

THE MINERAL INDUSTRIES OF CÔTE D'IVOIRE, GUINEA, LIBERIA, AND SIERRA LEONE

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CÔTE D'IVOIRE

Côte d'Ivoire was a producer of cement, clay, columbium (niobium), diamond, gold, gravel and crushed rock, manganese, natural gas, crude petroleum and petroleum products, sand, sulfuric acid, and tantalum. The country also had deposits of bauxite, cobalt, copper, iron ore, nickel, and silica sand. Gold production and exploration were inhibited by civil unrest.

In 2003, the gross domestic product (GDP) based on purchasing power parity amounted to about \$25.5 billion. The GDP fell by 2.8% in 2003 after decreasing by 1.6% in 2002. In 2002, industry accounted for 13% of the GDP, energy (which included the refining of petroleum), 4%; construction and public works, 3%; and petroleum extraction, less than 1% (International Monetary Fund, 2004a, p. 5; b, p. 206; 2004^{§1}).

In January 2003, the Government signed a ceasefire agreement with Mouvement pour la Justice et la Paix and Mouvement Populaire Ivoirien pour le Grand-Ouest, which were two rebel movements that operated in the western part of the country. The Government already had signed a ceasefire agreement in October 2002 with Mouvement Patriotique de Côte d'Ivoire, which held territory in the northern part of the country. Civil unrest took place in northern Côte d'Ivoire as late as November (United Nations Integrated Regional Information Networks, 2003b, c).

Commodity Review

Metals

Gold.—In 2003, national gold production fell to 1,313 kilograms (kg) from 3,570 kg in 2002. The decrease in output was attributable to the closure of the Angovia and Ity Mines. The Cie. Générale Des Matières Nucleaires Group (COGEMA) of France held 51% equity interest in the Ity Mine; the state-owned Société pour le Développement Minier en Côte d'Ivoire (SODEMI) held the remainder. The Ity Mine produced about 1,700 kg of gold in 2002; attacks by rebel forces near yearend, however, caused the mine to shut down. Cie. Minière d'Afrique [a subsidiary of Compagnie Minière Or (a subsidiary of COGEMA)] operated the Angovia gold mine; the company produced about 1,100 kg of gold in 2002 (Foster, 2003; Resource Information Unit, 2003). Production was halted in 2003 because of resource depletion.

Equigold NL of Australia explored for gold at the Bonikro deposit on the Oume property in late 2003. The company

planned to complete a feasibility study on developing Bonikro in the third quarter of 2004. Resources at Bonikro were estimated to be 5.06 million metric tons (Mt) of ore at a grade of 1.6 grams per metric ton (g/t) gold. The Government awarded the Didievi property to Equigold; the company planned to start exploration at Didievi in the first quarter of 2004 (Resource Information Unit, 2003; Equigold NL, 2004).

Randgold Resources Ltd. of the United Kingdom held the Boundiali, the Dabakala, the Mankono, the Nielle, and the Sikolo properties. The Nielle property contained the Tongan deposit, which had resources of 34 Mt of ore at a grade of 2.65 g/t gold. Afirmex Ltd. of Australia held the Korhogo and the Tengrela properties, and Ashanti Goldfields Company Ltd. of Ghana, the Allangoua property. Afirmex, Ashanti, and Randgold put exploration activities on hold because of civil unrest (Resource Information Unit, 2003).

Iron and Steel.—Société de Transformation de l'Acier en Côte d'Ivoire used imported steel to produce rebar, steel sheets, and other products. The International Iron and Steel Institute (2004, p. 91) reported that Côte d'Ivoire consumed 128,000 metric tons (t) of finished steel products in 2002 compared with 118,000 t in 2001 and 149,000 t in 1997. National imports of iron were \$116.2 million, or nearly 5% of total imports. Domestic resources of iron ore at Mount Nimba and Mount Kalayo, which were not yet developed, amounted to about 3 billion metric tons at a grade of 40% iron (Foster, 2003; International Monetary Fund, 2004a, p. 43).

Industrial Minerals

Cement.—Société Ivoirienne de Ciments et Matériaux (SOCIMAT), Société des Ciments d'Abidjan (SCA), and Société des Ciments du Sud-Ouest operated cement plants with a combined capacity of 1.3 million metric tons per year (Mt/yr). Housing and other private uses accounted for 75% of domestic cement consumption; public housing and industry, 10% each; and other public works, 5%. Economic stagnation led to weak industrial demand (International Cement Review, 2003).

Cement was exported to Burkina Faso and Mali by SOCIMAT and SCA. In 2002, exports of cement amounted to \$40 million, or 1% of total exports. Clinker was imported from Asian and European countries; imports of clinker amounted to \$42.6 million in 2002, or 2% of total imports (International Monetary Fund, 2004a, p. 41, 43).

Diamond.—Kimberlites were known to occur at Kanangone, Seguela, and Tortiya; diamond was produced only from alluvial deposits at Seguela and Tortiya. In mid-2003, African Mining and Petroleum Resources plc relinquished the Bobi diamond property. Golden Star Resources Ltd. of the United States held the Tortiya property (Resource Information Unit, 2003).

¹References that include a section mark (§) are found in the Internet Reference(s) Cited sections.

Mineral Fuels

Natural Gas.—Domestic production of natural gas fell to nearly 1.46 billion cubic meters in 2003 from 1.61 billion cubic meters in 2002. Ocean Energy Inc of the United States operated the offshore Panther Field, which was located in block CI-11. In April 2003, Ocean Energy was purchased by Devon Energy Corp. of the United States. A consortium of Canadian Natural Resources Ltd. (CNR), Société Nationale d'Operations Petrolieres de la Côte d'Ivoire (PETROCI), and Tullow Oil plc produced natural gas from the East Espoir oilfield. Offshore natural gas was being developed as the main fuel for heavy industry and power generation in Abidjan and to reduce deforestation in rural areas (Melly and Griffiths, 2003; B.V. Glohi, Director of Exploration and Production, Société Nationale d'Operations Petrolieres de la Côte d'Ivoire, written commun., August 18, 2004).

Petroleum.—Production of crude petroleum rose to nearly 7.54 million barrels (Mbbbl) in 2003 from 5.5 Mbbbl in 2002. Petroleum was imported from Nigeria for refining. In 2002, crude petroleum imports amounted to \$417.4 million, or 17% of total imports (International Monetary Fund, 2004a, p. 43).

CNR, PETROCI, and Tullow produced the majority of domestic petroleum at East Espoir in block CI-26, where production rose to 3.88 Mbbbl in 2003 from 2.48 Mbbbl in 2002. Production was expected to start at the West Espoir Field in late 2005. CNR, PETROCI, and Svenska Petroleum Exploration planned to develop the Baobab Field in block CI-40. In mid-2005, production at Baobab was expected to start at a rate of 24,000 barrels per day (bbl/d) and eventually to rise to 35,000 bbl/d. Devon Energy Corporation produced oil from the Lion Field in block CI-11 (Canadian National Resources Ltd., 2004, p. 5, 7, 44).

CNR planned to drill at the Acajou prospect in block CI-26 in 2004. Other companies active in petroleum exploration included Oranto Petroleum Ltd. of Nigeria in blocks CI-205 and CI-206 and Vanco Energy Co. of the United States in block CI-112. In December 2003, the Government offered 12 offshore and 4 onshore exploration blocks for bid (Melly and Griffiths, 2003).

Société Ivoirienne de Raffinage operated Côte d'Ivoire's only petroleum refinery; Société Multinationale des Bitumes operated an asphalt plant. In 2002, imports of petroleum products amounted to \$114.6 million, or nearly 5% of total imports. Exports of petroleum products were \$582 million, or 11% of total exports (International Monetary Fund, 2004a, p. 41, 43).

Infrastructure

Compagnie Ivoirienne d'Electricite was the country's only producer of electricity. In 2002, national production of electricity rose to 5,277 gigawatthours (GWh) from 4,852 GWh in 2001 and 2,753 GWh in 1997. From 1997 to 2002, the share of hydroelectric plants in total production fell to 33% from 68% (International Monetary Fund, 2004a, p. 19).

Société Internationale de Transport Africain par Rail of France operated Côte d'Ivoire's railroads. Rail traffic between

Burkina Faso and Côte d'Ivoire was shut down in September 2002 because of the civil war. In June 2003, rail service on the Abidjan-Ouagadougou railway was restored between rebel- and Government-controlled territories. The border between Burkina Faso and Côte d'Ivoire was reopened in September (United Nations Integrated Regional Information Networks, 2003a).

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GUINEA

In recent years, Guinea, which is a small country in western Africa, has been known to produce alumina, bauxite, diamond, and gold, most of which was designated for export. The country has also produced cement and salt.

In 2003, Guinea's GDP amounted to about \$16.1 billion at purchasing power parity. The GDP grew by 1.2% in 2003 after increasing by 4.2% in 2002 and 3.8% in 2001. The mining sector accounted for 16% of GDP; construction, 10%; manufacturing, 4%; and electricity and water, less than 1% (International Monetary Fund, 2004a, p. 5; b, p. 206; 2004§).

Commodity Review

Metals

Bauxite and Alumina.—Guinea was the world's second leading producer of bauxite after Australia. In 2003, mine production of bauxite fell to 17 Mt from nearly 17.5 Mt in 2002. The grade of bauxite produced fell to about 50% Al₂O₃ in 2002 from 60% Al₂O₃ in 1998. Compagnie des Bauxites de Guinée, which was the country's largest bauxite producer, operated the Boke Mine. Russian Aluminum (RUSAL) operated Société de Bauxites de Kindia's mine (Reuters, 2003).

Most of Guinea's bauxite was exported. Shipments of metallurgical-grade bauxite fell to 13.9 Mt in 2003 from 14.1 Mt in 2002. In 2003, the value of metallurgical-grade bauxite shipments amounted to \$263.4 million. Bauxite exports totaled \$289.8 million, or 40% of total exports (International Monetary Fund, 2004a, p. 18; Mohamed Sedna Nansoko, Guinea Ministry of Mines and Geology, written commun., June 23, 2004).

Alumina production rose to 734,933 t in 2003 from 701,936 t in 2002. The value of alumina exports was \$147.6 million in 2003, or 20% of total exports. RUSAL managed the Friguia alumina refinery. The company planned to build an alumina refinery with a capacity of 2.4 Mt/yr and a bauxite mine at Dian-Dian. The project has been delayed by funding difficulties (Samb, 2003; International Monetary Fund, 2004a, p. 18; Mohamed Sedna Nansoko, Guinea Ministry of Mines and Geology, written commun., June 23, 2004).

Gold.—Guinea's gold production fell to 16,226 kg in 2003 from 16,700 kg in 2002. The value of national gold production amounted to \$190.2 million in 2003. Gold exports were valued at \$138.7 million, or 19% of total exports (International Monetary Fund, 2004a, p. 18; Mohamed Sedna Nansoko, Guinea Ministry of Mines and Geology, written commun., June 23, 2004).

Société Ashanti de Guinée (Ashanti Goldfields Co. Ltd., 85%) was Guinea's leading gold producer. In 2003, production at the Siguiri Mine fell to 7,863 kg from 8,376 kg in 2002 because of lower ore grades and recovery rates. By the first quarter of 2005, Ashanti planned to complete a plant expansion to raise output to 10,900 kilograms per year (kg/yr). The project was expected to cost from \$75 million to \$80 million (Resource Information Unit, 2003; Ashanti Goldfields Co. Ltd., 2004, p. 9).

At the end of 2003, resources at Siguiri were nearly 114 Mt at a grade of 1.19 g/t gold, and reserves, 51.7 Mt at a grade of 1.17 g/t gold. Exploration increased contained gold resources by nearly 22 t in 2003; Ashanti planned to conduct additional exploration at Siguiri in 2004 (Ashanti Goldfields Co. Ltd., 2004, p. 9, 14-15).

Société Minière de Dinguiraye (Kenor ASA of Norway, 85%) mined gold at Lero. In 2003, production fell to 2,884 kg from 3,367 kg in 2002. Kenor expected to complete a feasibility study on a new processing plant by the end of 2004. After falling to about 2,200 kg in 2004, production at Lero was expected to increase to 12,400 kg in 2006. Kenor spent \$7.2 million on exploration in Guinea in 2003; resources increased to 82.5 Mt at a grade of 1.5 g/t gold from 59.7 Mt at a grade of 1.6 g/t gold in 2002 (Kenor ASA, 2004a, p. 2, 17; b, p. 7, 14, 17).

Semafo Inc. of Canada produced gold at the Kiniero Mine. In 2003, production at Kiniero rose to 1,453 kg from 1,307 kg. The company planned to produce 1,700 kg in 2004. At the end of 2003, resources at Kiniero were 7 Mt at a grade of 3.43 g/t gold and reserves, 1.9 Mt at a grade of 4.23 g/t gold. Exploration by Semafo in 2003 substantially increased resources at Kiniero (Semafo Inc., 2004, p. 5-8).

Cassidy Gold Corp. explored for gold at Kouroussa in 2003. International Gold and Minerals acquired the Kosoko and Saranfora properties and acquired a 40% share in the Bankole gold project. Mano River Resources Inc. of the United Kingdom held the Missamana-Gueliban property (Africa Mining Intelligence, 2003; African Mining, 2003a).

Industrial Minerals

Diamond.—National diamond production rose to 666,000 carats in 2003 from 491,160 carats in 2002. The value of Guinea's diamond production amounted to \$46.4 million in 2003; diamond exports were \$48.7 million, or about 7% of total exports (International Monetary Fund, 2004a, p. 18; Mohamed Sedna Nansoko, Guinea Ministry of Mines and Geology, written commun., June 23, 2004).

In fiscal year 2002-03, Trivalence Mining Corp. of Canada produced 26,304 carats of diamond from the Aredor Mine compared with 36,676 carats in fiscal year 2001-02. In 2003, the installation of two new plants increased gravel-processing capacity to 6,100 metric tons per day (t/d) from 2,400 t/d. Trivalence planned to produce 65,000 carats in 2004 and 100,000 carats in 2005. Resources at Aredor were estimated to be about 940,000 carats; Trivalence planned additional exploration in 2004 (Trivalence Mining Corp., 2003, p. 18-19; undated\$).

In June 2003, SearchGold Resources Inc. of Canada started production at its Mandala River property. The processing plant processed gravel at a rate of 250 t/d; the company planned to increase output to 500 t/d in October 2003. SearchGold also acquired the Ouira River exploration permit (African Mining, 2003b; Resource Information Unit, 2003).

Mineral Fuels

Petroleum.—Guinea did not produce or refine petroleum and was dependent upon imports for its petroleum requirements. In 2003, imports of petroleum products amounted to \$96.5 million, or nearly 17% of total imports (International Monetary Fund, 2004a, p. 17). In November, SCS Corp. completed an offshore seismic survey.

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LIBERIA

Liberia was a producer of cement, diamond, and gold. The domestic minerals industry has been inhibited by 14 years of civil war. Additionally, sanctions imposed by the United Nations Security Council since 2001 have resulted in an embargo of Liberian diamond exports. On December 22, 2003, the ban on diamond exports was extended for another year. The Security Council indicated that sanctions would be lifted if Liberia established an effective, transparent, and verifiable system to certify the origin of its diamond exports (Katz, 2003).

Following a peace agreement signed between the Government and two rebel groups in August 2003, the United Nations started to deploy a peacekeeping force to Liberia. Full deployment was expected in March 2004 (United Nations Integrated Regional Information Networks, 2003).

Liberia's GDP fell by nearly 30% in 2003 after rising by about 3% in 2002 and 5% in 2001. In 2002, manufacturing accounted for 5% of GDP; construction and mining, 2% each; and electricity and water, less than 1%. Growth in the industrial sector was limited by the rising cost of imported raw materials, inadequate electrical power, and weak domestic demand (Central Bank of Liberia, 2002, p. 2; International Monetary Fund, 2004, p. 23).

Mano River Resources held the Gondoja, the King George Larjor, the Vaney Camp, and the Weaju gold properties and the Bea Mountains and Kpo Range diamond properties. The company did not engage in exploration in Liberia during 2003 because of the security situation; it planned to restart activities in October 2004.

Liberia Cement Corp. operated a cement plant with a capacity of 220,000 t/yr. In 2002, production fell to 53,622 t from 62,897 t in 2001. The decrease in production was attributable to

import competition and lower domestic demand (Central Bank of Liberia, 2002, p. 6).

In 2003, Liberia did not produce or refine petroleum and depended upon imports for its petroleum requirements. Imports of petroleum products amounted to about \$25 million, or 17% of total imports (International Monetary Fund, 2004, p. 26).

Liberia's infrastructure was damaged during the civil war. The European Union planned to restore electrical power throughout the country by repairing the St. Paul's hydroelectric power station, which had been damaged during the early 1990s. The rehabilitation process was expected to last for 3 years and to cost \$60 million (United Nations Integrated Regional Information Networks, 2003).

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SIERRA LEONE

The small West African country of Sierra Leone was a producer of cement, diamond, gypsum, and salt and has deposits of bauxite, dimension stone, gold, platinum, titanium, and zirconium. With the end of the civil war, officially reported production and exports of diamond have increased sharply. In June 2003, the United Nations Security Council allowed sanctions on the trade of diamond from Sierra Leone to expire.

In 2003, Sierra Leone's GDP amounted to about \$2.9 billion at purchasing power parity. The GDP grew by 9.4% in 2003 after increasing by 26.8% in 2002 and 18.5% in 2001. Officially reported diamond exports accounted for 8% of GDP, and unreported diamond exports, about 5% (International Monetary Fund, 2004a, p. 27; b, p. 206; 2004§).

Commodity Review

Metals

Bauxite and Alumina.—Sierra Minerals Ltd. (a subsidiary of MIL Investments Sarl) completed a feasibility study on mining the Moyamba bauxite deposit. The company expected to produce 1.2 Mt/yr of bauxite within a 10-year period. In 2003, Russian Aluminum (RUSAL) submitted a plan to the Government for the development of Moyamba. RUSAL argued that it should be awarded the license for Moyamba because it had the funds to develop the deposits immediately and Sierra Minerals did not (Africa Mining Intelligence, 2003, 2004a).

Gold.—In late 2003, Mano River Resources signed a joint-venture agreement with Golden Star Resources Ltd. of the United States to explore at the Nimini, the Pampana, and the

Sonfon properties. Mano River Resources explored at Pampana in 2003. Afcan Mining Corp. held the Nimini East and the Nimini West exclusive prospecting licenses (African Mining, 2003; Mining Journal, 2003a).

Platinum-Group Metals.—In 2003, Jubilee Platinum plc of the United Kingdom agreed to enter into a joint-venture agreement with Golden Prospect plc for the York platinum-group metals property. York was located south of Freetown (Jubilee Platinum plc, 2003).

Titanium and Zirconium.—Sierra Rutile Ltd. (SRL) (a subsidiary of MIL Investments SARL) planned to restart production of ilmenite and rutile from its mine near the Imperri Hills. The company resumed such operations as maintenance and restoration of the minesite in January 2001. In the first phase of the project, SRL planned to start producing at a rate of 110,000 t/yr of rutile and 20,000 t/yr of ilmenite in 2005. The company planned to increase rutile production to 200,000 t/yr in Phase II (OPIC News, 2003; Africa Mining Intelligence, 2004b).

In March 2003, the U.S. Overseas Private Investment Corp. agreed to provide SRL with an investment guaranty of \$25 million to restart and expand mining operations. The European Union provided an additional \$25 million under the System for Stabilisation of Export Earnings for Mining Products. SRL also held an exploration license for ilmenite, rutile, and zircon at Rotifunk (OPIC News, 2003; Africa Mining Intelligence, 2004b).

Industrial Minerals

Cement.—In 2003, Sierra Leone Cement Corp. Ltd. (HeidelbergCement, 50%) operated a cement plant near Freetown that used clinker imported from Norway. Reconstruction after the civil war led to higher demand for building materials, especially cement. Cement production rose to 169,500 t from 144,100 t in 2002 (Bank of Sierra Leone, 2004, p. 3-4).

Diamond.—In 2003, officially reported diamond production rose to nearly 507,000 carats from 352,000 carats in 2002. Gem-quality diamond production amounted to about 250,000 carats at a value of \$69.8 million. Sierra Leone's entire diamond production was exported. In 2003, reported exports of diamond increased to \$76.7 million from \$41.7 million in 2002 and \$1.8 million in 1998. Diamond exports accounted for 91% of domestic exports and 83% of exports when reexports were included (International Monetary Fund, 2004a, p. 57; Femi I. Kamara, Sierra Leone Ministry of Mineral Resources, written commun., July 5, 2004).

Diamondworks Ltd. of Canada commissioned its processing plant at Koidu in December 2003. The plant had a capacity of about 1,000 t/d of ore; Diamondworks planned to produce at full capacity in February 2004. Resources at Koidu were estimated to be 6.3 Mt that contained nearly 3.1 million carats of diamond (Mining Journal, 2003b; Diamondworks Ltd., 2004). Other companies active in diamond exploration included African Diamonds plc of Ireland, Diamond Fields International Ltd. of Canada, and Mano River Resources.

Mineral Fuels

Petroleum.—In 2003, Sierra Leone did not produce or refine petroleum and depended upon imports for its petroleum requirements. Imports of petroleum products amounted to \$78.2 million, or nearly 26% of total imports. Repsol YPF SA of Spain acquired offshore exploration blocks SL-6 and SL-7; Oranto Petroleum Ltd. of Nigeria, block 5; and 8 Investments Inc. of the United States, block 4. Each block covered 4,000 square kilometers. The Government was considering whether to hold another licensing round for three remaining blocks in 2004 (Oil & Gas Journal, 2003; International Monetary Fund, 2004a, p. 58).

Infrastructure

The National Power Authority generated 109.4 GWh of electricity in 2003 compared with 123.5 GWh in 2002. Lower production was mainly attributable to breakdowns of generating plants and machinery. Industrial consumption rose to 27.8 GWh in 2003 from 25.6 GWh in 2002 (Bank of Sierra Leone, 2004, p. 3-4).

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TABLE 1
CÔTE D'IVOIRE, GUINEA, LIBERIA, AND SIERRA LEONE: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity		1999	2000	2001	2002	2003 ^e
CÔTE D'IVOIRE²						
Cement ^e		650	650	650	650	650
Columbite	kilograms	273	137	130 ^e	130 ^e	130
Diamond	carats	398,282	320,207	309,000	306,500	230,000
Gold	kilograms	2,967 ^r	3,444 ^r	3,672 ^r	3,570 ^r	1,313 ³
Gravel and crushed rock		570	540	550 ^e	550 ^e	550
Natural gas	million cubic meters	1,082 ^r	1,146 ^r	1,062 ^r	1,610 ^r	1,457 ³
Petroleum:						
Crude	thousand 42-gallon barrels	3,547 ^r	2,578 ^r	2,099 ^r	5,495 ^r	7,537 ³
Refinery products ^e	do.	19,000	20,100	19,500	19,000	19,000
Sand ^e		230	740	750	750	750
Sulfuric acid	metric tons	3,000	3,000	3,000	3,000	3,000 ^p
Tantalite	kilograms	686	408	400 ^e	400 ^e	400
GUINEA⁴						
Alumina:						
Production:						
Hydrate ^e		500	550	710	702 ³	735 ³
Calcined		568	541	674	670	723 ³
Shipments, calcined		480	520 ^e	670 ^{r,e}	660 ^{r,e}	680
Bauxite:						
Mine production:						
Wet basis ⁵		17,320	17,950	17,267	17,480	17,044 ³
Dry basis ⁶		15,590	15,700	15,100 ^e	15,300 ^e	15,000
Calcined		100 ^e	100 ^e	75	--	-- ³
Shipments (dry basis):						
Metallurgical		14,000 ^e	14,000 ^e	13,850	14,088 ^r	13,940 ³
Calcined		100 ^e	100 ^e	77 ^r	--	-- ³
Cement		297	300	315	360	360
Diamond ^{7,8}	thousand carats	383	369	364	491	666 ³
Gold ⁸	kilograms	12,001	13,104	16,264	16,700 ^r	16,226 ³
Salt ^e		15	15	15	15	15
LIBERIA^{e,9}						
Cement, hydraulic	metric tons	15,000	71,000 ^r	62,897 ^{r,3}	53,622 ^{r,3}	25,000
Diamond	carats	200,000	170,000	170,000	80,000	40,000
Gold	kilograms	25 ^r	25 ^r	57 ^{r,3}	42 ^{r,3}	20
SIERRA LEONE						
Cement	metric tons	45,100 ^r	73,400 ^r	113,300 ^r	144,100 ^r	169,500 ³
Diamond ¹⁰	carats	9,320 ^{r,11}	77,372	222,520	351,860	506,819 ³
Gold	kilograms	-- ^r	-- ^r	-- ^r	-- ^r	-- ³
Gypsum ^e	metric tons	4,000	4,000	4,000	4,000	4,000
Salt	do.	1,229 ^r	3,300 ^r	2,900 ^r	1,800 ^r	1,800

^eEstimated; estimated data are rounded to no more than three significant digits. ^pPreliminary. ^rRevised. -- Zero.

¹Table includes data available through October 1, 2004.

²In addition to the commodities listed, Côte d'Ivoire produced clay, crushed granite, manganese, and stone, but information is inadequate to make estimates of output levels.

³Reported figure.

⁴In addition to the commodities listed, Guinea produced modest quantities of crude construction materials (clays, sand and gravel, and stone), but information is inadequate to make reliable estimates of output levels.

⁵Metallurgical ore plus calcinable ore estimated to be 13% water.

⁶Data are for wet-basis ore estimated to be 13% water reduced to dry basis estimated to be 3% water.

⁷Production is approximately 70% to 80% gem quality.

⁸Figures include artisanal production.

⁹In addition to the commodities listed, Liberia produced a variety of industrial minerals and construction materials (clays, gypsum, sand and gravel, and stone), but information is inadequate to make reliable estimates of output levels.

¹⁰Does not include smuggled artisanal production; national diamond production was estimated to be 250,000 carats in 1998 and 600,000 carats per year from 1999 to 2001.

¹¹Exports.

TABLE 2
CÔTE D'IVOIRE, GUINEA, LIBERIA, AND SIERRA LEONE: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
CÔTE D'IVOIRE				
Cement		Société des Ciments d'Abidjan (Government, 40%; Ominum Tropical, 24%; SCOA Côte d'Ivoire SA, 12%)	Abidjan plant	750,000.
Do.		Société Ivoirienne de Ciment et Matériaux (Holcim and Origny, 80%)	do.	500,000.
Do.		Société des Ciments du Sud-Ouest (Government and Ominum Tropical)	San Pedro	100,000.
Gold ¹		Société des Mines d'Ity (Cie. Générale des Matières Nucleaires Group, 51%, and Société pour le Développement Minier en Côte d'Ivoire, 49%)	Ity Mine	450,000 ore.
Do.	kilograms	do.	do.	2,250 gold.
Do. ¹		Cie. Minière d'Afrique (Cie. Générale des Matières Nucleaires Group, 100%)	Angovia Mine	280,000 ore.
Do.	kilograms	do.	do.	1,200 gold.
Petroleum products	thousand 42-gallon barrels	Société Ivoirienne de Raffinage	Abidjan	23,800.
GUINEA				
Alumina		Alumina Co. of Guinea (Manro Haydan, 75%; Government, 15%; Aluminum Company of America Inc., 10%)	Friguia plant	700,000.
Bauxite		Compagnie des Bauxites de Guinée (Government, 49%; Alcan Inc., 24%; Aluminum Company of America Inc., 21.9%; Pechiney Group, 5.1%)	Bidikou, Sangaredi, and Sildara	14,000,000.
Do.		Société de Bauxite de Kindia (Government, 100%)	Kindia	2,500,000.
Do.		Alumina Co. of Guinea	Friguia mine	2,300,000.
Cement		Ciments de Guinée (Holcim Ltd., 51%, and Government, 44%)	Conakry plant	360,000.
Diamond	carats	Trivalence Mining Corp. of Canada	Aredor Mine	100,000.
Gold		Société Ashanti de Guinée (Ashanti Goldfields Co. Ltd., 85%, and Government, 15%)	Siguiiri Mine	9,000,000 ore.
Do.	kilograms	do.	do.	9,300 gold.
Do.		Société Minière de Dinguiraye (Kenor ASA of Norway, 85%, and Government, 15%)	Lero-Karta Mine	1,100,000 ore.
Do.	kilograms	do.	do.	3,500 gold.
Do.		Semafo Inc. of Canada	Kiniero Mine	400,000 ore.
Do.	kilograms	do.	do.	1,700 gold.
LIBERIA				
Cement		Liberia Cement Corp. (Scancem International of Norway, 64%)	Monrovia plant	220,000.
SIERRA LEONE				
Bauxite ¹		Sierra Leone Ore and Metal Co.	Mokanji Mine	1,500,000.
Cement		Sierra Leone Cement Corp. Ltd. (HeidelbergCement, 50%)	Freetown plant	110,000.
Petroleum products ¹	42-gallon barrels	Sierra Leone Petroleum Refining Co. Ltd.	Freetown	365,000.
Titanium: ¹				
Ilmenite		Sierra Rutile Ltd (MIL Investments SARL, 75%, and U.S. Titanium, LLC, 25%)	Impetri Hills	65,000 concentrate; 39,000 TiO ₂ content.
Rutile		do.	do.	200,000 concentrate; 192,000 TiO ₂ content.

¹Not operating in 2003.