



GHANA WHOLESALE ELECTRICITY MARKET BULLETIN

MARKET WATCH

Monthly Market Data Analysis

ISSUE NO. 59

1st November 2020 to 30th November 2020

This Bulletin covers major developments in the Wholesale Electricity Market (WEM) of Ghana from 1st November, 2020 to 30th November, 2020. It analyses the performance of the key WEM indicators against their benchmarks, and examines the likely implications of any discernable trends in the market.

The Electricity Market Oversight Panel (EMOP) would very much appreciate and welcome comments from readers on the Bulletin. Reasonable care has been taken to ensure the information contained in this Bulletin is accurate at the time of publication, nevertheless, any errors, omissions or inaccuracies therein are regretted.

HIGHLIGHTS OF THE MONTH

The System Peak Load continued to increase from 2,676.7 MW in September 2020, 2,881.6 MW in October 2020 to 2,999.5 MW in November 2020. The System Peak Load recorded in November 2020 was 2.4% lower than the 3,074 MW projected in the 2020 ESP. A total of 332 MW of electricity was supplied to CEB and SONABEL at the System Peak Load for November 2020. Similarly, the Ghana Peak Load continued to increase in November 2020, from 2,440.3 MW in September 2020, 2,742.6 MW in October 2020 to 2,775.5 MW. Additionally, the Ghana Peak Load recorded in October 2020 was 1.1% marginally higher than the 2,744 MW projected in the 2020 ESP. In November 2020, the average electricity demand increased by 6.1%, from 2,295.03 MW in October 2020 to 2,435.3 MW. Consequentially, the System Load Factor rose from 77.6% in October 2020 to 79.2% in November 2020.

The electricity that was supplied in November 2020 increased by 6.1% on average, from 55.08 GWh per day in October 2020 to 58.46 GWh per day. Based on the increase in the average supply, the total electricity supplied increased to 1,753.79 GWh in November 2020 from 1,707.5 GWh in October 2020. Electricity import from CIE reduced significantly by 87.5%, from 5.28 GWh in October 2020 to 0.64 GWh in November 2020. This increased the share of the electricity from domestic sources to almost 100%. Also, the total electricity exported to CEB, CIE, and SONABEL reduced by 7.9%, from 131.41 GWh in October 2020 to 120.97 GWh in November 2020.

The electricity generated from the hydroelectric power plants in November 2020 constituted 38.1% of the total electricity supplied which was higher than the 35.3%

Table 1. Projected and Actual Outturn of electricity demand and supply in October 2020 and November 2020.

	October 2020		November 2020	
	Projected	Actual Outturn	Projected	Actual Outturn
Total Supply (GWh)	1,675.4	1,707.5	1,669.2	1,753.8
Source by Power Plants (GWh)				
AKOSOMBO	405.2	423.3	363.0	478.9
KPONG	73.0	78.1	65.0	82.8
BUI	158.0	101.0	65.0	106.3
Sunon Asogli	-	230.7	247.0	188.4
TAPCO	100.4	29.4	162.0	81.1
TICO	202.4	139.5	189.0	80.6
TT1PP	-	73.8	-	25.2
CENIT	-	57.4	-	61.5
TT2PP	-	16.3	-	2.9
Amandi	120.2	-	96.0	34.9
Karpowership	284.6	270.9	259.0	269.0
AMERI	27.5	97.4	103.0	105.8
RTTP	59.5	4.4	-	71.7
Trojan Power	-	-	-	-
CENPOWER	239.6	115.8	116.0	94.4
AKSA	-	20.0	-	26.7
Bridge Power	-	-	-	-
BXC Solar	2.3	2.8	2.0	2.7
Safisana	0.1	-	-	-
VRA Solar	0.3	0.3	0.2	-
Genser	-	98.9	-	37.4
Meinergy	2.3	2.4	2.0	2.4
Total Domestic Supply (GWh)	1,675.4	1,702.2	1,669.2	1,753.1
Imports (GWh)	-	5.3	-	0.6
Total Supply (GWh)	1,675.4	1,707.5	1,669.2	1,753.8
Deficit/Over supply (GWh)	-	32.1	-	84.6
Ghana Coincident Peak Load (MW)	3,002.0	2,742.6	3,056.0	2,775.5
System Coincident Peak Load (MW)	2,682.0	2,881.6	2,736.0	2,999.5

HIGHLIGHTS OF THE MONTH

recorded in October 2020. The share of the electricity generated from thermal generation sources reduced 64.4% in October 2020 to 61.6% in November 2020. Solar generation sources continued to constitute 0.3% of the total electricity supply in November 2020.

The water level for the Akosombo GS and the Bui GS began to drop in November 2020. The rate of reduction in the water level for the dams were 0.03 feet per day for the Akosombo GS and 0.12 feet per day for the Bui GS in November 2020.

The share of the natural gas consumed continued to dominate the total fuel mix but at a reduced share from 98.4% in October 2020 to 97.9% in November 2020. As a result, the share of the liquid fuel consumed in November 2020 increased from 1.6% in October to 2.1%.

ELECTRICITY DEMAND AND SUPPLY

Electricity Demand

An increase of 4.1% was recorded for the System Peak Load in November 2020, from 2,881.6 MW in October 2020 to 2,999.5 MW. Contrary to this, the System Peak Load recorded in November 2020 was 2.4% lower than the 3,074 MW project in the 2020 ESP. At the System Peak Load for November 2020, a total of 332 MW was supplied to our neighbouring countries. (ie. CEB and SONABEL). The electricity generated from the hydroelectric power plants constituted 41%, whilst thermal generation sources accounted for the remaining 59% of the System Peak Load for November 2020. There was an increase in the Ghana Peak Load, from 2,742.6 MW in October 2020 to 2,775.5 MW in November 2020. The Ghana Peak Load recorded in November 2020 was 1.1% higher than the 2,744 MW projected in the 2020 ESP. The average electricity demand of 2,435.3 MW recorded in November 2020 was 6.1% higher than the 2,295.03 MW recorded in October 2020. The System Load Factor recorded for November 2020 was 79.2% which was higher than the 77.9% recorded in October 2020.

Electricity supply

The average electricity supplied in November 2020 increased from 55.08 GWh per day in October 2020 to 58.46 GWh per day by 6.1%. Similarly, the total of 1,753.79 GWh supplied in November 2020 was 2.7% higher than the 1,707.5 GWh recorded in October 2020. Out of the total electricity supplied in November 2020, 1,753.15 GWh was supplied through domestic sources whilst the remaining 0.64 GWh was imported from CIE. Electricity export in November 2020 reduced by 2.4%, from 131.41 GWh in October 2020 to 120.97 GWh. Of the total export in November 2020, 46.92 GWh was supplied to CEB, 2.04 GWh to CIE, and 72.01 GWh to SONABEL. A total of 1,632.81 GWh was transmitted for domestic consumption in November 2020, which was 3.6% higher than the 1,576.09 GWh recorded in October 2020. The electricity supplied from the hydroelectric power plants contributed 38.1% of the total supplied from domestic sources, thermal contributed 61.6% and the remaining 0.3% was supplied from solar power plants.

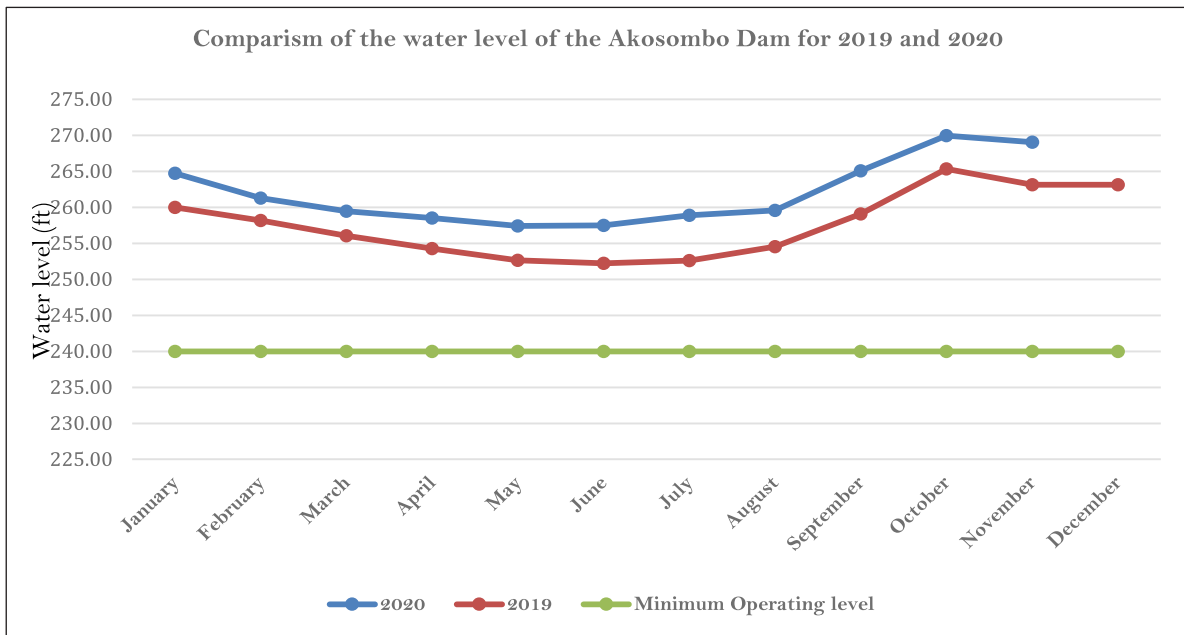
HYDRO DAM LEVELS

Akosombo Dam water level began to drop in November 2020

The Akosombo Generation Station (GS) began to witness a drop in the water level in November 2020. The rate of drop in the water level for the Akosombo Dam was recorded at 0.03 feet per day in November 2020. Consequently, the water level of 269.97 feet recorded at the beginning of the month dropped by 0.92 feet to a month-end water level of 269.05 feet. The water level recorded as the month-end level for November 2020 was 3.09 feet above the water level recorded for the same time in 2019 and was 29.05 feet above the minimum operating water level of 240 feet for the dam.

HIGHLIGHTS OF THE MONTH

Figure 1: Month-End Water Level for Akosombo Dam from January 2019 to November 2020.

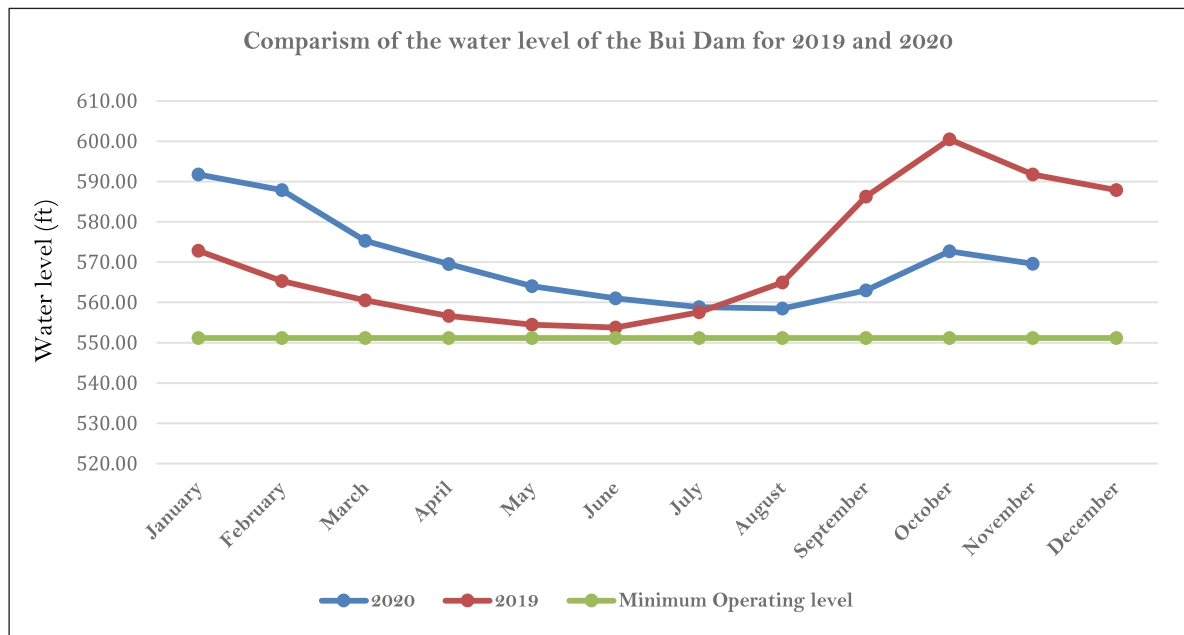


Bui Dam water level began to drop in November 2020

On 6th November, 2020, the Bui Generation Station (GS) began to record a negative inflow into the dam. The water level for the Bui Dam dropped at a rate of 0.12 feet per day in November 2020. The water level of 572.7 feet recorded for the dam at the beginning of the month dropped by 3.08 feet to a month-end water level of 569.62 feet. The water level recorded at the end of November 2020 was 27.16 feet below the water level recorded for the same period in 2019 and was 18.44 feet above the minimum operating water level of the dam.

Figure 2 shows the comparative end of month trajectory of the level of water in the Bui dam from January 2019 to November 2020.

Figure 2: Month-End Water Level for Bui Dam from January 2019 to November 2020



FUEL SUPPLY FOR POWER GENERATION

Natural gas imports from the West Africa Gas Pipeline Company (WAPCo) increased in November 2020

The natural gas supplied by the West African Gas Pipeline Company (WAPCo) increased 7.5% in November 2020, from 56.5 MMSCFD in October 2020 to 60.73 MMSCFD. Similarly, the gas pipeline company supplied a total of 1,821.97 MMSCF in November 2020 which was higher than the 1,752.49 MMSCF recorded in October 2020. The share of the total natural gas supplied WAPCo in the natural gas consumed was 20.6% in November 2020, which was higher than the 19.2% recorded in October 2020.

HIGHLIGHTS OF THE MONTH

In the total fuel mix, the total natural gas supplied by WAPCo contributed 20.2%, which represents an increase from the 18.9% recorded in October 2020.

Natural gas supply from domestic sources decreased in November 2020

The natural gas supplied from the domestic oil and gas fields for power generation decreased marginally by 2.9%, from 237.91 MMSCFD in October 2020 to 231.09 MMSCFD in November 2020. As a result, the total natural gas supplied decreased from 7,375.08 MMSCF in October 2020 to 6,932.66 MMSCF in November 2020. The total natural gas supplied from the domestic oil and gas fields contributed 79.4% of the total natural gas consumed in November 2020, which was lower than the 80.8% recorded in October 2020. In the total fuel mix, the share of the natural gas supplied from the domestic oil and gas fields decreased from 79.5% in October 2020 to 77.7% in November 2020.

Liquid Fuel consumption increased in November 2020 as natural gas consumption increased

There was a significant increase of 29.7% in liquid fuel consumption in November 2020, from 27,099 barrels in October 2020 to 35,160 barrels. The increase in liquid fuel consumption is a result of an increase in the electricity generated by AKSA in November 2020. HFO continued to be the only liquid fuel to be consumed for power generation in November 2020. The share of the total HFO consumed in the total fuel mix increased from 1.6% in October 2020 to 2.4% in November 2020.

Plant by Plant Highlights

Electricity Generation at the Akosombo Generation Station (GS) increased in November 2020

The average electricity supplied by the Akosombo GS increased from 13.65 GWh per day in October 2020 to 15.96 GWh per day by 16.9%. The total electricity supplied by the Akosombo GS increased from 423.27 GWh in October 2020 to 478.87 GWh in November 2020. Akosombo's total electricity supply was 31.9% higher than the 363 GWh projected in the 2020 ESP and constituted 28.7% of the total electricity supplied in November 2020. The hydroelectric power plant contributed 878.7 MW to the System Peak Load in November 2020, representing 29.3% of the load.

Electricity supply by Kpong Generation Station (GS) increased in November 2020

The Kpong hydroelectric power plant recorded an increase of 9.8% in the average electricity supplied, from 2.52 GWh per day in October 2020 to 2.76 GWh per day in November 2020. Consequently, the total electricity supplied by the hydroelectric power plant increased from 78.05 GWh in October 2020 to 82.95 GWh in November 2020. Kpong's total electricity supply in November 2020 was 27.6% higher than the 65 GWh projected in the 2020 ESP and constituted 5% of the total electricity supplied. The Kpong GS supplied 140 MW at the System Peak Load in November 2020, which represented 4.7% of the load.

The electricity supply by the Bui Generation Station (GS) increased in November 2020.

The average electricity supplied by the Bui GS increased by 9%, from 3.26 GWh per day in October 2020 to 3.55 GWh per day in November 2020. In a similar fashion, the total electricity supplied by the hydroelectric power plant increased from 101.1 GWh in October 2020 to 106.53 GWh. The Bui GS' total electricity supplied constituted 6.4% of the total electricity supplied in November 2020 and was 63.9% higher than the 65 GWh projected in the 2020 ESP. A total of 209.8 MW was supplied by the Bui GS to the System Peak Load in November 2020, which translates into 7% of the load.

The Sunon Asogli Power Plant (SAPP) generation continued to decrease in November 2020

The electricity supplied by the Sunon Asogli Power Plant (SAPP) continued to decrease from an average of 10.14 GWh per day in September 2020, and 7.44 GWh per day in October 2020 to 6.28 GWh per day in November 2020. Similarly, the total electricity supplied by SAPP decreased by 18.3%, from 230.67 GWh in October 2020 to 188.43 GWh in November 2020. The total electricity generated by the thermal power plant constituted 11.3% of the total electricity supplied in November 2020 and was 23.7% lower than the 247 GWh projected in the 2020 ESP. The thermal power plant supplied a total of 393.3 MW to the System Peak Load in November 2020. The load supplied by the SAPP contributed 13.1% of the System Peak Load in November 2020. A total of 1,304.36 MMSCF of natural gas was consumed by SAPP at an estimated heat rate of 7,668.32 Btu/kWh in November 2020. The heat rate recorded by the thermal power plant in November 2020 was lower than the 7,812.42 Btu/kWh recorded in October 2020.

Ameri Energy Power Plant's generation increased in November 2020

The Ameri power plant recorded an increase in the average electricity supplied in November 2020 by 12.3%, from 3.14 GWh per day in October 2020 to 3.53 GWh per day. Likewise, the total electricity supplied by the thermal power plant increased from 97.39 GWh in October 2020 to 105.89 GWh in November 2020. The total electricity supplied by the Ameri power plant constituted 6.3% of the total electricity supplied in November 2020 and was 2.8% marginally higher than the 103 GWh projected in the 2020 ESP. The Ameri thermal power plant contributed 104.2 MW to the System Peak Load, representing 3.5% of the load in November 2020. A total of 945.59 MMSCF of natural gas was consumed by the thermal power plant at an estimated heat rate of 9,892.84 Btu/kWh in November 2020, which was lower than the 10,005.25 Btu/kWh recorded in October 2020.

The Karpowership Power Plant's generation increased in November 2020

There was an increase in the average electricity supplied by the Karpowership in November 2020 by 2.6%, from 8.74 GWh per day in October 2020 to 8.97 GWh per day. On the contrary, the total electricity supplied by the thermal power plant reduced marginally by 0.7%, from 270.91 GWh in October 2020 to 268.99 GWh in November 2020. Karpowership's total electricity supply constituted 16.1% of the total electricity supplied in November 2020. Additionally, the total electricity supplied by the powership in November 2020 was 3.9% higher than the 259 GWh projected in the 2020 ESP. A total load of 393.8 MW was supplied by the thermal power plant at the System Peak Load, representing 13.1% of the load. The thermal power plant consumed a total of 1,938.48 MMSCF of natural gas at an estimated heat rate of 7,983.08 Btu/kWh in November 2020, which was lower than the 8,012.05 Btu/kWh recorded in October 2020.

AKSA Power Plant's generation increased in November 2020

The AKSA power plant recorded an increase of about 31% in the electricity supplied in November 2020. The average electricity supplied by the thermal power plant increased from 0.65 GWh per day in October 2020 to 0.89 GWh per day in November 2020. A total of 26.7 GWh of electricity was supplied by the AKSA power plant in November 2020 which was lower than the 20.01 GWh recorded in October 2020. The total electricity supplied by AKSA contributed 1.6% of the total electricity supplied in November 2020. However, the thermal power plant was projected to be offline in the 2020 ESP. A total of 111.7 MW was supplied by the thermal power plant to the System Peak Load in November 2020, representing 3.7%. AKSA consumed a total of 35,160 barrels of HFO at an estimated heat rate of 7,967.43 Btu/kWh in November 2020, which was lower than the 8,191.97 Btu/kWh recorded in October 2020.

Takoradi International Company (TICO) generation decreased in November 2020

The electricity supplied by the Takoradi International Company (TICO) reduced significantly by 40.3%, from an average of 4.5 GWh per day in October 2020 to 2.69 GWh per day in November 2020. The total electricity supplied by TICO reduced from 139.48 GWh in October 2020 to 80.57 GWh in November 2020. The thermal power plant's total electricity supply in November 2020 constituted 4.8% of the total electricity supplied and was 57.4% lower than the 189 GWh projected in the 2020 ESP. The TICO power plant supplied a total of 211 MW to the System Peak Load in November 2020, which translates into 7%. TICO consumed a total of 829.37 MMSCF of natural gas at an estimated heat rate of 11,403.23 Btu/kWh

HIGHLIGHTS OF THE MONTH

in November 2020. The heat rate recorded by the thermal power plant in November 2020 was lower than the 11,690.2 Btu/kWh recorded in October 2020.

Takoradi Power Company (TAPCo) Plant's generation increased in November 2020

The average electricity generated by the Takoradi Power Company (TAPCo) in November 2020 was 2.7 GWh per day. The Thermal power plant supplied a total of 81.12 GWh in November 2020 which was higher than the 29.36 GWh supplied in October 2020. The total electricity supplied by the thermal power plant constituted 4.9% of the total electricity supplied in November 2020 but was 49.9% lower than the 162 GWh projected in the 2020 ESP. At the System Peak Load for November 2020, TAPCo contributed 159 MW, representing 5.3% of the peak load. A total of 670.18 MMSCF of natural gas was consumed by TAPCo at an estimated heat rate of 9,151.65 Btu/kWh in November 2020, which was higher than the 8,117.85 Btu/kWh recorded in October 2020.

Cenpower Plant's generation decreased in November 2020

Average electricity of 3.15 GWh per day was supplied by the Cenpower plant in November 2020 which was 15.8% lower than the 3.74 GWh recorded in October 2020. The power plant supplied a total of 94.39 GWh in November 2020, which was also lower than the 115.81 GWh recorded in October 2020. The total electricity supplied by the power plant in November was 18.6% lower than the 116 GWh projected in the 2020 ESP and constituted 5.7% of the total electricity supplied. The electricity supplied by the thermal power plant to the System Peak Load was 180 MW, which represents 6% of the total load served. The Cenpower plant consumed 685.9 MMSCF of natural gas at an estimated heat rate of 8,049.69 Btu/kWh in November 2020. The heat rate recorded by the plant in November was an improvement on the 8,518.68 Btu/kWh recorded in October 2020.

Tema Thermal One Power Plant's (TT1PP) generation was limited in November 2020

The operations of TT1PP in November was limited to 11 days. The thermal power plant supplied a total of 25.22 GWh during this period, which constituted 1.5% of the total electricity supplied in November 2020. The thermal power plant was projected to be offline and did not also contribute to the System Peak Load in November 2020. A total of 314.79 MMSCF of natural gas was consumed by TT1PP at an estimated heat rate of 13,827.26 Btu/kWh in November 2020.

CENIT Power Plant generation continued to increase in November 2020.

The CENIT power plant recorded an increase of 10.7% in the average electricity supplied, from 1.85 GWh per day in October 2020 to 2.05 GWh per day in November 2020. Likewise, the total electricity supplied increased from 57.4 GWh in October 2020 to 61.49 GWh in November 2020. The total electricity supplied by CENIT in November 2020 constituted 3.7% of the total electricity supplied in November 2020. However, the thermal power plant was scheduled to be offline in the 2020 ESP. The thermal power plant supplied 108 MW to the System Peak Load in November 2020. This load constituted 3.6% of the peak load. The CENIT power plant consumed a total of 620.05 MMSCF of natural gas at an estimated heat rate of 11,170.28 Btu/kWh in November 2020, which was lower than the 11,425.27 Btu/kWh recorded in October 2020.

Kpone Thermal Power Plant (KTPP) continued operation in November 2020

The Kpone Thermal Power Plant (KTPP) continued its operation in November 2020 and supplied a total of 71.71 GWh which was significantly higher than the 4.43 GWh in October 2020. The total electricity supplied by the thermal power plant constituted 4.3% of the total electricity supplied in November 2020. According to the 2020 ESP, KTPP was expected to be offline during this period. The thermal power plant generated 100 MW at the System Peak Load in November 2020, which translates into 3.3% of the load. KTPP consumed 711.5 MMSCF of natural gas at an estimated heat rate of 10,991.08 Btu/kWh in November 2020.

The KTPP recorded a significant decrease in the total electricity supplied due to the natural gas rotation between TT1PP and KTPP. The KTPP generated 4.43 GWh in October 2020 significantly lower than the 67.64 GWh. The total electricity supplied by KTPP constituted 0.3% of the total electricity supplied in October 2020. The thermal power plant was projected to be offline in October 2020 according to the 2020 ESP. The power plant did not contribute to the System Peak Load in October 2020. KTPP consumed a total of 43.85 MMSCF of natural gas at an estimated heat rate of 10,954.22 Btu/kWh in October 2020 which was lower than the 11,481.33 Btu/kWh in September 2020.

Embedded Electricity Generation

Genser Power Plant's generation decreased in November 2020

The average electricity supplied by the Genser power plant reduced marginally by 0.7%, from 1.56 GWh per day in October 2020 to 1.25 GWh per day in November 2020. The Genser power plant supplied a total of 37.41 GWh of electricity in November 2020 which was lower than the 38.94 GWh recorded in October 2020. The total electricity supplied by the embedded thermal power plant constituted 2.2% of the total electricity supplied in November 2020. The Genser power plant consumed a total of 446.91 MMSCF of natural gas at an estimated heat rate of 13,540.96 Btu/kWh in November 2020, which was higher than the 13,114.56 Btu/kWh in October 2020.

BXC Solar generation decreased in November 2020

The BXC Solar power plant recorded a reduction in the total electricity supplied by 3.2%, from 2.78 GWh in October 2020 to 2.69 GWh in November 2020. The share of the electricity supplied by the solar power plant continued to be 0.2% of the total electricity supply. The total electricity supplied by the power plant in November 2020 was 34.5% higher than the 2 GWh projected in the 2020 ESP.

Meinergy Solar generation increased in November 2020

The total electricity supplied by the Meinergy Solar power plant increased by 2.5% in November 2020, from 2.35 GWh in October 2020 to 2.41 GWh. Meinergy's total electricity supplied in November 2020 constituted 0.1% of the total electricity supplied. The total electricity supplied by the solar power plant in November 2020 was 20.6% higher than the 2 GWh projected in the 2020 ESP.

Electricity Exchange – Import and Export decreased in November 2020

Electricity import from CIE reduced significantly by 87.9% in November 2020, from 5.28 GWh in October 2020 to 0.64 GWh. The total electricity imported constituted 0.04% of the total electricity supplied in November 2020.

The average electricity exported to the CEB, CIE, and SONABEL in November 2020 reduced by 4.9%, from 4.24 GWh per day in October 2020 to 4.03 GWh per day. The average electricity supplied to CIE and SONABEL reduced from 0.11 GWh per day, and 2.59 GWh per day in October 2020 to 0.07 GWh per day and 2.4 GWh per day in November 2020. On the contrary, the average electricity exported to CEB increased marginally by 1.8%, from 1.54 GWh per day in October 2020 to 1.56 GWh per day in November 2020.

A total of 120.97 GWh of electricity was exported to CEB, CIE and SONABEL in November 2020 which was lower than the 131.41 GWh recorded in the 2020 ESP. The total electricity exported was 11.7% lower than the 137 GWh projected in the 2020 ESP. Out of the total electricity exported, 46.92 GWh was supplied to CEB, 2.04 GWh to CIE and 72.01 GWh to SONABEL in November 2020.

Ghana continued to be a net exporter of electricity in November 2020.

OPERATIONAL FACT SHEET

Monthly Market Data Analysis

Figure 3a: Shares of sources of fuel in the total fuel mix for power generation Figure 3b: Shares of fuel type in the generation fuel mix power generation

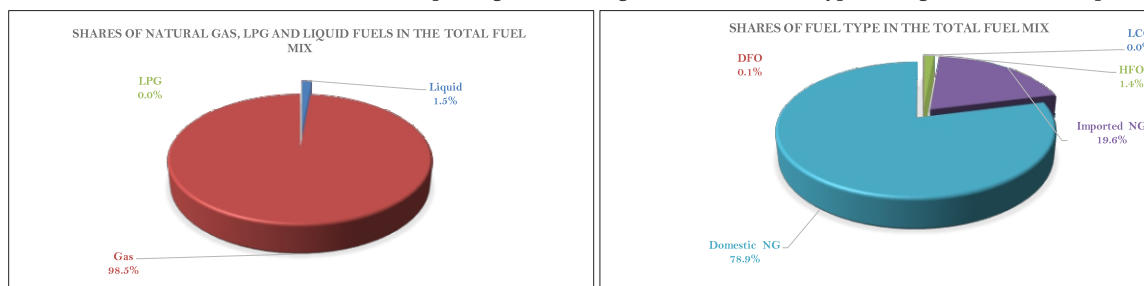
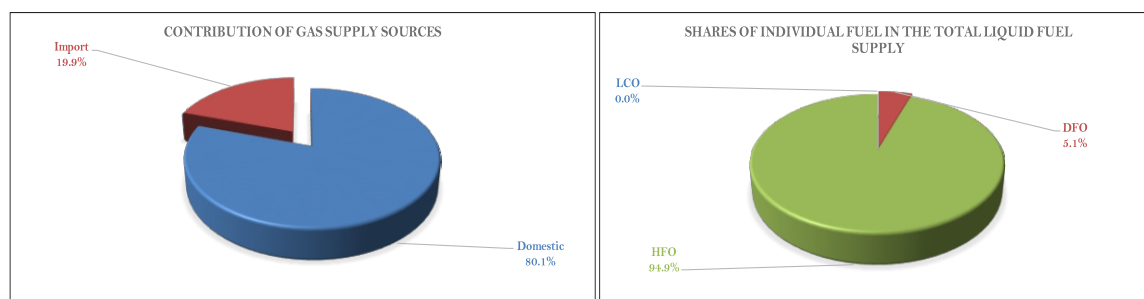


Figure 4a: Contribution of Natural Gas Supply by sources

Figure 4b: Contribution of individual fuel in the liquid fuel supply

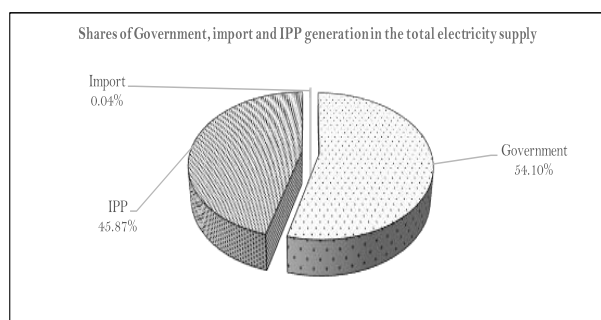
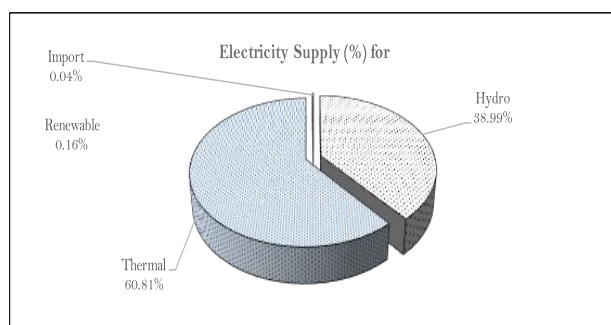


Peak Electricity Supply - November 2020			
Source of Supply	Generation at System Peak Load (MW)	Generation at Ghana Peak Load (MW)	Electricity Supply (GWh)
AKOSOMBO	878.70	949.80	478.87
KPONG	140.00	141.00	82.95
BUI	209.80	213.70	106.53
SEAP	393.30	273.80	188.43
TAPCO	159.00	107.00	81.12
TICO	211.00	212.00	80.57
TT1PP	-	106.00	25.22
CENIT	108.00	107.00	61.49
TT2PP	10.00	-	2.91
MRP	-	14.00	34.86
KARPOWER	393.80	416.30	268.99
AMERI	104.20	164.60	105.89
KTPP	100.00	102.00	71.71
Trojan Power	-	-	-
CENPOWER	180.00	-	94.39
AKSA	111.70	128.30	26.70
BXC Solar	-	-	2.69
Safisana	-	-	-
VRA Solar	-	-	-
Genser	-	-	37.41
IMPORT	2,999.50	2,935.50	0.64
Export to CIE at peak	-	-	46.92
Export to CEB at peak	212.00	42.00	2.04
Export to Sonabel	120.00	118.00	72.01
System Coincident Peak Load	2,999.50		
Ghana Coincedent Peak Load		2,775.50	
Total Supply			1,751.37
Total Supply without export			1,630.40

OPERATIONAL FACT SHEET

Average Monthly Flowrate (MMSCFD)	
Location	Monthly Average
Etoki	53.44
Tema WAGPCo	123.59
Aboadze WAGPCo	0.00
Aboadze GNGC	70.15
Reverse Flow	70.16

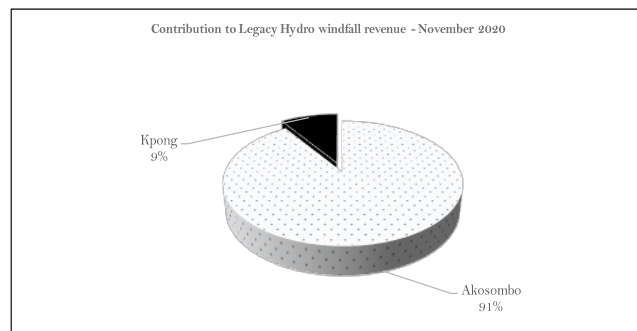
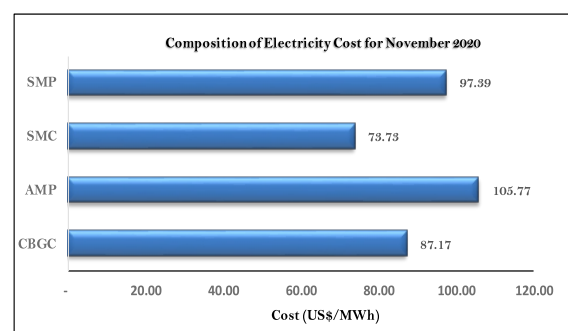
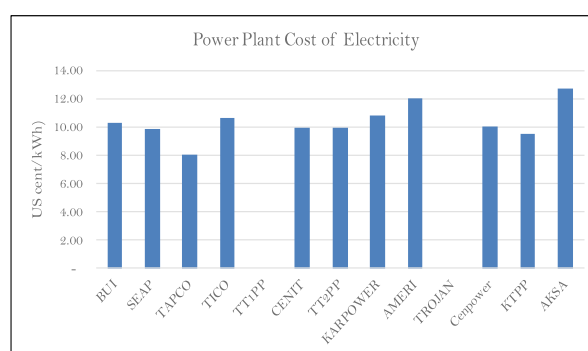
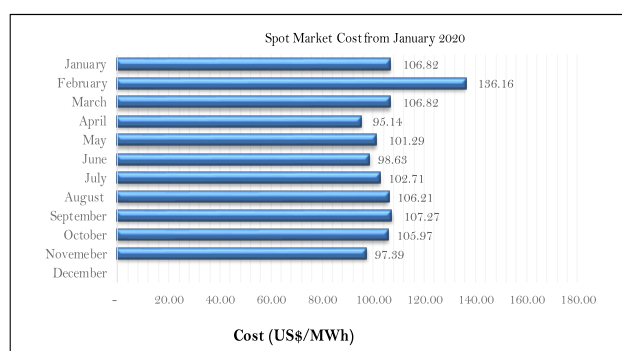
Nov-20			
	Beginning month (ft)	End month (ft)	Change in water level
Hydro Dam			(feet)
Akosombo	269.97	269.05	-0.92
Bui	572.70	569.62	-3.08



Power Plant Data November 2020								
	Installed Capacity (MW)	Plant Capacity Utilization (%)	Electricity Generation (GWh)	Natural Gas Consumption (MMBtu)	LCO Consumption (MMBtu)	DFO Consumption (MMBtu)	HFO Consumption (MMBtu)	LPG Consumption (MMBtu)
Akosombo	1,020.00	65.21	478.87	-	-	-	-	-
Kpong	160.00	72.00	82.95	-	-	-	-	-
Bui	400.00	36.99	106.53	-	-	-	-	-
SEAP	560.00	46.73	188.43	1,444,944.21	-	-	-	-
TAPCO	330.00	34.14	81.12	742,409.14	-	-	-	-
TICO	340.00	32.91	80.57	918,757.95	-	-	-	-
TT1PP	126.00	27.80	25.22	348,723.46	-	-	-	-
CENIT	126.00	67.78	61.49	686,882.94	-	-	-	-
TT2PP	87.00	4.64	2.91	28,349.81	-	-	-	-
KARPOWER	470.00	79.49	268.99	2,147,403.85	-	-	-	-
AMERI	250.00	58.83	105.89	1,047,503.10	-	-	-	-
Cenpower	370.00	35.43	94.39	759,828.72	-	-	-	-
TROJAN	56.00	-	-	-	-	-	-	-
KTTP	220.00	45.27	71.71	788,188.79	-	-	-	-
AKSA	360.00	10.30	26.70	-	-	-	212,716.01	-
Amandi	192.00	25.22	34.86	290,126.31	-	-	-	-
Bridge Power	-	-	-	-	-	-	-	-
GENSER	95.00	54.69	37.41	506,567.25	-	-	-	-
VRA Solar	2.50	12.44	0.22	-	-	-	-	-
BXC	20.00	18.68	2.69	-	-	-	-	-
Meinergy	20.00	16.75	2.41	-	-	-	-	-
Total	5,204.50	46.79	1,753.37	9,709,685.53	-	-	212,716.01	-

ECONOMIC FACT SHEET

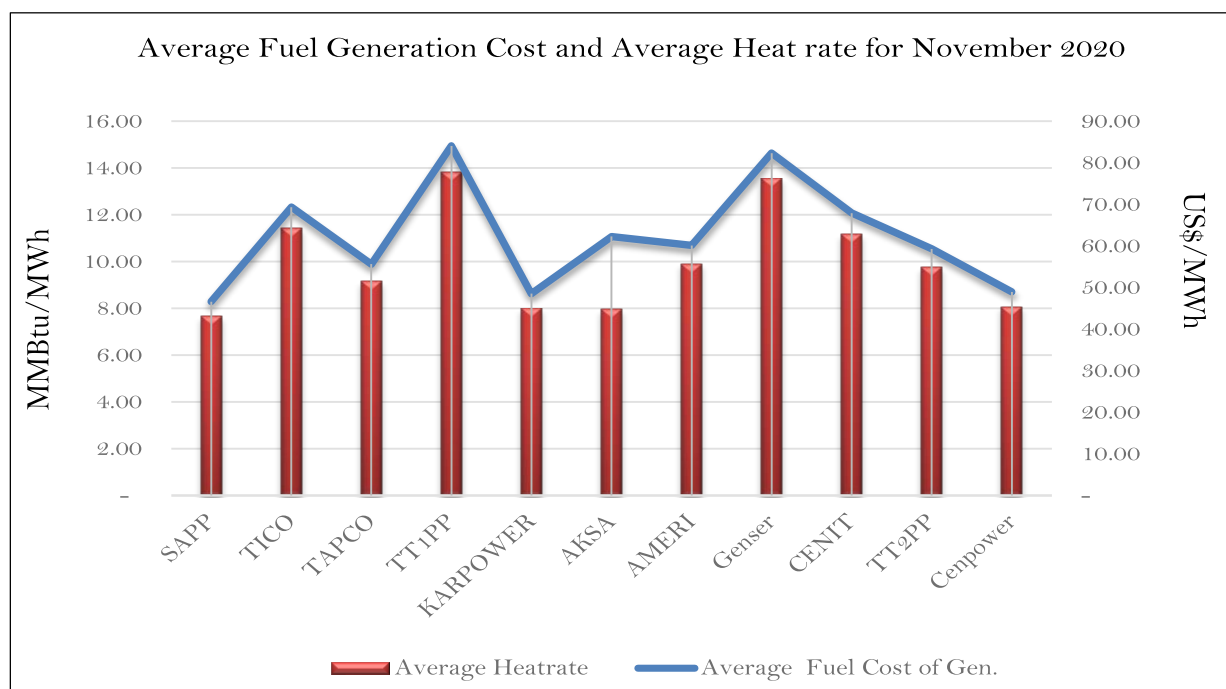
		Actual	Projected	Difference
Average Market Energy Cost	US\$/MWh	66.20	73.43	(7.23)
Average Market Capacity Charge (AMCC)	US\$/MWh	39.57	36.64	2.93
Total Average Market Cost (TAC)	US\$/MWh	105.77	110.08	(4.30)
System Marginal Cost (SMC)	US\$/MWh	73.73	87.97	(14.24)
System Marginal Capacity Charge (SMCC)	US\$/MWh	23.65	23.95	(0.30)
Spot Market Price (SMP)	US\$/MWh	97.39	111.92	(14.53)
Composite Bulk Generation Charge (CBGC)	US\$/MWh	87.17	87.17	-
Deviation of TAC from CBGC	US\$/MWh	(18.60)	(22.91)	4.30
Deviation of SMP from CBGC	US\$/MWh	(10.22)	(24.75)	14.53



	Gazetted Natural Gas Price	Weighted average Natural Gas Price	LCO	HFO	DFO	LPG
US\$/MMBTu	6.08	6.14	9.01	7.82	12.38	12.54

Average Fuel Prices		
		Nov-20
Fuel Type	Unit	Delivered Cost
Natural Gas	US\$/MMBTu	6.08
LCO	US\$/BBL	47.69
HFO	US\$/Tonne	263.86
DFO	US\$/Tonne	500.05
LPG	US\$/Tonne	534.95

ECONOMIC FACT SHEET



Power Plant	Capacity Utilization (%)	Average Heat rate (Btu/KWh)	Average Fuel Cost of Generation (US\$/MWh)	Emission Factor (kgCO ₂ /kWh)
Akosombo	65.21	-	-	-
Kpong	72.00	-	-	-
Bui	36.99	-	-	-
SAPP	46.73	7,668.32	46.62	0.41
TAPCO	34.14	9,151.65	55.64	0.49
TICO	32.91	11,403.23	69.33	0.61
TT1PP	27.80	13,827.26	84.07	0.73
CENIT	67.78	11,170.28	67.92	0.59
TT2PP	4.64	9,750.58	59.28	0.52
Amandi	79.49	8,322.35	50.60	0.44
KARPOWER	79.49	7,983.08	48.54	-
AMERI	58.83	9,892.84	60.15	0.52
TROJAN	-	-	-	-
KTPP	45.27	10,991.08	66.83	0.58
AKSA	10.30	7,967.43	62.28	0.63
Cenpower	35.43	8,049.69	48.94	0.43
Genser	54.69	13,540.96	82.33	0.72

Other Market News and Trends

	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Analysis A						
Cost of Generation (GHp/kWh)	45.97	48.83	50.06	50.40	48.06	42.23
PURC CBGT (GHp/kWh)	46.87	46.87	46.87	46.87	46.87	46.87
Difference (GHp/kWh)	0.90	-1.96	-3.19	-3.53	-1.19	4.64
Analysis B						
Cost of Generation (USCent/kWh)	8.33	8.46	7.41	8.88	8.46	7.41
PURC CBGT (USCent/kWh)	8.50	8.35	8.31	8.26	8.25	8.23
Difference (USCent/kWh)	0.16	-0.11	0.89	-0.62	-0.21	0.81
Average Monthly Exchange rate (GHS/US\$)	5.52	5.61	5.64	5.67	5.68	5.70

	April 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.84	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.43	0.5	0.5	0.5	0.5	0.5	0.5	0.4

	May 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.76	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.44	0.5	0.5	0.5	0.5	0.5	0.5	0.4

	June 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.81	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.42	0.5	0.5	0.5	0.5	0.5	0.5	0.4

	July 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.96	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.41	0.5	0.5	0.5	0.5	0.5	0.5	0.4

	August 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.97	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.39	0.5	0.5	0.5	0.5	0.5	0.5	0.4

	September 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Ratio Installed capacity to Demand	1.94	2.6	2.2	2.3	2.5	2.4	3.1	2.9
Capacity Factor	0.39	0.5	0.5	0.5	0.5	0.5	0.5	0.4

Other Market News and Trends

	April 2020 indicator							
	Ghana	World	SSA	OECD	Non-OECD	Income	Middle	Income
Capacity annual growth (%)	5.04	3.1	3.1	2.6	3.1	2.7	3.9	3.4
Ratio of installed capacity growth to demand growth	1.93	-3	0.2	-15.1	0.6	0.7	0.3	0.02

	May 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Middle Income	Low Income
Ratio Installed capacity to Demand	4.67	3.1	3.1	2.6	3.1	2.7	3.9	3.4
Ratio of installed capacity growth to demand growth	0.77	-3	0.2	-15.1	0.6	0.7	0.3	0.02

	June 2020 indicator							
	Ghana	World	SSA	OECD	High Income Non-OECD	Upper Middle Income	Middle Income	Low Income
Ratio Installed capacity to Demand	3.83	3.1	3.1	2.6	3.1	2.7	3.9	3.4
Ratio of installed capacity growth to demand growth	0.35	-3.0	0.2	-15.1	0.6	0.7	0.3	0.02

	July 2020 indicator						
	Ghana	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income	
Capacity annual growth (%)	3.83	3.1	3.1	2.7	3.9	3.4	
Ratio of installed capacity growth to demand growth	6.78	0.2	0.6	0.7	0.3	0.02	

	August 2020 indicator						
	Ghana	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income	
Capacity annual growth (%)	3.83	3.1	3.1	2.7	3.9	3.4	
Ratio of installed capacity growth to demand growth	5.36	0.2	0.6	0.7	0.3	0.02	

	September 2020 indicator						
	Ghana	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income	
Capacity annual growth (%)	3.83	3.1	3.1	2.7	3.9	3.4	
Ratio of installed capacity growth to demand growth	8.93	0.2	0.6	0.7	0.3	0.02	

	April 2020 indicator							
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income	
Emission Factor (KgCO ₂ /kWh)	0.33	0.6	0.5	0.9	0.7	0.5	0.3	
Fossil fuel dependency (%)	64.71	60.7	45.3	84.4	66.4	59.4	40.6	

	May 2020 indicator							
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income	
Emission Factor (KgCO ₂ /kWh)	0.33	0.6	0.5	0.9	0.7	0.5	0.3	
Fossil fuel dependency (%)	64.04	60.7	45.3	84.4	66.4	59.4	40.6	

Other Market News and Trends

	June 2020 indicator						
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Emission Factor (KgCO ₂ /kWh)	0.35	0.6	0.5	0.9	0.7	0.5	0.3
Fossil fuel dependency (%)	69.51	60.7	45.3	84.4	66.4	59.4	40.6

	July 2020 indicator						
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Emission Factor (KgCO ₂ /kWh)	0.35	0.6	0.5	0.9	0.7	0.5	0.3
Fossil fuel dependency (%)	65.00	60.7	45.3	84.4	66.4	59.4	40.6

	August 2020 indicator						
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Emission Factor (KgCO ₂ /kWh)	0.32	0.6	0.5	0.9	0.7	0.5	0.3
Fossil fuel dependency (%)	58.87	60.7	45.3	84.4	66.4	59.4	40.6

	September 2020 indicator						
	Ghana	World	SSA	High Income Non-OECD	Upper Middle Income	Lower Middle Income	Low Income
Emission Factor (KgCO ₂ /kWh)	0.30	0.6	0.5	0.9	0.7	0.5	0.3
Fossil fuel dependency (%)	49.06	60.7	45.3	84.4	66.4	59.4	40.6

Acronyms

AGPP = Atuabu Gas Processing Plant
CBGC = Composite Bulk Generation Charge
DFO = Distillate Fuel Oil
ECG = Electricity Company of Ghana
ESP = Electricity Supply Plan
GHp = Ghana Pesewa
GWh = Giga-watt Hours
KTPP = Kpone Thermal Power Plant
MRP = Mine Reserve Plant
LCO = Light Crude Oil
LTA = Long Term Average
MMscf = Million Standard Cubic Feet
NITS = National Interconnected Transmission System
SAPP = Sunon Asogli Power Plant
SNEP = Strategic National Energy Plan
TT2PP = Tema Thermal 2 Power Plant
VRA = Volta River Authority
WAGP = West African Gas Pipeline

Btu = British Thermal Units
CUF = Capacity Utilization Factor
EC = Energy Commission
EMOP = Electricity Market Oversight Panel
FPSO = Floating Production, Storage and Offloading
GNGC = Ghana National Gas Company
HFO = Heavy Fuel Oil
kWh = Kilo-watt hours
LEAP = Long-range Energy Alternative Planning
LI = Legislative Instrument
MW = Megawatt
MWh = Mega-watt hours
PV = Photovoltaic
SMP = System Marginal Price
TEN = Tweneboea, Enyenra, Ntomme
TT2PP = Tema Thermal 2 Power Plant
WAGPCo = West African Gas Pipeline Company
WEM = Wholesale Electricity Market

For any enquiries please contact the:
 EMOP Secretariat, Energy Commission, Accra.
Tel: 0302 813756/7/9 **E-mail:** emop@energycom.gov.gh