

INVESTING IN GHANA'S ENERGY SECTOR



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*The energy sector in Ghana contributes significantly
to the economy*

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Akwaaba!

A space and place to live and prosper.

Visitors and investors who arrive on the shores of tropical Ghana, situated in a strategic position on the west coast of the Gulf of Guinea, are used to being greeted with "Akwaaba" - You are welcome!

This hospitable nation has a proud record of not only being one of the most important nations in the African continent for its independence in 1957, but is also credited with showing the way toward peace and the stability of democracy.

Apart from the largest artificial lake, Lake Volta, the country is also the proud home of the only tropical rain forest walkway in Africa, the Kakum canopy walkway.

The appreciation of the role of Ghana in the African continent can probably best be described by the fact that Ghana is the first and only African country to have welcomed the monarch of the United Kingdom, Queen Elizabeth, and three American presidents on state visits.

On March 23, 1998 over half a million people gathered in Independence Square to see former President Bill Clinton and in February 2008 the former President George W. Bush visited Ghana.

A rich cultural history

In July 2009, the President of the United States, Barack Obama visited Ghana on his first visit to sub-Saharan Africa to highlight Ghana as a beacon of democracy and progress on the continent.

More than 25 million inhabitants of Ghana with a rich cultural history live in ten regions, which extend from the warm and relatively dry south-east coast to the hot and humid south-west and hot and dry north.

The lively and bustling metropolis of Accra is home to Kotoka International Airport while Tema Port facilitates oil import and export operations, part of a flourishing international trade.

Kumasi, the second largest city in Ghana, is located in the vicinity of Lake Bosomtwi, a natural lake, in a rain forest region and is also called the "Garden City". It is the hub of exports of gold, hard wood and cocoa and is home to Guinness Ghana.

To the south-west of the twin city of Sekondi-Takoradi is full of seams with the development as a result of the discovery and marketing of substantial oil deposits.

Ghana has a well developed infrastructure as regards electricity, water, roads, airports and ports. Readily available and accessible services such as water and electricity add to a favorable climate for investment. In a developing country it is clear that much more needs to be done and the development of the infrastructure is one of the priorities of the national development strategy.

A global driver directing investments such as corruption perception and the perception of the ease of doing business is and will continue to be a high priority. As a developing country, we realise that much more needs to be done and infrastructure is high on the agenda of the national development strategy.

We invite you to Ghana as an investor.

There is a long list of small, local and global, large and medium-sized businesses that have decided to invest in Ghana and are still here and and who are excited that they took that bold step.

We invite you to join them.



ENERGY

Sector Overview

The energy sector in Ghana contributes significantly to the economy. The sector can be classified into two main sub-sectors as follows:

- Petroleum sub-sector
- Power sub-sector

Ghana's petroleum sector involves upstream and downstream activities. The upstream activities include the production, procurement and refining of crude oil and the downstream activities include production, distribution and marketing of petroleum products and premixing of petroleum product for industrial uses, including fishing.

Distribution of petroleum products in Ghana is dominated by multinational oil marketing companies. Following the deregulation policy of the government, the oil marketing companies have increased in numbers to include several local Ghanaian companies. The products are retailed through gas stations which are either owned by the Oil Marketing Companies (OMCs) or private individuals. There are one hundred and thirty-three oil marketing companies in Ghana. The private sector, including the OMCs and others source and supply finished products through an open competitive tendering system.

The power sub-sector involves the generation, transmission and distribution of electrical energy for industrial, commercial and domestic use in Ghana. The Power System of Ghana is run by three utility companies; the Volta River Authority (VRA), Ghana Grid Company Limited (GRIDCO) and Electricity Company of Ghana (ECG).

Electricity is the dominant modern energy form used in the industrial and service sectors accounting for 69% of modern energy used in the two sectors of the national economy. The Ghana electricity supply industry is unbundled with separate jurisdictions and entities regarding activities of electricity generation, transmission and distribution.

Electricity generation is undertaken by the state-owned Volta River Authority (VRA), which operates the Akosombo Hydro Power Station, Kpong Hydro Power Station and the Takoradi Thermal Power Plant (TAPCO) at Aboadze. VRA is also a minority joint partner with TAQA, a private sector company which owns and operates the Takoradi International Power Company (TICO) thermal power plant also located at Aboadze. Bui Power Authority (BPA), another state-owned entity, is charged with the implementation of the Bui Hydro electric Power Project. In addition, independent power producers have been licensed to build, own and operate power plants.

GRIDCO (Transmission)

GRIDCO was established in accordance with the Energy Commission Act, 1997 (Act 541) and the Volta River Development (Amendment) Act, 2005 Act 692, which provides for the establishment and exclusive operation of the National Interconnected Transmission System by an independent Utility and the separation of the transmission functions of the Volta River Authority (VRA) from its other activities within the framework of the Power Sector Reforms.

The grid transmission network connecting the main production to consumption centres has been modeled and categorized into five zones under the Ghana Grid Company (GridCo).

GRIDCO's main functions are to:

- Undertake economic dispatch and transmission of electricity from wholesale suppliers (generating companies) to bulk customers, which include the Electricity Company of Ghana (ECG), Northern Electricity Distribution Company (NEDCO) and the Mines;
- Provide fair and non-discriminatory transmission services to all power market participants;
- Acquire and manage assets, facilities and systems required to transmit electrical energy
- Provide metering and billing services to bulk customers;
- Carry out transmission system planning and implement necessary investments to provide the capacity to reliably transmit electric energy; and manage the Wholesale Power Market.

Power Distribution

There are 3 distribution companies currently operating in Ghana, with some 69 Substations scattered around the country

- Electricity Company of Ghana (ECG) - serves customers in the southern Ghana
- Northern Electricity Distribution Company - serves the northern part of the country
- En Clave Power – serves companies at the Tema free zone enclave

GENERATION

Generation Capacity as of December 2014

Figure 1

Installed Power	Capacity
Total installed power capacity	2,830.5MW
Hydro Generation	1,580MW
Thermal Generation	1,248MW
Renewable Energy(Navrongo Solar PV plant)	2.5MW



Target of 5000MW in the medium term by 2020

The government's energy policy is embodied in the Strategic National Energy Plan 2006-2020. The policy aims to develop a sound energy market that would provide sufficient, viable and efficient energy services for Ghana's economic development through the formulation of a comprehensive plan that will identify the optimal path for the development, utilization and efficient management of energy resources available to the country.

The energy sector has been a vital component of Ghana's industrial and socio-economic development. In this regard, the sector has been undergoing a number of developmental initiatives to improve overall operational efficiency and supply security.

Ghana has relied mainly on hydro-power plants for electricity generation. A few thermal plants are used to regulate the peak load. However, recently the net demand for electrical power has been considerably greater than the supply.

GENERATION INSTALLED CAPACITY

Installed Grid Electricity Generation Capacity as of December 2014

PLANT	INSTALLED CAPACITY MW	TYPE	FUEL TYPE
AKOSOMBO	1,020	HYDRO	WATER
KPONG	160	HYDRO	WATER
TAPCO(T1)	330	THERMAL	LCO (LIGHT CRUDE OIL)/ GAS
TICO (T2)	220	THERMAL	LCO (LIGHT CRUDE OIL)/ GAS
T3	132	THERMAL	LCO (LIGHT CRUDE OIL)/ GAS
TT1P	110	THERMAL	LCO (LIGHT CRUDE OIL)/ GAS
TT2P	50	THERMAL	DFO (DISTILLATE FUEL OIL)/ GAS
MRP	80	THERMAL	DFO (DISTILLATE FUEL OIL)
SOLAR	2.5	RENEWABLE	SOLAR

Figure 2:

INSTALLED CAPACITY OF IPPs AND OTHER PLANTS

PLANT	INSTALLED CAPACITY MW	TYPE	FUEL TYPE
Sunon Asogli	200	Thermal	Gas
CENIT	126	Thermal	LCO
BUI HEP	400	Hydro	Water

Figure 3:

Ghana's installed generation sources as at February 2015

VRA Hydro	47%
VRA Thermal	36%
VRA Solar	0.1%
IPP Thermal	12%
BUI Hydro	5%

Currently, VRA contributes 75% of the total generation in Ghana.



Maximum Grid Power Generation capacity Estimated for 2015

GENERATION PLANT	CAPACITY (MW)		Plant Utilisation Factor ++	Average Available Capacity (MW)	Expected Energy (GWh)
	Installed	Dependable			
Hydro Power Plants					
Akosombo	1,020	900	0.75	675	5,913
Kpong	160	140	0.9	126	981.12
Bui	400	380	0.2	76	665.76
Sub-Total	1,580	1,420		877	7,682.52
Thermal Power Plants					
TAPCO (CC)	330	300	0.7	210	1,839.60
TICO (SC)	330	300	0.5	150	1,314
Sunon-Asogli (gas) 1	200	180	0.8	144	1,261.44
Sunon-Asogli (gas) 2	180	160	0.2	32	280.32
Tema Thermal Plant- TTIPP	126	110	0.7	77	674.52
Tema Thermal Plant- TT2PP	49.5	45	0.7	31.5	275.94
T3	0	0	0	0	0
Mines Reserve Plant (MRP)	80	76	0.5	38	332.88
CENIT Energy Ltd	126	110	0.7	77	674.52
Kpong Thermal Power Plant	200	180	0.4	72	630.72
Trojan	25	20	0.5	10	122.64
Sub-Total	1,466.50	1,481		841.5	7,327.74

Renewable and Embedded Generation					
VRA Solar grid-inter-tied	2.5	2	0.3	0.6	5.26
*BXC Solar grid Power	20	19	0.15	2.85	25
Sub-Total	22.5	21			30.16
Total	3,249	2,922		1,712	15,119.02

Fig. 4 * provisional Source: Energy Outlook for Ghana 2015
++Estimated

RENEWABLE ENERGY

Provisional licences so far issued for Renewable Energy electricity had risen to 62 with capacity totalling 5,074 MW compared with 36 totalling 3,905 MW in 2013. Out of this 44 are for Solar photovoltaic (PV) generation with a total capacity of 2,472 MW. Last year was 29 with total capacity of 2,155 MW.

Also, the number of provisional licences issued and their capacities for Wave, Biomass, Waste to Energy and Wind are 1000MW, 68MW, 554.MW and 876 MW respectively

Provisional licenses issued for Renewable Energy Electricity as of March 2015

Category	Number	Total Capacity (MW)
Solar	44	2,472
Wind	7	876
Hydro	3	101
Biomass	2	68
Waste -to- Energy	9	554.01
Wave	1	1000
TOTAL	66	5,071

AGENCIES IN THE ENERGY SECTOR

The National Interconnected Transmission System (NITS) for electricity is owned and operated by the Ghana Grid Company (GRIDCO). GRIDCO is a state-owned company. The distribution of electricity is done by the Electricity Company of Ghana (ECG), a state-owned company, and the Northern Electricity Department (NED), a subsidiary of the Volta River Authority (VRA).

The Energy Commission (EC) and the Public Utilities and Regulatory Commission (PURC) regulate the electricity supply industry. The Energy Commission, in addition to being responsible for technical regulations in the power sector, also advises the Minister for Energy on matters relating to energy planning and policy. The PURC on the other hand is an independent regulatory agency responsible for the economic regulation of the power sector with the mandate to approve rates for electricity sold by electricity distribution utilities.

The Ministry of Energy is responsible for formulating, monitoring and evaluating policies, programmes and projects in the energy sector. It is also the institution charged with the implementation of the National Electrification Scheme (NES) which seeks to extend the reach of electricity to all communities in the long term.

Section 11 of the Civil Service Act, 1983 (PNDCL 327), has amended the Civil Service (Ministries) Instrument, 2013(E.I.1) as follows:

- "Ministry of Energy and Petroleum " to "Ministry of Petroleum" and
 - "Ministry of Power".
- By this new development, agencies under the former

Ministry of Energy and Petroleum have been assigned to these new Ministries accordingly.

The Petroleum Ministry has the following agencies under it:

- Bulk Oil Storage & Transportation (BOST)
- Ghana Oil (GOIL)
- Ghana Cylinder Manufacturing Company (GCMC)

- Ghana National Gas Company (GNGC)
- Ghana National Petroleum Corporation (GNPC)
- National Petroleum Authority (NPA)
- Petroleum Commission (PC)
- Tema Oil Refinery (TOR)

The Power Ministry has the following agencies under it:

- Bui Power Authority (BPA)
- Energy Commission (EC)
- Electricity Company of Ghana (ECG)
- Ghana Grid Company (GRIDCO)
- Northern Electricity Distribution Company (NEDCO)
- Volta Aluminium Company (VALCO)
- Volta River Authority (VRA)
- VRA Resettlement

Investment Opportunities

As part of the strategies to achieve the objectives in the National Energy Strategic Plan, the Government, through the Ministry of Energy, is encouraging public-private sector partnership by securing private sector investment partnerships for re-capitalization of the energy supply system.

Investment opportunities therefore exist for the development of a viable local industry for the production of components and systems locally, to meet future spare-parts requirements of future investments thereby making savings and ensuring sustainability.

Investment opportunities in the sector include:

- Energy service companies to provide energy services in these areas:
 - Energy Audits & Energy Management Strategies
 - Power Factor Correction
 - Electrical Load Management
 - Boiler Efficiency/Heat Recovery

- Monitoring and Targeting Energy Management
 - Tariff Analysis
 - Refrigeration and Air Conditioning Systems
 - Compressed Air Systems
 - Kilns and Furnaces
 - Fuel Substitution
2. Energy Manufacturing Companies to supply energy-monitoring equipment to better meet the increased requests for power monitoring and tariff analysis from industry in the country.
 3. Companies to provide an alternative decentralized sustainable energy system that can easily be deployed in remote and deprived communities into the overall national energy mix.
 4. Companies to provide solar vaccine refrigerators for the preservation of vaccines for child immunization programmes in remote and off-grid parts of the country.
 5. Provision of solar energy systems to schools in off-grid communities.
 6. New, higher quality and cost competitive energy services to the poor, for cooking, transport, water heating and other home appliances.

Investment Opportunities In The Demand Sector

- Penetration of rural electrification by decentralized renewable energy complementation
- Penetration of solar energy in hotels, restaurants and institutional kitchens using solar water heaters
- Increased LPG penetration
- Improved efficiency cook-stove penetration
- Penetration of biogas for cooking in hotels, restaurants and institutional kitchens
- Increase the penetration of modern energy into agriculture for increased agricultural production, to help achieve the nation's food supply security objectives
- Substitution of diesel with bio-diesel in agricultural mechanization
- Drying of exportable farm produce such as pepper with solar dryers

- Displacing the use of diesel for irrigation with grid electricity and mechanical wind pumps
- Large-scale commercial poultry farmers to meet at least 10 percent of their electricity needs from biogas, using the droppings from the birds

Investment Incentives

Incentives to the sector may apply under the following provisions:

- All companies enjoy a corporate tax rate of 25%, except the mining companies which attract corporate tax of 35%
- Location Incentives (between 25 and 50%) for industries located in and outside the regional capitals as applicable.

The Ghana Investment Promotion Centre Act, Act 865, passed in 2013, also provides for automatic incentives and benefits. Please consult our website, www.gipcghana.com for further information.

Investment Guarantees

Ghana is a safe investment destination. Guarantees against expropriation of private investments provided under law are buttressed by the Ghanaian Constitution. Some investment guarantees are detailed below:

- i. Free transferability of capital, profits and dividends
- ii. Insurance against non-commercial risks – Ghana is a signatory to the World Bank's Multilateral Investment Guarantee Agency (MIGA) Convention
- iii. Double Taxation Agreements (DTAs) – to rationalize tax obligations of investors in order to prevent double taxation. DTAs have been signed and ratified with several countries

OTHER ATTRACTIONS TO INVESTORS

- iv. Ghana is one of the most attractive locations in Africa to invest and do business in. To make the Ghanaian environment more business friendly, there are efforts to reduce the occupancy costs for commercial and industrial properties and the general cost of doing business in the country.
- v. The Ghana Investment Advisory Council (GIAC), which was established with the help of the World Bank, helps shape government policy aimed at creating an enabling investment environment. The GIAC consists of multinational and local companies and institutional observers - International Monetary Fund (IMF), World Bank (WB), and United Nations Development Programme (UNDP).



vi. Also, there is a liberal investment environment in Ghana that offers a number of special benefits such as foreign investor ownership of local companies, participation in joint ventures with the minimum required equity of \$200,000 and companies wholly-owned by non-Ghanaians at \$500,000.

vii. The other factors that make Ghana a favourable place for investors in Africa and among developing countries in general, include the following

POTENTIAL SOURCES OF FUNDING

Viable companies and projects can easily attract financing both on the local and international financial markets. The main sources of funding are:

- 28 Banks
- 60 non-bank financial institutions
- 140 rural banks with 137 fully operational.
- The Ghana Stock Exchange – note that in the last four years, many issues of shares on the GSE have been oversubscribed by 100% - 300%, meaning that there is a lot of money for investment purposes
- Ghana Venture Capital Fund
- International development finance institutions based in Ghana, such as the International Finance Corporation (IFC) and the African Development Bank (AfDB)

A number of foreign financial institutions also provide off-shore financing directly to companies in Ghana.

GHANA'S COMPETITIVE ADVANTAGE

1. Stable Political Environment

Ghana is a politically stable country. This has been recognized by the world's famous leaders including US President Barack Obama and his predecessors and former UK Prime Minister Gordon Brown and his predecessors who have all commended Ghana for the political stability in the country over the years.

2. Macro-economic Policies

The Government of Ghana has initiated a number of sound macroeconomic policies designed to accelerate the process of growth and transformation of the economy under competitive conditions. The rate of inflation has been quiet unstable with the current rate of 13.80% as at January 2014, in the face of unstable prices of crude oil in the world market. The management and access to foreign exchange in Ghana continues to get better.

3. Foreign Ownership

In the on-going privatization program, hundred per cent (100%) foreign ownership is permitted.

4. Access to ECOWAS Market

Ghana is easily accessible to the markets of all the member states of the Economic Community of West Africa (ECOWAS) with its population of approximately 300 million people.

5. Good Physical Infrastructure

Ghana possesses well developed seaports, airports and road networks capable of meeting the needs of businesses in the 21st century. There is an effort to upgrade the rail network to make it easy to get to the ports from inland. Telecommunication facilities in Ghana are excellent with more private service providers offering telephone, internet and other telecommunication services. Basic utilities such as water and electricity are readily available at relatively affordable rates.

6. Excellent Labour Force

The country has some of the best teachers, lecturers and researchers in the continent who have excelled not only in Ghana but in Africa and other parts of the world. There is also a large human resource base of both skilled and unskilled labour which can be sourced at relatively low rates. The minimum wage in Ghana is currently GH¢7.00 Ghana cedis per day.

7. Access to International Markets

Ghana has easy access to the USA and European Union Markets. The flight time to almost all European Union countries is about 6 hours and 9 hours to the USA.

8. Availability of Fund Sources

Ghana has a large number of fast developing financial institutions available to raise long-term capital at competitive rates. These institutions include banks, insurance and venture capital companies and a Stock Exchange market (Ghana Stock Exchange).

9. High Safety Standard

There are high standards of health and safety measures in the country.

10. Warm and Friendly People

Ghana is internationally acclaimed for her hospitality to her investors and foreigners as a whole.

11. High Quality of Life

The quality of life of Ghanaians is fairly high having attained the middle income status.

12. Availability of Land

Ghana has a wide expanse of land that can be acquired with little difficulty through appropriate agencies and owners.





Other profiles available include:

INVESTING IN GHANA'S FOOD PROCESSING SECTOR • INVESTING IN GHANA'S FORESTRY SECTOR

INVESTING IN GHANA'S TEXTILES & GARMENTS INDUSTRY • INVESTING IN GHANA'S PROPERTY DEVELOPMENT SECTOR

INVESTING IN GHANA'S MINERALS PROCESSING SECTOR • INVESTING IN GHANA'S FISHING INDUSTRY

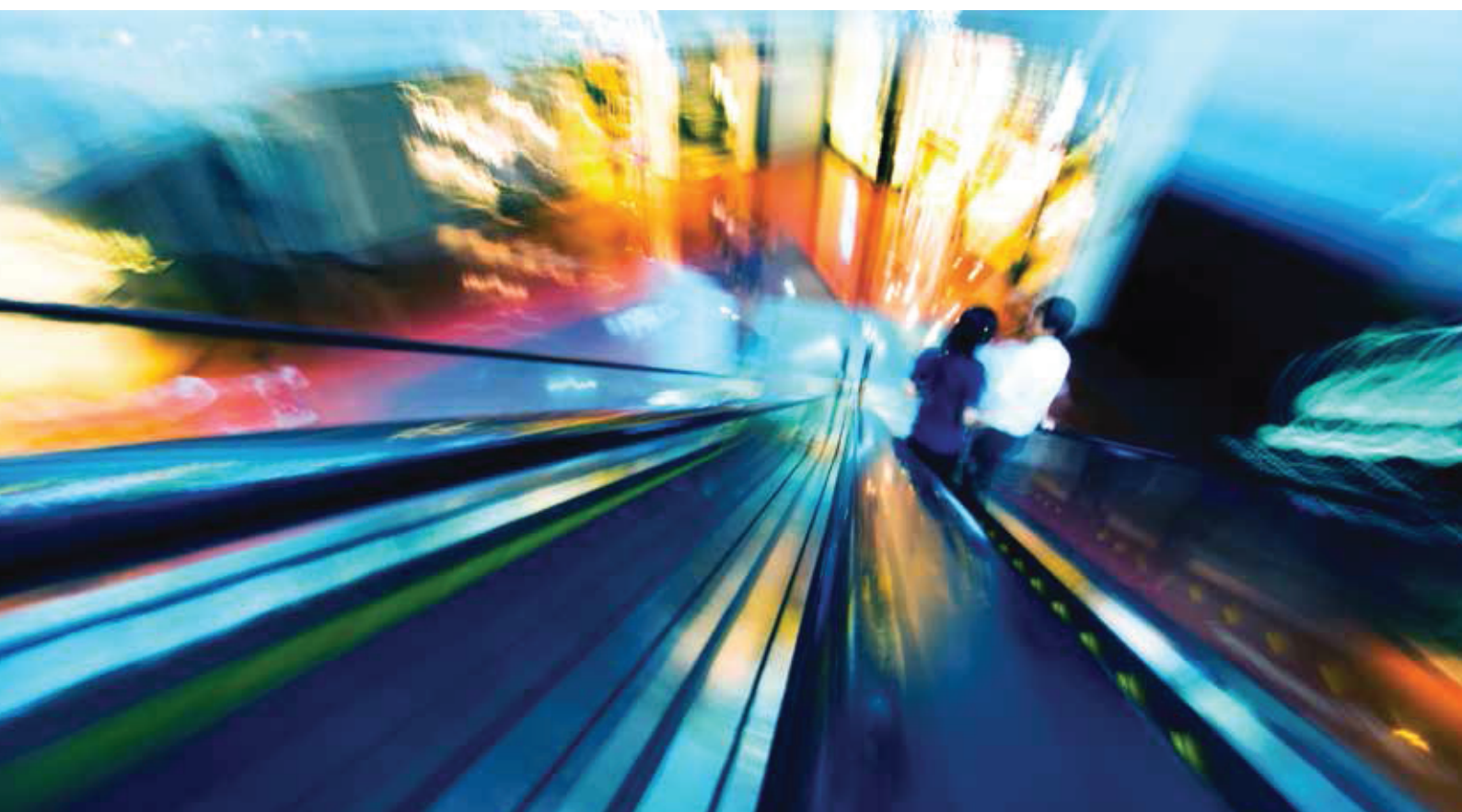
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INVESTING IN GHANA'S TOURISM SECTOR • INVESTING IN GHANA'S HEALTH SECTOR

INVESTING IN GHANA'S EDUCATION SECTOR • INVESTING IN GHANA'S HORTICULTURE INDUSTRY

INVESTING IN GHANA'S INFORMATION AND COMMUNICATION TECHNOLOGY SECTOR

INVESTING IN GHANA'S PETROLEUM SERVICES SECTOR





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These successful companies have invested in Ghana:

Anadarko • AngloGold Ashanti • Archer Daniels Midland • Baker Hughes • Barclays Bank
Barry Callebaut • British American Tobacco • Cargill • CFAO • Coca-Cola Bottling Co • Dizengoff • Ecobank •
Ericsson Radio Systems General Electric • Globacom • Gold Fields • Guinness • Hess • Holiday Inn • IBM • Interplast •
Kosmos Energy • Kraft Food • Movenpick • MTN • Nestle • Newmont Mining • Olam • PricewaterhouseCoopers
Procredit Savings and Loans Company • Provident Life Assurance Company • PZ Cussons Ghana Industries
Sandvik Tamrock • Scancom • SG-SSB • Shell • Stanbic Bank • Standard Chartered Bank • Total Petroleum
Toyota • Tullow • Unilever • Vanco • Vodafone • Wienco • Woolworths • Xerox