20 Years

ENERGY COMMISSION

OF REGULATING & MANAGING THE DEVELOPMENT & UTILIZATION OF ENERGY

ANNIVERSARY EDITION

2018

GHANA ENERGY STATISTICS HANDBOOK

ENERGY COMMISSION, GHANA

GHANA ENERGY STATISTICS HANDBOOK 2018

ADDRESS:
PMB, Ministries Post Office
Accra, Ghana.
Telephone: +233 302 813756/7/9
Fax: +233 302 813764
Website: www.energycom.gov.gh
E-mail: info@energycom.gov.gh

Office Location:
Ghana Airways Avenue,
Airport Residential
Area,

THE ENERGY COMMISSION

The Energy Commission which was established in 1997 by an act of Parliament (ACT 541) is the authoritative source of energy statistics in Ghana. Its National Energy Statistics published annually has been a very important source of energy data on Ghana for energy policy makers, researchers, students as well as organization and institutions in the energy and related sectors.

This document is the second edition of a handy pocket size book which summarieses key energy data for Ghana. It contains timely and clearly presented data on energy resources, energy production and consumption in Ghana. The user of this document will have at his or her fingertips key energy statistics including energy indicators, energy balances and prices as well as energy demand forecast.

The Commission has over the years been fulfilling its mandate as stated in the act establishing it. These include the following;

* To advise the sector Minister on national policies for the efficient, economic and safe supply of electricity and natural gas having due regard to the national economy;
* To formulate national policies for the development and utilisation of indigenous energy resources, in particular, renewable energy: solar, wind and biomass;
* Prepare, review and update periodically indicative national energy plan to ensure that all reasonable demand for energy are met in a sustainable manner;
* To prescribe by legislative instrument standards of performance and technical and operational rules of practice for the supply, distribution, sales of electricity and natural gas to consumers by public utilities;
* To promote energy efficiency and productive uses of electricity and natural gas;
* To license public utilities for the transmission, wholesale supply, distribution and sale of electricity and natural gas;
* To promote Local content and Local Participation in the Energy Supply Industry

A. K. Ofosu Ahenkorah (PhD)
Executive Secretary

BE ENERGY WISE!

Learn to save Energy and save yourself MONEY

ENERGY COMMISSION

Use Energy efficient appliances

"Turn Off the Lights when you leave a room. Switch Off fans when not needed. Iron your Clothes in bulk. These are just a few, simple Actions, we can all take. Not only will you be saving money for yourself, but these habits are Acts of Citizenship and Common Humanity"...

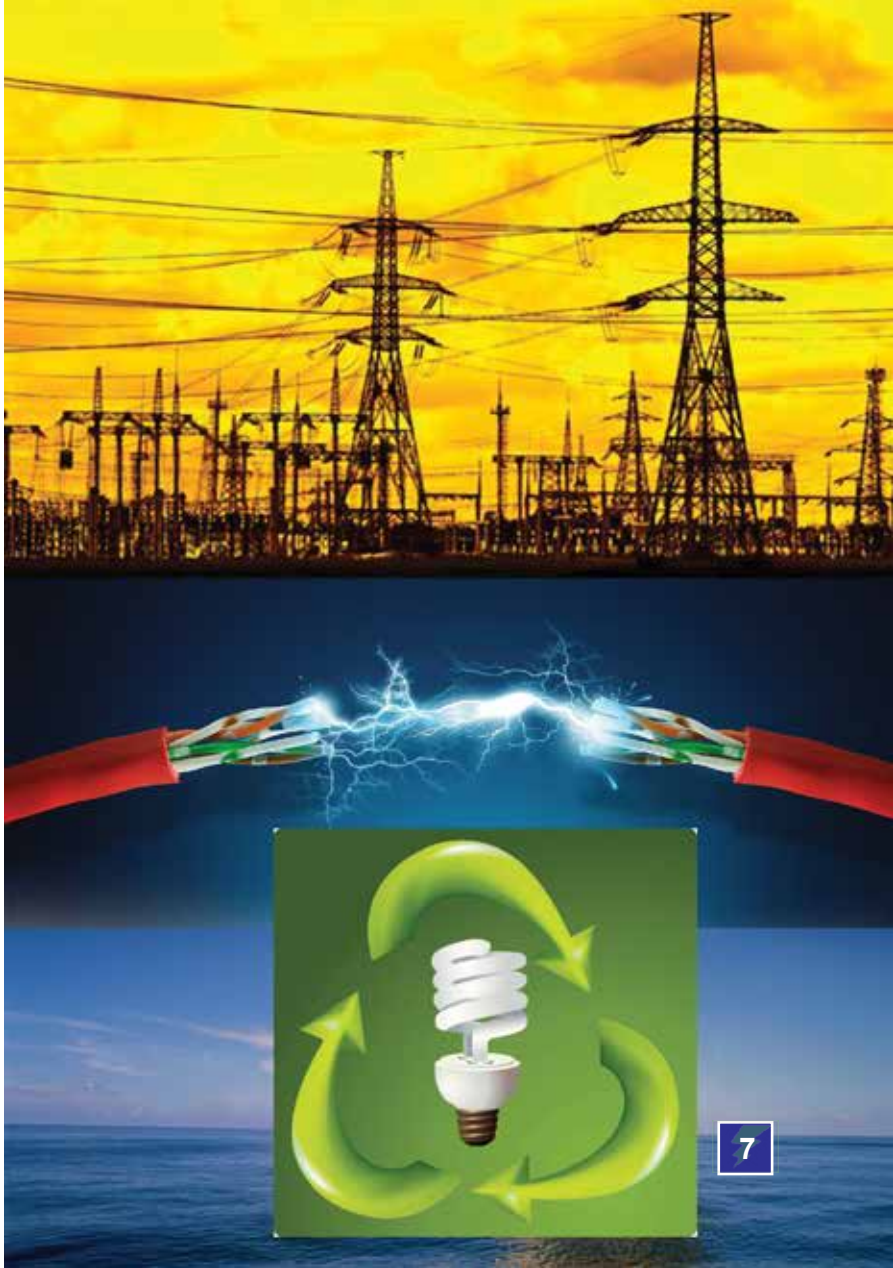
H. E. President
Nana Addo Dankwah Akuffo Addo
(Thursday 27th April, 2017)

Table Of Contents

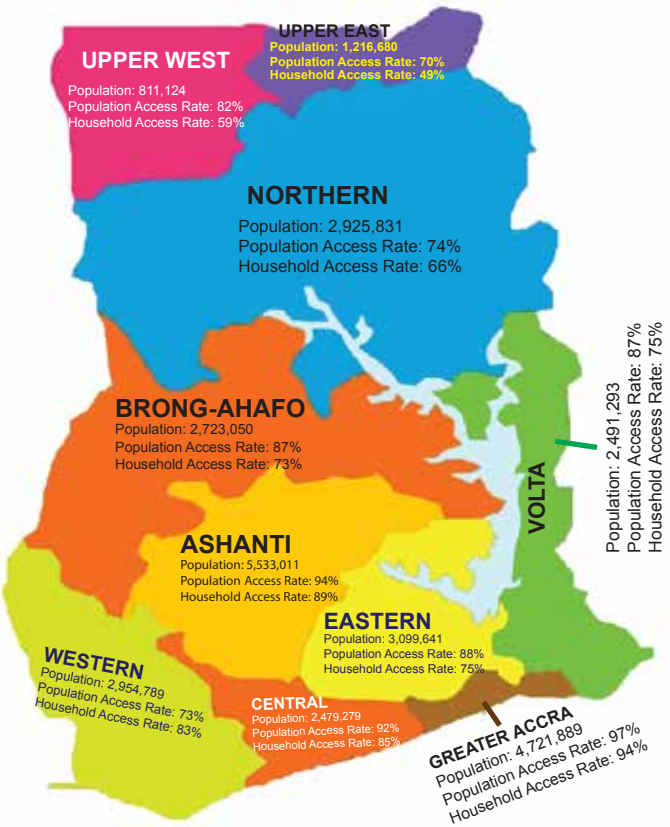
Energy Commission Of Ghana

ABBREVIATIONS

AEG	Accelerated Economic Growth
BAU	Business-as-Usual
FEC	Final Energy Consumption
FPSO	Floating, Production, Storage and Offloading
GDP	Gross Domestic Product
GWh	Gigawatt hour
GWh/yr	Gigawatt hours per year
kWh	kilowatt hour
m/s	metres per second
MW	Megawatts
NEDCo	Northern Electricity Distribution Company
TEC	Total Electricity Consumption
TEG	Total Electricity Generated
KTOE	Kilotonnes of Oil Equivalent
TPES	Total Primary Energy Supply
TPPC	Total Petroleum Products Consumption
WAGP	West Africa Gas Pipeline
W2E	Waste –to-energy



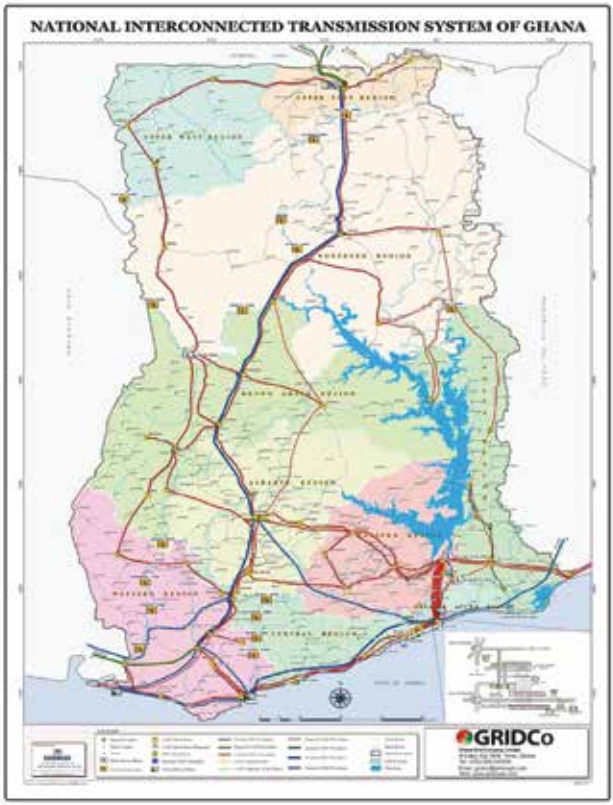
ELECTRICITY ACCESS MAP OF GHANA - 2017



National Access Rate:

Household = 81.4%
Communities = 84%

NATIONAL INTERCONNECTED TRANSMISSION SYSTEM OF GHANA



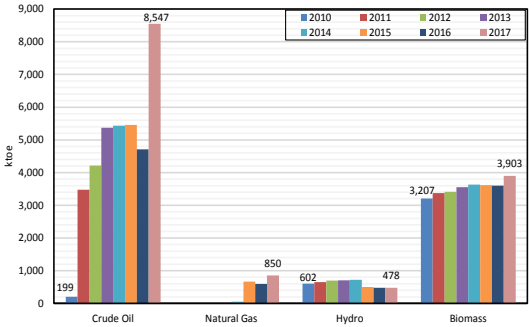
HIGHLIGHTS

Indicator	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Population	million	22.9	23.4	24.7	25.3	25.9	26.5	27	27.7	28.3	29.0
Exchange rate	Ghc/US$	1.07	1.42	1.42	1.51	1.81	1.92	2.94	3.78	3.92	4.36
GDP at current market prices	million Ghc	30,179	30,179	30,179	30,179	30,179	30,179	30,179	30,179	167,353	205,914
GDP at constant 2006 prices	million Ghc	21,592	22,593	24,101	27,486	30,040	32,237	33,522	34,808	36,104	39,175
GDP at current market prices	US$ million	28,204	25,963	32,186	39,517	41,656	48,654	38,612	36,264	42,685	47,269
GDP at constant 2006 prices	US$ million	20,179	15,911	16,848	18,158	16,615	16,790	11,420	9,217	9,209	8,993
GDP, PPP in constant US$	Million $	66,290	69,502	74,993	85,526	93,474	100,309	104,307	108,392	112,268	121,898
GDP per capita	US$	1,232	1,109	1,305	1,566	1,613	1,841	1,428	1,311	1,508	1,632
Crude oil production	million barrels	0.2	0.2	1.4	23.8	28.9	36.9	37.3	37.5	32.3	58.7
Crude oil export	million barrels	0.2	0.2	0.1	24.7	26.4	36.0	37.7	36.5	26.1	57.0
Total primary energy supply	ktoe	6,275	6,039	6,947	7,610	8,363	8,565	9,148	9,551	9,520	9,614
Total final energy consumption	ktoe	5,187	5,706	5,629	6,174	6,613	6,887	6,983	7,162	7,040	6,984
Total electricity production	GWh	8,324	8,958	10,167	11,200	12,024	12,870	12,963	11,492	13,022	14,068
Total petroleum production	kilotonnes	1,221.5	327.1	946.4	958.0	454.0	424.2	129.2	89.1	739.0	129.9
Total electricity consumption	GWh	6,950	7,156	7,839	8,978	9,905	10,563	10,695	9,685	11,418	12,091
Total petroleum consumption	ktoe	2,071	2,598	2,491	2,827	3,172	3,303	3,272	3,545	3,274	3,115
Primary energy supply/capita	toe	0.27	0.26	0.28	0.30	0.32	0.32	0.34	0.34	0.34	0.33
Electricity production/capita	kWh	363.5	382.8	411.6	442.7	464.2	485.7	480.1	414.9	460.2	485.8
Electricity consumption/capita	kWh	303.5	305.8	317.4	354.9	382.4	398.6	396.1	349.6	403.5	417.5
Petroleum consumption/capita	toe	0.09	0.11	0.10	0.11	0.12	0.12	0.12	0.13	0.12	0.11
TPES/GDP in constant 2006 prices	toe/million Ghc	290.6	267.3	288.3	276.9	278.4	265.7	272.9	274.4	263.7	245.4
TPES/GDP, PPP in constant 2011 US$	toe/million $	94.7	86.9	92.6	89.0	89.5	85.4	87.7	88.1	84.8	79.1
Average Electricity end user tariff	Ghc/kWh	0.15	0.15	0.21	0.25	0.23	0.31	0.46	0.54	0.82	0.76
Import dependency	%	51.6	47.3	54.1	59.1	51.2	53.1	53.5	50.7	56.1	49.7

$$\text{Import dependency} = \frac{\text{Total import}}{\text{TPES}} \times 100$$

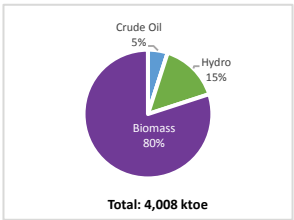
SUPPLY

PRODUCTION OF PRIMARY FUELS, 2010 - 2017, *ktoe*



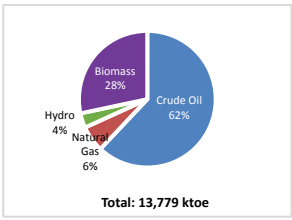
Shares of Primary Fuel Production, 2010 and 2017, ktoe

2010



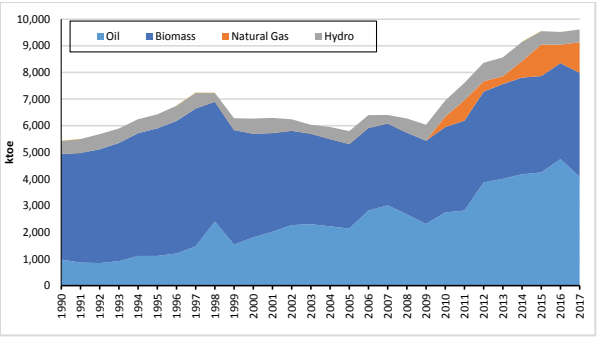
Total: 4,008 ktoe

2017



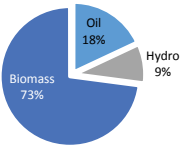
Total: 13,779 ktoe

PRIMARY ENERGY SUPPLY, 1990 – 2017, ktoe



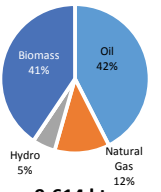
Shares of Primary Energy Supply, 1990 and 2017, ktoe

1990



5,432 ktoe

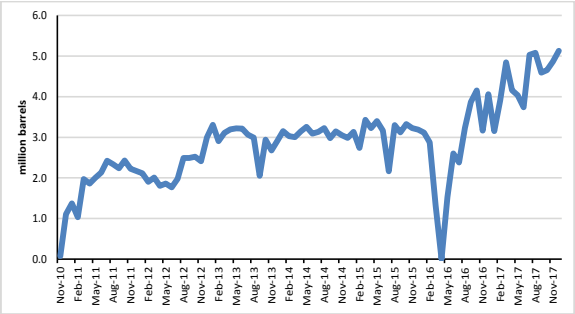
2017



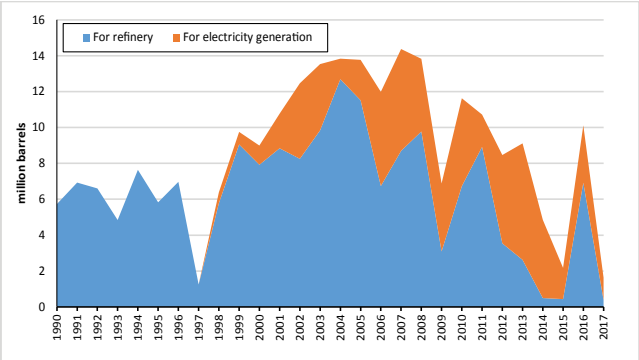
9,614 ktoe

NB: Solar is negligible

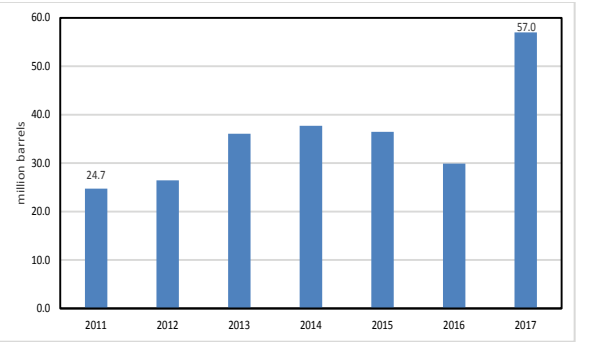
CRUDE OIL PRODUCTION, 2010 – 2017, million barrels



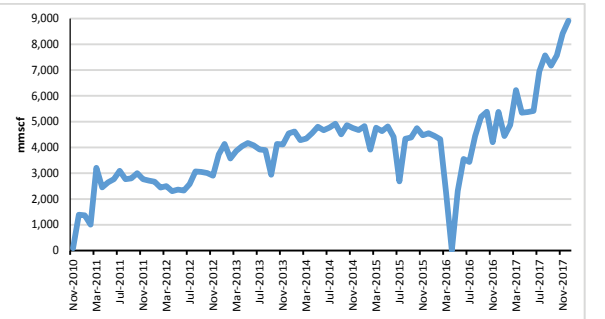
TOTAL CRUDE OIL IMPORT, 1990 – 2017 million barrels



TOTAL CRUDE OIL EXPORT, 2010 – 2017, million barrels

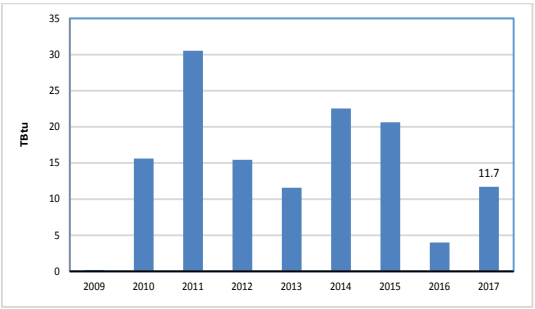


NATURAL GAS PRODUCTION, 2010 – 2017, mmscf



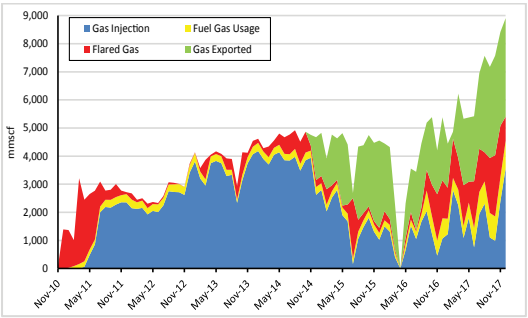
NB: All natural gas produced before November 2014 is flared, re-injected or used for electricity generation on the FPSO

NATURAL GAS IMPORT, 2010 - 2017,TBtu



NB: Import is gas delivered to VRA through the WAGP

NATURAL GAS UTILIZATION, 2010 – 2017, mmscf

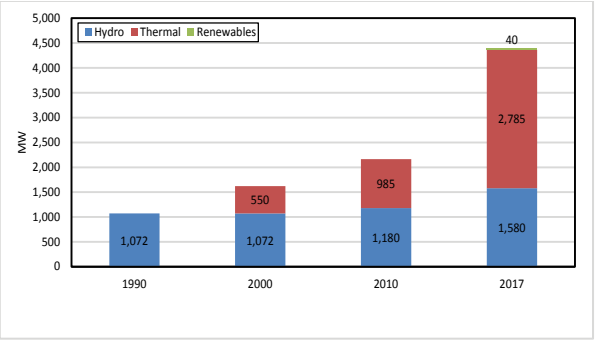


NB: exported is the quantity of natural gas transported through pipelines from the FPSO to the Gas Processing Plant.

INSTALLED RENEWABLE ELECTRICITY GENERATION CAPACITY, 2013 – 2017, kW

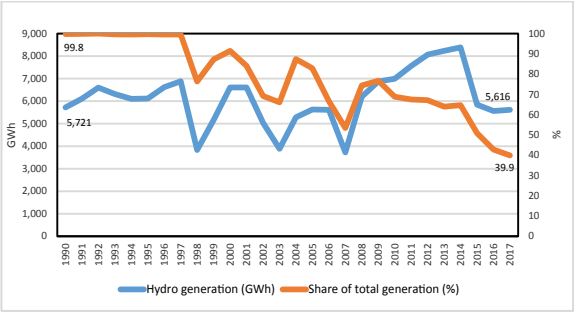
Year	Off-grid		On-grid				Mini-Grid		Installed (kW)
	Solar	Wind	Dist. SPV	Utility Solar	W2E	Hydro	Solar	Wind	
2013	-	-	495	2,500	-	-	-	-	2,995
2014	1,350	-	443	-	-	-	-	-	1,793
2015	4,003	20	700	20,000	100	4,000	256	11	29,090
2016	1,238	-	2,626	-	-	-	-	-	3,865
2017	678	-	4,266	-	-	-	58		5,002
TOTAL	7,269	20	8,530	22,500	100	4,000	314	11	42,744

INSTALLED ELECTRICITY GENERATION CAPACITY, MW

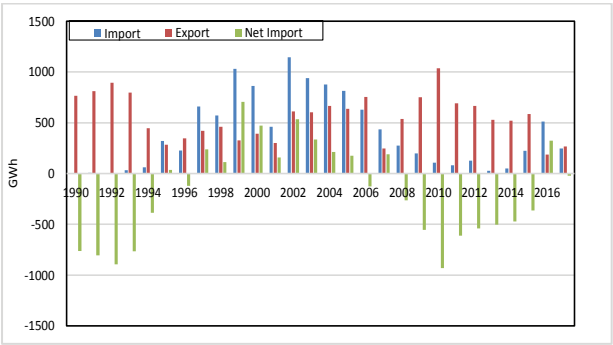


NB: Renewables include on-grid, of-grid and mini-grid installations.

HYDRO ELECRTICITY PRODUCTION, 1990 - 2017, GWh

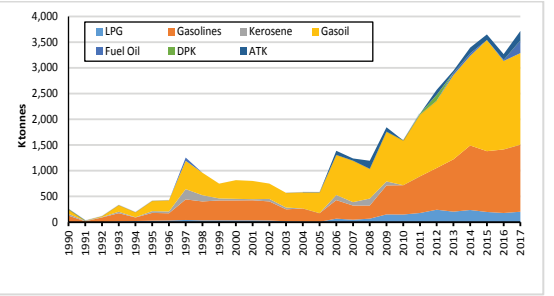


ELECTRICITY IMPORT AND EXPORT, 1990 - 2017, GWh

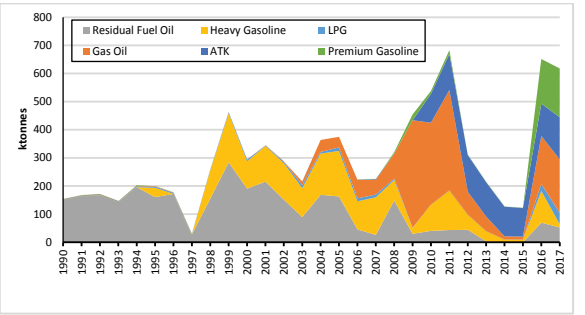


NB: Negative net import means net export

PETROLEUM PRODUCTS IMPORT, 2010 – 2017, ktonnes



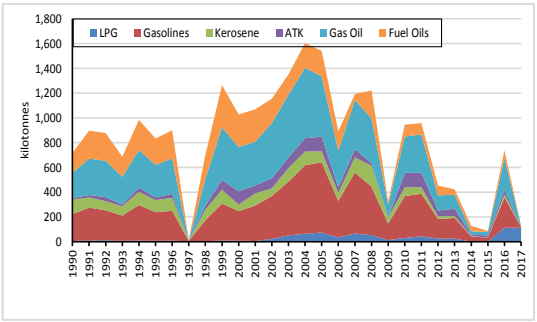
PETROLEUM PRODUCTS IMPORT EXPORT, 1990 – 2017, ktonnes



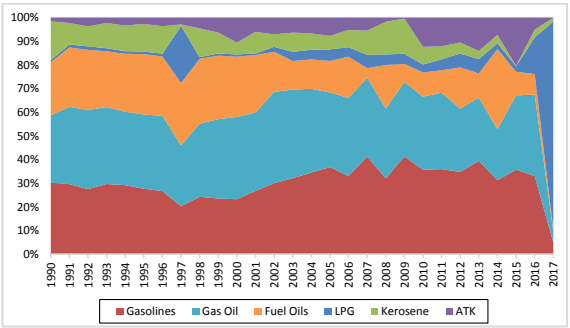
S

TRANSFORMATION

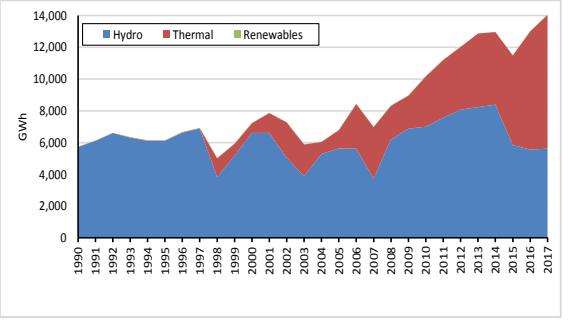
REFINERY PRODUCTION BY PRODUCTS, 1990 - 2017, ktonnes



SHARE OF REFINERY PRODUCTION, 1990 - 2017, percent

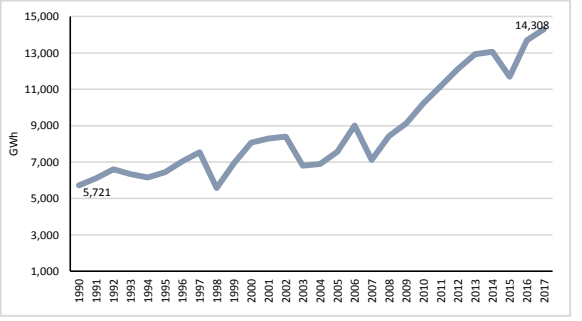


ELECTRICITY GENERATION BY SOURCE, 1990 - 2017, GWh

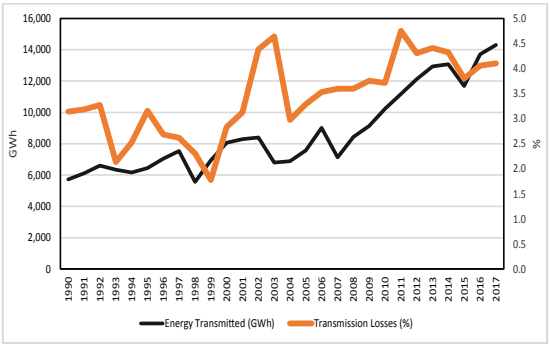


NB: Renewable is negligible. It is made up of grid-connected solar and biogas systems

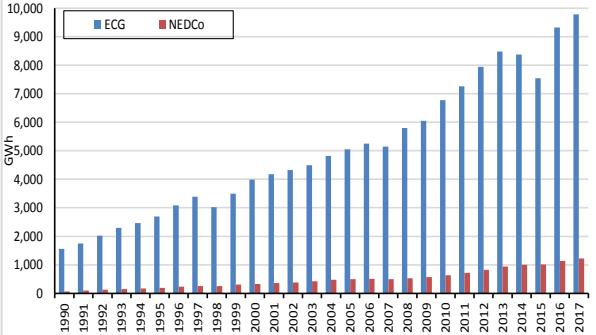
TOTAL ELECTRICITY TRANSMITTED, 1990 - 2017, GWh



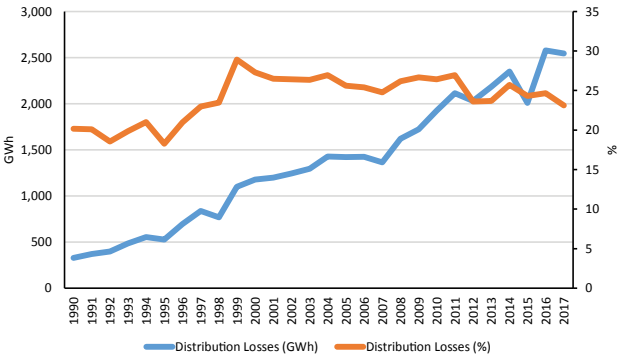
ELECTRICITY TRANSMITTED AND LOSSES, 1990 - 2017, GWh



ECG & NEDCo ELECTRICITY PURCHASED FOR DISTRIBUTION, 1990 - 2017, GWh



ELECTRICITY DISTRIBUTION AND LOSSES, 1990 - 2017,GWh



NB: Technical and Commercial losses

Do you need an ELECTRICIAN?

Then you must get a CEWP
(Certified Electrical Wiring Professional
licensed by the Energy Commission
to undertake wiring in Ghana)

Where can you find a CEWP

You can get CEWPs all over the country. A register of all CEWPs and CEWIs can be obtained from the offices of the ECG and NEDCo nationwide.

You can also download the mobile app "Certified Electrician" from the google play store. The app can help you search for all CEWPs and CEWIs by area, name, number etc and report any one for sanctions if they misconduct themselves

Download Android Application
"Certified Electricians"

For further details contact: THE ELECTRICAL WIRING SECRETARIAT

0302 813 756
0249 229 306
0506 344 713

0249 229 306
0506 344 713

Energy Commission
Electrical Wiring
Programme

Help eliminate quack electricians (Egya bɔbɔ electricians)

No CEWP,
NO Electricity
Connection

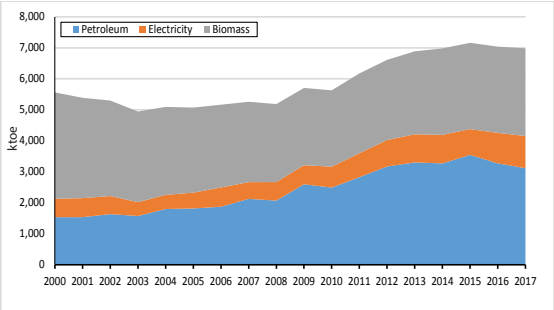
Office Location: Ghana Airways Avenue, Airport West Residential Area behind Alliance Francaise

For more information visit: www.energycom.gov.gh / cewp.energycom.gov.gh

For more information visit: www.energycom.gov.gh / cewp.energycom.gov.gh

FINAL ENERGY CONSUMPTION

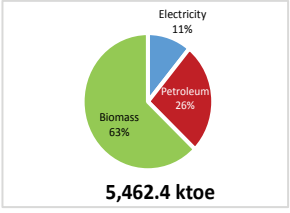
FINAL ENERGY CONSUMPTION BY FUEL TYPE, 2000 - 2017, ktoe



C

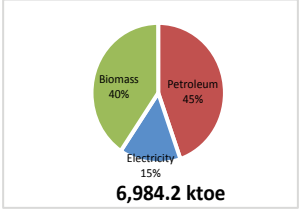
Shares of Total Energy Consumption by Fuels Type, 2000 and 2017, ktoe

2000



5,462.4 ktoe

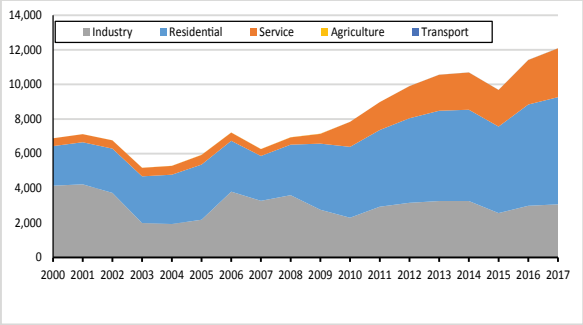
2017



6,984.2 ktoe


TULLOW
TULLOW
PSO KWAME NKRUMAH MV21

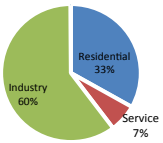
ELECTRICITY CONSUMPTION BY SECTOR, 2000 - 2017, GWh



C

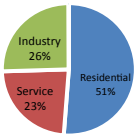
Shares of Electricity Consumption by Sector, 2000 and 2017, GWh

2000



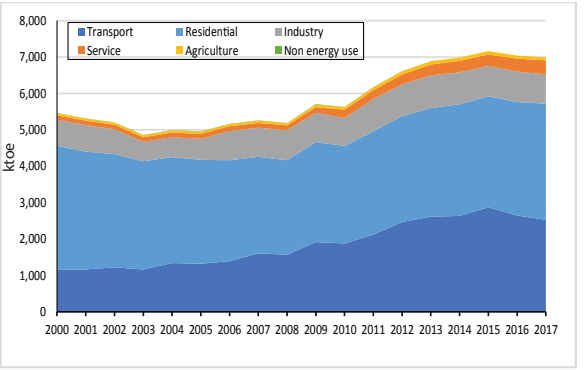
6,889 GWh

2017



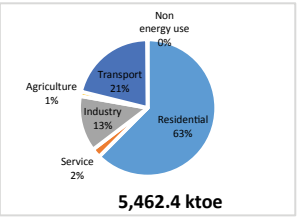
12,091 GWh

FINAL ENERGY CONSUMPTION BY SECTOR, 2000 - 2017, ktoe

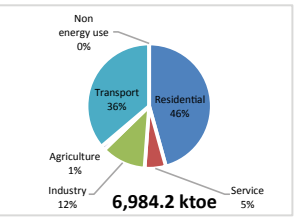


Shares of Final Energy Consumption by Sector, 2000 and 2017, ktoe

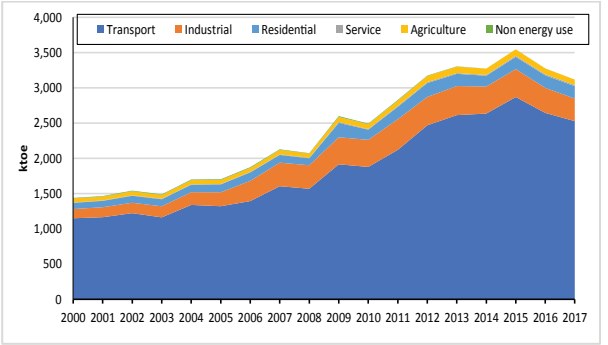
2000



2017



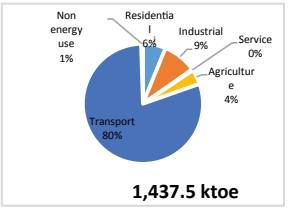
PETROLEUM PRODUCTS CONSUMPTION BY SECTOR, 2000 - 2017



C

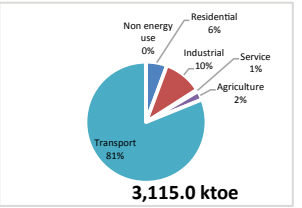
Shares of Petroleum Products Consumption by Sector, 2000 and 2017, *ktoe*

2000



1,437.5 ktoe

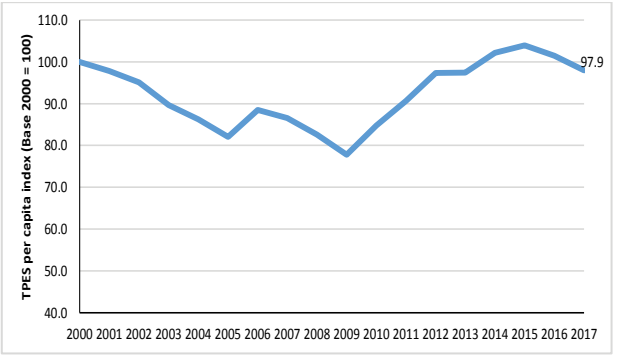
2017



3,115.0 ktoe

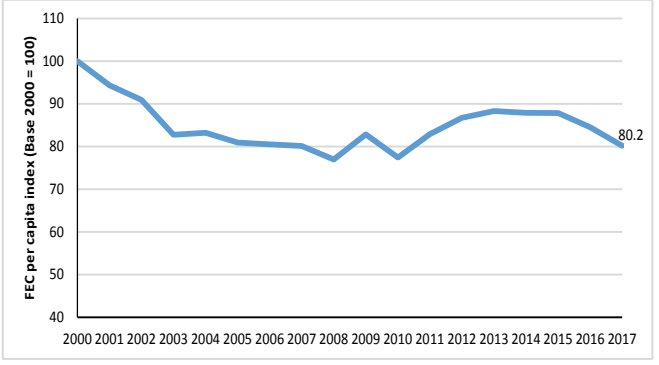
ENERGY INDICATORS

PRIMARY ENERGY SUPPLY PER CAPITA, 2000 - 2017, ktoe

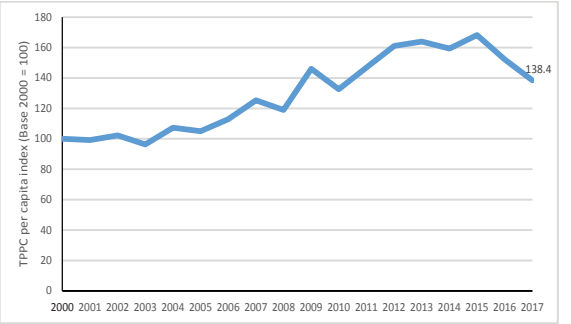


C

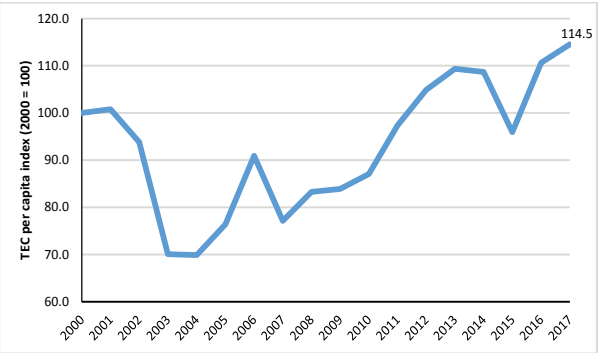
FINAL ENERGY CONSUMED PER CAPITA, 2000 - 2017, ktoe



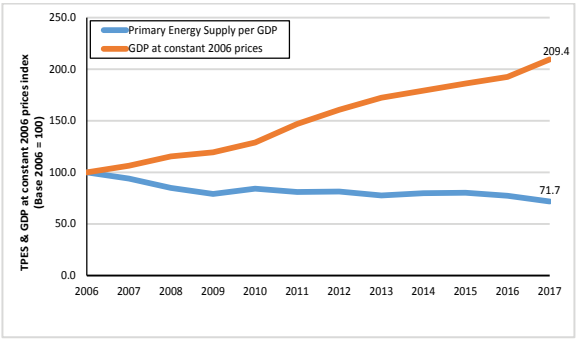
PETROLEUM PRODUCT CONSUMED PER CAPITA, 2000 - 2017, ktoe



TOTAL ELECTRICITY CONSUMED PER CAPITA, 2000 - 2017, ktoe

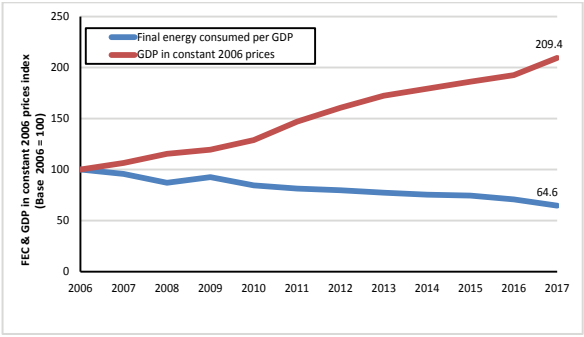


TOTAL PRIMARY ENERGY SUPPLY PER GDP, *ktoe/GDP*

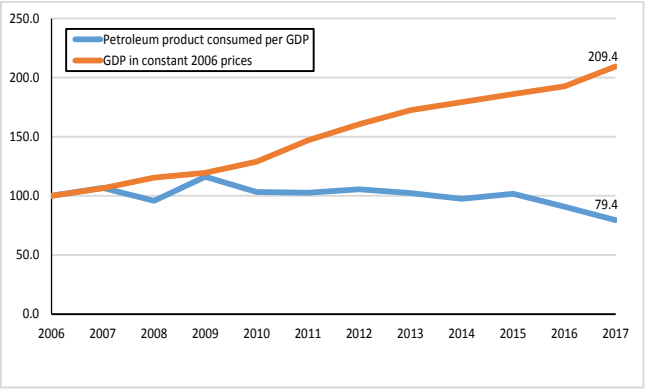


C

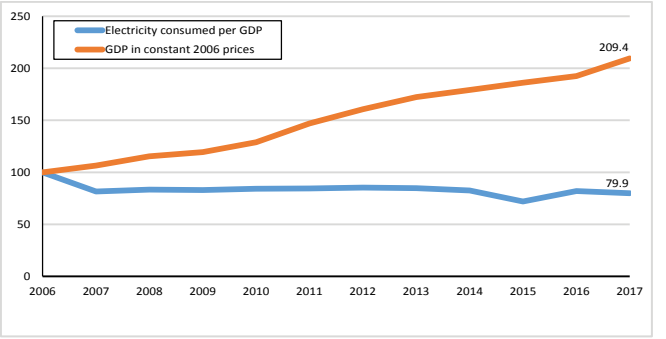
FINAL ENERGY CONSUMED PER GDP, *ktoe/GDP*



TOTAL PETROLEUM PRODUCT CONSUMED PER GDP, *ktoe/GDP*



TOTAL ELECTRICITY CONSUMED PER GDP, *ktoe/GDP*



C

ENERGY BALANCE

Energy Balance 2017, ktoe

SUPPLY AND CONSUMPTION	Crude Oil	Natural Gas	Petroleum Products	Biomass	Solar	Hydro	Electricity	Total
Production	8,547.3	850.5	123.0	3,903.3	2.4	482.9	-	**13,909.4**
Imports	237.9	295.2	4,221.3	-	-	-	21.2	**4,775.6**
Exports	-8,304.2	-	-471.2	-1.8	-	-	-23.0	**-8,800.3**
International Marine Bunkers	-	-	-90.7	-	-	-	-	**-90.7**
International Aviation Bunkers	-	-	-154.5	-	-	-	-	**-154.5**
Stock changes	-311.7	-	43.9	-	-	-	-	**-267.9**
Total energy supply	169.2	1,145.6	3,917.0	3,901.5	2.4	482.9	-1.8	**9,616.9**
Statistical differences	-27.8	1.4	220.0	-	-	-	0.1	**193.6**
Electricity plants	-168.5	-1,039.4	-627.4	-	-2.4	-482.9	1,209.8	**-1,110.9**
Oil refineries	-24.5	-	16.5	-	-	-	-	**-8.0**
Energy industry own use	-4.1	-76.0	-	-	-	-	-6.1	**-86.2**
Losses	-	-	-	-1,072.1	-	-	-162.0	**-1,234.1**
Final energy consumption		28.8	3,086.2	2,829.4	-	-	1,039.8	**6,984.2**
Residential	-	-	176.3	2,481.4	-	-	532.5	**3,190.2**
Industry	-	28.8	291.1	223.5	-	-	264.1	**807.5**
Commerce & Service	-	-	16.5	124.5	-	-	242.5	**383.5**
Agriculture & Fisheries	-	-	75.1	-	-	-	0.3	**75.4**
Transport	-	-	2,526.2	-	-	-	0.5	**2,526.6**
Non Energy Use	-	-	0.9	-	-	-	-	**0.9**

Energy Balance 2016, ktoe

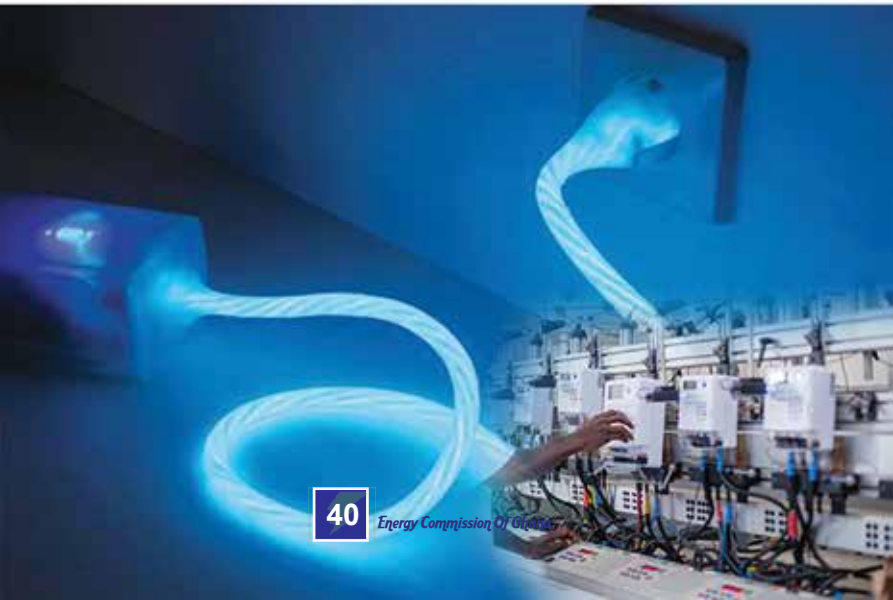
SUPPLY AND CONSUMPTION	Crude Oil	Natural Gas	Petroleum Products	Biomass	Solar	Hydro	Electricity	Total
Production	4,706.2	591.5	86.9	3,602.4	2.3	478.3	-	9,467.7
Imports	1,474.5	100.9	3,738.1	-	-	-	43.9	5,357.4
Exports	-4,357.5	-	-553.5	-1.9	-	-	-16.1	-4,929.0
International Marine Bunkers	-	-	-2.4	-	-	-	-	-2.4
International Aviation Bunkers	-	-	-122.6	-	-	-	-	-122.6
Stock changes	-223.5	-	-	-	-	-	-	-223.5
Total energy supply	1,599.8	692.4	3,146.5	3,600.5	2.3	478.3	27.9	9,547.6
Statistical differences	240.8	169.9	245	-	-	-	-0.3	655.4
Electricity plants	-492.7	-517.6	-402.3	-	-2.3	-478.3	1,120.0	-773.2
Oil refineries	-784.3	-	678.4	-	-	-	-	-105.9
Energy industry own use	-81.9	-	-	-	-	-	-6.1	-88.0
Losses	-	-	-	-817.1	-	-	-160.1	-977.2
Final energy consumption		4.8	3,264.5	2,783.4	-	-	981.7	7,034.7
Residential	-	-	177.1	2,441.0	-	-	502.8	3,121.3
Industry	-	4.8	350.9	219.9	-	-	256.5	830.2
Commerce & Service	-	-	14.9	122.5	-	-	221.0	358.4
Agriculture & Fisheries	-	-	82.7	0.0	-	-	0.3	83.0
Transport	-	-	2,642.4	0.0	-	-	1.0	2,640.4
Non Energy Use	-	-	1.4	0.0	-	-	-	1.4

*include statistical difference, own use and losses

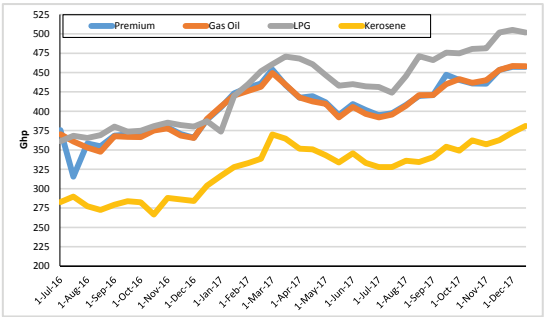
B

B

ENERGY PRICES



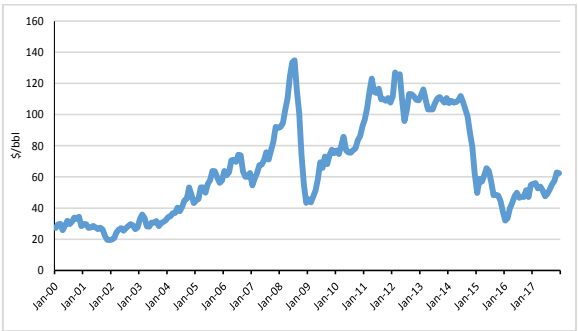
PETROLEUM PRODUCT PRICES, *Ghp*



NB: Products in Ghp/lt except LPG which is in Ghp/kg

P

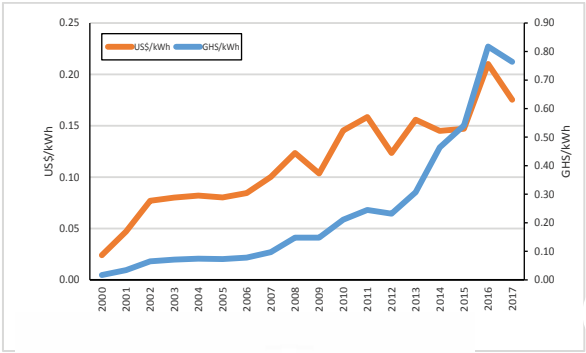
AVERAGE CRUDE OIL PRICES, JAN 2000 – DEC 2017, *$/bbl*



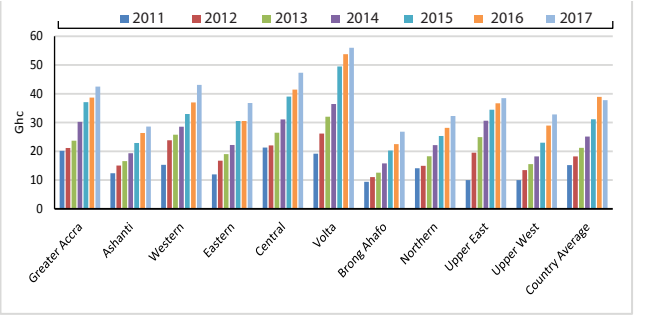
ELECTRICITY TARIFF

TARIFF CATEGORY	EFFECTIVE DATE								
	Dec, 2011	Oct, 2013	Jan, 2014	Jul, 2014	Oct, 2014	Apr, 2015	Jul, 2015	Dec, 2015	Mar, 2018
Residential									
0 - 50 (Exclusive)	9.5	15.7	17.2	19.3	20.5	21.1	21.1	33.6	27.7
51 - 300 (GHp/kWh)	17.6	31.4	34.5	38.7	41.2	42.3	42.3	67.3	55.5
301 - 600 (GHp/kWh)	22.8	40.8	44.9	50.2	53.5	54.9	54.9	87.4	72.1
600+ (GHp/kWh)	25.3	45.3	49.8	55.8	59.4	61.0	61.0	97.1	80.1
Service Charge for Lifeline Consumers (GHp/month)	165.3	295.7	324.5	363.8	387.5	397.7	397.7	633.2	213.0
Service Charge for Other Residential Consumers (GHp/month)	165.3	295.7	324.5	363.8	387.5	397.7	397.7	633.2	633.2
Non-Residential									
0 -300 (GHp/kWh)	25.3	45.2	49.6	55.6	59.2	60.8	60.8	96.8	67.8
301 - 600 (GHp/kWh)	26.9	48.1	52.8	59.2	63.0	64.7	64.7	102.1	72.1
600+ (GHp/kWh)	42.4	75.9	83.3	93.4	99.5	102.1	102.1	162.5	113.8
Service Charge (GHp/month)	275.5	492.9	540.9	606.3	645.9	662.9	662.9	1,055.3	1055.3
SLT - Low Voltage									
Maximum Demand (GHp/kVA/month)	1,542.9	2,760.3	3,028.9	3,395.1	3,616.9	3,712.1	3,712.1	5,909.6	5909.6
Energy Charge (GHp/kWh)	26.3	47.1	51.7	58.0	61.8	63.4	63.4	100.9	75.7
Service Charge (GHp/month)	1,102.2	1,971.7	2,163.5	2,425.1	2,583.6	2,651.5	2,651.5	4,221.2	4221.1
SLT - Medium Voltage									
Maximum Demand (GHp/kVA/month)	1,322.5	2,366.0	2,596.2	2,910.1	3,100.2	3,181.8	3,181.8	5,065.4	5065.4
Energy Charge (GHp/kWh)	20.4	36.5	40.0	44.9	47.8	49.1	49.1	78.1	58.6
Service Charge (GHp/month)	1,542.9	2,760.3	3,028.9	3395..1	3,616.9	3,712.1	3,712.1	5,909.6	5909.6
SLT - High Voltage									
Maximum Demand (GHp/kVA/month)	1,322.5	2,366.0	2,596.2	2,910.1	3,100.2	3,181.8	3,181.8	5,065.4	5065.4
Energy Charge (GHp/kWh)	18.7	33.5	36.8	41.2	43.9	45.1	45.1	71.8	53.8
Service Charge (GHp/month)	1,542.9	2,760.3	3,028.9	3,395.1	3,616.9	3,712.1	3,712.1	5,909.6	5909.6
SLT-High Voltage - Mines									
Capacity Charge (GHp/KVA/Month)	1,542.9	2,760.3	3,028.9	3,395.1	3,616.9	3,712.1	3,712.1	5,909.6	5909.6
Energy Charge (GHp/kWh)	29.8	53.2	58.4	65.5	69.8	71.6	71.6	114.0	102.6
Service Charge (GHp/Month)	1,542.9	2,760.3	3,028.9	3,395.1	3,616.9	3,712.1	3,712.1	5,909.6	5909.6

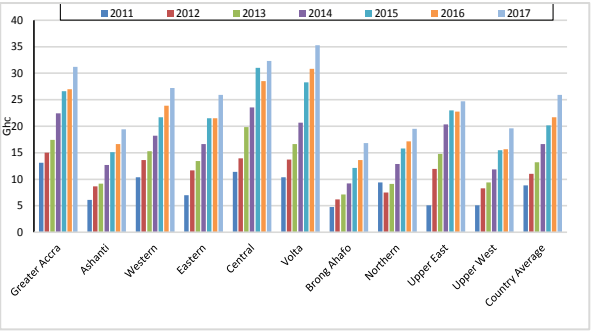
AVERAGE ELECTRICITY END USER TARIFF, 2000 - 2017



AVERAGE PRICES OF MAXIBAG OF CHARCOAL BY REGION, 2011 – 2017, *Gh¢*

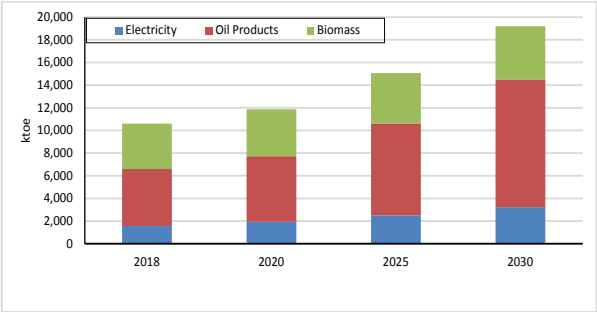


AVERAGE PRICES OF MINIBAG OF CHARCOAL BY REGION, 2011 - 2017,*Gh¢*



OUTLOOK

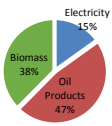
Outlook for Energy Demand by Fuels under Business-as-Usual Scenario, *ktoe*



Business-as-usual (BAU) scenario assumes that the population will grow from 24.7million in 2010 at an annual average growth rate of 2.1% to 38 million in 2030. GDP will increase from US$32.2b (in current prices) in 2010 at an annual average growth rate of 7.1% to US$126.9billion in 2030.

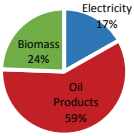
2018 and 2030 Shares of Energy Demand by Fuels under Business-as-Usual Scenario, *ktoe*

2018



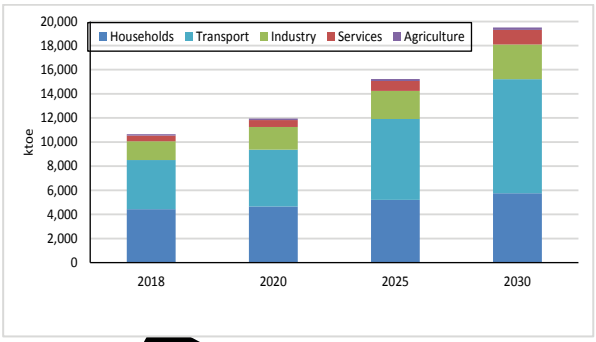
10,598 ktoe

2030



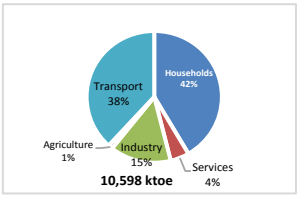
19,187 ktoe

Outlook for Energy Demand by Sectors under Business-as-Usual Scenario, *ktoe*

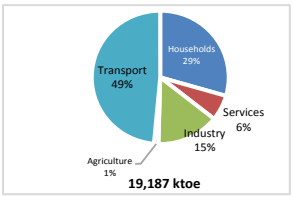


2018 and 2030 Shares of Energy Demand by Sectors under Business-as-usual Scenario,*ktoe*

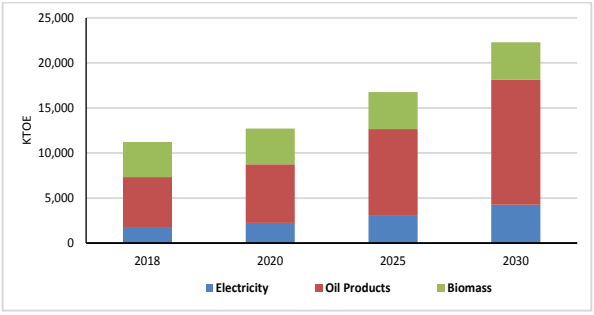
2018



2030



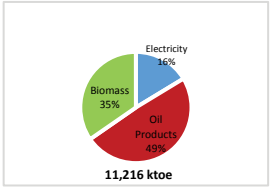
Outlook for Energy Demand by Fuels under Accelerated Economic Growth Scenario, *ktoe*



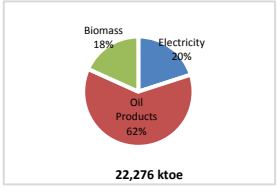
Accelerated Economic Growth (AEG) scenario assumes that the population will increase from 24.7million in 2010 at an annual average growth rate of 2.09% to 37.4million in 2030. GDP will increase from US$32.2 billion (in current prices) in 2010 at an annual average growth rate 8.3% to US$158.6 billion in 2030.

2018 and 2030 Shares of Energy Demand by Fuels under Accelerated Economic Growth Scenario, *ktoe*

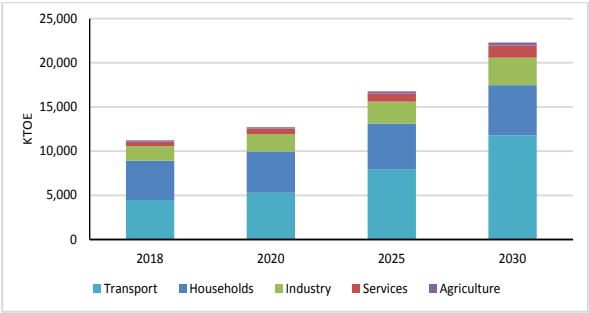
2018



2030

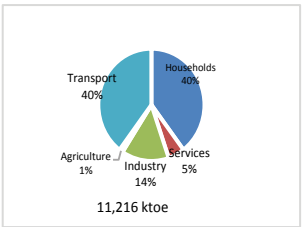


Outlook for Energy Demand by Sectors under Accelerated Economic Growth Scenario, *ktoe*

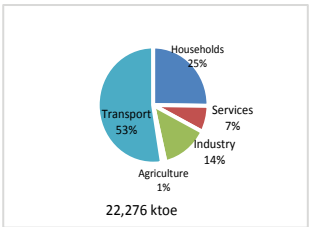


2018 and 2030 Shares of Energy Demand by Sectors under Accelerated Economic Growth Scenario, *ktoe*

2018



2030



Save Power by using an
Automatic Timer Switch(ATS)
to Switch off
Your **FREEZER**
in the **Night**

- The energy Commission is introducing Automatic Timer Switch (ATS) as an energy conservation device to enable consumers switch off and switch on their freezers automatically at predetermined times to reduce power consumption.
- With the help of ATS, users do not have to wake up from their sleep to do the switch off and switch on of a freezer at the user preferred times.
- A programmed ATS will have to be inserted into the power output socket on the wall and freezer power input plug inserted into the output socket of the timer.
- The Energy Commission is introducing the timer to consumers on pilot basis. Interested consumers can contact the Commission for further information.

Energy Commission: Telephone: 0302-813756/7/9, Website: www.energycom.gov.gh

CONVERSION FACTORS

1 tonne of Crude Oil	=	1.01- 1.02 TOE
1 tonne of Gasoline:	=	1.05 TOE
1 tonne of Kerosene:	=	1.03 TOE
1 tonne of Jet Fuel:	=	1.03 TOE
1 tonne of Diesel /Gas Oil	=	1.02 TOE
1 tonne of Residual Fuel Oil	=	0.97 TOE
1 tonne of LPG	=	1.08 TOE
1 tonne of Firewood/fuelwood	=	0.30 - 0.36 TOE
1 tonne of Charcoal	=	0.68 - 0.88 TOE
1 tonne of Sawdust/sawmill residues/wood chips	=	0.20 - 0.30 TOE
1 Tonne of crude oil	=	8 barrels of crude oil
1 cubic metre	=	6.29 barrels
1 barrel	=	37 imperial gallons or 163.66 Litres
1 GJ of Natural Gas	=	1.05 mmBtu or 1.07 mscf
1 MMBTU of Gas	=	27.096 cubic metres (m^3)
1 MMBTU of Gas	=	5.82 bbl of crude oil equivalent
1,000 m^3	=	36.906 mmBtu
1 GWh	=	86 TOE
1 GWh	=	3601 GJ
1 TOE	=	41.86 GJ

ENERGY COMMISSION, GHANA