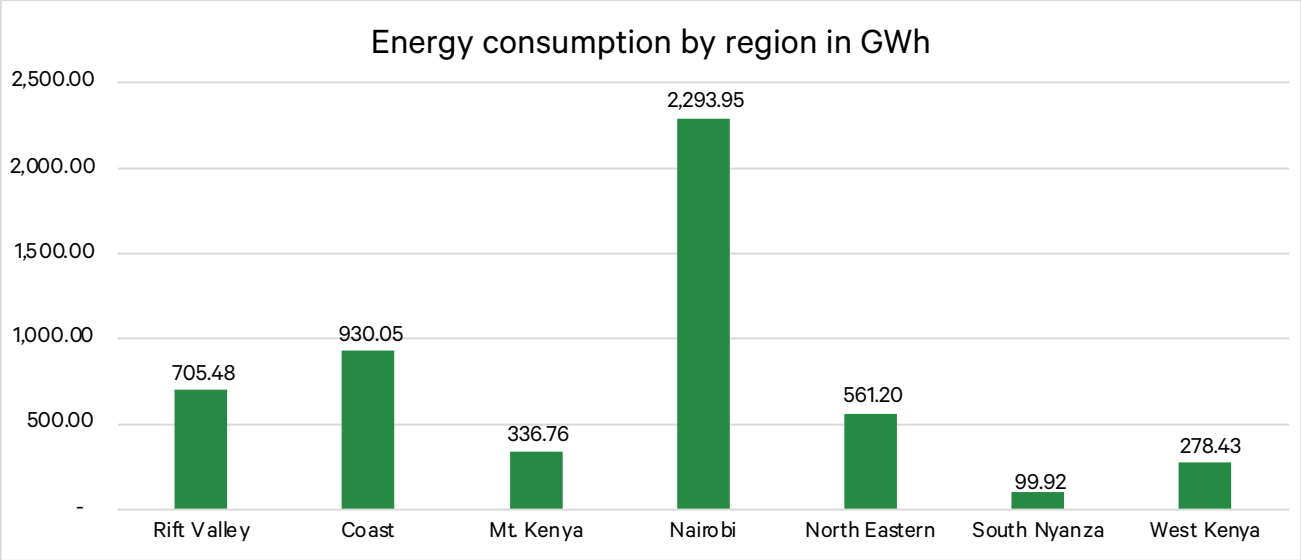


Figure 1.6: Energy consumption by region between June and December 2023

1.2 Electricity Pricing

The electricity pricing structure takes into account various factors, including the cost of generating, transmitting and distributing electricity, pass through costs, energy losses that occur during transmission, as well as government taxes and levies.

1.2.1 Power Purchase Agreement

A Power Purchase Agreement (PPA) is a contractual arrangement between power generators and utilities or companies, outlining the terms for the sale of electricity. These terms encompass the quantity of power to be sold and the associated costs. PPAs play a crucial role in offering long-term price stability by establishing a fixed electricity price throughout the contract term. This stability is beneficial to both generators and consumers, as it helps mitigate the risks associated with fluctuating market conditions. There was no new PPA between Kenya Power and energy producers during this period.

1.2.2 Base Electricity Tariff

The Authority approved the base tariff for the tariff control period spanning from 2022/2023 to 2025/2026 in March 2023. The base electricity tariff consists of multiple components that encompass the costs related to electricity generation, transmission, distribution, operational expenses, and profit margins for the utility company. Table 1.5. provides details of the applicable base tariff for various customer categories during the reviewed period.

Customer category	Voltage at connection	Energy Limit (kWh/month)	Base Tariff (Ksh.)	Demand Charge (Kshs.)
Domestic	240 Volts/415 Volts	0-30	12.24	0
		31-100	16.58	0
		>100	20.58	0
Small Commercial	240 Volts/415 Volts	0-30	12.24	0
		31-100	16.36	0
		>100	20.00	0
Electric Mobility	240 Volts/415 Volts	200-15,000	16.00	0
Commercial/Industrial	415 Volts	>15,000	14.50	1,100
	11,000 Volts	No Limit	13.08	700
	33,000 Volts	No Limit	12.52	370
	66,000 Volts	No Limit	12.26	300
	132,000 Volts	No Limit	11.98	300
Street Lighting	240Volts/450 volts	No Limit	9.24	0

Table 1.5: Base tariff for the financial year 2023/2024

1.2.3 Pass-through charges

Pass-through charges, approved by EPRA, are implemented to cover additional expenses incurred by electricity generating plants, comprising Fuel Energy Cost (FEC), Foreign Exchange Rates Fluctuations Adjustments (FERFA), Water Resource Authority (WRA) levy, Inflation Adjustments, and taxes.

The Fuel Energy Charge (FEC) demonstrated both upward and downward movements during the period under review, the highest charge at Ksh. 5.74/kWh in November 2023 and the lowest at Ksh. 3.98/kWh in December. These fluctuations are attributed to poor hydrology, varying wind output, and breakdowns in some geothermal power plants, leading to increased thermal power generation fueled by imported fossil fuels.

During the review period, the WRA Levy was the highest in December at Ksh. 0.0158/kWh and lowest in November at Ksh. 0.01/kWh, reflecting the impact of heavy rains experienced in December.

The FERFA levy, designed to offset the impact of foreign exchange rate fluctuations on power generation expenses, was highest in December at Ksh. 3.1687/kWh and lowest in October at Ksh. 0.8003/kWh., This may be attributed to the weakening of the Kenya Shilling against the US Dollar.

The inflation adjustment on end-user tariffs remained at Ksh. 0.23/kWh throughout the review period. Inflation adjustment is implemented to account for changes in the general price level of goods and services, ensuring that electricity tariffs align with prevailing economic conditions. Table 1.6. illustrates the trend in pass-through charges.

Pass-through charges	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
FEC (Ksh./kWh)	4.02	4.46	4.16	4.94	5.74	3.98
Forex adj. (Ksh./kWh)	1.7466	1.70756	1.3800	2.0528	0.8003	3.1687
Inflation adj. (Ksh./kWh)	0.23	0.23	0.23	0.23	0.23	0.23
WRA levy (Ksh./kWh)	0.0146	0.0148	0.0138	0.0136	0.0100	0.0158

Table 1.6: A trend in pass-through charges between July to December 2023

The pass-through charges for the second half of the year were lower on average compared to the first half of the year. This is primarily attributed to lower thermal contribution resulting in lower FEC component. Figure 1.7 highlights the trend in pass-through charges from July 2021 to December 2022.

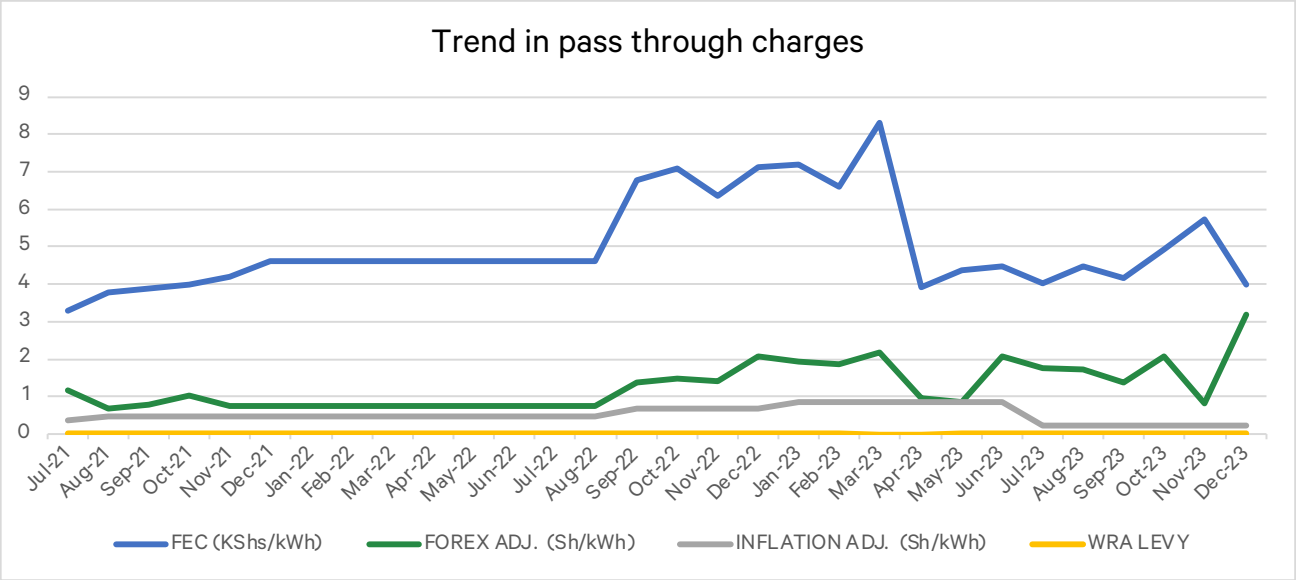


Figure 1.7: Trend in pass-through charges between July 2021 and December 2023

1.2.4 Evolution of the overall electricity Tariff

The overall electricity tariff cover both the cost of producing energy and the pass-through charges. The volatility in the overall tariff is attributed to the fluctuations in the pass-through charges and the review of the base tariff. Figure 1.8 gives a summary of the trend in the overall tariff for the different customer categories.

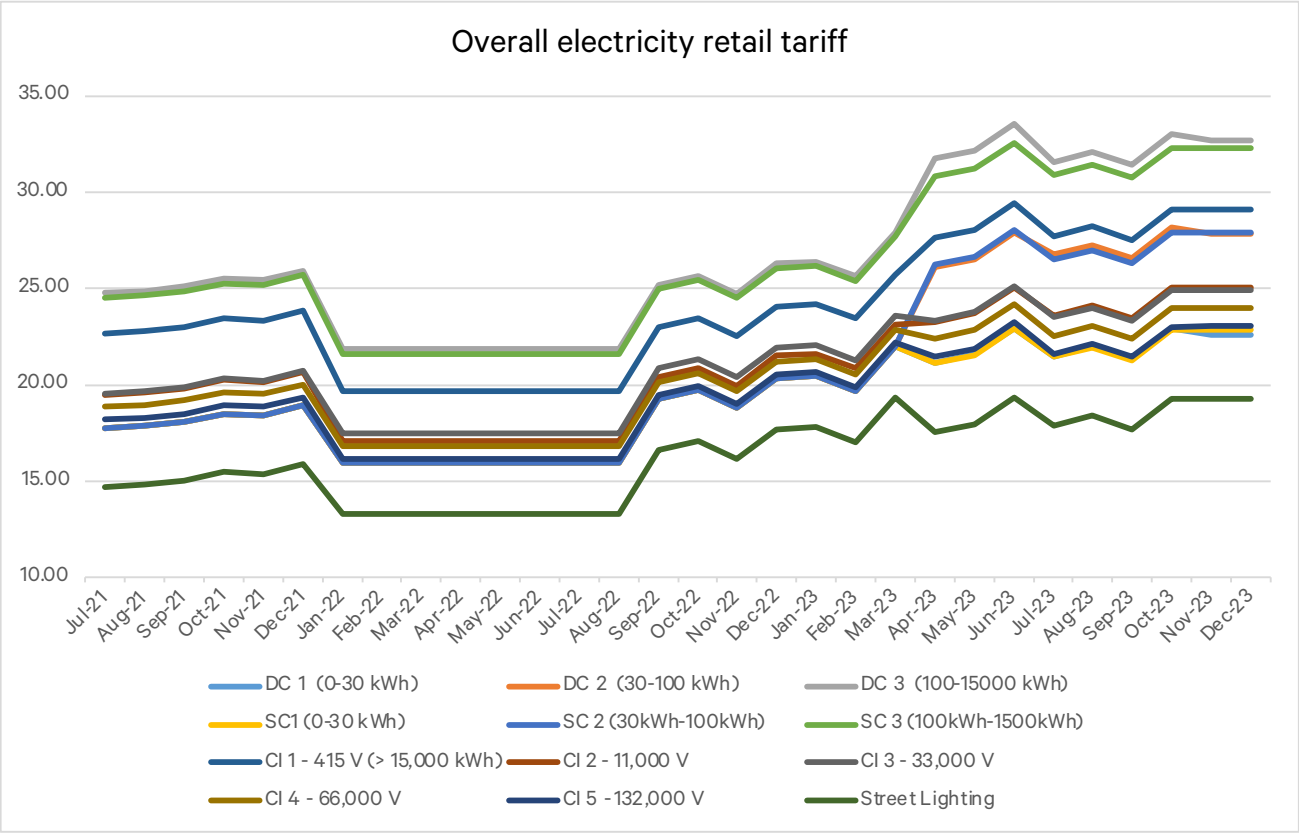


Figure 1.8: Trend in the overall electricity retail tariff between July 2021 and December 2023

1.2.5 Time of Use (ToU) Tariff

The ToU tariffs targets commercial and industrial consumers with the aim of incentivizing them to consume electricity during the off-peak hours. It provides a 50% discounted tariff on the energy charge rates during the off-peak periods (2200hrs to 0600hrs during weekdays, 1400hrs to 0800hrs Saturdays and the whole day on Sundays and during Public Holidays) on premises that electricity consumption thresholds are met.

The TOU beneficiaries cumulatively saved Ksh. 947.3 million during the review period. The savings achieved in this period increased by Ksh. 398.3 million compared to the first half of the year.

Description	Unit of measure	July	August	September	October	November	December
Savings by customers	Ksh. (million)	204.4	99	153.3	197.00	117.70	175.90

Table 1.7: A summary of monthly savings by the TOU customers

Source: Kenya Power

1.3 System Losses

In the review period, total system losses, both technical and commercial, totalled 23.2% exceeding the 18.5% benchmark set by the Authority. Table 1.8 provides a detailed breakdown of monthly system losses as a factor of energy purchased by Kenya Power from power producers and energy sold to consumers.

	Jul -23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Total
Purchased (GWh)	1,159	1,154	1,120	1,149	1,114	1,110	6,805.8
Sales (GWh)	883.92	889.62	879.27	879.53	862.23	832.35	5,226.9
Losses (GWh)	23.7%	22.9%	21.5%	23.5%	22.6%	25.0%	23.2%

Table 1.8: A summary of electricity system losses between July and December 2023

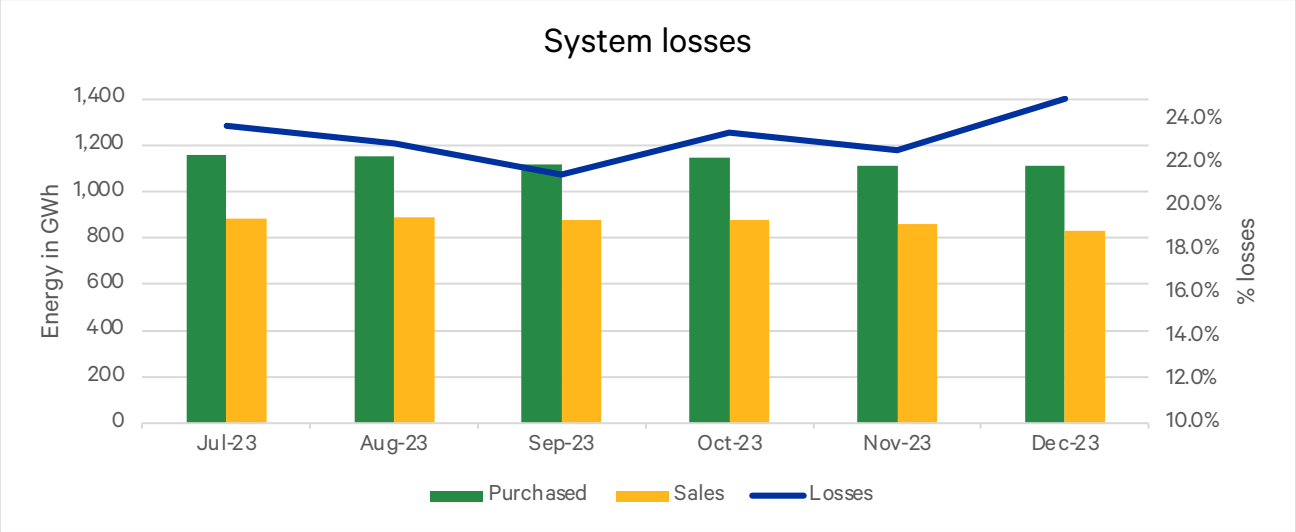


Figure 1.9: System losses between July and December 2023

System losses encompass the electrical energy lost during transmission and distribution, comprising both technical losses inherent to the power system's efficiency and commercial losses involving unbilled electrical energy delivered to consumers. Technical losses are proportionate to the effectiveness of the transmission and distribution network, while commercial losses involve issues like power supplied to illegal connections, meter tampering, and fraudulent use of electrical energy.

1.4 Reliability Indices

Reliability indices measure how frequently interruptions occur in a power supply system, how long they last and how long it takes to restore supply. There are three indices used to quantify how reliable a power supply system is namely: CAIDI, SAIDI and SAIFI.

Customer Average Interruption Duration Index (CAIDI)

In the period under review, it took an average of 2.280 hours to restore service after interruptions which was well within the allowed threshold of 3.83 hours. The shortest restoration time was an average of 1.966 hours in July while the longest was 2.616 hours in August.

System Average Interruption Duration Index (SAIDI)

In the period under review, customers experienced outages lasting an average of 8.836 hours per month, a duration longer than the 5.0 hours benchmark set by the Authority. The shortest interruption was in the month of July at 5.525 hours per month while the longest was in September at 11.078 hours per month.

System Average Interruption Frequency Index (SAIFI)

Customers experienced an average of 3.865 interruptions per month in the period under review. This is more than the acceptable 2.15 interruptions per month set by the Authority. The highest number of interruptions per month were recorded in September at 4.987 while the lowest was recorded in July at 2.81 interruptions per month.

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Average	EPRA target (FY23/24)
CAIDI	1.966	2.616	2.222	2.235	2.387	2.255	2.280	3.53
SAIDI	5.525	8.579	11.078	8.145	10.746	8.941	8.836	5.00
SAIFI	2.811	3.279	4.987	3.644	4.503	3.965	3.865	2.15

Table 1.9: A summary of system reliability indices from July to December 2023

1.5 Competition analysis

1.5.1 Market Share

The market share is determined by energy purchased from power producers by the off taker (Kenya Power). In the period under review, Kengen continued to dominate the energy market with a share of 62.24%. This dominance underscores Kengen's significant role as a major player in the energy generation landscape, attributed to its extensive infrastructure and diverse portfolio of power generation assets. In addition, most of its plants have base load capacity (for the case of Geothermal) therefore have a high availability factor.

Lake Turkana Wind Power (LTWP) plant held a notable market share of 10.25 %. Imports recorded a significant increase in market share, from 4.49% as of June 2023 to 6.19%. Table 1.10 shows the market shares of the electricity sector based on energy purchased for the period under review.

Company	Market share
KenGen	62.24%
LTWP	10.25%
Orpower	6.26%
Imports	6.19%
Kipeto Energy Plc.	3.45%
Rabai Power	3.18%
Sosian Geothermal	1.90%
Thika Power	1.42%
Alten Kenya Solar Farm	0.78%
Selenkei Solar Farm	0.72%
Cedate	0.72%
Malindi Solar Group	0.71%
Gulf Power	0.67%
Garissa Solar	0.63%
Others	0.89%

Table 1.10: A summary of the electricity market share between July and December 2023

1.5.2 Competition analysis

During the period under review, the Herfindahl-Hirschman Index (HHI) was consistently above the recommended threshold of 0.1. This is attributed to KenGen's dominance in energy generation. Competition in the industry has been increasing over the years occasioned by new power plants and increase in imports. Figure 1.10 presents a trend of the HHI for the period under review.

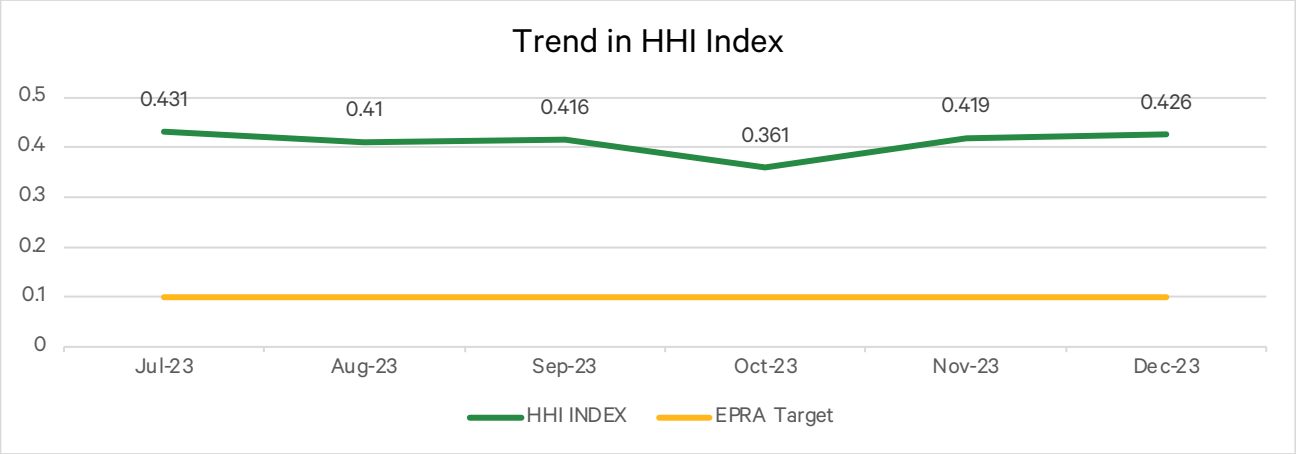


Figure 1.10: Trend in HHI Index between July and December 2023

1.6 Greenhouse gas emissions

The Green House Gas (GHG) emissions for the electricity sub-sector are estimated based on the electrical energy generated in the period under review and the prevailing grid emission factor. The national grid emission factor for Kenya is 0.5tCO2/MWh. This factor accounts for CO2 emissions associated with electricity generation and supply. The correlation between CO2 emissions and electricity generation is determined by the grid emission factor.

The highest emissions amounting to 579.42 thousand tonnes of CO2, were registered in July 2023, whereas the lowest emissions of 554.76 thousand tonnes of CO2 were documented in December 2023. These figures align with the highest and lowest electricity consumption observed during the period under review. Figure 1.11 illustrates the electricity generation CO2 emissions between July and December 2023.

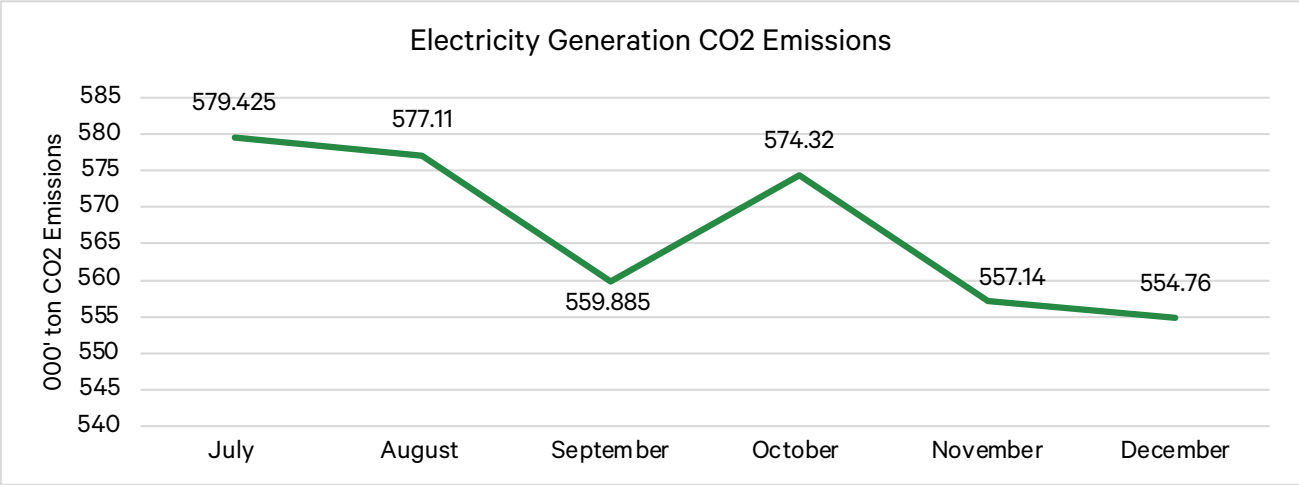


Figure 1.11: Electricity generation CO2 emissions between July and December 2023.

2 RENEWABLE ENERGY

The Government of Kenya has set a target to achieve 100% of its electrical energy generation from renewable sources by 2030. In pursuit of this goal, Kenya launched the Kenya Energy Transition Investment Plan (ETIP) at the United Nations Climate Change Conference (COP 28) during the period under review. This plan is designed to replace fossil fuel electrification with low-carbon alternatives, primarily sourced from renewable energy.

As of December 2023, the installed capacity of renewable energy sources reached 2,776.3 MW, constituting 79.56% of Kenya's total installed capacity. This includes 2,429.2 MW of interconnected renewable energy capacity and 344.6 MW of captive renewable energy capacity. Notably, the reviewed period witnessed additions in captive solar PV plants, to an installed captive capacity of 196.2 MW. Table 2.1 shows the country's installed renewable energy capacity by technology as at December 2023.

Technology	Interconnected Capacity (MW)		Captive Capacity (MW)	Off grid Capacity (MW)	Total Installed Capacity (MW)
	Installed	Effective			
Hydro	839.3	810.4	33.0	0.1	872.4
Geothermal	940.0	841.1	3.7	-	943.7
Wind	435.5	425.5	-	0.6	436.1
Solar	210.3	210.3	196.2	3.9	410.4
Bioenergy	2.0	2.0	111.8	-	113.8
Total	**2,427.1**	**2,289.3**	**344.6**	**4.6**	**2,776.3**

Table 2.1: Installed renewable energy capacity by technology as at December 2023

In the period under review, 84.93% of the energy supplied to Kenya's national grid was obtained from renewable energy sources. Thermal plants contributed 8.91%, while 6.16% was imported. Within the realm of renewable sources, geothermal energy maintained its dominance, meeting 44.55% of Kenya's total energy generation. Hydro and wind generation accounted for 22.54% and 14.30%, respectively. Additionally, utility-scale solar generation contributed 3.54% to the country's overall energy needs. Figure 2.1 visually represents the renewable energy contribution to the generation mix during this period.

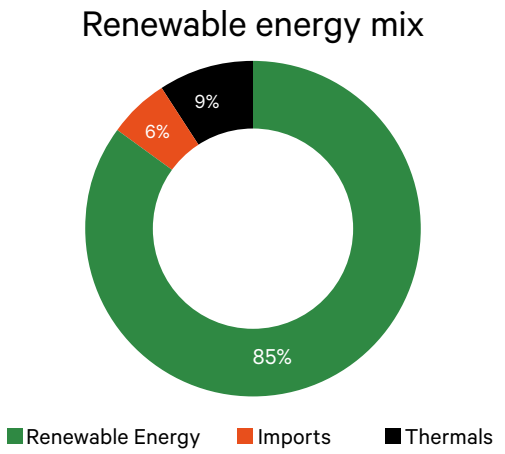


Figure 2.1: Share of renewable energy contribution to Kenya's energy mix between July and December 2023

2.1 Geothermal power generation

Kenya's installed geothermal capacity as at December 2023 was 943.7 MW. During the review period, geothermal energy resources contributed significantly, generating a total of 3,032.03 GWh, representing 44.55% of the energy supplied to the interconnected grid. The monthly energy generation is depicted in Figure 2.2. Notably, the highest geothermal energy generation occurred in August 2023, reaching 529.915 GWh, while the lowest was recorded in July 2023 at 494.812 GWh.

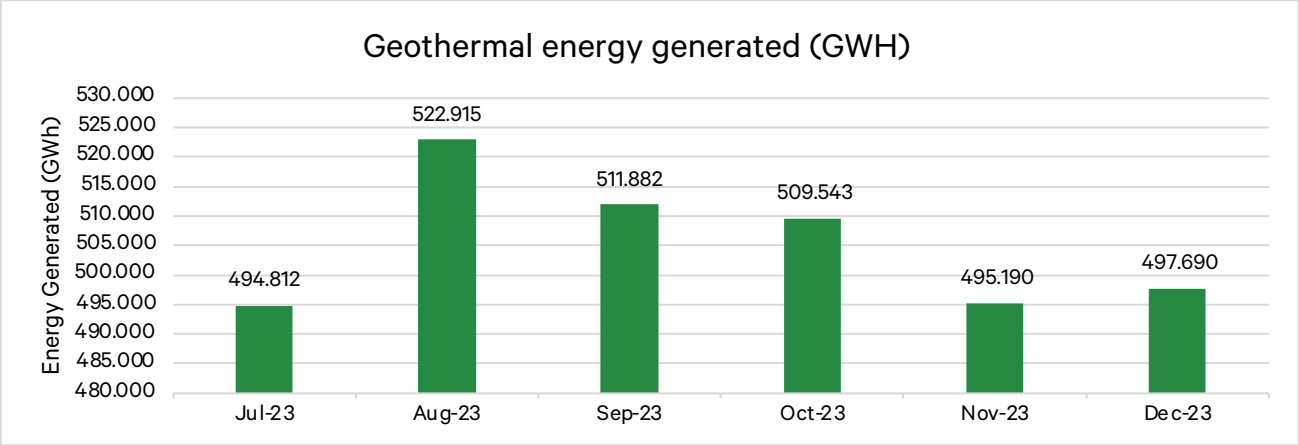


Figure 2.2: Geothermal energy generated between July and December 2023

Geothermal energy generation in the period under review decreased by 0.10% from 3,034.95 GWh in a similar period in 2022. The slight decrease is attributed to increased generation from hydro resources and energy imports. The trend in geothermal energy generated between 2021 and 2023 is illustrated in figure 2.3.

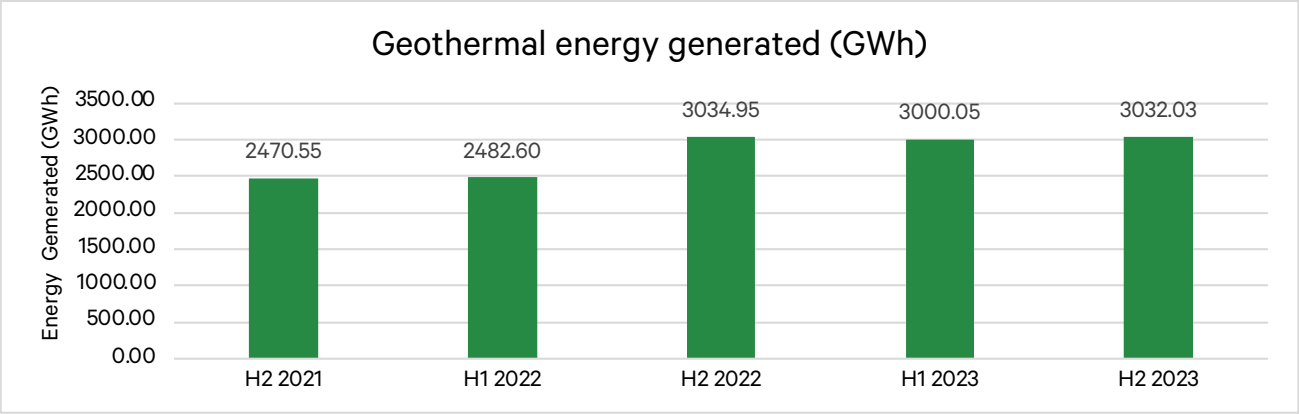


Figure 2.3: A trend of geothermal energy generated from July 2021 to Dec 2023

2.2 Hydro power generation

As of December 2023, the installed capacity of Kenya's hydro plants was 872.4 MW, comprising 839.3 MW of interconnected capacity and 33MW of captive capacity.

During the period under review, interconnected hydropower plants generated 1,534.01 GWh, constituting 22.54% of the total energy generated. Figure 2.4 provides a visual representation of the monthly energy generation from hydropower plants throughout the review period. The energy generated from hydro resources is comparable to rainfall patterns. July had the highest hydro energy generated at 279.484 GWh while October had the lowest hydro energy generated at 205.281 GWh.

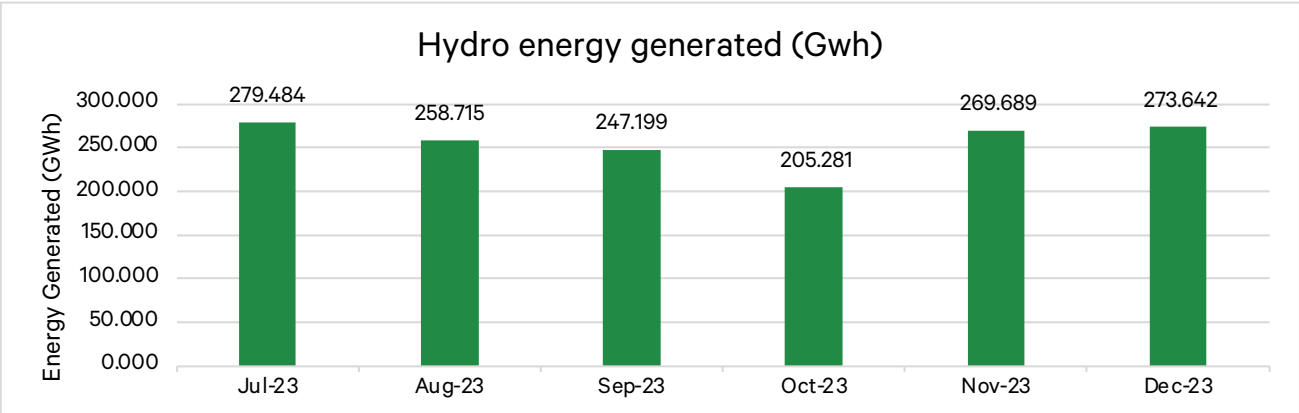


Figure 2.4: A trend in energy generated from hydropower plants between July and December 2023

The hydropower generation positively correlates with inflows into Sondu Miriu and dam levels for Turkwel and Masinga Dams. During the period under review Turkwel had an average dam end month level of 1,133.56 meters above sea level (m. a. s. l). The Minimum Operation Level (MOL) of Turkwel Dam is 1105 m. a. s. l. and the Full Supply Level (FSL) is 1150 m. a. s. l. The dam levels for Turkwel for the period under review are illustrated in figure 2.5.

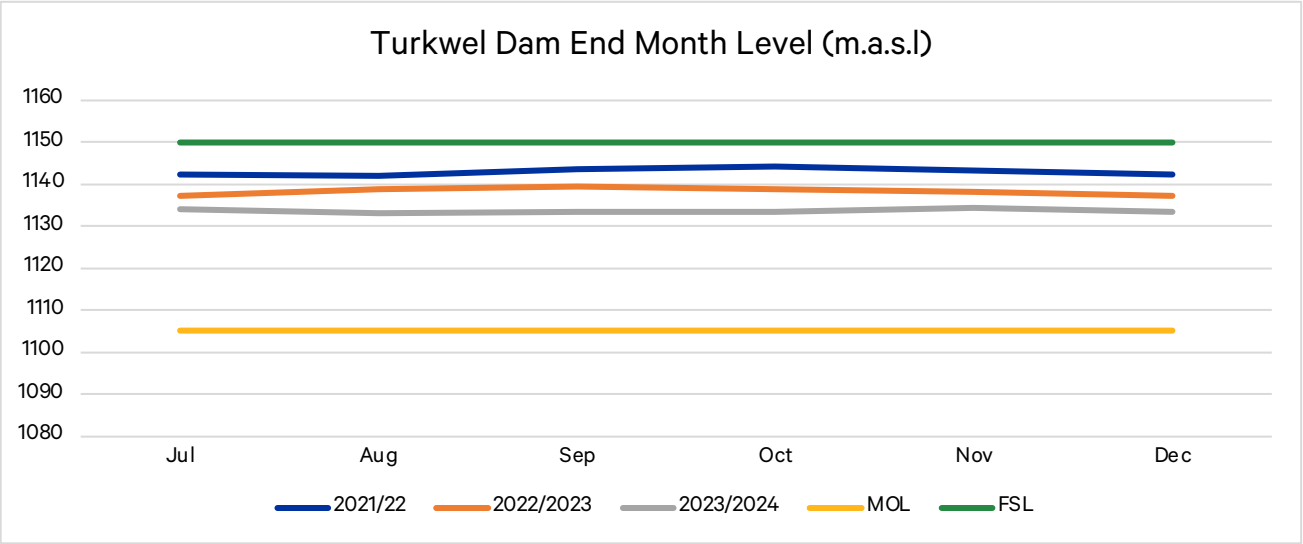


Figure 2.5: Turkwel dam levels between July and December 2023

Masinga dam had an average dam level of 1,043.66 m. a. s. l. against an MOL of 1,035 m. a. s. l. and an FSL of 1,056.5 m. a. s. l. The lowest dam levels for the review period were recorded in September and October 2023 at 1037.27 and 1036.85 m. a. s. l. respectively. There was however a significant improvement in November and December to dam levels of 1,050.58 and 1,054.10 m. a. s. l. following heavy rainfall in the two months. This led to an increase in the hydro energy generated in the last two months of the review period. The monthly dam end month levels are illustrated in figure 2.6.

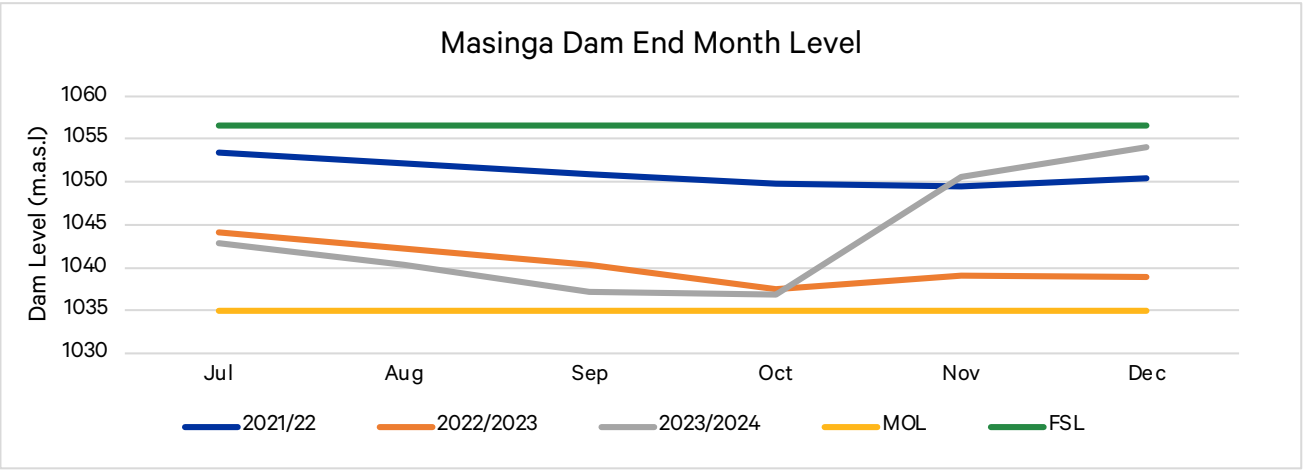


Figure 2.6: Masinga dam levels between July 2021 and December 2023

During the period under review, there was a notable increase of 5.19% in hydro energy generation, from 1,454.4 GWh in a similar period in 2022. This can be attributed to improved hydrology in November and December 2023. The increase in hydro generation played a pivotal role in decreasing the dependence on thermal generation. Figure 2.7 shows a visual representation of the trend in hydro energy generation from 2021 to 2023.

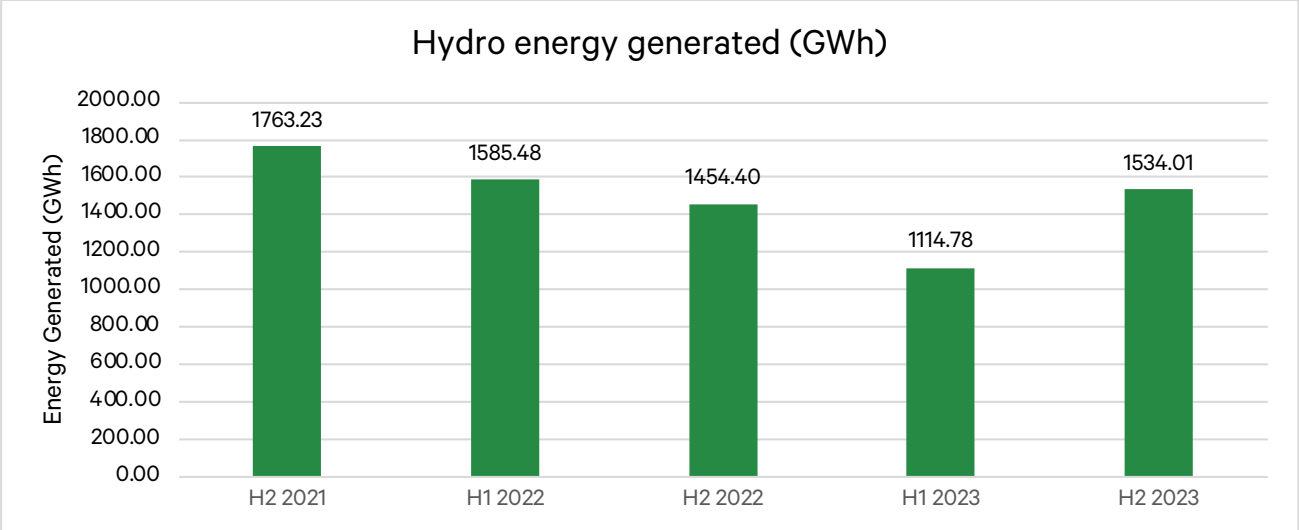


Figure 2.7: A trend in hydro energy generation from 2021 and 2023

2.3 Wind power generation

As at December 2023, Kenya's installed wind energy capacity was 436.1 MW. Figure 2.8 illustrates the monthly wind energy generation throughout the review period. The highest wind energy generation occurred in July 2023, reaching 198.461 GWh, while the lowest was recorded in December 2023 at 85.504 GWh. The reduced wind energy generation in December 2023 is attributed to wind curtailment, favoring geothermal generation and electricity imports.

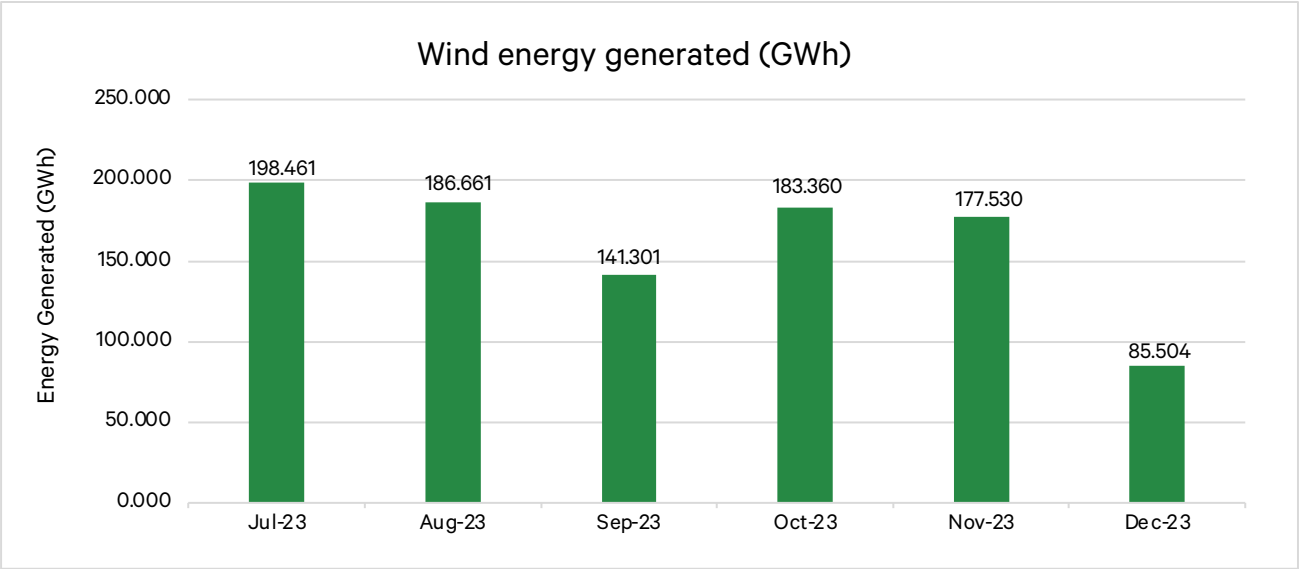


Figure 2.8: Wind energy generation between July and December 2023

Wind energy contributed a total of 972.82 GWh to the interconnected grid during the review period, constituting 14.30% of the country's total electricity mix.

The wind energy generated decreased by 18.07% from 1,148.63 GWh in the second half of 2022. The wind energy generation trend between 2021and 2023 is provided in figure 2.9.

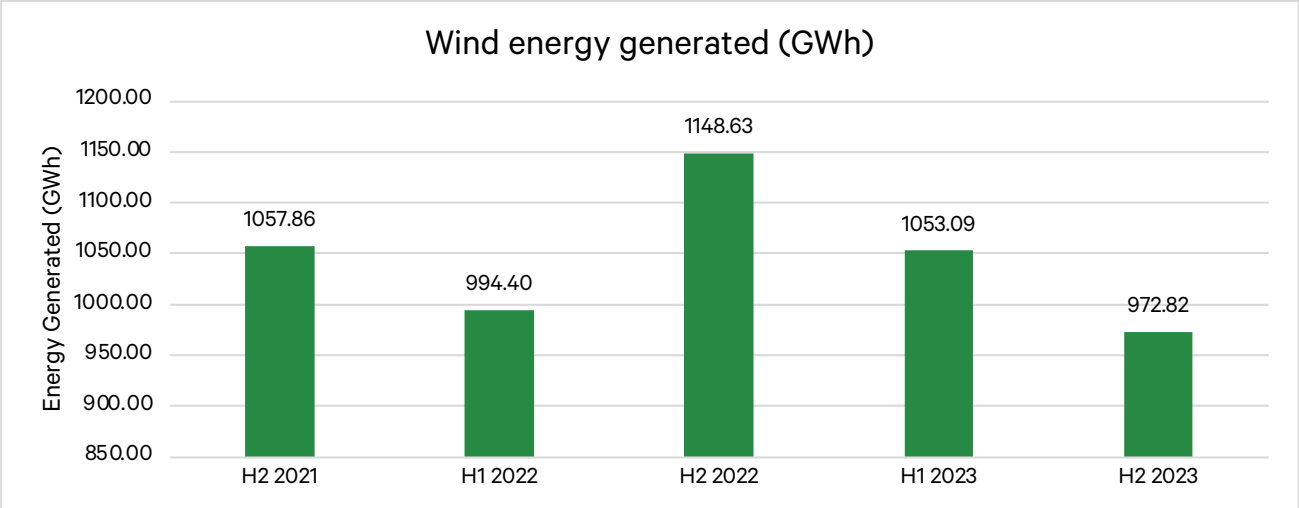


Figure 2.9: A trend in wind energy generation between 2021 and 2023

2.4 Solar power generation

As of December 2023, Kenya's solar installed capacity was 410.4 MW comprising 210.3 MW of grid-interconnected capacity, 3.9 MW of off-grid capacity and 196.2 MW of captive capacity. Figure 2.10 showcases the monthly energy generation from interconnected solar photovoltaic plants. The peak solar energy generation was observed in December 2023, totaling 44.443 GWh, while the lowest was recorded in November 2023 at 35.691 GWh. These variations in energy generation are attributed to fluctuations in solar insolation.

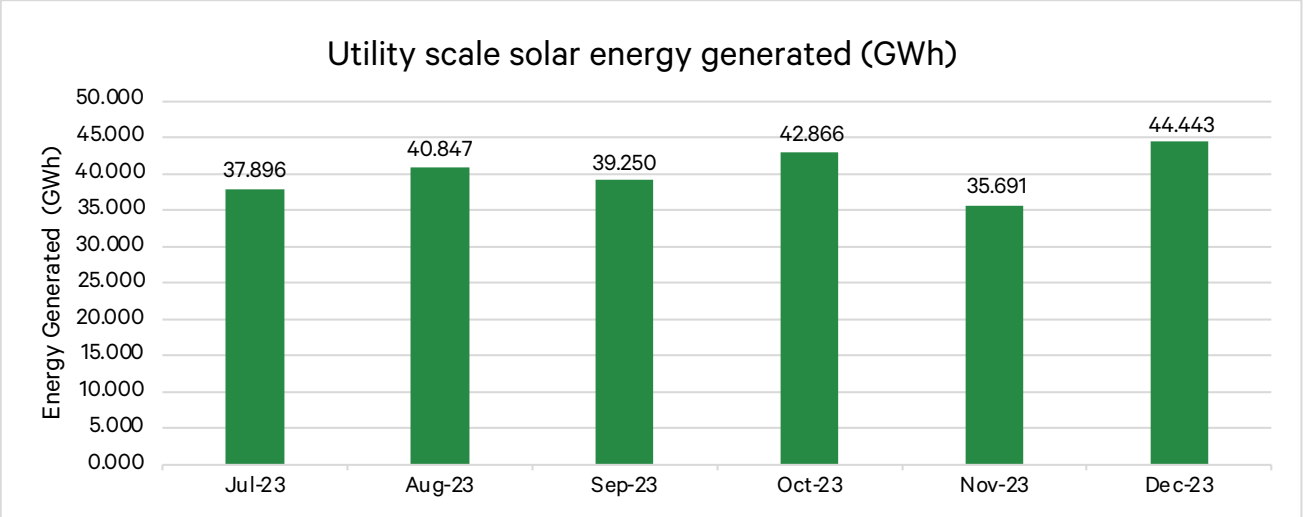


Figure 2.10: Solar energy generation between July and December 2023

Solar photovoltaic systems play a prominent role in the country's captive generation capacity, contributing 196.2 MW, which constitutes 43.77% of the total captive capacity. This preference for solar PV technology can be attributed to various factors, including its ease of setup, favorable solar insolation levels across many regions of Kenya, cost-effectiveness in energy production, and supportive government policies.

Figure 2.11 shows energy generation from 167 captive solar PV installations with a combined capacity of 48.356 MW between 2021 and 2023. The submitted data indicates that 27.579 GWh of energy was generated in the 2021-2022 financial year, which increased to 46.722 GWh in the 2022-2023 financial year, reflecting an annual growth rate of 69.41%. This increase is attributed to the addition of extra captive generation capacity.

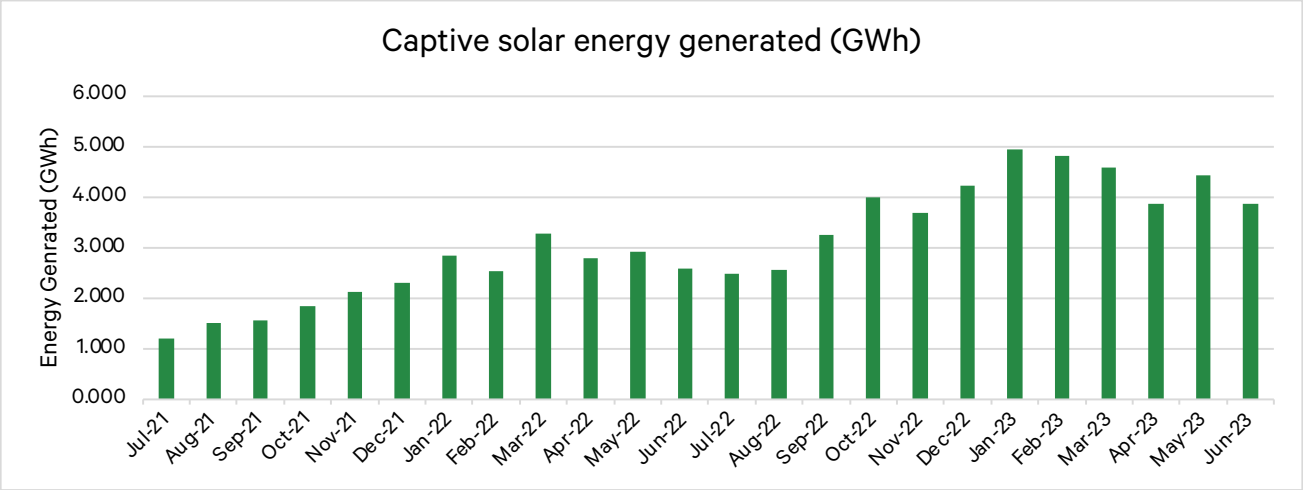


Figure 2.11: Captive solar energy generation between 2021 and 2023

In the period under review, the Authority approved 11 applications for PPAs for captive projects with a combined capacity of 6.502 MW. This is outlined in table 2.2.

No	Applicant	Technology	Capacity	Location
1.	Equator Energy Kenya Limited	Solar PV	1,400 kWp	Saj Ceramics Limited
2.	Equator Energy Kenya Limited	Solar PV	2,200 kWp	Milly Glass Works Limited
3.	Ecoligo Limited	Solar PV	100 kWp	DL Koisagat Tea Estates
4.	Ecoligo Limited	Solar PV	450 kWp	Mogogosiek Tea Factory
5.	Ecoligo Limited	Solar PV	82 kWp	Summit Fibers limited
6.	Ariya Finergy Ltd	Solar PV	550 kWp	Isuzu East Africa Ltd
7.	Crossboundary Energy Kenya Ltd	Solar PV	680 kWp	Maisha Packaging Company Ltd
8.	Ecoligo Limited	Solar PV	300 kWp	Quality Meat Packers Ltd
9.	Farmdo Energy Kenya Ltd	Solar PV	220 kWp	PJ Dave Flora Ltd
10.	Gridx Africa Development Ltd	Solar PV	320 kWp	Muthu Keekorok Management Ltd
11.	Ofgen Ltd	Solar PV	200 kWp	Tropikal Brands Ltd

Table 2.2: A list of captive PPAs that were approved between July and December 2023

2.5 Bioenergy

Bioenergy refers to sustainable energy derived from organic matter and can take various forms such as firewood, biochar, briquettes, bagasse, biogas, syngas, bioethanol and biodiesel. In Kenya, these diverse forms of bioenergy find applications in open-fire cooking, improved cook stoves, industrial biomass boilers, furnaces, internal combustion engines, lighting lamps and electricity generation. Notably, bioenergy constitutes the most substantial portion of final energy consumption in Kenya.

As of December 2023, the installed capacity for bioenergy was 113.8 MW, comprising 111.8 MW of captive capacity and 2MW of grid-interconnected capacity. In the period under review, the grid interconnected biogas plant generated 0.215 GWh of energy representing 0.00316% of the country's generation mix.

3 ENERGY EFFICIENCY

The Authority has instituted two key regulations to foster energy efficiency: the Energy (Energy Management) Regulations, 2012 and the Energy (Appliances' Energy Performance and Labelling) Regulations, 2016.

The Energy (Energy Management) Regulations primarily target commercial and industrial facilities with an energy consumption threshold of at least 180,000 kWh of thermal and electrical energy. These regulations mandate designated facilities to conduct energy audits and implement the recommended measures arising from these audits. In the period under review, 154 facilities conducted energy audits, comprising 48 small, 85 medium, and 21 large energy consumers. These audits projected substantial energy savings amounting to 272.878 GWh from the implementation of recommended energy conservation measures.

4 OTHER ENERGY SOURCES

4.1 Imports

Kenya imports electricity from Ethiopia Electricity Power Company (EEP) under a PPA and has energy exchange contracts with Uganda Electricity Transmission Company Limited (UETCL). In the period under review, Kenya imported 419.131 GWh of electricity accounting for 6.16 % of the country's energy mix. Figure 4.1 shows the monthly energy imports for the period under review. The increase in December 2023 is attributed to the attainment of full commercial operation of the power purchase agreement between Kenya Power and EEP on 1st December 2023.

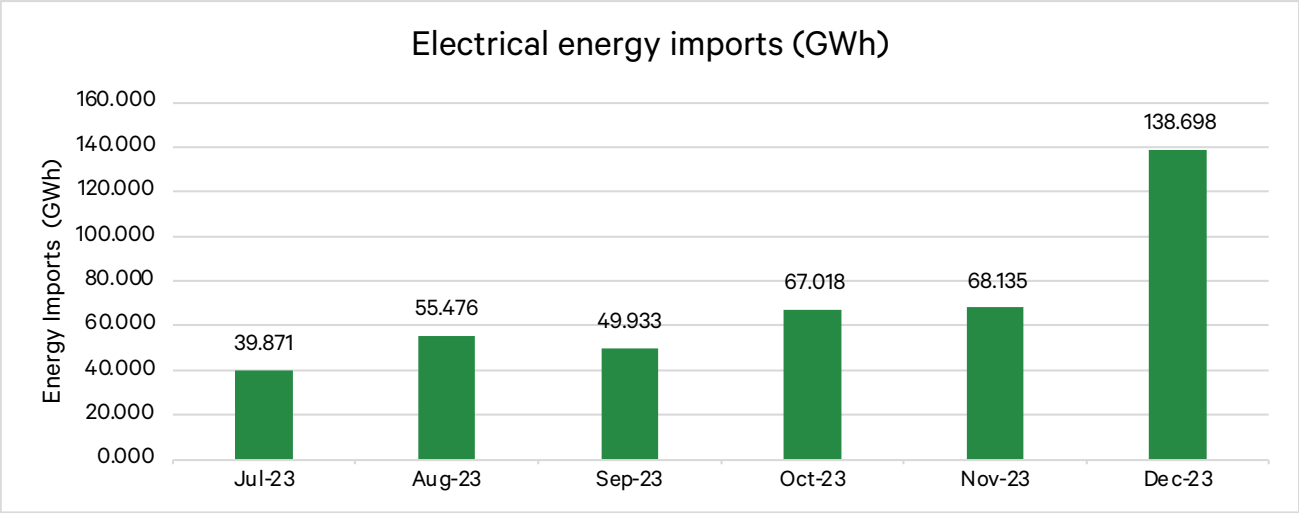


Figure 4.1: Electrical energy imports between July and December 2023

The trend of energy imports between 2021 and 2023 is provided in figure 4.2. In the period under review, electricity imports increased by 65.79 %, from 143.40 GWh in the second half of 2022 to 419.13 GWh.

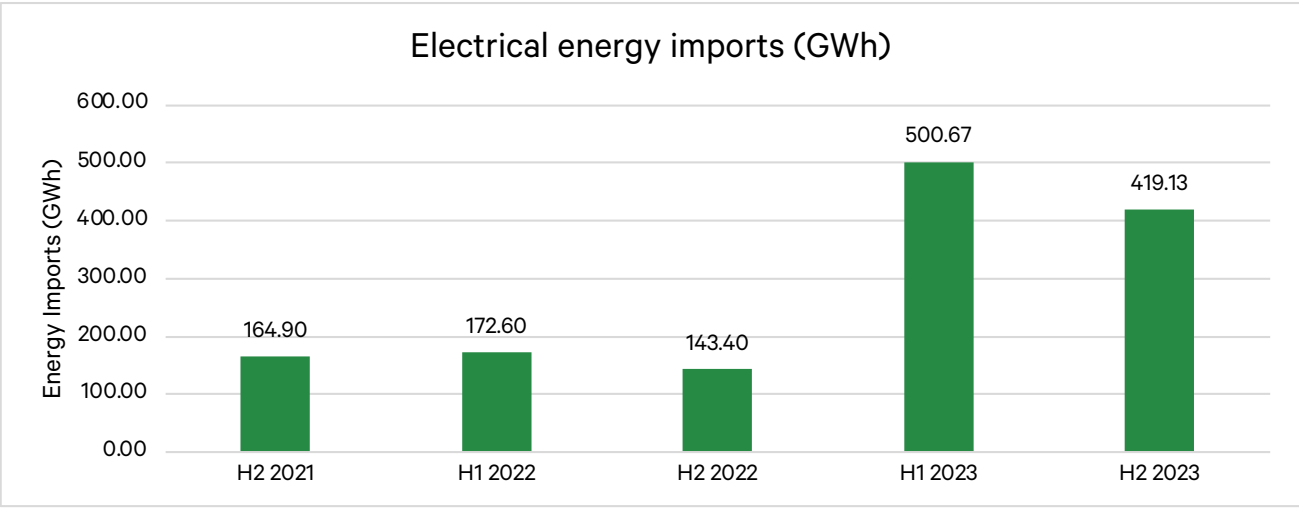


Figure 4.2: A trend in electrical energy imports between 2021 and 2023

4.2 Thermal energy

Kenya has an installed thermal interconnected capacity of 572.8 MW, consisting of 512.8 MW from Medium Speed Diesel and 60 MW from gas turbines. Thermal energy resources are usually employed to meet peak demand, provide voltage support, and counter the intermittence of variable renewable energy resources.

During the period under review, 606.093 GWh of energy was sourced from thermal energy sources. The highest thermal energy generation occurred in October 2023, totaling 140.568 GWh, primarily influenced by a poor hydro regime. Conversely, the lowest thermal energy generation was observed in the months of November and December 2023, attributed to an improved hydro regime and increased energy imports. Figure 4.3 shows a trend in thermal energy generated between July and December 2023.

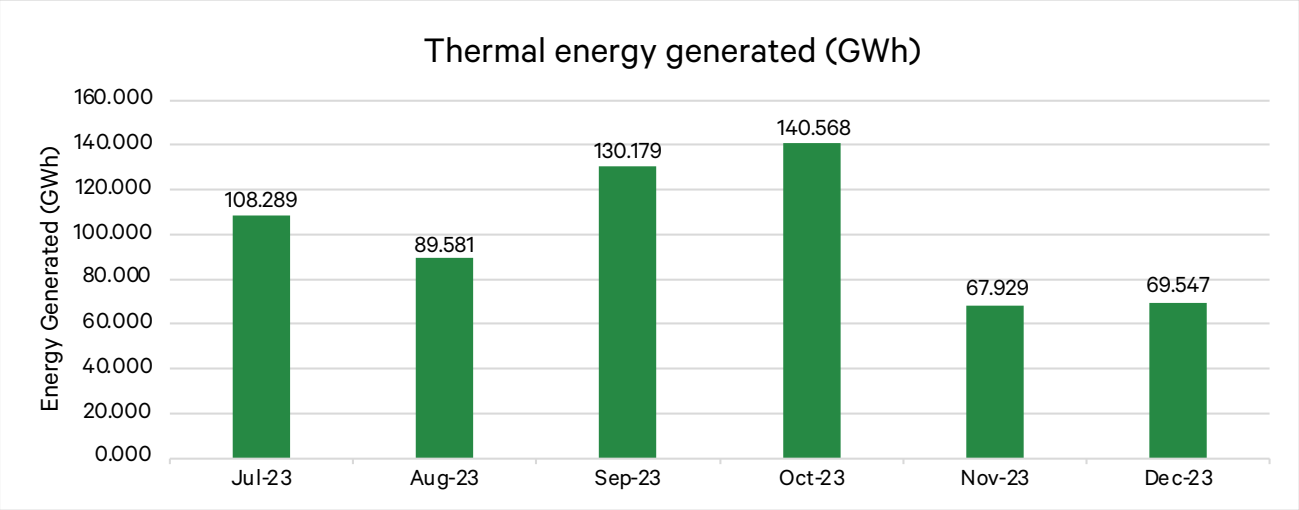


Figure 4.3: Trend in thermal energy production between July and December 2023

The thermal energy generated has been on a decline since 2022 as shown in figure 4.4. The decline is attributed to a decrease in the thermal installed capacity and prioritization of renewable energy generation.

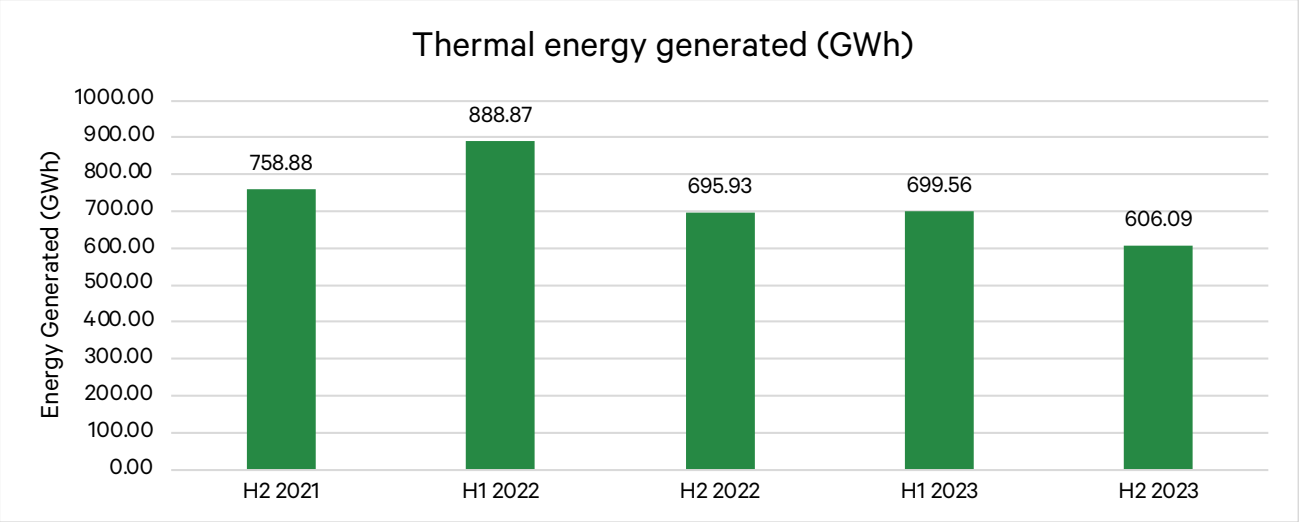


Figure 4.4: A trend in thermal energy generation between 2022 and 2023

5 EMERGING TRENDS

5.1 Electric Mobility

The drive to decarbonize the transport sector has sparked a growing interest in electric mobility (e-mobility) in Kenya. The country's energy mix is highly conducive to supporting e-mobility, with almost 85% of energy generation sourced from renewable channels. The adoption of e-mobility is anticipated to elevate the country's energy demand, particularly during off-peak periods historically characterized by low demand.

In a move to encourage the embrace of electric transportation, the Authority implemented a special tariff for e-mobility effective from 1st April 2023. Notably, during the reviewed period, energy consumption by the electric mobility consumer category surged by 160%, escalating from 29,097 kWh in July 2023 to 75,729 kWh in December 2023, as highlighted in Table 5.1.

Month	Energy Consumption (kWh)
July	29,097.00
August	58,169.00
September	48,118.00
October	50,399.10
November	54,153.00
December	75,729.00
Total	**315,665.10**

Table 5.1: A summary of energy consumption by the electric mobility consumer category between July and December 2023

A visual representation of the energy consumption by the electric mobility category is provided in figure 5.1.

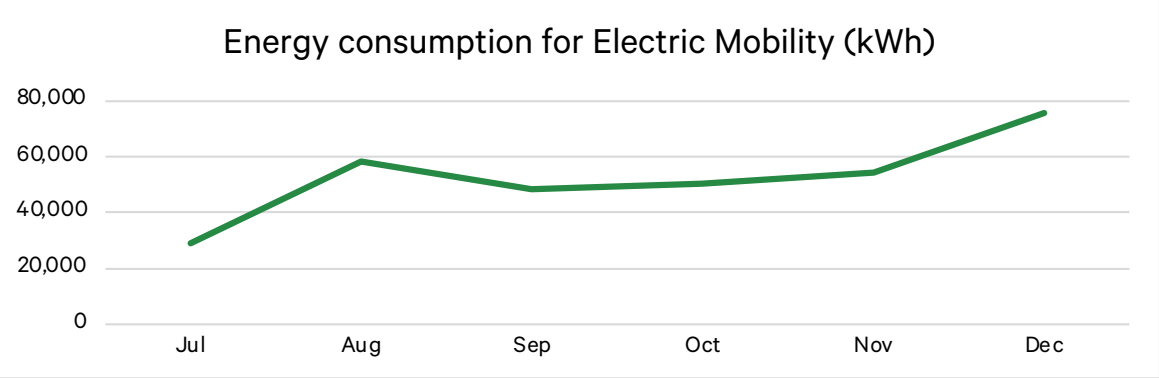


Figure 5.1: A trend in energy consumption by the electric mobility category from July to December 2023

In order to accelerate the adoption of electric vehicles and guarantee the establishment of safe, reliable, accessible, and affordable charging infrastructure, the Authority released the Electric Vehicle Charging & Battery Swapping Infrastructure Guidelines on 14th September 2023. These guidelines provide a concise summary of essential considerations for setting, designing, installing, and operating electric vehicle charging points and stations.

Energy & Petroleum Cabinet Secretary Davis Chirchir (R) and EPRA Director General Daniel Kiptoo during the launch of the Electric Vehicle Charging & Battery Swapping Infrastructure Guidelines

During the review period 2,694 electric vehicles (EVs) were registered, bringing the cumulative number of registered EVs to 3,753. The increase in registered EVs may be attributed to government initiatives such as the introduction of the e-mobility tariff, reduction of excise duty on EVs from 20% to 10% and exemption of fully electric cars from Value Added Tax (VAT).

As of December 2023, EVs constituted 1.62% of vehicles registered that year, with the country aiming to reach 5% by 2025, as outlined in the Kenya National Energy Efficiency and Conservation Strategy, 2020.

Year	Total No. of registered vehicles	No. of registered EVs	Cumulative No. of registered EVs	% Share of EVs
2019	328,551	129	194	0.04
2020	339,813	106	300	0.03
2021	407,462	284	584	0.07
2022	285,009	475	1,059	0.17
2023	165,913	2,694	3,753	1.62

Table 5.2: A summary of registered vehicles as at December 2023

Source: NTSA

A trend in the registration of EVs is provided in figure 5.2.

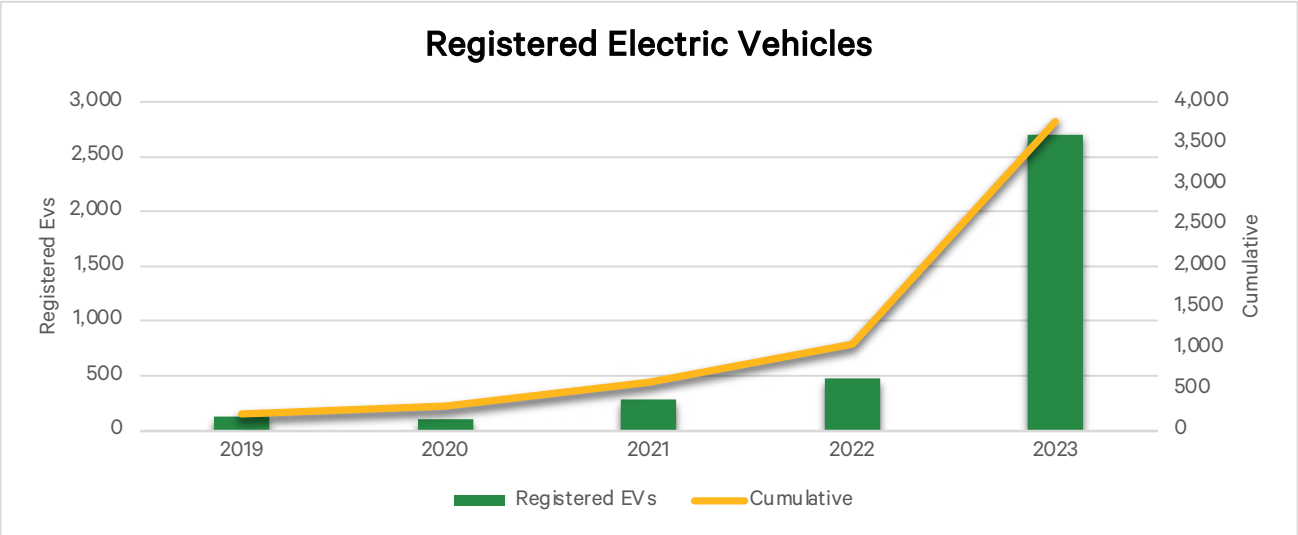


Figure 5.2: A trend in the registration of EVs from 2019 to 2023

5.2 Green Hydrogen

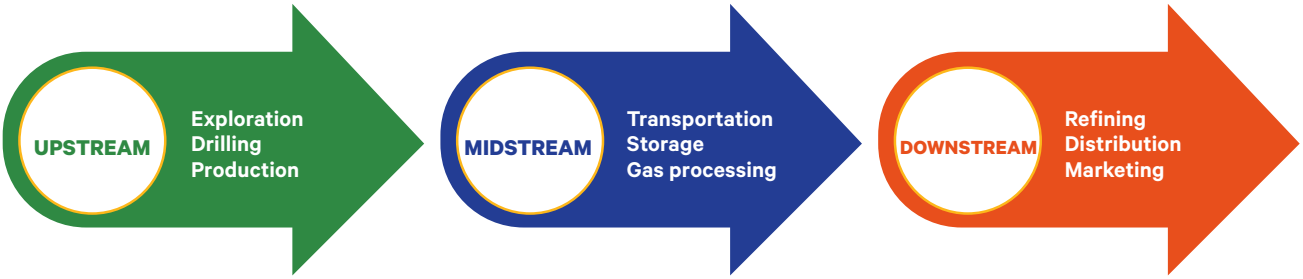
Green hydrogen is recognized as a promising alternative for decarbonizing the transport, agricultural, and energy sectors. In September 2023, Kenya unveiled its Green Hydrogen Strategy and Road Map during the Africa Climate Summit. This strategic initiative aims to capitalize on the country's abundant renewable energy resources to create demand for diverse applications of green hydrogen.

In November 2023, Kenya commissioned its first green hydrogen plant in Morendat, Nakuru County. The facility comprises a 2.1 MWp solar PV installation with 780 kWh Lithium ion storage supplying a 1 MW alkaline electrolyzer. The facility produces one ton of green ammonia per day.

Kenya's renewable energy installed capacity is set to increase to meet the demand generated by green hydrogen projects.

6 PETROLEUM

The petroleum sector comprises upstream, midstream and downstream petroleum segments.



6.1 Upstream subsector

The Government is currently reviewing of the Final Field Development Plan (FDP) submitted by Kenya Joint Venture (KJV) partners in March 2023. The Authority is playing an advisory role that will inform its approval and progression to Final Investment Decision (FID) and ultimately full field development. The plan anticipates the attainment of First Oil in 2028.

6.2 Midstream and Downstream subsectors

This section presents a summary of the performance of the mid and downstream subsector entailing supply, transportation, consumption, pricing and competition.

6.2.1 Petroleum supply and demand

6.2.1.1 Petroleum imports

During the period under review, 4,262,747.58 m3 were imported into the country for local consumption and export to neighboring countries; Uganda, South Sudan, DRC, Rwanda and Burundi. Figure 6.1 shows the biannual imports trend from 2021 to 2023.

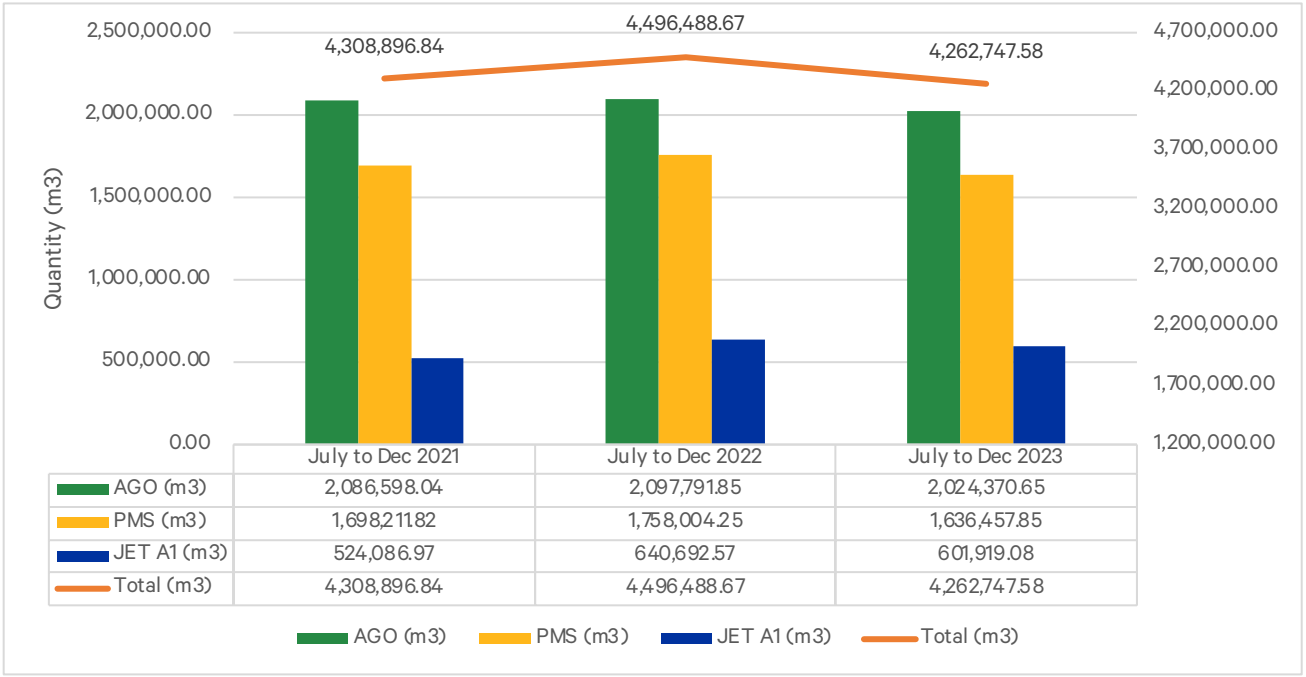


Figure 6.1: A trend in petroleum imports from July 2021 to December 2023

Overall, the share of volumes designated for the local market accounted for 57.40% of the total import volume. Figure 6.2 shows a comparison of local and transit volumes during the review period.

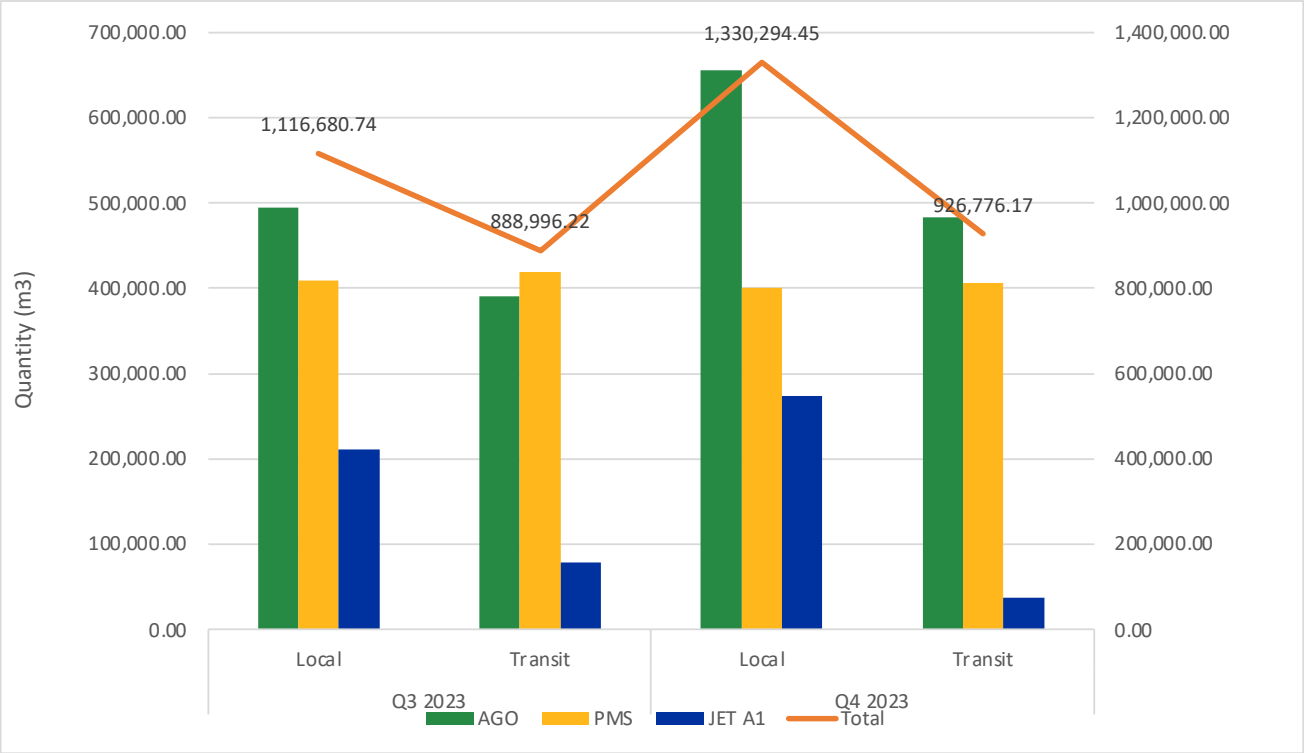


Figure 6.2: A comparison of local and transit petroleum products from July to December 2023

6.2.1.2 Domestic petroleum consumption

The overall domestic demand for petroleum products declined by 3.01% to 2,717,699.16 m3 compared to a corresponding period in 2022. This reduction in consumption could be attributed to suppressed demand. Figure 6.3 illustrates the trend in demand over biannual periods.

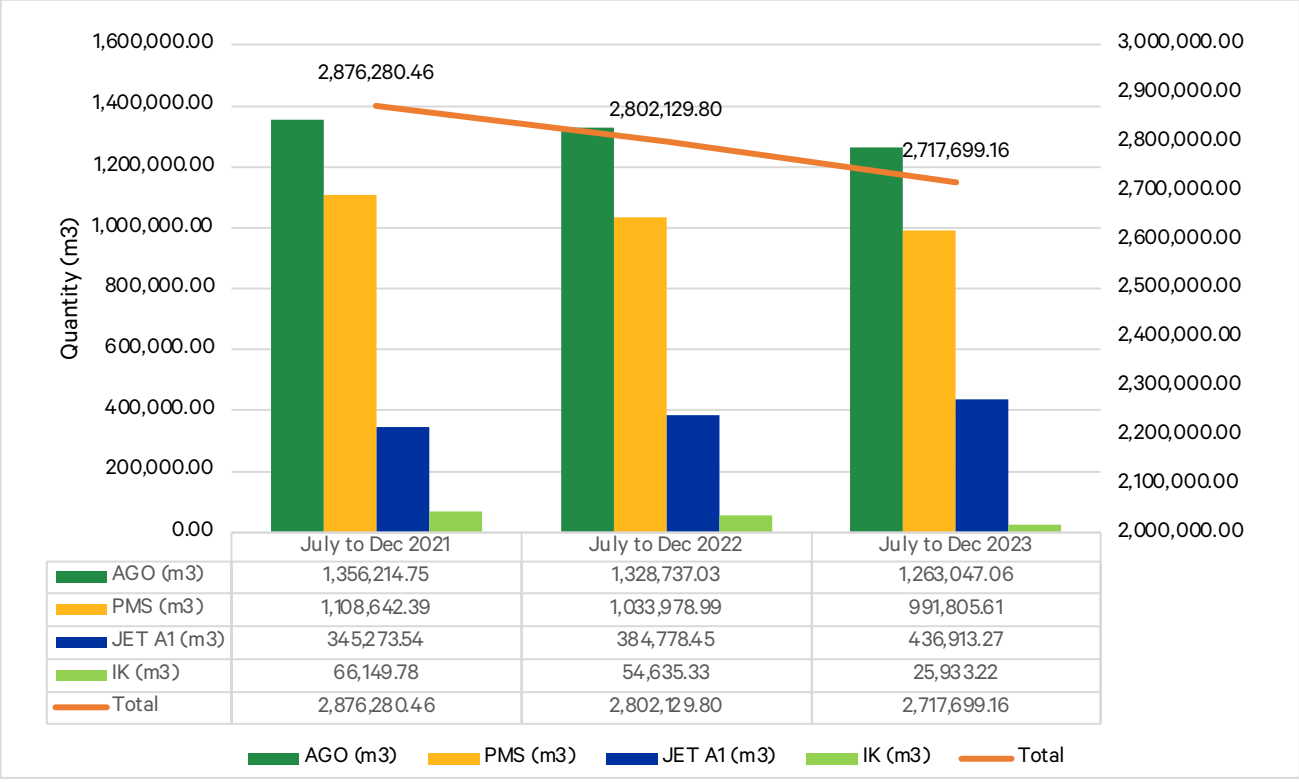


Figure 6.3: A trend in domestic petroleum consumption from July 2021 to December 2023

The demand for petroleum products through the period under review was steady with the highest consumption level being recorded in August 2023. This notably coincides with the highest demand for AGO. The highest demand for PMS was recorded in December 2023 and can be attributed to increased travel during the festive season. Figure 6.4 shows the trend in consumption of petroleum products across the six months.

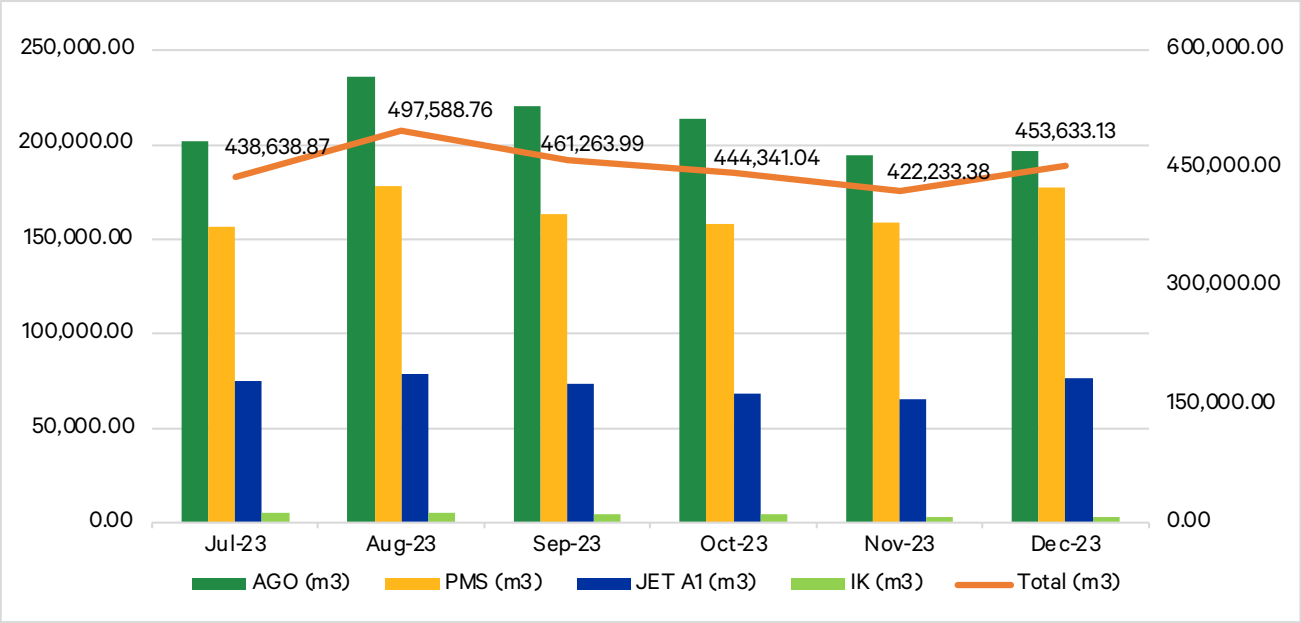


Figure 6.4: Monthly trend in the consumption of petroleum products

6.1.2.3 Pipeline throughput

The Kenya Pipeline Company (KPC) primarily handles petroleum products imported into the country. This represents about 95% of petroleum products imported during the period under review.

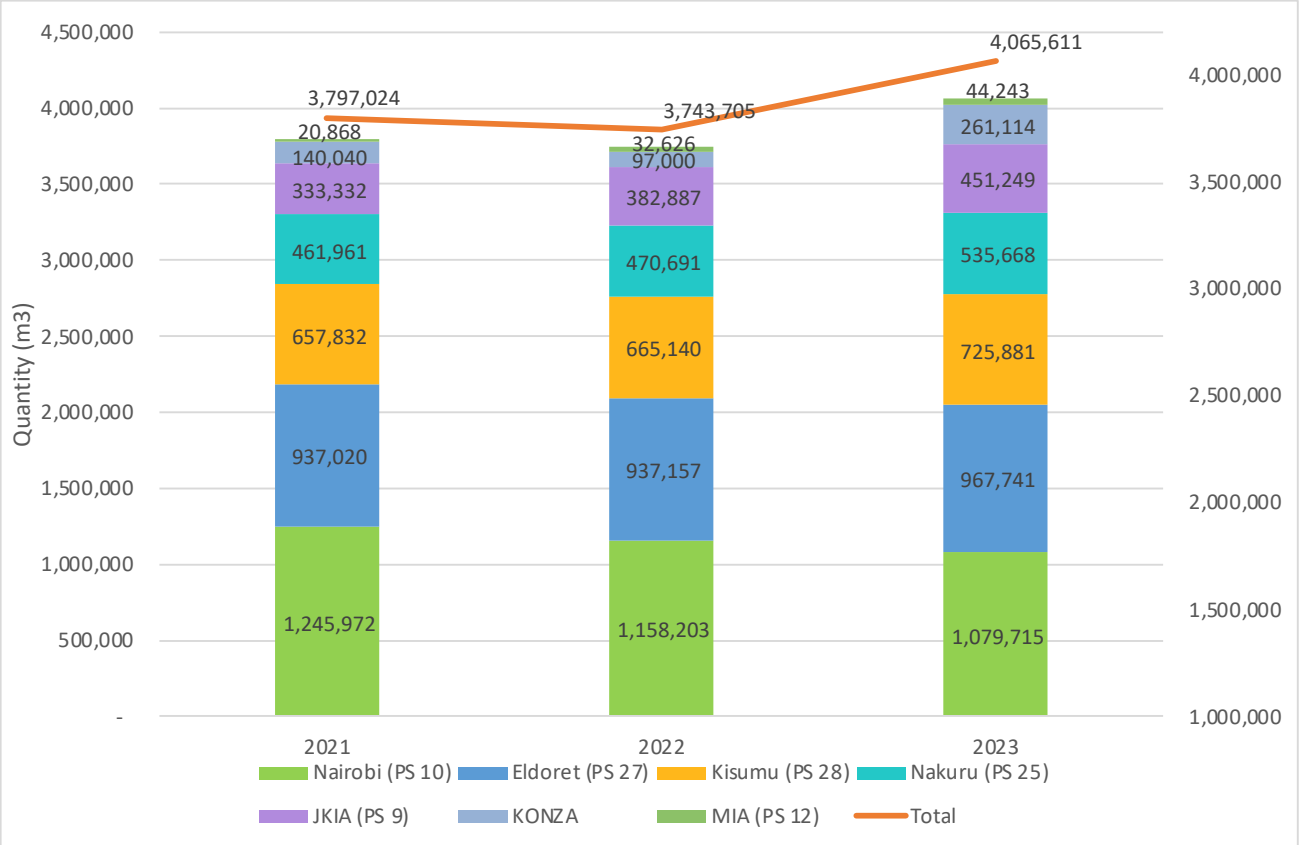


Figure 6.5: Pipeline throughput by depot by biannual period

The trend in figure 6.5 shows an overall increase in pipeline throughput compared to similar periods in previous years. This can be attributed to increased volumes to the transit market. There was however reduced throughput to the local market serving as evidence of suppressed demand. Figure 6.6 shows a comparison of the local and transit throughput during the period under review.

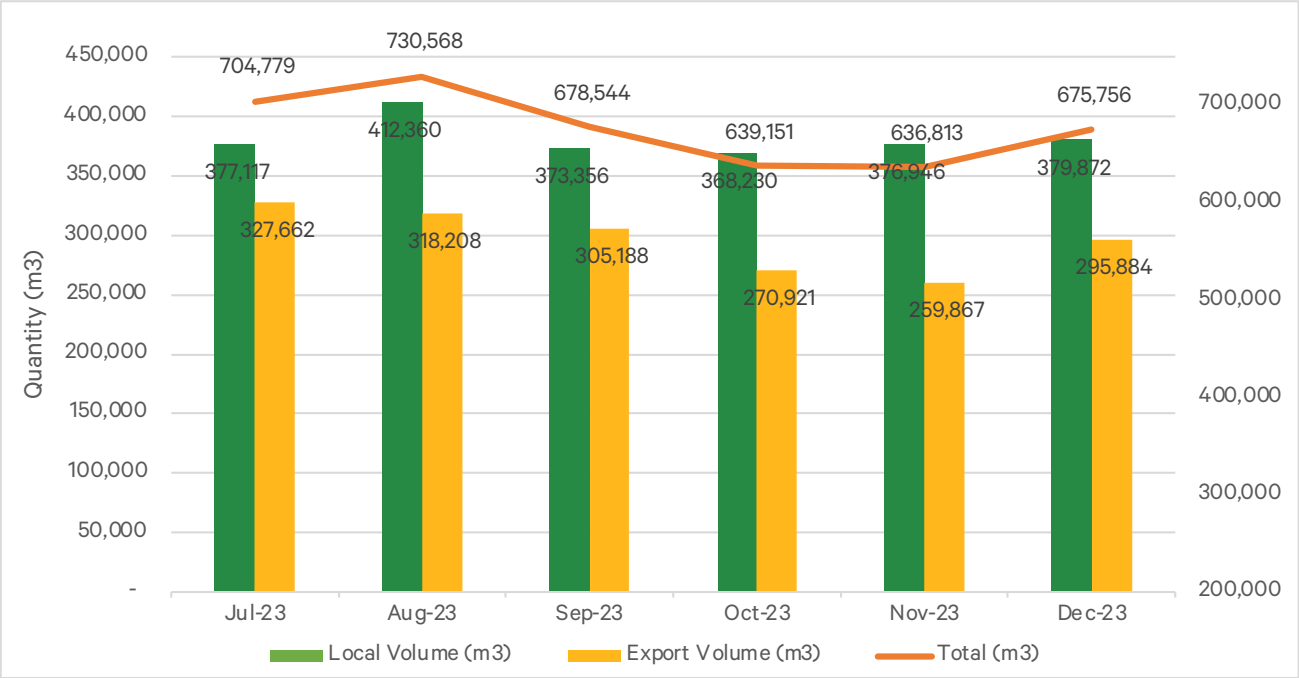


Figure 6.6: A trend in pipeline throughput from July to December 2023

6.2.2 Petroleum Prices

6.2.2.1 Evolution of International Crude Oil prices

During the period under review, Murban Crude Oil recorded a peak price of 93.92$/bbl in December 2023 and a minimum price of 75.59$/bbl in September 2023. There was a general downward progression in international crude oil prices during the review period. The decrease in crude prices was occasioned by overproduction of crude oil coupled with overall world oil demand reduction.

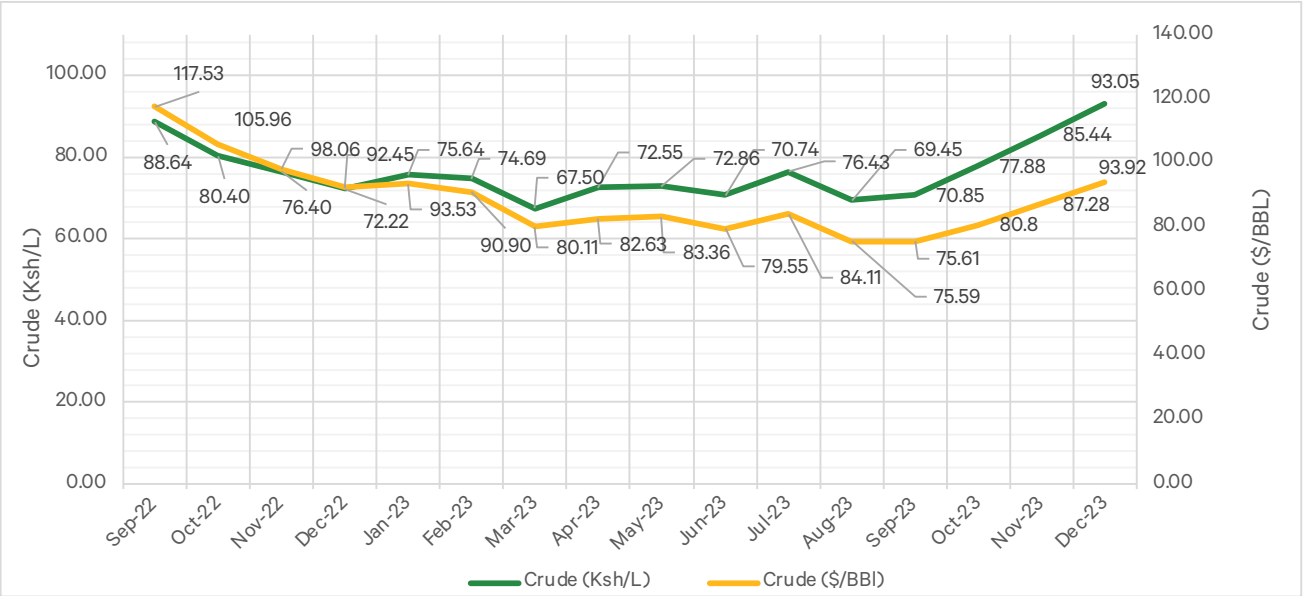


Figure 6.7: A trend in Murban Crude oil prices from September2022 to December 2023

Figure 6.7 shows the effect of the exchange rate on the cost of petroleum products. Significant depreciation of the Kenya Shilling against the dollar resulted in an increase in fuel prices despite reduction in international crude oil prices.

6.2.2 Local Retail Petroleum Prices

Fuel prices in Kenya are determined by landed costs, distribution costs, taxes and levies, demurrage costs and margins accrued by Oil Marketing Companies (OMCs). The Authority computes these costs and publishes monthly prices for PMS, AGO and IK on the 14th day of every month. Figure 6.8 shows the trend of the Nairobi pump prices for the period July 2023 to December 2023.

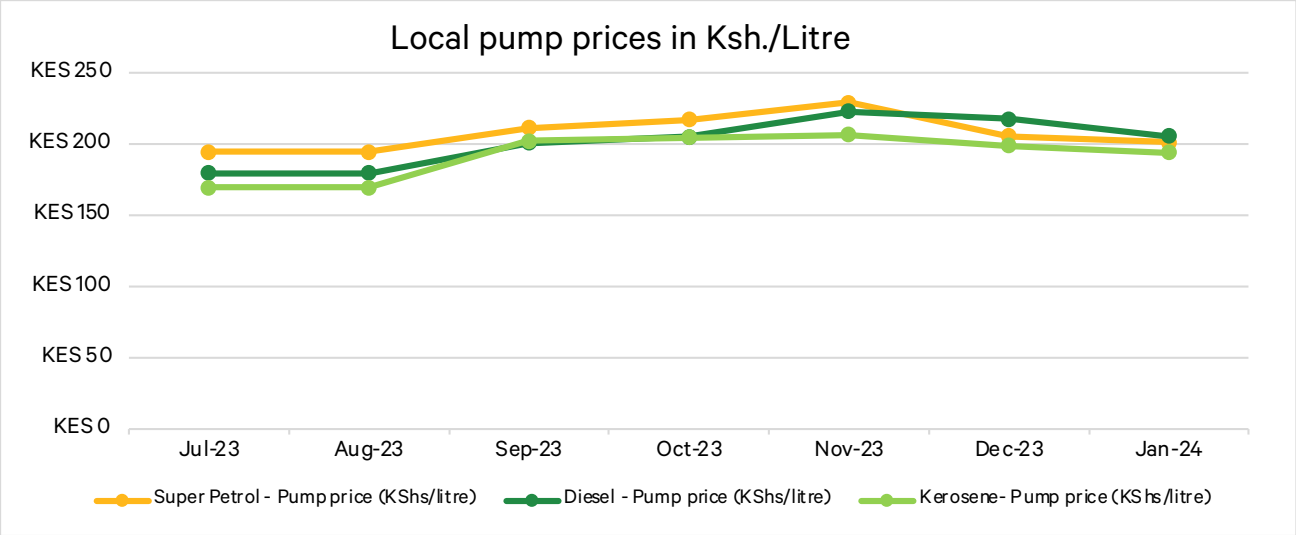


Figure 6.8: A trend of Nairobi Pump Prices from July to December 2023

6.2.3 LPG supply and demand

6.2.3.1 LPG import infrastructure

There are two main routes for importation of LPG into the country, Namanga and Mombasa port. Other entry points include Oiloitok and Lunga Lunga. Figure 6.9 shows the share of imports by each route.

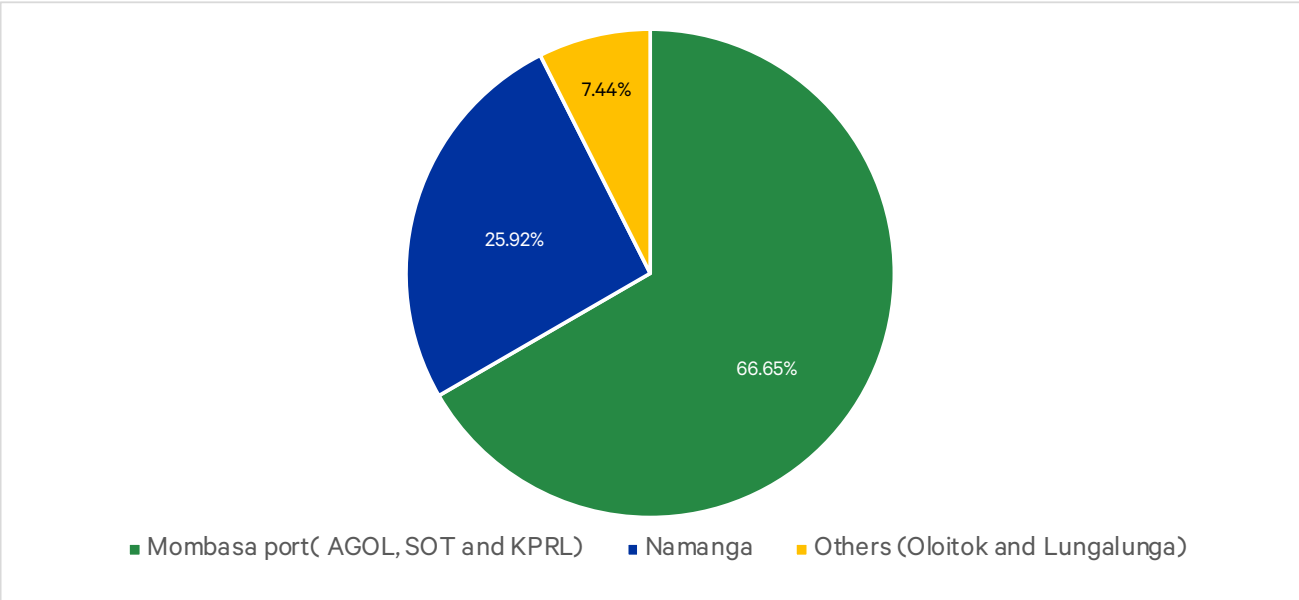


Figure 6.9: A comparison of LPG imports by route

6.2.3.2 Consumption of LPG

Demand for Liquefied Petroleum Gas (LPG) increased by 8% to 360,594 metric tonnes in 2023. This increase is attributed to Government initiatives such as the removal of VAT on LPG through the Finance Act 2023 and the implementation of the LPG growth strategy that aims to increase per capita consumption of LPG to 15kg per capita by 2030.

The trend in per capita consumption of LPG is summarized in the figure 6.10.

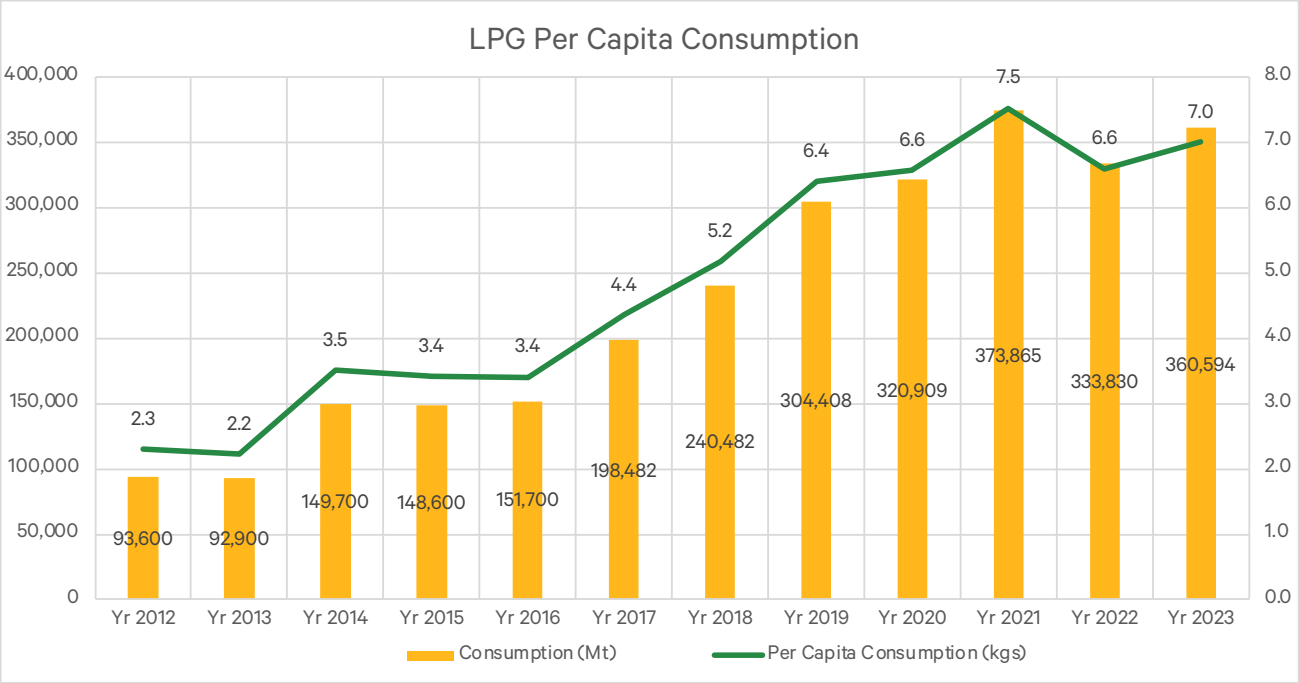


Figure 6.10: A trend in the Consumption of LPG (Metric Tonnes) and Per Capita Consumption of LPG (kg) from 2012 to 2023

Figure 6.11 shows the trend in LPG consumption in 2023.

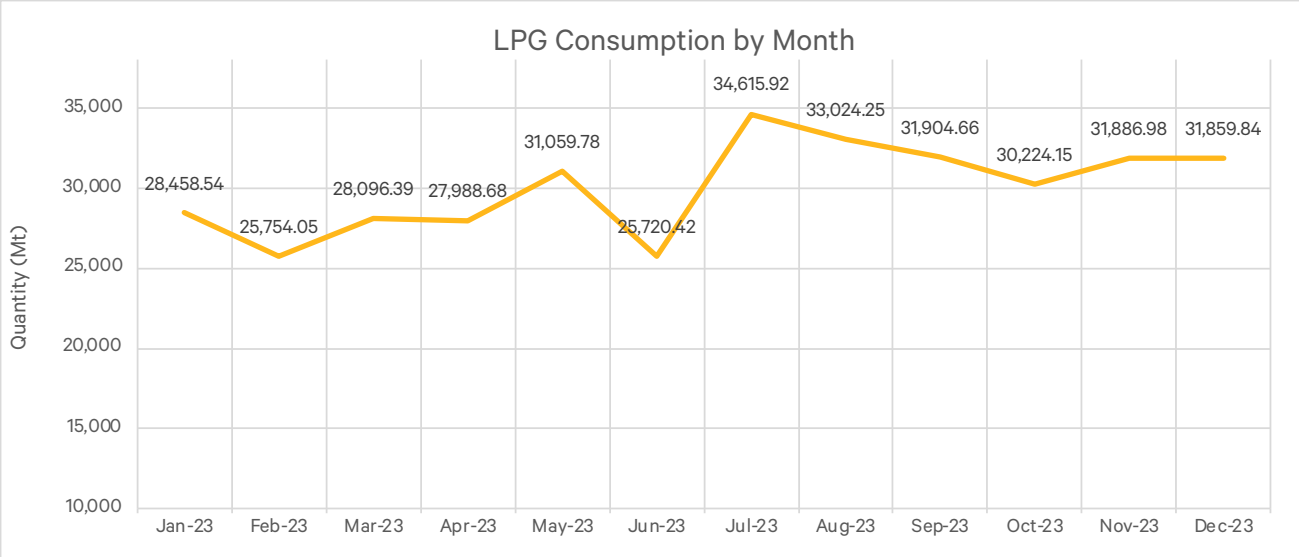


Figure 6.11: A trend in the monthly consumption of LPG (Metric tonnes) in 2023

6.3 Competition in the Petroleum Sector

6.3.1 Market Share

There were 136 registered Oil-Marketing Companies (OMCs) as at December 2023. These companies market petroleum products; AGO, IK, PMS, JET oil, lubricants, and LPG. Table 6.1 presents the market shares of the OMCs during the review period.

Company	Total Sales - PMS, AGO, IK and JET (m3)	% Share
Vivo Energy Kenya Limited	1,213,241.81	22.07%
TotalEnergies Marketing Kenya Plc	817,901.68	14.88%
Rubis Energy Kenya Plc	772,317.06	14.05%
Ola Energy Kenya Limited	388,018.00	7.06%
Be Energy Limited	228,081.69	4.15%
Oryx Energies Kenya Limited	178,696.44	3.25%
Stabex International Ltd	150,367.00	2.74%
Galana Energies Limited	143,899.39	2.62%
Tosha Petroleum (Kenya) Limited	126,378.89	2.30%
Lake Oil Limited	122,640.84	2.23%
Petro Oil Kenya Limited	118,754.00	2.16%
Hass Petroleum Kenya Limited	98,700.00	1.80%
Gapco Kenya Limited	84,177.20	1.53%
Gulf Energy Holdings Limited	69,640.20	1.27%
Fossil Supplies Limited	66,019.00	1.20%
Lexo Energy Kenya Limited	53,993.65	0.98%
Dalbit Petroleum Limited	53,580.14	0.97%
Astrol Petroleum Company Limited	48,271.94	0.88%
Towba Petroleum Company Limited	46,774.42	0.85%
Sahara Energy Limited	43,521.35	0.79%
Others	671,712.11	12.22%

Table 6.1: Market share of Oil-Marketing Companies

6.3.2 Herfindahl–Hirschman Index (HHI)

The Herfindahl–Hirschman Index (HHI) for the downstream petroleum subsector in 2023 was 0.1040 against the Authority's benchmark of 0.1. This is an indicator of healthy competition in the sector.

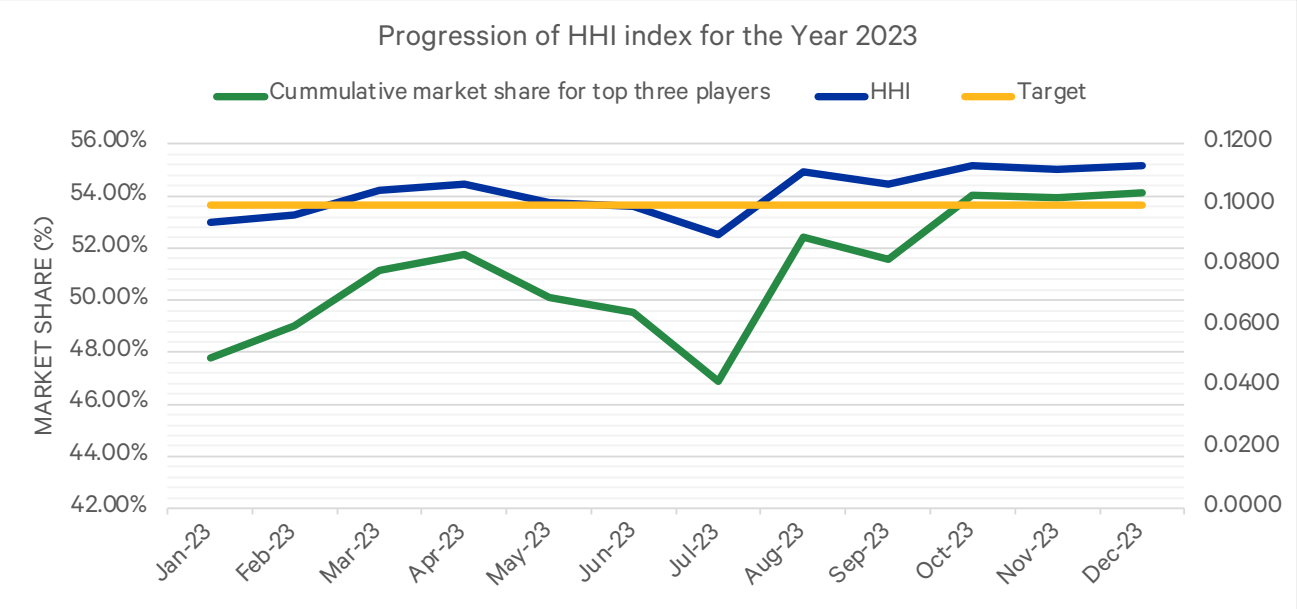


Figure 6.12: HHI index for downstream petroleum in 2023

7 CONSUMER PROTECTION

The Authority plays a crucial role in safeguarding consumer interests within the energy and petroleum sector. This pivotal role encompasses licensing, economic regulation, monitoring the quality of energy and petroleum products, handling complaints and disputes, and investigating accidents and incidents. This section, in particular, delves into aspects related to licensing, fuel quality, and LPG compliance.

7.1 Licencing

7.1.1 Petroleum and LPG operations

The Authority grants licenses, permits or certificates to any persons intending to undertake the importation, exportation, bulk storage or transportation of petroleum products. Table 7.1 summarizes the licenses issued during the period under review.

Type of licence	Licences issued
Driver Certification	3,997
Export and Wholesale of Petroleum Products(Except LPG)	532
Retail of LPG in Cylinders	459
Retail of Petroleum Products (except LPG)	452
Transport of petroleum products(Except LPG) by Road	435
Storage & Wholesale of LPG in cylinders	113
Transport of LPG in Cylinders	89
Import, Export and Wholesale of Petroleum Products (Except LPG)	71
Storage & Filling of LPG in Cylinders	53
Transport of LPG in bulk by Road	43
Storage of petroleum products(Except LPG)	24
Transport of Jet-A1	21
Export & wholesale of Jet-A1	17
Export and Wholesale of LPG in bulk	13
Import, Export and Wholesale of LPG in bulk	13
Bunkering of Petroleum Products (Except LPG)	7
Import, Export and Wholesale of Fuel Oil	6
Import, Export and Wholesale of Bitumen	6
Import of Lubricants	3
Storage of LPG in Bulk	2
Storage & Filling of LPG in Bulk	1
Reticulation of LPG	1
Retail of LPG in Cylinders Via Smart Meters	1
Total	6,359

Table 7.1: Summary of licenses issued between July and December 2023

7.1.2. Electricity and Renewable Energy Sector

During the period under review, the Authority approved the following licences in the electricity sub-sector:

a) Generation and retail supply licenses

No.	Licensee	Technology	Capacity	Location	County
1.	DPA Kenya Limited	Solar PV	4MW	Ruiru	Kiambu
2.	Crossboundary Energy Kenya Limited	Solar PV	1.17MW	Maisha Mabati Mills factory in Lukenya	Machakos
3.	Equator Energy Kenya Limited	Solar PV	2.2MW	Mombasa	Mombasa
4.	Equator Energy Kenya Limited	Solar PV	1.4MW	Athi River	Machakos
5.	Gusii Tea Solar Company Limited	Solar PV	0.69MW	Sanganyi	Nyamira
6.	Gusii Tea Solar Company Limited	Solar PV	0.52MW	Kebirigo	Nyamira
7.	Crossboundary Energy Kenya Limited	Solar PV	2.3MW	Salgaa	Nakuru
8.	Crossboundary Energy Kenya Limited	Solar PV	1.3MW	Maisha Packaging Company Limited	Machakos
9.	Ariya Finergy Limited	Solar PV	550kW	Isuzu East Africa Limited vehicle assembly plant off Enterprise Road in Nairobi	Nairobi
10.	Crossboundary Energy Kenya Limited	Solar PV	680kW	Maisha Packaging Company Limited factory in Salgaa, Nakuru County	Nakuru
11.	Ecoligo Ltd	Solar PV	100kW	DL Koisagat Tea Estates Limited factory in Nandi County	Nandi
12.	Ecoligo Ltd	Solar PV	450kW	Mogogosiek Tea Factory Company Limited factory	Bomet
13.	Ecoligo Ltd	Solar PV	82kW	Shimanzi, Mombasa	Mombasa
14.	Rentco Renewable Energy Limited	Solar PV	650kW	Keritor Tea Factory, Nyamira	Nyamira

Table 7.2: A list of generation and retail supply licences approved between July and December 2023

b) Electrical Workers and Contractors

The Authority licenses electrical workers and contractors who undertake electrical installation works. In the period under review, 183 electrical workers and 185 electrical contractors were licensed. Table 7.3 presents the number of electrical worker certificates and electrical contractor licences issued in the period under review.

	Number of Issued Certificates/Licences					
	C2	C1	B	A2	A1	Total
Electrical Workers	103	41	22	0	17	183
Electrical Contractors	71	50	28	0	36	185

Table 7.3: Electrical worker and contractor licences issued between July and December 2023

c) Solar PV and Energy Audit Licensing

Throughout the review period, licenses were issued to 147 solar PV firms, 87 solar PV technicians, and one energy audit firm as outlined in Table 7.4.

Category	Class	Number of licences issued
Solar PV Contractor/ Vendor/ Manufacturer	C1	36
	V1	46
	V2	65
Solar PV Technicians	T3	24
	T2	63
Energy Audit Firm	A	1

Table 7.4: A summary of solar PV firms, technicians and energy audit licenses issued between July and December 2023

7.1.3. Electrical Appliance Registration Certificates

The Energy (Appliances' Energy Performance and Labelling) Regulations, 2016 have a primary focus on improving the energy efficiency of electrical appliances. These regulations mandate that both imported and locally manufactured refrigerators, non-ducted air conditioners, fluorescent lamps, and motors undergo testing to verify compliance with the relevant Kenya Standard.

Importers or manufacturers of these regulated appliances are eligible to receive a registration certificate upon demonstrating their compliance with these regulations.

During the period under review, the Authority issued registration certificates for 66 refrigerator models and 27 Air conditioner models.

7.2 Fuel Quality Monitoring

This process involves adding small amounts of a distinct identifier, commonly a bio-chemical liquid referred to as the marker, to fuel products. This helps identify the presence of fuel adulterants or fuels intended for export. During the review period, the Authority marked 1,813,443,113 litres of Export Volume and 28,402,954 litres of Local Kerosene volumes. A summary of volumes marked per month is provided in table 7.5.

Month	Export Volume Marked (Litres)	Local Kerosene Volume Marked (Litres)
July	274,153,414	5,137,748
August	331,008,265	6,087,218
September	309,754,972	4,026,971
October	275,149,408	5,036,343
November	283,716,765	4,324,301
December	339,660,289	3,790,373
Total	**1,813,443,113**	**28,402,954**

Table 7.5: Volumes of export and local kerosene marked between July 2023 and December 2023.

Once marking is done, the Authority monitors the petroleum products at retail stations across the county to ascertain fuel quality. When selecting sample sites, the Authority takes into account various factors, including the need for nationwide coverage, intelligence gathered through surveillance efforts, and feedback from the public.

During the period under review, the Authority conducted 14,552 sample tests at 3,150 petroleum outlets across the country.

Month	Fuel tests
July	2,510
August	2,406
September	2,522
October	2,504
November	2,452
December	2,158
Total	**14,552**

Table 7.6: A summary of fuel samples tested between July 2023 to December 2023.

Out of the tests carried out, 3,106 stations equivalent to 98.6% were found to be compliant. However, 44 stations were non-compliant, and appropriate penalties were imposed as per the relevant legislation.

7.3 LPG Monitoring

The Authority undertakes routine compliance inspections on LPG facilities to assess their adherence to regulatory requirements, operational safety standards, maintenance of plant and equipment, emergency preparedness, and risk management practices.

During the period under review, the Authority undertook 840 inspections on wholesale and retail sites which recorded a compliance level of 51.96%, 54 bulk LPG road tankers with a compliance level of 82.07% and 18 LPG storage and filling plants with a compliance level of 65.3%.

The Authority is keen on improving compliance in the LPG sector through public education, awareness forums and enforcement measures.

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