

2016 Minerals Yearbook

GUINEA

THE MINERAL INDUSTRY OF GUINEA

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In 2016, Guinea's real gross domestic product (GDP) increased by 6.6% compared with an increase of 3.5% (revised) in 2015, and the country's rate of inflation was about 8%; the nominal GDP was nearly \$6.8 billion. Guinea has a variety of mineral resources (including significant undeveloped iron ore resources) and, in 2016, produced bauxite, cement, diamond, and gold. Guinea held the world's largest bauxite reserves, which were estimated to be 7.4 billion metric tons (Gt) (Bray, 2017). Its proven iron ore reserves were estimated by the Government to be 20 Gt with an estimated average iron content of at least 60%. In 2016, Guinea was the world's 4th-ranked producer of bauxite, accounting for 11.5% of world output; the country also was the world's 16th-ranked producer of diamond, by carat. Guinea did not produce or refine petroleum and was dependent upon imports to meet its requirements for petroleum; however, petroleum exploration was taking place offshore Guinea (table 1; International Monetary Fund, 2016b; Ministry of Mines and Geology, 2017, p. 10; Bray, 2018; Olson, 2018).

Minerals in the National Economy

The mining sector in Guinea accounted for about 15.6% of all the income that the Government received in 2016, or about 16% of real GDP (Institute of National Statistics, 2018, p. 24). In 2016, Guinea exported about 20.9 million metric tons (Mt) of bauxite valued at \$883 million, 100,000 carats of diamond (gem and industrial) valued at \$22.1 million, and 30 metric tons (t) of gold valued at \$1.1 billion (Institute of National Statistics, 2018, p. 188).

In 2016, Guinea's exports of goods and services, which was an indicator of the country's economic performance, increased by 10.3% compared with that of the previous year, and its imports of goods and services also increased by 6.2%. In 2015 (the latest year for which data were available), the country's main export partners were Ghana (which received 22% of Guinea's exports), India (16%), the United Arab Emirates (10%), and Spain (9%). The country's main import partners were the Netherlands (which supplied 18% of Guinea's imports), China (15%), India (10%), Belgium (7%), and France and the United Arab Emirates (6% each) (International Monetary Fund, 2016b; Institute of National Statistics, 2015, p. 4, 7–8, 11–21).

Government Policies and Programs

The Ministère des Mines et de la Géologie (Ministry of Mines and Geology) was the Government agency in charge of overseeing the implementation of Guinea's mining code, and the Société Guinéenne du Patrimoine Minier (Soguiipami) [Guinean Mining Heritage Society] was the company in charge of acting on behalf of the Government in all mining ventures and of promoting Guinea's mineral sector abroad. The legislative framework for Guinea's mineral sector is provided by law L/2013/053/CNT of April 2013. Guinea's amended mining code

committed the country to increase transparency in the mining sector, reduce taxes and royalties, and hire Guinean residents (Law Library of Congress, The, 2013).

Production

In 2016, Guinea continued to recover from the effects of the Ebola virus disease (EVD) outbreak. The slow return to normal activities included resumption of mineral commodity production. Bauxite (dry basis) production increased by 93.2% in 2016 owing most likely to the continuing efforts to normalize production. Gold production decreased by about 2.9%, whereas gem diamond production decreased by 32.3%. Both decreases were likely because of the fluctuation in world demand. Cement production was estimated to have remained at about the same level as in 2015. Data on mineral production are in table 1.

Structure of the Mineral Industry

Guinea's mining and mineral-processing operations were mostly privately owned, and the Government's participating interest ranged from 15% to 49% for about one-half of the operations. Artisanal miners mined diamond and gold at various locations throughout the country. Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Bauxite and Alumina.—Hongqiao Group Ltd. (CHG) of China began production at its new mine in Boko late in 2015. The new mine had a 10-million-metric-ton-per-year (Mt/yr) capacity, and shipments of bauxite from the mine to China began late in the second part of the year (Thomson Reuters, 2015).

Guinea accounted for 26% of the world's total bauxite reserves. The Compagnie des Bauxites de Guinée (CBG), which was owned by Halco Mining Inc.—a joint venture among the Government of Guinea (49%), Rio Tinto plc of the United Kingdom (23%), Alcoa Inc. of the United States (22.5%), and Dadco Group of Germany (5%)—owned the Sangaredi Mine, which was the largest bauxite mine in the country. As of 2016, the total bauxite reserves at the Sangaredi Mine were estimated to be 346 Mt grading 48.9% Al_2O_3 , including 183 Mt of proved reserves grading 48.5% Al_2O_3 and 163 Mt of probable reserves grading 49.3% Al_2O_3 . The mine produced 16 Mt of bauxite in 2016 compared with 14.6 Mt in 2015, which was an increase of 14% (table 2; Rio Tinto plc, 2017, p. 220, 223; Bray, 2018).

In 2016, the joint venture of Guinea Alumina Corp. S.A. (GAC), a subsidiary of Emirates Global Aluminum (EGA), and CBG was still working on the Boko expansion project in the Boko region. CBG held 22.95% of the share in the Boko expansion project, which had probable and proven reserves

estimated to be 59.5 Mt and 23.2 Mt, respectively, each grading 48.5% Al_2O_3 (Guinea Alumina Corp. S.A., 2017).

United Company RUSAL plc (RUSAL) of Russia announced in March 2016 that it would delay the Dian-Dian bauxite project until 2017 owing to weak aluminum prices. RUSAL had launched the first stage of the project in 2014, which included the construction of a 3-Mt/yr bauxite mine to be completed in 2018. The second phase of the project would include the ramping up of bauxite production to 6 Mt/yr by 2021. RUSAL stated that by the end of 2020 it would discuss with the parties involved the possibility of constructing a 1.2-Mt/yr alumina refinery. RUSAL also stated that it was to resume operations at the suspended Friguia alumina complex, although a specific date was not announced. Mineral resources at Dian-Dian were estimated to be 564 Mt (Thomson Reuters, 2016b; United Company RUSAL plc, 2017, p. 21–24, 50–54, 100, 178).

In 2016, Anglo-African Mineral plc of the United Kingdom (Anglo-African) entered into a joint venture with China New Era Group Corp. and China Geo-Engineering Corp. to codevelop the FAR project, which Anglo-African was developing through its wholly owned subsidiary Forward Africa Resources S.A. (FAR). The project is located in the Durekha and Kindia Prefectures. Anglo-African also was developing two other projects, the Somalu and the Toubal projects, located near Mamou and Tougue, respectively. As of November 2015 (the latest month for which data were available), the Joint Ore Reserves Committee (JORC)-compliant mineral resources of the FAR project were estimated to be 73 Mt of bauxite, including 26 Mt of measured resources, 11 Mt of indicated resources, and 36 Mt of inferred resources. The JORC-compliant inferred mineral resources of the Somalu project were estimated to be 459 Mt of bauxite grading at 43% Al_2O_3 . The JORC-compliant inferred resources of the Toubal project were estimated to be 722 Mt of bauxite grading at 43% Al_2O_3 (Anglo-African Minerals plc, 2016).

Gold.—Gold production at the Lefa Mine, which was operated by Netherlands-based Nord Gold N.V. (Nordgold), decreased by 9% to 6,056 kilograms (kg) from 6,662 kg in 2015. The decrease was due in part to a decrease in the grade of the ore mined, whereas the amount of ore milled remained at about the same level. In 2016, Nord gold completed a preliminary design for a new tailings storage facility and planned to apply for relevant permits in the first part of 2017. The company also reported that the mine's exploration program was expanded to include regional oxide deposits located up to 45 kilometers (km) away from the plant.

As of December 2015, the Lefa-corridor stockpiles' measured and indicated resources were estimated to be 4.56 Mt at a grade of 0.60 gram per metric ton (g/t) gold, and the Lefa-corridor heap-leach resources were estimated to be 9.42 Mt at a grade of 0.52 g/t gold. The Lefa Mine was located about 700 km northeast of Conakry (Nord Gold N.V., 2017, p. 66–68, 98, 104).

In 2016, production at the Siguiri Mine increased to about 8,055 kg compared with a revised 7,930 kg in 2015. The production increase was due to the increase in the amount of ore processed. This increase in the quantity of material processed was necessary to compensate for decreasing grades. As of December 2015 (the latest month for which data were available), the total inclusive mineral resources, including

measured, indicated, and inferred, were estimated to be 191.8 Mt at a grade of 0.89 g/t gold and containing 171 t of gold. The mineral reserves were estimated to be 99.7 Mt grading 1.02 g/t gold and containing 101 t of gold (AngloGold Ashanti Ltd., 2015, p. 39, 82, 90–91; 2016, p. 85–86, 91–92; 2017).

Iron Ore.—In 2015 (the latest year for which data were available), the Simandou South (Blocks 3 and 4) iron ore project remained undeveloped owing to disputes between the Government of Guinea and the developing companies regarding the management of the asset. In 2014, joint-venture partners Rio Tinto plc (47%), Aluminum Corp. of China Ltd. (Chinalco) (41%), and the International Finance Corporation (IFC) (4.5%) had signed an investment framework contract with the Government of Guinea (7.5%) for the development of the Simandou South (Blocks 3 and 4) iron ore project. The contract was approved for ratification by the Guinean National Assembly in June 2014 and approved by the Executive branch and Supreme Court in August 2014. The first stage in the development of the project included the completion of a bankable feasibility study and the establishment of a funding consortium to build associated infrastructure. The bankable feasibility study was expected to be submitted to the Government of Guinea in 2015; however, completion of the study was delayed owing to the EVD outbreak. The joint-venture partners were working to complete the bankable feasibility study for the mine and infrastructure in 2015, and the final copy of the study was submitted to the Government in May 2016; however, by October, Rio Tinto had sold its entire stake in the Simandou project to Aluminum Corp. of China (Chinalco) (Rio Tinto plc, 2016a, p. 37, 204; 2016b; 2016c, p. 14).

The Simandou South project, which is located 550 km southeast of Conakry, was considered to host one of the world's largest undeveloped high-grade iron ore deposits and was expected to produce about 100 Mt/yr of iron ore upon commissioning. As of 2015, total resources, including measured, indicated, and inferred, were estimated to be 835 Mt grading 65% iron. The project was expected to generate about \$1.5 billion per year in Government revenue, to create about 4,500 direct jobs, and to employ 3,500 contractors. These estimated Government proceeds were based on long-term market forecasts for the production of 100 Mt/yr of iron ore at an average price of \$75 per metric ton (free on board) (Rio Tinto plc, 2016a, p. 225; 2016b; 2016c, p. 14).

The Simandou South project was planned to be developed in two stages, the first of which would include the development of the 50-Mt/yr Oueleba Mine. The second stage would consist of the development of the Pic de Fon deposit, the expansion of iron ore hauling capacity at the railway, capacity expansion at the deepwater port, and the rampup of production to the projected 100 Mt/yr. Project parameters, including related costs and a timeline, were to be provided upon completion of the bankable feasibility study. The Government was initially to hold a 7.5% free-carried interest in the project, which it could gradually increase to a maximum of 15% during a period of 20 years or to 20% through a contributing interest. In 2015, SRK Consulting in collaboration with Rio Tinto had worked on preparing a mineral resource estimate of Pic de Fon deposit and the Oueleba Mine. As of 2016, this estimate had not been published (Rio Tinto plc, 2014, p. 6, 23; 2016a, p. 23, 134; SRK Consulting, 2015).

In October 2016, Sable Mining Africa Ltd. of the United Kingdom changed its name to Consolidated Growth Holdings Ltd. (CGH), and it removed its listing from the AIM market [an alternative investment market] on the London Stock Exchange after the company and its chief executive officer had legal issues. CGH stopped all development work on its projects, including the Nimba iron ore project (Thomson Reuters, 2016a). As of December 2015 (the latest year for which data were available), the Nimba total JORC-compliant resources were estimated to be 205.2 Mt of iron ore grading 57.8% iron at a cutoff rate of 40% iron. The Nimba project is located in southeastern Guinea near the border with Liberia and Côte d'Ivoire and consists of a near-surface hematite banded iron formation deposit. In 2014, an inter-ministerial decree signed by the Governments of Guinea and Liberia granted Sable Mining the rights to export iron ore from Nimba through the Port of Buchanan. Iron ore would be hauled 65 km by road to a transfer yard near Yekepa, Liberia, where the ore would be stockpiled and then loaded onto freight cars. From Yekepa, the ore would be transported 18 km by rail to the shared rail line at Tokadeh in Liberia and from there to the Port of Buchanan for export. A memorandum of understanding for the use, rehabilitation, and expansion of the rail line connecting Yekepa to the Port of Buchanan was also signed during the year (Sable Mining Africa Ltd., 2014; 2015, p. 1, 5).

Industrial Minerals

Diamond.—In 2016, Guinea produced 112,837 carats of diamond (industrial and gem), including artisanal production; this was a decrease of about 32.4%, which was owing mostly to fluctuation of international prices and the challenges brought on by the EVD epidemic. The export value of diamond increased by about 21% to \$22.7 million in 2016 from \$18.7 million in 2015, however, owing mostly to increasing international prices and the ratio of gem to industrial diamond being exported (Kimberley Process, 2017).

In January, Stellar Diamonds Plc of the United Kingdom reported that it had recovered a 55-carat diamond from the Baoule kimberlite project, thus confirming the presence of large stones in the pipe, and that it was continuing to recover gemstones of up to 12 carats. The company was engaged in exploration, development, and production at several diamond properties in Guinea, including the Baoule kimberlite pipe project, the Bomboko Mine, the Droujba Mine, and the Mandala Mine. The company reported that, by the first quarter of 2016, it was 63% complete in its expected trial mining and processing of 100,000 t of kimberlite from a 5-hectare pipe at Baoule. In 2015, 46,500 t of kimberlite from the east lobe and 26,000 t from the west lobe were processed, yielding 9,300 carats of diamond. The Bomboko, the Droujba, and the Mandala Mines were under care-and-maintenance status in 2015 (Stellar Diamonds plc; 2015a, p. 2, 3, 9–10; 2015b, p. 4, 37; 2016).

Outlook

Guinea's GDP increased in 2016, and the International Monetary Fund forecasted probable growth in Guinea for 2017.

Bauxite production will continue to be a major engine of development in the country. Guinea's trade with Chinese companies is expected to continue and likely to increase for the foreseeable future, as China has developed an interest in the Guinean mineral industry. China had invested considerably in bauxite mining in Guinea in the past and has expressed interest in investing in iron ore mining in the country as well. The Simandou South project (Blocks 3 and 4) alone has the potential to place Guinea among the world's top 10 iron ore producers and to transform the country's economy. The lack of associated infrastructure to support mining operations at Simandou might be a deterrent to foreign direct investment in the project, however. Capital expenditures for the construction of associated infrastructure to develop not only the Simandou South project but other bauxite and iron ore mineral projects represent a significant proportion of the cost that companies must bear not only to access these mineral resources but to get them to international markets. These costs will continue to exert financial pressure on mining companies and potential investors and have the potential to delay the commissioning of mineral projects (Bermúdez-Lugo and Menzie, 2015; International Monetary Fund, 2015, p. 10, 14; 2016a, p. 1, 7; 2016b, p. 234).

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TABLE 1
GUINEA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons, gross weight, unless otherwise specified)

Commodity ²	2012	2013	2014	2015	2016
METALS					
Alumina	150	--	--	--	--
Bauxite:					
Dry basis	16,041 ^r	16,900 ^e	17,258 ^r	16,300 ^e	31,500
Wet basis	17,823	18,763	19,175	18,114	35,000 ^e
Gold, mine, Au content kilograms	14,790	15,147	16,955	14,593 ^r	14,177
INDUSTRIAL MINERALS					
Cement, hydraulic	317 ³	377 ³	435	500 ^e	500 ^e
Diamond:					
Gem carats	213,440	161,892	131,247	133,505	90,237
Industrial ^e do.	53,400	40,500	32,800	33,400	22,600

^eEstimated. ^rRevised. -- Zero.

¹Table includes data available through December 7, 2017. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

²In addition to the commodities listed, clay, gravel, iron ore, salt, sand, and stone may have been produced in Guinea, but available information was inadequate to make reliable estimates of output.

³Source: Banque Centrale, Ministères du Plan, de l'Économie et des Finances.

TABLE 2
GUINEA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina		Friguia S.A. (United Company RUSAL plc, 100%)	Friguia alumina refinery, ¹ Fria	650,000
Bauxite		Compagnie des Bauxites de Guinée (CBG) [Halco Mining Inc. (Alcoa Inc., 22.5%; Rio Tinto plc, 23%; Dadco Group, 5%), 51%; Government, 49%]	Sangaredi Mine, Kamsar	16,000,000
Do.		Compagnie des Bauxites de Kindia S.A. (CBK) (United Company RUSAL plc, 100%)	Debele Mine, Kindia	3,400,000
Do.		Friguia Bauxite and Alumina Complex (United Company RUSAL plc, 100%)	Friguia Mine, ¹ Fria	2,100,000
Do.		Hongqiao Group Ltd. (100%)	Boke Mine, Boke	10,000,000
Cement		Ciments de Guinée S.A. (LafargeHolcim Ltd., 59.9%, and Government, 40.1%)	Conakry grinding plant, 35 kilometers from Conakry Port	300,000
Do.		Ciments d'Afrique (CIMAF)	Dubreka industrial zone, 40 kilometers from Conakry	500,000
Diamond	carats	Association pour la Recherche et l'Exploitation du Diamant et de l'Or (Batax Bouna International Mining Corp.)	Aredor Mine	38,000
Do.		Stellar Diamonds Plc	Baoule, Bomboko, Droujba, and Mandala Mines	NA
Do.		Artisanal miners	Mainly in Banankoro	NA
Gold	kilograms	Société AngloGold Ashanti de Guinée SA (AngloGold Ashanti Ltd., 85%, and Government, 15%)	Siguiro Mine, 850 kilometers northeast of Conakry	10,600
Do.	do.	Société Minière de Dinguiraye (Nordgold N.V., 85%, and Government, 15%)	Lefa (Lero-Karta) Mine, 700 kilometers northeast of Conakry	6,400
Do.	do.	Semafo Guinée S.A. (New Dawn Mining Corp., 85%, and Government, 15%)	Kiniero Mine, 2 650 kilometers east of Conakry	1,250
Do.	do.	Artisanal miners	Various locations throughout the country, including the town of Kouremale near the border with Mali	NA
Iron ore		Forécariah Guinea Mining S.A. ³ (Bellzone Mining plc, 42.5%; China International Fund Ltd., 42.5%; Government, 15%)	Forécariah Mine, 160 kilometers southeast of Conakry	1,000

Do., do. Ditto. NA Not available.

¹On care-and-maintenance status since 2012.

²The mine was sold to New Dawn Mining Corp. in 2014, and production has been on hold since 2014.

³The mine was liquidated in 2017.