ENERGY COMMISSION

NATIONAL ENERGY STATISTICAL BULLETIN 2025

2025 NATIONAL ENERGY STATISTICAL BULLETIN

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Energy Statistics and Balances

April 2025

|Securing Ghana's Future Energy Today

FOREWORD

The 2025 National Energy Statistical Bulletin provides a comprehensive overview of Ghana's energy supply and utilisation landscape from 2000 to 2024. This edition presents detailed data on energy production, imports, exports, and consumption trends, while offering key insights into Ghana's progress toward achieving Sustainable Development Goal 7—ensuring access to affordable, reliable, sustainable, and modern energy for all.

This publication has been developed through close collaboration with key institutions across the energy value chain. These include the Ministry of Energy, Volta River Authority (VRA), Ghana Grid Company Limited (GRIDCo), Ghana National Petroleum Corporation (GNPC), National Petroleum Authority (NPA), Ghana National Gas Company (GNGC), Tema Oil Refinery (TOR), Public Utilities Regulatory Commission (PURC), Electricity Company of Ghana (ECG), Northern Electricity Distribution Company (NEDCo), Enclave Power Company Ltd (EPC), and the West African Gas Pipeline Company (WAPCo). We also acknowledge the vital contributions of the Bank of Ghana (BoG) and the Ghana Statistical Service (GSS). We are grateful for the continued cooperation and support of these institutions, whose data inputs have been instrumental in the production of this report.

This statistical bulletin is intended to serve as a critical reference for policymakers, planners, regulators, researchers, and other stakeholders, facilitating evidence-based decision-making and strategic energy planning. We also deeply value the feedback received from users of past editions, which has significantly informed the enhancements reflected in this year's publication.

Accordingly, the 2025 National Energy Statistical Bulletin supersedes the 2024 edition. We encourage our readers to share comments and suggestions that will further strengthen future editions of this important national resource.

Mrs. Eunice A. Biritwum

Acting Executive Secretary

TABLE OF CONTENTS

FOREWORD i
TABLE OF CONTENTS ii
LIST OF TABLES iv
LIST OF FIGURES vi
ABBREVIATIONS AND ACRONYMS vii
CONVERSION FACTORS viii
GLOSSARY x
SECTION 1: ELECTRICITY ACCESS MAPS OF GHANA 1
SECTION 2: ENERGY SUPPLY AND FINAL CONSUMPTION 3
2.1 Total Energy Supply 3
2.2 Total Final Consumption by Fuel 4
2.3 Total Final Consumption by Sector 6
SECTION 3: ELECTRICITY 8
3.1 Electricity Generation Capacity 8
3.2 Electricity Generation 11
3.3 Electricity Export and Import 13
3.4 Peak Load 15
3.5 Electricity Transmitted and Losses 16
3.7 Electricity Purchase, Sales and Losses by Distribution Utilities 18
3.8 Electricity Consumption 21
3.9 Customer Population by Classification 22
3.10 Dam Headwater level 24
3.11 Electricity Distribution Reliability Indices 26
SECTION 4: PETROLEUM 29
4.1 Crude Oil Production 29
4.2 Crude Oil Import and Export 29
4.3 Natural Gas Production and Import 31
4.4 Petroleum Products Production 31
4.5 Petroleum Products Import 33
4.6 Petroleum Products Export 34
4.7 Final Consumption of Petroleum Products by Fuel 36

4.8 Final Consumption of Petroleum Products by Sector 37
SECTION 5: BIOMASS 39
5.1 Woodfuel Production 39
5.2 Charcoal Import and Export 40
5.3 Woodfuel Consumption 41
SECTION 6: ENERGY BALANCES AND INDICATORS 43
6.1 Energy Balance 43
6.2 Energy Indicators 43
6.2.1 Sustainable Development Goal 7 (SDG7) Indicators 43
SECTION 7: ENERGY PRICES 48
7.1 Crude Oil Prices 48
7.2 Petroleum Products Prices 49
7.3 Average Electricity Sale Price 51

LIST OF TABLES

Table 2.1: Total Energy Supply (ktoe) 3
Table 2.2: Total Final Energy Consumed by Fuels (ktoe) 5
Table 2.3: Final Energy Consumption by Sectors (ktoe) 6
Table 3.1: Grid Installed and Dependable Capacity (MW) 9
Table 3.2: Generation Capacities in Ghana as at 2024 (MW) 10
Table 3.3: Renewable Energy Installed Generation Capacity (KW) 11
Table 3.4: Annual Electricity Generation 12
Table 3.5: Electricity Import and Export (GWh) 14
Table 3.6: System and Domestic Peak Load (MW) 16
Table 3.7: Electricity Transmitted and Transmission Losses (GWh) 17
Table 3.8: Distribution Utilities' Purchases, Sales and Losses (GWh) 20
Table 3.9: Electricity Consumption by Sectors (GWh) 21
Table 3.10: Distribution Utilities Customer Population 23
Table 3.11: Akosombo Dam Month-End Elevation (feet) 24
Table 3.12: Bui Dam Month-End Elevation (feet) 26
Table 3.13: Electricity Distribution Reliability Indices 28
Table 4.1: Crude Oil Import and Export 30
Table 4.2: Production of Petroleum Products (kt) 32
Table 4.3: Petroleum Products Import (kt) 33
Table 4.4: Petroleum Products Export (kt) 35
Table 4.5: Petroleum Products Consumption by Fuels (Ktoe) 36
Table 4.6: Petroleum Product Consumption by Sector (Ktoe) 38
Table 5.1: Biomass Production (Ktoe) 39
Table 5.2: Charcoal Import and Export (ktoe) 41
Table 5.3: Biomass Consumption by Sector (Ktoe) 42
Table 6.1: Energy Balance, 2024 (ktoe) 44
Table 6.2: Energy Balance, 2023 (ktoe)* 45
Table 6.3: Energy Indicators 46
Table 6.4: Sustainable Development Goals (SDG7) Indicators 47
Table 7.1: Average Dated Brent Crude Oil Prices (US$/bbl) 48
Table 7.2: Average Ex-pump Prices for Petroleum Products 50
Table 7.3: Average Electricity Price 51

Table 7.4: Average Electricity Price by Customer Class.....52
Table 7.5: Electricity Tariff by Customer Class.....53

LIST OF FIGURES

Figure 1.1: Population with access to electricity by region 1
Figure 2.2: Household with access to electricity by region 2
Figure 2.1: Total Energy Supply 4
Figure 2.2: Trend in Final Energy Consumption by Fuel 5
Figure 2.3: Final Energy Consumed by Sectors 7
Figure 3.1: Installed Generating Capacity (2000-2024) 8
Figure 3.2: Electricity Generation (2000-2024) 13
Figure 3.3: Electricity Import and Export 15
Figure 3.4: System and Ghana Peak Load 15
Figure 3.5: Electricity Transmitted and Transmission Losses 17
Figure 3.6: Percentage of Transmission Losses 18
Figure 3.7: Trends in Electricity Purchases, Sales, and Losses by Distribution Utilities 19
Figure 3.8: Electricity Consumption by Sectors 22
Figure 3.9: Customer Population 22
Figure 3.10: Trend in Akosombo Headwater Level 25
Figure 3.11: Trend in Bui Dam Headwater Level 25
Figure 3.12: Distribution Regulatory Indices 27
Figure 4.1: Trend in Crude Oil Production 29
Figure 4.2: Trend in Crude Oil Import and Export 30
Figure 4.3: Trend in Natural Gas Production and Import 31
Figure 4.4: Trend in Production of Petroleum Products 32
Figure 4.5: Trend in Petroleum Product Import 34
Figure 4.6: Trend in the Export of Petroleum Products 35
Figure 4.7: Final Energy Consumption of Petroleum Products by Fuel 37
Figure 4.8: Final Energy Consumption of Petroleum Products by Sector 38
Figure 5.1: Trend in Biomass Production 40
Figure 5.2: Trend in Charcoal Import and Export 40
Figure 5.3: Trend in Biomass Consumption by Sector 42
Figure 7.1: Trend in Average Crude Oil Prices 49
Figure 7.2: Trend in petroleum products prices 49
Figure 7.3: Trend in Average Electricity Price 52

ABBREVIATIONS and ACRONYMS

Bbls	Barrels
GWh	Gigawatt-hour
Kt	Kilotonnes
ktoe	thousand tonnes of oil equivalent
kWh	kilowatt-hour
MMBtu	Million British thermal unit
MW	Megawatt
tBtu	Trillion British Thermal Units
tCO2	Tonnes of Carbon dioxide
toe	Tonnes of oil equivalent
W	Watt
ATK	Aviation Turbine Kerosene
DPK	Dual Purpose Kerosene
LCO	Light Crude Oil
LPG	Liquefied Petroleum Gas
RFO	Residual Fuel Oil
Dist. SPV	Distributed Solar Photovoltaic
FEC	Final Energy Consumption
TES	Total Energy Supply
TFC	Total final consumption
W2E	Waste-to-Energy
SLT	Special Load Tariff
ECG	Electricity Company of Ghana
EPC	Enclave Power Company Ltd
GNGC	Ghana National Gas Company
GNPC	National Petroleum Corporation
GRIDCo	Ghana Grid Company
GSS	Ghana Statistical Service
NEDCo	Northern Electricity Distribution Company
NPA	National Petroleum Authority
OCTP	Offshore Cape Three Points
PURC	Public Utilities Regulatory Commission
VALCO	Volta Aluminium Company
VRA	Volta River Authority
WAGP	West African Gas Pipeline
WAPCo	West African Gas Pipeline Company

CONVERSION FACTORS

Ghana Standard Figures					
Petroleum Products					
Gasoline / Petrol	1	Tonne	=	1324.5	Litres
Kerosene	1	Tonne	=	1240.6	Litres
Jet Kerosene	1	Tonne	=	1240.6	Litres
Gasoil / Diesel	1	Tonne	=	1183.43	Litres
Fuel Oil	1	Tonne	=	1009.08	Litres
LPG	1	Tonne	=	1000	Kg
Petroleum					
Crude Oil	1	Tonne	=	1.02	toe
Gasoline / Petrol	1	Tonne	=	1.05	toe
Kerosene	1	Tonne	=	1.03	toe
Jet Kerosene	1	Tonne	=	1.03	toe
Gasoil / Diesel	1	Tonne	=	1.02	toe
Fuel Oil	1	Tonne	=	0.97	toe
LPG	1	Tonne	=	1.08	toe
Crude Oil	1	barrel	=	35	Imperial gallons
	1	Imperial gallon	=	4.546	litres
	1	Tonne	=	7.33	barrels
	1	cubic metre	=	6.289	barrels
Natural Gas	1	GJ	=	1.05	MMBtu
	1	MMBtu	=	0.0252	toe
	1	MMBtu	=	1.019	MSCF
	1	MMBtu	=	27.10	cubic metre (m3)
	1	MMBtu	=	5.82	bbl. of crude oil equivalent
	1000	m3	=	36.91	MMBtu
Electricity	1000	W	=	1	kW
	1000	kW	=	1	MW
	1000	MW	=	1	GW
	1000	kWh	=	1	MWh
	1000	MWh	=	1	GWh
	1	GWh	=	86	TOE
	1	GWh	=	3600	GJ
	1	TOE	=	41.86	GJ

Ghana Standard Figures				
Woodfuel				
Firewood/fuelwood	1	Tonne	0.30-0.36	toe
Charcoal	1	Tonne	0.68-0.88	toe
Sawdust/sawmill residues/wood chips	1	Tonne	0.20-0.30	toe

The low side reflects average dry wood and corresponding charcoal in the forest zones while the high side reflects average dry wood and corresponding charcoal in the savannah zones of the country.

Between 5-6 mass units of wood are used to produce one mass unit of charcoal in the country

Charcoal Source	Average Weight (kg) of Charcoal		
	Mini Bag	Maxi Bag	Moisture Content
Sawmill residue	21 – 22	44 - 45	Up to 40%
Savannah wood	30 – 32	55 - 60	Up to 20%
Acacia plant	31 – 32	57 - 63	Up to 20%
All other woods	25 – 27	50 - 55	Up to 25%

GLOSSARY

Energy flows	
Production	It covers the capture, extraction or manufacture of fuels or energy in forms that are ready for general use
Import	It comprises all fuel and other energy products entering the national territory
Export	It comprises all fuel and other energy products leaving the national territory
International Aviation Bunkers	It covers the quantities of fuels delivered to aeroplanes of any nationality for consumption during international flights
International Marine Bunkers	It covers the quantities of fuels delivered to ships of any nationality for consumption during international voyages
Stock changes	It is the difference between opening and closing stock levels. A stock draw is an addition to supply and so will be entered with a positive sign. The converse applies to stock build.
Total Energy Supply	Represents the amount of energy that is available in the national territory during the reference period. It includes production, import and stock changes, less export and international aviation and marine bunkers
Transformation (Electricity plants)	It refers to power plants designed to produce electricity only for sale to third parties, as their primary activity
Transformation (Oil refineries)	It is the process where quantities of crude oil are processed into petroleum products
Own Use	It is the primary and secondary energy consumed by transformation industries for heating, pumping, lighting and other purposes
Losses	It refers to losses during the transmission, distribution and transport of fuels and electricity
Final Energy Consumption	It refers to all fuel and energy delivered to final users for their energy Use
Non-Energy Use	It comprises the use of energy products as raw materials for the manufacture of non-fuel products as well as for direct uses that do not involve using the products as a source of energy, nor as a transformation input
Statistical differences	It is the numerical difference between the total energy supply and the total use of it. It includes the sum of the unexplained differences for individual fuels as they appear in the energy statistics

SECTION 1: ELECTRICITY ACCESS MAPS OF GHANA

PROPORTION OF THE POPULATION WITH ACCESS TO ELECTRICITY

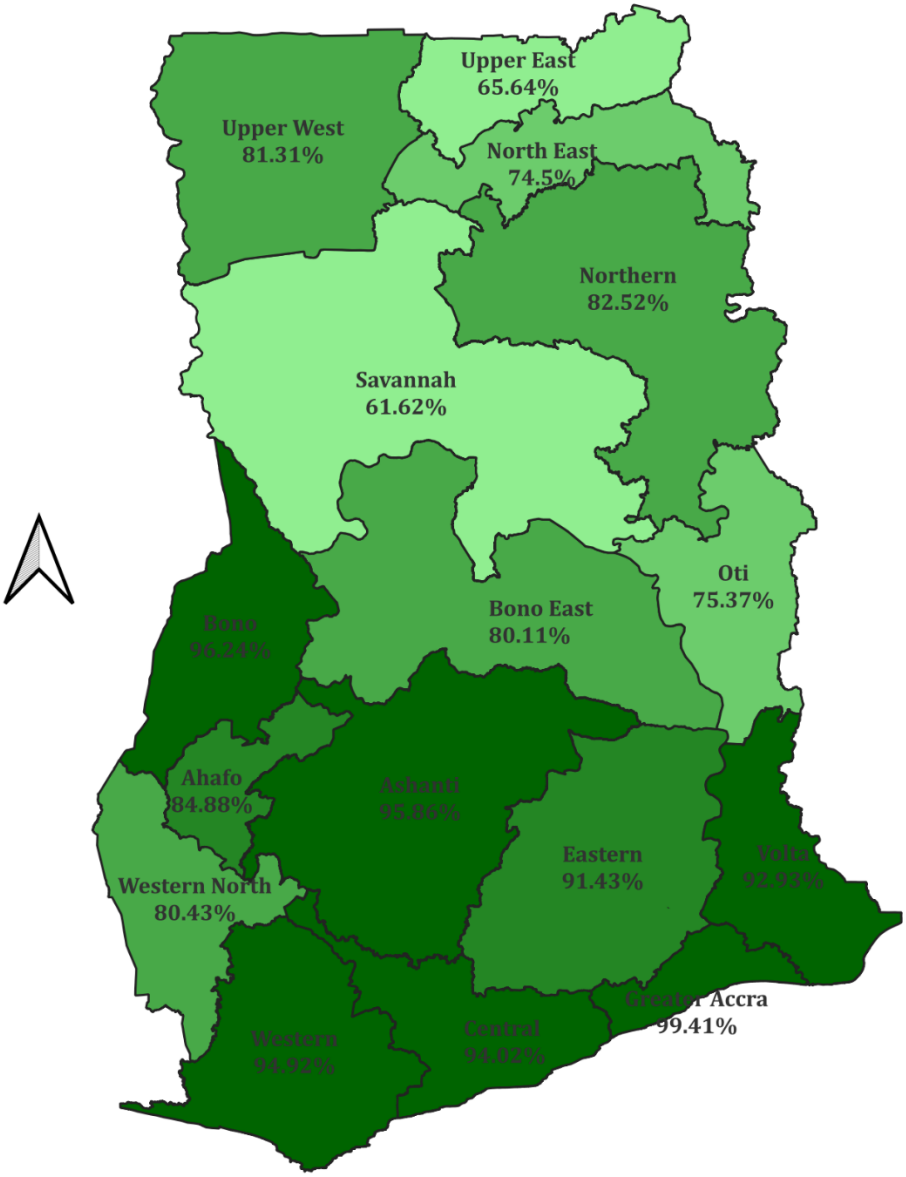


Figure 1.1: Population with access to electricity by region

2024 National population electricity access rate: 89.4%

$$Regional\ population\ access = \frac{Total\ number\ of\ persons\ with\ access\ to\ the\ grid\ in\ the\ region}{Total\ population\ of\ the\ region} \times 100\%$$

Source: Ministry of Energy

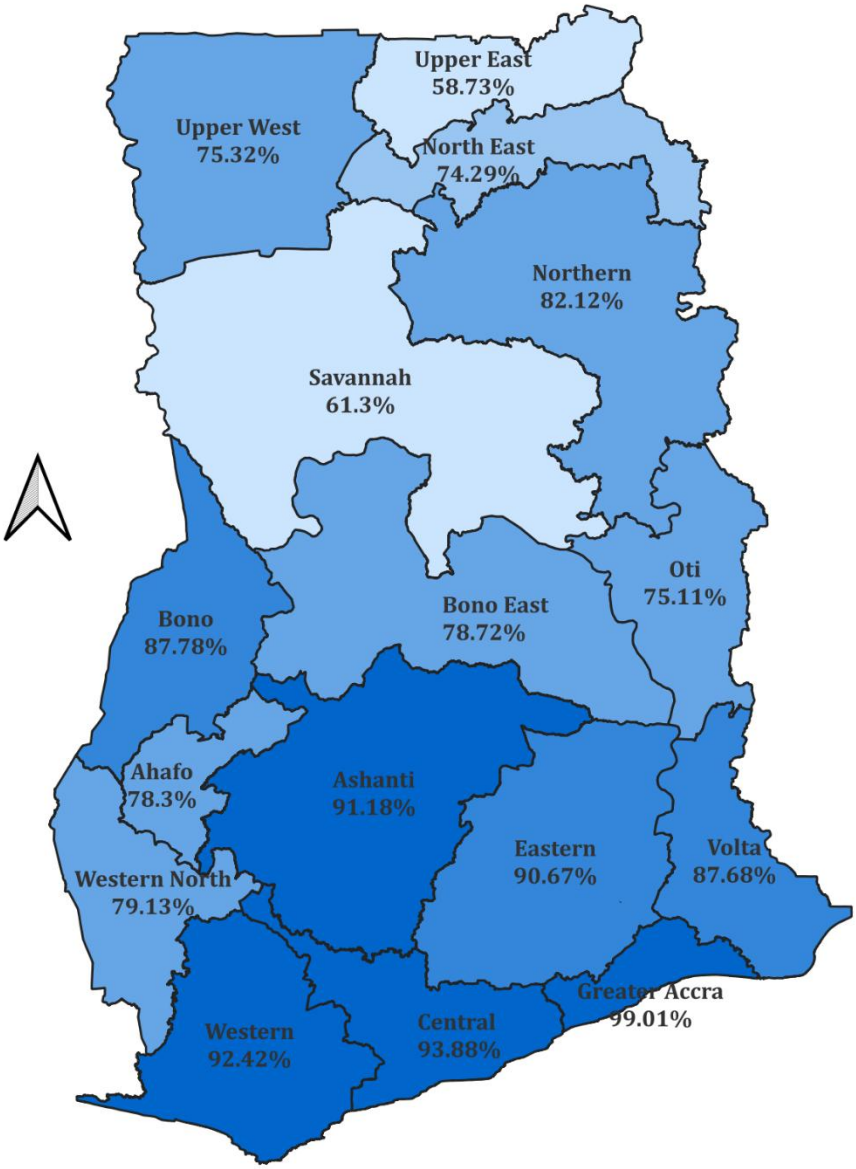


Figure 2.2: Household with access to electricity by region

2024 National household electricity access rate: 87.9%[1]

$$Regional\ household\ access = \frac{Total\ number\ of\ households\ connected\ to\ the\ grid\ in\ the\ region}{Total\ number\ of\ households\ in\ the\ region} \times 100\%$$

[1] Source: Computed based on data from Ghana Statistical Service

SECTION 2: ENERGY SUPPLY AND FINAL CONSUMPTION

2.1 Total Energy Supply

In 2000, biomass dominated Ghana's primary energy supply, accounting for 66.2% (4,410 ktoe), followed by oil at 25.3% (1,688 ktoe) and hydro at 8.5% (568 ktoe). By 2024, biomass's share dropped to 29.3% (4,026 ktoe), while natural gas grew significantly from 0.1% in 2009 to 28.4% (3,906 ktoe) in 2024. Oil remained a key contributor, increasing to 36% (4,943 ktoe), while hydro and solar experienced modest growth, reaching 6.2% (851 ktoe) and 0.11% (16 ktoe), respectively.

Overall, Ghana's total energy supply more than doubled from 6,666 ktoe in 2000 to 13,741 ktoe in 2024, growing at a compound annual growth rate (CAGR) of 3.1%.

Table 2.1: Total Energy Supply (ktoe)

Year	Oil[2]		Natural Gas[3]		Hydro		Solar		Biomass		Total
	ktoe	%	ktoe	%	ktoe	%	ktoe	%	ktoe	%	ktoe
2000	1,688	25.3	-	-	568	8.5	-	-	4,410	66.2	6,666
2001	1,761	26.8	-	-	568	8.7	-	-	4,236	64.5	6,565
2002	2,277	33.3	-	-	433	6.3	-	-	4,135	60.4	6,845
2003	2,347	35.1	-	-	334	5.0	-	-	4,009	59.9	6,691
2004	2,094	31.8	-	-	454	6.9	-	-	4,041	61.3	6,589
2005	2,103	31.8	-	-	484	7.3	-	-	4,030	60.9	6,617
2006	2,908	39.1	-	-	483	6.5	-	-	4,047	54.4	7,437
2007	3,082	41.4	-	-	320	4.3	-	-	4,036	54.3	7,438
2008	2,862	38.8	-	-	533	7.2	-	-	3,975	53.9	7,370
2009	2,390	34.3	5	0.1	591	8.5	-	-	3,975	57.1	6,961
2010	2,934	37.4	416	5.3	601	7.7	-	-	3,903	49.7	7,855
2011	2,874	34.8	813	9.9	650	7.9	-	-	3,918	47.5	8,255
2012	3,467	39.8	412	4.7	694	8.0	-	-	4,137	47.5	8,710
2013	4,137	42.9	308	3.2	708	7.3	0	0.00	4,485	46.5	9,639
2014	4,061	40.4	655	6.5	721	7.2	0	0.00	4,614	45.9	10,051
2015	3,766	36.7	1,253	12.2	503	4.9	0	0.00	4,738	46.2	10,260
2016	4,613	43.1	732	6.8	478	4.5	2	0.02	4,868	45.5	10,694
2017	3,998	37.2	1,211	11.3	483	4.5	2	0.02	5,066	47.1	10,761
2018	4,276	37.2	1,676	14.6	517	4.5	3	0.02	5,015	43.7	11,488
2019	4,395	36.4	2,107	17.5	624	5.2	4	0.04	4,942	40.9	12,072
2020	4,305	33.7	3,014	23.6	627	4.9	5	0.04	4,822	37.7	12,773
2021	4,470	35.5	3,189	25.3	647	5.1	11	0.08	4,275	34.0	12,591
2022	4,152	33.4	3,472	28.0	704	5.7	14	0.11	4,073	32.8	12,416
2023	4,642	35.8	3,487	26.9	790	6.1	13	0.10	4,043	31.2	12,975
2024	4,943	36.0	3,906	28.4	851	6.2	16	0.11	4,026	29.3	13,741

[2] oil includes both crude oil and petroleum products
[3] Natural gas refers to dry marketable production

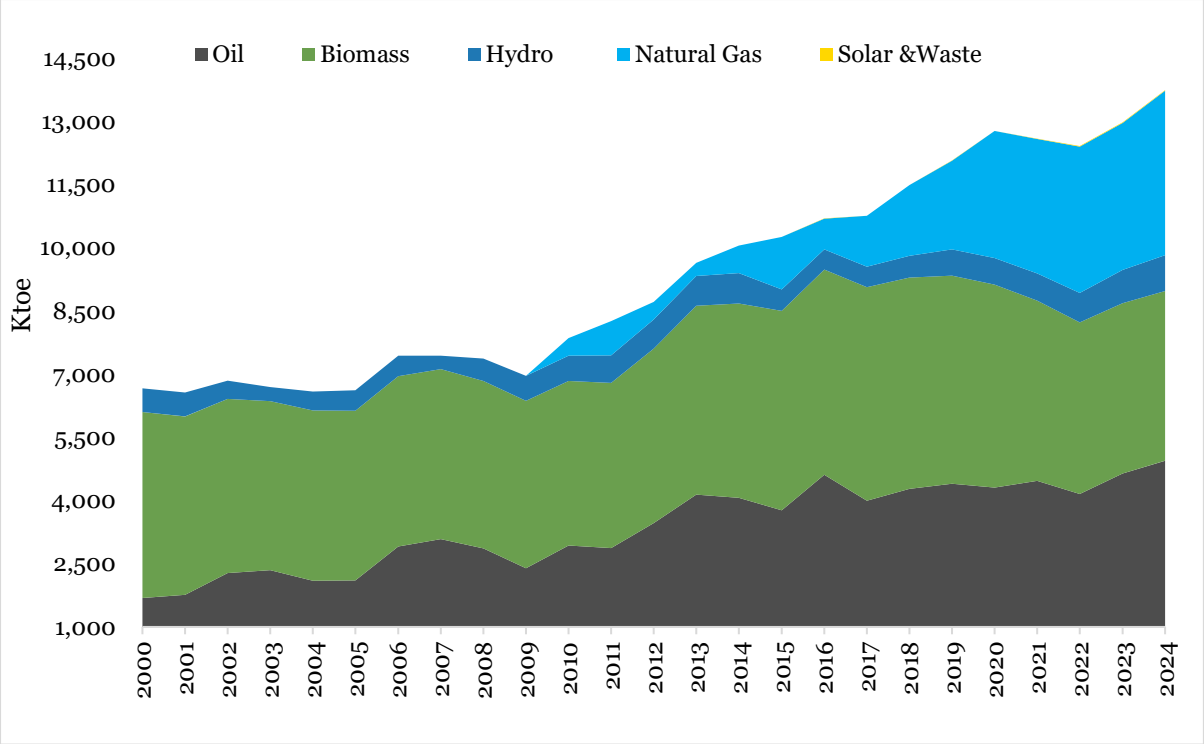


Figure 2.1: Total Energy Supply

2.2 Total Final Consumption by Fuel

Total final energy consumption (TFEC) increased from 5,468 ktoe in 2000 to 9,519 ktoe in 2024, representing a CAGR of 2.3%. Biomass, which dominated the energy mix in the early 2000s, accounted for 62.8% (3,432 ktoe) of total consumption in 2000. However, its share declined steadily to 25.9% (2,464 ktoe) in 2024, reflecting an average annual decline of 1.4%. In contrast, petroleum consumption saw significant growth, increasing from 26.4% (1,445 ktoe) in 2000 to 55.8% (5,319 ktoe) in 2024, at an average annual growth rate of 5.6%. Similarly, electricity consumption also increased, from 10.8% (591 ktoe) in 2000 to 18.3% (1,737 ktoe) in 2024, with an average annual growth rate of 4.6%.

Table 2.2: Total Final Energy Consumed by Fuels (ktoe)

Year	Electricity[1]		Petroleum[2]		Biomass		Total
	Ktoe	%	Ktoe	%	Ktoe	%	Ktoe
2000	591	10.8	1,445	26.4	3,432	62.8	5,468
2001	614	11.5	1,467	27.6	3,238	60.9	5,319
2002	586	11.2	1,550	29.7	3,082	59.1	5,218
2003	449	9.2	1,494	30.7	2,925	60.1	4,868
2004	458	9.2	1,705	34.1	2,839	56.8	5,002
2005	513	10.3	1,712	34.4	2,745	55.2	4,970
2006	623	12.3	1,775	35.0	2,671	52.7	5,069
2007	532	10.3	2,023	39.1	2,614	50.6	5,170
2008	601	11.7	1,973	38.6	2,544	49.7	5,118
2009	618	11.0	2,496	44.4	2,513	44.7	5,627
2010	667	12.2	2,408	44.0	2,395	43.8	5,471
2011	765	13.0	2,704	45.9	2,419	41.1	5,889
2012	851	12.9	3,189	48.3	2,566	38.8	6,606
2013	908	12.9	3,308	47.1	2,804	39.9	7,020
2014	917	13.1	3,243	46.2	2,853	40.7	7,013
2015	829	11.5	3,497	48.4	2,896	40.1	7,222
2016	993	13.8	3,255	45.3	2,945	40.9	7,193
2017	1,058	14.7	3,104	43.0	3,053	42.3	7,214
2018	1,166	14.9	3,582	45.9	3,063	39.2	7,811
2019	1,252	15.4	3,798	46.8	3,069	37.8	8,119
2020	1,370	15.8	4,250	49.2	3,026	35.0	8,646
2021	1,502	17.1	4,641	52.7	2,660	30.2	8,803
2022	1,562	18.5	4,318	51.3	2,543	30.2	8,423
2023	1,621	18.6	4,590	52.8	2,489	28.6	8,700
2024	1,737	18.2	5,319	55.9	2,464	25.9	9,519

[1]Include commercial losses

[2]Petroleum consumption from 2016 onwards includes natural gas used in industry

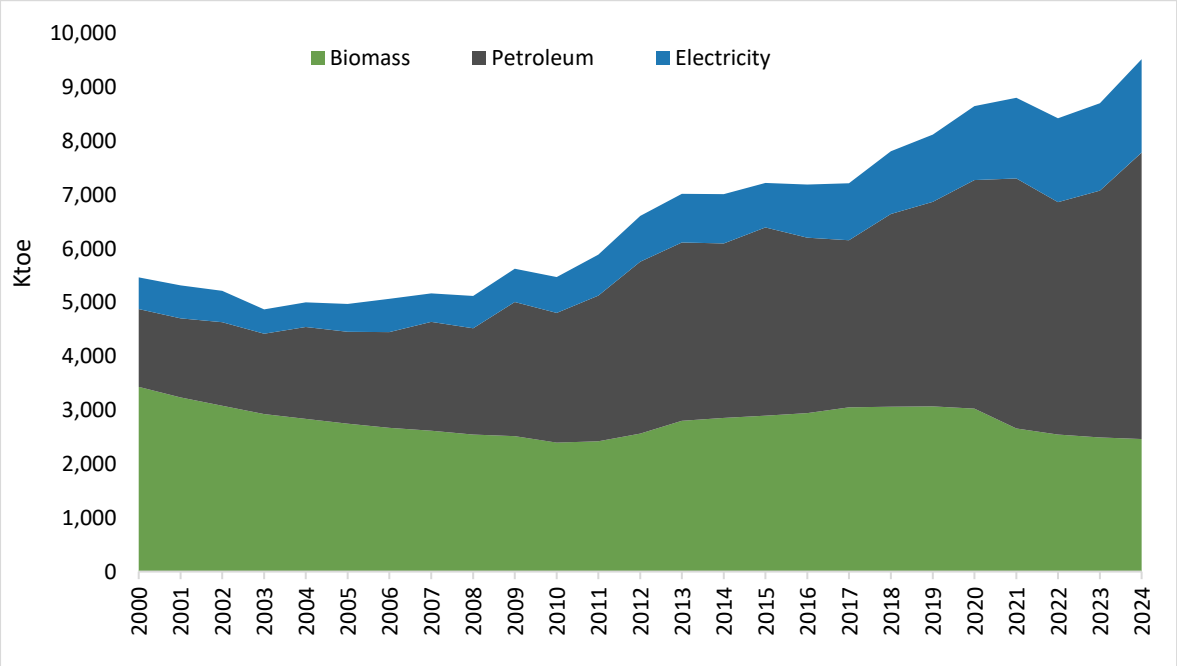


Figure 2.2: Trend in Final Energy Consumption by Fuel

2.3 Total Final Consumption by Sector

Ghana's total final energy consumption (TFEC) increased from 5,468 ktoe in 2000 to 9,519 ktoe in 2024, nearly doubling over the period. The residential sector remained the largest consumer, though its relative share of total consumption declined over time. In contrast, the transport sector recorded the most significant growth, nearly tripling from 1,186 ktoe in 2000 to 4,168 ktoe in 2024. Similarly, industrial consumption experienced a substantial increase, almost tripling over the same period. The service and agriculture sectors showed moderate growth, while non-energy use remained minimal.

Table 2.3: Final Energy Consumption by Sectors (ktoe)

Year	Residential	Industry	Service	Agriculture	Transport	Non-Energy Use	Total
2000	3,389	731	121	33	1,186	7.2	5,468
2001	3,218	740	123	29	1,200	7.8	5,319
2002	3,086	706	127	29	1,261	8.7	5,218
2003	2,946	553	132	32	1,196	8.4	4,868
2004	2,884	566	135	30	1,377	9.2	5,002
2005	2,815	613	146	35	1,352	9.7	4,970
2006	2,636	896	173	41	1,315	10.3	5,069
2007	2,576	855	164	49	1,516	8.8	5,170
2008	2,557	880	144	59	1,473	4.9	5,118
2009	2,650	913	165	66	1,819	13.1	5,627
2010	2,573	769	244	35	1,842	7.4	5,471
2011	2,739	801	228	48	2,063	9.7	5,889
2012	2,900	854	273	62	2,511	5.5	6,606
2013	3,009	942	330	61	2,673	3.7	7,020
2014	3,007	868	351	106	2,680	1.1	7,013
2015	3,083	968	251	100	2,819	-	7,222
2016	3,122	1,017	343	104	2,606	-	7,193
2017	3,252	1,041	406	125	2,389	-	7,214
2018	3,325	1,249	323	119	2,794	1.4	7,811
2019	3,361	1,282	381	122	2,967	5.2	8,119
2020	3,445	1,486	321	139	3,253	1.8	8,646
2021	3,151	1,619	351	147	3,535	1.2	8,803
2022	2,967	1,681	359	92	3,322	1.1	8,423
2023	2,954	1,726	370	92	3,558	0.4	8,700
2024	2,953	1,876	415	108	4,168	0.1	9,519

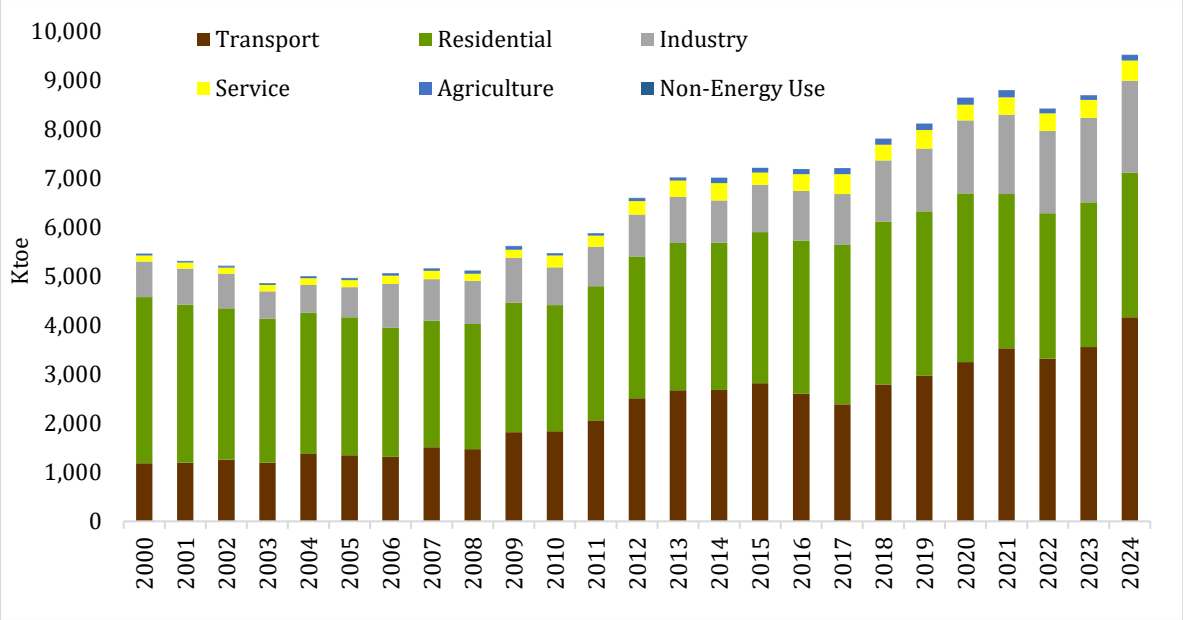


Figure 2.3: Final Energy Consumed by Sectors

SECTION 3: ELECTRICITY

3.1 Electricity Generation Capacity

Electricity generation capacity, excluding distributed generation, has increased by 5.3% over the period reaching 5,749 MW in 2024, as depicted in Figure 3.1. As of 2024, hydro, thermal, and renewable sources accounted for 1,584 MW (28%), 4,032 MW (70%), and 133 MW (2%) of total installed capacity, respectively (Table 3.1).

Similarly, the dependable capacity from these sources also increased by 5.8% to 5,211 MW in 2024.

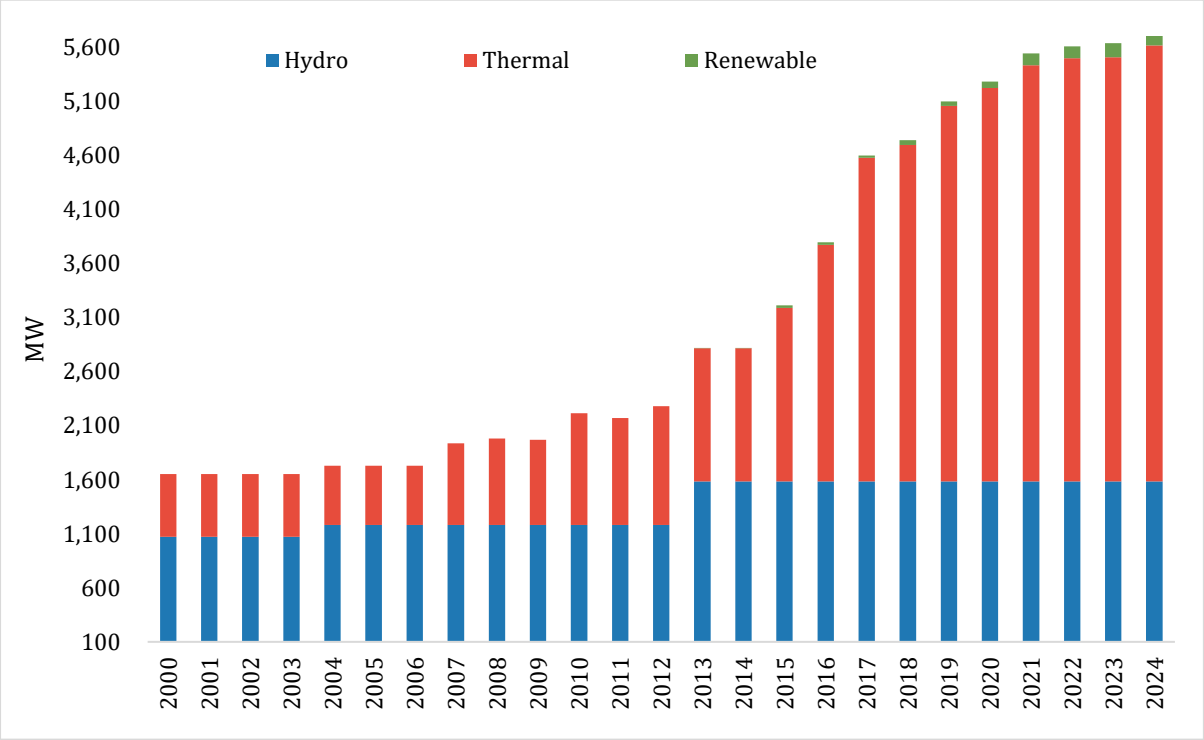


Figure 3.1: Installed Generating Capacity (2000-2024)

Table 3.1: Grid Installed and Dependable Capacity (MW)

Year	Installed Capacity				Dependable Capacity			
	Hydro	Thermal	Other Renewable[1]	Total	Hydro	Thermal	Other Renewable[1]	Total
2000	1,072	580	-	1,652	928	430	-	1,358
2001	1,072	580	-	1,652	951	530	-	1,481
2002	1,072	580	-	1,652	974	530	-	1,504
2003	1,072	580	-	1,652	982	530	-	1,512
2004	1,180	550	-	1,730	1,040	500	-	1,540
2005	1,180	550	-	1,730	1,040	500	-	1,540
2006	1,180	550	-	1,730	1,040	500	-	1,540
2007	1,180	755	-	1,935	1,040	670	-	1,710
2008	1,180	801	-	1,981	1,040	695	-	1,735
2009	1,180	790	-	1,970	1,040	725	-	1,765
2010	1,180	1,035	-	2,215	1,040	945	-	1,985
2011	1,180	990	-	2,170	1,040	895	-	1,935
2012	1,180	1,100	-	2,280	1,040	995	-	2,035
2013	1,584	1,232	3	2,818	1,380	1,105	2	2,487
2014	1,584	1,232	3	2,818	1,380	1,105	2	2,487
2015	1,584	1,607	23	3,213	1,380	1,475	18	2,873
2016	1,584	2,189	23	3,795	1,380	2,009	18	3,407
2017	1,584	2,993	23	4,599	1,380	2,729	18	4,127
2018	1,584	3,113	43	4,740	1,380	2,884	34	4,298
2019	1,584	3,473	43	5,100	1,365	3,225	34	4,624
2020	1,584	3,639	59	5,282	1,400	3,393	47	4,841
2021	1,584	3,849	112	5,545	1,400	3,583	89	5,073
2022	1,584	3,914	112	5,610	1,374	3,618	89	5,081
2023	1,584	3,923	133	5,639	1,411	3,664	106	5,180
2024	1,584	4,032	133	5,749	1,411	3,695	106	5,211

[1]Solar and waste

The list of power plants, excluding off-grid and distributed generation, in Ghana as at December 31, 2024, is presented in Table 3.2.

Table 3.2: Generation Capacities in Ghana as at 2024 (MW)

Plant	Installed Capacity	Dependable Capacity[4]
Hydro Power Plants		
Akosombo	1,020	900
Kpong	160	140
Bui	404	371
Tsatsadu Hydro	0.045	0.045
Sub-total	**1,584**	**1,411**
Thermal Power Plants		
Takoradi Power Company (TAPCO)	330	315
Takoradi International Company (TICO)	340	330
Tema Thermal 1 Power Plant (TT1PP)	110	100
Tema Thermal 2 Power Plant (TT2PP)	80	70
[5]Takoradi T3	132	120
Cenit Energy Ltd	110	100
Kpone Thermal Power Plant	220	200
Anwomaso Thermal	250	230
Sunon Asogli Power (Ghana) Ltd	560	512
Karpowership	470	450
Twin City (Amandi)	210	201
AKSA	370	330
Cenpower	360	340
Early Power	200	189
Genser	290	208
Sub-total	**4,032**	**3,695**
Other Renewables		
On-grid[6]		
VRA Solar (Navrongo)	2.5	2.0
VRA Solar (Lawra)	6.5	5.2
VRA Solar (Kaleo)	29	22
BXC Solar	20	16
Meinergy	20	16
Bui Solar	55	44
Safisana Biogas	0.1	0.1
Sub-total	**133**	**106**
Total	**5,749**	**5,211**

[4] Dependable capacity refers to the maximum power output that a power plant can reliably and consistently deliver at nominal ambient conditions, as demonstrated in a performance test report
[5] Has not been operational since 2015, but has not been officially decommissioned
[6] In previous editions, the Navrongo, Lawra, and Kaleo solar power plants were listed as VRA Solar (Navrongo), VRA Solar (Lawra), and VRA Solar (Kaleo), respectively

Table 3.3: Renewable Energy Installed Generation Capacity (KW)

Year	Off-grid		On-grid				Mini-Grid		Installed
	Solar	Wind	Dist. SPV	Utility Solar	W2E	Hydro	Solar	Wind	
2013	-	-	495	2,500	-	-	-	-	2,995
2014	1,350	-	443	-	-	-	-	-	1,793
2015	4,003.00	20	700	20,000	100	-	256	11	25,090
2016	1,238	-	2,626	-	-	-	-	-	3,865
2017	678	-	4,266	-	-	-	58.3		5,003
2018	155	-	9,441	20,000	-	-	-	-	29,596
2019	-	-	9,924	-	-	45	-	-	9,969
2020	-	-	9,626	6,540	-	-	-	-	16,166
2021	-	-	7,367	63,000	-	-	-	-	70,367
2022	-	-	4,820	1,000	-	-	-	-	5,820
2023*	-	-	9,483	19,780	-	-	-	-	29,263
2024*	-	-	27,375	-	-	-	257		27,632
Total	**7,424**	**20**	**86,565**	**132,820**	**100**	**45**	**571**	**11**	**227,557**

Note: This excludes large hydro (Akosombo, Kpong and Bui); *Provisional
Source: Ministry of Energy & Energy Commission

3.2 Electricity Generation

Total electricity generation[7] increased from 7,224 GWh in 2000 to 25,550 GWh in 2024, reflecting a CAGR of 5.4%. Hydro, which accounted for 92% of the energy mix in 2000, grew at an average annual rate of 1.7%, reaching 9,893 GWh by 2024. However, its share of the total generation declined to 39% in 2024, primarily due to an increase in thermal generation.

Thermal generation increased significantly from 614 GWh in 2000 to 15,476 GWh in 2024. Its share of the energy mix increased from 8% to 61%, making it the dominant source of electricity. This growth corresponds to a CAGR of 14.4%.

Meanwhile, other renewable energy sources such as Solar PV, introduced in 2013, grew at an average annual rate of 45.2%, reaching 181 GWh in 2024 (Table 3.4). Despite this growth, renewables accounted for only 0.71% of total electricity generation in 2024.

[7] Electricity generation includes embedded generation and import

Table 3.4: Annual Electricity Generation

Year	Generation (GWh)				Share (%)		
	Hydro	Thermal	Other Renewables	Total	Hydro	Thermal	Other Renewables
2000	6,610	614	-	7,224	92	8	-
2001	6,609	1,250	-	7,859	84	16	-
2002	5,036	2,237	-	7,273	69	31	-
2003	3,885	1,996	-	5,881	66	34	-
2004	5,280	758	-	6,038	87	13	-
2005	5,629	1,159	-	6,788	83	17	-
2006	5,619	2,811	-	8,430	67	33	-
2007	3,727	3,251	-	6,978	53	47	-
2008	6,196	2,129	-	8,325	74	26	-
2009	6,877	2,081	-	8,958	77	23	-
2010	6,995	3,171	-	10,166	69	31	-
2011	7,561	3,639	-	11,200	68	32	-
2012	8,071	3,953	-	12,024	67	33	-
2013	8,233	4,635	3	12,870	64	36	0.02
2014	8,387	4,572	4	12,963	65	35	0.03
2015	5,844	5,644	3	11,491	51	49	0.03
2016	5,561	7,435	27	13,023	43	57	0.21
2017	5,616	8,424	28	14,067	40	60	0.20
2018	6,017	10,195	33	16,246	37	63	0.20
2019	7,252	10,894	52	18,197	40	60	0.28
2020	7,293	12,815	57	20,165	36	64	0.28
2021	7,521	14,417	122	22,060	34	65	0.55
2022	8,192	14,818	162	23,172	35	64	0.70
2023	9,187	14,930	148	24,264	38	62	0.61
2024	9,893	15,476	181	25,550	39	61	0.71

Source: GRIDCo and ECG

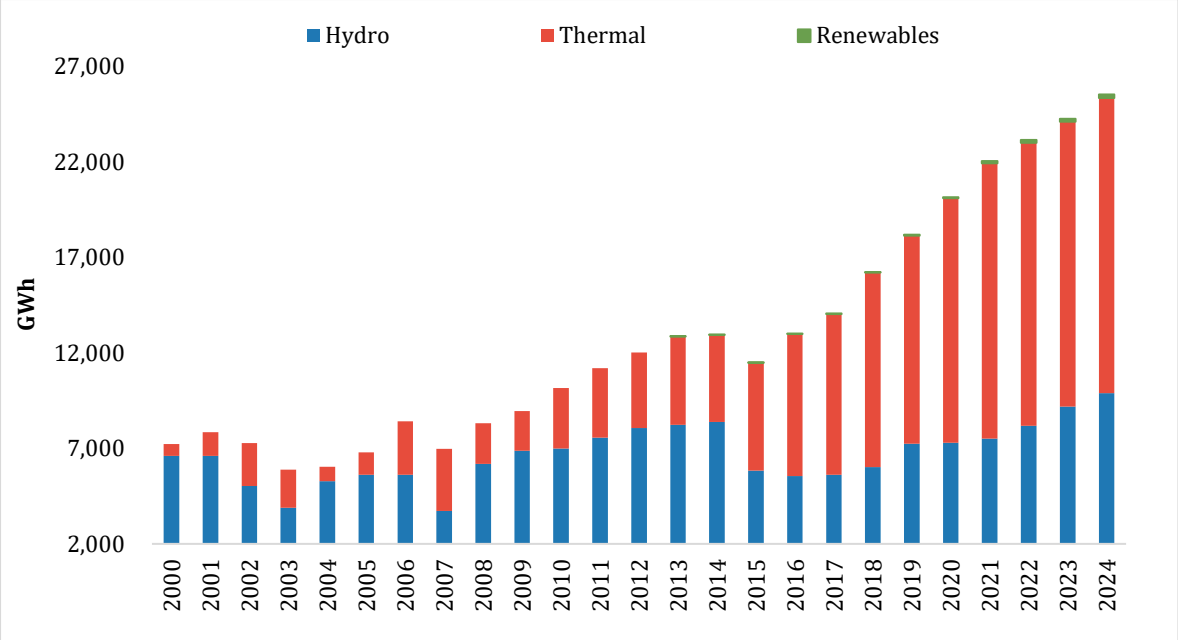


Figure 3.2: Electricity Generation (2000-2024)

3.3 Electricity Export and Import

Ghana's electricity trade data from 2000 to 2024 shows a significant shift from being a net importer to a net exporter. In the early 2000s, Ghana relied heavily on electricity imports, with net exports reaching a low of -534 GWh in 2002. However, by 2006, Ghana achieved its first positive net export of 126 GWh. From 2008 onwards, Ghana consistently maintained positive net exports, with exports growing at an average annual rate of 10.9%, increasing from 538 GWh in 2008 to 2,528 GWh in 2023, before declining by 16.4% to 2,113 GWh in 2024.

During the same period, electricity imports decreased by 9.4%, dropping from 275 GWh in 2008 to 57 GWh in 2024. As a result, net exports increased nearly sevenfold between 2008 and 2024, reaching 2,056 GWh in 202, as illustrated in Table 3.5.

Table 3.5: Electricity Import and Export (GWh)

Year	Import[8]	Export	Net Export
2000	864	392	-472
2001	462	302	-160
2002	1,146	612	-534
2003	940	535	-405
2004	878	667	-211
2005	815	639	-176
2006	629	755	126
2007	435	249	-186
2008	275	538	263
2009	198	752	554
2010	141	1,036	896
2011	165	802	637
2012	177	716	539
2013	121	654	533
2014	165	630	465
2015	236	581	346
2016	765	473	-292
2017	320	377	56
2018	140	739	600
2019	127	1,430	1,303
2020	58	1,855	1,797
2021	44	1,734	1690
2022	37	2,215	2,177
2023	79	2,528	2,449
2024	57	2,113	2,056

Source: GRIDCo

[8] Imports include both planned and unplanned imports

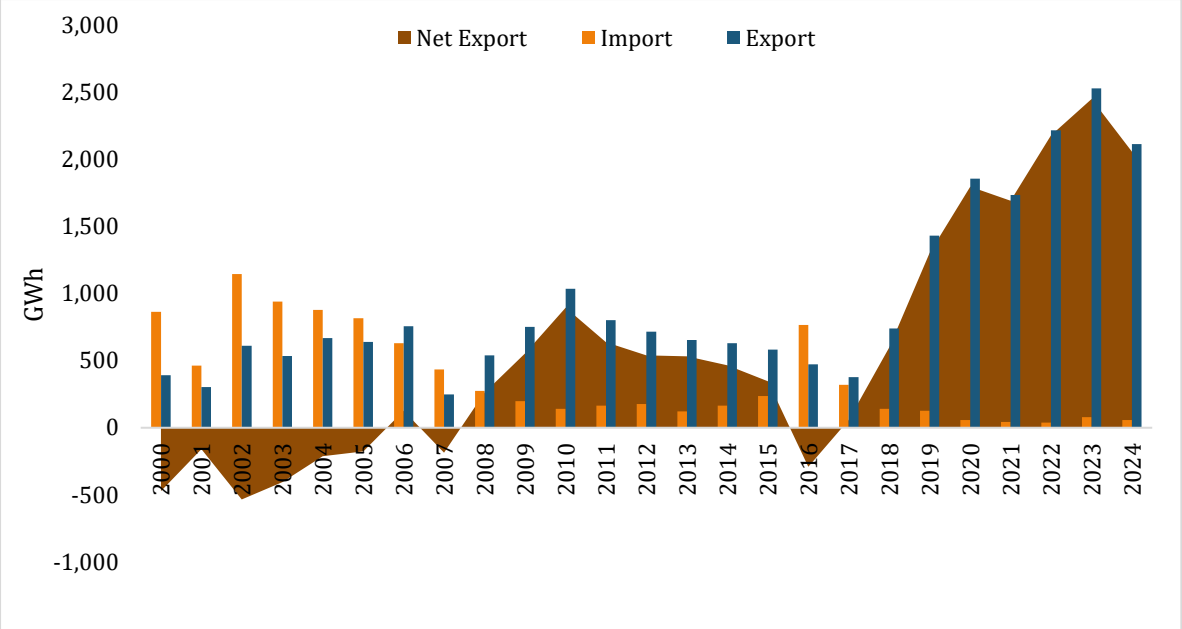


Figure 3.3: Electricity Import and Export

3.4 Peak Load

Table 3.6 presents data on Ghana's System Peak (comprising Ghana Load at Peak, VALCO load, and export load) and Domestic Peak (including ECG, NEDCo, Mines, and Direct Customers of VRA) from 2000 to 2024.

During this period, Ghana's system peak grew at an average annual rate of 5.2%, increasing from 1,161 MW in 2000 to 3,952 MW in 2024, representing a twofold rise. The domestic peak load also grew at an average annual rate of 6.3%, increasing from 820 MW to 3,568 MW, marking a threefold increase.

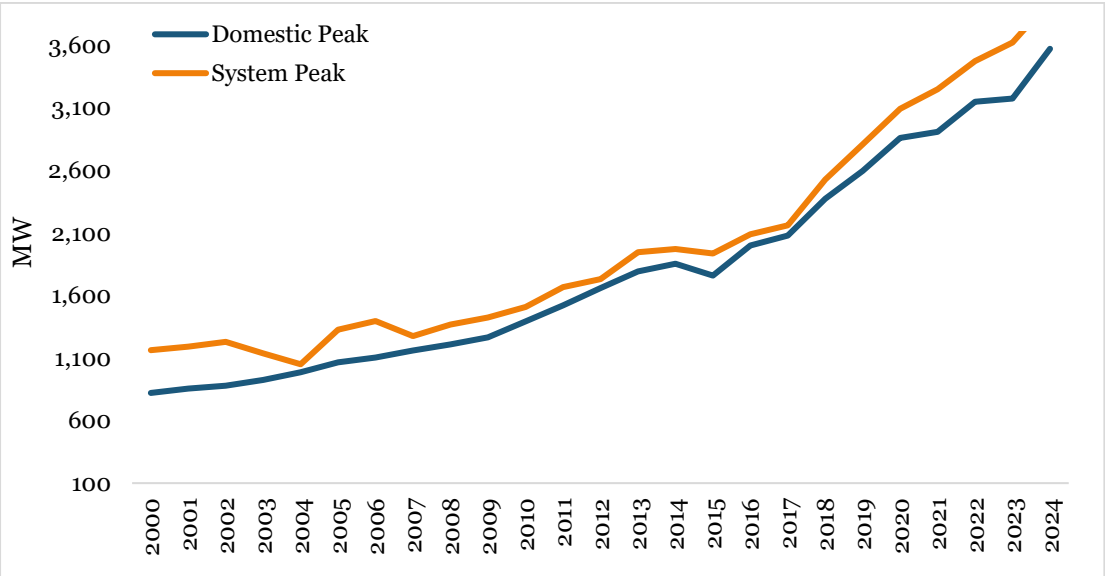


Figure 3.4: System and Ghana Peak Load

Table 3.6: System and Domestic Peak Load (MW)

Year	System Peak[9]	Domestic Peak[10]
2000	1,161	820
2001	1,190	854
2002	1,227	879
2003	1,135	925
2004	1,049	985
2005	1,325	1,064
2006	1,393	1,104
2007	1,274	1,158
2008	1,367	1,208
2009	1,423	1,263
2010	1,506	1,391
2011	1,665	1,520
2012	1,729	1,658
2013	1,943	1,791
2014	1,970	1,853
2015	1,933	1,757
2016	2,078	1,997
2017	2,158	2,077
2018	2,525	2,371
2019	2,804	2,613
2020	3,090	2,857
2021	3,246	2,904
2022	3,469	3,144
2023	3,618	3,171
2024	3,952	3,568

Source: GRIDCo

3.5 Electricity Transmitted and Losses

Table 3.7 presents the trends in total electricity transmission and corresponding transmission losses over the period from 2000 to 2024. The total electricity transmitted increased from 8,067 GWh in 2000 to 24,654 GWh in 2024, representing a twofold increase. However, this growth was not consistent, with notable declines observed in 2003, 2007, and 2015.

Transmission losses, expressed as a percentage of total electricity transmitted, peaked at 5.01% in 2021. Notably, losses declined to 3.86% in 2023 and 2024. This reduction fell below the 4.1% benchmark established by the Public Utilities Regulatory Commission (PURC), a target first achieved in 2022 (Figure 3.6).

[9] System Peak = Domestic Peak Load + VALCO Load + Export Load
[10] Maximum demand for Ghana (ECG, NEDCo, Direct Customers of VRA and Mines)

Table 3.7: Electricity Transmitted and Transmission Losses (GWh)

Year	Electricity Transmitted	Transmission Losses	Transmission losses % of total electricity transmitted
2000	8,067	229	2.84
2001	8,293	259	3.12
2002	8,402	368	4.38
2003	6,800	402	5.91
2004	6,891	205	2.97
2005	7,565	249	3.29
2006	9,013	318	3.53
2007	7,123	256	3.59
2008	8,423	303	3.60
2009	9,131	343	3.76
2010	10,267	413	4.02
2011	11,340	505	4.45
2012	12,164	522	4.29
2013	12,927	580	4.49
2014	13,071	565	4.32
2015	11,692	443	3.79
2016	13,700	607	4.43
2017	14,308	587	4.10
2018	15,960	707	4.43
2019	17,887	843	4.71
2020	19,717	888	4.50
2021	21,466	1076	5.01
2022	22,478	922	4.10
2023	23,551	908	3.86
2024	24,654	951	3.86

Source: GRIDCo

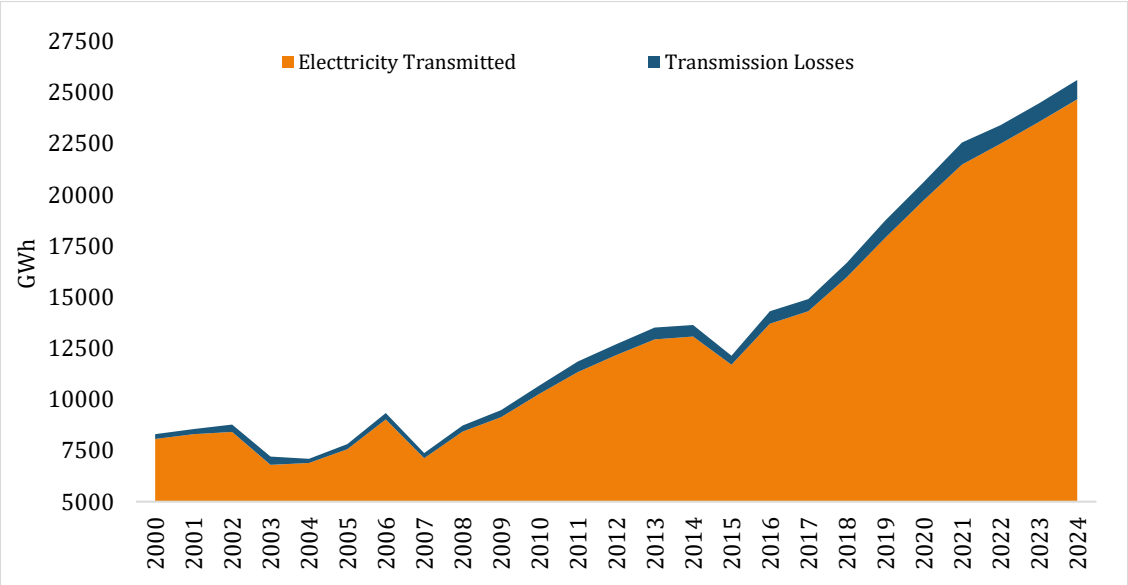


Figure 3.5: Electricity Transmitted and Transmission Losses

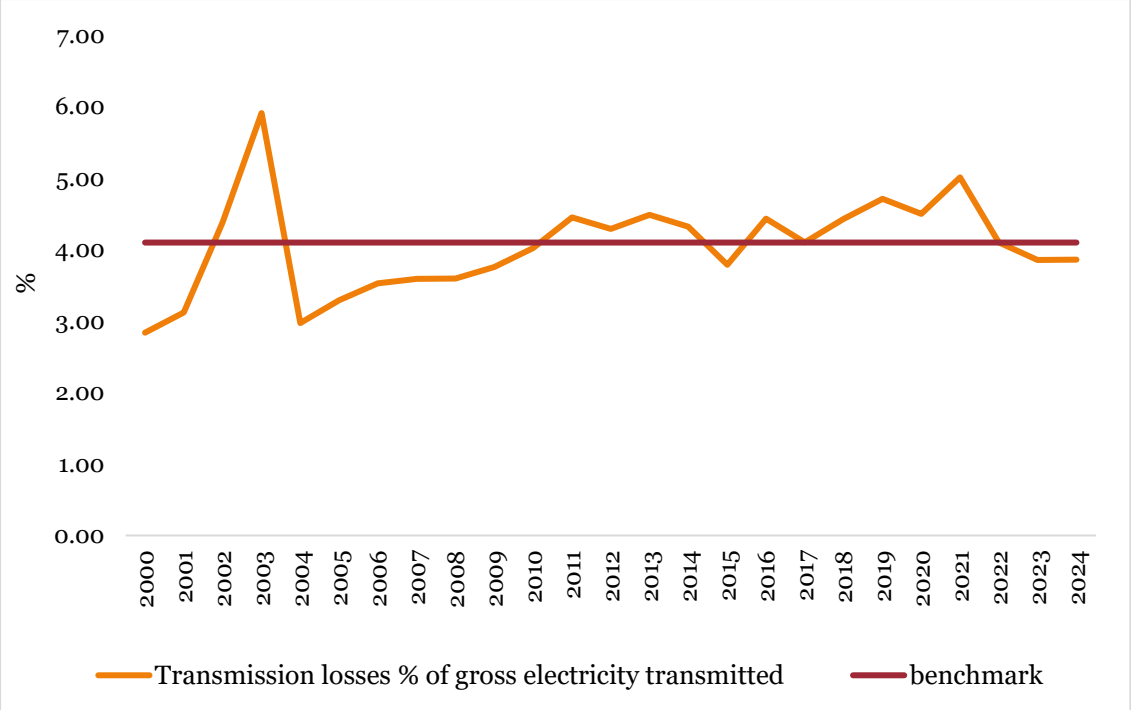


Figure 3.6: Percentage of Transmission Losses

3.7 Electricity Purchase, Sales and Losses by Distribution Utilities

Total electricity purchases by distribution utilities experienced an average annual growth rate of 6.5%, increasing from 4,319 GWh in 2000 to 19,458 GWh in 2024, representing a four-fold increase. Similarly, electricity sales grew at an average annual rate of 6.1%, increasing from 3,142 GWh to 13,098 GWh over the same period. The Electricity Company of Ghana (ECG), the largest distribution utility, consistently accounted for the majority of purchases and losses. The Enclave Power Company (EPC), which has been operational since 2015, has maintained relatively low loss percentages, averaging 2.5% from 2015 to 2024.

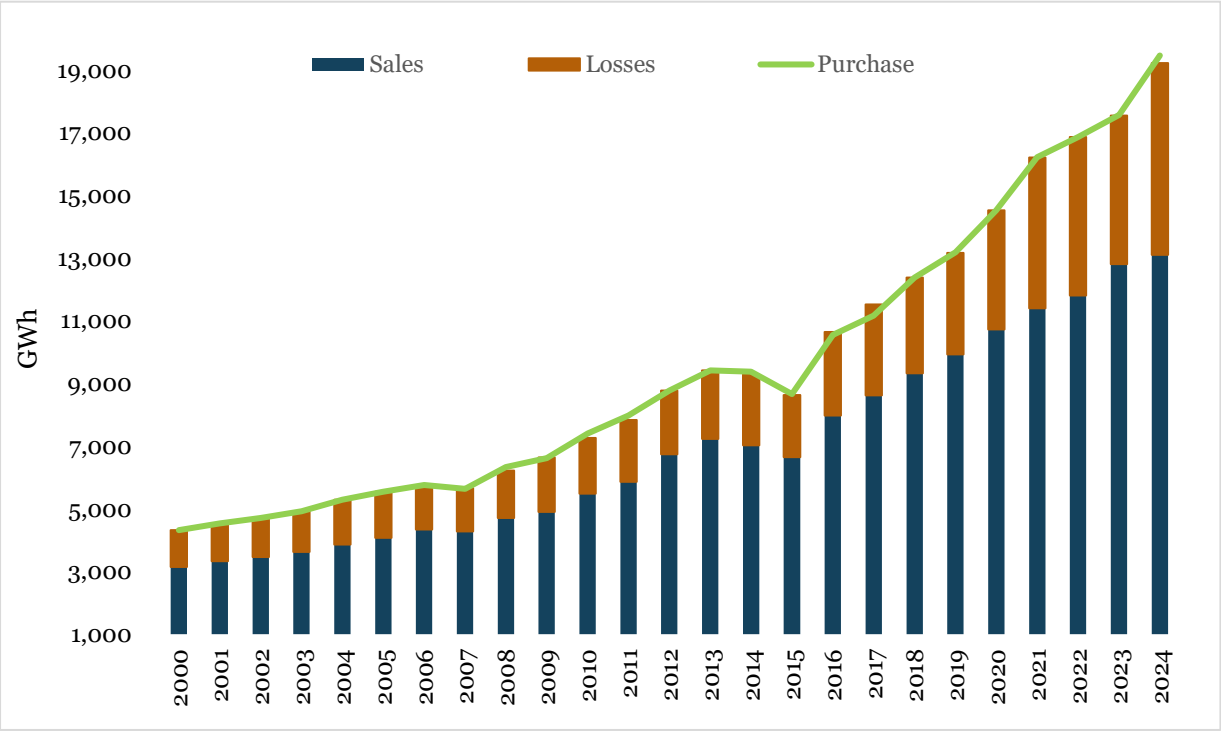


Figure 3.7: Trends in Electricity Purchases, Sales, and Losses by Distribution Utilities

Table 3.8: Distribution Utilities' Purchases, Sales and Losses (GWh)

Year	ECG				NEDCo				EPC				Total			
	Purchase	Sales	Losses[5]	% of Losses	Purchase	Sales	Losses[5]	% of Losses	Purchase	Sales	Losses[5]	% of Losses	Purchase	Sales	Losses[5]	% of Losses
2000	3,989	2,910	1,078	27.0	330	232	98	29.7	-	-	-	-	4,319	3,142	1,176	27.2
2001	4,175	3,080	1,095	26.2	355	251	104	29.3	-	-	-	-	4,530	3,331	1,199	26.5
2002	4,326	3,200	1,126	26.0	383	265	118	30.8	-	-	-	-	4,709	3,466	1,244	26.4
2003	4,496	3,343	1,153	25.7	426	283	143	33.6	-	-	-	-	4,922	3,625	1,296	26.3
2004	4,818	3,539	1,279	26.5	473	323	150	31.7	-	-	-	-	5,291	3,862	1,429	27.0
2005	5,045	3,760	1,283	25.4	501	312	189	37.7	-	-	-	-	5,546	4,072	1,472	26.5
2006	5,253	3,978	1,274	24.3	507	356	151	29.8	-	-	-	-	5,760	4,334	1,425	24.7
2007	5,146	3,909	1,250	24.3	494	366	129	26.1	-	-	-	-	5,640	4,275	1,379	24.5
2008	5,799	4,317	1,374	23.7	529	392	137	25.9	-	-	-	-	6,328	4,709	1,511	23.9
2009	6,052	4,483	1,574	26.0	566	413	162	28.6	-	-	-	-	6,618	4,896	1,736	26.2
2010	6,771	4,972	1,649	24.4	635	511	126	19.9	-	-	-	-	7,406	5,483	1,775	24.0
2011	7,259	5,285	1,815	25.0	719	581	147	20.5	-	-	-	-	7,978	5,865	1,963	24.6
2012	7,944	6,079	1,864	23.5	822	658	165	20.1	-	-	-	-	8,766	6,737	2,029	23.2
2013	8,479	6,496	1,982	23.4	937	737	200	21.3	-	-	-	-	9,416	7,233	2,182	23.2
2014	8,370	6,262	2,024	24.2	998	759	239	23.9	-	-	-	-	9,368	7,020	2,263	24.2
2015	7,544	5,831	1,680	22.3	1,013	720	294	29.0	102.3	95.9	6.3	6.2	8,659	6,646	1,980	22.9
2016	9,316	7,115	2,212	23.7	1,123	763	440	39.2	107.5	99.8	7.5	7.0	10,546	7,977	2,659	25.2
2017	9,783	7,575	2,379	24.3	1,224	889	521	42.6	157.4	154.6	2.7	1.7	11,165	8,618	2,903	26.0
2018	10,901	8,251	2,649	24.3	1,318	910	404	30.6	160.7	159.5	4.3	2.7	12,379	9,321	3,057	24.7
2019	11,535	8,685	2,850	24.7	1,413	1,010	386	27.3	235.4	229.0	6.1	2.6	13,183	9,924	3,243	24.6
2020	12,706	9,333	3,374	26.6	1,576	1,148	425	27.0	242.1	237.0	5.3	2.2	14,524	10,717	3,804	26.2
2021	14,222	9,884	4,323	30.4	1,764	1,281	483	27.4	232.4	229.6	2.6	1.1	16,219	11,394	4,809	29.6
2022	14,811	10,274	4,537	30.6	1,824	1,307	517	28.3	227.7	226.6	1.0	0.5	16,863	11,808	5,055	30.0
2023	15,352	11,218	4,133	26.9	1,938	1,324	600	31.0	268.7	263.1	1.3	0.5	17,559	12,805	4,735	27.0
2024	17,009	11,561	5,448	32.0	2,134	1,228	669	31.3	315.1	309.5	1.9	0.6	19,458	13,098	6,119	31.4

[5] Distribution Losses include technical and commercial losses

3.8 Electricity Consumption

Total electricity consumption has increased from 6,869 GWh in 2000 to 20,196 GWh in 2024, reflecting an average annual growth rate of 4.6% (Table 3.9). The residential sector, one of the largest end-users of electricity, has experienced significant growth, increasing from 2,020 GWh to 8,569 GWh at an average annual rate of 6.2%. Similarly, the industrial sector, despite periodic fluctuations, remains a key driver of electricity demand, growing at an average annual rate of 2.6% from 4,367 GWh to 8,159 GWh.

The service sector experienced the highest growth, with an average annual growth rate of 8.6%, while the agricultural and transport sectors, although smaller, also recorded significant increases.

In 2024, electricity consumption was distributed across sectors as follows: residential (42.2%), industrial (40.4%), service (16.9%), agriculture (0.2%), and transport (0.1%). The trend in electricity consumption by the various sectors is depicted in Figure 3.8.

Table 3.9: Electricity Consumption by Sectors (GWh)

Year	Residential	Industry	Service	Agriculture	Transport	Total
2000	2,020	4,367	475	2.5	4.2	6,869
2001	2,178	4,463	492	3.7	4.2	7,141
2002	2,264	4,027	516	5.0	4.3	6,817
2003	2,377	2,266	563	6.5	13.7	5,226
2004	2,540	2,186	573	7.6	15.9	5,323
2005	2,715	2,573	658	9.7	10.6	5,967
2006	2,712	4,013	502	8.6	9.5	7,246
2007	2,571	3,213	387	7.5	11.8	6,190
2008	2,921	3,619	425	9.1	11.1	6,984
2009	3,261	3,235	664	15.4	8.2	7,184
2010	3,532	2,589	1,628	1.6	9.0	7,760
2011	3,702	3,345	1,837	1.8	12.6	8,899
2012	3,988	3,718	2,182	2.1	9.4	9,899
2013	4,222	3,868	2,465	2.4	4.8	10,562
2014	4,031	3,992	2,632	2.6	7.3	10,665
2015	4,266	3,990	1,381	2.3	1.9	9,640
2016	4,217	4,970	2,355	3.2	2.7	11,548
2017	5,038	4,455	2,805	3.1	2.6	12,304
2018	5,739	5,788	2,018	6.8	6.0	13,558
2019	6,068	5,645	2,836	6.9	6.3	14,562
2020	6,844	6,704	2,363	17.1	7.5	15,936
2021	6,962	7,693	2,775	25.5	9.7	17,465
2022	7,100	8,069	2,960	32.6	10.7	18,172
2023	7,479	8,250	3,069	39.2	11.4	18,849
2024	8,569	8,159	3,406	49.2	13.1	20,196

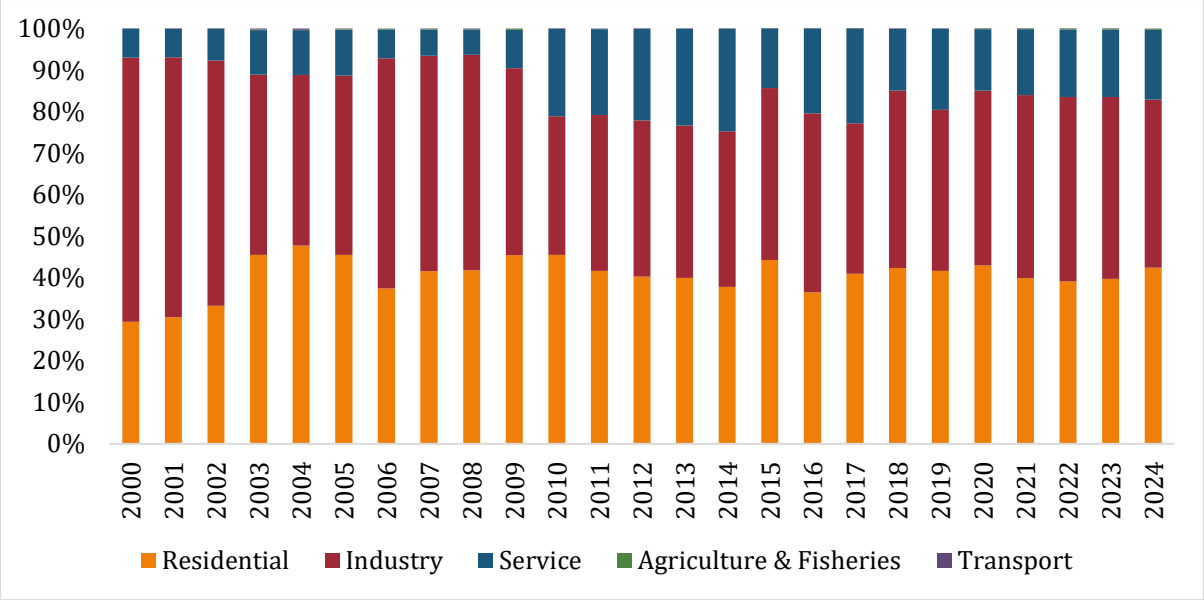


Figure 3.8: Electricity Consumption by Sectors

3.9 Customer Population by Classification

Table 3.10 presents the distribution of electricity customers in Ghana by customer type (Residential, Non-Residential, and Special Load Tariff (SLT)) from 2000 to 2024. Over this period, the total number of customers grew consistently, increasing from 932,598 in 2000 to 6,166,430 in 2024, reflecting an annual average growth rate of 8.2%.

Residential customers have consistently dominated the customer base, accounting for 85.7% of the total in 2024. Non-residential customers represented 14.3%, while SLT customers constituted a minimal 0.04% of the total in the same year.

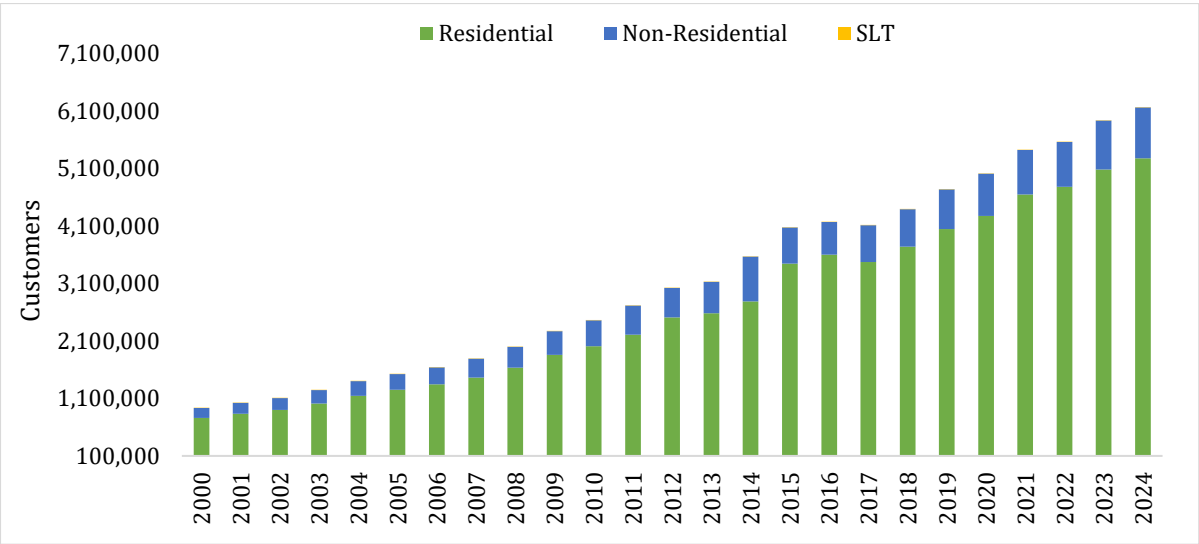


Figure 3.9: Customer Population

Table 3.10: Distribution Utilities Customer Population

Year	Residential	Non-Residential	SLT	Total
2000	758,558	173,245	795	932,598
2001	832,212	189,807	828	1,022,847
2002	902,815	205,687	855	1,109,357
2003	1,014,404	230,651	880	1,245,935
2004	1,146,016	253,340	902	1,400,258
2005	1,253,330	272,442	964	1,526,736
2006	1,347,067	295,703	1,016	1,643,786
2007	1,463,679	328,511	1,055	1,793,245
2008	1,634,407	365,844	1,157	2,001,408
2009	1,856,962	413,634	1,233	2,271,829
2010	2,006,972	454,430	1,369	2,462,771
2011	2,209,957	505,447	1,481	2,716,885
2012	2,511,208	514,492	1,647	3,027,347
2013	2,582,294	545,665	1,882	3,129,841
2014	2,789,913	779,780	2,034	3,571,727
2015	3,445,423	630,518	2,115	4,078,055
2016	3,600,185	568,473	1,438	4,170,096
2017	3,474,163	641,003	1,496	4,116,662
2018	3,743,430	650,971	1,544	4,395,945
2019	4,046,358	692,046	1,744	4,740,148
2020	4,275,929	733,550	1,805	5,011,284
2021	4,648,932	775,312	1,998	5,426,242
2022	4,786,044	778,554	2,113	5,566,711
2023	5,085,561	849,405	2,246	5,937,212
2024	5,281,816	882,125	2,489	6,166,430

Source: ECG, EPC & NEDCo

3.10 Dam Headwater level

The water levels of the two major hydropower dams in the country, the Akosombo and Bui, have remained largely above their respective minimum levels of 240 ft and 550 ft, as shown in Figure 3.10 and Figure 3.11. Tables 3.11 and 3.12 show the summary of Akosombo and Bui dam water levels.

Table 3.11: Akosombo Dam Month-End Elevation (feet)

Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2000	260	258	257	255	253	252	252	255	260	263	262	260
2001	257	255	253	251	250	248	247	246	250	252	249	248
2002	246	244	242	240	239	238	238	240	244	247	246	244
2003	242	241	239	238	237	237	238	241	250	256	256	254
2004	253	251	250	248	247	246	246	249	255	257	256	254
2005	252	250	249	247	245	244	245	246	250	253	252	250
2006	248	246	244	242	240	239	237	237	241	246	246	244
2007	242	239	237	236	236	236	235	240	253	256	256	255
2008	253	251	249	248	246	245	246	253	261	266	265	264
2009	262	260	258	257	255	254	254	259	266	270	270	268
2010	266	265	263	261	259	258	258	260	270	277	277	275
2011	274	272	271	269	267	266	267	268	272	275	274	272
2012	270	268	266	264	263	261	263	264	268	271	270	268
2013	266	264	262	260	259	257	256	255	258	261	259	258
2014	256	254	252	250	248	246	245	243	248	251	249	247
2015	245	244	242	241	239	238	238	238	242	245	244	243
2016	241	240	239	238	236	236	236	240	247	253	252	251
2017	249	247	245	242	241	240	243	249	252	253	253	253
2018	250	248	247	246	244	243	245	250	252	253	253	251
2019	260	258	256	254	253	252	253	254	259	256	266	265
2020	263	261	260	259	257	257	259	260	265	270	269	268
2021	267	265	264	263	261	260	260	262	269	270	270	269
2022	267	266	264	263	262	261	261	262	268	274	274	273
2023	271	270	268	267	266	265	267	269	275	277	276	275
2024	273	272	270	268	266	265	265	264	265	271	271	269

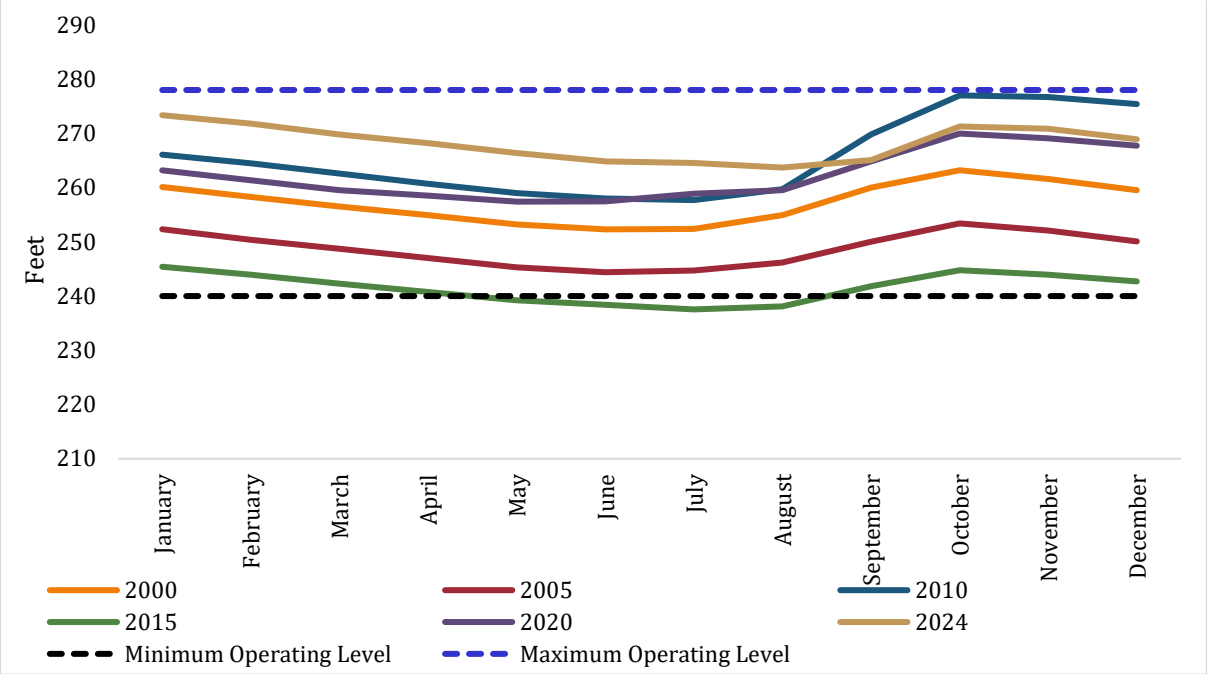


Figure 3.10: Trend in Akosombo Headwater Level

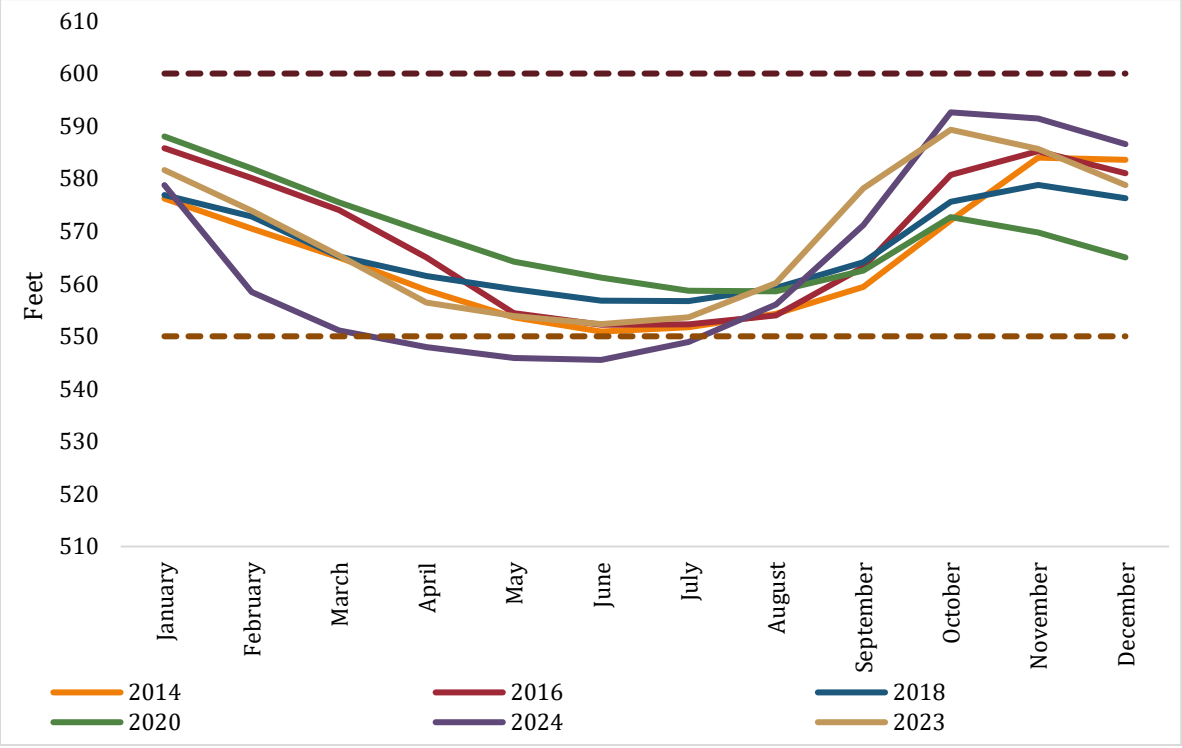


Figure 3.11: Trend in Bui Dam Headwater Level

Table 3.12: Bui Dam Month-End Elevation (feet)

Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	576	571	565	559	554	551	552	554	559	572	584	584
2015	582	578	574	571	567	563	558	555	561	575	592	591
2016	586	580	574	565	554	552	552	554	563	581	585	581
2017	577	573	565	562	559	557	557	559	564	576	579	576
2018	577	573	565	562	559	557	557	559	564	576	579	576
2019	573	566	561	557	554	554	558	565	586	600	597	592
2020	588	582	575	570	564	561	559	559	563	573	570	565
2021	559	553	550	549	547	547	550	566	588	591	588	583
2022	579	573	566	563	560	560	562	569	589	599	594	589
2023	582	574	565	556	554	552	554	560	578	589	586	579
2024	579	558	551	548	546	546	549	556	571	593	591	587

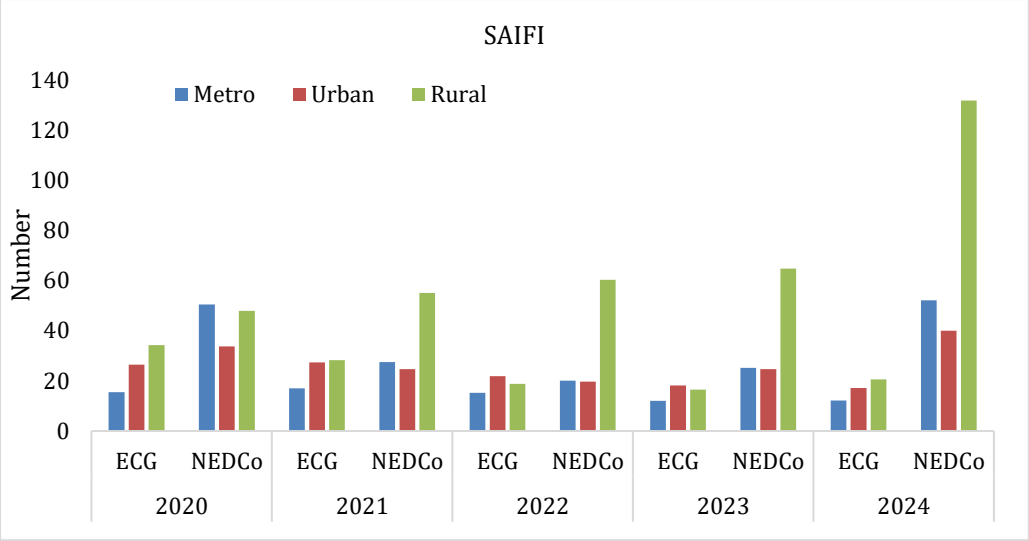
3.11 Electricity Distribution Reliability Indices

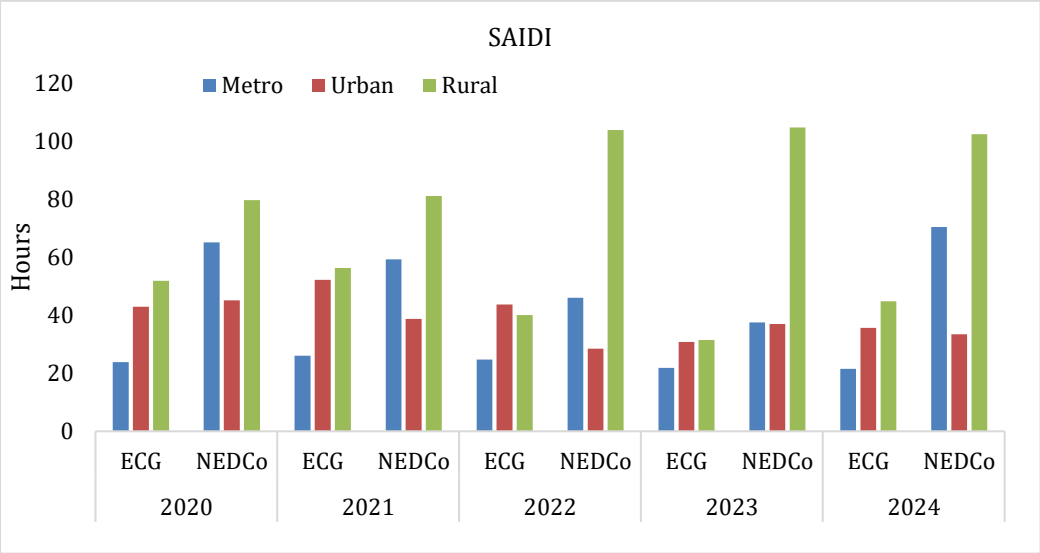
Table 3.13 presents the reliability indices for electricity supply across the operational areas of the ECG and NEDCo in Ghana from 2018 to 2024. Both the System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) reliability indices have shown consistent improvement over the period.

However, both utilities have consistently exceeded the SAIFI benchmark of six (6) interruptions per year across all operational areas, indicating a higher than permissible frequency of supply interruptions.

Regarding SAIDI, both utilities have generally maintained values well below benchmarks, suggesting acceptable limits for interruption durations. However, metropolitan and urban areas within NEDCo's operational zones consistently experienced the longest interruption durations.

For the Customer Average Interruption Duration Index (CAIDI), both utilities have consistently kept values well below the benchmarks, demonstrating effective performance in restoring power after interruptions.





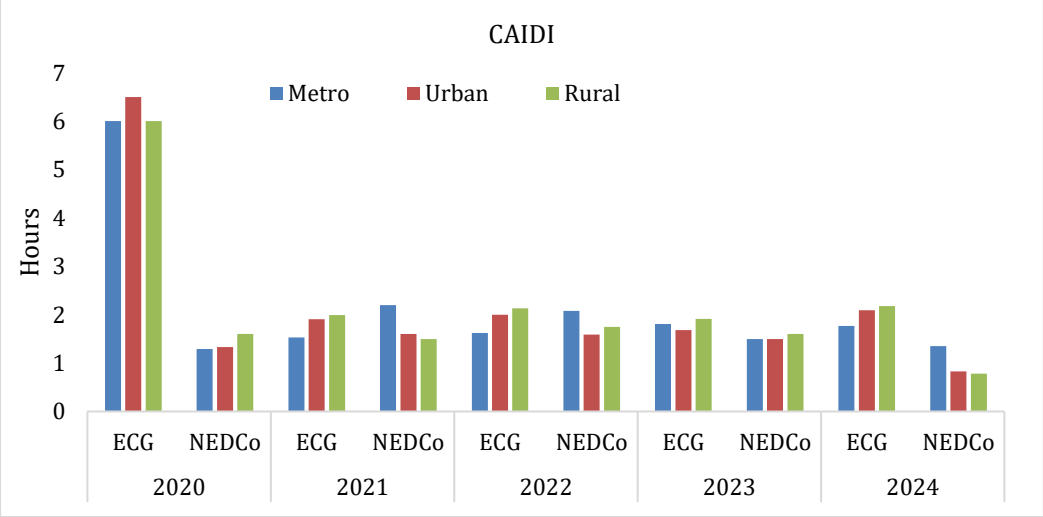


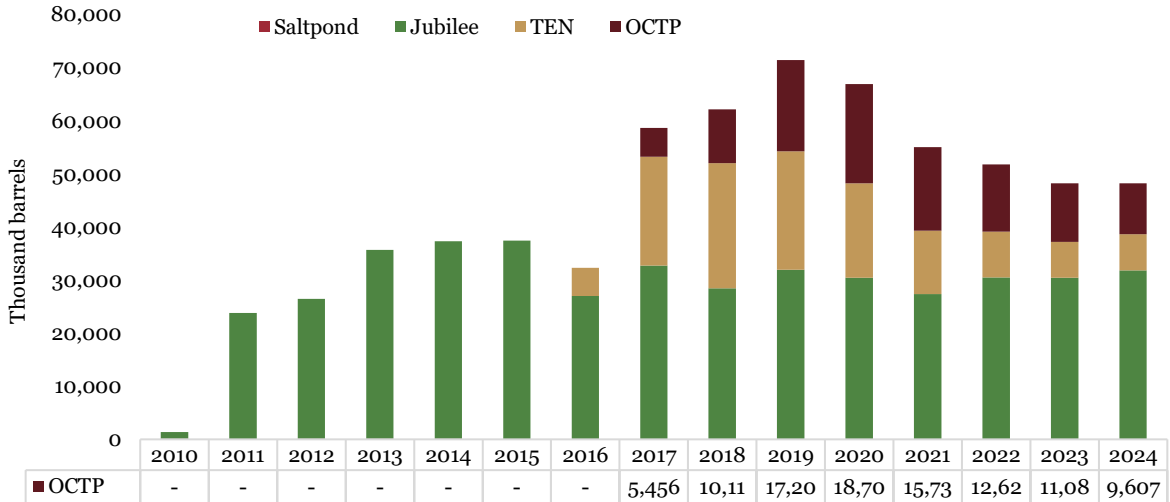
Figure 3.12: Distribution Regulatory Indices

Table 3.13: Electricity Distribution Reliability Indices

Reliability Index	Operational Area	Regulatory Benchmarks per L.I 1935	2018		2019		2020		2021		2022		2023		2024	
			ECG	NEDCo	ECG	NEDCo	ECG	NEDCo	ECG	NEDCo	ECG	NEDCo	ECG	NEDCo	ECG	NEDCo
System Average Interruption Frequency Index (SAIFI)	Metro	6.0	28.0	146.0	26.5	42.4	15.5	50.5	17.1	27.5	15.3	20.1	12.1	25.2	12.2	52.1
	Urban	6.0	57.0		45.1	59.8	26.4	33.8	27.4	24.7	21.8	19.7	18.2	24.7	17.1	40.0
	Rural	6.0	61.0		60.4	52.8	34.2	47.9	28.2	55.1	18.8	60.4	16.5	64.8	20.6	131.9
System Average Interruption Duration Index (SAIDI)	Metro	48.0	44.0	123.0	37.7	61.0	23.8	65.1	26.1	59.2	24.7	46.0	21.9	37.5	21.5	70.3
	Urban	72.0	71.0		63.4	85.2	42.9	45.1	52.2	38.7	43.7	28.4	30.7	36.9	35.7	33.5
	Rural	144.0	76.0		80.0	74.7	51.9	79.6	56.3	81.0	40.0	103.8	31.5	104.6	44.7	102.4
Customer Average Interruption Duration Index (CAIDI)	Metro	8.0	2.0	1.0	1.4	1.4	6.0	1.3	1.5	2.2	1.6	2.1	1.8	1.5	1.8	1.4
	Urban	12.0	1.0		1.4	1.4	6.5	1.3	1.9	1.6	2.0	1.6	1.7	1.5	2.1	0.8
	Rural	24	1.0		1.3	1.4	6.0	1.6	2.0	1.5	2.1	1.8	1.9	1.6	2.2	0.8

4.1 Crude Oil Production

Ghana's crude oil production has increased substantially, rising from 23.8 million barrels in 2011 to 48.2 million barrels in 2024. This represents an almost twofold increase, despite a decline of 0.015% between 2023 and 2024. The contribution of Jubilee, TEN, and OCTP fields has been instrumental in this growth since 2010, as illustrated in Figure 4.1.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
OCTP	-	-	-	-	-	-	-	5,456	10,11	17,20	18,70	15,73	12,62	11,08	9,607
TEN	-	-	-	-	-	-	5,316	20,45	23,55	22,31	17,80	11,97	8,613	6,716	6,784
Jubilee	1,268	23,75	26,35	35,58	37,20	37,41	26,98	32,75	28,46	31,91	30,42	27,33	30,52	30,44	31,84
Saltpond	98	76	105	98	97	47	-	-	-	-	-	-	-	-	-

Figure 4.1: Trend in Crude Oil Production
Source: Petroleum Commission & Ghana National Petroleum Corporation

4.2 Crude Oil Import and Export

Table 4.1 presents data on Ghana's crude oil imports and exports from the year 2000 to 2024. Crude oil imports, primarily for refinery use and electricity generation, exhibited significant fluctuations over the period. Total imports peaked at 14.4 million barrels in 2007 before declining to 2.1 million barrels in 2024, reflecting a 1.5-fold decrease compared to 2023 (Table 4.1).

Meanwhile, crude oil exports, which commenced in 2002, experienced remarkable growth, with an average annual growth rate (AAGR) of 31.9%. Exports surged from 0.06 million barrels in 2002 to 47.49 million barrels in 2024, although export volumes in 2024 saw a marginal decline of 0.8% compared to 2023, particularly following the onset of commercial production in 2011.

Table 4.1: Crude Oil Import and Export

Year	Imports (000' bbls)			Exports (000' bbls)
	Refinery use	Electricity Generation	Total Import	
2000	7,923	1,072	8,994	-
2001	8,840	1,931	10,772	-
2002	8,256	4,212	12,467	62
2003	9,843	3,693	13,537	72
2004	12,695	1,144	13,838	160
2005	11,519	2,254	13,772	82
2006	6,735	5,254	11,990	160
2007	8,698	5,679	14,376	189
2008	9,777	4,054	13,831	214
2009	3,090	3,787	6,877	173
2010	6,728	4,910	11,638	98
2011	8,919	1,802	10,721	24,450
2012	3,541	4,926	8,467	26,431
2013	2,621	6,495	9,116	35,194
2014	491	4,362	4,852	37,703
2015	433	1,741	2,173	36,460
2016	6,920	3,199	10,119	29,904
2017	965	1,728	2,693	56,990
2018	984	395	1,379	62,020
2019	4,906	904	5,810	70,985
2020	4,671	400	5,071	67,458
2021	1,136	-	1,136	55,416
2022	226	-	226	52,237
2023	2,667	446	3,114	47,871
2024	1,675	420	2,095	47,488

Source: NPA & Petroleum Commission

Figure 4.2 shows the crude oil import and export trend from 2000 to 2024.

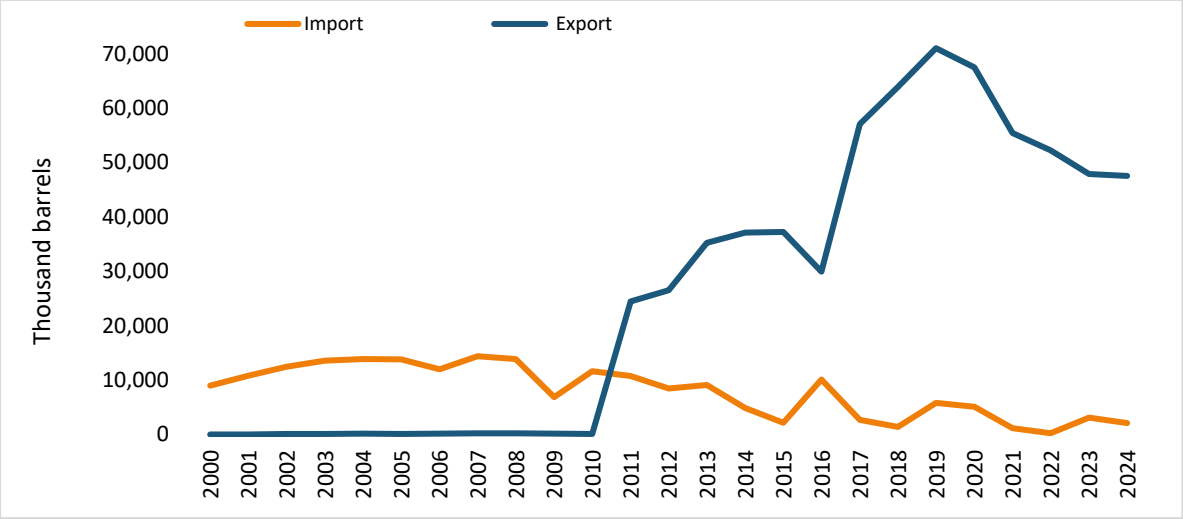
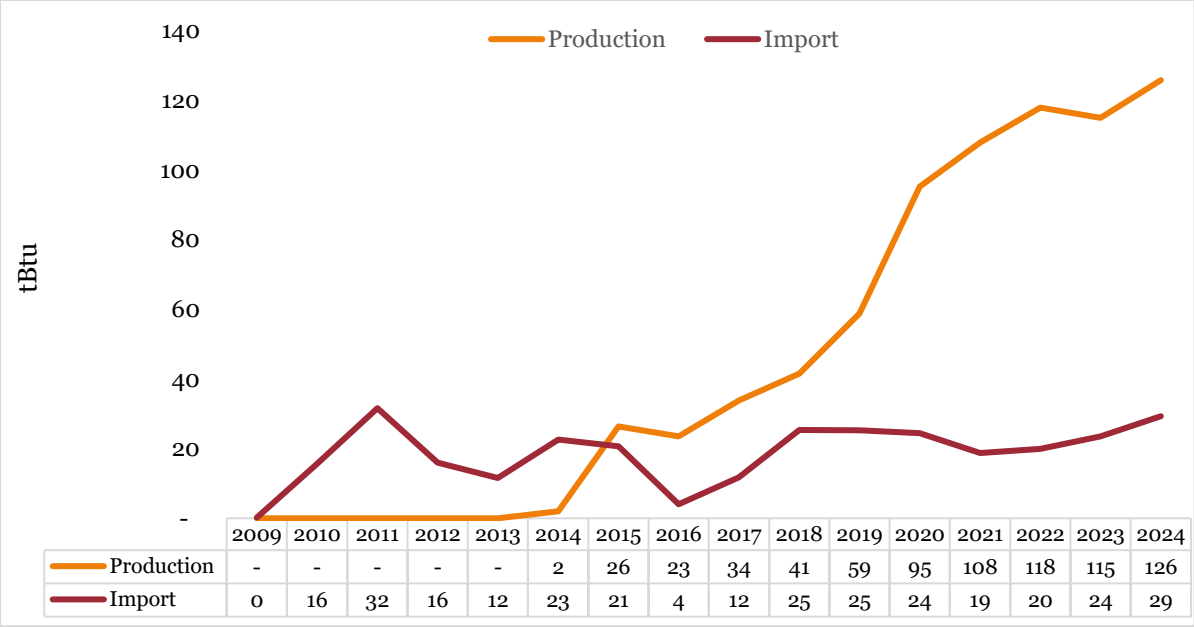


Figure 4.2: Trend in Crude Oil Import and Export

4.3 Natural Gas Production and Import

Ghana's natural gas production[11] showed significant growth in recent years, increasing from 2.0 tBtu in 2014 to 126 tBtu in 2024, representing an average annual growth rate of 51.3% over the period (Figure 4.3). However, production experienced a slight annual decline of 2.5% in 2023, followed by a recovery with a 9.6% annual increase in 2024.

To supplement domestic production, the total gas imports[12] from Nigeria through the West African Gas Pipeline (WAGP), have experienced occasional fluctuations, peaking at 25 tBtu in 2018 and 2019 before stabilizing around 20-29 tBtu in recent years, with a 26% increase from 23 tBtu in 2014 to 29 tBtu in 2024 (Figure 4.3).



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Production	-	-	-	-	-	2	26	23	34	41	59	95	108	118	115	126
Import	0	16	32	16	12	23	21	4	12	25	25	24	19	20	24	29

Figure 4.3: Trend in Natural Gas Production and Import

Source: GNGC & VRA

4.4 Petroleum Products Production

Ghana's domestic petroleum products production rose from 266 kt in 2023 to 449 kt in 2024, a 69% year-on-year increase, driven primarily by production from the Sentuo Oil Refinery Limited. This growth was reflected in higher yields or production volumes of LPG, gasoline, and gasoil. However, total production remains significantly lower than 2000 levels, declining by 3.4% from 1,028 kt to 449 kt in 2024.

[11] Natural gas production refers to the lean gas production from GNGC and OCTP
[12] Natural gas delivered through WAGP

Table 4.2: Production of Petroleum Products (kt)

Year	LPG	Gasoline	Kerosene	ATK	Gas Oil	RFO	Naphtha	Total
2000	10	239	52	108	358	262	-	1,028
2001	7	286	98	64	353	261	-	1,070
2002	24	346	61	82	447	196	-	1,155
2003	53	434	110	86	507	164	-	1,352
2004	66	553	111	107	568	199	-	1,604
2005	75	567	88	119	486	205	-	1,541
2006	36	294	65	46	294	156	-	891
2007	67	493	122	66	398	49	-	1,195
2008	55	391	169	21	361	225	-	1,222
2009	14	135	49	1	103	25	-	327
2010	32	338	71	117	293	97	-	946
2011	45	344	53	116	310	91	-	958
2012	27	158	21	48	122	79	-	454
2013	26	167	15	60	113	43	-	424
2014	3	40	4.5	9	28	44	-	129
2015	2	32	0.2	18	28	9	-	89
2016	114	244	24.5	38	255	64	-	739
2017	114	6.5	2.0	0.1	8.8	4.4	-	136
2018	88	102	33	22	114	32	0.8	391
2019	70	125	12	80	198	205	6.2	696
2020	85	66	35	28	150	216	1.6	582
2021	95	43	24	0.7	71	147	1.5	383
2022	116	-	-	-	14	27	1.0	158
2023	103	23	-	-	73	65	2.1	266
2024	119	128	-	-	165	36	0.38	449

Source: TOR, GNGC & NPA

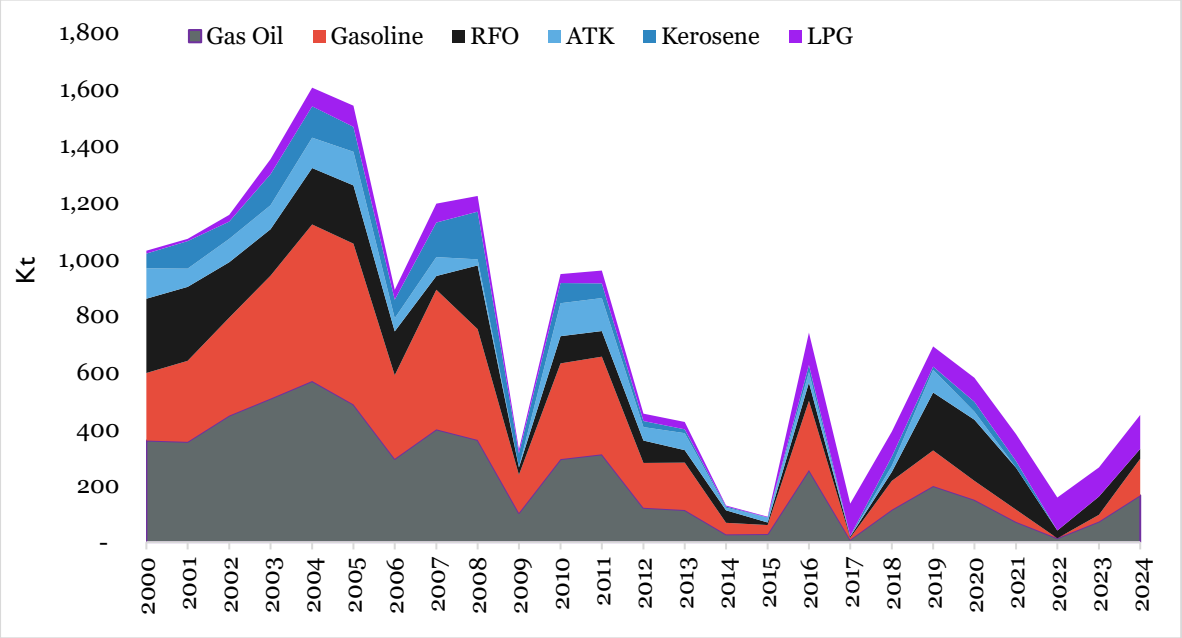


Figure 4.4: Trend in Production of Petroleum Products

4.5 Petroleum Products Import

Ghana's petroleum products imports increased significantly from 816 kt in 2000 to 4,872 kt in 2024, representing a fivefold increase and an average annual growth rate (AAGR) of 7.7%.

Gasoline (petrol) and gas oil (diesel) imports increased at AAGRs of 7% and 8.2%, respectively, reaching 1,981 kt and 2,399 kt by 2024 (Table 4.3). Liquefied Petroleum Gas (LPG) imports also grew substantially, increasing nearly sixfold from 35 kt in 2000 to 232 kt in 2024, with an AAGR of 8.2%.

Additionally, Aviation Turbine Kerosene (ATK) also became a significant contributor to Ghana's petroleum imports, reaching 219 kt in 2024.

Table 4.3: Petroleum Products Import (kt)

Year	LPG	Gasoline	Kerosene	ATK	Gas Oil	DPK	Fuel Oil	Total
2000	35	387	30	-	363	-	-	816
2001	36	389	22	-	354	-	-	801
2002	32	371	49	-	298	-	-	750
2003	17	232	35	-	286	-	-	569
2004	11	255	-	-	313	-	-	579
2005	7	167	-	-	404	-	-	578
2006	68	360	100	79	780	-	-	1,387
2007	47	275	67	43	807	-	-	1,238
2008	68	255	136	156	579	-	-	1,194
2009	151	563	78	84	970	-	-	1,845
2010	148	570	-	-	872	-	-	1,590
2011	178	713	-	-	1,201	18	-	2,109
2012	242	812	-	96	1,309	115	-	2,573
2013	204	1,017	-	41	1,639	-	44	2,946
2014	236	1,254	-	112	1,742	-	49	3,394
2015	198	1,182	-	109	2,161	-	-	3,650
2016	178	1,236	-	113	1,720	-	386	3,632
2017	202	1,304	-	181	1,781	-	608	4,076
2018	315	1,324	-	184	1,753	-	649	4,224
2019	275	1,265	-	181	1,733	-	366	3,821
2020	262	1,682	-	80	1,947	-	63	4,033
2021	221	1,717	-	203	1,864	-	85	4,090
2022	221	1,564	-	209	2,055	-	26	4,075
2023	242	1,800	-	196	2,227	-	22	4,487
2024	232	1,981	-	219	2,399	-	42	4,872

Source: National Petroleum Authority

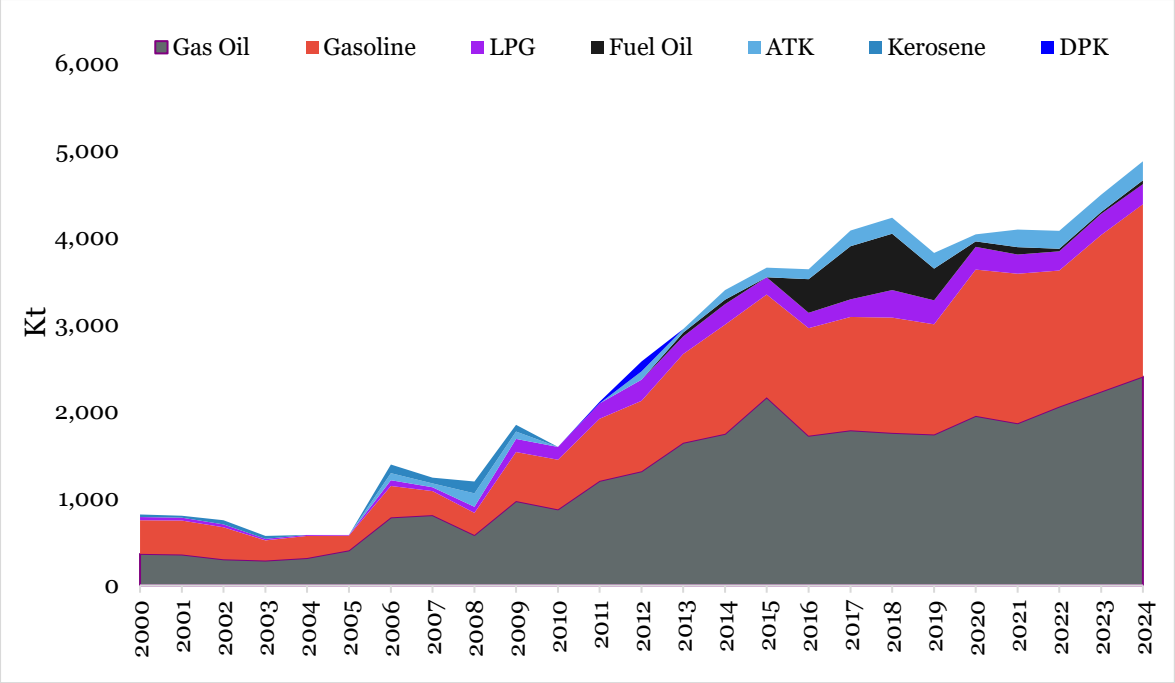


Figure 4.5: Trend in Petroleum Product Import

4.6 Petroleum Products Export

Table 4.4 provides an overview of Ghana's petroleum products exports from 2000 to 2024, highlighting significant fluctuations over the period. Total export volumes declined from 440 kilotons (kt) in 2000 to 192 kt in 2023, reflecting a substantial reduction. However, a notable recovery was observed in 2024, with total exports increasing to 526 kt, marking a 174% rise compared to 2023. Among the products, Gas Oil demonstrated the most significant growth, increasing by sixfold from 51 kt in 2000 to a peak of 382 kt in 2009, before declining to 22 kt in 2024. In contrast, Fuel Oil and Gasolines experienced sharp declines. Fuel Oil exports dropped from 191 kt in 2000 to 75 kt in 2021, with no exports recorded in 2022, 2023, or 2024. Similarly, Gasolines decreased from 97 kt in 2000 to 3 kt in 2022, with no exports in 2023, before rebounding to 313 kt in 2024. Aviation Turbine Kerosene (ATK) remained relatively stable, growing at an average annual rate of 2.9%, from 95 kt in 2000 to 187 kt in 2024.

Table 4.4: Petroleum Products Export (kt)

Year	LPG	Gas Oil[1]	Fuel Oil	ATK[2]	Gasolines	Total
2000	6	51	191	95	97	440
2001	1	35	216	75	127	453
2002	4	36	152	88	129	410
2003	11	46	89	84	104	335
2004	6	61	169	99	151	486
2005	13	38	163	110	204	526
2006	10	66	46	105	113	341
2007	10	53	26	114	164	366
2008	5	88	148	107	78	427
2009	1	382	30	111	41	566
2010	-	291	41	97	104	532
2011	-	357	44	136	155	691
2012	-	81	45	125	54	305
2013	-	52	4	116	36	207
2014	-	11	-	100	10	121
2015	18	13	3	92	90	215
2016	25	169	68	123	273	658
2017	40	284	18	146	191	679
2018	5	37	41	177	67	327
2019	1	20	91	205	108	425
2020	3	10	173	113	5	305
2021	0.04	10	75	188	18	292
2022	0.35	7	-	194	3	204
2023	2	7	-	183	-	192
2024	3	22	-	187	313	526

[1]Include sales to international marine bunkers
[2]Include sales to international aviation bunkers
Source: NPA, GCAA and JUHI Ghana

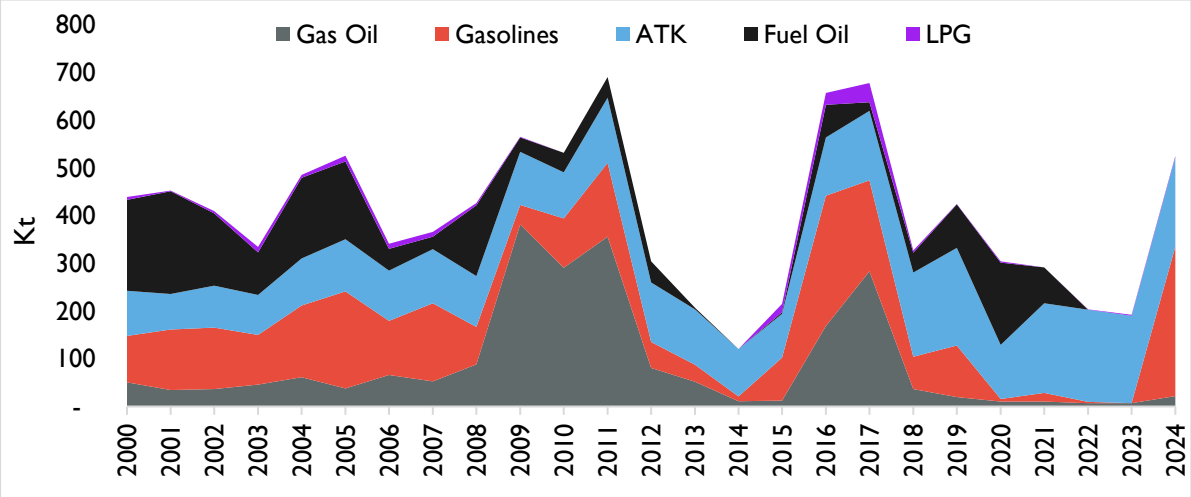


Figure 4.6: Trend in the Export of Petroleum Products

4.7 Final Consumption of Petroleum Products by Fuel

Petroleum products consumption[13] by fuel and sector are presented in Tables 4.5 and 4.6, respectively. Ghana's final consumption of petroleum consumption grew at an average annual rate of 5.6%, rising from 1,445 Ktoe in 2000 to 5,319 Ktoe in 2024. Gasoline/premix and gas oil grew at 5.4% and 5.5%, respectively, while LPG increased at an average annual rate of 8.8%. Meanwhile, kerosene/ATK and RFO declined, respectively, as natural gas increased with an average annual growth of 67.2% since 2016.

Table 4.5: Petroleum Products Consumption by Fuels (Ktoe)

Year	LPG	Gasoline	Premix	Kerosene	ATK	Gas Oil	RFO	Natural Gas	Naphtha	Total
2000	49	554	33	70	2	679	59	-	-	1,445
2001	46	565	29	73	2	699	54	-	-	1,467
2002	54	602	29	77	2	732	53	-	-	1,550
2003	61	507	31	71	6	770	47	-	-	1,494
2004	71	608	30	75	9	866	47	-	-	1,705
2005	76	568	34	77	10	898	49	-	-	1,712
2006	95	541	36	79	10	956	59	-	-	1,775
2007	101	575	44	65	12	1,174	53	-	-	2,023
2008	127	576	55	36	13	1,118	49	-	-	1,973
2009	238	741	59	92	14	1,311	41	-	-	2,496
2010	193	780	35	51	12	1,306	32	-	-	2,408
2011	232	847	48	64	17	1,459	36	-	-	2,704
2012	290	1,042	62	47	17	1,698	32	-	-	3,189
2013	272	1,135	61	29	16	1,757	38	-	-	3,308
2014	261	1,157	59	10	15	1,715	26	-	-	3,243
2015	301	1,220	50	3.9	19	1,890	13	-	-	3,497
2016	304	1,123	59	8.3	9	1,736	13	5	-	3,255
2017	299	1,126	72	5.8	15	1,527	10	49	-	3,104
2018	311	1,318	58	5.1	12	1,773	35	68	1.43	3,582
2019	324	1,413	57	3.9	18	1,859	40	78	5.25	3,798
2020	359	1,603	81	5.1	10	2,017	47	125	1.84	4,250
2021	373	1,797	83	4.7	13	2,130	77	163	1.16	4,641
2022	329	1,675	31	4.1	19	1,993	51	214	1.07	4,318
2023	343	1,786	27	2.7	16	2,101	68	247	0.37	4,590
2024	368	2,066	31	1.8	15	2478	54	306	0.15	5,319

[13] Demand for petroleum products is assumed to be equivalent to petroleum products consumption

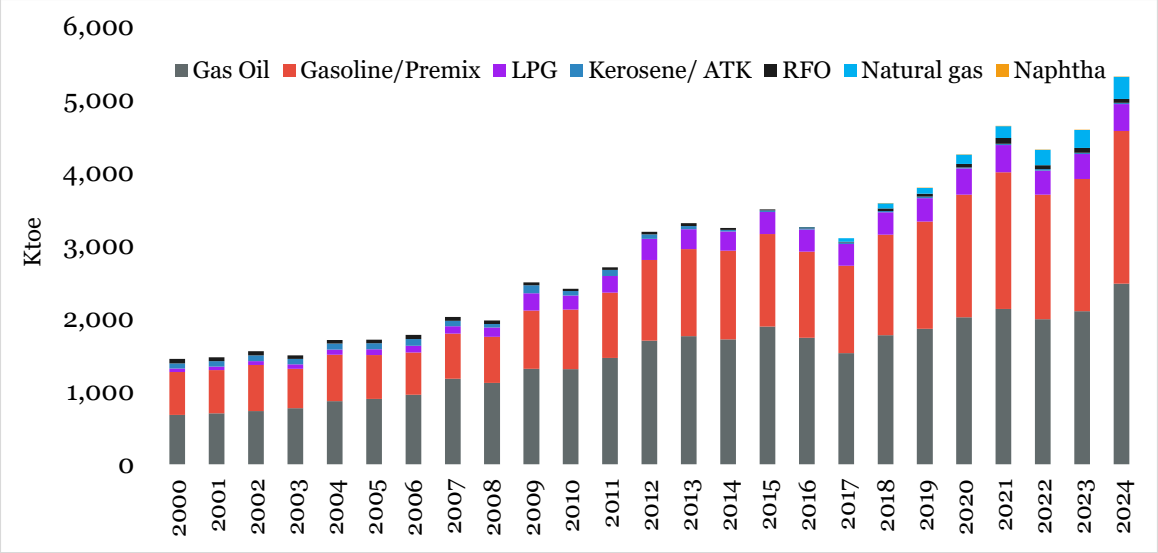


Figure 4.7: Final Energy Consumption of Petroleum Products by Fuel

4.8 Final Consumption of Petroleum Products by Sector

Total petroleum product consumption has grown significantly, with a compound annual growth rate (CAGR) of 5.6%, increasing from 1,445 Ktoe in 2000 to 5,319 Ktoe in 2024. This growth has been driven primarily by the transport and industrial sectors.

The transport sector remained the largest consumer, accounting for 78% of total consumption in 2024, compared to 82% in 2000. Similarly, the industrial sector experienced substantial growth, increasing its share from 9% in 2000 to 16% in 2024.

Residential sector consumption grew steadily from 88 Ktoe in 2000 to 175 Ktoe in 2024, though its share of total consumption remained relatively stable at 3-4%. The service sector increased from 5 Ktoe in 2000 to 24 Ktoe in 2024, while agriculture rose from 33 Ktoe to 104 Ktoe over the same period. Together, these sectors accounted for less than 5% of total consumption.

Table 4.8 presents the consumption of petroleum products by sector from 2000 to 2024.

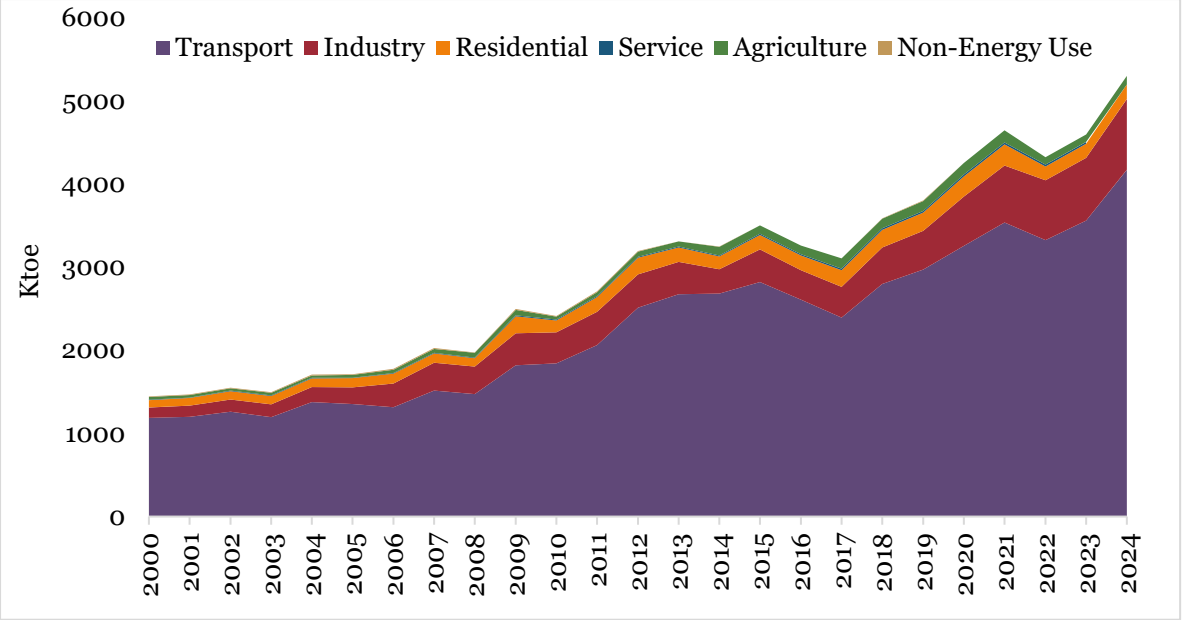


Figure 4.8: Final Energy Consumption of Petroleum Products by Sector

Table 4.6: Petroleum Product Consumption by Sector (Ktoe)

Year	Residential	Industry	Service	Agriculture	Transport	Non-Energy Use	Total
2000	88	125	5	33	1,186	7	1,445
2001	90	135	5	29	1,200	8	1,467
2002	100	146	6	29	1,261	9	1,550
2003	100	153	7	31	1,195	8	1,494
2004	106	179	5	30	1,375	9	1,705
2005	112	199	6	34	1,351	10	1,712
2006	121	284	7	40	1,314	10	1,775
2007	110	334	8	48	1,515	9	2,023
2008	99	332	7	59	1,472	5	1,973
2009	204	383	13	65	1,819	13	2,496
2010	144	372	8	35	1,842	7	2,408
2011	176	398	11	48	2,061	10	2,704
2012	198	401	12	62	2,510	5.5	3,189
2013	173	385	12	61	2,673	3.7	3,308
2014	153	292	11	106	2,679	1.1	3,243
2015	172	392	13	100	2,819	0	3,497
2016	179	352	14	104	2,606	0	3,255
2017	202	370	18	125	2,389	0	3,104
2018	210	440	19	118	2,793	1.4	3,582
2019	218	466	20	122	2,967	5.2	3,798
2020	243	592	23	137	3,252	1.8	4,250
2021	252	685	25	144	3,534	1.2	4,641
2022	165	720	21	89	3,322	1.1	4,318
2023	167	755	22	89	3,557	0.4	4,590
2024	175	849	24	104	4,166	0.1	5,319

SECTION 5: BIOMASS

5.1 Woodfuel Production

The total wood supply in Ghana decreased from 4,410 Ktoe in 2000 to 4,026 Ktoe in 2024, reflecting an average annual decrease of 0.4% (Table 5.1).

Wood for charcoal production showed a consistent upward trend, rising from 1,614 Ktoe in 2000 to a peak of 3,323 Ktoe in 2017. However, production declined slightly by 4%, reaching 2,577 Ktoe in 2024.

In contrast, firewood production declined by 6.6% from 2,741 Ktoe in 2000 to 1,386 Ktoe in 2010, followed by a rebound to 1,830 Ktoe in 2020. Notably, firewood production experienced a 4.5% annual decline in 2023 compared to 2022 but further declined by 2.1% to 1,419 Ktoe in 2024.

Table 5.1: Biomass Production (Ktoe)

Year	Wood for Charcoal	Firewood	Other	Total Wood Supply
2000	1,614	2,741	55	4,410
2001	1,646	2,539	51	4,236
2002	1,737	2,351	47	4,135
2003	1,789	2,177	44	4,009
2004	1,984	2,017	40	4,041
2005	2,120	1,873	37	4,030
2006	2,269	1,742	35	4,047
2007	2,346	1,657	33	4,036
2008	2,361	1,583	31	3,975
2009	2,411	1,533	30	3,975
2010	2,488	1,386	30	3,903
2011	2,474	1,414	31	3,918
2012	2,593	1,514	30	4,137
2013	2,774	1,681	30	4,485
2014	2,905	1,679	30	4,614
2015	3,039	1,669	30	4,738
2016	3,174	1,665	29	4,868
2017	3,323	1,714	29	5,066
2018	3,221	1,766	28	5,015
2019	3,090	1,823	29	4,942
2020	2,963	1,830	29	4,822
2021	2,665	1,582	29	4,275
2022	2,525	1,519	29	4,073
2023	2,564	1,450	29	4,043
2024	2,577	1,419	29	4,026

NB: 2007-2009 figures extrapolated from 2003 field survey data; 2011-2022 figures extrapolated from 2010 field survey data and include sawdust, sawmill residue, etc.

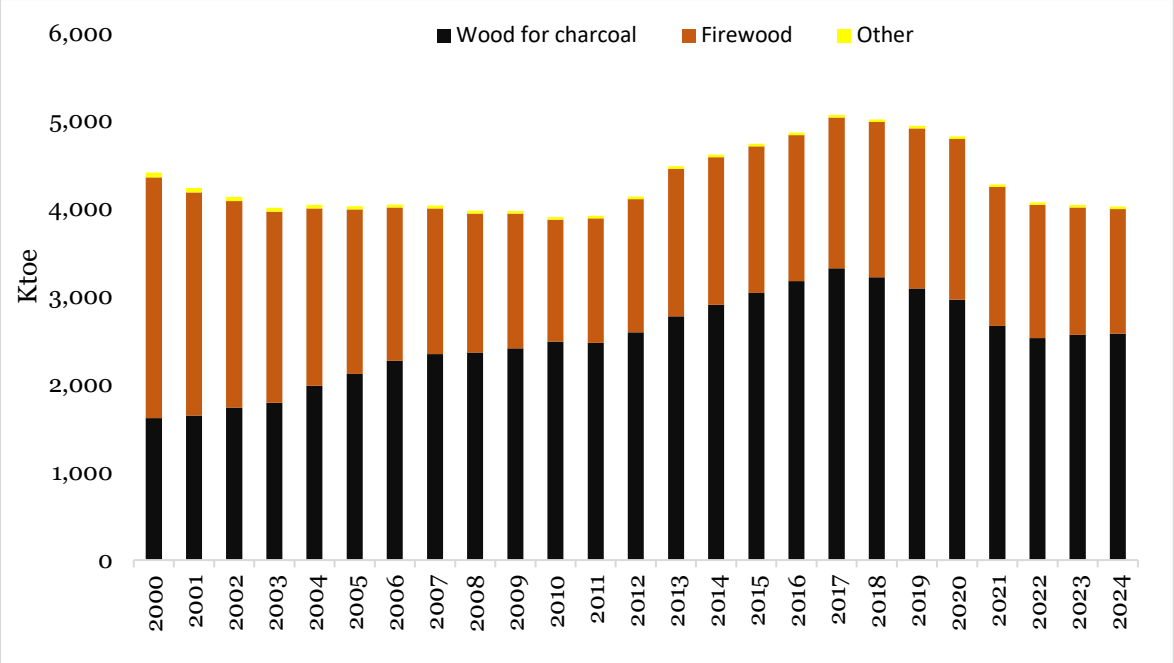


Figure 5.1: Trend in Biomass Production

5.2 Charcoal Import and Export

Ghana's imports and exports of charcoal from 2000-2024 are presented in Table 5.2. Charcoal imports increased from 0.003 ktoe (4.2 tonnes) in 2010 to 0.063 ktoe (80.2 tonnes) in 2023. No charcoal imports were recorded in 2024. On the other hand, charcoal exports declined significantly over the period, from 2.3 ktoe in 2000 to 0.5 ktoe in 2024.

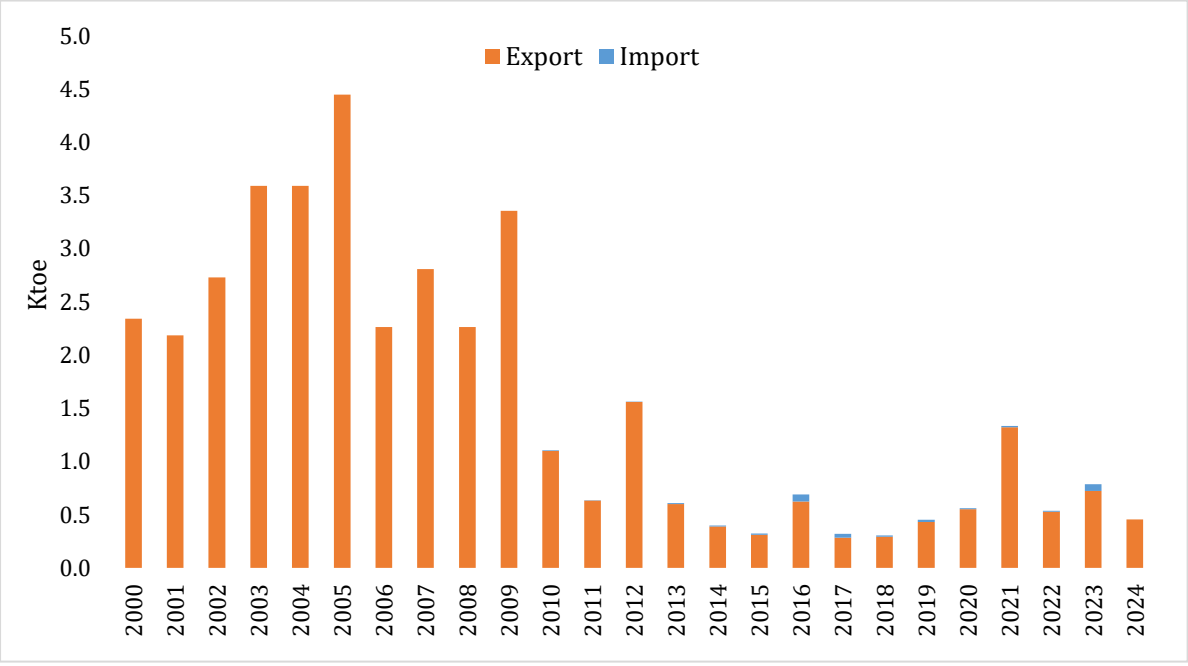


Figure 5.2: Trend in Charcoal Import and Export

Table 5.2: Charcoal Import and Export (ktoe)

Years	Import	Export
2000	-	2.3
2001	-	2.2
2002	-	2.7
2003	-	3.6
2004	-	3.6
2005	-	4.4
2006	-	2.3
2007	-	2.8
2008	-	2.3
2009	-	3.4
2010	0.003	1.1
2011	0.00	0.6
2012	0.00	1.6
2013	0.01	0.6
2014	0.01	0.4
2015	0.01	0.3
2016	0.06	0.6
2017	0.03	0.3
2018	0.01	0.3
2019	0.02	0.4
2020	0.01	0.6
2021	0.01	1.3
2022	0.01	0.5
2023	0.06	0.7
2024	-	0.5

Source: Energy Commission

5.3 Woodfuel Consumption

The total woodfuel consumption declined from 3,432 Ktoe in 2000 to 2,464 Ktoe in 2024, reflecting an average annual decline rate of 1.4%. This reduction was primarily driven by a decrease in residential charcoal consumption (Table 5.3). The residential sector remained the dominant consumer of woodfuel, accounting for the largest share of total usage, although consumption in this sector fell from 3,127 Ktoe in 2000 to 2,041 Ktoe in 2024. The service sector showed modest fluctuations, while industrial consumption varied significantly, reaching a high of 325 Ktoe in 2024.

Table 5.3: Biomass Consumption by Sector (Ktoe)

Year	Residential	Service	Industry	Total
2000	3,127	75	230	3,432
2001	2,941	75	222	3,238
2002	2,792	77	214	3,082
2003	2,642	77	206	2,925
2004	2,560	80	199	2,839
2005	2,470	83	192	2,745
2006	2,282	122	267	2,671
2007	2,245	123	245	2,614
2008	2,207	100	238	2,544
2009	2,166	95	252	2,513
2010	2,125	96	174	2,395
2011	2,244	59	116	2,419
2012	2,360	73	133	2,566
2013	2,473	107	224	2,804
2014	2,508	113	232	2,853
2015	2,544	120	233	2,896
2016	2,580	126	238	2,945
2017	2,617	147	288	3,053
2018	2,622	130	311	3,063
2019	2,622	117	331	3,069
2020	2,614	95	318	3,026
2021	2,301	87	272	2,660
2022	2,191	84	268	2,543
2023	2,143	84	261	2,489
2024	2,041	98	325	2,464

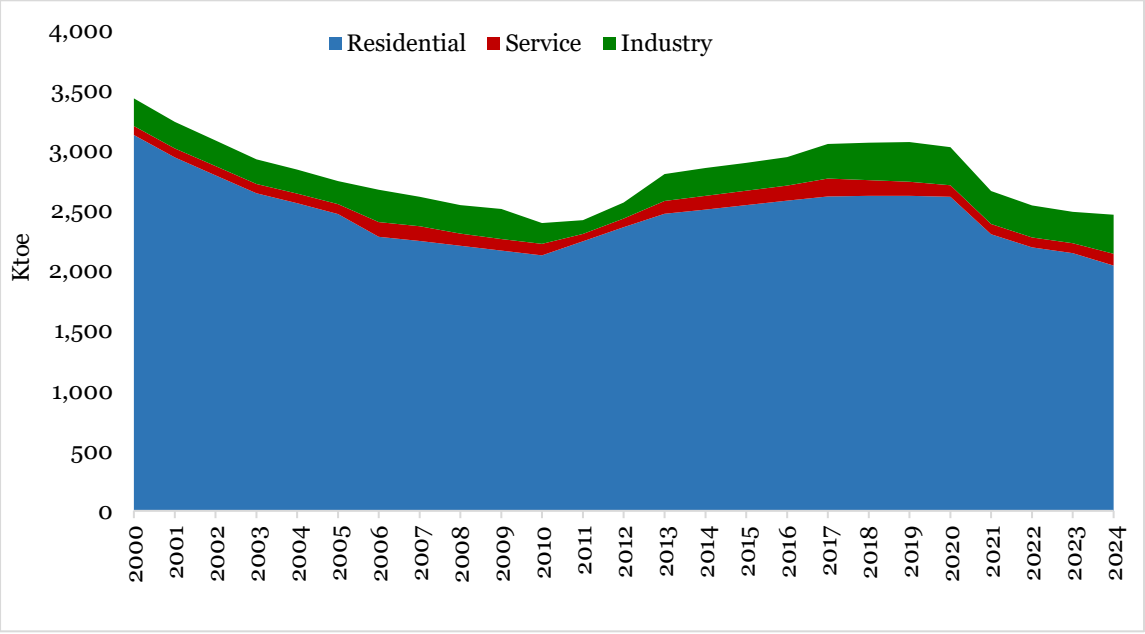


Figure 5.3: Trend in Biomass Consumption by Sector

SECTION 6: ENERGY BALANCES AND INDICATORS

6.1 Energy Balance

The country's energy balance for 2024 and 2023 is presented in Tables 6.1 and 6.2 respectively. The energy balance shows the summary of all flows of energy products in the country in a specified period, usually one year. It is presented in a common unit ktoe and with products aggregated by category: oil, natural gas, petroleum products, wood, charcoal, solar, hydro, and electricity, displaying their flows from supply to final consumption.

6.2 Energy Indicators

Energy indicators are energy use/supply characteristics with specific, observable and measurable attributes. They are developed to describe the link between energy use/supply and human activities. They, therefore, support policy formulation and implementation efforts. They also help to define potential targets and assess comparative analysis among countries. There are various indicators relating to energy, and its resultant emission. Some are energy intensity, energy use per capita and grid emission factor. Table 6.3 presents an overview of energy-related and macroeconomic indicators.

6.2.1 Sustainable Development Goal 7 (SDG7) Indicators

The Sustainable Development Goals (SDGs) aim to foster economic growth, ensure social inclusion and protect the environment. Sustainable Development Goal indicators include statistical indicators on Social, Economic and Environmental dimensions. While the importance of these various indicators is recognised, this section focuses on indicators relating to SDGs. SDG 7, specifically, dedicated to energy, is to ensure access to affordable, reliable, sustainable and modern energy for all by 2030. Table 6.4 presents the country's progress in achieving SDG 7.

Table 6.1: Energy Balance, 2024 (ktoe)

Supply and Consumption	Crude Oil	Natural Gas	Petroleum Products	Wood	Charcoal	Solar	Hydro	Electricity	Total
Production	6,814	3,168	-	4,062	-	16	851	-	14,874
Imports	291	738	5,043	-	-	-	-	4.9	6,077
Exports	-6,608	-	-341	-	-0.5	-	-	-182	-7,132
International Marine Bunkers	-	-	-13	-	-	-	-	-	-13.4
International Aviation Bunkers	-	-	-193	-	-	-	-	-	-193
Stock changes	-49	-	0.0	-	-	-	-	-	-49
TES	**448**	**3,906**	**4,495**	**4,062**	**-0.5**	**16**	**851**	**-177**	**13,564**
Transfers	-101	-	108	-	-	-	-	-	7.1
Statistical differences	40.1	25	287	0.12	0.07	-	-	-	-301
Transformation (Electricity plants)	-19.8	-3,575	-34	-	-	-16	-851	2,197	-2,298
Transformation (Oil refineries)	-367	-	363.7	-	-	-	-	-	-3.4
Other transformation	-	-	-	-2,577	1,016	-	-	-	-1,562
Energy industry own use	-	-	207	-	-	-	-	28	235
Losses	-	-	-	-	-	-	-	255	255
TFC	**-**	**306**	**5,013**	**1,448**	**1,015**	**-**	**-**	**1,737**	**9,519**
Residential	-	-	175	1,097	944	-	-	737	2,953
Industry	-	306	544	322	2.62	-	-	702	1,876
Commerce & Service	-	-	24	29	69	-	-	293	415
Agriculture & Fisheries	-	-	104	-	-	-	-	4.2	108
Transport	-	-	4,166	-	-	-	-	1.1	4,168
Non-Energy Use	-	-	0.15	-	-	-	-	-	0.15

Table 6.2: Energy Balance, 2023 (ktoe)*

Supply and Consumption	Crude Oil	Natural Gas	Petroleum Products	Wood	Charcoal	Solar	Hydro	Electricity	Total
Production	6,818	2,895	-	4,043	-	13	790	-	14,558
Imports	433	593	4,646	-	0.06	-	-	6.8	5,679
Exports	-6,661	-	-7	-	-0.7	-	-	-217	-6,886
International Marine Bunkers	-	-	-4	-	-	-	-	-	-3.6
International Aviation Bunkers	-	-	-188	-	-	-	-	-	-188
Stock changes	-223.37	-	-173.0	-	-	-	-	-	-396
TES	**367**	**3,487**	**4,275**	**4,043**	**-0.7**	**13**	**790**	**-211**	**12,763**
Transfers	-105	-	112	-	-	-	-	-	7.3
Statistical differences	25.5	13	56	-	0.06	-	-	-	95
Transformation (Electricity plants)	-64.55	-3,228	-56	-	-	-13	-790	2,086	-2,065
Transformation (Oil refineries)	-172	-	168.0	-	-	-	-	-	-4.1
Other transformation	-	-	-	-2,564	1,011	-	-	-	-1,553
Energy industry own use	-	-	100	-	-	-	-	20	120
Losses	-	-	-	-	-	-	-	235	235
TFC	**-**	**247**	**4,343**	**1,479**	**1,010**	**-**	**-**	**1,621**	**8,700**
Residential	-	-	167	1,199	944	-	-	643	2,954
Industry	-	247	508	261	0.38	-	-	709	1,726
Commerce & Service	-	-	22	19	65	-	-	264	370
Agriculture & Fisheries	-	-	89	-	-	-	-	3.4	92
Transport	-	-	3,557	-	-	-	-	1.0	3,558
Non-Energy Use	-	-	0.37	-	-	-	-	-	0.37

*** Revised**

Table 6.3: Energy Indicators

Indicator	Unit	2000	2010	2015	2017	2018	2019	2020	2021	2022	2023	2024
Population	million	18.91	24.66	27.67	28.96	29.61	30.28	30.82	30.83	31.55	32.28	33.01
GDP (current US$)[1]	million US$	4,983	32,197	48,595	60,327	67,299	68,338	70,029	79,524	74,266	76,363	80,716
GDP, PPP (constant 2021 international $)[1]	million $	65,340	114,528	160,909	179,859	191,010	203,441	204,486	214,867	223,070	229,639	233,849
Total Energy Supply	ktoe	6,666	7,855	10,260	10,761	11,488	12,072	12,773	12,591	12,416	12,975	13,741
Total Final Energy Consumed	ktoe	5,467	5,471	7,222	7,214	7,811	8,119	8,646	8,803	8,423	8,700	9,519
Total Electricity Generated	GWh	7,224	10,166	11,490	14,069	16,246	18,197	20,165	22,060	23,172	24,264	25,550
Total Electricity Consumed	GWh	6,869	7,760	9,640	12,304	13,558	14,562	15,936	17,465	18,172	18,849	20,196
Total Petroleum Products Consumed	ktoe	1,445	2,408	3,497	3,104	3,582	3,798	4,250	4,641	4,318	4,590	5,319
Total Biomass Consumed	ktoe	3,432	2,395	2,896	3,053	3,063	3,069	3,026	2,660	2,543	2,489	2,464
Energy Intensity (TES/GDP current million US$)	toe/million US$	1,338	244	211	178	171	177	182	158	167	170	170
Energy Intensity in PPP (TES/ GDP in PPP)	toe/million $	102.02	68.59	63.76	59.83	60.14	59.34	62.46	58.60	55.66	56.50	58.76
Energy Intensity in PPP (FEC/ GDP in PPP)	toe/million $	83.68	47.77	44.88	40.11	40.89	39.91	42.28	40.97	37.76	37.88	40.71
Total Primary Energy Supply/capita	toe/capita	0.35	0.32	0.37	0.37	0.39	0.40	0.41	0.41	0.39	0.40	0.42
Energy use per capita (TFC/persons)	toe/capita	0.29	0.22	0.26	0.25	0.26	0.27	0.28	0.29	0.27	0.27	0.29
Total Electricity Generated/capita	kWh/capita	382	412	415	486	549	601	654	715	734	752	774
Total Electricity Consumed/capita	kWh/capita	363	315	348	425	458	481	517	566	576	584	612
Total Petroleum Products Consumed/capita	toe/capita	0.08	0.10	0.13	0.11	0.12	0.13	0.14	0.15	0.14	0.14	0.16
Total Biomass Consumed/capita	toe/capita	0.18	0.10	0.10	0.11	0.10	0.10	0.10	0.09	0.08	0.08	0.07
Total Electricity Consumed/GDP	kWh/US$ 1,000 of GDP	1,378	241	198	204	201	213	228	220	245	247	250
Total Energy Supply/GDP	toe/US$ 1,000 of GDP	1,338	244	211	178	171	177	182	158	167	170	170
Total Petroleum Products Consumed/GDP	toe/US$ 1,000 of GDP	290	75	72	51	53	56	61	58	58	60	66
Grid Emission Factor (wind/solar projects) *	tCO2/MWh		0.38	0.30	0.55	0.41	0.38	0.33	0.37	0.33	0.32	0.32
Grid Emission Factor (all other projects) *	tCO2/MWh		0.53	0.33	0.55	0.49	0.44	0.38	0.43	0.37	0.37	0.35

NB: * The figures have been revised. Grid emission factor is the amount of CO2 emitted per unit of electricity generated and supplied into the national electricity grid. In simple terms, its measures the carbon intensity of the national electricity grid. Project activities displacing electricity from the grid can use this emission factor to estimate the CO2 emissions impacts of the project.

Table 6.4: Sustainable Development Goals (SDG7) Indicators

Target	Indicator	Indicator Definition	Disaggregation	Unit	2010	2015	2017	2018	2019	2020	2021	2022	2023	2024
7.1 Ensure universal access to affordable, reliable and modern energy services.	7.1.1 Proportion of the population with access to electricity	Proportion of population with access to electricity	National	%	64.4	83.2	84.1	84.3	85	85.3	87	88.8	88.9	89.4
			Urban	%	83.9	93.6	100	100	100	100	100	100	100	100
			Rural	%	39.7	56.9	67	68.3	70.5	71.7	72.9	74.0	76.2	76.7
		Households with access to electricity	National	%	64.2	75.7	81.4	81.6	82.5	82.8	86.3	86.8	87.5	87.9
			Urban	%	83.8	90.7	92	92.2	92.6	93	95.2	95.8	96.6	97.0
			Rural	%	39.5	56.6	66.9	68.1	70.4	71.5	72.6	73.6	74.5	74.8
	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Proportion of population using Electricity as a primary source for cooking	National	%	0.54	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5
			Urban	%	0.76	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6
			Rural	%	0.27	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
		Proportion of population using LPG as primary source for cooking	National	%	18.2	23.9	24.5	24.8	25.1	25.3	36.9	40.2	44.1	47.9
			Urban	%	28.9	35.3	34.8	34.6	34.3	34.1	51.3	56.1	60.3	64.4
			Rural	%	4.8	6.8	8.7	9.9	11.3	12.8	14.8	16.5	18.7	20.5
7.2 Increase substantially the share of renewable energy in the global energy mix.	7.2.1 Renewable energy share in the total final energy consumption		National[1]	%	52.2	45.9	46.9	48.2	44.8	44.0	40.8	36.1	36.9	35.8
			National[2]	%	8.4	5.8	5.9	5.9	5.6	6.2	5.8	5.9	6.7	7.2
7.3. Double the global rate of improvement in energy efficiency.	Energy intensity measured in terms of total energy supply and GDP, PPP (constant 2021 international $)		National	TOE/ million US$	68.6	63.8	64.3	59.8	60.1	59.3	62.5	58.6	55.7	56.5
	Energy intensity measured in terms of final energy consumption and GDP, PPP (constant 2021 international $)		National	TOE/ million US$	47.8	44.9	43.2	40.1	40.9	39.9	42.3	41.0	37.8	37.9

[1]Includes woodfuel
[2]Excludes woodfuel (electricity consumed from solar, biogas and hydro only)

Sources: Ghana Statistical Service, Ministry of Energy & Energy Commission

SECTION 7: ENERGY PRICES

7.1 Crude Oil Prices

The average crude oil price in Ghana has shown a general upward trend over the years, with intermittent periods of decline, notably from 2013 to 2016 and in 2020. In 2022, the average price surged by 39.5%, rising from US$70.8 per barrel in 2021 to US$98.8 per barrel. However, this increase was followed by a decline in subsequent years, with prices averaging US$82.2 per barrel in 2023 and US$79.8 per barrel in 2024. Table 7.1 presents the monthly average crude oil prices from 2001 to 2024.

Table 7.1: Average Dated Brent Crude Oil Prices (US$/bbl)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2001	25.8	27.7	25.7	25.4	25.4	26.7	25.7	25.8	26.1	21.5	19.2	19.3	24.5
2002	20.0	20.2	24.0	26.0	25.7	24.5	25.7	26.3	28.3	27.5	24.5	27.5	25.0
2003	30.2	32.4	29.5	24.8	25.4	27.2	28.2	29.4	26.8	29.0	28.8	29.6	28.4
2004	30.6	30.3	32.7	30.0	37.1	35.5	37.7	41.7	42.8	49.4	44.6	40.6	37.8
2005	44.9	45.9	53.3	53.2	49.9	55.6	57.9	63.8	63.7	59.4	56.2	57.6	55.1
2006	63.9	61.1	63.1	70.6	71.0	69.7	74.2	73.9	63.5	60.1	60.0	62.5	66.1
2007	54.6	59.0	62.4	67.5	67.9	70.6	75.8	71.2	77.0	82.5	92.1	91.5	72.7
2008	91.9	94.5	103.0	110.4	124.6	133.5	134.8	115.2	100.8	73.6	55.1	43.3	98.4
2009	45.6	43.7	47.3	51.2	58.6	69.3	65.8	73.1	68.2	73.9	77.5	75.2	62.5
2010	76.9	74.7	79.9	85.7	77.0	75.7	75.5	77.1	78.2	83.5	86.1	92.4	80.2
2011	96.8	104.1	114.6	123.1	114.5	113.9	116.7	109.8	110.0	108.8	110.6	107.7	110.9
2012	111.6	127.0	124.6	125.9	109.4	95.9	102.8	113.2	113.0	111.5	109.5	109.2	112.8
2013	112.3	116.1	109.5	103.3	103.3	103.3	107.4	110.3	111.2	109.5	107.8	110.6	108.7
2014	107.3	108.8	107.7	108.1	109.2	112.0	108.2	103.5	98.6	88.1	79.4	62.4	99.4
2015	49.7	58.7	57.0	60.9	65.6	63.8	56.8	48.2	48.6	48.1	44.4	37.7	53.3
2016	31.9	33.4	39.8	43.3	47.6	49.9	46.6	47.2	47.2	51.4	47.1	54.9	45.0
2017	55.5	56.0	52.5	53.7	51.1	47.5	49.2	51.9	55.2	57.5	62.9	62.3	54.6
2018	69.1	65.7	66.7	71.7	77.1	75.9	75.0	73.9	79.1	80.6	66.0	57.7	71.5
2019	60.2	64.5	67.1	71.7	70.3	63.1	64.2	59.5	62.3	59.6	62.7	65.2	64.2
2020	63.7	55.5	33.7	26.6	32.1	40.8	43.2	45.0	41.9	41.4	44.0	50.2	43.2
2021	55.3	62.3	65.8	65.3	68.3	73.4	74.3	70.5	74.9	83.8	80.8	74.8	70.8
2022	85.5	94.3	112.5	105.8	111.6	117.2	105.1	97.7	90.6	93.6	90.4	81.3	98.8
2023	83.9	83.9	79.7	82.7	75.7	75.0	80.2	84.6	92.6	88.7	82.0	77.3	82.2
2024	79.2	81.7	84.7	89.0	83.0	83.0	83.9	78.9	72.7	75.4	73.4	73.2	79.8

Source: Bank of Ghana

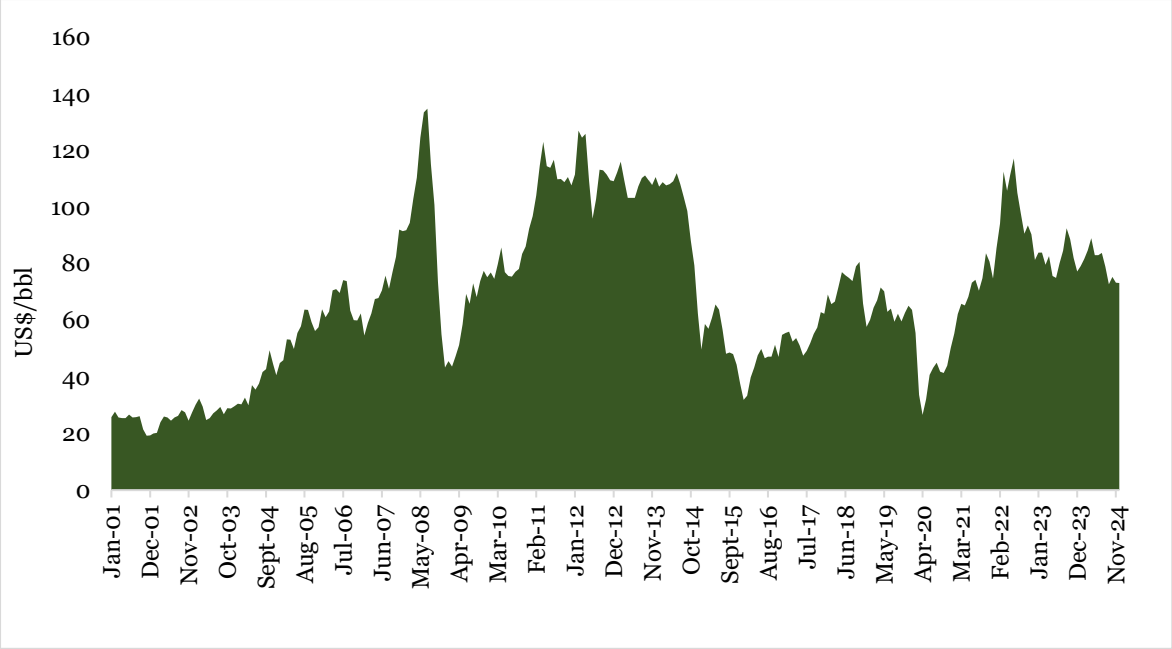


Figure 7.1: Trend in Average Crude Oil Prices

7.2 Petroleum Products Prices

Table 7.2 presents the yearly average ex-pump prices of petroleum products (petrol, diesel, kerosene and LPG) in the country.

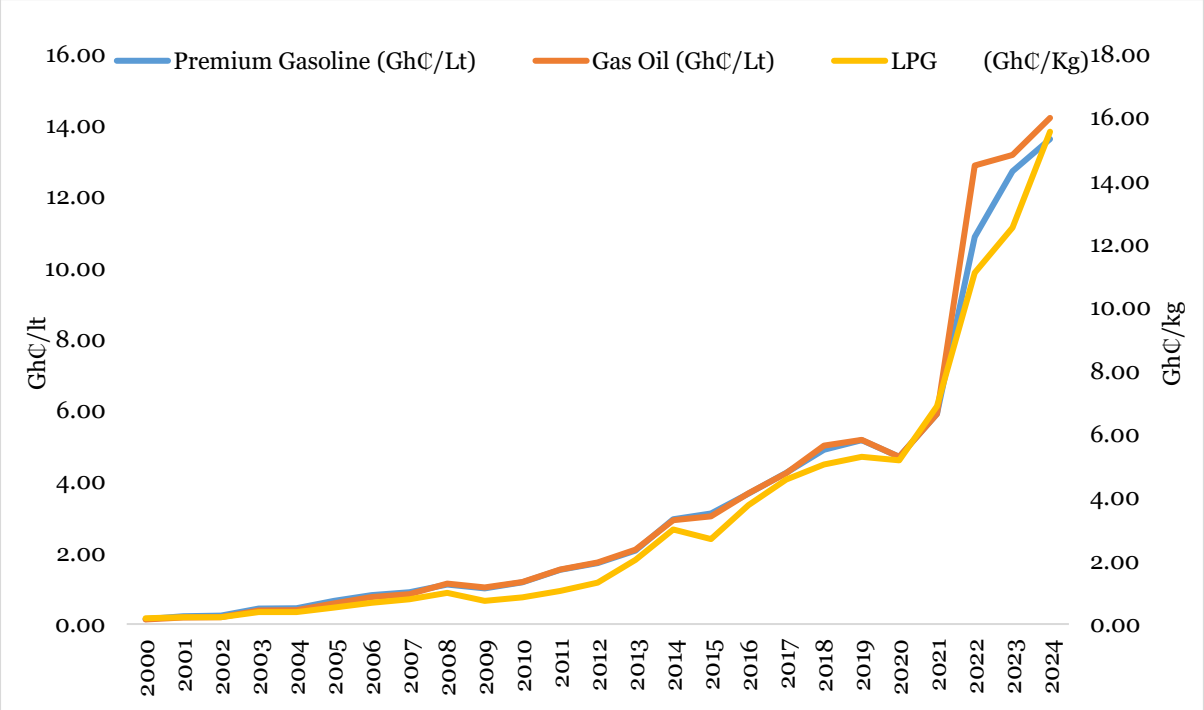


Figure 7.2: Trend in petroleum products prices

Table 7.2: Average Ex-pump Prices for Petroleum Products

Year	Premium Gasoline (Gh₵/Lt)	Gas Oil (Gh₵/Lt)	Kerosene (Gh₵/Lt)	LPG (Gh₵/Kg)
2000	0.14	0.13	0.13	0.18
2001	0.22	0.19	0.19	0.22
2002	0.23	0.20	0.20	0.22
2003	0.44	0.38	0.38	0.37
2004	0.44	0.39	0.39	0.38
2005	0.65	0.58	0.50	0.52
2006	0.81	0.76	0.62	0.67
2007	0.90	0.84	0.74	0.78
2008	1.11	1.14	1.07	0.98
2009	1.00	1.02	0.79	0.73
2010	1.17	1.18	0.91	0.84
2011	1.52	1.53	0.91	1.05
2012	1.71	1.73	0.91	1.31
2013	2.06	2.09	1.27	2.03
2014	2.94	2.91	2.85	2.99
2015	3.10	3.02	2.97	2.68
2016	3.66	3.67	2.83	3.76
2017	4.25	4.23	3.47	4.56
2018	4.90	5.01	4.33	5.04
2019	5.17	5.17	4.71	5.28
2020	4.69	4.70	4.25	5.17
2021	5.90	5.90	5.61	6.88
2022	10.87	12.87	11.96	11.09
2023	12.71	13.17	15.26	12.52
2024	13.62	14.21	11.56	15.55

Source: NPA

7.3 Average Electricity Sale Price

The average electricity price of consumers in the regulated market is categorised into three main groups: residential, non-residential and Special Load Tariff (SLT). From 2000 to 2024, the average electricity price increased at an annual average growth rate of 18.4% (Table 7.3).

However, a comparison between 2023 and 2024 reveals a 14% decline in the average electricity price (GH¢/kWh). Additionally, the average electricity price by customer type is presented in Table 7.4.

Table 7.3: Average Electricity Price

Year	GH¢/kWh	US$/kWh
2000	0.02	0.02
2001	0.03	0.05
2002	0.07	0.08
2003	0.07	0.08
2004	0.07	0.08
2005	0.07	0.08
2006	0.08	0.08
2007	0.10	0.10
2008	0.15	0.12
2009	0.15	0.10
2010	0.21	0.15
2011	0.25	0.16
2012	0.23	0.12
2013	0.31	0.16
2014	0.46	0.14
2015	0.54	0.15
2016	0.82	0.21
2017	0.80	0.18
2018	0.71	0.15
2019	0.70	0.13
2020	0.74	0.13
2021	0.75	0.13
2022	0.79	0.10
2023	1.35	0.12
2024	1.16	0.10

Table 7.4: Average Electricity Price by Customer Class

Year	GH₵/kWh			US$/kWh		
	Residential	Non-Residential	SLT	Residential	Non-Residential	SLT
2018	0.62	0.89	0.78	0.13	0.19	0.17
2019	0.58	1.03	0.70	0.11	0.20	0.14
2020	0.62	1.16	0.76	0.11	0.21	0.14
2021	0.61	1.13	0.78	0.11	0.20	0.13
2022	0.69	1.05	0.83	0.08	0.13	0.10
2023	1.23	1.74	1.32	0.11	0.16	0.12
2024	1.08	1.24	1.25	0.10	0.11	0.11

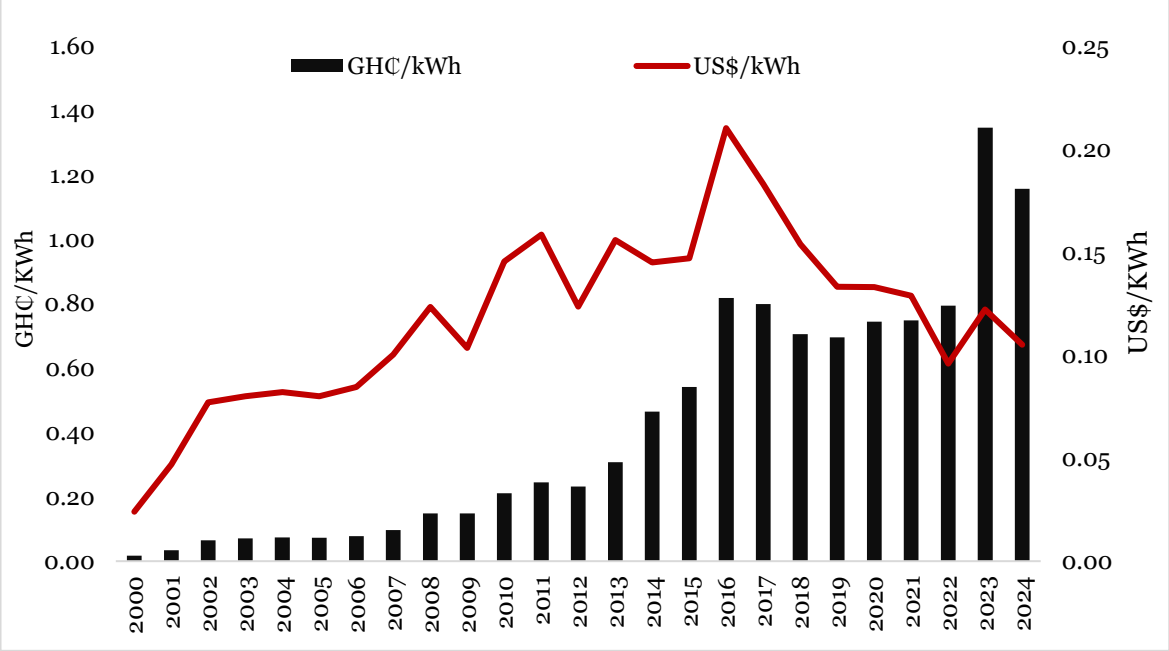


Figure 7.3: Trend in Average Electricity Price

Table 7.5: Electricity Tariff by Customer Class

Tariff Category	Effective Date													
	Jan, 2020	Apr, 2020	Jul, 2020	Oct, 2020	Jan, 2021	Sep, 2022	Feb, 2023	Jun, 2023	Sep, 2023	Dec, 2023	Apr, 2024	Jul, 2024	Sep, 2024	Oct, 2024
Residential														
0-30 (Exclusive)	-	-	-	-	-	42	54	64	64	63	63	66	68	67.6
0 - 50 (Exclusive)	33	33	33	33	33	-	-	-	-	-	-	-	-	
31 - 300 (GHp/kWh)	-	-	-	-	-	89	116	137	143	140.6	141	149	153	153.3
51 - 300 (GHp/kWh)	65	65	65	65	65									
301 - 600 (GHp/kWh)	85	85	85	85	85	116	150	178	185	182				
300+ (GHp/kWh)											186	197	203	203
600+ (GHp/kWh)	94	94	94	94	94	128	167	198	206	203				
Service Charge for Lifeline Consumers (GHp/month)	213	213	213	213	213	213	213	213	213	213	213	213	213	213
Service Charge for Other Residential Consumers (GHp/month)	746	746	746	746	746	1073	1073	1,073	1,073	1073	1,073	1,073	1,073	1,073
Non-Residential														
0 -300 (GHp/kWh)	80	80	80	80	80	84	109	129	129	127	127	134	138	138.4
301 - 600 (GHp/kWh)	85	85	85	85	85	89	116	137	137	135				
300+ (GHp/kWh)											158	167	172	172
600+ (GHp/kWh)	134	134	134	134	134	133	173	205	205	202				
Service Charge (GHp/month)	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243	1,243
SLT - Low Voltage														
Maximum Demand (GHp/kVA/month)	-	-	6,960	6,960	6,960	6,960	-	-	-	6,960	-	-	-	-
Energy Charge (GHp/kWh)	105	105	105	89	105	133	172	204	204	201	191	200	207	207
Service Charge (GHp/month)	4,971	4,971	4,971	4,971	4,971	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
SLT - Medium Voltage														
Maximum Demand (GHp/kVA/month)	-	-	5,966	5,966	5,966	5,966	-	-	-	-	-	-	-	-
Energy Charge (GHp/kWh)	80	80	80	69	80	100	131	155	155	153	153	160	165	165
Service Charge (GHp/month)	6,960	6,960	6,960	6,960	6,960	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
SLT - High Voltage														
Maximum Demand (GHp/kVA/month)	-	-	5,966	5,966	5,966	5,966	-	-	-	-	-	-	-	-
Energy Charge (GHp/kWh)	83	83	83	63	83	75	137	163	163	160	153	160	165	165
Service Charge (GHp/month)	6,960	6,960	6,960	6,960	6,960	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
SLT-High Voltage - Mines														
Capacity Charge (GHp/KVA/Month)	-	-	6,960	6,960	6,960	6,960	-	-	-	-	-	-	-	-
Energy Charge (GHp/kWh)	264	264	264	121	264	264	343	406	406	399.9	400	420	432	432
Service Charge (GHp/Month)	6,960	6,960	6,960	6,960	6,960	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000

Source: PURC


ENERGY COMMISSION