

THE MINERAL INDUSTRY OF OTHER COUNTRIES OF AFRICA

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Burundi¹

Minerals commodity production remained a minor factor in the agriculture-dominated economy of landlocked Burundi. Minor quantities of gold, kaolin, limestone, tantalum, tin, tungsten, and presumably construction materials were produced. Expanding the output of gold and initiating the production of nickel and associated platinum-group metals from a lateritic deposit and phosphate from a carbonatite-apatite deposit did not materialize, although they were of considerable interest to the Government. Nickel exploration by RTZ Corp. of the United Kingdom and Broken Hill Pty. Co. Ltd. (BHP) of Australia remained suspended. No activity was reported on the Butihinda and the Musinga gold deposits.

The periodic eruptions of violence that persisted prior to and during 1995, especially the assassination of the Minister of Energy and Mines, deterred any possible new developments in the minerals sector, despite the good geologic potential for a substantial economic contribution and the Government's demonstrated interest in promoting the industry.

Geologic mapping at the scale of 1:50,000, especially active from the 1950's into the 1970's, revealed mostly Precambrian metamorphic rock formations generally striking north-northeast with the younger formations at lower elevations along the eastern border with Tanzania. The western limb of the Great Rift System was along the western border. Rare-earth deposits were found in older formations in the mountainous western quarter of the country along Lake Tanganyika. Nickel, vanadium, and related metal deposits were found in a number of rather small basic or ultramafic areas between two patches of the oldest basement rock (Archean)—one in the southwest and the other, a small isolated occurrence on the north edge of the easternmost point of the country.

Government policy, laws, and regulations, including those specifically covering mining and petroleum, were designed to attract private investment, particularly by foreign entities. The free-trade (import/export tax-free) zone system covering the entire country launched in 1993 offered many benefits to industrial and commercial ventures. Minerals processing no longer qualified for these benefits, according to a Government announcement in May 1995, which resolved a political controversy over the fact that a gold buyer-refiner,

Affimet, was the only beneficiary. For a number of years, the Government had promoted foreign support for several progressively more detailed studies aimed at exploiting gold, nickel, peat, phosphate, and other mineral resources. Although committed to privatization, the Government apparently still held some degree of ownership of several mineral-related enterprises.

The Ministry of Energy and Mines reported mineral production valued at \$9 million² in 1995. (*See table 1.*)

Although official trade figures were not available, the principal mineral commodity exports were cassiterite, columbium-tantalum, gold, and wolframite were shipped primarily to Europe. Mineral export volume was small compared with that of mineral imports, principally petroleum products, cement, steel, and fertilizer.

Infrastructure included an extensive domestic road network, although only a few main roads were paved. Beyond the border, roads to available railheads were rather poor, except northward through Rwanda into Uganda and Kenya. By this route, the ocean port of Mombasa, Kenya, was about 2,100 kilometers (km) from Bujumbura. Lake vessels were a major mode of transportation on Lake Tanganyika, connecting Bujumbura with several railheads in Tanzania, Zaire, and Zambia. There was an international airport at Bujumbura, as well as a few other airstrips. In much of the country, hydroelectric power was reasonably available and had the potential for additional development. Telecommunications were limited.

The outlook for the minerals industry indicated little change, pending resolution of the political situation. Hydropower potential and the abundance of water were advantages, but export transportation and infrastructural factors in general were not favorable.

Equatorial Guinea³

The Republic of Equatorial Guinea consisted of two main provinces—the volcanic island of Bioko in the Gulf of Guinea and Rio Muni on the African mainland. Walter International and CMS NOMEKO Oil & Gas Co. of the United States continued to develop the Alba gas-condensate field in the Gulf of Guinea, 36 km offshore of Bioko. Crude petroleum production in 1995 was estimated to be 1.9 million barrels. Mobil Oil Equatorial Guinea (75%) and United Meridian International Corp. (25%) of the United

States drilled the Opalo-1 wildcat and two appraisal wells on the Zafiro prospect offshore of Equatorial Guinea. Zafiro was declared to be a commercial field, and the companies planned to begin production.

Decree-Law 9/1981, enacted in 1981 regulated mining activity, except aggregate and radioactive minerals. Petroleum exploration and production in Equatorial Guinea was controlled by Decree-Law No. 7/1981, enacted in 1981, and pursuant to the earlier Hydrocarbons law (Model of Agreement), section II, paragraph 2.8 (E).

Several mineral and geological surveys have been conducted in recent years by various organizations. From 1981 to 1985, France's Bureau de Recherches Géologiques et Minières (BRGM) identified several types of minerals in Rio Muni. The mineral occurrences included bauxite, copper, alluvial gold, ilmenite beach sands, lead, phosphates, and zinc. The Government indicated, however, that further exploration was needed to determine the economic viability of these resources.

Lesotho⁴

In 1995, the mineral industry of Lesotho consisted almost exclusively of diamond production, most of which was from the Liqhobong Complex, about 220 km north-northeast of Maseru, the capital. Precious and industrial diamonds were produced and traded by the De Beers Central Selling Organization. Between 1983 and 1995, this property yielded from 1,000 to 1,500 carats of diamond annually at a grade of 49 carats per 100 tons.

During 1995, Messina Diamond Corp. of Canada negotiated an exploration permit for a 400-hectare area in the Liqhobong Complex. Phase one of this exploration was to include detailed mapping and bulk sampling at a cost of about \$2.5 million. Messina's concession is ideally located in the Maluti Mountains in the vicinity of the Lesotho Highlands Water Development Project, which will provide adequate electricity and water for a mining operation.

According to the Geological Society of Lesotho, other mineral production in 1995 included crushed stone, clay, and sand and gravel, which were used domestically. The Department of Mines and Geology and the Ministry of Natural Resources were responsible for gathering and disseminating basic geologic data in Lesotho.

Rwanda⁵

The minerals industry, principally the mining of columbium-tantalum, tin, and tungsten ores, contributed little to Rwanda's gross domestic product (GDP). Export earnings accounted for about \$45 million. Of this total, agricultural products provided the bulk of export earnings, and the mineral industry contributed about 10%. Because Rwanda has no crude oil reserves or refinery activities, all its commercial energy is imported in the form of refined

petroleum products from Kenya and Tanzania; consumption is less than 2,000 barrels per day. Gasoline and diesel were the principal product imports; however, heavy fuel oil, consumed by a few industrial units, accounted for about 15% of product imports. The prices of gasoline and diesel are determined by the Government; the prices of other petroleum products are not controlled. Most of the distribution and marketing of fuels was conducted by the following privately owned companies: Enterprise Rwandaise de Petrole, Societe Generale de Petrole, and Rwanda Petrolgaz. The Government is a major equity holder in PetroRwanda, which enjoys a market share of approximately 25%.

Mineral-related commodities, mainly petroleum products, structural steel, and cement, were a significant component of imports, constituting about 25% of the total imports valued at \$250 million. Trade was mostly with the United States and Europe. By comparison, agriculture, principally coffee and tea production, generally accounted for one-half of the GDP and more than 80% of exports and employed more than 90% of the labor force. All industry, mostly associated with agriculture, but including the minerals sector, contributed only slightly more than 17% to the GDP.

The structure of the minerals industry consisted mostly of a number of small cooperatives and individual artisanal miners that produced the concentrates of columbium-tantalum, gold, tin, and tungsten ores from scattered locations, generally in a 30-km-wide zone extending east-west through Kigali, the capital. Mineral production data were estimated. (*See table 1.*)

Transportation was tied to the internal network of paved roads, which was considered to be good. Rwanda must rely on neighboring states for access to seaports on the Indian Ocean 1,500 km east of Kigali at Mombassa, Kenya, and Dar es Salaam, Tanzania. Typical c.i.f delivered costs of imports were 30% higher than f.o.b. vessel in port. There were no railroads in Rwanda, but several terminals, to the north in Uganda and to the south and southeast in Tanzania, were located about 400 km from Kigali. Internationally funded improvements to roads in Tanzania to the terminal at Isaka on the railroad to Dar es Salaam were expected to result in much lower costs and transit time. Lake Kivu provided some low-cost transportation to a limited area, and the international airport at Kigali was an important factor.

Ample hydroelectric power was advantageous to further industrial and mine development. The electrical distribution system was however, still rather limited. Since 1993, Rwanda has been able to generate only 60% of its electricity requirement. The diesel-powered Ntakura electric powerplant has not been operative since 1993.

Environmental problems at many small mines were known to exist, but economic conditions were not conducive to their resolution. The outlook on mineral production was for a gradual return to pre-1994 conditions when, and if, the political situation stabilizes. Significant changes are not likely for some time.

São Tomé e Príncipe⁶

The Democratic Republic of São Tomé e Príncipe is a dual island nation south of Nigeria and west of Gabon on the Equator in the Atlantic Ocean. The country's mineral production comprised some small clay and stone open pit operations to supply local construction needs. All other minerals and refined petroleum products were imported.

Swaziland⁷

Although mining was a small but important factor in the economy of the Kingdom of Swaziland, it accounted for about 2% of the GDP. In 1995, overall mining revenue decreased to \$25.8 million compared with that of 1994.⁸ The revenue decrease was attributed to the low production level, the high cost of mining, and a miners' strike in the latter part of 1995. Near yearend, worker issues were still unresolved, and the Swaziland Federation of Trade Unions made it known that if their demands for higher wages and health and safety measures were not met by the end of the year, they would call for mass stay-aways. During 1995, about 1,200 workers were employed by the mining industry; an additional 16,000 Swazis were employed in South African mines, which contributed to the country's economy by wage repatriation.

Four commodities, asbestos, coal, diamond, and quarry products, mainly construction stone, constituted the mining industry of the Kingdom. Despite substantial mining potential, Swaziland has attracted little attention from foreign investors in recent years. The Mining Act of 1958, governing prospecting and mining in the country, seems to be out-of-date, and the Government is in the process of updating this document with a view to attracting international companies.

Swaziland's Bulembu asbestos mine, in operation for more than 50 years, increased production by 7% during the year compared with that of 1994. The mine operator, Consolidated Mining of South Africa, employed 900 workers, down from more than 2,000 in 1986. To keep the production level high, management processed old low-grade slags, as well as high-grade mine output, to take advantage of favorable prices during the year. Also, management was actively engaged in exploration in the adjoining area for future reserves because the present reserves will sustain the current level of production for only another 2 years.

Bulembu Mine authorities regularly test the air and ground water in the mining area for asbestos and report the results to the Geological Survey and Mines Department. Asbestos levels are reportedly well within the Department-mandated levels.

The Maloma Colliery continued coal production from opencast mining at a high-stripping radii and resulted in lower production for 1995 compared with that of 1994. Preparation to take all production facilities underground in 1995 did not materialize. Although the Maloma Mine

produces a high-grade, low-phosphorous anthracite that is in great demand in Europe and Japan, the production difficulties and high royalties prevented the mine from achieving its full potential. To remedy this, the Government was negotiating with international companies to turn over the management of the company; by the end of 1995, however, no changes had been made. In 1995, total production was approximately 172,000 metric tons (t), or about 56,000 t less than that of 1994. As the Matola (Maputo) Coal Terminal in Mozambique still was not available for shipments of Swaziland coal, the company was obliged to truck its product 25 km by road to the railroad terminal where it was transported to the ports of Richard Bay and Durban in South Africa. This mode of transportation added to the expense of coal export from Swaziland.

Diamond production decreased 1.4% during the year. Decline in production was attributed primarily to the physical condition of the mined kimberlite, since the company had to mine unoxidized ore, instead of the weathered kimberlite it had produced in previous years. By yearend, Dokolwayo's diamond mine problems included the depth of the mine, the poor grade of ore, and escalating costs, especially the cost of energy to run the mine. Dokolwayo Mine was owned on a 50-50 basis by the South African company Trans Hex and the Swaziland National Trust Organization, Tibiyu Taka Ngwane. The new negotiated royalty, a decrease of from 12% to 7%, will probably not help future operation of the mine.

In 1995, construction materials, primarily sand, gravel, and crushed stone, were produced in Swaziland. Production of crushed stone was from two commercial quarries operated near Mbabane at Kwalini and Tonkwane. Sluggish demand in the construction industry and the completion of a large road rehabilitation project were the primary causes of the decrease in output. Stone production decreased by 38% compared with that of 1994.

In 1995, there was no commercial gold production in Swaziland. SouthernEra Resources Ltd. of Canada has however applied for two exploration licenses in Swaziland—one to cover the former Piggs Peak Mine area and the other to cover the Daisy Mine area. These locations have produced 9,331 and 590 kilograms (kg) of gold, respectively. SouthernEra was planning a systematic drilling program in 1996 to delineate the mineralized area, as well as the reserves.

Swaziland's road and railroad network was considered to be generally adequate to serve the mining industry, with the exception of the Bulembu asbestos mine. The asbestos mine, located in mountainous terrain, ships its ore by aerial bucketway to the nearby town of Barberton, South Africa. Swaziland's first railroad, from Kadake to the Mozambique border, was built to export ore from the now-closed iron mine northwest of Mbabane. The same line served to export coal when security conditions in Mozambique permitted. The portion of the railroad from Kadake to Matsapha has been inactive for many years, and its rails were recently taken up.

A newer north-south railroad was built to allow the rapid transportation of South African goods, including coal, through Swaziland chiefly to Richards Bay and Durban.

Swaziland's electrical generation capacity and grid have been a problem for industrial development. The generation capacity totaled about 60 megawatts, installed in a number of coal and diesel and (or) fuel oil thermal plants. The coal-fired plants were designed for South African bituminous coal rather than the harder-to-ignite Swaziland anthracite. Projects have been discussed to build anthracite-burning powerplants near the Swaziland coalfields, most notably at Mpaka where the proposal would involve reopening an old coal mine. Swaziland typically imports about \$10 million to \$13 million annually of electricity.

Except for coal, the future of mining in Swaziland is uncertain beyond the turn of the century. According to the operators, current reserves at the country's sole asbestos and diamond mines are nearing depletion. At the Bulembu asbestos mine, HVL Asbestos (Swaziland) Ltd. has expressed cautious optimism for finding modest additional reserves as a result of exploration between the existing ore body and the nearby South African border.

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¹Text prepared June 1997 by Bernadette Michalski.

²Where necessary, values have been converted from Burundi francs (FBu)

to U.S. dollars at the rate of FBu282=US\$1.00.

³Text prepared Mar. 1995 by Thomas P. Dolley, revised Apr. 1996 by Philip M. Mobbs.

⁴Text prepared June 1997 by E. Shekarchi.

⁵Text prepared May 1997 by Bernadette Michalski.

⁶Text prepared Mar. 1995 by Thomas P. Dolley, revised Apr. 1996 by Philip M. Mobbs.

⁷Text prepared May 1997 by E. Shekarchi.

⁸Where necessary, values have been converted from Swazi emalangeni (E) to U.S. dollars at the rate for 1995 of E3.8=US\$1.00.

Major Sources of Information

Ministerio de Minas y Energia

Departamento de Minas y Hidrocarburos
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Malabo, Equatorial Guinea

Telephone (240) 9-2086

Fax: (240) 9-3353

Department of Mines and Geology

Ministry of Water, Energy and Mining

Maseru, Lesotho

Geological Survey and Mines Department

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TABLE 1
OTHER COUNTRIES OF AFRICA: PRODUCTION OF MINERAL COMMODITIES

(Metric tons unless otherwise specified)

Commodity		1991	1992	1993	1994	1995
BURUNDI 1/						
Clays: Kaolin		6,680	9,690	5,000 e/	2,331 r/	4,766
Columbium-tantalum, mine output, ore (30% Ta ₂ O ₅):						
Gross weight e/	kilograms	--	30,000	--	90,000	160,000
Ta ₂ O ₅ content	do.	--	8,527	--	26,125	46,692
Gold e/	do.	25	32	20	20	20
Lime		86	182	150 e/	150 e/	200
Peat e/		10,000 2/	12,000 2/	10,000	10,000	10,000
Tin, mine output, ore (60% SnO ₂):						
Gross weight e/	kilograms	124 2/	183 2/	100	-- r/	25
Sn content e/	do.	74	110	60 r/	-- r/ 2/	15 2/
Tungsten, mine output, ore (65 % WO ₃)						
Gross weight e/	kilograms	--	--	--	--	42,500
WO ₃ content	do.	--	--	--	--	27,493
RWANDA e/ 3/ 4/						
Cement		60,000	60,000	60,000	10,000	10,000
Columbium-tantalum, ore and concentrate:						
Gross weight	kilograms	100,000	100,000	100,000	10,000	149,000 2/
Nb content	do.	34,000	34,000	34,000	3,400	40,000 2/
Ta content	do.	22,000	22,000	22,000	2,200	28,000
Gold, mine output, Au content	do.	1,000	1,000	1,000	100	26 2/
Tin, mine output, Sn content		730	500	400	50	242 2/
Tungsten, mine output, W content		175	175	175	30	47 2/
SWAZILAND 5/ 6/						
Asbestos, crysotile fiber		13,900	32,300	33,900	26,720	28,570
Coal, anthracite	thousand metric tons	123	100	50	228	172
Diamond	carats	17,400	50,500	61,700	76,100	75,000
Stone, quarry products	thousand metric tons	82	148	163	185	114

e/ Estimated. r/ Revised.

1/ Table includes data available through June 15, 1997.

2/ Reported figure.

3/ Includes data available through June 30, 1997.

4/ In addition to commodities listed, the following are produced but information is inadequate to reliably estimate output: some gemstones (sapphire and tourmaline); limestone for cement and possibly agriculture; shale and/or clay for cement; and probably crude construction materials (i.e., clays for brick and tile, sand and gravel, stone) from small local operations. Beryllium (beryllium concentrate, estimated 10% BeO) production was last reported in 1985 at 27 tons. Tin smelter output was last reported in 1985 at 800 tons metal when the smelter was reported shut down.

5/ Includes data available through May 30, 1997.

6/ In addition to the commodities listed, modest quantities of crude construction materials (brick clay, sand and gravel) and pyrophyllite are produced, but output is not reported quantitatively, and information is inadequate to make reliable estimates of output levels.