



# 2014 Minerals Yearbook

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**GHANA**

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# THE MINERAL INDUSTRY OF GHANA

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Diamond, gold, manganese, and crude petroleum were Ghana's key mineral commodities in terms of their contribution to the country's gross domestic product (GDP) and to income earnings. In 2014, Ghana was among the top 15 producers of rough diamond by carat weight and in 2014 produced about 3% of world mined gold. Other mineral commodities produced in the country included aluminum, bauxite, cement, lead, natural gas, petroleum products, salt, and silver. In addition to these mineral commodities, Ghana produced a variety of crude construction materials, such as clay, lime, limestone, sand and gravel, and stone; in 2014, however, available information was inadequate to make reliable estimates of output (Kimberley Process Rough Diamond Statistics, 2015b; George, 2016).

## Minerals in the National Economy

Ghana's mineral sector contributed 8% to the country's real GDP in 2014 compared with 9.4% in 2013. The mineral sector's contribution to GDP growth decreased to 3.2% in 2014 from 11.6% in 2013. Gold and petroleum and gas exports accounted for about 61% of the country's total export earnings in 2014 compared with about 64% in 2013. Export revenue from gold decreased by 11.6% in 2014 to nearly \$4.4 billion and petroleum and gas by about 4% to nearly \$3.7 billion. Gold and crude petroleum and gas export revenue accounted for nearly 11% and 9.6%, respectively, of nominal GDP, which in 2014 was estimated to be \$38.6 billion (Bank of Ghana, 2015, p. 19; Ghana Statistical Service, 2015, p. 5, 7; International Monetary Fund, 2015, p. 28).

Nonfuel mineral revenue generated by the members of the Ghana Chamber of Mines decreased by 17% to about \$3.94 billion in 2014 from nearly \$4.75 billion in 2013. The decrease in revenue was mostly attributed to the drop in the international price of gold and the decrease in manganese exports. Gold accounted for about 97% of this revenue; manganese, for about 2%; and diamond, less than 1%. Member companies of the Ghana Chamber of Mines employed a total of 12,382 people in 2014, compared with 21,103 people in 2013. This represented a loss of more than 8,700 mining jobs or about a 41% decrease in mining labor in 2014. About 98% of the people employed by the industry were reported to be Ghanaian nationals. The decrease in the workforce was attributed partly to company cutbacks resulting from the decrease in the international price of Ghana's key mineral commodities (Ghana Chamber of Mines, 2015, p. 7–9).

Ghana continued to struggle with electricity generation shortages. In 2014, the Government requested that Volta River Authority (VOLTA) consumers, which included many mining companies, reduce their consumption of electricity by 25%. During the second half of the year, the Ghana Grid Company Ltd. (GRIDCO) installed automatic frequency load shedding devices on mining company power feeders to automatically control the supply of electricity. The Ghana Chamber of Mines

reported that these electricity-rationing programs adversely affected mining operations, which resulted in damages to equipment at processing plants and delays in equipment startups. The Electricity Company of Ghana Ltd. (ECG) attributed the increase in the number and duration of electricity outages to inadequate supply from Sunon Asogli Power (Ghana) Ltd., GRIDCO, and VOLTA, Ghana's main electricity providers. Ghana's major power generating source was the Akosombo Hydroelectric Power Station, which depended on adequate water levels in the Volta River to supply the Akosombo reservoir. Low water levels in the Volta River continued to force VOLTA to cut back on output. Thermal powerplants in Ghana were also operating below capacity and were reported to have contributed to the estimated 300-megawatt power deficit in the country (Rufai, 2014; Ghana Chamber of Mines, 2015, p. 14; Golden Star Resources Ltd., 2015, p. 22).

## Government Policies and Programs

The legislative framework for the mineral sector in Ghana is provided by the Minerals and Mining Act 703 of 2006 and the Petroleum (Exploration and Production) Law of 1984. The Minerals Commission is the Government entity responsible for the regulation and management of Ghana's mineral resources and for coordinating Government policy related to them. The corporate income tax for mining companies operating in the country is 35% and the royalty rate on total revenue earned from the mining of nonfuel minerals is not to exceed 6% or to be less than 3%. Artisanal and small-scale gold mining by unlicensed Ghanaians and foreign nationals continued unabated in the country despite Government efforts to curb these activities. In 2014, the Ghana Chamber of Mines urged the Government to amend the relevant sections of the Minerals and Mining Act to make unlicensed mining by artisanal and small-scale miners a statutory offense (Ghana Chamber of Mines, 2015, p. 18–19; Petroleum Commission, 2015).

## Production

In 2014, Ghana began producing natural gas. Manganese production was estimated to have decreased by 18% to 418,000 metric tons (t); secondary lead production by 8.4% to 2,817 t; and crude petroleum output by 4.5% to 37.2 million barrels. Gold production (excluding gold mined by artisanal means) increased by 1.7% to 90,754 kilograms (kg) and rough diamond by 43.3% to 242,260 carats. Bauxite production data, which was based on reported imports by China, was estimated to be 835,000 t. Aluminum and petroleum products output were estimated to have remained at about the same levels of production as in 2012 and 2013, as the country's only aluminum smelter continued to operate below production capacity and the Tema petroleum refinery continued to struggle with output levels. Cement production was estimated to have remained at

about the same level of 3 million metric tons (Mt). Salt and silver production also were estimated to have remained at about the same levels. Information on artisanal and small-scale gold production as well as output for other industrial minerals, such as clay, lime, limestone, sand and gravel, and stone, was inadequate to make reliable estimates of output. Data on mineral production are listed in table 1.

### Structure of the Mineral Industry

The Ministry of Lands and Natural Resources (MLNR), through the Geological Survey Department (GSD), the Minerals Commission, and the Precious Minerals Marketing Co. Ltd. (PMMC), oversees all aspects of Ghana's mineral sector. The GSD is responsible for providing reliable and up-to-date geologic information and serves as the repository for the country's geoscientific data. Through its Inspectorate Division, the Minerals Commission institutes and enforces environmental, health, and safety standards in the country's mines and ensures that mining companies and all mining-related activities comply with Ghana's mining and mineral law. The PMMC is responsible for promoting the country's precious minerals and jewelry industry. Ghana National Petroleum Corp. (GNPC), through the Petroleum Commission, is responsible for the exploration, development, and production of Ghana's hydrocarbon resources. Ghana National Gas Company (GNGC) is responsible for the development of the country's natural gas resources as well as processing and distributing natural gas from foreign sources. The majority of mining operations in Ghana were privately owned. Table 2 is a list of major mineral industry facilities.

### Mineral Trade

The Bank of Ghana reported that the country's total export earnings were affected by the decrease in the international price of Ghana's key mineral commodities, mainly gold and petroleum. Total merchandise export receipts amounted to about \$13.2 billion in 2014 compared with nearly \$13.8 billion in 2013. Gold export receipts, which amounted to about \$4.4 billion and crude petroleum export receipts, which amounted to nearly \$3.7 billion, accounted for nearly 33% and 28%, respectively, of total export receipts in 2014. This represented a loss of about \$578 million in gold revenue and \$160 million in petroleum revenue in 2014 compared with earnings in 2013. Exports of manganese decreased by 32% to about 1.4 Mt and generated nearly \$91.1 million. The value of Ghana's merchandise imports was estimated to have decreased by 17% to \$14.6 billion. The value of petroleum and natural gas imports increased by 4% to \$3.7 billion and represented about 25% of total imports. Exports of rough diamond increased by 40% to 224,821 carats and generated \$10 million in revenue (Ghana Chamber of Mines, 2015, p. 9, 13; Bank of Ghana, 2015, p. 18–19; Kimberley Process Rough Diamond Statistics, 2015b).

Ghana's total exports of all goods and services to the United States were valued at \$271.6 million in 2014 compared with about \$366 million in 2013; \$14 million of this export value was from gold; \$605,000, from nonferrous metals; \$568,000, from drilling and oilfield equipment; and \$151,000,

from sulfur and nonmetallic minerals. Ghana's total imports from the United States were valued at \$1.2 billion in 2014 compared with nearly \$982 million in 2013. This included \$40.6 million for excavating machinery, \$322 million for fuel oil, \$72 million for natural gas liquids, \$34 million for petroleum products, \$22 million for drilling and oilfield equipment, \$6.4 million for iron and steel mill products, and \$2.9 million for other iron and steel products. Ghana was a member of the World Trade Organization and the Economic Community of West African States (U.S. Census Bureau, 2015a, b).

### Commodity Review

#### Metals

**Bauxite and Alumina and Aluminum.**—Ghana Bauxite Company Ltd. (GBCL) operated Ghana's only bauxite mine, which is located in southwestern Ghana about 240 kilometers (km) from the Port of Takoradi. In 2014, aging infrastructure and a deteriorated rail system continued to constrain the efficient transportation of bauxite ore to the Port of Takoradi. Ghana's Tema aluminum smelter, which was 100% owned by the Government, continued to operate at 20% of its installed capacity of 200,000 metric tons per year (t/yr) (Oved, 2014).

**Gold.**—Gold in Ghana was produced at both the industrial and artisanal scale. In June, Resolute Mining Ltd. of Australia acquired a 90% operating interest in the Bibiani gold mine, which was formerly owned by Noble Mineral Resources Ltd. of Australia. The Bibiani Mine had been owned by Ashanti Goldfields Co. Ltd. during the 1990s and then was sold to Central African Gold Ltd. of the United Kingdom (CAGL) in 2006. CAGL operated the mine until January 2009, when it closed operations owing to low metallurgical recoveries, and financial difficulties related to the 2008–9 global financial crisis. Resolute planned to carry out a feasibility study to evaluate the development of an underground mine at Bibiani, which it expected to be completed in the 2016–17 timeframe. The mine was to remain on care-and-maintenance status through completion of the feasibility study. A 20,000-meter drilling program, which was expected to better delineate the underground resource was started in 2014 (Resolute Mining Ltd., 2015, p. 5, 23, 45).

AngloGold Ashanti Ltd. of South Africa operated the Iduapriem and the Obuasi gold mines. The Iduapriem Mine produced a total of 5,505 kg of gold in 2014, and the Obuasi Mine, a total of 7,558 kg. The Obuasi Mine was placed under a limited operational status in 2014 following a review of the mine's operational efficiencies. Operations were scaled down and the mine's staff was retrenched after underground production ceased during the fourth quarter. A limited number of employees were contracted to work on a 1-year fixed-term basis to process tailings and stockpiled ore, while AngloGold explored for options to optimize the long-term sustainability of the mine (AngloGold Ashanti Ltd., 2015, p. 9, 101).

A feasibility study to seek the modernization of operations at the Obuasi Mine was underway. AngloGold reported it would consider seeking a joint-venture partner to operate the mine if necessary. The company reported that the Government's

directive to curtail the use of electricity in Ghana was not expected to affect operations during the mine's transition into a limited operating status. An amendment to the company's mining contract with the Government, which detailed the technical, environmental, financial, and social responsibilities of the company during the transition, was submitted to the Government in July and approved in November. In July, the company submitted an environmental management plan covering the period from October 2014 to December 2015 to the Environmental Protection Agency (EPA) and an additional environmental management plan for 2016 to 2019, to be submitted to EPA, was to be completed in 2015. The total number of employees at Iduapriem Mine decreased to 1,352 in 2014 from 1,590 in 2013 and that of the Obuasi Mine to 3,541 from 5,194 (AngloGold Ashanti Ltd., 2015, p. 18, 23, 24, 82, 106, 113).

At the Nzema Mine, production decreased slightly to 2,254 kg in 2014 from 2,357 kg in 2013. Endeavour Mining Corp. of Canada, which was the company that operated the mine, purchased high-grade gold ore from local artisanal miners, which the company reported separately in its annual report. Purchased gold was 1,326 kg in 2014 compared with 860 kg in 2013, which represented more than one-half of the Nzema Mine's total output in 2014. The decrease in output at the Nzema Mine was attributed to lower ore throughput, the processing of lower grade ore, and heavy rainfall. Electricity outages and mandatory electricity rationing during the second half of the year were also reported to have hindered production (Endeavour Mining Corp., 2015, p. 10).

Golden Star Resources Ltd. of Canada operated the Bogoso-Prestea gold mine complex. In 2014, production at the Bogoso Mine increased to 4,602 kg from 4,510 kg in 2013. Output, however, was lower than targeted owing to heavy rainfall in June, which impeded access to higher grade ore and to an extended electricity outage during the third quarter, which delayed the processing of ore. Golden Star operated a gold ore processing facility at Bogoso, which used bio-oxidation technology to treat refractory ore and a carbon-in-leach processing facility to treat nonrefractory ore. Refractory gold pits were expected to be depleted by the third quarter of 2015, at which time the refractory processing plant would be placed on care-and-maintenance status. The treatment of tailings at Bogoso, which continued in 2014, was expected to continue until 2017. Production in 2015 was projected to remain at about the same level as in 2014. Golden Star was in the process of evaluating sources of funding to redevelop the Prestea underground mine, which was on care and maintenance in 2014. Redevelopment costs were estimated at \$41 million. The company was in the process of completing a feasibility study for the mine, which it expected to commission in mid-2015 (Golden Star Resources Ltd., 2015, p. 4–5, 21, 27, 31).

Golden Star also held a 90% interest in the Wassa open pit mine, which in 2014 produced a total of 3,509 kg of gold compared with 5,779 kg in 2013. Ore at the Wassa Mine had been previously sourced from the Wassa and Father Brown pits, but production from the Father Brown pit ceased in 2014, following the company's decision not to invest an estimated \$26 million to optimize the pit. Production was also hindered

because of the recovery of lower than expected ore grades at the Wassa pit. Production in 2015 was expected to remain at about the same level as that of 2014. Golden Star completed a preliminary assessment for the development of an underground mine at Wassa in 2014, which outlined total measured and indicated resources of 35.7 Mt at a grade of 2.22 grams per metric ton (g/t) gold. A feasibility study for the project was also commissioned during the year (Golden Star Resources Ltd., 2015, p. 4–5, 21, 23, 77, 31).

Gold Fields Ltd. of South Africa operated the Damang and the Tarkwa gold mines. Gold production at the Tarkwa Mine decreased to 17,365 kg in 2014 from 19,664 kg in 2013. Gold Fields had planned to stop production at the mine's high-cost south heap-leach operation and had looked into replacing all or a part of the mine's north heap-leach operation by expanding its carbon-in-leach processing capacity. The expansion of the carbon-in-leach plant was completed in December and was expected to help maintain production at the Tarkwa Mine at an average level of about 17,100 kilograms per year. Gold production at Damang Mine increased to 5,530 kg in 2014 from 4,762 kg in 2013 partly as a result of the processing of higher grade ore and the installation of an additional carbon-in-leach tank (Gold Fields Ltd., 2015, p. 5, 24, 62).

The Tarkwa and Damang Mines sourced electricity from the ECG and the VOLTA. To deal with power outages, Gold Fields secured additional electricity from Unilever and used diesel-powered generators. The company also signed a 10-year electricity purchasing agreement with independent electricity producer Genser Energy of the United States. Genser was to commission a clean coal power-generation facility in the vicinity of the Tarkwa Mine in 2016. First production was to be delivered from an alternative plant during the second quarter of 2015, as the permanent plant was completed. The coal plant was expected to eventually replace all or a significant proportion of the Tarkwa and Damang Mine's electricity needs from ECG and VOLTA (Gold Fields Ltd., 2015, p. 64–65).

Colorado-based Newmont Mining Corp. operated the Ahafo and the Akyem Mines. In 2014, gold production from the Ahafo Mine decreased to 13,748 kg from 17,729 kg in 2013, mostly as a result of the mining of lower grade ore and of lower throughput owing to the depletion of the mine's oxide ore reserves. The processing plant at Ahafo consisted of a conventional mill and a standard carbon-in-leach plant, which processed oxide ore. The plant sourced electricity from ECG. Newmont continued to ramp up production at the Akyem Mine, which began operating in September 2013. The mine produced a total of 14,681 kg in 2014. Production at Akyem's carbon-in-leach processing plant ramped-up to full capacity in October 2013. Electricity for the plant was also sourced from ECG and from an onsite limited cogeneration plant (Newmont Mining Corp., 2015, p. 28, 64–65).

**Lead.**—Gravita Ghana Ltd., which was a subsidiary of Gravita India Ltd. was the only secondary lead producer in Ghana. The company produced remelted lead ingots from the recycling of lead acid battery scrap. In 2014, the company produced a total of 2,817 t of secondary lead compared with 3,076 t in 2013 (Gravita India Ltd., 2015, p. 16).



**Manganese.**—Manganese was produced at the Nsuta Mine in the Western Region of Ghana, by Consolidated Minerals Ltd. of the United Kingdom, through its 90% interest in Ghana Manganese Co. Ltd. (GMC), which exported high-grade manganese carbonate ore, mainly to China. Manganese was exported to China as part of a 10-year sales offtake agreement signed with Tianyuan Manganese Industry Co. Ltd of China (TMI) in 2012. The contract was for the purchase of 1.5 million metric tons per year of manganese ore from the Nsuta Mine. In 2014, Consolidated Minerals terminated the contract stating that TMI had breached its contracted purchasing obligations. The dispute was pending arbitration proceedings in London and in China. GMC produced nearly 1.5 Mt of manganese ore in 2014 compared with 1.8 Mt in 2013. The decrease in production was partly attributed to the adoption of a stringent cost-reduction exercise resulting from the termination of the contract with TMI, to an extended rainy season, and to the rationing of electricity (Consolidated Minerals Ltd., 2015, p. 5–7).

### *Industrial Minerals*

**Diamond.**—The majority of Ghana's diamond production was from small-scale and artisanal miners who operated in the Bonsa River valley near the town of Tarkwa and in the Birim River valley between the towns of Akwatia and Oda. Additional small diamond occurrences have been reported elsewhere throughout the country. All diamond production in Ghana was from secondary deposits, and there were no known diamondiferous kimberlites in the country. The Akwatia diamond mine remained closed in 2014. Ghana produced a total of 242,260 carats of rough diamond in 2014 compared with 169,043 carats in 2013 (Kimberley Process Rough Diamond Statistics, 2015a, b).

### *Mineral Fuels*

**Natural Gas.**—In November, the offshore segment of the Western Corridor Gas Infrastructure pipeline, which connected the Jubilee oilfield to the Atuabo natural gas processing plant, was commissioned. Total natural gas exported from the Jubilee oilfield to the Atuabo plant was reported to be 54 million cubic meters (Ministry of Finance, 2015, p. 1–2).

**Petroleum.**—In 2014, a total of 37.2 million barrels of crude petroleum were produced from the Jubilee oilfield. Exploration activities continued at the Tweneboa-Enyenra-Ntomme oilfield. The Ministry of Mines reported that production of crude petroleum from the Tweneboa-Enyenra-Ntomme oilfield was expected to begin during the third quarter of 2016, and production was expected to peak at a rate of 76,000 barrels per day by 2018. Natural gas production at the oilfield was expected to begin in 2017 (Ministry of Finance, 2015, p. v, 1–3).

In December, the Ministry of Petroleum approved a plan for the development of the Sankofa-Gye Nyame oilfield in the Offshore Cape Three Points Block. As of yearend, Parliament had reviewed and ratified the necessary commercial contracts for the development of the oilfield. Petroleum reserves at Sankofa-Gye Nyame were estimated to be 131.3 million barrels of crude petroleum, 1.07 trillion cubic feet of natural gas, and

30 million barrels of oil equivalent of condensate. The first crude petroleum production was expected by the third quarter of 2017, and the first natural gas exports by the first quarter of 2018. Crude petroleum production was expected to peak at 43,800 barrels per day by 2021. The appraisal of the West Cape Three Points Block was completed on December 31, and the evaluation of the economic viability of developing the Akasa, the Mahogany, and the Teak prospects was to be announced in 2015 (Ministry of Finance, 2015, p. v, 1–3).

### **Outlook**

The emergence of the hydrocarbon sector is likely to enhance Ghana's position as a world mineral producer, but in the short run, gold is likely to continue to be the country's leading mineral export earner. Mining operations, in particular those of companies mining gold, are likely to continue to be affected by Ghana's shortage of electricity generation. The electricity crisis, if prolonged, could force mining companies to seek alternative sources of energy. Some of these companies may opt to substitute hydropower sources of electricity for coal-generated electricity or diesel-fueled powerplants, which would increase the country's carbon footprint. In the short run, the electricity crisis is also likely to discourage foreign direct investment in mining given the mineral sector's high requirements for electricity.

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TABLE 1  
GHANA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2010	2011	2012	2013	2014
Aluminum, primary	--	35 <sup>r</sup>	38 <sup>r</sup>	37 <sup>r</sup>	38
Bauxite, gross weight <sup>3</sup>	595	400	753	827	835 <sup>e</sup>
Cement, hydraulic <sup>e,4</sup>	2,100	2,500	3,000	3,000	3,000
Diamond <sup>5</sup>	334	302	233	169	242
Gold, mine output, Au content	76,332 <sup>6</sup>	82,598 <sup>r,6</sup>	86,972 <sup>r,7</sup>	89,224 <sup>r,7</sup>	90,754 <sup>7</sup>
Lead, secondary <sup>8</sup>	NA	2,403	2,961	3,076	2,817
Manganese:					
Gross weight	1,530 <sup>r</sup>	1,689 <sup>r</sup>	1,467 <sup>r</sup>	1,812 <sup>r</sup>	1,497
Mn content <sup>e</sup>	422 <sup>r</sup>	484	414 <sup>r</sup>	510 <sup>r</sup>	418
Petroleum:					
Crude	2,050 <sup>e</sup>	24,196	26,429	35,588 <sup>r</sup>	37,202
Refinery products <sup>e</sup>	10,000	10,000	10,000	10,000	10,000
Natural gas	--	--	--	--	53,983 <sup>9</sup>
Salt	85	250 <sup>r,e</sup>	250 <sup>r,e</sup>	250 <sup>r,e</sup>	250
Silver, Ag content of exported dore	3,313	3,088	3,200 <sup>e</sup>	3,300 <sup>e</sup>	3,400 <sup>e</sup>

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do Ditto. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through December 28, 2015.

<sup>2</sup>In addition to the commodities listed, a variety of crude construction materials (clays, lime, limestone, sand and gravel, and stone) were produced. Output of these commodities was not reported, however, and available information was inadequate to make reliable estimates of output.

<sup>3</sup>Figure based on bauxite shipments as reported by the Ghana Chamber of Mines.

<sup>4</sup>All from imported clinker.

<sup>5</sup>Reported by Kimberley Process Certification Scheme.

<sup>6</sup>Does not include artisanal and small-scale output, which was estimated to be more than 25,000 kilograms in 2010 and more than 30,000 kilograms in 2011.

<sup>7</sup>Does not include artisanal and small-scale mining output. In 2012, 2013, and 2014, available information was inadequate to make reliable estimates of output from artisanal mining sources.

<sup>8</sup>Reported data are for fiscal year beginning on March 31 of the year indicated.

<sup>9</sup>Natural gas exported from the Jubilee Field to the Atuabo natural gas processing plant.

TABLE 2  
GHANA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Volta Aluminum Co. Ltd. (VALCO) (Government, 100%)	Aluminum smelter at Tema	200.
Bauxite		Ghana Bauxite Company Ltd. (GBCL) (Bosai Minerals Group Co. Ltd., 80%, and Government, 20%)	Bauxite mine at Awaso	830.
Cement		Ghana Cement Company Ltd. (GHACEM) (HeidelbergCement AG, 93.1%)	Clinker grinding plant at Takoradi	1,200.
Do.		do.	Clinker grinding plant at Tema	2,200.
Do.		Diamond Cement Ghana Ltd.	Cement plant at Aflao <sup>1</sup>	1,500.
Do.		Savanna Cement Company Ltd. (SAVACEM) and Diamond Cement Ghana Ltd.	Town of Buipe, Central Gonja District	300.
Diamond	thousand carats	Great Consolidated Diamond Ghana Ltd. (Government, 100%)	Placer mine at Akwatia, <sup>2</sup> Birim Valley	360.
Do.	do.	Artisanal diamond miners	Birim Valley	500 to 900.
Gold	kilograms	AngloGold Ashanti Ltd., 100%	Obuasi surface and underground mine, 60 kilometers south of Kumasi	17,000.
Do.	do.	do.	Iduapriem Mine, 70 kilometers north of Takoradi	8,800.
Do.	do.	Resolute (Bibiani) Ltd. (Resolute Mining Ltd.)	Bibiani Mine, 250 kilometers northwest of Accra	3,400.
Do.	do.	Golden Star (Bogoso-Prestea) Ltd. (Golden Star Resources Ltd., 90%, and Government, 10%)	Bogoso-Prestea open pit mine, 300 kilometers west of Accra	7,300.
Do.	do.	Golden Star (Wassa) Ltd. (GSWL) (Golden Star Resources Ltd., 90%, and Government, 10%)	Wassa Mine, 30 kilometers northwest of Tarkwa	7,000.
Do.	do.	do.	Father Brown Mine, <sup>3</sup> 35 kilometers from the town of Bogosu; 80 kilometers south of the Wassa Mine	3,000.
Do.	do.	Gold Fields Ltd., 90%, and Government, 10%	Tarkwa open pit mine and carbon-in-leach and heap-leach plants, 300 kilometers west of Accra	21,800.
Do.	do.	do.	Damang Mine and carbon-in-leach plant, 360 kilometers west of Accra	6,000.
Do.	do.	Newmont Mining Corp., 100%	Ahafo Mine, 290 kilometers northwest of Accra, Brong Ahafo region	17,100.
Do.	do.	do.	Akyem Mine	14,700.
Do.	do.	Endeavour Mining Corp., 90%, and Government, 10%	Nzema Mine, 280 kilometers west of Accra, East municipal district	3,100.
Do.	do.	Chirano Gold Mine Ltd. (Kinross Gold Corp., 90%, and Government, 10%)	Chirano Mine, 100 kilometers from Kumasi, southwestern Ghana	9,000.
Do.	do.	Perseus Mining Ltd.	Edikan gold mine, 195 kilometers northwest of Accra	6,200.
Do.	do.	Artisanal and small-scale gold miners	Throughout Ghana	> 10,000.
Lead, secondary		Gravita Ghana Ltd. (Gravita India Ltd.)	Tema	6.
Limestone and lime		Carmeuse Lime Products (Ghana) Ltd. (Carmeuse S.A.)	Takoradi	NA.
Manganese ore		Ghana Manganese Company Ltd. (Ghana Consolidated Minerals Ltd., 90%, and Government, 10%)	Open pit mine at Nsuta-Wassaw Western region	1,500.

See footnotes at end of table.

TABLE 2—Continued  
GHANA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum, crude	thousand 42-gallon barrels	Tullow Oil plc, 34.71%; Anadarko Petroleum Corp., 23.49%; Kosmos Energy LLC, 23.49%; Ghana National Petroleum Corp. (GNPC), 13.75%; Sabre Oil & Gas Holdings Ltd., 2.81%; E.O. Group Ltd., 1.75%	Jubilee oilfield, 60 kilometers offshore	43,800.
Petroleum products	do.	Tema Oil Refinery (Government, 100%)	Refinery at Tema	16,400.
Salt		Panbros Salt Industry Ltd.	Salt pan at Mendskrom, near Accra	250.
Do.		Elmina Salt Producers Association	Artisanal salt pan mining near Elmina	NA.

Do., do. Ditto. NA Not available.

<sup>1</sup>Used imported clinker.

<sup>2</sup>On care-and-maintenance status.

<sup>3</sup>Closed in May.