Investment Brief for the Electricity Sector in Ghana

Overview

Ghana's economy growth decelerated sharply to an estimated 4.2% in 2014, down from 7.4 % in 2013. Manufacturing and oil production from the offshore Jubilee field, gas supply interruptions from Nigeria, disruptions in power supply, rising inflation, and decline of the Cedi were the key drivers of the slow down. As compared to regional countries with similar energy and oil & gas investment opportunities, Ghana is well-ranked as an investment location, as a consequence of its long history as a stable democracy and an attractive investment climate. With the commissioning of Bui hydroelectric plant, Ghana's total system installed capacity is 2,837 MW, with electricity reaching some 74% of the population nationwide. However, the firm or dependable capacity would be 2,515 MW. The generation capacity was expected to increase in the third quarter of 2014 by another 240 MW after the commissioning of the Kpone thermal power plant, bringing the total installed capacity to 3,077 MW. Expanding generation capacity, extension of the distribution network, reliability of the power supply, reduction of technical and commercial losses, and access to natural gas feedstocks are areas of focus in the power and energy sectors for the Government of Ghana (GoG) to maintain economic growth.

Energy Demand

As indicated below, total energy generation, consumption, and peak demand are increasing in Ghana. The projected Electricity Coincident Peak Demand for the year 2014 was 2,179.5 MW. This represented an increase of 236.6 MW and a growth of 12.2% over the 2013 actual peak which was 1,942.9 MW. The increase occurred as a result of mines, industrial customers, residential and new loads emanating from rural projects.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Energy Generated (GWh)	7,273	5,882	6,039	6,788	8,430	6,978	8,324	8,958	10,167	11,200	12,024
Energy Consumed (GWh)	6,829	5,241	5,299	5,964	7,362	6,441	7,219	7,452	8,317	9,187	9,258
Peak Demand (MW)	1,227	1,135	1,049	1,325	1,393	1,274	1,367	1,423	1,506	1,665	1,729

Source: Electricity Company of Ghana

Hydroelectric generation represents about 55% of dependable capacity, with the remaining 45% largely made up of thermal generation. Solar energy contributes less than half % of total capacity. The GoG-owned power generation stations are shown below.

Government of Ghana--Installed Generation Capacity

FACILITY	MW	% of Total Capacity	Type	Fuel Type
Akosombo	1,020	37.5%	Hydro	Water
Kpong	160	5.9%	Hydro	Water
Solar	2	0.1%	Solar	Solar
TAPCO (T1)	330	12.1%	Thermal	LCO/Gas/DFO
TICO (T2)	220	8.1%	Thermal	LCO/Gas/DFP
T3	132	4.9%	Thermal	LCO/Gas/DFO
MRP	80	2.9%	Thermal	DFO
Siemens Plant	49	1.8%	Thermal	Gas/DFO
Total	**1,993**	**73.3%**		

Ghana has 3 successful, quasi-Independent Power Producer (IPP) projects listed in the chart below:

IPPs	MW	% of Total Capacity	Type	Fuel Type
BUI Power	400	14.7%	Hydro	Water
Sunon Asogli	200	7.4%	Thermal	Gas
CENIT	126	4.6%	Thermal	LCO/Gas
Total IPPs	**726**	**26.7%**		
TOTAL GHANA	**2,719**	**100%**		

Source: Volta River Authority (VRA)

The following challenges affected reliability of energy supply in 2014:

- Inadequacy of available generation capacities to meet the projected demand under all system conditions
- Poor planning and untimely schedule of maintenance and retrofit upgrades to power plants
- Security of fuel supplies such as natural gas supply from the West African Gas Pipeline (WAGP), Ghana Gas, and adequate stocks of Light Cycle Oil (LCO) and Distillate Fuel Oil (DFO)
- Potential of the WAGP not being able to meet contractual quantity of gas
- Possible delay in the completion of the Ghana Gas Project
- Low water level for the hydro power plants

The country currently sheds between 400–700 MW of power during off peak and peak periods as a result of a worsening in power supply.

Economic Development Policies

Economic development in Ghana is constrained by inadequate generation capacity which, in turn, is limited by the insufficient supply of natural gas. According to estimates by the GoG prepared in 2013, to sustain the country's current rate of economic growth, some 200 MW of additional generation capacity will be required per annum over the next 20 years (an additional 4,000 MW).

The GoG has established targets and undertaken a number of initiatives to facilitate development of additional generation capacity, including:

1. An announced target of 5,000 MW of installed capacity by the end of 2016, a key plank in the campaign platform of the current government

2. Targeting 1,000 MW in new generation capacity over the next 5 years through expansion at existing facilities (including upgrades of single to combined-cycle plants)

3. Expanding investment opportunities in renewables, such as solar, wind, and biogas/mass projects, with a goal of achieving a 10% renewables in the generation mix by 2020, and

4. Developing currently identified offshore natural gas deposits and bringing on-stream processed gas as quickly as possible to reduce dependency on liquid fuels for existing and planned generation

An overview of IPP projects in advanced stages of development (with Provisional Licenses, Siting Permits, Power Purchase Agreements, etc.) and seeking to move toward financial close is shown below:

PLANNED PROJECTS	MW	% of Total	Type	Sponsor	Estimated Year Online	Capacity by Type	
Mere Power Nzema (Blue Energy; UK)	155	7.1%	Solar	Private	2015/16	Thermal	90.7%
Siginik Energy (Episolar; Canadian)	50	2.3%	Solar	Private	2015	Solar	9.3%
Ghana 1000 (General Electric)	1,050	47.8%	Thermal	Private	2017/18		
Jacobsen/Jelco	360	16.4%	Thermal	Private	2016		
Cenpower Plant	348	15.5%	Thermal	Private	2016		
Amandi Energy	243	11.1%	Thermal	Private	2017		
TOTAL GHANA	**2,206**	**100%**					

In addition to the IPPs listed above, 22 entities have provisional licenses to construct thermal generation facilities and 33 more have provisional licenses to develop renewable energy facilities.

Investment Climate

Ghana offers investors an attractive and stable investment climate that is highly competitive with that of other countries in Africa with similar energy and oil & gas investment opportunities. As codified within its investment legal/regulatory framework, Ghana has created a successful business enabling environment for inward Foreign Direct Investment (FDI) which averaged US$ 3.0 billion per year from 2009 to 2012 (*source: World Bank*). The country has received a "High" overall score ranking for *Doing Business* by the World Bank. Key investment climate features include:

- Ghana Investment Promotion Centre (GIPC) has established a "one-stop shop" for investment registration and provides assistance to enable investors to take advantage of relevant incentives
- A free-floating exchange rate regime (Ghana *cedi* can be exchanged for US Dollars (US$) and major European currencies)
- Low minimum capital requirements for joint ventures or wholly owned foreign corporations
- Investor protection limiting expropriation and nationalization
- British common law and customary law system that recognizes and enforces secured interest in property, both chattel and real
- A liberalized import regime policy within the framework of the World Trade Organization
- Tax incentives (under the Free Zone Act, investors are entitled to a 10-year corporate tax holiday), and
- Both S&P and Fitch have provided Ghana with a long term sovereign credit rating of "B"

Private Sector Focus

Enabling private sector investment and attracting inward FDI is a priority for the GoG in order to close an annual infrastructure funding gap in excess of US$ 1.0 billion. In 2011, the GoG approved the National Policy on Public Private Partnership as part of the economic reform agenda. Further, the GoG has replaced regulations that were perceived as being unfriendly to investors. The Ghana Investment Promotion Centre Act, 2013 (GIPC Act No 865 of 2013) governs investment in all sectors of the economy, with sector-specific laws for minerals and mining, oil & gas, and the trade free zones. In general, the GIPC has streamlined procedures and reduced delays.

The Millennium Challenge Corporation (MCC) signed a Compact with Ghana in 2014, undertaking to invest potentially US$ 498.2 million to support the transformation of Ghana's electricity sector and stimulate private investment. Focused on also addressing challenges in distribution, generation and access to energy, the GoG will invest US$ 37.4 million of its own funds in the initiative, bringing the total Compact value to US$ 535.6 million.

Energy Sector Institutions

The key public sector institutions involved in the Ghanaian electricity sector, all within the portfolio of the Ministry of Energy and Petroleum, include:

Electricity Company of Ghana (ECG): The government-owned entity responsible for the distribution of electricity in the southern part of Ghana--namely Ashanti, Central, Eastern, Greater Accra, Volta, and Western Regions--covering approximately 80% of the population in Ghana (http://www.ecgonline.info).

Energy Commission (EC): The Energy Commission is required by law to regulate, manage, and develop the utilization of energy resources in Ghana and provide the legal, regulatory and supervisory framework for all providers of energy in the country. EC grants licenses for the transmission, wholesale, supply, distribution, and sale of electricity and natural gas and refining, storage, bulk distribution, marketing, and sale of petroleum products (http://energycom.gov.gh).

Ghana Grid Company (GRIDCo): GRIDCo was unbundled from VRA and became functional in 2008. GRIDCo operates all electricity transmission services and wholesale market operations throughout Ghana (www.gridcogh.com).

Ghana National Gas Company (GNGC): A government enterprise that was established to monetize Ghana's natural gas resources, provide more reliable fuel imports for the power industry, and function as a catalyst for downstream petrochemical industries (www.ghanagas.com.gh).

Ghana National Petroleum Corporation (GNPC): A government-owned company that partners with international petroleum companies to develop Ghana's oil and gas resources (www.gnpcghana.com).

Ministry of Energy & Petroleum (MOEP): In 2014 the government broke up MOEP into the Ministry of Petroleum and the Ministry of Power. The Ministry of Petroleum has the responsibility for developing and implementing energy sector policy in Ghana related with petroleum and supervises the operations of Ghana National Petroleum Corporation, and the Tema Oil Refinery. The Ministry of Power has the responsibility for overseeing electricity production and infrastructure development including generation, transmission, distribution, and efficient operation of the national utilities.

Northern Electricity Department: NEDCo is a wholly-owned subsidiary of VRA, responsible for the distribution of electricity in the northern regions of Ghana (www.nedco.com.gh).

Public Utilities Regulatory Commission: PURC is an independent regulatory body established to approve tariff rates for electricity customers and enforce performance standards for energy sector operators in Ghana (www.purc.com.gh).

Volta River Authority: Government-owned, VRA is the generator of electrical energy for industrial, commercial, and residential uses across Ghana. Through its wholly owned subsidiary NEDCO, VRA is also responsible for distribution of electricity in the northern sector of Ghana (www.vraghana.com).

Electricity Sector Enabling Environment

Ghana's electricity market has undergone significant restructuring and reforms, including the on-going unbundling of assets and the opportunity for increased private sector participation through IPPs. Tariff rates have increased significantly in the past year, making them more cost reflective. In an effort to keep pace with inflation, currency devaluations (Cedi to the US Dollar), and rising fuel costs, a quarterly adjustment mechanism has been put in place beginning January 1, 2014.

Electricity Sector Investment Framework for Renewables

In accordance with Ghana's Renewable Energy Act 2011, PURC sets Feed in Tariffs (FITs) for renewable energy projects. FITs were approved in Ghana for the first time in August 2013. Once a Power-Purchase Agreement (PPA) is in-force, FIT rates are set for 10 years. Rates are subject to review outside of in-force PPAs on a biennial basis. At an exchange rate of 1.9968 Ghana Cedi to US$ 1.00, FITs per US$/kWh are: Wind – 0.16, Solar – 0.20, Hydro 10 (MW or less) – 0.13, Hydro (10 MW-100 MW) – 0.11, and Biomass – 0.15.

Investment Opportunities

There are wide opportunities for private investment in the energy sector in the form of IPPs and under FITs for renewable energy projects. The GoG target of 5,000 MW by 2015/16 coupled with the estimated requirement of an additional 4,000 MW of capacity over the next 20 years, will require significant foreign investment, private capital, and technical expertise.

Public Sector Procurement

Ghanaian public sector institutions are required by law to announce tenders for goods and services on their respective web-sites and in papers.

In addition, in November 2013, the Petroleum Local Content and Local Participation Regulations (LI 2204) were passed, setting requirements for local ownership and participation in the oil and gas sectors.

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