THE MINERAL INDUSTRY OF

BENIN

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The production of mineral commodities, primarily cement and crude petroleum, represented a minor part of the economy of Benin. (See table 1.) Agriculture, commerce, and trade accounted for more than 80% of the country's gross domestic product (GDP), which was estimated to be about \$2.3 billion.\(^1\) Real GDP growth was estimated to have declined to 4.4% in 1998 from 5.6% in 1997 (International Monetary Fund, December 22, 1998, Benin—Enhanced structural adjustment facility policy framework paper, 1998-2001, accessed May 27, 1998, at URL http://www.imf.org/external/np/pfp/Benin/index.htm).

Regulation of mineral extraction industries rests with the Ministrère des Mines, de l'Energie, et de l'Hydraulique (Ministry). Act No. 83-003 of May 1983, which was the Benin Mining Code, Decree 89-296, implemented the Code's regulations, and Act No. 83-004 addressed fiscal policy affecting mineral development. The Government's recently adopted policy of actively encouraging foreign investment has been successful in the precious-metals sector. In 1998, the Ministry was tasked to promote construction materials, dimension stone, and peat and to strengthen the research capacities of the Office Béninois de Recherches Géologiques et Minières (OBRGM).

A new mining code was being considered by parliament. OBRGM assumed the mineral-development administration duties of the former Office Béninois des Mines (OBEMINES). The Government also created the Beninese Agency for the Environment and, on July 31, 1998, promulgated an environmental law. Associated environmental management implementing regulations were being assembled.

Benin was a country of almost 6 million people but had not the mining tradition that is found in other West African countries. Several illicit alluvial gold operations were underway, operated by non-Beninese West Africans. Formal gold exploration was concentrated in two areas in the Atacora gold zone in northwestern Benin—the Natitingou- Perma and the Djougou/Alédjo-Koura. Companies active in exploration included A.M.I. BENIN on a 772-square-kilometer (km²) concession, BHP World Minerals on concessions P6 and P7, Coronation International Mining Corp. of the United Kingdom on three exploration licences that covered 1,674 km², Hansa GeoMin Consult GmbH of Germany, Oracle, Sani Mines International Inc. of Canada on a 647-km² concession, and Texlon. In 1998, Resolute Ltd. of Australia secured an option to acquire 50% interest in all of BHP's West African

concessions.

Benin's three cement companies, the Société des Ciments d'Onigbolo and the clinker-grinders Cimentierie du Bénin S.A. (Scancem International, 48.7% interest) and Société des Ciments du Bénin, have a nameplate production capacity of about 875,000 metric tons per year (t/yr) sufficient to fulfill the domestic demand that was estimated at just more than 500,000 t/yr (Hargreaves and others, 1998). Severe power shortages affected Benin from March through June 1998 to the extent that the cement companies were authorized to import cement to cover production shortages.

In the petroleum sector, West Africa Resources, a subsidiary of Abacan Resource Corp. of Canada, and Addax Petroleum (Benin) Ltd, a subsidiary of Addax Petroleum Ltd. of Switzerland, acquired the deepwater offshore Block 4 in February 1997. Abacan and Addax also were partners on offshore Block 1, which surrounded the Government-operated Sèmè oilfield. In July 1997, Abacan acquired 100% participating interest in Blocks 1 and 4.

Petroleum production from Sèmè ceased in December 1998. The Government was considering alternatives for removal of the surface facilities and was investigating funding options, including a loan from the International Development Association, an affiliate of the World Bank.

Société Tarpon-Benin, owned by BBFI Benin Ltd., local investors, Profco Resources Ltd. of Canada, and Trans Coastal Industries Inc. of Canada, drilled the 2,761-meter Tarpon Ike No. 1 in 1997 on offshore Block 2. Well tests encountered only noneconomic returns. The wildcat well was plugged and abandoned, and in 1998, the companies agreed to relinquish the concession (Transatlantic Petroleum Corp., 1999). Archean Benin Energy S.A.R.L., a subsidiary of Archean Energy Ltd. of Canada, acquired a production-sharing contract for offshore Block 3 in 1997 and had existing seismic data reprocessed during 1998 (Yahoo, December 2, 1997, Archean Energy Ltd., accessed on December 4, 1997, at URL http://biz.yahoo.com/ prnews/971202/ archean benin partic 1.html). In 1998, Deminoil, a subsidiary of Demindex of South Africa, and Thompson & Van Eyck were awarded the petroleum concession to onshore Block A (World Oil, 1998).

Benin, with a total installed electricity generating capacity of 54-megawatts (MW), traditionally imported much of its power needs, about 100 MW had been imported from the Akosombo hydroelectric plant in Ghana, and 60 MW, from the Nangbeto hydroelectric plant in Togo. In early 1998, drought curtailed regional electricity generating capability, resulting in Benin being limited to about 5 MW from Ghana and 15 MW from Togo.

¹Where necessary, values have been converted from Communauté Financière Africaine francs (CFAf) to U.S. dollars at the average 1998 rate of CFAf588.6=US\$1.00.

In June 1998, Abacan Power (Benin) Ltd., a subsidiary of Abacan Resources; Enron Benin Power Ltd., a subsidiary of Enron Corp. of the United States; and the Government of Benin agreed to proceed with the construction of a 160-MW natural-gas-fired electricity generating plant in Cotonou. Enron was to build, own, and operate the plant and a 60-kilometer (km) natural gas pipeline to Abacan's offshore Aje natural gas discovery on OML 113 in Nigeria (formerly OPL 309). Proposed plant startup was December 1999.

Benin's transportation infrastructure consisted of 16,200 km of roads and the 438-km railroad from Cotonou to Parakou. To enhance the country's active reexport sector, the Government proposed a number of transportation sector reforms. The Government also hoped to increase the mining sector's contribution to national economic and social development, including job creation, increased diversity of exports, and as a source of foreign exchange and royalty revenue. It has proposed to establish a geologic information management system, to prepare a development strategy for the mining sector, and to revise the mining code.

Mineral-resource development opportunities identified by the Government included 10 million tons (Mt) of brick clay deposits at Zogbodomé, 5 Mt at Gbédji-Kotovi, and 1 Mt at Massi-Lomé; 1 Mt of kaolin at Adakpamé; feldspar; 506 Mt of iron at 46% to 52% iron with 13% to 15% silica at Loumbou-Loumbou and Madécali; more than 90 Mt of limestone usable

for cement at Onigbolo and 17 Mt at Massé; about 33 million Mt of sandy limestone at Bakpodji; 6 Mt of marble at Idadjo; 12 Mt of peat near Cotonou; the 5.5 Mt of phosphate grading 25.2% P₂O₅ at Mékrou; silica sand; and a number of potential ornamental stone quarrying sites, including charnockite at Pototoumana, granite at Gobada and Parakou, granodiorite at Tebou, monzonite at Bétérou, and rhyolite at Pako. OBEMINES also had documented occurrences of columbiumtantalum, industrial diamond, gypsum, mica, nickel, rare earths, rutile, tungsten, and zirconium in Benin (Ministry of Energy, Mining, and Hydraulics, 1992; Ministère des Mines, de l'Energie, et de l'Hydraulique, written commun., 1997; Direction de la Promotion des Investissements, October 25, 1996, Note a l'attention des investisseurs potentiels, accessed May 25, 1999, at URL http://planben.intnet.bj/pne// dpinote.htm).

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TABLE 1 BENIN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ $2 \slash$

(Metric tons unless otherwise specified)

				1996	1997	1998
Cement, hydraulic		465,491 3/	578,827 3/	360,000 r/	450,000 r/	520,000
Gold	kilograms	300	300	300	500	500
Petroleum, crude	thousand 42-gallon barrels	884 3/	654 3/	600 r/	400 r/	200

r/ Revised.

 $^{1/\}operatorname{Includes}$ data available through May 28, 1999.

^{2/} In addition to the commodities listed, a variety of industrial minerals and construction materials (clays, gypsum, sand and gravel, and stone) are produced; but information is inadequate to make reliable estimates of output.

^{3/} Reported figure.