

2009 Minerals Yearbook

BENIN, BURKINA FASO, AND SAO TOME E PRINCIPE

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

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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. In 2009, the real GDP grew by 3.2% compared with 5% in 2008; the per capita GDP was \$1,500 (U.S. Department of State, 2010).

Benin's exports to the United States were valued at about \$441,000 in 2009 compared with about \$31 million in 2008 and \$5 million in 2007. Imports from the United States were valued at about \$397 million in 2009 compared with about \$846 million in 2008 and \$289 million in 2007. These included nearly \$84 million of fuel oil; \$4 million of excavating machinery; \$764,000 of specialized mining equipment; \$296,000 of drilling and oilfield equipment; and \$17,000 of petroleum products (U.S. Census Bureau, 2010a, b).

Production

Data on mineral production have been estimated for 2009 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

Industrial Minerals

Cement.—Ciments du Sahel S.A. of Senegal was in the process of building a new cement plant 150 kilometers southeast of the capital city of Cotonou. The cement plant, which was to be named New Cement Works of Benin (NOCIBE), would have a production capacity of 1.2 Mt/yr. About 3,500 jobs were expected to be created during the first phase of the project, 400 of which would remain as permanent jobs upon completion of the plant. Benin's annual cement deficit was estimated to be 1 Mt/yr. Benin exported about

180,000 metric tons per year of cement to Nigeria (African Manager, 2009).

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BURKINA FASO

Mining did not play a significant role in Burkina Faso's economy. The gold sector, however, is likely to become a significant contributor to the country's GDP owing to the opening in 2008 of the Kalsaka, the Mana, and the Youga Mines and the commissioning of the Inata Mine in 2009. The country's investment and mining codes, which were revised in 2004, reportedly have triggered renewed interest by investors in the mining industry. Exploration for copper, gold, and uranium was ongoing throughout the year. More than 80% of Burkina Faso's population relied on subsistence agriculture, and at least 20% of the Government budget was financed from international aid (U.S. Department of State, 2010).

Production

Gold production increased by about 73% to 13,181 kilograms (kg) compared with 7,633 kg produced in 2008. 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

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Copper.—Volta Resources Inc. held a prospecting license for the Gaoua copper-gold porphyry project. A mineral resource estimate completed by SRK Consulting Ltd. of the

United Kingdom in 2009 indicated that the deposits at Gaoua hosted an initial inferred resource of 82.6 million metric tons (Mt) of ore at an average grade of 0.40% copper and 0.40 gram per metric ton (g/t) gold (Volta Resources Inc., 2010, p. 4-5).

Gold.—Gold production from the Kalsaka Mine decreased by 9% to 1,693 kg compared with 1,866 kg in 2008. The mine was owned and operated by Kalsaka Mining S.A., which was a joint venture of Cluff Gold plc of the United Kingdom (78%), IMARB Indústria Metalúrgica of Brazil (12%), and the Government (10%). The company attributed the decrease in production to the processing of uncharacteristically fine-grained ore at one of the mine's pits, which required additional cement for agglomeration and took time to optimize, and to unexpected maintenance downtime caused by the failure of the agglomeration drum tyres. The Kalsaka Mine was expected to produce about 2,200 kg in 2010 (Cluff Gold plc, 2010, p. 8-9).

At the Taparko-Boroum Mine, gold production increased by about 225% to 3,096 kg compared with 954 kg in 2008 mostly owing to improved productivity and the mining of higher ore grades. High River Gold Mines Ltd. of Canada was the company that operated the mine through its 90%-owned subsidiary, Société des Mines de Taparko S.A. The remaining 10% ownership was held by the Government (High River Gold Mines Ltd., 2010, p. 4, 10-11).

The Youga gold mine, which is located in Boulgou Province about 180 km from the capital city of Ouagadougou in southern Burkina Faso, produced a total of 2,018 kg of gold in 2009 compared with 911 kg in 2008. The mine, which began production in February 2008, was owned by Etruscan Resources Inc. (90%) and was operated by the company's subsidiary Burkina Mining Company S.A. (Etruscan Resources Inc., 2010, p. 12-13).

Gold production from the Mana Mine increased by 107% to 4,774 kg compared with 2,302 kg in 2008. The increase in production was mostly owing to the commissioning of the first phase of an expansion program aimed at increasing production capacity at the processing plant. Phase two of the program which would further increase throughput at the plant by 6,000 metric tons per day of ore was scheduled to be completed by the second quarter of 2010 (Semafo Inc., 2010, p. 9).

In June 2009, Avocet Mining plc of the United Kingdom acquired Wega Mining ASA of Norway's 90% interest in the Inata open pit gold mine. The mine, which is located about 220 km north of the capital of Ouagadougou, produced its first gold on December 20. As of December 31, measured and indicated resources at Inata were estimated to be 32.1 Mt at an average grade of 1.64 g/t gold. The mine was expected to produce between 2,800 kg and 3,400 kg in 2010 and about 3,700 kilograms per year (kg/yr) of gold thereafter, and would employ 300 people (Avocet Mining plc, 2009a; 2009b, p. 6).

On February 25, IAMGOLD Corp. of Canada, through its subsidiary IAMGOLD Burkina Faso Inc., acquired a 90% interest in the Essakane gold project from Orezone Resources Inc. The Essakane project is located about 330 kilometers northeast of Ouagadougou. Orezone had begun construction of a mine at Essakane in September 2008. In 2009, the construction of the mine was ahead of schedule; commercial production was expected to begin in August 2010. As of December 31, 2009, measured and indicated resources at Essakane were estimated

to be 110.5 Mt at an average grade of 1.33 g/t gold. Once in operation, the mine was expected to produce about 9,800 kg/yr of gold (IAMGOLD Corp., 2010, p. 18, 61, 65).

Zinc.—The Perkoa zinc project continued to be under a care-and-maintenance program in 2009, although construction work to complete the process plant footings and foundation continued throughout the year. Blackthorn Resources Ltd. of Australia (the company that was developing the project) had made a decision to suspend construction work at Perkoa in 2008, citing a reduction in the market price for zinc and the company's inability to obtain additional capital to complete construction projects. The company was seeking a partner with which to jointly develop Perkoa and to resume operations in 2010. The Perkoa Mine is located in Sanguie Province about 120 km from Ouagadougou and 35 km from the town of Koudougou. Total measured and indicated resources at Perkoa were estimated to be 6.7 Mt at a grade of 16.4% zinc and 35.4 g/t silver (Blackthorn Resources Ltd., 2010, p. 3, 7).

Mineral Fuels and Related Materials

Uranium.—Crosscontinental Uranium Ltd. of Canada, which held an exploration license for the Oursi uranium concession in northeastern Burkina Faso, temporarily postponed all uranium exploration activities in the country. The company reported that it had applied for additional permits to explore for uranium in other prospective areas within the country, but that the Government had been slow in processing the applications owing to the Government's interest in developing new policies with respect to uranium mining. Crosscontinental was a subsidiary of Pancontinental Uranium Corp. and held a 35% interest in the Oursi concession area. The concession tenement covers an area of 500 square kilometers and consists of two target areas that are prospective for uranium mineralization. A detailed airborne geophysical survey of these areas was completed in October and results reportedly revealed several uranium-related radiometric anomalies (Pancontinental Uranium Corp., 2010, p. 3, 7, 10).

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SAO TOME E PRINCIPE

Mining did not play a significant role in Sao Tome e Principe's economy. The services sector, in particular, tourism, accounted for about 71% of the GDP. In 2009, the real GDP grew by 4% and the per capita GDP was \$1,174. Mineral production was limited to clay and volcanic rock, although information was inadequate to make reliable output estimates for these commodities. Potential exists for the development of the country's petroleum industry. All other mineral product requirements were imported. Sao Tome e Principe's economy 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 (U.S. Department of State, 2010).

Commodity Review

Mineral Fuels

Petroleum.—The National Petroleum Agency 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 Government planned to launch a new licensing round for six blocks within the Nigeria-Sao Tome and Principe Joint Development Zone (JDZ) in March 2010. Houston-based Environmental Remediation Holding Corp. (ERHC) and Equator Exploration of the United Kingdom were each given the right to hold a 100% ownership in two of the six blocks and a 15% interest in any other two of their choosing. ERHC had helped the Government peg out blocks in the zone in 1997, and at the time had signed an agreement of first refusal for blocks that were to be held for auction within the JDZ (Africa Energy Intelligence, 2009).

China Petroleum and Chemical Corp. (SINOPEC) planned to drill its first well in Block 2, which is located offshore Sao Tome e Principe within the JDZ. SINOPEC was considering taking over Addax Petroleum Ltd's 14.33% interest in Block 2 and Addax's stakes in three other Blocks within the JDZ (Rigzone.com, 2009).

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

(Metric tons unless otherwise specified)

Country and commodity		2005	2006	2007	2008	2009
BENIN						
Cement, hydraulic	thousand metric tons	1,100	1,489 3	$1,550^{-3}$	1,500	1,500
Clay		21,000	72,196 ³	77,295 ³	77,000	77,000
Gold	kilograms	20	24 3	19 ³	20	20
Gravel	cubic meters	29,000	10,558 3	25,348 3	25,000	25,000
Limestone	thousand metric tons	NA	915 ³	1,057 3	1,000	1,000
Marble		NA	278 3	342 3	300	300
Sand	thousand cubic meters	NA	5,250	5,500	5,500	5,500
BURKINA FASO ⁴						
Cement		30,000	30,000	30,000	30,000	30,000
Dolomite	cubic meters	3,000	3,000	3,000	3,000	3,000
Gold	kilograms	1,397 ³	1,571 3	2,250 3	7,633 3,5	13,181 3,5
Granite	cubic meters	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 October, 14, 2010.

³Reported figure.

⁴In addition to the commodities listed, manganese, 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.

${\it TABLE~2}$ BENIN AND BURKINA FASO: STRUCTURE OF THE MINERAL INDUSTRIES IN 2009

(Metric tons unless otherwise specified)

		Major operating companies			
Country and commodity		and major equity owners	Location of main facilities	Annual capacity	
BE	ENIN				
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.	
Do.		New Cement Works of Benin (NOCIBE)	150 kilometers southeast of Cotonou	1,200,000 cement. ¹	
BURKI	NA FASO				
Cement		Diamond Cement Burkina S.A. (West African Cement S.A.)	NA	550,000.	
Gold	kilograms	Société des Mines de Taparko S.A. (High River Gold Mines Ltd., 90%, and Government, 10%)	Taparko-Boroum Mine, 200 kilometers from Ouagadougou	3,100.	
Do.	do.	Kalsaka Mining S.A. (Cluff Gold plc, 78%; IMARB Indústria Metalúrgica, 12%; Government 10%)	Kalsaka Mine, 150 kilometers west of Ouagadougou	1,900.	
Do.	do.	Burkina Mining Company S.A. (Etruscan Resources Inc., 90%, and Government, 10%)	Youga Mine, 180 kilometers southeast of Ouagadougou	3,100.	
Do.	do.	Semafo Burkina Faso S.A. (Semafo Inc., 90%, and Government, 10%)	Mana Mine, 200 kilometers west of Ouagadougou	3,700.	
Do.	do.	Avocet Mining plc, 90%, and Government, 10%	Inata Mine, 220 kilometers north of Ouagadougou	3,700.	
Do.	do.	IAMGOLD Burkina Faso Inc. (IAMGOLD Corp., 90%, and Government, 10%)	Essakane Mine, 330 kilometers northeast of Ouagadougou	9,800.2	
Manganese		Burkina Manganèse S.A.R.L.	Kiere Mine	NA.	
Zinc		Blackthorn Resources Ltd., 90%, and Government, 10%	Perkoa Mine, Sanguie Province, 35 kilometers from the town of Koudougou	68,900. ³	

Do., do. Ditto. NA Not available.

¹Under construction.

²Under construction. The Essakane Mine was expected to be in operation in August 2010.

³Under construction. The project was placed on care-and-maintenance status in 2008 and continued to be under care and maintenance in 2009.