



2008 Minerals Yearbook

**CENTRAL AFRICAN REPUBLIC, CÔTE D'IVOIRE,
AND TOGO**

THE MINERAL INDUSTRIES OF CENTRAL AFRICAN REPUBLIC, CÔTE D'IVOIRE, AND TOGO

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CENTRAL AFRICAN REPUBLIC

Clay, diamond, gold, limestone, quartz, and sand and gravel were the only mineral commodities reported as being produced in Central African Republic. The country's undeveloped mineral resources included copper, graphite, ilmenite, iron ore, kyanite, lignite, manganese, monazite, quartz, rutile, salt, tin, and uranium. On November 21, 2008, Central African Republic was accepted as a candidate country to join the Extractive Industries Transparency Initiative (EITI). The EITI is a voluntary global compact for improving transparency in countries whose economies are dependent on the mining industry by having the Government disclose the payments and revenues received from companies engaged in mining operations within the country. Central African Republic had until November 20, 2010, to undertake validation (Extractive Industries Transparency Initiative, 2008).

Production

Production of gold and diamond, which was mostly artisanal, came from the regions of Berberati, Haute-Kotto, and Haute-Sangha. In 2008, diamond production decreased by 19.3% to 377,209 carats from 467,711 carats produced in 2007. Production of other mineral commodities was estimated for 2008. Data on mineral production are in table 1.

Structure of the Mineral Industry

The Ministry of Mines, Energy and Water was the Government agency responsible for the mining sector. Production and trade of diamond and gold were overseen by Bureau d'Evaluation et de Contrôle de Diamant et d'Or (BECDOR). BECDOR maintained the country's diamond and gold production database and assessed the value of diamond parcels that came from the various diamond exporting companies (collectively known as bureaux d'achat) operating in the country.

Commodity Review

Metals

Gold.—AXMIN Inc. of Canada continued to work on the development of the Passendro gold project, which is located about 60 kilometers (km) from the town of Bambari. A bankable feasibility study for Passendro was completed in April 2008. The study was released in March 2008 and included the results of drilling completed as of the end of June 2007. Following the drilling campaign, AXMIN hired SRK Consulting (UK) Ltd.

(SRK) to undertake geologic modeling and resource estimation of the seven gold mineralized deposits that together made up the Passendro project, namely Bacanga Head, Baceta, Barbacoa, French Camp, Katsia, Main Zone, and Ngetepe. Following the study, a 17% increase in measured and indicated resources was reported as compared with a resource estimate obtained from a feasibility study conducted in 2006. In November, the Government approved AXMIN's environmental and social impact assessment and, as of yearend, the company was in the process of applying for a mining license. AXMIN planned to develop an open pit mine operation that would produce about 6,900 kilograms per year (kg/yr) of gold (reported as 223,000 troy ounces) during the first 3 years of operation and would then produce an average of 6,300 kg/yr of gold (reported as 203,000 troy ounces) for the remaining life of the mine, which was estimated to be 5.9 years. Gold production was expected to begin in 2010 (Axmin Inc., 2008a, c; 2009, p. 2-4).

London-based Pan African Resources plc signed mining conventions for the exclusive exploration rights to the Bogoin gold prospect, which is located in southwestern Central African Republic about 120 km north of the capital city of Bangui, and for the Dekoa gold prospect, which is located in the west-central part of the country about 330 km from Bangui. The conventions were for a period of 25 years each. A rotary air-blast drilling program and a 2,062-meter (m) reverse-circulation drilling program were completed at the Bogoin prospect during the year. The Dekoa prospect hosted six major gold-in-soil anomalies with an interpreted strike length of 25 km. These anomalies were discovered through a regional stream sediment sampling program. Pan African operated in Central African Republic under its subsidiary Or Oubangui S.A. (Pan African Resources plc, 2009, p. 11, 19).

Iron Ore.—AXMIN continued to explore for iron ore at the Topa Hill iron ore prospect. Topa Hill, which was discovered by AXMIN in 2006, is located within the company's Bambari-Bakala concession and consists of two iron-rich-northwest-trending ranges of hills that reportedly contain ore grading about 64.3% iron on average. In April 2008, the company announced that high-grade iron assays were obtained from initial core drilling at Topa with a weighted average of 63.1% iron across true widths ranging from 10 to 52 m to a maximum tested depth of 150 m. The company planned to move its drilling program to the East Limb Hills of the Topa Hill prospect during 2009 (Axmin Inc., 2008b).

Industrial Minerals

Diamond.—London-based Pangea DiamondFields plc, through its wholly owned subsidiary Dimbi Diamants SAU, explored for diamond at the Dimbi and the Etoile alluvial

diamond concessions. Following the commissioning of a bulk sampling plant in January 2007, the company began a bulk sampling exercise at Dimbi, which was focused mainly around a 3-km radius from the plant and was concentrated mainly in the Mea River floodplain and the Akongo River. The objective of the company was to delineate sufficient ore resources at economic grades to process about 40,000 cubic meters per month of gravel for at least 5 years. More than 3,500 carats were recovered at Dimbi as of October 2008, but owing to market conditions and lower diamond prices during 2008, the company decided to place the Dimbi plant and equipment on care-and-maintenance status. Activities at the Etoile concession were also suspended pending the recovery of the diamond market (Pangea DiamondFields plc, 2009, p. 15).

Mineral Fuels and Related Materials

Uranium.—On August 1, 2008, Areva Group of France signed an agreement with the Government to mine uranium at Bakouma in eastern Central African Republic. The deal reportedly ended friction between Areva and the Government, which in 2006 had awarded the Bakouma mining rights to the British-Canadian company UraMin Inc. Areva bought out UraMin in July 2007 and thereby acquired a 90% working interest in 10 separate areas of uranium mineralization within the Bakouma prospect. Uranium deposits at Bakouma were mined to a limited extent during the 1960s and 1970s but not at a commercial scale. Areva planned to begin delivering uranium by 2010. Inferred mineral resources at Bakouma were estimated to be about 5.7 million metric tons at an average grade of 1.72% U (Ngoupana, 2008; Thompson Financial News Ltd., 2008; Areva Group, 2009, p. 87).

References Cited

- Areva Group, 2009, 2008 reference document: Paris, France, Areva Group, 476 p.
- Axmin Inc., 2008a, AXMIN files NI 43-101 technical report—Passendro gold project bankable feasibility study—Central African Republic: Toronto, Ontario, Canada, Axmin Inc. press release, April 15, 2 p.
- Axmin Inc., 2008b, Initial drilling results at Topa iron belt Central African Republic—High-grade iron assays averaging 63.1% Fe: Toronto, Ontario, Canada, Axmin Inc. press release, April 21, 3 p.
- Axmin Inc., 2008c, Passendro gold project—Central African Republic update: Toronto, Ontario, Canada, Axmin Inc. press release, May 6, 2 p.
- Axmin Inc., 2009, 2008 annual report: Toronto, Ontario, Canada, Axmin Inc., 37 p.
- Extractive Industries Transparency Initiative, 2008, Welcome—Central African Republic: Oslo, Norway, Extractive Industries Transparency Initiative newsletter, November 27, 4 p.
- Ngoupana, Paul-Marine, 2008, Update-1, Areva—CAR secures deal to end Bakouma mine row: Reuters, August 2. (Accessed January 28, 2010, at <http://www.reuters.com/article/idUSL26136020080802>.)
- Pan African Resources plc, 2009, Annual report for the year ended June 30, 2008: London, United Kingdom, Pan African Resources plc, 71 p.
- Pangea DiamondFields plc, 2009, 2008 annual report: London, United Kingdom, Pangea DiamondFields plc, 54 p.
- Thompson Financial News Ltd., 2008, Areva signs uranium mining deal with Central African Republic: Thompson Financial News Ltd., August 2. (Accessed January 28, 2010, at <http://www.forbes.com/feeds/afx/2008/08/02/afx5282504.html>.)

CÔTE D'IVOIRE

Mineral commodities produced in Côte d'Ivoire included cement, clay, diamond, gold, gravel and crushed stone, manganese ore, natural gas, niobium (columbium) ore, crude petroleum and petroleum products, sand, sulfuric acid, and tantalum ore. Undeveloped mineral resources included bauxite, cobalt, copper, iron ore, nickel, and silica sand. On May 7, 2008, Côte d'Ivoire was accepted as a candidate country to join the Extractive Industries Transparency Initiative. The country had until May 8, 2010, to undertake validation (Extractive Industries Transparency Initiative, 2008).

On October 29, 2008, the United Nations Security Council renewed once again the ban on rough diamond exports that it had imposed on the country since 2002. The measure was to be reviewed on October 31, 2009. Presidential elections, which were originally to be held in November 2008, were postponed, and no new date was established as of yearend (United Nations Security Council, 2008; U.S. Department of State, 2009).

Production

Manganese ore production increased by 86.6% to 176,561 metric tons (t) in 2008 from a revised 94,618 t in 2007. Gold production increased by 238% to 4,205 kilograms (kg) from 1,243 kg as a result of the opening of the Angovia and the Bonikro gold mines. 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.—During the second quarter of 2008, La Mancha Resources Inc., which held a 45.9% interest in the Ity gold mine, began an exploration campaign on the northeast portion of the Zia extension area, which is adjacent to the former Flotouo-Zia pit. Preliminary results from the exploration campaign and the prefeasibility study reportedly showed a positive economic potential for the area, which the company planned to develop beginning in 2013 (La Mancha Resources Inc., 2009, p. 35).

In June 2008, Lihir Gold Ltd. of Australia completed a merger with Equigold NL, thereby acquiring a 90% interest in Equigold's Bonikro gold project. The Bonikro gold project is located in south-central Côte d'Ivoire about 250 km northwest of the capital city of Abidjan. Equigold had discovered gold mineralization at Bonikro in 1996 and by May 2007 had begun the construction of a mine. First commercial production from the Bonikro open pit mine was achieved in October 2008 and by yearend, a total of about 1,150 kg (reported as 37,000 troy ounces) of gold had been produced. Annual gold production was expected to average about 3,700 kg (reported as 120,000 troy ounces) during the 8 years of projected mine life (Lihir Gold Ltd., 2009, p. 16-17).

Construction work was underway at London-based Randgold Resources Ltd. of the United Kingdom's Tongon project,

which included the construction of key mine installations, such as housing, power and water supply, and administration and communication facilities. Engineering, construction, and civil earthworks contractors had also been appointed, and other contracts were being negotiated. The Tongon project is located within the company's Nielle exploration permit in northern Côte d'Ivoire about 55 km south of the border with Mali. The company planned to develop an open pit gold mine at Tongon with production capacity of about 9,000 kg/yr (reported as 290,000 troy ounces) during the first 2 years of operation and then an average of about 8,400 kg/yr (reported as 270,000 troy ounces) for the remainder of the mine's life, which was estimated to be 10 years. The Tongon Mine was scheduled to be commissioned in the fourth quarter of 2010. Randgold Resources held an 84% interest in the project (Randgold Resources Ltd., 2009, p. 14, 30-35).

The Angovia Mine, which is located about 40 km northwest of Yamoussoukro, poured its first gold in March 2008. Cluff Gold plc. of the United Kingdom (the company that operated the mine) estimated that production at Angovia would reach about 1,200 kg (reported as 40,000 troy ounces) in 2009 (Cluff Gold plc, 2008).

Iron Ore.—Tata Steel Group, through its subsidiary Tata Steel Côte d'Ivoire S.A., was awaiting Government approval to proceed with exploration activities at the Mount Nimba iron ore deposit. Upon approval of an exploration license, the company planned to invest more than \$1 billion and to conduct a feasibility study in 2009. The iron ore mined was to be supplied to Tata Steel's subsidiary Corus Group, which had steel production facilities in the Netherlands and in the United Kingdom (Tata Steel Group, 2008a, 2008b, p. 86, 166).

Manganese.—Taurian Resources Private Ltd. continued to explore for manganese in the Zanzan region in northeastern Côte d'Ivoire. The company held two exploration licenses, one for the Bondoukou area, which consisted of numerous hills containing manganese mineralization, and one for the Toumodi area, which consisted of two hills containing manganese mineralization. In 2008, Taurian announced that the Government had granted the company a special authorization to export 50,000 t of manganese ore from its Bondoukou and Toumodi concessions during the exploration stage. The company used about 45,000 t of this amount during the year through its mining operations at Bondoukou. Taurian submitted a feasibility report to the Government and was awaiting a mining permit for the development of the Bondoukou deposits, which it expected to receive by mid-2009. To ensure that there was no stoppage of mining activities at Bondoukou during the permitting period, the Government granted Taurian another special export permit for an additional 200,000 t. Mining operations at Dingbi and Kofu were expected to begin in June 2009 (Taurian Resources Private Ltd., 2008).

Industrial Minerals

Diamond.—Partnership Africa Canada, which is a nongovernmental organization, reported that a joint review mission conducted in April 2008 by a United Nations panel of experts on Côte d'Ivoire and the Kimberley Process revealed

that diamond continued to be mined in areas that remained under the control of the rebel group Forces Nouvelles and indicated that although Côte d'Ivoire was under a United Nations embargo, diamond continued to be traded in the open market. The group of experts visited the diamond mining areas of Bobi, Korhogo, Seguela, and Tortiya. The number of people mining in these areas was estimated to be between 5,000 and 20,000 (Partnership Africa Canada, 2008a, 2008b, p. 20; United Nations Security Council, 2008).

References Cited

- Cluff Gold plc, 2008, Interim results for the six months ended June 30, 2008: London, United Kingdom, Cluff Gold plc press release, September 26, 9 p.
- Extractive Industries Transparency Initiative, 2008, Welcome—Côte d'Ivoire: Oslo, Norway, Extractive Industries Transparency Initiative newsletter, May 23, 7 p.
- La Mancha Resources Inc., 2009, Consolidated financial statements as of December 31, 2008 and 2007 and for the years ended December 31, 2008 and 2007: Montreal, Quebec, Canada, La Mancha Resources Inc., 50 p.
- Lihir Gold Ltd., 2009, 2008 annual report: Queensland, Australia, Lihir Gold Ltd., 119 p.
- Partnership Africa Canada, 2008a, Côte d'Ivoire—Conflict diamonds continue: Ontario, Canada, Other Facets newsletter, no. 27, June, 4 p.
- Partnership Africa Canada, 2008b, 2008 Diamonds and human security annual review—Côte d'Ivoire: Ontario, Canada, Partnership Africa Canada, October, 23 p.
- Randgold Resources Ltd., 2009, 2008 annual report: London, United Kingdom, Randgold Resources Ltd., 116 p.
- Tata Steel Group, 2008a, Tata Steel Côte d'Ivoire S.A. sets up office at Abidjan: Mumbai, India, Tata Steel Group press release, August 11, 2 p.
- Tata Steel Group, 2008b, 101st annual report—2007-2008: Mumbai, India, Tata Steel Group 264 p.
- Taurian Resources Private Ltd., 2008, Ivory Coast—Exploration permits: Taurian Resources Private Ltd. (Accessed July 28, 2009, at <http://taurianresources.co.in/default/content/blogsection/6/47/lang.english.>)
- United Nations Security Council, 2008, Security Council renews Côte d'Ivoire arms and diamond trade bans until October 31, 2009: New York, New York, United Nations Security Council, October 29, 5 p.
- U.S. Department of State, 2009, Côte d'Ivoire: U.S. Department of State background note, January. (Accessed April 13, 2009, at <http://www.state.gov/r/pa/ei/bgn/2846.htm>.)

TOGO

Mineral commodities produced in Togo included cement, clinker, diamond, gold, limestone, and phosphate rock. Undeveloped mineral resources included bauxite, gypsum, iron ore, manganese, marble, rutile, and zinc.

Production

In 2008, diamond production decreased by 49% to 8,787 carats from 17,362 carats produced in 2007. Production of phosphate rock increased by about 12% to 842,000 t from 750,000 t in 2007. Data on mineral production are in table 1.

Structure of the Mineral Industry

At least one company, Lithic Metals and Energy Ltd., explored for chromite, nickel, uranium, and zinc in Togo in 2008. Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Lithic Metals and Energy Ltd. of Australia (LMEL), through its subsidiary Regent Resources Capital Corporation S.A.U., held several exploration licenses for three project areas in Togo that were prospective for chromite, nickel, uranium, and zinc. The three project areas were of the Haito, the Niamtougou-Kara, and the Pagala projects. The Haito project, which is located in southern Togo, consisted of five exploration licenses for an area of 1,000 square kilometers (km²); the project had known nickel mineralization and historical chromite production as well as minor copper occurrences that had been identified by earlier Government-funded exploration and mapping programs. In September 2008, the company announced assay values of up to 6.38% nickel and 0.34% cobalt from test pits completed at the Kpote Hill prospect and nickel values of 1.04% nickel from test pits completed at the Mount Haito prospect. Chromite was mined at Mount Haito by a French company during the 1950s. Sampling of remnant chromite dumps and outcropping chromite material by LMEL returned values of up to 44% Cr₂O₃. The Pagala project, which is located about 250 km north of the capital city of Lome in central Togo, consisted of five

exploration licenses for an area of 1,000 km². At Pagala, the company targeted known zinc mineralization, which had been identified previously by Anglo American plc of the United Kingdom and Bureau de Recherches Géologiques et Minières of France. Between the 1970s and the 1990s, marble, which was deemed suitable for the production of dolomitic quicklime, was also mined at Pagala. Phosphate rock occurrences had also been identified at Pagala. LMEL planned to compile and reinterpret all available data on Pagala, to conduct field validation test work, and to evaluate phosphate rock and marble occurrences. The Niamtougou-Kara project, which is located about 400 km from Lome in northern Togo, covered an area of 1,640 km². An exploration campaign conducted during the 1960s and 1970s discovered uranium in several target areas. LMEL completed an airborne geophysical survey of the project area in April 2008 and planned to conduct mapping, sampling, and drilling of targets (Lithic Metals and Energy Ltd., 2008a, p. 10-14; 2008b).

References Cited

- Lithic Metals and Energy Ltd., 2008a, Annual report for the year ended March 31, 2008: Perth, Australia, Lithic Metals and Energy Ltd., 44 p.
Lithic Metals and Energy Ltd., 2008b, High grade nickel results at Kpote Togo: Perth, Australia, Lithic Metals and Energy Ltd. press release, September 8, 2 p.

TABLE 1
CENTRAL AFRICAN REPUBLIC, CÔTE D'IVOIRE, AND TOGO: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Country and commodity	2004	2005	2006	2007	2008	
CENTRAL AFRICAN REPUBLIC³						
Clay	NA	NA	78,886 ⁴	79,000	79,000	
Diamond ⁵	carats	350,000	383,300 ⁴	419,528 ⁴	467,711 ⁴	377,209 ⁴
Gold, mine output, Au content	kilograms	7	15 ⁴	10 ⁴	10	10
Limestone		NA	85,000 ⁴	85,000 ⁴	85,000	85,000
Sand and gravel		NA	NA	172,436 ⁴	173,000	170,000
CÔTE D'IVOIRE⁶						
Cement		650,000	650,000	650,000	650,000	650,000
Columbium (niobium) and tantalum:						
Columbite	kilograms	130	130	130	130	130
Tantalite	do.	400	400	400	400	400
Diamond	carats	300,000	300,000	300,000	300,000	300,000
Gold, mine output, Au content ⁷	kilograms	1,219 ⁴	1,335 ⁴	1,324 ⁴	1,243 ⁴	4,205 ⁴
Gravel and crushed stone		659,097 ⁴	660,000	660,000	660,000	660,000
Manganese ore, gross weight		--	--	56,829 ⁴	94,618 ^{r,4,8}	176,561 ^{4,8}
Natural gas	million cubic meters	2,000 ⁴	2,200 ⁴	2,200	1,574 ^{r,4}	1,600
Petroleum:						
Crude	thousand 42-gallon barrels	8,125 ⁴	14,574 ⁴	21,955 ⁴	17,727 ⁴	22,000
Refinery products	do.	19,000	19,000	19,000	19,000	19,000
Sand		173,056 ⁴	173,000	173,000	173,000	173,000
Sulfuric acid		3,000	3,000	3,000	3,000	3,000
TOGO⁹						
Cement:						
Clinker		1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Hydraulic ¹⁰		800,000	800,000	800,000	800,000	800,000
Diamond	carats	123,000	41,000	28,176 ⁴	17,362 ⁴	8,787 ⁴
Limestone		2,400,000	2,400,000	2,400,000	2,400,000	2,400,000
Phosphate rock, beneficiated product:						
Gross weight	thousand metric tons	1,115 ⁴	1,350	1,650	750	842 ⁴
P ₂ O ₅ content	do.	418 ⁴	481	590 ⁴	270	303

^rRevised. do. Ditto. NA Not available. -- Zero.

¹Estimated data are rounded to no more than three significant digits.

²Table includes data available through October 6, 2009.

³In addition to the commodities listed, Central African Republic produced quartz crystals, but information is inadequate to make reliable estimates of output.

⁴Reported figure.

⁵Production is approximately 70% to 80% gem quality.

⁶In addition to the commodities listed, Côte d'Ivoire produced clay and crushed granite, but information is inadequate to make reliable estimates of output.

⁷Does not include production from artisanal mining.

⁸Based on reported manganese ore exports.

⁹Togo also presumably produced gold, but output is not reported, and available information is inadequate to make reliable estimates of output.

¹⁰Includes cement produced from imported clinker.

TABLE 2
CÔTE D'IVOIRE AND TOGO: STRUCTURE OF THE MINERAL INDUSTRIES IN 2008

(Metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
CÔTE D'IVOIRE				
Cement		Société des Ciments d'Abidjan	Abidjan plant	750,000.
Do.		Société de Ciments et Matériaux (Holcim Ltd.)	do.	800,000.
Do.		Société des Ciments du Sud-Ouest	San Pedro	100,000.
Gold	kilograms	Société des Mines d'Ity (La Mancha Resources Inc., 45.9%; Société pour le Développement Minier, 44.1%; Government 10%)	Ity Mine, 700 kilometers from Abidjan	1,900.
Do.	do.	Yaouré Mining SA (Cluff Gold plc, 90%, and Government, 10%)	Angovia Mine, 40 kilometers northwest of Yamoussoukro	1,240.
Do.	do.	Equigold Mines CISA (Lihir Gold Ltd., 90%, and Government, 10%)	Bonikro Mine, 250 kilometers northwest of Abidjan	3,700.
Manganese		Société pour le Développement Minier	Pilot plant, eastern Bondoukou	NA.
Petroleum, crude	thousand 42-gallon barrels	Canadian Natural Resources Ltd., 57.61%; Svenska Petroleum Exploration AS, 27.39%; Société Nationale d'Opérations Pétrilières 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, 20%	East Espoir oilfield, offshore	6,700.
Petroleum products	42-gallon barrels per day	Société Ivoirienne de Raffinage (Government, 100%)	Abidjan	65,000.
TOGO				
Cement ¹		Société de Ciments du Togo	Lome plant	800,000 cement.
Do.		West Africa Cement Co.	Tabligbo	1,000,000 cement; 1,200,000 clinker.
Limestone ¹		Ciments de l'Afrique de l'Ouest	do.	2,400,000.
Phosphate rock		International Fertilizer Group Togo	Akoumape and Hahotue	2,000,000.
Do., do. Ditto.				

¹Based on information available as of yearend 2005.