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GlobalData

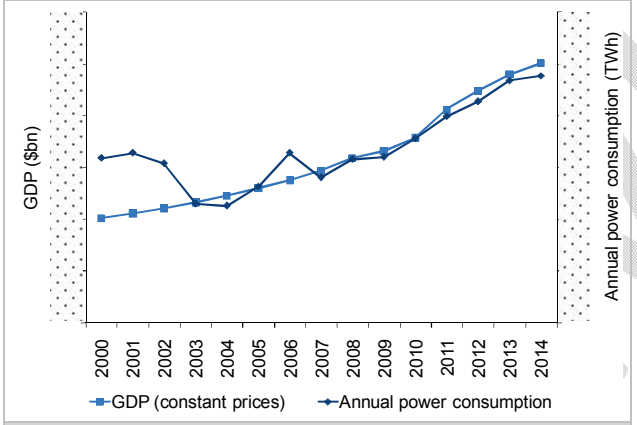
GHANA POWER MARKET OUTLOOK TO 2025, UPDATE 2015 – MARKET TRENDS, REGULATIONS, AND COMPETITIVE LANDSCAPE

Executive Summary

Overview of the Ghana Power Sector

Power consumption in Ghana has been increasing in recent years, and grew at a Compound Annual Growth Rate (CAGR) of XX% between 2000 and 2014 due to a rise in both industrial and residential consumption, as well as governmental programs such as rural electrification projects. The following figure shows the relationship between Gross Domestic Product (GDP) and annual power consumption in Ghana during the 2000–2014 period.

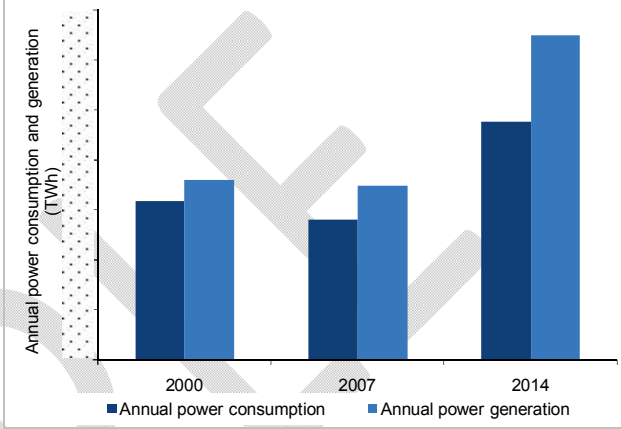
Power Market, Ghana, Gross Domestic Product ($bn) and Annual Power Consumption (TWh), 2000–2014



Source: GlobalData; IMF, 2014
TWh: Terawatt hour

The following figure presents a comparison between generation and consumption during the 2000–2014 period. Annual power consumption decreased at a negative CAGR of XX% between 2000 and 2007, but then increased at a CAGR of XX% between 2008 and 2014. Annual power generation also decreased, at a negative CAGR of XX% between 2000 and 2007, and increased at a CAGR of XX% during the 2008–2014 period.

Power Market, Ghana, Annual Power Consumption and Generation (TWh), 2000–2014



Source: GlobalData, Power Database [Accessed on March 16, 2015]

Energy security is a challenge for the country's power sector. Ghana has traditionally been dependent on its hydropower resources for baseload capacity, while thermal power sources have mainly been used to meet peak demand. The following figure depicts the share of different fuel types based on installed capacity.

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2 Introduction

Ghana is a member of the Economic Community of West African States (ECOWAS), a regional economic organization that comprises a market of XX million people in West Africa, as well as the West African Power Pool (WAPP), a co-operation of the national electricity companies in Western Africa, within the aegis of ECOWAS and the World Trade Organization (WTO).

Ghana has an open economic system. In spite of a turbulent political history after independence in 1957, Ghana's economy has strengthened due to sound management and the sustained implementation of poverty-alleviation programs. In 2006, Ghana signed the Millennium Challenge Corporation compact, which aims to assist in developing the country's agricultural sector. Ghana has also attempted debt relief measures through the Heavily Indebted Poor Country program in 2002 and the Multilateral Debt Relief Initiative in 2006.

In 2009, Ghana signed a three-year Poverty Reduction and Growth Facility program with the International Monetary Fund (IMF), to improve its macro-economic stability, private sector competitiveness, human resource development and civic administration. The discovery of oil and subsequent oil production from the offshore Jubilee oilfield in 2010 is also expected to strengthen the country's economy. In addition, high gold and cocoa prices, both of which are produced in the country, aided economic growth from 2010 to 2013.

In 2013, the service sector contributed XX% of the Gross Domestic Product (GDP), followed by the industrial and agricultural sectors with shares of XX% and XX% respectively. New oil fields are being discovered and developed and proved oil reserves have jumped by XX million barrels, which is expected to provide a significant boost to the economy in the future (CIA, 2014).

Ghana is rich in natural resources and exports gold, cocoa, timber, tuna, bauxite, aluminum, manganese ore, diamonds, and horticultural products. Imports are primarily made up of capital equipment, petroleum and processed foodstuffs.

The Ghanaian power market is run and monitored by the Ministry of Energy, which is the highest authority responsible for the country's electricity policies. It is complemented by two regulatory bodies: the Public Utilities Regulatory Commission of Ghana (PURC) and the Energy Commission (EC). The Volta River Authority (VRA), a government-owned entity, holds a large share of the power generation market. Previously, the VRA had handled power transmission in the country, but now Grid Company of Ghana (GRIDCo) has taken over transmission. Electricity distribution is

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managed by the Electricity Company of Ghana (ECG) in southern Ghana, and the Northern Electricity Department (NED) in northern Ghana.

2.1 GlobalData Report Guidance

- The executive summary covers the key growth trends in the Ghana power market.
- Chapter three provides a snapshot of the key parameters that impact Ghana's power sector, as well as key points about the power market.
- Chapter four provides an analysis of the Ghana power market.
- Chapter five details the regulatory scenario of the power market and the inward foreign investment scenario in Ghana.
- Chapter six provides information on Ghana's cumulative installed capacity and annual generation trends, by individual generation source.
- Chapter seven describes the power transmission and distribution infrastructure in Ghana and provides information on interconnectors. The section also covers upcoming grid-related projects in Ghana.

Note: All 2014 market numbers provided in the report are estimates, except where actual data were available.

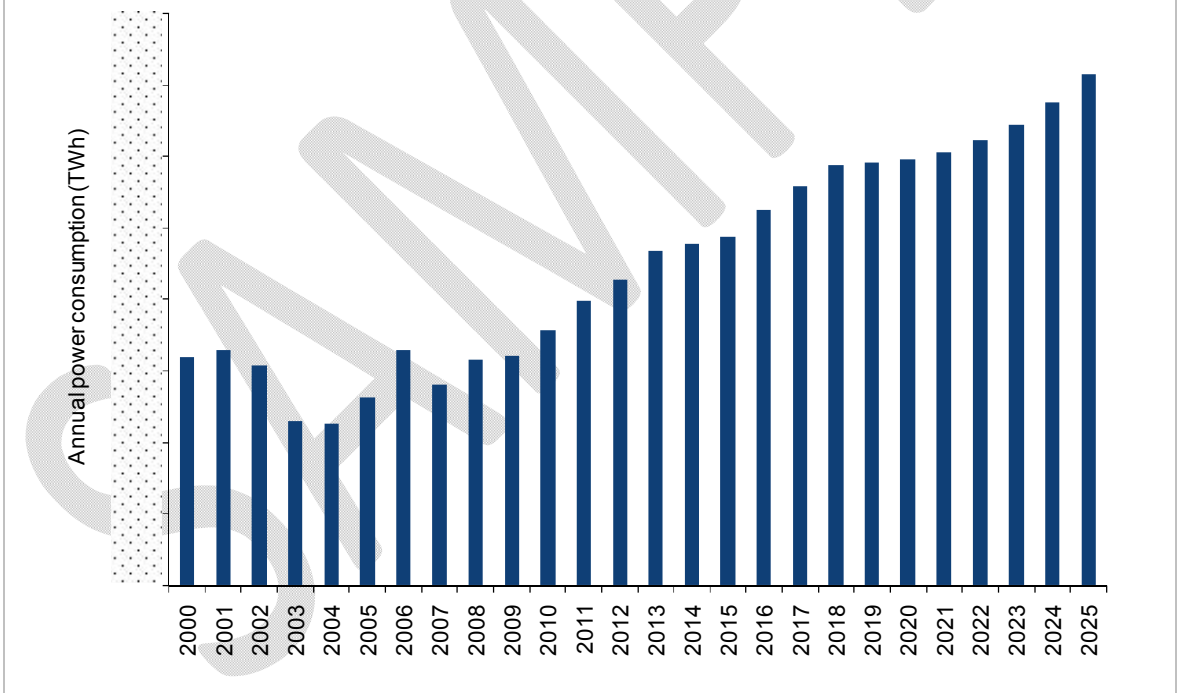
Ghana, Power Market, Market Analysis

4.4 Ghana, Power Market, Demand Structure

Total annual power consumption in Ghana increased from XX TWh in 2000 to XX TWh in 2014, at a CAGR of XX%. Consumption is expected to increase at a CAGR of XX% to XX TWh in 2025.

These figures are related to grid-supplied power. One of the most important reasons behind the modest growth rate in power consumption in Ghana from 2000 to 2014 was a lack of power availability. Most consumers in the industrial sector, which consumes the most power, rely on independent or back-up power. In urban regions, residences that are connected to the grid are subject to power rationing and power cuts, which can last for XX hours or more per day. Grid-supplied power consumption is expected to increase In future, due to improvements in the power supply as a result of the increase in installed capacity, and the improvement of the transmission system.

Figure 3: Power Market, Ghana, Annual Power Consumption (TWh), 2000–2025



Source: GlobalData, Power Database [Accessed on March 16, 2015]

Ghana, Power Market, Market Analysis

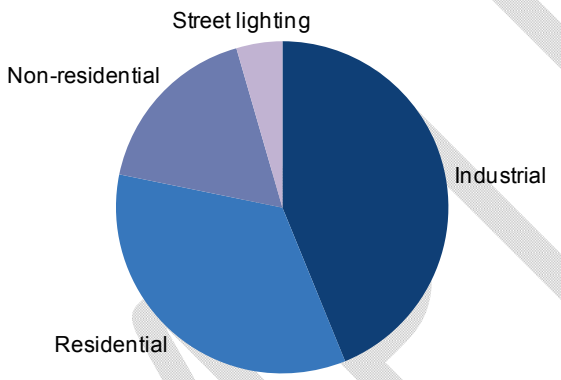
Table 4: Power Market, Ghana, Annual Power Consumption (TWh), 2000–2025	
Year	**Annual power consumption**
2000	
2001	
2002	
2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014	
2015	
2016	
2017	
2018	
2019	
2020	
2021	
2022	
2023	
2024	
2025	
Source: GlobalData, Power Database [Accessed on March 16, 2015]	

Ghana, Power Market, Market Analysis

4.4.1 Power Consumption by Sector, 2014

The industrial sector was the largest consumer of electricity in 2014, with a share of XX%, followed by the residential sector with a share of XX%. The non-residential sector that comprises the commercial sector and other smaller sectors other than public lighting accounted for XX%, and street lighting accounted for the remaining XX%.

Figure 4: Power Market, Ghana, Power Consumption by Sector (%), 2014



Source: GlobalData

Table 5: Power Market, Ghana, Power Consumption by Sector (%), 2014

Sector	Consumption
Industrial	
Residential	
Non-residential	
Street lighting	

Source: GlobalData

9 Appendix

9.1 Market Definitions

9.1.1 Power

Power refers to the rate of production, transfer or energy use, usually related to electricity. It is measured in Watts (W) and often expressed in kilowatts (kW) or Megawatts (MW). It is also known as real power or active power.

9.1.2 Installed Capacity

Installed capacity refers to the generator's nameplate capacity as stated by the manufacturer, or the maximum rated output of a generator under given conditions. It is given in MW on a nameplate affixed to the generator.

9.1.3 Electricity Generation

Electricity generation refers to the process of generating electricity from other forms of energy. It also refers to the amount of electricity produced, expressed in Gigawatt-hours (GWh).

9.1.4 Electricity Consumption

Electricity consumption is the sum of electricity generated, plus imports, minus exports and transmission and distribution losses. It is measured in GWh.

9.1.5 Thermal Power Plant

A thermal power plant is a plant in which turbine generators are driven by the burning of fossil fuels.

9.1.6 Hydropower Plant

A hydropower plant is a plant in which the turbine generators are driven by falling water.

9.1.7 Nuclear Power

Nuclear power is the energy released from the fission of nuclear fuel in a reactor.

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9.1.8 Renewable Energy Resources

Renewable energy resources are those that provide energy that is naturally replenished but limited in the amount of energy available per unit of time. Biomass, geothermal, solar, small hydro and wind are examples of renewable resources.

9.2 Abbreviations

Table 18: Abbreviations	
CAGR	Compound Annual Growth Rate
Ckm	Circuit kilometer
EC	Energy Commission
ECG	Electricity Company of Ghana
ECOWAS	Economic Community of West African States
FiT	Feed-in Tariff
GDP	Gross Domestic Product
GRIDCo	Ghana Grid Company Limited
GW	Gigawatt
GWh	Gigawatt hour
IPP	Independent Power Producer
kV	Kilovolt
kWh	Kilowatt hour
MVA	Megavolt-Ampere
MW	Megawatt
NED	Northern Electricity Department
PURC	Public Utilities Regulatory Commission
T3	Takoradi 3
TAPCO	Takoradi Power Company
TICO	Takoradi International Company
TWh	Terawatt hour
V	Volt
VRA	Volta River Authority
WAPP	West African Power Pool
Source: GlobalData	

Appendix

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9.4 GlobalData's Methodology

GlobalData's dedicated research and analysis teams consist of experienced professionals with advanced statistical expertise and marketing, market research and consulting backgrounds in the energy industry.

Appendix

GlobalData adheres to the codes of practice of the Market Research Society (www.mrs.org.uk) and Strategic and Competitive Intelligence Professionals (www.scip.org).

All of GlobalData's databases are continuously updated and revised. The following methodology has been followed for the collection and analysis of data presented in this report.

9.4.1 Coverage

This report covers the Ghana power market, examining the market structure and providing historical generation, capacity and consumption forecasts until 2025. It also looks at the market's regulatory structure, import and export trends, competitive landscape and leading active and upcoming power projects.

9.4.2 Secondary Research and Analysis

The capacity, generation and consumption data is collected and validated using a number of secondary resources including but not limited to:

- Government agencies, ministry websites, industry associations, the World Bank, IMF, and statistical databases
- Company websites, annual reports, financial reports, analyst reports and investor presentations
- Industry trade journals, market reports and other literature
- GlobalData's proprietary databases such as the Capacity and Generation Database, Power Plant Database and Transmission and Distribution Database

Further to this, the following secondary information is collected and analyzed to project Ghana's power market scenario to 2025, analyzing factors such as:

- Macro-economic scenario
- Government regulations, policies and targets
- Government and private sector investment
- Contract and deal announcements
- Utility expansion plans
- The sector's historical track record

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- Other qualitative insights built through secondary research and analysis of company websites, annual reports, investor presentations, industry and trade journals, and data from industry associations

9.4.3 Primary Research and Analysis

Secondary research is further complemented through primary interviews with industry participants to verify the market numbers obtained through secondary research and obtain first-hand information on industry trends.

The participants are drawn from a diverse set of backgrounds, including power producers, equipment manufacturers, industry associations, government bodies, utilities, distributors, and academia. The participants include but are not limited to C-level executives, industry consultants, academic experts, business development and sales managers, purchasing managers, plant managers, government officials and industry spokespersons.

9.5 Disclaimer