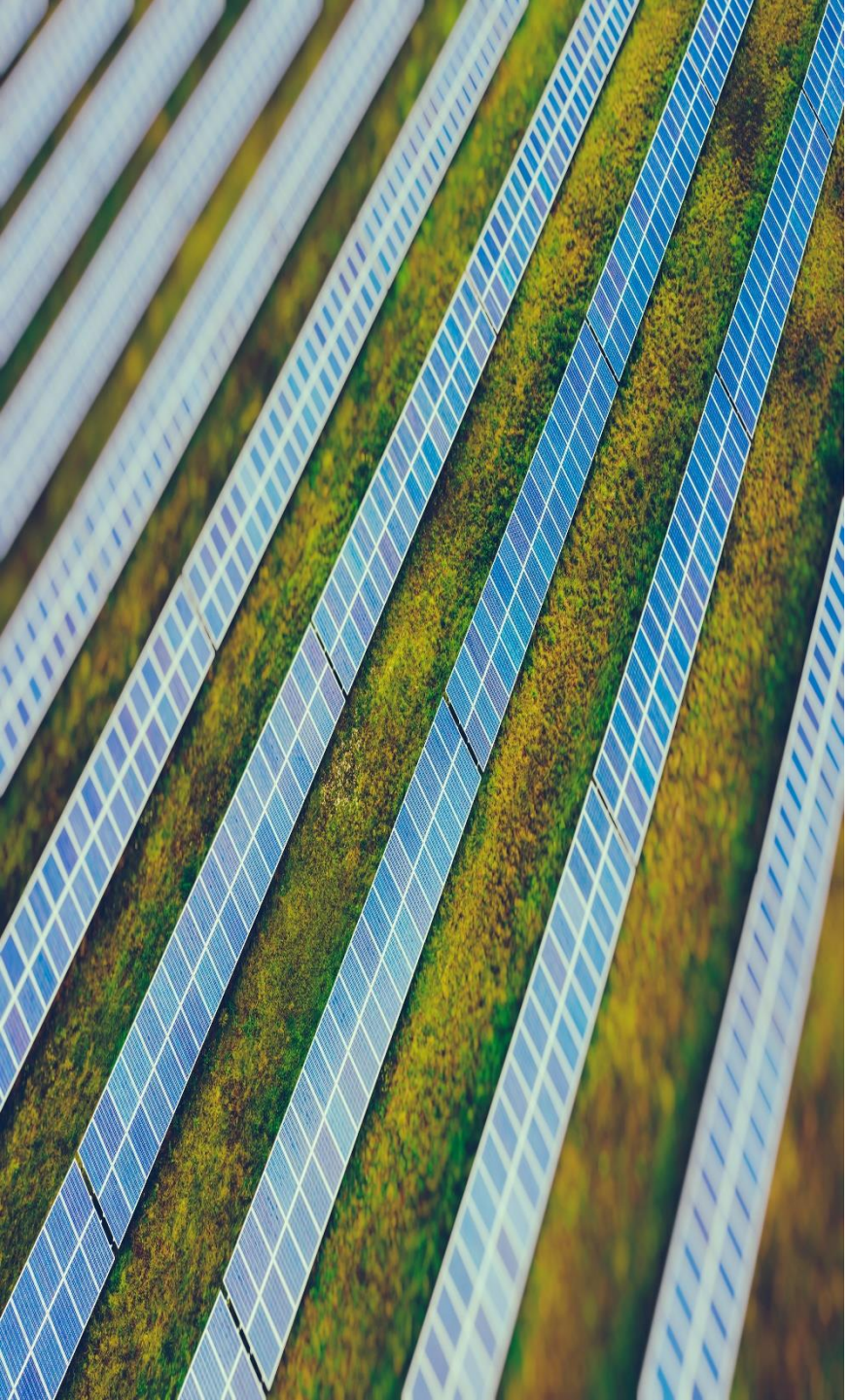
Final

Ghana's Power Sector Report

November 2022



Contents

GHANA INVESTMENT PROMOTION CENTRE

01

Why invest in Ghana

GHANA INVESTMENT PROMOTION CENTRE

Why invest in Ghana
Country overview

- Formerly known as the Gold Coast, Ghana was the first sub-Saharan nation to gain independence from colonial rule in 1957.
- Ghana is credited as being one of the most stable democracies in Africa, having successfully conducted 8 national elections and recorded no incidence of a coup d'état since 1992.

Airports

- 1 international airport
- 5 domestic airports

Railway

- 3 major railway networks with a total track length of 1,300 km

Dry ports

- Tema Port
- Takoradi Port

Road network

- Main roads: 67,291 Km
- Main arteries : 12,800 Km
- Paved roads: 3,800 Km

Internal infrastructure

Total land area	**Overview:** Ghana has total land area of 238,537 sq.km Ghana has 16 administrative regions and 261 district assemblies.
Electricity supply	• Ghana's electricity supply is derived from hydropower generated from the Akosombo, Bui Power and Kpong dams, and 10 thermal plants at Aboadze in Western Region. • According to World Bank, Ghana has an 86.63% (2021) access to electricity.
Water supply	Water is provided to citizens through the Ghana Water Company Limited, Community Water and Sanitation Agency and private water producers.
Locational advantage	○ Ghana is geographically closer than any other country to the center of the earth. ○ Ghana has 2 harbors with one being the largest in West Africa, making Ghana the gateway to West Africa.

Source: Oxford Economics, Ghana Statistical Service, UNCTAD, Bank of Ghana, Doing Business Report (2020), World Bank

Why invest in Ghana
Investment attractions

2nd largest economy in West Africa

- Ghana has an active retail market and healthy consumption levels. Fitch reports, household spending is expected to increase from US$55bn in 2021 to USD81bn in 2025.
- AfCFTA presents an opportunity for intra-regional growth by leveraging access to common markets and knowledge transfer through labour mobility, thereby attracting foreign direct investments into the region.
- The AfCFTA secretariat is located in Ghana.

Rich in natural resources

- Ghana was the largest (No.1) producer of gold in Africa and 6th largest in the world in 2021.
- 13,000 metric tonnes of manganese reserve.
- 16.86 million tonnes of high-grade trihydrate bauxite mined since 1997.
- Newly discovered deposits of lithium in 2021 amounting to 30.1million tonnes, setting Ghana up to become West Africa's first lithium producer.

Preferred tourism destination

- International arrivals of tourist increased from 932,579 in 2016 to 1,130,307 in 2019, however 2020 saw a reduction to 355,108 due to lockdown measures in response to Covid -19.
- As at September 2021, international tourist arrivals increased by 18% while domestic tourists grew by 58%.

Youthful population

- Ghana is blessed with a very youthful population, about 67% of the population is within the ages of 15 to 64 years.
- Government initiative such as free basic and secondary has ensured a 69.8% literacy rate for citizens who are 6 years and older as at 2021.

Stable political environment

- Ghana is ranked the second most peaceful country in Africa and the 38th most peaceful country in the world as per the 2021 Global Peace Index.
- Due to provisions made in the constitution of Ghana (article 20) and Free Zones Act (Act 504) there is a reduced threat of nationalism of private businesses.

Investor-friendly government initiatives

- Government has initiated a plethora of incentives to ensure a conducive and enabling business environment.
- Government incentives include tax holidays, rebates, provision of industrial parks, provision of finance through partnering agencies and interest subsidies.
- Ghana has double taxation agreements with the United Kingdom, South Africa and other EU countries.

Top investment destination

- Foreign Direct Investment (FDI) has averaged $2.72b from 2017 to 2021, suggesting stability in the inflow of capital with investment focus in oil and gas, mining (including gold and manganese), and agriculture (cocoa).
- Ghana attracted US$2.65bn in FDI inflows in 2020, one of the highest amount in West Africa.

Agrarian economy

- Ghana is endowed with vast arable lands rich in agriculture.
- In 2020, Ghana was the **2nd** largest producer of cocoa in the world, the **4th** largest producer of cassava in the world.
- Ghana is blessed with fertile land for the production of maize, tomato, rice among many other food crops.

Source: Oxford Economics, Ghana Statistical Service, United States Geological Service, Global Peace Index, World Bank, Visit Ghana (Tourism Report 2020), Ghana Investment Promotion Centre, Ghana Bauxite Company Ltd

GHANA INVESTMENT PROMOTION CENTRE

02

Sector overview

A snapshot of Ghana's power sector

27
Number of power plants (2021)

22,051 GWh
Annual production (2021)

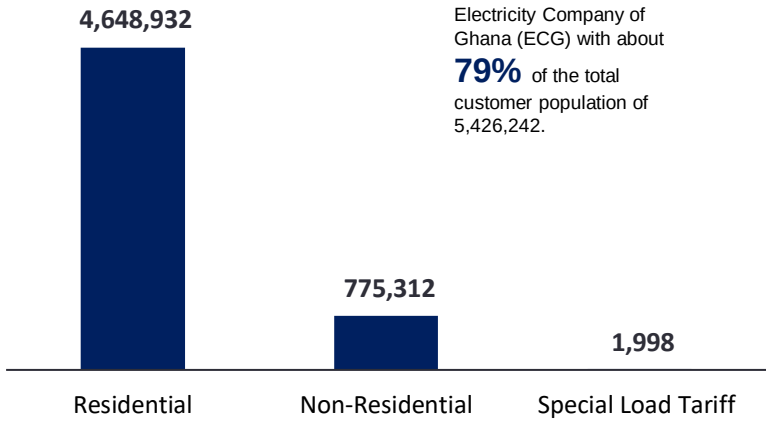
95%
Share of urban population with access (2021)

87%
Ghana's electricity access rate (2021)

1,734 GWh
Electricity export (2021)

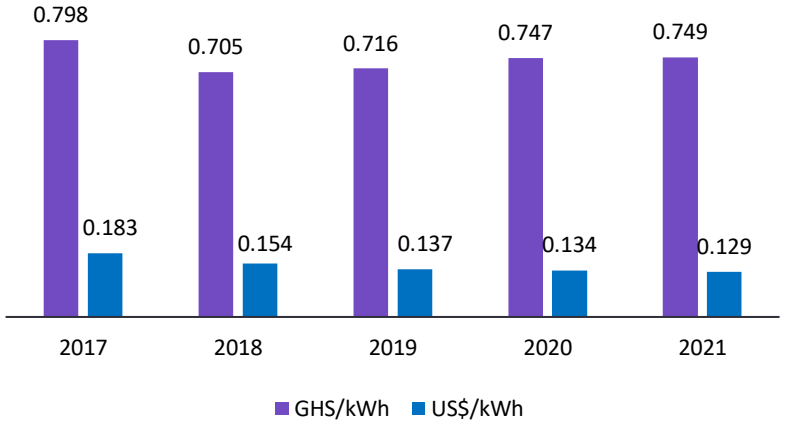
5%
Transmission losses % of total electricity transmitted (2021)

Power distribution customer population 2021



Electricity Company of Ghana (ECG) with about **79%** of the total customer population of 5,426,242.

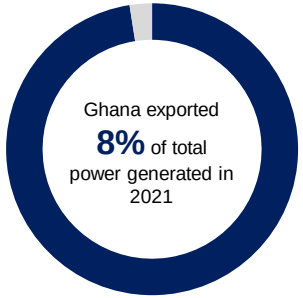
Trends in average electricity end-user tariff (2017 – 2021)



IPPs installed capacity accounts for 62% of total installed capacity in 2021.

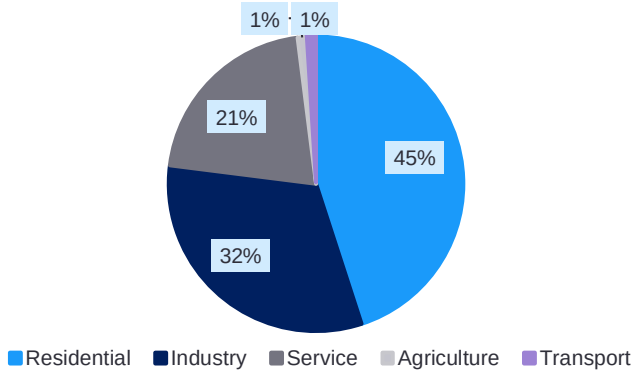
IPPs: Independent Power Producer

Power exported (2021)

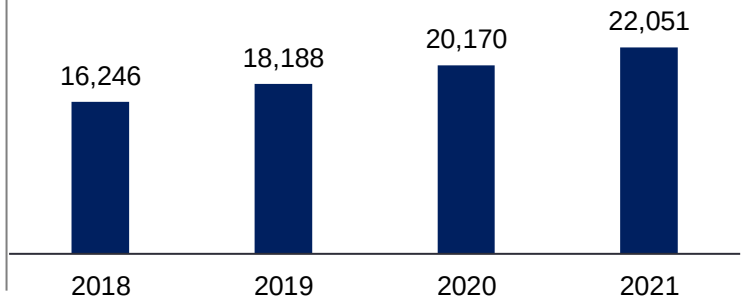


Ghana's net export of electricity has increased from 600 GWh in 2018 to 1,690 GWh in 2021, representing an annual average growth rate of **41%**

Electricity consumption by sectors (GWh) 2021

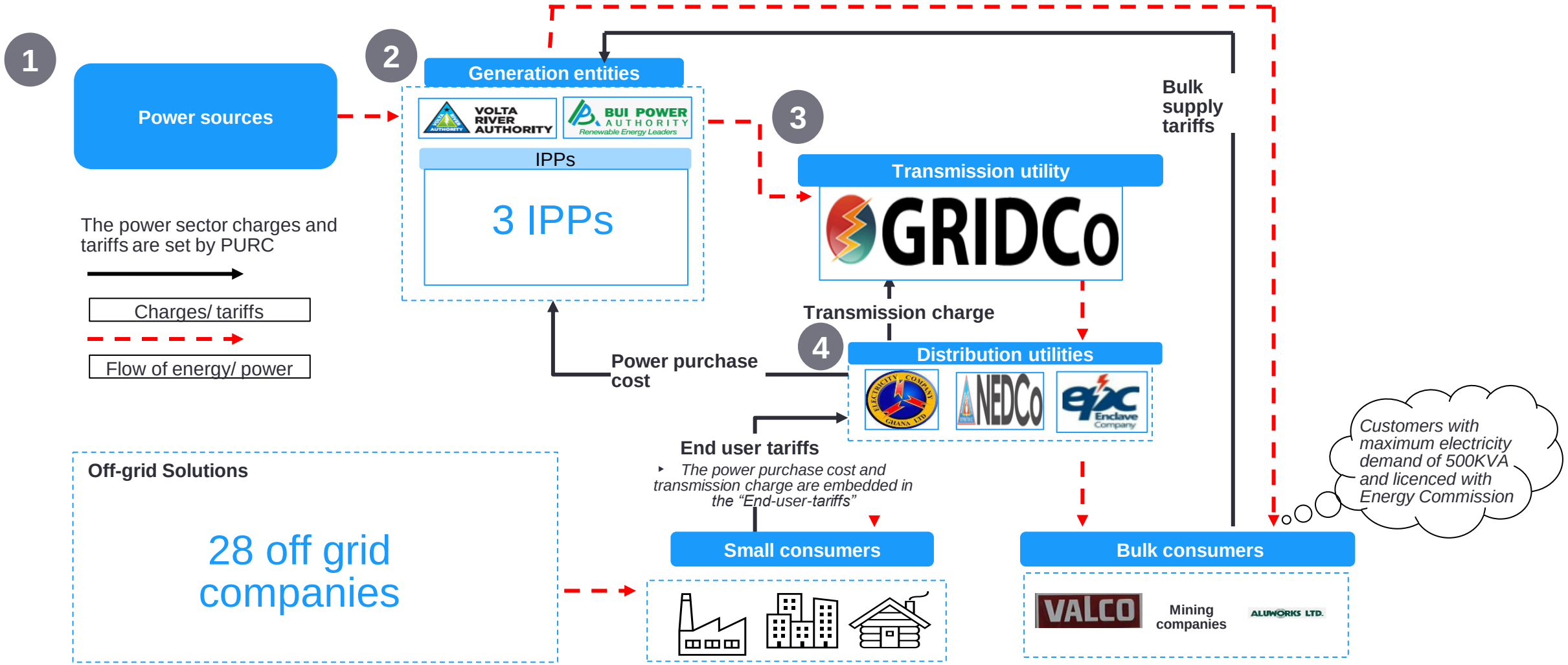


Annual electricity generated in Ghana (2018 – 2021) (GWh)



Source: Ministry of Energy, Fitch Solutions, The World Bank, Energy Commission Ghana

A snapshot of Ghana's power sector



Source: Energy Commission Ghana, Smart Solar Ghana

GHANA INVESTMENT PROMOTION CENTRE

Power generation

Electricity Generation

Ghana's energy generation mix has primarily consisted of hydro and thermal sources.

In 2021, hydro accounted for around **34.1%** of total power, with thermal accounting for **65.3%** and renewables accounting for **0.55%.**

Total installed capacity as at 2021 was **5,481 MW**, however, due to shifting hydrological conditions, insufficient fuel sources, and decrepit infrastructure, actual availability rarely reaches 2,400 MW[1] according to USAID[1].

Installed capacity by energy mix (2021)

Hydro power	Thermal power	Other renewables
3 plants	15 plants	9 plants
1,584 MW	3,753 MW	144 MW

Thermal fuel power sources

- **Natural Gas** 2,070 MW
- **Liquid Gas** 68 MW
- **Diesel** 335 MW
- **Crude Oil** 700 MW
- **Heavy Fuel Oil (HFO)** 400 MW

Electricity generation entities (2021)

VOLTA RIVER AUTHORITY

IPPs

- SUNON ASOGLI POWER
- Trojan Power
- aksa POWER GENERATION
- CENIT ENERGY
- BRIDGE POWER
- BXC Solar/Meienergy
- KARPOWERSHIP
- CEN POWER GENERATION COMPANY LIMITED
- CORKS ENERGY

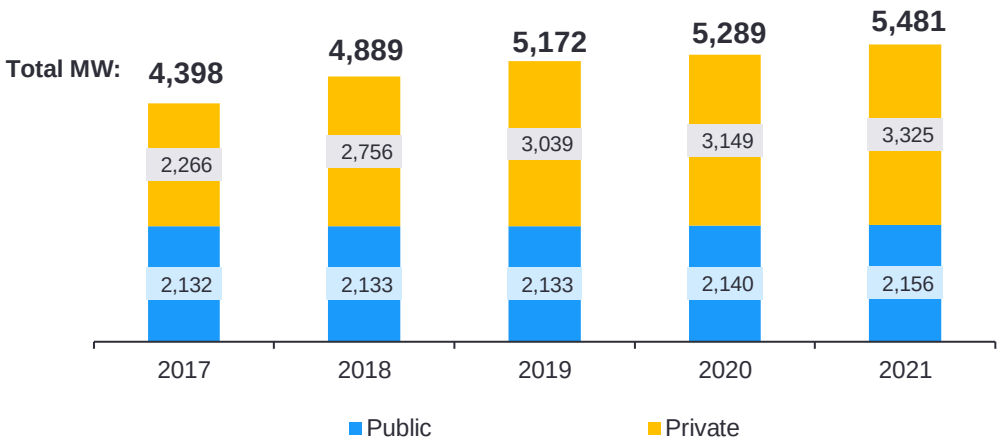
Other renewables power sources

- **Solar** 124 MW
- **Bio** 20 MW

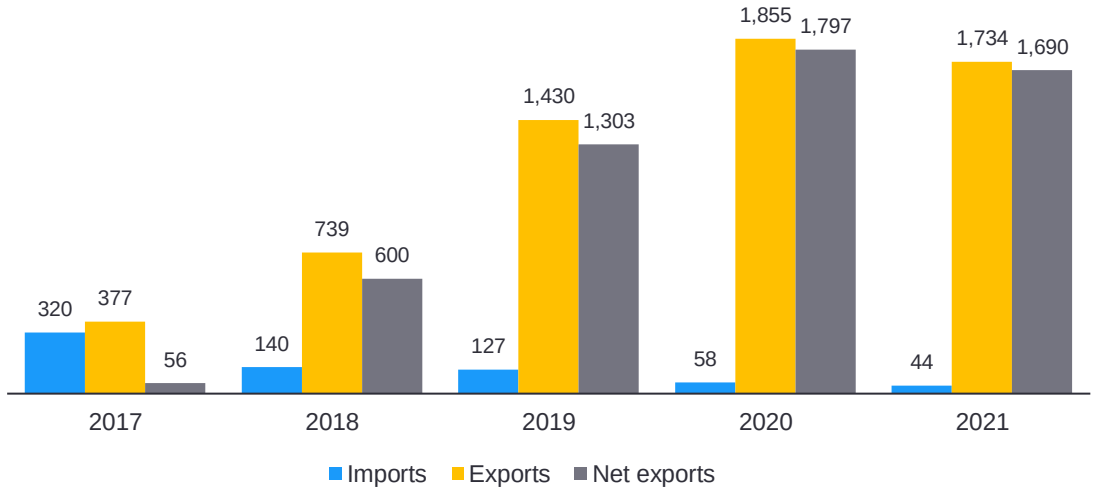
Source: Energy Commission Ghana, USAID, Power Africa Project

Power generation

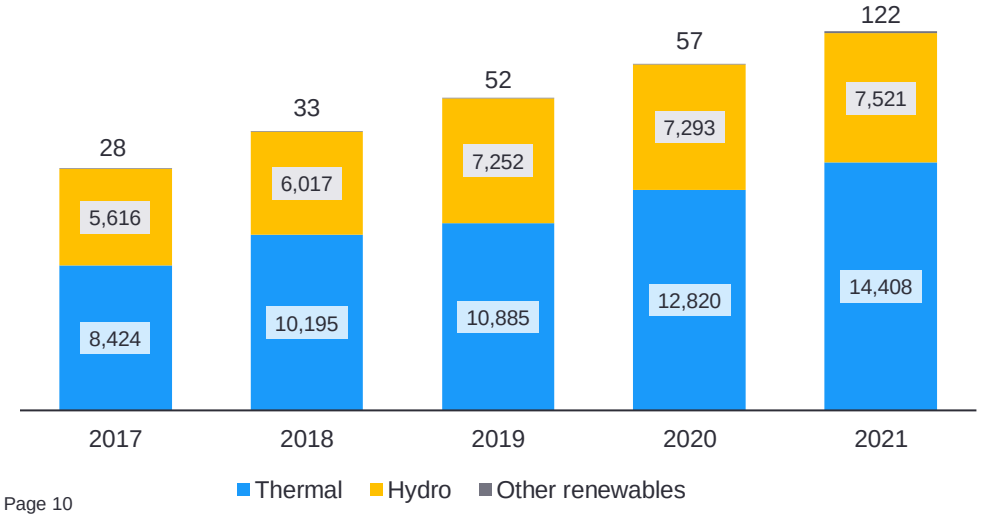
Installed capacity by interest (MW)



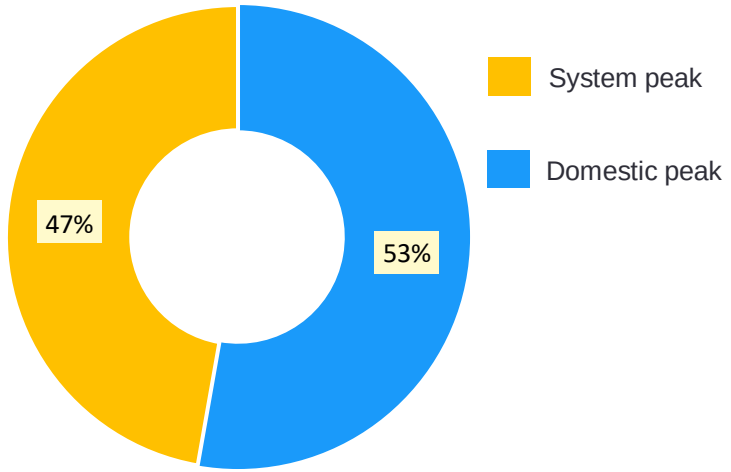
Electricity import and export (GWh)



Annual electricity generation (GWh)



System and domestic peak load (MW) (2021)



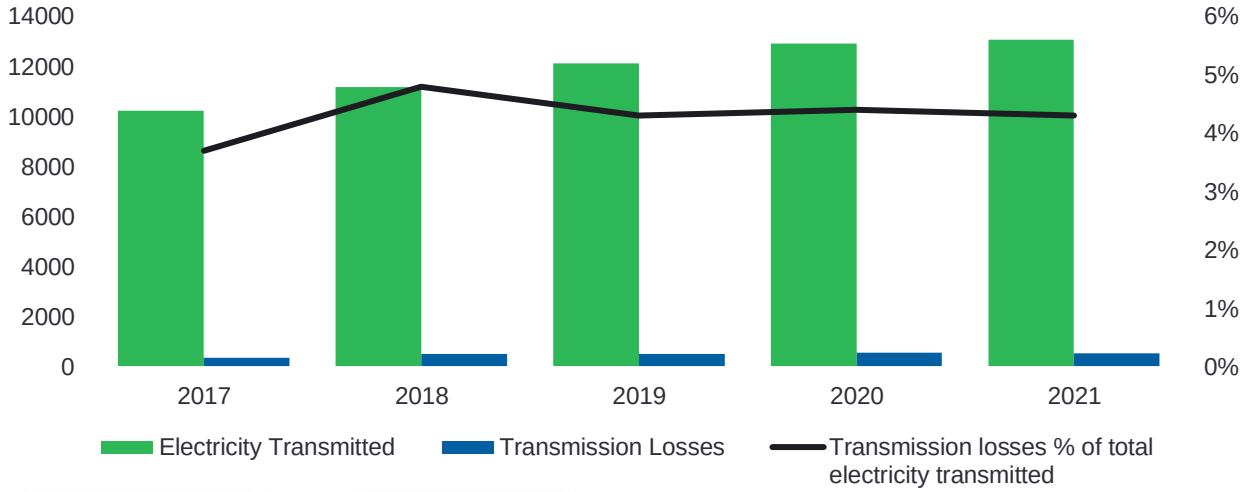
Source: Energy Commission Ghana

Power transmission

Source: Energy Commission Ghana, Ghana Grid Company

- **Ghana Grid Company (GRIDCo)** is responsible for all transmissions.
- GRIDCo owned 68 substations as at 2021, from which it steps voltages down to 34.5 kV and 11 kV to sell to existing distributors: Electricity Company of Ghana (ECG), Northern Electricity Distribution Company (NEDCo) and Enclave Power Company (EPC).

Electricity transmitted and losses (GWh) 2010-2021

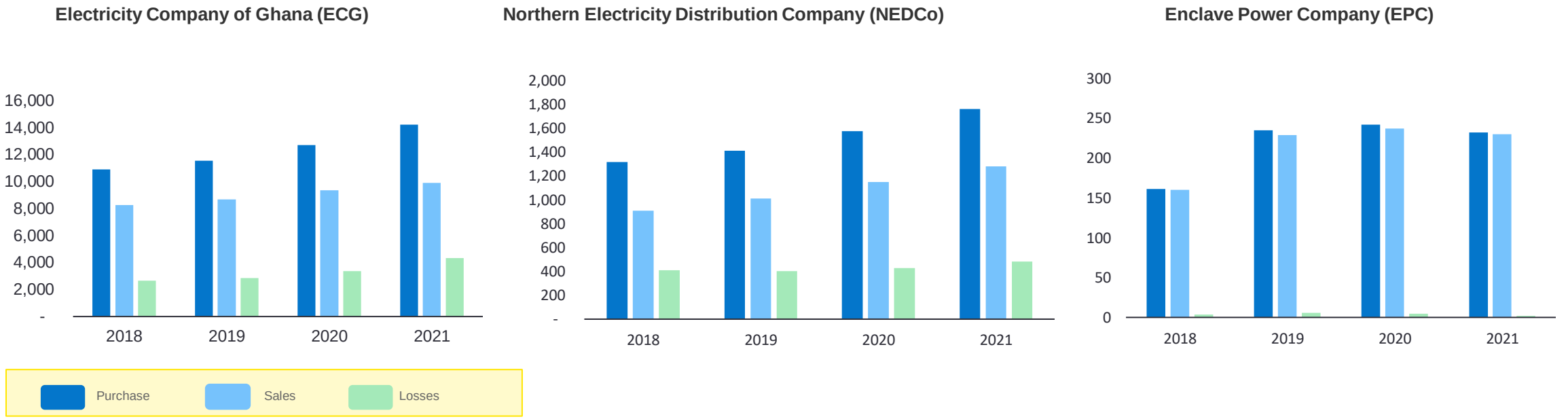


Transmission network	Voltage levels	Substations	Interconnection (WAPP)
5,000 km (2021)	69, 161, 225 & 330 kv (2021)	68 (2021)	3 Countries (2021)

Source: Energy Commission (2021)

Power distribution

Power distribution purchases, sales and losses (GWh)



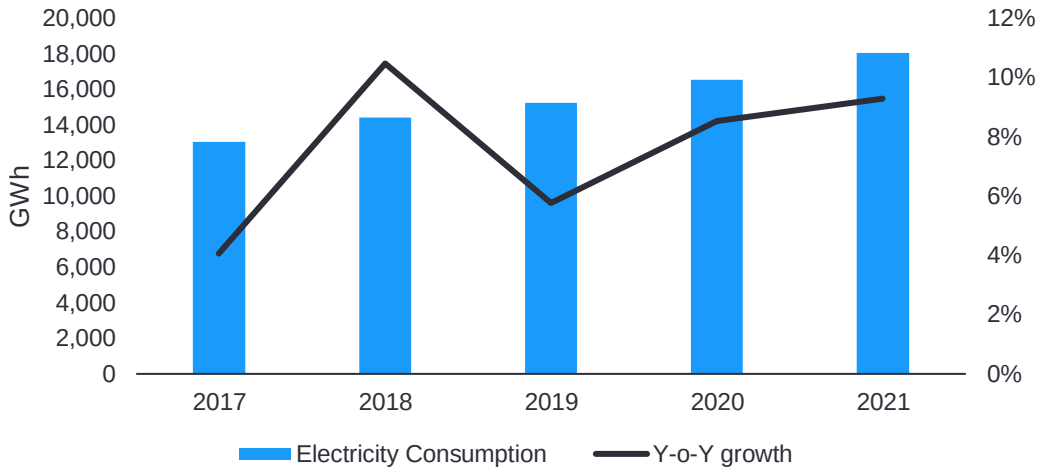
- Ghana has three primary distribution utilities, two of which are state-owned (ECG & NEDCo) and one of which is run privately (EPC).
- The major distribution firm, the Electricity Company of Ghana (ECG), is a limited liability company controlled entirely by the Ghanaian government. ECG is currently in charge of electricity distribution and supply in six political/administrative zones in southern Ghana: Ashanti, Central, Eastern, Greater Accra, Volta, and Western.
- ECG is responsible for the purchase of electrical energy in bulk from the power generators for distribution to consumers located in the lower third of Ghana's territory. ECG distributes approximately 90% of the public distribution loads as at the end of 2021.
- NEDCo was established to distribute electricity in the Brong-Ahafo, Northern, Upper East and Upper West Regions of Ghana as part of VRA's 161kV transmission grid extension to the northern parts of Ghana.
- EPC operates within the Tema Free Zones Enclave, supplying about 50 industrial companies.

Source: Energy Commission Ghana, Volta River Authority

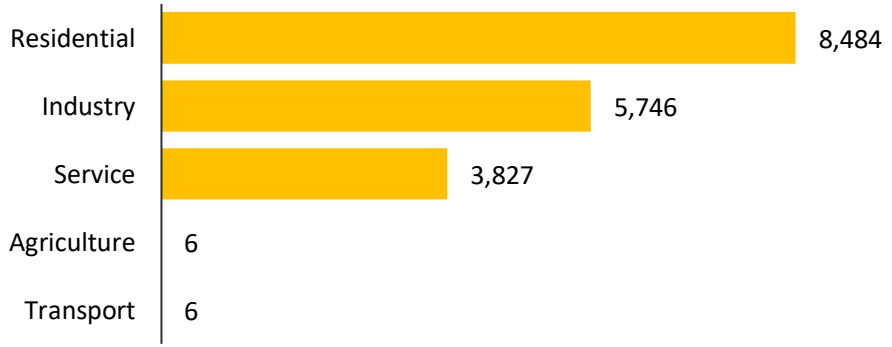
Electricity consumption

- Total electricity generation almost doubled from 14,068 GWh in 2011 to 22,051 GWh in 2021, representing an annual average growth rate of 11%.
- Total electricity consumption increased from 13,036GWh in 2017 to 18,067GWh in 2021 representing an annual average growth rate of 8%.
- Electricity consumption by the industrial and residential sectors accounted for 31.8% and 47% of the total electricity consumed in 2021 respectively, compared to about 30.4% and 43% of the final electricity consumption in 2020.

Historical electricity consumption (2017 – 2021)



Electricity consumption by sectors GWh (2021)



Source: Energy Commission Ghana

Power tariff regime

Tariffs in the electricity sub-sector refer to Public Utilities Regulatory Commission (PURC) approved electricity charges payable by regulated consumers to the distribution utility. This comprises charges for generation, transmitting and distributing electricity to the premises of the consumer.

Gazetted Tariff Composition		
Composite BGC	**TSC1 & TSC2**	**DSC1, DSC2 & DWC**	**EUT**
Composite Bulk Generation Charge (CBGC)	• This refers to PURC weighted average of approved maximum charge for the procurement of capacity and energy that distribution utilities shall be allowed to recover from customers through the PURC gazetted average end user tariff.
Transmission Service Charge (TSC)	• TSC1 is the rate for GRIDCo to recover cost of transmission network operations. • TSC2 is the rate for GRIDCo to recover transmission losses.
Distribution Service Charge (DSC)	• DSC1 - PURC approved rate for distribution companies (DisCos) to recover the cost of distribution. • DSC2 - PURC approved rate for DisCos to recover distribution losses. • DWC - Rate payable to DisCos for the use of their networks by embedded bulk customers.

Regulated Customers		
Residential	**Non-residential**	**SLT**	**EUT**
Residential	• These are customers who use electricity for non-commercial uses, maintain a consumption level equal to or less than 100KVA at a nominal service voltage of 415 volts.
Non-residential	• Regulated customers who use electricity for commercial and non-domestic activities, maintain a consumption level equal to or less than 100KVA at a service voltage of 415 Volts and/or 240 Volts.
SLT	• There are three classes of SLT consumers – SLT HV (33kV with maximum demand of equal to or above 100KVA); SLT MV (415 volts with maximum demand of up to 100KVA) SLT LV 415 volts with maximum demand of up to 100KVA but consume less than 100kV).

Tariff revenue is obtained by charging regulated consumers for usage of electricity according to four schedules of PURC gazetted electricity tariffs. This is composed of three main components:

- Composite Bulk Generation Charge (CBGC)
- Transmission Service Charge (TSC)
- Distribution Service Charge (DSC)

The following are also considered:

- Statutory Levies and Charges (Value-Added Tax/ National Health Insurance Levy, Public Lighting, National Electrification Levy, Power factor Surcharge)

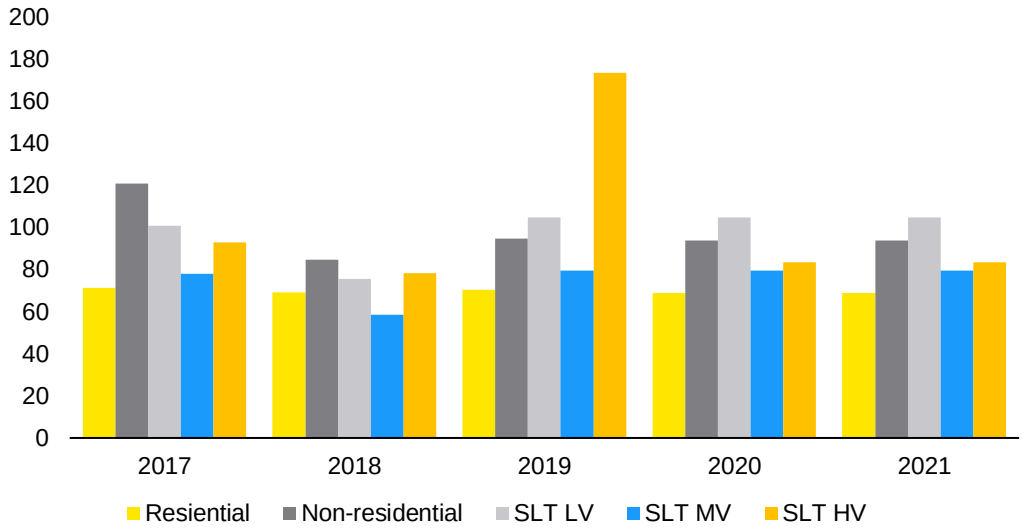
Government Subsidy measures that come in the following forms are considered:

- Subsidy I - Social subsidy applicable to all lifeline consumers
- Subsidy II – Subsidy applicable to consumers within the 0-150 units' electricity consumption category
- Special subsidy applicable to some selected mines and steel companies.

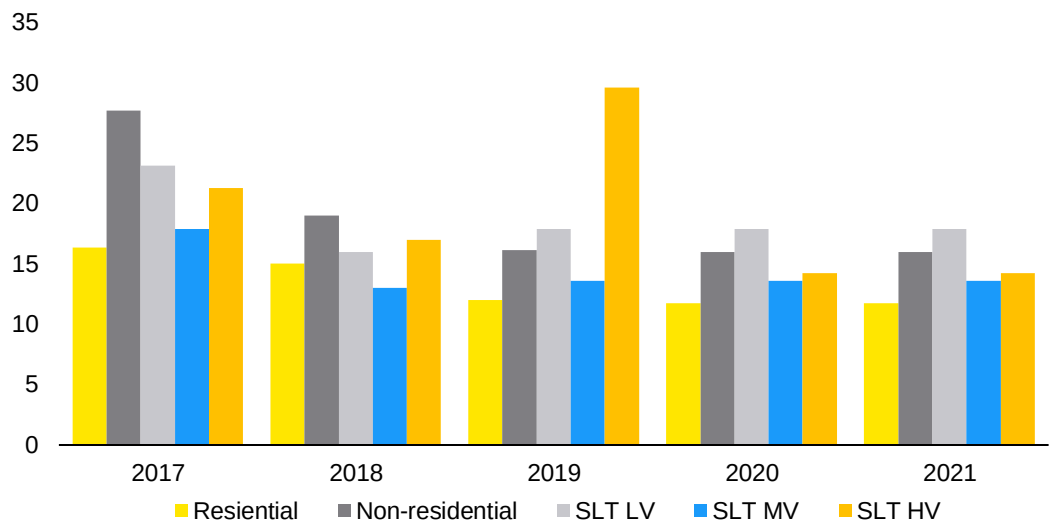
Source: PURC, Energy Commission Ghana

Power tariff regime

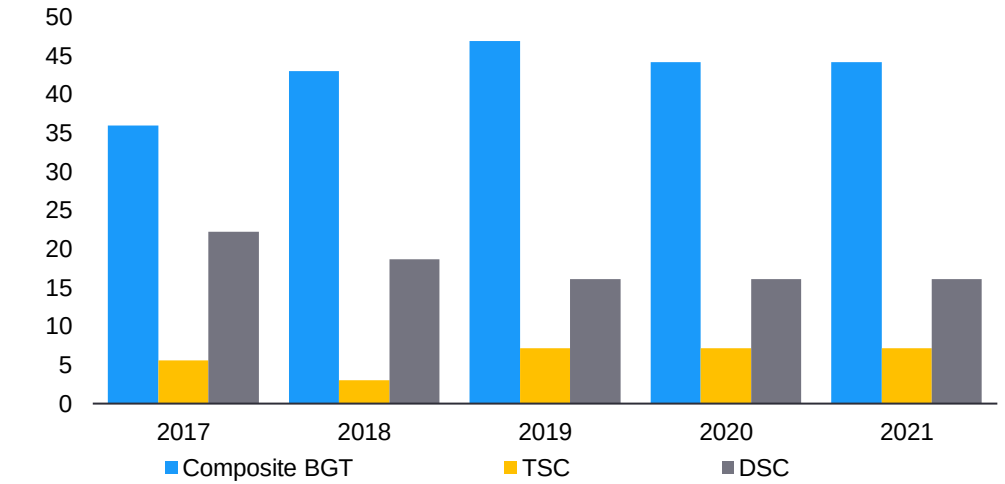
Tariffs by Customer (GHp)



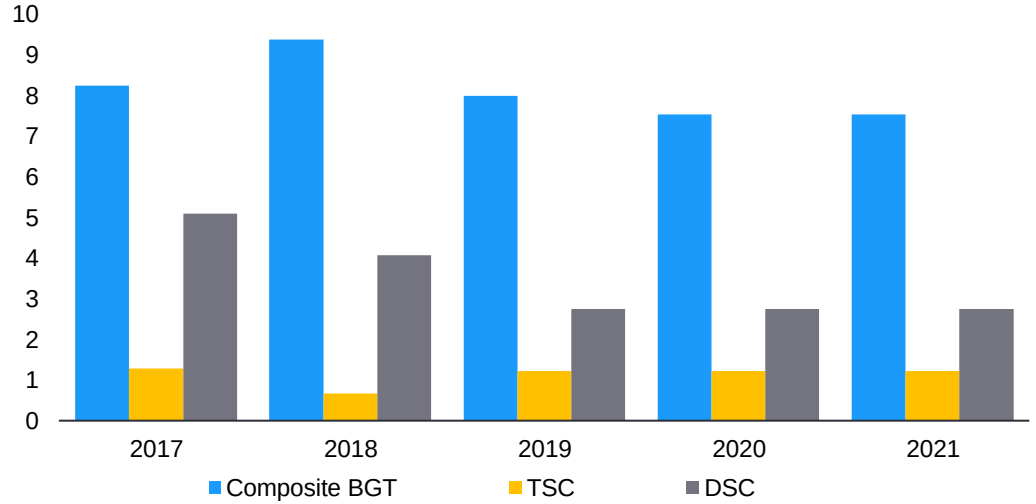
Taffifs by customer (US cents)



Tariffs by USPs (GHp)



Tariffs by USPs (US cents)



Source: PURC

USPs: Utility Service Providers, TSC: Transmission Service Charge, DSC: Distribution Service Charge, Composite BGT: Composite Bulk Generation Tariff, SLT: Special Load Tariff

Key developments

Wind generation in Ghana

- NEK Umwelttechnik AG, a Swiss company, in July 2020 built a 1GW of wind generation capacity plant in Ghana. This project comprised the Ayitepa (225MW), Konikablo (200MW), Amlakpo (200MW), Madavunu (200MW), and Koluedor (160MW) wind farms.

Kasoa bulk supply point

- Government in partnership with the United States inaugurated the Kasoa bulk supply point (BSP) in June 2022, the United States has completed its nearly six-year $316 million investment in Ghana's energy infrastructure, supporting more reliable power for hundreds of thousands of schools, hospitals, offices, and homes in Ghana.

Mini grid and solar plan

- The African Development Bank granted approximately US$27 million for the Ghana Mini-grid and Solar Photovoltaic Net Metering Plan in 2021. The project entailed the installation of 67.5MW of capacity split among 35 mini-grids and several independent solar capacity projects across the Volta Lake region.

Pokuase bulk supply point

- Government inaugurated the Pokuase bulk ssupply point (BSP) in Accra in 2021. The US Millennium Challenge Corporation (MCC) funded the $64.7 million electrical infrastructure project under the Ghana Power Compact.

Establishment of energy distribution networks

- In June 2020, a 55 off-grid energy distribution network at a total cost of US$230 million funded by the Climate Investment Fund was completed. Currently, the project serves 9 district areas in the country; Sene East, Krachi East and West, Pru, Nkwanta North and South, Gonja Central, East and West and Nchumuru.

Source: Fitch Solutions power report, US Embassy

Key partnerships

Amandi Energy	**Project capacity:** 200MV dual-fueled plant **Estimated project cost:** US$552 million **Year of partnership:** 2019 **Partnering agency:** Endeavour Energy
Karpowership	**Project capacity:** 450MW powership over a 10 year period **Estimated project cost:** US$786 million **Year of partnership:** 2014 **Partnering agency:** ECG
Sunon Asogli Power	**Project capacity:** 360MW power plant **Estimated project cost:** US$360 million **Year of partnership:** 2016 **Partnering agency:** Guangdong Power Engineering
Trojan Power	**Project capacity:** 160,000 -180,000m^3 of LNG **Estimated project cost:** US$550 million **Year of partnership:** 2017 **Partnering agency:** ECG
Ameri Energy Group	**Project capacity:** 250MW power plant **Estimated project cost:** US$420 million **Year of partnership:** 2016 **Partnering agency:** ECG & VRA
Cenit Energy	**Project capacity:** 126MV thermal power plant **Estimated project cost:** US$200 million **Year of partnership:** 2012 **Partnering agency:** VRA

Source: Company websites, Ministry of Finance

Regulatory overview

	Regulatory agency	Scope of activity	Responsibilities	Nature of activity		
				Oversight function	Inspection/ licensing	Policy making
	Ministry of Energy	General	Creation, implementation, monitoring, and assessment of energy policies to develop and ensure reliable, high-quality energy service at a low cost.	✓	✓	✓
	Ghana Grid Company Ltd	General	Carry out cost-effective electricity dispatch and transmission from wholesale suppliers (generating businesses) to bulk users.	✓	✓	
	Energy Commission Ghana	General	Oversee and supervise the development and usage of Ghana's energy resources, particularly in the areas of electricity licensing, renewable energy, natural gas, and energy efficiency.	✓	✓	
	Bui Power Authority	General	Plan, execute and manage the Bui Hydroelectric Project, now the Bui Generating Station (BGS).	✓	✓	
	Public Utilities Regulatory Commission	General	Regulate the provision of electricity and water utility services.	✓	✓	

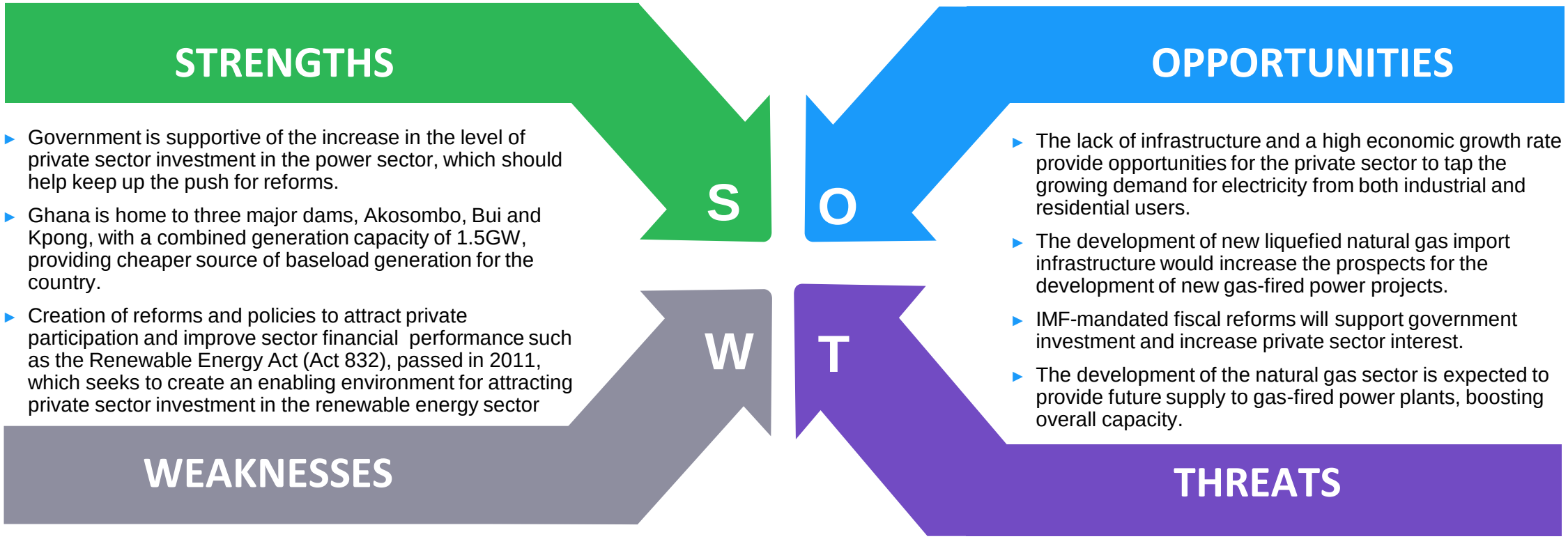
Source: Company Website

Regulatory overview

	Regulatory agency	Scope of activity	Responsibilities	Nature of activity		
				Oversight function	Inspection/ licensing	Policy making
	Volta River Authority	General	Generate, transmit and distribute electricity under the Volta River Development Act 1961	✓	✓	
	Electricity Company of Ghana	General	Responsible for the distribution of electricity in six (6) operational regions in the southern part of Ghana	✓	✓	
	Northern Electricity Distribution Company	General	Provide safe and reliable power to homes and businesses in northern Ghana	✓	✓	
	Environmental Protection Agency	General	Co-manage, protect and enhance the country's environment as well as seek common solutions to global environmental problems	✓	✓	

Source: Company Website

Power sector SWOT analysis



- Government is supportive of the increase in the level of private sector investment in the power sector, which should help keep up the push for reforms.
- Ghana is home to three major dams, Akosombo, Bui and Kpong, with a combined generation capacity of 1.5GW, providing cheaper source of baseload generation for the country.
- Creation of reforms and policies to attract private participation and improve sector financial performance such as the Renewable Energy Act (Act 832), passed in 2011, which seeks to create an enabling environment for attracting private sector investment in the renewable energy sector

- The lack of infrastructure and a high economic growth rate provide opportunities for the private sector to tap the growing demand for electricity from both industrial and residential users.
- The development of new liquefied natural gas import infrastructure would increase the prospects for the development of new gas-fired power projects.
- IMF-mandated fiscal reforms will support government investment and increase private sector interest.
- The development of the natural gas sector is expected to provide future supply to gas-fired power plants, boosting overall capacity.

- A high reliance on hydropower leaves the power sector vulnerable to changing weather conditions.
- Thermal power is vulnerable to disruptions to gas supplies.
- Limited access to international financial markets in Ghana makes it difficult for investors to raise capital.

- The risk of tax increases aimed to prop up government revenue streams, given the country's perennially weak fiscal position, is likely to increase costs for businesses.
- Most energy corporations function as state monopolies, with energy generating, transmission, and distribution obligations to satisfy demand. This arrangement has been beset by a limited capital investment, weak infrastructure, low performance, and mismanagement throughout time.

Source: Fitch Solutions, Country Risk & Industry Research

03

Sector opportunities

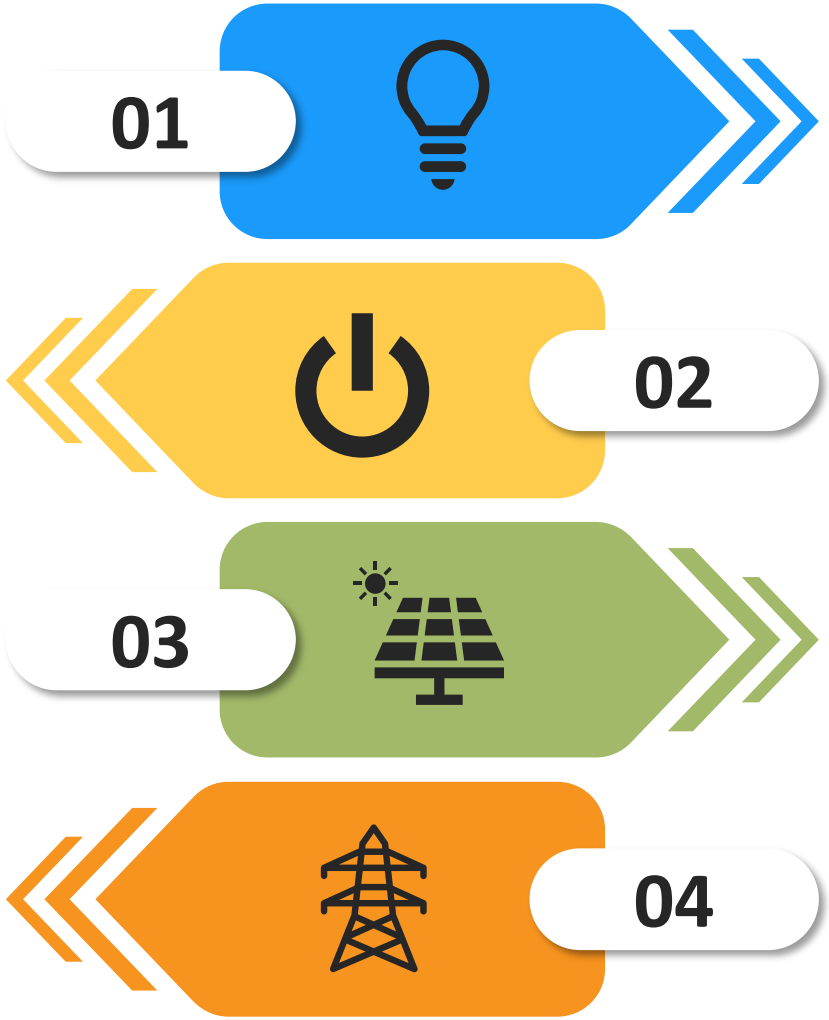
Sector opportunities

Off-grid power solutions

- Many rural customers do not have access to and cannot afford electricity from the national grid, which is further compounded by the rising inflation in the country.
- This poses a significant risk to revenue collection for project developers, who are constantly developing models to promote increased electricity consumption.

Establishment of transmission entities

- GridCo is the only transmission entity in the country
- While much emphasis is placed on power generation, particularly in the context of renewable energy, transmission infrastructure has long been forgotten, suffering from decades of neglect and underinvestment.



Establishment of private distribution entities

- Enclave Power Company is the only private entity that distributes electricity in Ghana.
- The Electricity Company of Ghana serves over 80% of Ghana's population, which puts a strain on the company's current infrastructure, resulting in frequent power outages.

Penetration of solar energy

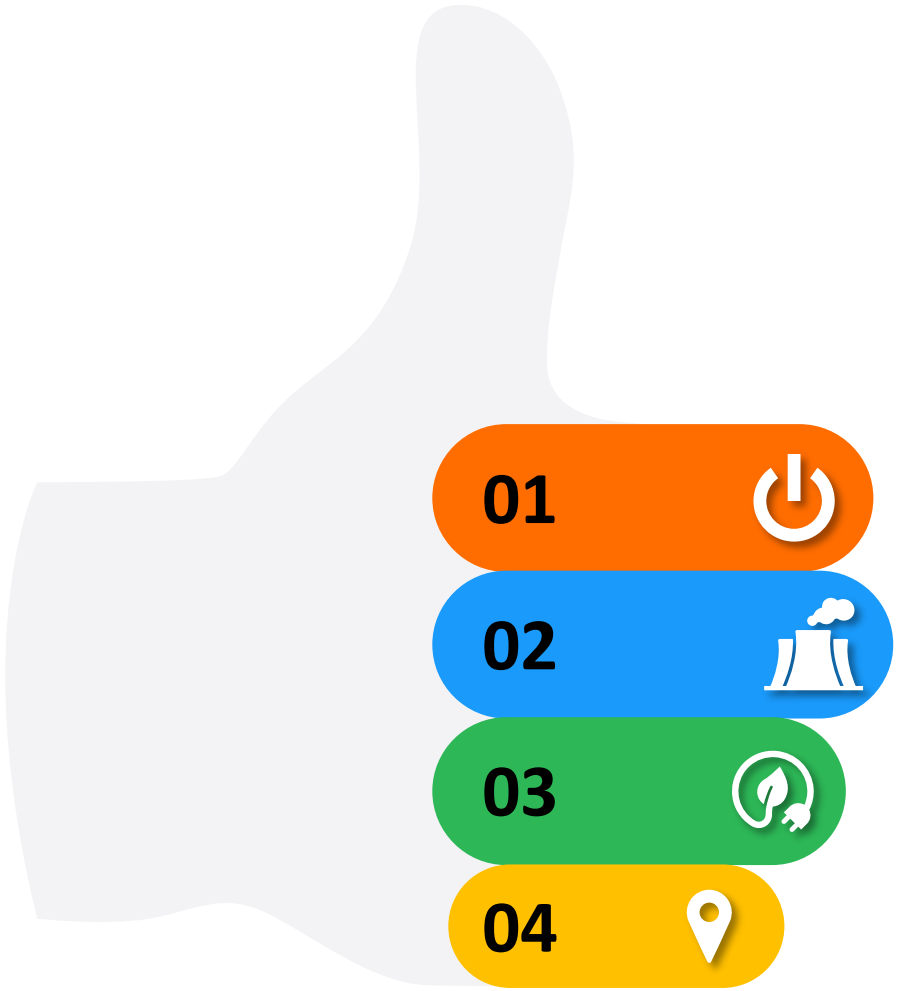
- Many large solar projects in Ghana have relied on public-private partnerships (PPPs).
- The goal in the country to open more opportunities for private sector involvement in development initiatives, particularly in the construction, health, and energy sectors.
- It is undeniable that Ghana receives nearly constant sunlight throughout the year, allowing it to rely on solar energy for its whole electricity demands.

Source: Market Research, International Trade, Energy Commission, Science Direct

04

Key investment highlights

Key investment highlights



01. Power Supply

- As of 2021, the electricity access rate stands at 86.63%, with 50% of rural residents and 95% of urban residents connected to the electricity grid whereas in Nigeria, electricity access rate stands at 55.4% .
- Compared to other African countries, cost of power is affordable in Ghana. The price of electricity for businesses per KWh stands at US$ 0.106 in 2021 which includes all cost of power, distribution and taxes.
- Ghana has fairly stable and reliable power supply all year round.

02. Vibrant Power Generation Sector

- Ghana has significant investment in the power generation industry, with both public and private enterprises participating.
- Ghana now has a total installed capacity of 5,134 megawatts (MW), with a dependable capacity of 4,710 MW.
- Thermal power generation accounts for 65% of Ghana's total power generation, while hydropower contributes for 34%.

03. Growing Renewable Energy Sector

- Ghana began construction on a 155-MW solar plant to boost the country's electricity generation capacity by 6% in Nzema at an estimated cost of US$400 million by a UK based firm; Blue Energy.
- By 2020, it was estimated to achieve around 10% of the national target of producing 10% of its electricity from renewable energy sources.
- In a similar line, Africa's largest solar energy plant, the Nzema project in Ghana's Western region, was completed in 2016 and expected to supply electricity to over 100,000 families.

04. Location

- Ghana's geographic location allows it to receive a lot of solar radiation, which is great for both electricity and thermal energy usage.
- The country receives an average of 4-6 kWh/m2/day of solar energy and 1,800 to 3,000 hours of sunshine each year, with the northern belt receiving the most.

Source: Mondaq, Energy Commission

05

Testimonials

Testimonials

"Early Power Ltd has been doing business in Ghana since 2014. While economic and power challenges coupled with the Covid-19 pandemic have troubled the sector in recent times significant opportunities abound.

Opportunities in the sector include investment in renewable energy or smaller scale energy projects, the transfer skills from foreign to local human capital to make Ghanaians more competitive on a global scale and the promotion of local content participation."

Early Power Limited

06

Contact us

Key contacts

Yofi Grant

Chief Executive Officer

Tel: +233 302 665 125-9

Email:

yofi.grant@gipc.gov.gh

Yaw Amoateng Afriyie

Deputy Chief Executive Officer

Tel: +233 302 665 125-9

Email:

yaw.afriyie@gipc.gov.gh

Edward B. Ashong-Lartey

Director, Investor Services

Tel: +233 302 665 125-9

Email

edward.ashong-lartey@gipc.gov.gh

Eugenia Okyere

Head of Research

Tel: +233 302 665 125-9

Email:

eugenia.okyere@gipc.gov.gh

07

Appendix

Appendix I

There are three primary segments in the electricity sector: generation, transmission and distribution.

Generation companies

Volta River Authority

IPS

Corks Energy

Karpowership

Cenit Energy

深能安所固电力 Sunon Asogli Power

Bridge Power

CEN Power Generation Company Limited

Trojan Power

Ameri Plant

Transmission companies

GRIDCo – Backbone to Power Delivery

Distribution companies

Electricity Company of Ghana Ltd.

Northern Electricity Distribution Co.

Enclave Company

Source: Energy Commission Ghana, Company websites

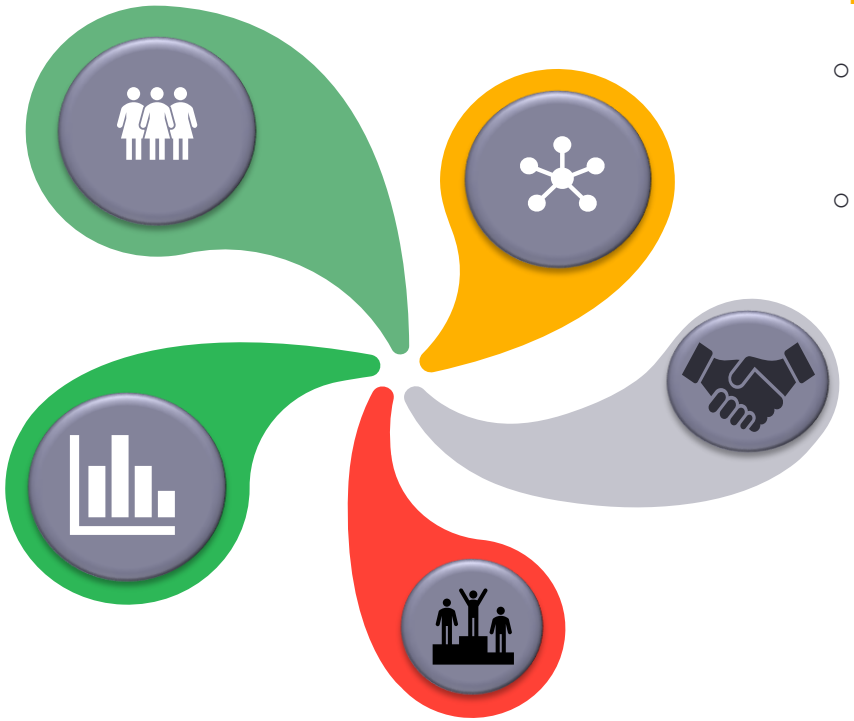
Appendix II: Porter's Five Forces

Bargaining power of suppliers

- Ghana's power suppliers are completely state-owned.
- Since the government control both transmission and generation of power across the country, it has the authority to set power prices that consumers must pay.

Threat of substitutes

- Generators, solar panels, and other small-scale power supplies, such as flashlights, can be used as power substitutes in Ghana.
- However, substitutes have low bargaining leverage because predominantly, power from the government is relatively cheaper than most forms of alternative power supply. The price of electricity currently stands at US$0.106/KWh.



Competitive rivalry

- In this industry, there is practically little competition. There are only three major power distribution firms in the country, each with a specific area of the country to cover.

Threat of New Entrants

- Few new players or entrepreneurs may enter the power business due to the substantial capital investment required to establish production facilities and a distribution network.
- Furthermore, established multi-national large competitors benefit from economies of size and scope, making it extremely difficult for a new entry to compete.

Bargaining power of buyers

- Consumer bargaining power is also low in Ghana; prices are determined by the government with little input from the public.
- Consumers do not have the option of transferring from one electricity distribution company to another because there are no other options.

High Medium Low

 Source: Market research

Appendix III: Ghana has a robust regulatory framework that seeks to protect and balance the various stakeholders within the power sector.

Regulatory

- The legal framework that regulate the activities involved in generating electricity from renewable energy is the Renewable Energy Act 1045 (2020).
- The Renewable Energy Act provides legal backing for the development, management, utilisation, sustainability and adequate supply of renewable energy for the generation of heat and power.
- Under the Act, renewable energy refers to energy generated from non-depleting sources such as sewage gas, ocean energy, landfill gas, biomass, wind, hydro and solar.

Requirement for licence

- Section 8(1) of the Renewable Energy Act outlines that it is prohibited for a person to engage in commercial activities within the renewable energy industry space without a licence issued by the Energy Commission.
- The following engagements are considered as commercial activities within the renewable energy space: production, transportation, storage, distribution, sale and marketing, importation, exportation and re-exportation and installation and maintenance.
- According to Section 8(4), individuals found to be violating this clause will be liable on summary conviction for a fine not exceeding two thousand penalty units or a term of imprisonment not exceeding five years or both.
- Section 14 (1) of the Act outlines that licence granted under the Act is expected to be renewed for the period specified in the license.
- Section 14(4) states that any individual or entity that fails to renew its license or whose renewal application is rejected by the Board is expected to cease providing services to which the license relates.

Brief description on required licence

Production and Supply Licence:

Per Section 20 of the Renewable Energy Act, the production and supply licence gives the licensee the legal right to manufacture and assemble renewable energy product, install, generate and supply electrical energy and produce bio-fuel or wood fuel according to the directives of the Energy Commission.

Bulk Storage Licence:

This licence according to Section 21 of the Act permits the licensee to store renewable energy products in commercial quantities and also, install a facility for the storage of the renewable energy product.

Installation and Maintenance Licence:

This licence permits the applicant to install, operate and maintain renewable energy systems. The licensee, in accordance with Section 23(1) will have the permit to engage in commercial activities that correlates to the specific renewable technology. Specific renewable technology explained by Section 23(2) as technologies for solar, wind, mini hydro, biogas digester among others.

Bulk Transportation Licence:

This license grants the licensee the legal access to transport renewable energy products. Under the Section 24 (1) of the Renewable Energy Act, the licensee shall have the permit to transport bio-fuel product or wood fuel and use a registered vehicle to transport the bio-fuel product or wood fuel product in accordance with the directives of the Energy Commission.

Source: Energizing growth in Ghana (World Bank, 2019)

Appendix IV: List of abbreviations

CAGR	Compound Annual Growth Rate
Capex	Capital Expenditure
CBGC	Composite Bulk Generation Charge
Composite BGT	Composite Bulk Generation Tariff
DSC	Distribution Service Charge
DisCo	Electricity Distribution Company
DWC	Distribution Wheeling Charge
EC	Energy Commission
ECG	Electricity Company of Ghana
EPC	Enclave Power Company
EUT	End User Tariff
GHp	Ghana Pesewa
GRIDCo	Ghana Grid Company
GW	Gigawatt
GWh	Gigawatt hours

IPP	Independent Power Producer
Ktoe	Kilotonnes of oil equivalent
KW	Kilowatt
KWh	Kilowatt hours
kV	Kilovolt
KVA	Kilovolts ampere
MW	Megawatt
m^2	Metre cube
NEDCo	Northern Electricity Distribution Company
PURC	Public Utilities Regulatory Commission
SLT	Special Load Tariff
SLT HV	Special Load Tariff-High Voltage
SLT LV	Special Load Tariff-Low Voltage
SLT MV	Special Load Tariff-Medium Voltage
TSC	Transmission Service Charge
USPs	Utility Service Providers
VRA	Volta River Authority