



2012 Minerals Yearbook

CÔTE D'IVOIRE

THE MINERAL INDUSTRY OF CÔTE D'IVOIRE

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Côte d'Ivoire continued on its path to economic recovery following the post-electoral crisis of 2010–11. In 2012, the country's gross domestic product (GDP) increased by an estimated 8.6%. The mineral sector contributed 2.3% to the GDP and employed about 30,000 people. During the year, total investments in the sector amounted to about \$223 million. Mineral commodities produced in Côte d'Ivoire in 2012 included crude petroleum, gold, manganese ore, natural gas, petroleum products, and silver. In addition to these commodities, the country also produced industrial minerals, such as cement, crushed stone, and sand and gravel. Rough diamond exports from Côte d'Ivoire continued to be under a United Nations (UN) embargo. Undeveloped mineral resources included bauxite, cobalt, copper, iron ore, nickel, and silica sand (United Nations Security Council, 2012; Ministère de l'Economie et des Finances, 2013; Organisation for Economic Co-operation and Development, 2013, p. 308; U.S. Department of State, 2013; Chambre de Commerce et d'Industrie de Côte d'Ivoire, undated).

The Government reported that the development of Côte d'Ivoire's mineral resources has been hindered by the lack of sufficient geologic data for the country, the lack of basic infrastructure to support the development of identified mineral deposits, the relative absence of national public and private investment in the mineral sector, an outdated institutional mineral sector framework, and the scarcity of installed mineral processing capacity in the country (Government of the Republic of Côte d'Ivoire, 2012, p. 8, 27–30).

Various prospecting and mineral exploration projects were underway, including mineral exploration for nickel and cobalt in the north and northwest of the country, for gold and iron ore in various locations throughout the country, for manganese and phosphate rock in the southwest, and for tantalum in the north and southwest. Australian, Canadian, Chinese, French, and Indian investors carried out these exploration projects, which were at different stages of development. As a former French colony, Côte d'Ivoire maintains close economic ties with France, which owns or has interest in the national electric utility company, Abidjan Port, and Abidjan's public water utility facilities, and is involved in the management of the national airport (U.S. Department of State, 2013).

Government Policies and Programs

Mining activities in Côte d'Ivoire are regulated by the Council of Ministers through law No. 95–553 of July 18, 1995 (the “Mining Code”); by Decree No. 96–634 of August 9, 1996, which deals with the implementation of the Mining Code; and by Ordinance No. 96–600 of August 9, 1996, which deals with taxes and duties related to mining activities. The Mining Code is administered by the Ministère de l'Industrie et des Mines [Ministry of Industry and Mines], which is the agency that oversees all aspects of the nonfuel mineral sector.

Société d'Etat pour le Développement Minier de Côte d'Ivoire [State Company for Mining Development of Côte d'Ivoire] (SODEMI) is the Government agency in charge of overseeing all prospecting and exploration activities in the sector. The Ministère du Pétrole et de l'Energie [Ministry of Petroleum and Energy] oversees all aspects of the fuels sector, and Société Nationale d'Opérations Pétrolières de Côte d'Ivoire (Petroci) [State Company for Petroleum Development] is responsible for overseeing all prospecting and exploration activities in the hydrocarbon sector as well as the transport, storage, and trade of crude petroleum and petroleum products (Chambre de Commerce et d'Industrie de Côte d'Ivoire, undated).

Other Governmental and nongovernmental institutions engaged in the mineral sector include Direction Générale des Mines et de la Géologie [General Directorate of Mines and Geology], Agence Nationale pour le Développement de l'Environnement [National Agency for the Development of the Environment], Conseil National-ITIE [EITI National Council], Secrétariat Permanent de la Représentation du Processus de Kimberley en Côte d'Ivoire [Permanent Secretariat for the Representation of the Kimberley Process in Côte d'Ivoire], Groupement Professionnel des Miniers de Côte d'Ivoire [Group of Professional Miners of Côte d'Ivoire], and Syndicat Ivoirien des Exploitants de Carrières de sable et de Gravier roulé [Sand and Gravel Operators Syndicate] (Chambre de Commerce et d'Industrie de Côte d'Ivoire, undated).

The Government planned to reestablish Côte d'Ivoire's status as an economic hub in the West Africa region. To this end, in June 2012, the Government adopted a new investment code, which was to replace the 1995 Investment Code, and planned to review its mining and petroleum investment codes. In addition, plans to carry out aerial geophysical surveys of the national territory were underway. The Government also encouraged foreign direct investment in the sector (Government of the Republic of Côte d'Ivoire, 2012, p. 8, 27–30; U.S. Department of State, 2013).

In March, the Government published Côte d'Ivoire's National Development Plan 2012–2015 (CNDP), which outlines the country's macroeconomic and structural policies and programs for a 3-year period starting in 2012. The CNDP includes the establishment of economic priority areas to be developed, among which are the energy, hydrocarbon, infrastructure, mines, and transportation sectors. The CNDP also includes the adoption of a Code of Ethics and Good Conduct (CEGC). The CEGC is aimed at providing transparency in the management of public resources. About 26% of planned public and private investments for 2012 to 2015, would be used to improve infrastructure and transport services, including the development of a road network connecting urban, inter-urban, and international paved roads and the development, maintenance, and modernization of airport, port, and railroad infrastructure. About 6% of these investments

would be in the hydrocarbon sector, 5.5% in the energy sector (in particular, for the generation, transport, and distribution of electricity); and 5.5% for the development of nonfuel mineral resources (Government of the Republic of Côte d'Ivoire, 2012, p. 8, 27–30).

Production

Reported production of most mineral commodities increased during the year. This included manganese, which increased by about 130%; crushed stone, by 32.7%; natural gas, by 9.1%; and gold, by 5.6%. Crude petroleum production, however, decreased by about 13% to 10.77 million barrels (Mbbbl) from a revised 12.39 Mbbbl. Reported cement production was based on exports of hydraulic cement. Data on total cement production in 2012 were not available. Data on mineral production are in table 1.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Gold.—Gold production in Côte d'Ivoire came mainly from the Bonikro, the Ity, the Tongon, and the Yaouré Mines. Gold was also produced throughout the country by artisanal miners. Production of gold from the Tongon Mine decreased by about 16% to 6,551 kilograms (kg) owing in part to a number of power outages during the first three quarters of the year and to a fire at the mill circuit during the fourth quarter. Randgold Resources Ltd. of the United Kingdom, which was the company that operated the mine, addressed these problems by installing additional generating capacity at the mine and installing an additional capacitor bank to absorb fluctuations in voltage deliveries. The company also planned to install a gravity circuit and a flotation circuit to improve recovery rates at the plant in order to reach its production target of 9,300 kilograms per year (kg/yr) in 2014. Tongon Mine is located in northern Côte d'Ivoire about 55 kilometers (km) south of the border with Mali. The mine employed 1,717 people in 2012. Randgold held an 89% interest in the Tongon Mine through its subsidiary Société des Mines de Tongon S.A.; the remaining share was held by the Government (10%) and by Ivorian interests (1%) (Randgold Resources Ltd., 2013, p. 36–41).

Amara Mining plc of the United Kingdom (formerly Cluff Gold plc; name was changed on October 1, 2012) continued to focus on the development of a mineralized sulfide deposit underlying the Yaouré Mine's oxide deposit. The company reportedly spent \$14 million in exploration at Yaouré in 2012 to conduct a 29,988-meter (m) diamond-drilling program for 29 holes and planned to announce a mineral resource update and to complete further metallurgical testwork by the second quarter of 2013. The company described the Yaouré ore body as a mesothermal, quartz-carbonate vein-style gold deposit with mineralization that is controlled by a thick zone of shearing with multiple zones of alteration. The Yaouré Mine is located 5 km from Lake Kossou in central Côte d'Ivoire (Amara Mining plc, 2013, p. 13, 38, 24–25).

La Mancha Resources Inc. of Canada, which held the rights to the Ity Mine, sold its interest in the mine to Weather Investments II SARL of Egypt on November 13. La Mancha had completed a 7,955-m drilling program for the Ity Mine on May 31 and was planning to complete a resource estimate for the mine during the third quarter of the year; owing to the change in ownership, however, no information on the progress of the resource estimate was announced as of yearend (La Mancha Resources Inc., 2012a, b).

The Bonikro Mine produced a total of 2,865 kg of gold during the year. The mine is located in south-central Côte d'Ivoire about 240 km northwest of the capital city of Abidjan. Newcrest Mining Ltd. of Australia, which owned an 89% interest in the mine, was in the process of exploring for other prospects within 30 km of the Bonikro Mine, including the Hire and the Dougbafla-East deposits and various other exploration targets. The Bonikro Mine and the Dougbafla deposit are located within the Oume Project area, and the Hire deposit, which was undergoing a feasibility study, is located about 10 km southeast of Bonikro. Gold mineralization at the Bonikro Mine was reportedly in the form of structurally controlled shear zones and stockwork veins. Newcrest planned to continue with its exploration program in 2013 (Newcrest Mining Ltd., 2013, p. 20, 27).

Endeavour Mining Corp. of Canada was in the process of completing the construction of the Agbaou Mine, which was expected to be commissioned in the first quarter of 2014 at a cost of \$159 million. The mine would have a production capacity of about 3,200 kg/yr and was expected to operate for a period of 8 years. The Agbaou Mine is located about 200 km northwest of Abidjan and covers an area of 334 square kilometers (km²). An updated NI 43–101-compliant technical report was completed for the mine on July 12 and yielded measured and indicated resources (including reserves) of about 15 million metric tons (Mt) with an average gold grade of 2.43 grams per metric ton (g/t) at a cutoff grade of 0.5 g/t. Proven and probable reserves were reported to be about 11 Mt with an average grade of 2.54 g/t. Once in operation, the mine would employ about 650 people. Endeavour held an 85% interest in the project through its subsidiary Agbaou Gold Operations S.A., and the Government and SODEMI held 10% and 5% interests, respectively (Endeavour Mining Corp., 2013, p. 18–20).

Iron Ore.—Tata Steel Ltd. of India was looking for a partner to help finance the construction of a railroad to connect its Mount Gao and Mount Nimba iron ore concessions to the San Pedro Port in southwestern Côte d'Ivoire. Tata, which continued to carry out exploration activities at Mount Gao and Mount Nimba, held a 75% interest in the concession through its subsidiary Tata Steel Côte d'Ivoire. SODEMI held the remaining 25% share in the project. In 2011, the company had put exploration work on hold because of security concerns related to Côte d'Ivoire's post-electoral crisis. At the time, the company had completed an airborne geophysical survey that covered 811 km² for the Mount Gao prospect and a detailed 1:10,000-scale geologic map for an area of 100 km². Other undeveloped iron ore resources in Côte d'Ivoire included the Mount Klahoyo deposit, which was a 670-Mt

magnetite deposit located 600 km northwest of Abidjan, and the 150-Mt Monogaga-Victory deposit, which is located west of the city of Sassandra in southwestern Côte d'Ivoire (Kouamou, 2011; Tata Steel Ltd., 2011, p. 68–69; Thomson Reuters, 2013; Société pour le Développement Minier de la Côte d'Ivoire, undated).

Nickel.—On June 21, Sama Resources Inc. of Canada, through its wholly owned subsidiary Sama Nickel Côte d'Ivoire SARL, announced the results of an NI 43–101-compliant mineral resource estimate for the Samapleu nickel-copper sulfide deposit. Indicated mineral resources for Samapleu were reported to be 12.5 Mt at average grades of 0.24% nickel and 0.23% copper and inferred mineral resources were reported to be 8 Mt at average grades of 0.23% nickel and 0.17% copper. The company also completed a 2,663-m drilling program for the Sipilou South nickel-cobalt laterite deposit. Following the resource assessment, Sama decided to launch a preliminary economic assessment to study the possibility of developing a mining operation at Samapleu. Airborne Surveys (Pty) Ltd. of South Africa was contracted at the end of the year to carry out a 3,300-km-long aerial electromagnetic and magnetic survey of the property. Sama had acquired the rights to Samapleu in March 2010 when it purchased all the issued and outstanding common shares of Sama Nickel Corp., which in turn held 100% interest in Samapleu through its wholly owned subsidiary Sama Nickel Côte d'Ivoire SARL. The Samapleu project covers an area of 449 km² and is located about 600 km northwest of Abidjan and 40 km west of the town of Biankouma (Sama Resources Inc., 2012, p. 3–8).

Industrial Minerals

Diamond.—Ivorian rough diamond reportedly continued to reach international markets in violation of the restrictions imposed on Côte d'Ivoire by United Nations Resolution 1643 (2005). On April 26, through Resolution 2045 (2012), the United Nations Security Council decided to renew until April 30, 2013, the measures in place to prevent any country from importing rough diamond from Côte d'Ivoire. All diamond production in Côte d'Ivoire was carried out by artisanal miners. Throughout the year, the Government engaged with representatives of the Kimberley Process Certification Scheme (KPCS) and other stakeholders in the sector to determine ways in which it could become a participant country in the KPCS. The KPCS is an international certification system designed to stop the trade in conflict diamond and, as of yearend, had 54 participants, including the United States, representing 81 countries. The European Union and its member states are counted as a single participant (United Nations Security Council, 2012; 2013, p. 39, 43; Kimberley Process Certification Scheme, 2013).

Minerals Fuels

Petroleum.—The Government signed various petroleum production-sharing agreements (PSAs) during the year for several petroleum blocks located in the Gulf of Guinea offshore Côte d'Ivoire. These included a PSA with London-based Talaveras Group for Blocks CI–501, CI–504, and CI–523;

a PSA with Petroci for Blocks CI–500, CI–502, and CI–520; a PSA with a consortium of Texas-based Anadarko Petroleum Corp. and Total S.A. of France for Blocks CI–515 and CI–516; and a PSA with a consortium of Calgary-based Canadian Natural Resources International and Total S.A. for Block CI–514. The agreements signed in March and May included a PSA with African Petroleum Ltd. Côte d'Ivoire of Australia for Block CI–509 and a PSA with the consortium of Petroci and Vitol Exploration & Production for Block CI–508 (Société Nationale d'Opérations Pétrolières de Côte d'Ivoire, 2012, p. 7).

Projects planned for the hydrocarbon sector included the construction of a storage and liquefied natural gas terminal in Abidjan, the construction of a gas pipeline to the east of the country, the construction of a gas pipeline to connect Abidjan with the city of Takoradi in Ghana, the construction of an oil pipeline between the towns of Bouake and Ferkessedougou, and the construction of a hydrocarbons storage terminal in Abidjan, among other projects (Société Nationale d'Opérations Pétrolières de Côte d'Ivoire, 2012, p. 33).

Outlook

Côte d'Ivoire's economy was expected to grow by 8.9% in 2013 and 9.8% in 2014 (Organisation for Economic Co-operation and Development, 2013, p. 29, 216). Although the mineral sector was expected to be a significant contributor to this growth, the country was still in need of basic infrastructure to support mining activities. The country's National Development Plan for 2012–2015, if implemented, is expected to address this issue in the near future. If it is implemented, improvements in the country's infrastructure, together with the drafting of new mining legislation, the adoption of a code of conduct, and the Government's commitment to invest in the generation, transport, and distribution of electricity will likely boost growth of the mineral sector and attract foreign direct investments to the country in the near future.

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TABLE 1
CÔTE D'IVOIRE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012	
Cement ³	360,034	283,400	188,800	98,900	78,000	
Crushed stone, granite ⁴	thousand metric tons	1,090	1,005	1,095	1,100 ^e	1,460
Gold, mine output, Au content ⁵	kilograms	4,205	6,947	5,310	9,871	10,423
Manganese ore:						
Gross weight ⁶	176,561 ⁷	161,300	87,400	43,600	100,400	
Mn content (43–45%)	75,921	72,585	39,330	19,620	45,200	
Natural gas	million cubic meters	1,657	1,540	1,666	1,632 ^r	1,780
Petroleum:						
Crude	thousand 42-gallon barrels	16,745	19,882	14,562 ^r	12,391 ^r	10,770
Refinery products	do.	25,900	25,000	20,400	20,000 ^e	25,000 ^e
Sand and gravel	cubic meters	NA	NA	93,200	90,000 ^e	80,000 ^e
Silver ^c		--	100	200	400	500
Sulfuric acid		3,000 ^e	NA	NA	NA	NA

⁸Estimated data are rounded to no more than three significant digits. do. Ditto. NA Not available. ^rRevised. -- Zero.

¹Table includes data available through November 29, 2013.

²Although rough diamond exports continued to be under a United Nations embargo, rough diamond production was thought to be continuing, but available information was inadequate to make reliable estimates of output.

³Based on reported exports of hydraulic cement.

⁴The crushed stone series, which before 2007 was reported to be exports of gravel and crushed stone, has been revised to reflect crushed stone data only as reported by the Ministry of Mines, Petroleum, and Energy.

⁵Does not include production from artisanal mining.

⁶As reported by the International Manganese Institute.

⁷Reported manganese ore exports.

TABLE 2
CÔTE D'IVOIRE: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Société des Ciments d'Abidjan	Abidjan plant	750,000
Do.		Société des Ciments du Sud-Ouest	San Pedro	100,000
Do.		Société de Ciments et Matériaux (Holcim Ltd.)	Abidjan plant	900,000
Gold	kilograms	Equigold Mines CI SA (Newcrest Mining Ltd., 89.9%, and Government, 10.1%)	Bonikro Mine, 240 kilometers northwest of Abidjan	5,000
Do.	do.	Société des Mines d'Ity (La Mancha Resources Inc., 45.9%; Société pour le Développement Minier (SODEMI), 44.1%; Government, 10%)	Ity Mine, 700 kilometers from Abidjan	1,900
Do.	do.	Société des Mines de Tongon SA (Randgold Resources Ltd., 89%; Government, 10%; local Ivorian company, 1%)	Tongon Mine, northern Côte d'Ivoire, 55 kilometers south of the border with Mali	9,000
Do.	do.	Yaouré Mining SA (Amara Mining plc, 90%, and Government, 10%)	Yaouré Mine, 40 kilometers northwest of Yamoussoukro	1,240
Manganese		Compagnie Minière du Littoral (Société pour le Développement Minier de la Côte d'Ivoire (SODEMI), 51%; China National Geological and Mining Corp., 39%; private interests, 10%)	Lauzoua/Mokta Mine, 180 kilometers west of Abidjan	300,000
Do.		Dharni Sampda Private Ltd.	Bondoukou Mine	NA ¹
Petroleum, crude	thousand 42-gallon barrels	Canadian Natural Resources Ltd., 57.61%; Svenska Petroleum Exploration AS, 27.39%; Société Nationale d'Opérations Pétrolières de la Côte d'Ivoire (Petroci), 15%	Baobab oilfield, offshore	17,520
Do.	do.	Canadian Natural Resources Ltd., 58.67%; Tullow Oil plc, 21.33%; Société Nationale d'Opérations Pétrolières de la Côte d'Ivoire (Petroci), 20%	East Espoir oilfield, offshore	6,700
Do.	do.	Tullow Oil plc., 45%; Anadarko Petroleum Corp., 40%; Société Nationale d'Opérations Pétrolières de la Côte d'Ivoire (Petroci), 15%	Block CI-103	NA
Do.	do.	Lukoil Overseas Côte d'Ivoire Ltd., 56.66%; Vanco Côte d'Ivoire Ltd., 28.34%; Société Nationale d'Opérations Pétrolières de la Côte d'Ivoire (Petroci), 15%	Block CI-401	NA
Petroleum products	42-gallon barrels per day	Société Ivoirienne de Raffinage (Government, 100%)	Abidjan	60,000

Do., do. Ditto. NA Not available.

¹It was not clear whether the mine was operational in 2010 and (or) in 2011 .