



# 2014 Minerals Yearbook

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## GUINEA

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# THE MINERAL INDUSTRY OF GUINEA

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In 2014, Guinea was among the three West African countries most affected by the Ebola virus disease (EVD) outbreak, in terms of suspected, probable, and confirmed cases of EVD. Mining companies operating in Guinea reported being affected by the temporary cancellation of flights to and from Conakry, the delay of essential shipping cargo containing mining supplies and equipment, and the temporary closure of Guinea's borders with Liberia, Senegal, and Sierra Leone. Coincidentally, the emergence of the EVD outbreak was accompanied by changes in mineral market conditions, which affected the price of Guinea's key and prospective mineral export commodities and, consequently, Government proceeds from the mineral sector (BBC News, 2014; Lennane, 2014; McGroarty and others, 2014; Mutzabaugh, 2014; Bermúdez-Lugo and Menzie, 2015).

Prior to the onset of the EVD outbreak and the change in mineral market conditions, the rampup and development of new mining projects in Guinea were the basis of World Bank forecasts for real gross domestic product (GDP) increases through 2017. Projected growth was not only to be driven largely by the rampup of bauxite mining operations, but also by the future commissioning of new bauxite and iron ore projects. These projects were expected to double Guinea's real GDP by 2015 and to greatly enhance the prospects for future GDP growth. Iron ore in particular was expected to become an increasingly significant source of export earnings (Bermúdez-Lugo and Menzie, 2015).

## Minerals in the National Economy

In 2014, Guinea produced more than 7% of world bauxite production, and remained among the world's top four producers of bauxite. Estimated total mineral exports, which were valued at \$1.3 billion, accounted for 19.7% of the nominal GDP (estimated to be \$6.6 billion) and 88% of total exports. Revenue from the mineral sector accounted for about 11% of total Government receipts in 2014 compared with 17% in 2013. The decrease in Government revenue was attributed in part to constraints imposed by the EVD outbreak, which delayed onsite company audits and, consequently, the collection of taxes from mining companies. The onset of the EVD outbreak led mining companies to put in place precautionary measures to safeguard mining assets and to protect staff. These measures included securing the perimeter of mining sites, establishing new health screening and operational protocols, granting leave to nonessential staff, and reducing exploration activities (Nord Gold N.V., 2014; Samb and Nebhay, 2014; United Company Rusal plc, 2014b; Semafo Inc., 2014a; AngloGold Ashanti Ltd., 2015b, p. 90; International Monetary Fund, 2015, p. 7–8, 22, 25; Stellar Diamonds plc, 2015; Bray, 2016).

The Ministère des Mines, et de la Géologie was the Government agency in charge of overseeing the implementation of Guinea's Mining Code, and Société Guinéenne du Patrimoine Minier (Soguijami) 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 No. L/2013/053/CNT of April 2013 (Law Library of Congress, The, 2013).

## Production

The Friguia bauxite mine and alumina refinery, which were idled in April 2012 following a trade union strike, remained closed during the year. Bauxite production increased by 2.2% to about 19.2 million metric tons (Mt) in 2014 from 18.8 Mt in 2013, and gold production increased by 11.9% to 16,955 kilograms (kg) in 2014 from a revised 15,147 kg in 2013. Cement production was estimated to have increased by nearly 33% to 500,000 metric tons (t); this estimate was based on preliminary data reported by the National Institute of Statistics. Diamond production, as reported by the Kimberley Process Certification Scheme, decreased by 18.9% to 164,059 carats in 2014 from 202,365 carats in 2013. Data on mineral production are in table 1.

## Structure of the Mineral Industry

Guinea's mining and mineral processing operations were privately owned. 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.**—The Sangaredi Mine, which was operated by Compagnie des Bauxites de Guinée through a consortium of companies, including Canada-based Rio Tinto Alcan Inc., United States-based Halco Mining Inc., and Channel Islands [United Kingdom]-based Dado Group, continued to operate throughout the year, although mining activities were quarantined. Despite the constraints imposed by the EVD outbreak, Rio Tinto reported achieving record bauxite production at the Sangaredi Mine. The mine produced 15.8 Mt of bauxite in 2014 compared with 15.4 Mt in 2013; this amount was 13% above the mine's reported nameplate annual capacity of 14 Mt. In 2014, Rio Tinto formed the Rio Tinto Business Resilience Team in partnership with the Government and international health organizations to address issues related to the EVD outbreak and to put in place measures to raise awareness of the disease among staff and local communities. The company reported distributing hygiene kits and providing support to local hospitals by donating protective equipment and medical supplies. As of yearend, Rio Tinto reported that none of its employees had been affected by EVD (Rio Tinto plc, 2015, p. 23, 28, 196, 213).

United Company Rusal plc's (RUSAL's) Dian-Dian bauxite project was reported to be on schedule. On July 10, RUSAL announced the launching of the first stage of the project, which included the construction of a 3-million-metric-ton-per-year (Mt/yr) bauxite mine to be completed by 2016. The second phase of the project would include the rampup of bauxite production to 6 Mt/yr, and the third phase would involve the construction of a 1.2-Mt/yr alumina refinery to be commissioned by the end of 2019. The final phase of the project, which was dependent upon favorable mineral market conditions, would include capacity expansion at the alumina refinery to 2.4 Mt/yr and capacity expansion at the bauxite mine to 12 Mt/yr. Early in the year, RUSAL took preventative measures to protect mining staff from contracting EVD, including establishing a quarantine policy and sanitary screening posts at the Port of Conakry. The company also reported providing Guinean medical institutions with medicine, disinfectants, and other specialized equipment (United Company Rusal plc, 2014a, p. 7; 2014b; 2014c; 2015, 33–34).

Alliance Mining Commodities Ltd. of Australia held a 90% interest in the Koumbia bauxite project. A mining license for the development of the project was granted to Alliance in July. As of yearend, the company was in the process of completing an update for an existing definitive feasibility study that was carried out in 2012. Bauxite reserves at Koumbia were estimated to be 305 Mt at a grade of 48% Al<sub>2</sub>O<sub>3</sub>. Production of bauxite ore was expected to begin in 2016 at a rate of 10 Mt/yr and to ramp up to 20 Mt/yr by 2019. Alliance planned to construct a 125-kilometer (km)-long rail system to transport the ore from the Koumbia Mine to a proposed site along the Nunez River. The ore would then be transported in barges down the Nunez River to a deepwater outer estuary and then offloaded to a marine vessel for transshipment. As of yearend, Alliance was in the process of seeking potential investors to secure funding for the project. Capital costs were estimated to be \$951 million (Alliance Mining Commodities Ltd., 2014).

Anglo-African Minerals reported that its bauxite exploration activities in Guinea were not affected by the EVD outbreak. During the year, Anglo-African carried out exploration programs for the F.A.R., Mintep, Somalu, and Toubal bauxite projects. An initial mineral resource estimate study was completed for the F.A.R. project in October, which yielded an initial inferred mineral resource estimate of 43 Mt of bauxite ore at a grade of 41.9% aluminum oxide. Further exploration was to be carried out for the F.A.R. project in 2015. Guinea Alumina Corp.'s GAC project was also reported to be on schedule, with port and export terminal infrastructure expected to be commissioned in 2015. Information was inadequate to determine the status of the development of China Power Investment Co.'s Boffa-Santou-Houda bauxite project (Anglo-African Minerals plc, 2014, 2015; Torchia, 2014; Trade Arabia Business News Information, 2014).

**Gold.**—Mining operations continued at the Lefa and Siguirri gold mines, although exploration activities were curtailed at Siguirri during the second half of the year. Production at Lefa Mine increased by 26% to 6,380 kg in 2014 from 5,061 kg in 2013. Netherlands-based Nordgold N.V., which was the operator of the mine, partly attributed the increase in output to the mining of higher ore grades, an increase in the amount of ore milled,

the processing of stockpiled ore, and improved recoveries at the processing plant. Nord Gold planned to invest \$4.1 million in exploration in 2015. During the year, the company established an Ebola prevention and management emergency response plan, which outlined the actions to be taken by staff if probable, suspected, or confirmed cases of EVD were detected within the perimeter of its operation. A total of 42 washing stations were set up throughout the mine site, electronic thermometers were established at various checkpoints, and staff was sensitized through weekly updated announcements. Nord Gold reported that, as of yearend, there had been no confirmed cases of EVD within the perimeter of the Lefa Mine site (Nord Gold N.V., 2014; 2015, p. 44–45, 109, 160–161, 216).

Production at the Siguirri Mine also increased during the year to 10,575 kg compared with a revised 9,518 kg in 2013. The mine achieved this increase in output owing to the mining of higher ore grades during the first half of the year. Available high-grade ore resources, however, decreased during the second half of the year as these resources were depleted. Exploration work on Siguirri Blocks 2, 3, and 4 was suspended in late July as the cases of EVD increased in the region. AngloGold Ashanti Ltd. reported that the EVD outbreak had led to significant disruptions in its exploration activities, including the suspension of its 2014 field mapping and geophysics activities. AngloGold reported implementing restrictions regarding travel to and from the Siguirri Mine and the temporary suspension of all mineral exploration programs in Guinea (AngloGold Ashanti Ltd., 2015a, p. 78, 80; 2015b, p. 27, 39, 82, 90–91).

On May 28, Semafo Inc. of Canada sold its 85% interest in the Kiniero Mine to New Dawn Mining Corp., a private company operating in Zimbabwe. The Kiniero Mine was on care-and-maintenance status in 2014 and did not produce any gold. Avocet Mining plc's \$89 million Tri-K gold project was active and awaiting approval of a mining license as of November 16 (Avocet Mining plc, 2014; Semafo Inc., 2014a; 2014b, p. 15; 2015, p. 7).

**Iron Ore.**—In 2014, joint-venture partners Rio Tinto, Aluminum Corp. of China Ltd. (Chinalco), and the International Finance Corporation (IFC) signed an investment framework contract with the Government of Guinea 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 and approved by the Executive branch and the Supreme Court in August. 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 cost of developing the Simandou South project, which would include the construction of a 650-km-long railway and a new deepwater port, was projected to be \$20 billion (Rio Tinto plc, 2014, p. 22; 2015, p. 33, 44).

The Simandou South project, which was considered to host one of the world's largest undeveloped high-grade iron ore deposits, was expected to produce about 100 Mt/yr of iron ore upon commissioning. 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, 2014, p. 5).

The Simandou South project would be developed in two stages, the first of which would include the development of the 50-Mt/yr-capacity Ouelaba 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 timeline, were to be provided by Rio Tinto upon completion of the bankable feasibility study. The Government would initially hold a 7.5% free-carried interest in the project, which it would be able to increase progressively to a maximum of 15% during a period of 20 years or to 20% through a contributing interest. Rio Tinto reported that the completion of a bankable feasibility study for Simandou was delayed owing to the EVD outbreak but that none of its employees in Guinea had been affected by the disease (Rio Tinto plc, 2014, p. 6, 23; 2015, p. 23, 134).

On April 25, the Government revoked joint-venture partners BSG Resources Ltd. (BSGR) of the United Kingdom and Vale S.A. (Vale) of Brazil's mining licenses for the Simandou North (Blocks 1 and 2) and Simandou South (Zogota) iron ore projects. The licenses were revoked after a Government-appointed technical committee concluded that BSGR had illegally obtained the rights to the two concessions in 2010. BSGR was barred from reapplying for the rights to the projects once the Government issues a new bidding round. The Government's decision did not prohibit Vale from participating in any future bidding rounds, however, as Vale, which had acquired a majority interest in the projects from BSGR by paying \$500 million and committing a total of \$2.5 billion upon achievement of specific milestones, was not implicated in the committee's findings. Vale, however, reported that it was considering its legal rights and options regarding the Government's decision. On December 12, BSGR announced it had initiated legal action to seek a judicial review of the decisions made by the Government of Guinea in revoking its mining licenses (BSG Resources Ltd., 2014a, b; Burgis, 2014; Kieran, 2014; Vale S.A., 2015, p. F-51, 76).

On April 30, Rio Tinto filed a lawsuit with the U.S. District Court for the Southern District of New York against Vale, S.A. and BSG Resources Ltd., its subsidiaries in Guinea, and other private citizens for the loss of its mining rights to the Simandou North (Blocks 1 and 2) and Simandou South (Zogota) projects in late 2008. Rio Tinto had held the mining rights to these blocks until December 2008, when the Government canceled the company's mining licenses to the projects and granted them to BSGR. As of yearend, the case was pending the Court's review (Rio Tinto plc, 2015, p. 44).

United Kingdom-listed Sable Mining Africa Ltd. continued to work on the development of the Nimba iron ore project. A prefeasibility study for the project, which was completed in March, provided an updated indicated and inferred Joint Ore Reserves Committee (JORC) resource estimate of 181.8 Mt of iron ore at a grade of 58.8% 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. Iron ore production from Nimba was expected to begin in late 2016 at a rate of 3 Mt/yr (Sable Mining Africa Ltd., 2014).

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 rail wagons. 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 planned to complete a bankable feasibility study for the project during the first half of 2015 (Sable Mining Africa Ltd., 2014).

Operations at the Forécariah iron ore project continued to be on hold as of yearend. Bellzone Mining plc had achieved first production and shipment of iron ore from the Forécariah Mine in 2012, but as of yearend 2013, the company reported that the project had been downgraded owing to its lower prospects following the decrease in the international price of iron ore. The company reported that it had shifted its priorities to the development of its more prospective Guinean mining asset, the Kalia iron ore project. In 2014, Bellzone announced that the EVD outbreak had negatively affected the company's efforts to source capital to continue with the next steps in the development of the Kalia deposit and that it continued to seek alternative financing strategies to develop the project. A bankable feasibility study completed in September 2013 estimated JORC probable reserves to be 59.8 Mt at a grade of 54.1% iron (Bellzone Mining plc, 2015, p. 4, 6, 42).

On July 29, ArcelorMittal S.A. of Luxembourg acquired BHP Billiton Ltd. of Australia's 43.5% interest and Areva Group of France's 13% interest in Euronimba Ltd. Euronimba held 95% of the mining rights to the Mount Nimba iron ore project. The remaining 43.5% interest in Euronimba was owned by Newmont Mining Corp. of Colorado. Mount Nimba's resources were estimated to be 935 Mt of direct-shipping ore at a grade of 63.1% iron. The project is located in southeastern Guinea near the border with Liberia (ArcelorMittal, 2015, p. 33).

### *Industrial Minerals*

**Diamond.**—Stellar Diamonds plc of the United Kingdom announced that operations at its Baoulé kimberlite pipe project in Guinea were unaffected by the EVD outbreak and that health screening protocols for staff as well as travel restrictions to help prevent infection had been put in place during the year. The company planned to carry out a drilling program for Baoulé in 2015 (Stellar Diamonds plc, 2015).

### *Mineral Fuels and Related Materials*

**Petroleum.**—Guinea did not produce or refine petroleum and was dependent upon imports for its petroleum requirements. In March, Tullow Oil plc of the United Kingdom declared force majeure on its offshore exploration block in Guinea. Exploration

operations were temporarily halted following Tullow's notice to its partner, Houston-based Hyperdynamics Corp., of an investigation by the U.S. Department of Justice and the U.S. Securities and Exchange Commission into the activities of Hyperdynamics in obtaining and retaining its concession rights to the block. The force majeure was lifted in May, and as of yearend, operations were pending further discussions with the Government. Tullow held a 40% operating interest in the concession. Hyperdynamics, through its subsidiary SCS Corp., and Korean National Oil Corp., through its subsidiary Dana Petroleum (E&P) Ltd., held a 37% and a 23% interest in the concession, respectively (Hyperdynamics Corp. 2014; Tullow Oil plc., 2015, p. 53).

**Uranium.**—Forte Energy NL of Australia relinquished its Bohodu prospecting license, one of its four uranium prospecting licenses in Guinea. The company, however, continued with the exploration of the Firawa concession area, which is also prospective for rare-earth element mineralization. Firawa is located 25 km to the east of Kissidougou. Revised inferred JORC mineral resource estimates for Firawa were reported to be 30.3 Mt at a grade of 295 parts per million (ppm)  $U_3O_8$  with a cutoff grade of 100 ppm (Forte Energy NL, 2015, p. 13).

## Outlook

Government revenue from mining is expected to decrease in 2015 owing to estimated reductions in profits generated by mining companies in 2014, which resulted from the constraints imposed by the EVD outbreak and the decrease in the international price of Guinea's key mineral commodity exports. The International Monetary Fund, however, estimated that Guinea's GDP growth will rebound in 2016, based partly on the expected eradication of EVD. Mineral and energy sector reforms and the completion of key infrastructure projects under development, such as the construction of the Kaleta hydroelectric dam, are expected to improve Guinea's business environment and benefit all sectors of the economy. Upon completion, the Kaleta Dam is expected to more than double Guinea's current electricity generation capacity (International Monetary Fund, 2015, p. 10, 41).

Low international prices for Guinea's key mineral export commodities, if sustained, could delay the commissioning of mining projects under development and deter future foreign direct investment in the mineral sector. The cancellation or significant delay of these projects would be a major setback to the Guinean economy. At a level of output of 100 Mt/yr of iron ore and based on 2013 levels of world mine production data by country, the Simandou South (Blocks 3 and 4) project alone has the potential to place Guinea among the world's top 10 iron ore producers and transform its economy. Even at a low price of \$50 per metric ton, Simandou South could generate \$5 billion in Government revenue, or about 76% of Guinea's 2014 estimated nominal GDP (\$6.6 billion). 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 companies must bear to not only 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).

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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2010	2011	2012	2013	2014
Alumina	597	574	150	--	--
Bauxite:					
Mine production:					
Wet basis <sup>3</sup>	17,633	17,440	17,823	18,763	19,175
Dry basis <sup>4</sup>	15,900 <sup>e</sup>	15,696 <sup>r</sup>	16,041 <sup>r</sup>	16,887 <sup>r</sup>	17,258
Shipments (dry basis), metallurgical <sup>5</sup>	15,600	15,600	17,900	18,500	18,800
Cement	237 <sup>6</sup>	365 <sup>7</sup>	317 <sup>7</sup>	377 <sup>7</sup>	500 <sup>e</sup>
Diamond <sup>8</sup> carats	374,096	303,785	266,800	202,365	164,059
Gold, mine output, Au content <sup>9</sup> kilograms	15,217	15,695	14,790	15,147 <sup>r</sup>	16,955

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through November 30, 2015.

<sup>2</sup>In addition to the commodities listed, Guinea produced modest quantities of crude construction materials (clay, gravel, sand, and stone), granite, iron ore, and salt, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Metallurgical ore estimated to be 13% water.

<sup>4</sup>Data are for wet-basis ore estimated to be 13% water reduced to dry basis estimated to be 7% water.

<sup>5</sup>Data are for shipments of bauxite ore as reported by importing countries.

<sup>6</sup>Reported figure by Banque Centrale, Ministères du Plan, de l'Économie et des Finances.

<sup>7</sup>Reported figure by Institut National de la Statistique.

<sup>8</sup>Production is approximately 70% to 80% gem quality; includes artisanal production.

<sup>9</sup>Does not include artisanal gold mining production, which has historically ranged between 1,500 and 5,000 kilograms per year.

TABLE 2  
GUINEA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(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 refinery, <sup>1</sup> Fria	650,000
Bauxite		Compagnie des Bauxites de Guinée (CBG) [Halco Mining Inc. (Alcoa Inc., 45%; Rio Tinto plc, 45%; Dadco Group, 10%), 51%, and the Government, 49%]	Sangaredi Mine, Kamsar	14,000,000
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, <sup>1</sup> Fria	2,100,000
Cement		Ciments de Guinée (Holcim Ltd., 60%, and Government, 40%)	Conakry grinding plant, 35 kilometers from Conakry Port	600,000
Do.		Ciments d'Afrique (CIMAF)	Dubrêka 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.		Artisanal miners	Mainly in Banankoro	NA
Gold	kilograms	Société AngloGold Ashanti de Guinée SA (AngloGold Ashanti Ltd., 85%, and Government, 15%)	Siguiri Mine, 850 kilometers northeast of Conakry	10,600
Do.	do.	Société Minière de Dinguiraye (Nord Gold N.V., 85%, and Government, 15%)	Lefa (Lero-Karta) Mine, 700 kilometers northeast of Conakry	6,400
Do.	do.	Semafo Guinée S.A. (Semafo Inc., 85%, and Government, 15%)	Kiniero Mine, <sup>1</sup> 650 kilometers east of Conakry	1,250
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. (Bellzone Mining plc, 42.5%; China International Fund Ltd., 42.5%; Government, 15%)	Forécariah Mine, <sup>1</sup> 160 kilometers southeast of Conakry	4,000,000

Do., do. Ditto. NA Not available.

<sup>1</sup>On care-and-maintenance status.