



2008 Minerals Yearbook

BENIN, BURKINA FASO, AND SAO TOME E PRINCIPE

THE MINERAL INDUSTRIES OF BENIN, BURKINA FASO, AND SAO TOME E PRINCIPE

By Omayra Bermúdez-Lugo

BENIN

Mining did not play a significant role in Benin's economy. The country produced mostly industrial minerals, which included cement, clay, limestone, marble, and sand and gravel. Gold was produced in small quantities by artisanal miners. Agriculture was the mainstay of the economy, and cotton accounted for about 40% of the gross domestic product (GDP) and about 80% of export earnings (U.S. Department of State, 2009).

In 2008, the real GDP grew by 5% compared with 4.6% in 2007. The growth in the real GDP was attributable to measures taken by the Government to revitalize the agriculture and construction sectors and to improvements in the electricity supply system. Construction activities throughout the year included the building of roads and Government infrastructure, and expansions at the Cotonou airport. Improvements in the provision of electricity were made possible by the rehabilitation and installation of power generators (Organization for Economic Co-operation and Development, 2009).

Benin's exports to the United States were valued at about \$31 million in 2008 compared with about \$5 million in 2007 and \$555,000 in 2006; \$15.7 million of these exports were for United States goods returned and reimports (U.S. Census Bureau, 2009b). Imports from the United States were valued at about \$846 million in 2008 compared with about \$289 million in 2007 and \$115 million in 2006. These included nearly \$348 million in fuel oil; \$38.9 million in petroleum products; \$2 million for excavating machinery; \$205,000 in specialized mining equipment; and \$123,000 for drilling and oilfield equipment (U.S. Census Bureau, 2009a).

Production

Data on mineral production have been estimated for 2008 and are provided in table 1.

Structure of the Mineral Industry

Cement was produced by Ciments du Benin S.A., Société des Ciments d'Onigbolo, and Société des Ciments du Benin. These companies had a combined cement production capacity of 1.43 million metric tons per year (Mt/yr) (table 2). Gold was produced by artisanal miners from gold veins near the villages of Kwatena and Tchantangou, in the Atakora Mountains in northwestern Benin, and from alluvial sediments along the Perma River and its tributaries.

Commodity Review

Mineral Fuels

Petroleum.—Petróleos de Venezuela S.A. was reportedly considering the possibility of building a 500,000-barrel-per-day petroleum refinery in Benin at a cost of \$10 billion. The refinery would supply petroleum to Benin, Burkina Faso, and Côte d'Ivoire, as well as other West African countries (Petroleum Economist, 2008).

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BURKINA FASO

Mining did not play a significant role in Burkina Faso's economy. The mining sector, however, could soon begin to contribute significantly to the country's GDP owing to recent developments in the industry, which included the opening of four new gold mines in the past 2 years, the opening of a manganese mine in 2008, and the possible development of another manganese mine and a zinc mine in the near future. The country's investment and mining codes, which were revised in 2004, allowed for the full repatriation of profits and 100% ownership of companies, which reportedly triggered renewed interest by investors in the mining industry, in particular the gold sector. Exploration for copper, gold, and uranium was ongoing throughout the year.

More than 80% of the population relied on subsistence agriculture, and at least 20% of the Government budget was financed from international aid. Investments by French companies accounted for about 70% of total foreign direct investment, although investments in mineral exploration and development were mostly by Australian and Canadian companies. As of January 1, 2008, Burkina Faso reduced the corporate income tax rate to 30% from 35% in 2007, and the tax on dividends, to 12.5%

from 15%. Burkina Faso imported cement, building materials, fertilizers, and petroleum products (U.S. Department of State, 2009a, p. 2-3, 30-31). Production of mineral commodities in 2008 was limited to cement, dolomite, gold, granite, marble, phosphate rock, pumice and related volcanic materials, and salt.

In August, more than 30 artisanal gold miners reportedly died during a mine collapse at the Konkera mining site near the village of Boussoukoula. The Boussoukoula village is located about 500 kilometers (km) southwest of the capital city of Ouagadougou near the border with Côte d'Ivoire. The Government had banned mining at Konkera temporarily from June to September owing to the possibility of accidents occurring during the rainy season. The number of artisanal miners digging for gold at Konkera was estimated to be about 10,000 (Jeune afrique.com, 2008; Reuters, 2008).

Production

Gold production increased by about 239% to 7,633 kilograms (kg) in 2008 from 2,250 kg in 2007; the increase in gold production was owing to the opening of the Kalsaka, the Mana, and the Youga gold mines. Mineral production data for other mineral commodities produced in Burkina Faso are based on estimates and are provided in table 1.

Structure of the Mineral Industry

High River Gold Mines Ltd. (High River) of Canada through its subsidiary Société des Mines de Taparko (Somita S.A.) operated the Taparko-Boroum gold mine; Cluff Gold plc of Canada in joint venture with IMARB Indústria Metalúrgica of Brazil operated the Kalsaka gold mine; Etruscan Resources Inc. of Canada operated the Youga gold mine; and Semafo Inc. of Canada operated the Mana gold mine. Pancontinental Uranium Corp. of Canada through its subsidiary Crosscontinental Uranium Ltd. and in joint venture with Australian companies Longreach Oil Ltd. and Southern Cross Exploration NL explored for uranium. Gryphon Minerals Ltd. of Australia; Randgold Resources Ltd. of the United Kingdom; and Canadian companies Channel Resources Ltd., Goldbelt Resources Ltd., Orezone Resources Inc., Riverstone Resources Inc., Sanu Resources Ltd., and Volta Resources Inc. continued to explore for gold. Etruscan and Volta also explored for copper. Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Copper.—Volta held three copper/gold prospecting licenses on the Boromo gold belt. The licenses were for the Danyoro, the Malba, and the Souhouera prospects, which made up the 687.5-square-kilometer (km²) Gaoua project in southern Burkina Faso. The company had begun the second phase of diamond drilling at Gaoua in May and announced in November that it planned to have an initial resource estimate completed for two target areas before the end of the first quarter of 2009 (Volta Resources Inc., 2008; 2009, p. 2-4).

Gold.—The Kalsaka gold mine, which is located about 150 km northwest of Ouagadougou, began production in October. The mine was owned and operated by Kalsaka Mining SA, which was a joint-venture of Cluff (78%), IMARB Indústria Metalúrgica (12%), and the Government (10%). The mine was expected to produce about 1,900 kilograms per year of gold (reported as 60,000 troy ounces) (Cluff Gold plc, 2009).

The Taparko-Boroum Mine, which reopened in September 2007, produced 954 kg (reported as 30,667 troy ounces) of gold in 2008. The mine was 90% owned by High River and 10% owned by the Government. Production in 2008 was lower than expected, and the company attributed this decrease to numerous mill shutdowns throughout the year because of continuing mechanical problems with the mill drive-train. High River expected to correct these problems during 2009 and to produce between 1,960 and 2,360 kg (reported as 63,000 and 76,000 troy ounces) of gold during the year. The company also began a feasibility study for the Bissa Group prospect in 2008 and planned to invest \$1.8 million in 2009 to complete the study and determine the viability of a mining and processing facility. The company also planned to invest about \$2.5 million in other exploration concessions within the country in 2009 (High River Gold Mines Ltd., 2009, p. 3-16).

The Youga gold mine, which is located in southern Burkina Faso near the border with Ghana, began production during the third quarter of 2008. The mine produced about 911 kg (reported as 29,305 troy ounces) of gold during the year. Gold production for 2009 was expected to be between 2,500 kg and 2,800 kg (reported as 80,000 and 90,000 troy ounces). Gold reserve estimates at the Youga Mine were reported to be 6.8 million metric tons (Mt) at an average grade of 2.7 grams per metric ton (g/t) gold (Etruscan Resources Inc., 2009, p. 1-3).

The Mana gold mine, which began production in early 2008, produced about 2,300 kg (reported as 74,000 troy ounces) of gold during the year. Semafo, which held a 90% interest in the mine through its subsidiary Semafo Burkina Faso S.A., planned to purchase additional mining equipment during 2009 and to make minor facility modifications to increase plant throughput capacity to 6,000 metric tons per day (t/d) from 2,000 t/d. The company also planned to invest \$4 million in exploration to evaluate the mine's underground potential (Semafo Inc., 2009, p. 11-12).

Volta held gold prospecting licenses for the 244.5-km² Kampti III prospect and for the 48.2-km² Bansie prospect, which were located on the Hounde gold belt, and for the 230-km² Titao Sud, the 204-km² Titao 1, and the 142.2-km² Barga II prospects, which made up the Titao gold project, in the Goren gold belt. The company also held a prospecting license for the 123.5-km² Dahisma prospect in the San Matenga gold belt (Volta Resources Inc. 2009, p. 4-6).

Manganese.—The Kiere Mine, which is located in the Province of Tuy in southwestern Burkina Faso and operated by Burkina Manganèse S.A.R.L. (a subsidiary of Africa China Mining Corp.), opened in December 2008. The mineral resource of the mine was estimated to be 600,000 metric tons (t) of ore at grades ranging between 45% to 55% manganese (U.S. Department of State, 2009a, p. 31).

Weatherly International plc of the United Kingdom completed a bankable feasibility study for the Tambao

manganese deposit on behalf of Dubai-based Wadi Al Rawda Industrial Developments. The Tambao deposit is located in the Tambao region about 340 km northeast of the capital city of Ouagadougou. As of yearend 2008, the results of the feasibility study had been submitted to the Government for assessment, together with an environmental impact statement and an application for a mining license. The mineral resource of the envisioned Tambao Mine was estimated to be 19 Mt at a grade of 50% manganese. The mine was expected to produce about 350,000 metric tons per year (t/yr) during the first 2 years of operation, 550,000 t/yr during the third and fourth years and 1 Mt/yr after the fifth year of operation. The ore was to be transported by truck to an existing rail line at Kaya and from there via rail to the Abidjan Port in Côte d'Ivoire. The feasibility study also envisioned the construction of an extension of the rail line from Kaya to the Tambao Mine (Weatherly International plc, 2008; 2009, p. 1, 5).

Zinc.—Blackthorn Resources Ltd. (formerly AIM Resources Ltd.; name changed on December 16, 2008) announced that it had put the Perkoa zinc mine on care-and-maintenance status, reportedly owing to the more-than-50% reduction in the market price for zinc and the adverse effects of the global financial crisis in obtaining additional capital to complete construction projects at Perkoa on terms acceptable to the company. The Perkoa Mine is located in Sanguie Province about 120 km from Ouagadougou, and 35 km from the town of Koudougou. Kougoudou is linked by road to Côte d'Ivoire, Ghana, and Togo, and by rail to Abidjan Port. The mineral resource at Perkoa was estimated to be 6.7 Mt at a grade of 16.4% zinc and 35.4 g/t silver. The mine was expected to produce about 70,000 t/yr of zinc (AIM Resources Ltd., 2009, p.1-7).

Industrial Minerals

Cement.—Burkina Faso had only one cement plant; the plant had a capacity to produce 550,000 t/yr of cement. The plant was owned by West African Cement S.A. of India and operated under its subsidiary, Diamond Cement Burkina S.A. (World Investment News, 2008; U.S. Department of State, 2009b).

Mineral Fuels and Related Materials

Uranium.—In June 2008, Pancontinental Uranium Corp. of Canada through its subsidiary Crosscontinental Uranium Ltd. signed a joint-venture agreement with Australian companies Longreach Oil Ltd. and Southern Cross Exploration NL for the exploration of the Oursi uranium concession area in northeastern Burkina Faso. The Oursi concession tenement, which covers an area of 500 km², consists of two areas that are prospective for uranium mineralization; they are known as the Agalsa area and the Tin Dioulaf area. A detailed airborne geophysical survey of the area was completed in October and results reportedly revealed several uranium radiometric anomalies. As of yearend 2008, the joint venture was in the process of conducting ground inspections of the concession area (Pancontinental Uranium Corp., 2008; 2009, p. 9).

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SAO TOME E PRINCIPE

Mining did not play a significant role in Sao Tome e Principe's economy. Agriculture was the mainstay of the economy and accounted for about 16% of the country's GDP. Mineral production was limited to clay and volcanic rock; potential exists, however, for the development of the country's petroleum industry. All other mineral product requirements were imported. The country has traditionally relied on foreign assistance from various donors, including the African Development Bank, the European Union, Portugal, Taiwan, the United Nations Development Program, and the World Bank.

On February 22, 2008, the country was accepted as a candidate country to join the Extractive Industries Transparency Initiative (EITI) and received a grant of support from the EITI multidonor trust fund. Sao Tome e Principe had until March 9, 2010, to undertake EITI validation (Extractive Industries Transparency Initiative, 2009; U.S. Department of State, 2009).

Commodity Review

Mineral Fuels

Petroleum.—The National Petroleum Agency (NPA) of Sao Tome e Principe was the public entity responsible for the management and implementation of Government policies in all areas related to hydrocarbons, and for tracking and regulating all economic activities related to the petroleum industry. The agency was created by law No. 5 of June 2004. Petroleum Geo-Services (PGS) of Norway, which had been working in Sao Tome since 2001, provided technical training to NPA staff during the year on the use of geo-technical software to be used at a new technical data room at NPA facilities. PGS acquired 10,000 km of marine seismic exploration data to help determine

the country's offshore petroleum potential (National Petroleum Agency of São Tomé and Príncipe, 2008, 2009).

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TABLE 1
BENIN AND BURKINA FASO: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Country and commodity	2004	2005	2006	2007	2008
BENIN					
Cement, hydraulic	1,100	1,100	1,489 ³	1,550 ³	1,500
Clay	21,000	21,000	72,196 ³	77,295 ³	77,000
Gold	20	20	24 ³	19 ³	20
Gravel	29,000	29,000	10,558 ³	25,348 ³	25,000
Limestone	NA	NA	915 ³	1,057 ³	1,000
Marble	NA	NA	278 ³	342 ³	300
Sand	NA	NA	5,250	5,500	5,500
BURKINA FASO⁴					
Cement	30,000	30,000	30,000	30,000	30,000
Dolomite	3,000	3,000	3,000	3,000	3,000
Gold	1,125 ³	1,397 ³	1,571 ³	2,250 ³	7,633 ^{3,5}
Granite	300,000	300,000	300,000	300,000	300,000
Phosphate rock:					
Gross weight	2,400	2,400	2,400	2,400	2,400
P ₂ O ₅ content	650	650	650	650	650
Pumice and related volcanic materials	10,000	10,000	10,000	10,000	10,000
Salt	5,000	5,000	5,000	5,000	5,000
Stone, marble	100,000	100,000	100,000	100,000	100,000

NA Not available.

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

²Table includes data available through June 30, 2009.

³Reported figure.

⁴In addition to the commodities listed, sand and gravel and other construction materials are produced, but information is inadequate to make reliable estimates of output.

⁵Includes artisanal mining, which was estimated to be 1,600 kilograms.

TABLE 2
BENIN AND BURKINA FASO: STRUCTURE OF THE MINERAL INDUSTRIES IN 2008

(Metric tons unless otherwise specified)

County and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
BENIN				
Cement		Société des Ciments d'Onigbolo (Amida Group, 100%)	Onigbolo plant	450,000 cement; 500,000 clinker.
Do.		Ciments du Benin S.A. (Scancem International AS, 48.7%)	Cotonou plant	275,000 cement.
Do.		Société des Ciments du Benin (Government, 50%, and LaFarge Group, 50%)	do.	700,000 cement.
BURKINA FASO				
Cement		Diamond Cement Burkina S.A. (West African Cement S.A.)	NA	550,000.
Gold	kilograms	Société des Mines de Taparko (High River Gold Mines Ltd., 90%, and Government, 10%)	Taparko-Boroum Mine 200 kilometers from Ouagadougou	3,100.
Do.	do.	Cluff Gold plc, 78%; IMARB Indústria Metalúrgica, 12%; Government 10%	Kalsaka Mine, 150 kilometers west of Ouagadougou	1,900.
Do.	do.	Etruscan Resources Inc., 90%, and Government, 10%	Youga Mine	2,700.
Do.	do.	Semafo Inc., 90%, and Government, 10%	Mana Mine	3,900.
Manganese		Burkina Manganèse S.A.R.L.	Kiere Mine	NA.
Zinc		Aim Resources Ltd., 90%, and Government, 10%	Perkoa Mine	68,900. ¹

Do, do. Ditto. NA Not available.

¹On care and maintenance.

