

THE MINERAL INDUSTRY OF BOTSWANA

By Philip M. Mobbs

Botswana was the one of the world's leading producers of diamond, which remained the foundation of the country's economy in 1995 as it had for nearly two decades. Nickel and copper also played significant, though smaller, roles in the national economy. Other valuable minerals produced included agate, clay, coal, cobalt, gold, salt, sand, silver, soda ash, and stone. Diamond was the most notable target of exploration during 1995; however, much of Botswana's potential mineral resources remained unexplored, buried under the sands of the Kalahari Desert.

The mineral industry was the principal reason the country had a high per capita gross domestic product (GDP) and a surplus in balance of payments. Mining accounted for about 33% of the GDP, which was approximately \$4.5 billion in 1995.¹ The mineral industry also provided about 80% of the value of national exports, as well as about 50% of Government revenue.

The Government recognized and actively promoted the nation's mineral potential, and its stable political history has sustained interest in the country by the mining industry and other international investors. The Government's development-oriented fiscal prudence, free market philosophy, and flexibility and fairness in dealing with investors were also factors in attracting foreign investment. The Government, in order to reduce the economy's heavy dependence on diamond, was interested in industrial diversification. Private-sector growth and job creation, especially in manufacturing and tourism, were emphasized as national development objectives.

The Government encouraged foreign investment in Botswana. There were no restrictions on reinvestments or repatriation of earnings and capital. Botswana has never nationalized or expropriated any foreign business. It carefully followed its established rules for investment, and its courts repeatedly upheld contracts. Government corruption was rare and penalties severe. In 1995, corporate income taxes were reduced from 35% to 25%. An investment guarantee agreement with the United States was signed in 1968. Botswana also was a member of the Multilateral Investment Guarantee Agency, the World Bank's political insurance unit.

The Ministry of Mineral Resources and Water Affairs had responsibility for the mining sector. The Ministry granted reconnaissance permits (for 1-year general prospecting) and prospecting licenses (for 3 years plus two 2-year extensions with minerals and area specified). It negotiated 25-year

mining leases with project plans, financial aspects, and lease extension conditions specified. Subunits of the Ministry also carried out geological surveys and made mine safety and environmental inspections and collected mineral production information. The Ministry's Department of Mines maintained a register of mineral investment opportunities.

Mining activity was regulated by the Mineral and Mining Act. Mineral rights, vested in the state, were separate from surface rights. On significant mineral ventures, the Government normally exercised its legal right to acquire for free a 15% to 25% equity interest. Royalties also were collected on certain mineral sales, such as 3% on base metals, 5% on gold, and 10% on diamonds.

Botswana was the world's second largest producer in volume of gem-quality diamond, after Australia. The Jwaneng and Orapa Mines alone accounted for approximately 20% of the world's gem-quality diamond production. In 1995, diamond production increased from 1994 levels. (*See table 1.*) Salt and soda ash output continued to rebound. Gold production plummeted with the closure of the Monarch Mine, and agate production dropped in response to low demand.

Approximately 21 mining licenses were in effect. An additional five leases were granted during the year, four for aggregates and one for soda ash.

Mineral commodities continued to dominate the country's exports, with Europe being the principal destination of mineral exports. More than 70% of total export value of \$2.1 billion was attributed to diamond shipments in 1995. Cobalt, copper, and nickel content of smelter matte and soda ash contributed about 10% of total export value.

The Government and Anglo American Corp. of South Africa Ltd. (AAC) were significant partners in Botswana's mineral industry. (*See table 2.*) De Beers Centenary AG, an AAC-affiliated company, owned one-half of Debswana Diamond Co. (Pty.) Ltd. AAC had an equity interest in Botswana RST Ltd. that was the Government's partner in BCL Ltd. (BCL), the nickel-copper-cobalt producer. AAC holdings also included substantial interests in Tati Nickel Mining Co. (Pty.) Ltd., Botswana Ash (Pty.) Ltd., and Morupule Colliery (Pty.) Ltd. Besides the BCL, Debswana, and Botswana Ash operations, the Botswana industry consisted of a number of medium- and small-scale mines producing agate, aggregates, brickmaking clay, gold, and dimension stone.

Employment in the domestic mining industry was slightly more than 5% of a total formal (wage-earning) employment of about 250,000. Major mines, such as the BCL and Botswana Ash operations, were situated in regions with few job opportunities. This, coupled with the state's ownership interest in the companies, resulted in the Government's active support of the operations, despite the companies' financial difficulties.

BCL continued to operate under difficult financial conditions. The grade of nickel-copper ore recovered during the year was less than expected. Also during 1995, the Selebi-Phikwe flash smelting furnace was overhauled. The 57-day shutdown resulted in slightly reduced matte output, although the cobalt content of the smelter matte was increased. Matte was shipped to the Empress Nickel Refinery Ltd. in Eiffel Flats, Zimbabwe, and Nikkelverk A/S in Kristiansand, Norway, for refining.

In July, Tati Nickel Mining Co. began production from the Phoenix open pit mine near Francistown. Eighty thousand metric tons of nickel-copper concentrate from the Phoenix Mine and 60,000 metric tons (t) of nickel-copper concentrate from the Selkirk Mine were toll smelted at BCL.

Gold production had been predominantly from the Monarch Mine, with some production provided by Minerals Holdings Botswana (Pty.) Ltd.'s tailings dump retreatment and Kudu Mining Co. (Pty.) Ltd.'s Rainbow Mine. Southern Africa Joint Venture, a consortium of Australian companies, began test mining of the oxide ore of the Golden Eagle open pit in February 1995 and was reprocessing tailings from the Map Nora Mine, which Phelps Dodge Mining Co. of the United States had operated from 1989 to 1991. Gallery Resources NL agreed to buy out St. Francis Mining NL's 47.5% interest and Celtic Trust Ltd.'s 5% interest in the Southern Africa Joint Venture. Mining and Development (Botswana) (Pty.) Ltd. became Monarch Goldfields Botswana (Pty.) Ltd., which held the Monarch and Golden Eagle Mines, and Shashe Holdings (Pty.) Ltd., which owned the flooded Shashe Mine and the Map Nora Mine tailings. During May 1995, the Monarch Mine was placed on care and maintenance, and the Golden Eagle test was suspended as drilling and delineation work began at both mines. Upgrading the recovery plant capacity at the Monarch Mine was the subject of a feasibility study begun during 1995.

At yearend, there were more than 500 active prospecting licenses in Botswana, approximately 70% of which were for diamond. De Beers Prospecting Botswana (Pty.) Ltd. continued its countrywide prospecting. It processed samples from prospects in the Gope area in conjunction with Falconbridge of Canada. Debswana increased the processing capacity at the Jwaneng Mine with the addition of a fourth treatment line.

A number of international mining companies were actively exploring for diamond. AfriOre Ltd. of Canada, formerly Amarado Resources Ltd., was involved in a joint venture on the Kokong West property operated by a local subsidiary of

Gencore of South Africa. BHP Minerals International Exploration Inc.'s exploration activity was earning BHP 51% interest in AfriOre's Gope diamond prospect. Auridiam Consolidated NL of Australia continued its evaluation of three diamondiferous kimberlite pipes in the Orapa area. Botswana Diamondfields Inc. of Canada completed the evaluation of the soil samples taken on its Jwaneng, Mopipi, Okwa, and Orapa West licenses and completed magnetic surveys of the Makgadikgadi and Okwa license areas. Both the Mopipi and Makgadikgadi prospects were drilled during 1995.

The Fancamp Resources Ltd., Scintilore Explorations Ltd., and Solidor Resources Inc. joint venture on the Gemsbok diamond project floundered. Based on their interpretation of the airborne magnetic survey, Fancamp and new partner, Freewest Resources Ltd. of Canada, were reevaluating the Gemsbok lease as a nickel-copper prospect.

Redaurum Ltd. of Canada was actively exploring its leases. Southern Africa Minerals Corp. sampled its Kokong, Mabuasehube, and Mosomane diamond prospects as well as 26 kimberlites on its Molopo licenses. The corporation drilled eight kimberlites on the Lekgodu Property, 100 kilometers southwest of Molopo. SouthernEra Resources Ltd. of Canada transferred most of its interest in five exploration prospects to De Beers Consolidated Mines Ltd. of South Africa.

TNK Resources Inc. of Canada reprocessed an airborne magnetic survey of its Gope group of licenses in central Botswana and began a preliminary sampling program on 55 targets identified by the survey. TNK owned 66% of the Midswana Diamond Exploration Corp. that was working the Middlepits Prospect in southwestern Botswana. Trillion Resources Ltd. explored the Shashi diamond prospect with two other Canadian companies, Skeena Resources Ltd. and Nickelodeon Minerals Inc. Trillion also evaluated samples collected on the Sowa Diamond project with Winspear Resources Ltd. and Consolidated Venturex Holdings Ltd.

Lazare Kaplan Botswana (Pty.) Ltd. (Lazare Kaplan International Inc. of the United States, 60%; Botswana Development Corp., 34.9%; and Government of Botswana, 5.1%) operated a diamond cutting and polishing plant in Molepolole. The operation, opened in 1993, concentrated on production of smaller stones (less than 0.18 carat).

Financial losses continued to accrue for Soda Ash Botswana (Pty.) Ltd. (SAB). The company initiated liquidation in May 1995. Former SAB shareholders reacquired the assets of the company, and in September 1995, Botswana Ash (Pty.) Ltd. officially began soda ash operations with significantly lower debt service.

Coal production continued to be constrained by less than expected demand by major consumers, especially SAB/Botswana Ash.

Transportation facilities were good on the eastern fringe of the country. Both highway and railroad connected landlocked Botswana with South Africa and Zimbabwe.

Electric generating capacity consisted of the 132-megawatt (MW) Morupule coal-fired plant and the 60-MW coal-fired plant at Selebi-Phikwe. About two-thirds of the power generated was consumed by the mining industry, most notably BCL and Debswana. Water availability was a major constraint affecting the mineral industry in Botswana.

Heavy exploration activity was expected to continue in the short term, and this may result in new commercial mineral operations. The country's favorable geologic environment and mineral investment climate should continue to make Botswana a target for foreign mineral investment.

¹Where necessary, values have been converted from Botswana Pula (P) to U.S. dollars at the rate of P2.77=US\$1.00 for 1995.

Major Sources of Information

Ministry of Mineral Resources and Water Affairs
P.O. Box 0018

Gaborone, Botswana
Telephone: (267) 360-4600
Fax: (267) 372-738

Department of Mines

P.O. Box 0049
Gaborone, Botswana
Telephone: (267) 352-641
Fax: (267) 352-141

Department of Geological Survey

P.O. Box 0014
Lobatse, Botswana
Telephone: (267) 330-428
Fax: (267) 332-013

Major Publications

Department of Mines Annual Report. Republic of Botswana,
Gaborone, annual.

U.S. Department of State. Country Commercial Guide:
Botswana, annual.

TABLE 1
BOTSWANA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1991	1992	1993	1994	1995
Coal, bituminous	783,873	901,452	890,000	900,298	898,383
Cobalt: Smelter output, Co content of matte 3/ 4/	208	208	205	225	270
Copper:					
Mine output, Cu content of ore milled	24,800	24,400	25,100	27,500 r/ e/	24,700 e/
Smelter output, Cu content of matte 3/ 4/	20,576	20,413	20,132	22,780	20,500
Diamond: 5/ kilograms	16,506	15,946	14,730	15,550 r/	16,802
Gemstones, semiprecious 6/ kilograms	205	348	38,900	67,000	20,000
Gold 7/ do.	20	165	192	248 r/	86 8/
Lime	6	--	--	--	--
Manganese ore e/ (45% Mn) 9/	--	1,318	3,700	--	--
Nickel:					
Mine output, Ni content of ore milled	23,500	23,000	23,400	19,042 r/	22,100 e/
Smelter output, matte, gross weight 3/	48,319	48,071	50,780	51,488	49,931
Smelter output, Ni content of matte 4/	19,294	18,873	21,621	19,041	18,100
Salt 10/	2,600	53,708	98,000	186,000	208,126
Sand, construction 11/ cubic meters	340,825	190,305	150,000	140,000	112,000
Soda ash, natural	62,000	123,593	126,000	174,000	211,000
Stone, crushed cubic meters	783,487	804,242	760,000	572,000	860,737

e/ Estimated. r/ Revised.

1/ Table includes data available through May 26, 1997.

2/ In addition to commodities listed, the following were produced, but information was inadequate to reliably estimate output: silver (estimated about 2% of reported gold bullion production) and clay for brick and tile (brick units output reported was 12.7 million for 1992, 20.7 million for 1993, and 24.3 million for 1995 estimated as equivalent in metric tons of clay to 25,000, 41,000, and 48,000, respectively).

3/ Smelter product was granulated nickel-copper-cobalt matte.

4/ Figures also used for recoverable mine output in world production tables appearing in Volume I of the Minerals Yearbook. Included some product from direct smelting ore; i.e., ore not reported as milled.

5/ Assumed to contain about 70% gem and near gem, 30% industrial diamond.

6/ Presumably, principally agate. Reported as sales.

7/ Reported as bullion; historically included silver estimated at about 2%.

8/ Monarch Mine placed on care and maintenance during May 1995.

9/ Production commenced in 1992 and ceased in Nov. 1993.

10/ From natural soda ash production.

11/ Additional production of sand and gravel from small local operations was periodically reported, but information was inadequate to estimate output.

TABLE 2
BOTSWANA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Clay 1/		Lobatse Clay Works (Proprietary) Ltd. (Botswana Development Corp./Interkiln Corp. joint venture)	Lobatse, 70 kilometers south-southwest of Gaborone	50,000 e/
Do.		Makoro Brick and Tile (Pty.) Ltd.	Makoro, 10 kilometers south of Palapye	20,000 e/
Coal		Morupule Colliery (Pty.) Ltd. (Anglo American Corp. of South Africa Ltd. (AAC) and related firms, 93.3%)	Morupule, 270 kilometers north-northeast of Gaborone	1,000,000
Cobalt 2/		BCL Ltd., (Government, 30%; Botswana RST Ltd. (BRST), 70%)	Selebi-Phikwe, 350 kilometers northeast of Gaborone	300
Copper 2/		BCL Ltd. (Government, 30%; BRST, 70%)	do.	20,000
Copper ore		Tati Nickel Mining Co. (Pty.) Ltd. (AAC, 21%; De Beers, 22%; Francistown Mining & Exploration Ltd., 42%; Government, 15%)	Selkirk Mine, 23 kilometers east of Francistown	80,000 3/
Diamond	million carats	Debswana Diamond Co. (Pty.) Ltd. (Government, 50%; De Beers Centenary AG, 50%)	Orapa, Letlhakane, and Jwaneng, respectively 375 kilometers north, 350 kilometers north, and 115 kilometers west of Gaborone	17.5 e/
Gemstones, semiprecious	kilograms	Agate Botswana (Pty.) Ltd.	Processing plant at Pilane, 45 kilometers north of Gaborone	60,000
Do.	do.	Masa Precious Stones (Pty.) Ltd.	Bobonong, east of Selebi-Phikwe	4,000
Gold bullion 4/	do.	Monarch Goldfields Botswana (Pty.) Ltd. (Gallery Resources NL of Australia, 100%)	Monarch Mine, just north of Francistown	600 5/
Nickel 2/		BCL Ltd. (Government, 30%; BRST, 70%)	Selebi-Phikwe, 350 kilometers northeast of Gaborone	22,000
Nickel ore, in concentrate		Tati Nickel Mining Co. (Pty.) Ltd. (AAC, 21%; De Beers, 22%; Francistown Mining & Exploration, 42%; Government, 15%)	Selkirk Mine, near Francistown Phoenix Mine, near Francistown	60,000 6/ 80,000
Salt		Botswana Ash (Pty.) Ltd. (Government, 50%; AECI Chlor-Plastics Ltd., 14%; AAC, 14%, De Beers Centenary AG, 14%; others, 8%)	Sua Pan, 450 kilometers north of Gaborone	650,000
Soda ash		do.	do.	300,000

e/ Estimate. NA Not available.

1/ For brick and tiles.

2/ In nickel-copper-cobalt smelter matte.

3/ Copper content estimated at 2%.

4/ Botswana bullion typically had silver content estimated at 2%.

5/ Mine placed on care and maintenance during May 1995.

6/ Nickel content estimated at 2.4%.