

# THE MINERAL INDUSTRY OF GUINEA

By Philip M. Mobbs

Guinea was the world's second largest bauxite producer and held the world's largest bauxite reserves. The aluminum industry continued to dominate Guinea's mineral economy. The limited domestic demand for crude minerals (less than 10% of produced bauxite was used to produce alumina in Guinea) resulted in the mineral sector effectively dominating the nation's exports.

Mineral production and processing accounted for about 25% of the nation's gross domestic product. Mineral exports, primarily alumina, bauxite, diamond, and gold, accounted for approximately 90% of the country's total exports. Guinea supplied 33% of the United States' total bauxite imports in 1996. The mining industry consumed approximately 55% of the country's petroleum products imports.

Subsequent to the short-lived February 1996 army rebellion, the Government cited a "fragile state of public finances, governmental inefficiency, weak private investment, and continued high unemployment" as reasons for the national condition (U.S. Embassy, Conakry, Guinea, 1996). To assuage the situation, the Government encouraged infrastructure development, promoted mineral industry expansion, and made the improvement of the investment climate a priority. Among the announced economic reforms was a 50% increase in the mining industry's preferential fuel rates. The rate increase effectively raised the industry's mining, transportation, and remote site electrical power generating costs.

The new Guinean mining code of 1995 defined incentives, mineral ownership, mining fees, mining titles, royalties, and other taxes. The Government reserved 15% free equity in gold and gem operations for itself. The state's participation in bauxite- and iron-mining ventures was subject to negotiation. Mineral beneficiation in Guinea was encouraged. Under the new law, the royalty on alumina was 5% and 3.5% on concentrates compared with 10% for bauxite and 7% for other ores. The corporate income tax rate was 35%.

In addition to possessing significant bauxite reserves, the nation had diamond, gold, granite, and iron deposits. The Government was encouraging the expansion of the bauxite sector and promoting the diversification of the mineral industry. The Government also indicated that chromium, cobalt, graphite, limestone, manganese, nickel, tin, and uranium resources existed in the country, but need additional investigation (Ministère des Mines et de la Géologie, 1995).

Commercial production of bauxite, diamond, and gold was significantly augmented by artisanal production of diamond and gold in 1996. (See table 1.) The production of bauxite was dominated by three companies. The Compagnie des Bauxites de

Guinée (CBG) operated a number of open pit bauxite mines in the Boké District. During 1996, CBG had rapidly expanded its production capacity to almost 14 million metric tons per year (Mt/yr). The Société des Bauxites de Kindia (SBK) was restoring production to the operation's nominal 3-Mt/yr capacity. SBK's production was exported to the Ukraine. The Société d'Economie Mixte Friguia planned to double its alumina plant capacity. Additionally, the Government was encouraging development of the proposed 600,000-metric-ton-per-year Dabola and the 11-Mt/yr Dian-Dian bauxite operations.

Artisanal operators have mined gold placers for many years in the Kankan, Kouroussa, Mandiana, and Siguiri regions, known as "la zone du Boure." Artisanal diamond and gold miners continued to operate alongside foreign company exploration activities, despite the efforts of the concession holders.

The Société Minière de Dinguiraye (SMD), operated a mine at Léro in northern Guinea. SMD was owned by the Government (15%) and Delta Gold Mining (85%), a Jersey registered corporation of the United Kingdom. Delta, in turn, was owned by Kenor A.S. of Norway, and by Mine Or, the gold operations subsidiary of La Source Group of France. Razel, a French construction company, had the contract to operate the open pit mine. Unweathered dolerite contamination in the ore adversely affected crusher operations and abundant clay-sized material in the lateritic ore continued to cause agglomeration problems. SMD planned to install a new primary crusher in 1997.

Gold was first poured at Léro in April 1995. During 1996, 547,000 metric tons (t) of ore was mined; 337,000 t agglomerated, stacked and leached; and 210,000 t of ore was stockpiled. SMD produced 1,207 kilograms of gold from Léro during 1996.

SMD also continued to explore the Dinguiraye concession, which included the region surrounding the Léro Mine and the Fayalala prospect, as well as the Bofeko, Mataganian, and North Mataganian placer deposits. Kenor announced reserves at Léro of 704,000 t grading 3.4 grams of gold per ton (Kenor A.S., 1996). Kenor also completed the Fayalala feasibility study during 1996. The study indicated that the Fayalala oxides were amenable to dump leaching, eliminating the costs of agglomeration (Kenor A.S., 1997).

The diamond region in the southeast and the gold region in the northeastern sector of Guinea, near the Mali border, were the sites of an international exploration frenzy. A number of companies held diamond or gold exploration permits. However, most exploration activity was in the preliminary stages.

Golden Shamrock Mines Ltd. (GSM) of Australia accepted the feasibility study on the Siguiri gold project and recommended that the Société Aurifère de Guinée (SAG) proceed with the venture. At mid-year, Ashanti Goldfields Co. Ltd. of Ghana acquired GSM and its 70% interest in SAG. The joint venture of Ashanti and AGEM Ltd., a subsidiary of IAMGOLD Ltd. of Canada, were drilling on the Mandiana exploration permit in northeastern Guinea. Les Minéraux SGV SA, the 50-50 joint venture between West Africa Mining Exploration Corp. Inc. (SEMAFO) and Emerging Africa Gold (EAG) Inc., an affiliated company of St. Geneviève Resources Ltd. of Canada, was drilling and trenching the Jean and the Gobeles vein systems on its concession.

Other companies active in Guinea included Cambrian Resources of Australia, prospecting on the Kouroussa concession; the First Quantum Minerals Ltd. of Canada and Reunion Mining plc of the United Kingdom joint venture on the Nyantanina exploration permit; Kenor's subsidiary, Goldex AS, on the Bananfara Permit; and Les Minéraux, on the Sumandou permit. Lithos Corp. of Canada acquired interest in the Apredor ground reconnaissance permit during 1996. Also involved in Guinea were the joint venture of SAGEM S.A. of Guinea and New Sage Resources, the Canadian subsidiary of Striker Resources NL of Australia, on the Sankarani gold deposit; and Wells Gold Corp. NL of Australia on the Kossaken concession. Additionally, African Selection Mining Corp. of Canada, Bassad Guinea S.A. of Guinea, Cyprus-Amax Minerals Co. of the United States, International Mining Co. S.A. of Guinea, and Golden Limbo Rock Ressources S.A., a subsidiary of Mano River Resources Ltd. of Switzerland held interest in exploration permits in Guinea, as well as Jade Mining Corp., Northern Abitibi Mining Corp. of Canada, Pacific Galleon Mining Corp. of Canada, the joint venture between Patrician Gold Mines Ltd. of Canada and Chalice Mining Inc. of Canada, and the joint venture of Rodera Diamond Corp. of Canada and Samran Metals and Mining of the United Kingdom.

The kimberlite pipes near Banankoro were believed to be the source of Guinea's unusually large, high-quality diamond gemstones. Nationwide, 70% to 80% of diamond production was of gem quality. Diamonds were recovered from alluvial gravels in the valleys of the Baoule and Bimboko Rivers and their tributaries. This area contained about two-thirds of the country's known diamond placer reserves and accounted for approximately 80% of the official production of diamonds.

The Association pour la Recherche l'Exploitation du Diamants et de l'Or (Aredor) diamond mine in Gbenko was closed in 1994 and relinquished by Bridge Oil Co. of Australia because of spiralling operating costs and the continued presence of artisanal miners on the company's concession. During 1996, First City Mining Co. Ltd. of Canada and Consolidated African Mines Ltd. of South Africa acquired the Aredor Concession that included the former Aredor Mine. Their operating company, Aredor FCMC S.A., began pilot-plant operations in May and recovered 3,828 carats of diamond by yearend (Trivalence Mining Corporation, 1997). Trivalence Mining Corp. of Canada subsequently acquired First City and its interest in Aredor during 1996.

Hymex Diamond Corp., of Canada's subsidiary Hymex Guinea S.A., installed a new wash plant and recovered 21,552 carats of diamond during 1996.

Total bauxite reserves were estimated at about 20 billion metric tons grading more than 40% aluminum oxide according to the Ministry of Natural Resources and Energy. Iron resources were estimated to be about 6 billion metric tons grading 64% to 68% iron. Gold reserves were estimated between 200 and 1,000 t, and the Government also estimated there were reserves of 20 million carats of diamond in Guinea, with 70% to 80% gem quality (Ministère des Ressources Naturelles et de l'Énergie, 1997).

Mining railroads totaled 239 kilometers (km) of standard-gauge line and 806 km of 1-meter (m) line. A 135-km standard-gauge line linked the Sangarédi Mine with the Port of Kamsar, and a 104-km standard-gauge line linked the Kindia Mine with Conakry. A 145-km, 1-m line linked the Fria Mine with Conakry. In addition to the mine railroads, 661 km of 1-m-gauge line connected Conakry with Kankan; this line was undergoing rehabilitation. The Dabola-Conakry segment of the Conakry-Kankan line needed to be upgraded to support the Dabola project.

Guinea had two main ports: Kamsar and Conakry. Kamsar served the Sangarédi Mine, handling only bauxite shipments. Conakry served the Fria and Kindia Mines and also was the country's main general cargo port. The country had 1,280 km of navigable waterways.

Caisse Française de Développement de France was funding the 75-megawatt (MW) capacity Garafiri hydroelectric project on the Konkoure River and a 11.75-MW expansion of the capacity at Tombo thermal power station in Conakry. Electricity production from Garafiri was anticipated by 1999.

The 1995 mining code significantly improved the business climate for the mineral industry. However, mineral operations remained hampered by infrastructural constraints. Guinea's transportation network was improving slowly. International development of mineral deposits was proceeding more slowly than anticipated. The less-than-expected foreign investment was attributed to the country's perceived political and economic risks, as well as civil disturbances in adjacent Liberia and Sierra Leone.

Bauxite and alumina are expected to continue dominating Guinea's economy. The addition of the CBG's Bidikoum Mine should help maintain the high quality of the nation's bauxite exports. Alumina production capacity was expected to increase given the proposed renovations, capacity expansions, and new projects. Ventures requiring significant electric power availability, such as an aluminum smelter, could become feasible as the nation's power generation capacity is increased as planned.

Guinea's formal diamond and gold industries could thrive if new investments and exploration programs expanded production and attracted additional international interest. The activation of the Léro gold mine and the proposed production from the Fayalala, Mandiana, and Siguiri gold deposits should provide some industry diversification in addition to extra revenue for the Government. The proposed 6-Mt/yr Nimba iron

ore mining project remains dependent upon resolution of Liberia's civil war and access to an export route through Liberia.

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### Major Source of Information

Ministère des Ressources Naturelles et de l'Energie  
Centre de Promotion et du Development Minier  
P.O. Box 295  
Conakry, Republic of Guinea  
Telephone: (224) 41-51-44  
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TABLE 1  
GUINEA: PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity	1992	1993	1994	1995	1996	
<b>Alumina:</b>						
<b>Production:</b>						
Hydrate	601	642	648	630 r/	650	
Calcined	561	656	640	616 r/	640	
Shipments, calcined	553	656	545	616 r/	619	
<b>Bauxite:</b>						
<b>Mine production:</b>						
Wet basis 2/	16,100 r/	17,100 r/	14,900 r/	18,000 r/	18,700	
Dry basis 3/	14,300 r/	15,300 r/	13,300 r/	15,800 r/	16,500	
Calcined	96	80 r/	89	244 r/	95	
<b>Shipments (dry basis):</b>						
Metallurgical	12,314	13,617	11,033	12,304	12,304	
Calcined	95	79 r/	91	89	95	
Diamond 4/ 5/	thousand carats	153 r/	167 r/	381 r/	365	205
Gold 5/	kilograms	5,140 r/	3,864 r/	5,617	7,863 r/	6,838

r/ Revised.

1/ In addition to the commodities listed, modest quantities of crude construction materials (clays, sand and gravel, and stone) presumably are produced but output is not reported quantitatively, and available information is inadequate to make reliable estimates of output levels. Table includes data available through Aug. 27, 1997.

2/ Metallurgical plus calcinable ore estimated at 13% water.

3/ Data are for wet-basis ore estimated at 13% water, reduced to dry basis estimated at 3% water.

4/ Production is approximately 70% to 80% gem quality.

5/ Figures include artisanal production.