



2006 Minerals Yearbook

MOZAMBIQUE

THE MINERAL INDUSTRY OF MOZAMBIQUE

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In 2006, Mozambique played a significant role in the world's production of aluminum, beryllium, and tantalum. The country's share of the world's tantalum mine output amounted to 6%; beryllium, 5%; and aluminum, 2%. Other domestically significant mineral processing operations included cement and natural gas (Magyar, 2007; Plunkert, 2007; Shedd, 2007).

Minerals in the National Economy

In 2004 (the latest year for which data were available), the manufacturing sector accounted for 14% of the gross domestic product, and mining and quarrying, 1.8%. The Mozal smelter accounted for about one-half of manufacturing output but had a much more modest effect on employment. The value of output in the mining sector increased by 11% in 2005 (International Monetary Fund, 2005, p. 41; Organisation for Economic Cooperation and Development, 2007, p. 393).

Production

The production of coal was estimated to have increased by 193% in 2006; granite, by 150%; garnet, 103%; diatomite, 33%; marble, 30%; cement, 29%; bauxite, 26%; dumortierite, 20%; and limestone, 15%. The production of aquamarine, beryl, niobium (columbium), tantalum, and tourmaline was estimated to have decreased by nearly 14% in 2006. In the past several years, the output of aluminum and natural gas had increased sharply.

Structure of the Mineral Industry

Most of Mozambique's mining and mineral processing operations were privately owned, including the cement plants, the Mozal aluminum smelter, and the Temane gas processing plant. Artisanal miners produced gold and aquamarine, tourmaline, and other gemstones. Carbomoc E.E., which was the country's only coal producer, was state-owned.

Commodity Review

Metals

Aluminum.—Mozambique was Africa's second ranked producer of aluminum after South Africa. The Mozal aluminum smelter, which used alumina imported from western Australia as raw material, increased output to 564,000 metric tons (t) in 2006 compared with 555,000 t in 2005. Mozal's rated capacity amounted to 506,000 metric tons per year (t/yr); BHP Billiton Ltd. planned to increase capacity by 250,000 t/yr by 2009. The expansion of Mozal depended on the negotiation of long-term power contracts (table 2; BHP Billiton Ltd., 2006, 2007; Organisation for Economic Cooperation and Development, 2007, p. 393, 398-399).

In the first six months of 2006, aluminum exports were valued at \$637.8 million compared with \$504.2 million during the same period in 2005. The share of aluminum in total exports, however, declined to 57% from 63% as other exports increased at a faster rate.

E.C. Meikles (Pty.) Ltd. of Zimbabwe operated a small bauxite mine in Manica Province. In 2006, output increased by an estimated 26%; production was expected to rise by an additional 10% in 2007 (Government of Mozambique, 2007, p. 17).

Gold.—Small amounts of gold were produced by artisanal miners. Pan African Resources plc of the United Kingdom was considering the development of a mine at the Fair Bride deposit on its Manica gold project. The mine would produce an average of 2,600 kg/yr during an expected mine life of between 8 and 9 years. Pan African planned to start drilling in the first quarter of 2007 (Pan African Resources plc, 2006).

Iron and Steel.—In October 2006, Mittal Steel South Africa Ltd. agreed to purchase the assets of Companhia Siderurgica de Mozambique (CSM) and Companhia Mozambique de Trefloria (Trefil) for \$11.45 million. Mittal stated that production of steel rods at CSM and wire and nails at Trefil could restart by April 2007; the company planned to invest an additional \$10 million to reopen the plants (Mozambique News Agency, 2006).

Niobium (Columbium) and Tantalum.—National production of tantalite was estimated to be 240,000 kilograms (kg) in 2006 compared with 281,212 kg in 2005. Fleming Family & Partners owned a majority stake in the Marropino Mine through Highland African Mining Company (HAMC). The company was unable to produce at Marropino until the fourth quarter of 2006 because of financial and technical problems. HAMC also held a license to produce tantalite from the Morrua Mine, which had been shut down since the 1980s. If the Morrua Mine were reopened, it could produce as much as 230,000 kilograms per year (kg/yr) of tantalum pentoxide (Ta_2O_5) (Sunday Times, 2005; Mozambique News Agency, 2007).

TAN Mining and Exploration of South Africa had planned to reopen the Muiane Mine in mid-2005 at a cost of \$5 million. The company had planned to produce 82,000 kg/yr of Ta_2O_5 in concentrate from 420,000 t/yr of ore; the tantalite recovery rate would be about 60%. By the end of 2006, production had not restarted at Muiane, however, and TAN's lease was awarded to HAMC because the former company reportedly violated clauses in its contract with the Government (Mining Review Africa, 2005; Mozambique News Agency, 2007).

Industrial Minerals

Cement.—Cimentos de Mocambique SARL (Cimentos de Portugal, SGPS, SA (Cimpor), 65.4%) produced cement at its Dondo, Matola, and Nacala plants. ARJ Group opened a cement plant at Nacala in mid-2005. In 2005 and 2006, Cimpor's production was reduced by operational problems at the Matola

plant; the kiln was shut down for two months in 2006 to install and repair environmental protection equipment (Cimentos de Portugal, SGPS, SA, 2007, p. 68-69).

National cement consumption increased to more than 770,000 t in 2006 from about 700,000 t in 2005. Cimpor's market share declined to 78% in 2006 from 83% in 2005. Before 2005, Cimpor's sales were from domestic production; the problems at the Matola plant, however, forced the company to import cement (Cimentos de Portugal, SGPS, SA, 2007, p. 68-69).

Clays.—Small amounts of bentonite were produced at Mafuiane in the Namaacha District. Production was inhibited by high transportation costs.

Gemstones.—Aquamarine, Morganite, tourmaline, and other gemstones were mined in Zambezia Province; dumortierite, in Tete Province; and garnet, in Niassa Province. The mine output of garnet doubled to an estimated 4,400 kg in 2006; the increase may have been attributable to upgrades to the Cuamba Mine by Sociedade Mineira de Cuamba E.E. Garnet production was expected to increase by 26% in 2007. The production of dumortierite declined sharply in 2005 because of poor market conditions and a lack of equipment. In 2007, production was expected to increase by 10% compared with an estimated 20% in 2006. Copper-containing tourmaline was mined from an alluvial deposit in the Alto Ligonha District of Zambezia Province starting in early 2004; the mines were still producing at the end of 2006 (Government of Mozambique, 2007, p. 17-18; Wise, 2007).

Titanium and Zirconium.—BHP Billiton was conducting a review and update of previous feasibility studies on its Corridor Sands Project, which was based upon 10 deposits of heavy-mineral sands near Chibuto in southern Mozambique. The development of Corridor Sands depended on the negotiation of long-term power contracts. BHP Billiton was also considering the development of the TiGen mineral sands project at Moebase (Organisation for Economic Cooperation and Development, 2007, p. 398-399).

Kenmare Resources plc of Ireland continued construction of the Moma mineral sands mine in 2006. The company planned to start mining in early 2007; the initial rate of ilmenite production was expected to be 700,000 t/yr. In the second half of 2007, Kenmare planned to complete an expansion to increase ilmenite production to 800,000 t/yr in 2008; the output of zircon would be 56,000 t/yr, and rutile, 21,000 t/yr (Industrial Minerals, 2006).

Mineral Fuels and Related Materials

Coal.—Companhia Vale do Rio Doce (CVRD) of Brazil completed a feasibility study on the development of the Moatize coalfield in 2006; the company planned to make its final decision about the project in 2007. If CVRD were to decide to proceed, the Moatize Mine was expected to produce 9 million metric tons per year (Mt/yr) of coking coal and 3.5 Mt/yr of thermal coal starting as early as 2010. The coking coal was likely to be consumed by steel plants in Brazil; thermal coal would be consumed by a new coal-fired power station built by CVRD in Mozambique with a capacity of 1,500 megawatts (Mozambique News Agency, 2004; Mining Journal, 2006).

Development of the Moatize Mine depended on rehabilitation of the railway from Beira to Tete, and the construction of a maritime export terminal at Beira. Total costs of the project were estimated to be \$2 billion. Ircan International of India and Rites Ltd. of India were engaged in rebuilding the 650-kilometer (km) rail line from Beira to Tete, which linked the Moatize Mine to the Port of Beira. Rehabilitation was expected to be completed in early 2009 (Mozambique News Agency, 2004; Mining Journal, 2006).

Central African Mining and Exploration Company plc explored at its properties in the Moatize coalfield in 2006; the company also held properties in the Mucanha-Vuzi coalfield. Riversdale Mining Ltd. of Australia acquired exploration licenses in the Moatize coalfield in the first quarter of 2006 (Central African Mining and Exploration Company plc, 2006, p. 6).

Natural Gas.—Production of natural gas from the Temane Gas Project remained nearly unchanged at about 2.33 billion cubic meters in 2006. Sasol Ltd. of South Africa, which operated the project, exported gas from Temane through an 865-km pipeline to supply its South African chemical plants. In 2006, Sasol operated at 75% of capacity; the company planned to reach full capacity by June 2008. Higher production would be attributable to the development of the Pande gasfield by the end of 2007 (table 2; Sasol Ltd., 2006, p. 49, 65).

Sasol engaged in exploration in its onshore properties and planned to start exploration at offshore Blocks 16 and 19 in 2007. The company planned a possible further increase in production capacity by 2012 to 6.2 billion cubic meters per year from 3.1 billion cubic meters per year; this increase would depend on the results of its exploration activities (Sasol Ltd., 2006, p. 49, 65).

Petroleum.—Mozambique produced neither crude petroleum nor refined petroleum products and relied on imports. In early 2006, the Onshore Area in the Rovuma Basin was awarded to Artumas Group Inc. of Canada; Area 1, to Anadarko Petroleum Corp. of the United States; Areas 2 and 5, to Norsk Hydro ASA of Norway; Areas 3 and 6, to Petronas Carigali Overseas Shd. Bhd. of Malaysia; and Area 4, to ENI S.p.A. of Italy (National Institute of Petroleum, 2006).

Uranium.—The Mavuzi Mine in northwestern Mozambique produced uranium during the 1950s. OmegaCorp Ltd. of Australia conducted an exploration project at Mavuzi in late 2005 and 2006; the company planned a small-scale drill program for 2007 (Resource Information Unit, 2007).

Outlook

The Moma Mine was likely to increase economic growth in 2007; the outlook for titanium minerals in Mozambique depended heavily upon global market trends. The Moatize coal mine could boost economic growth in 2010; the development of the mine depended upon global market trends and the rehabilitation of rail and port infrastructure. Development of the Corridor Sands and the Mozal 3 projects depended upon reliable power supplies. Demand for construction materials could increase in 2007 because of public works projects; the development of the Corridor Sands, Moatize, and Mozal 3

projects could also lead to growth in the construction sector. In 2007, the production of limestone was expected to increase by 58%; marble slabs, 20%; sand, 9%; and marble blocks, 5% (Government of Mozambique, 2007, p. 17).

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TABLE 1
MOZAMBIQUE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2002	2003	2004	2005	2006 ^c
Aluminum:					
Bauxite	9,119	11,793	6,723	9,518	12,000
Metal, refined	273,000	407,000	549,000	555,000	564,000 ³
Beryl kilograms	54,300	78,300	45,200	146,300	130,000
Cement, hydraulic thousand metric tons	490 ^r	600 ^r	570 ^r	560 ^r	720
Clays:					
Bentonite:					
Crude	--	--	3,336	--	--
Processed	580	684	578	547	610
Brick	84,024	100,176	108,231	32,031	32,000
Coal, bituminous	43,512	36,742	16,525	3,417	10,000
Diatomite	--	--	3,000 ^c	4,500 ^c	6,000
Gemstones:					
Aquamarine kilograms	26	8	18	16	14
Dumortierite	40	65	113	10	12
Garnet kilograms	1,136	440	2,686	2,172	4,400
Tourmaline do.	124	581	1,570	245	210
Gold ⁴ do.	17	63	56	63	68
Natural gas million cubic meters	2	1	1,295	2,316	2,330
Niobium (columbium) and tantalum, columbite-tantalite, ore and concentrate:					
Gross weight kilograms	46,900	188,695	712,095	281,212	240,000
Nb content ^c do.	5,500	23,000	87,000	34,000	29,000
Ta content ^c do.	13,000	54,000	205,000	81,000	70,000
Quartz kilograms	31,363	30,985	173,478	--	--
Salt, marine ^c	80,000	80,000	80,000	80,000	80,000
Sands cubic meters	795,813	1,372,032	1,429,743	833,113	860,000
Stone:					
Granite do.	670	539	521	2,198	5,500
Gravel and crushed rock do.	795,733	740,501 ^r	779,581 ^r	850,919 ^r	880,000
Limestone	1,301,232	1,348,372	1,593,450	654,179	750,000
Marble:					
Block cubic meters	453	452	617	509	630
Slab square meters	9,980	10,227	13,666	12,318	16,000

^cEstimated; estimated data are rounded to no more than three significant digits. ^rRevised. -- Zero.

¹Table includes data available through June 9, 2007.

²Other such gemstones as morganite were produced, but information is insufficient to estimate production.

³Reported figure.

TABLE 2
MOZAMBIQUE: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity ¹
Aluminum		Mozal SARL (BHP Billiton Ltd., 47%)	Maputo	506,000.
Bauxite		E.C. Meikles (Pty) Ltd. of Zimbabwe	Monte Snuta	12,000. ^c
Bentonite		Cia Desenvolvimento Mineira ²	Boane	30,000.
Cement		Cimentos de Mocambique, SARL (Cimentos de Portugal, SGPS, SA (Cimpor), 65.4%)	Dondo, Matola, and Nacala	745,000.
Do.		ARJ Group	Nacala	250,000.
Coal, bituminous		Carbomoc	Chipanga XI Mine at Moatize	60,000.
Garnet	kilograms	Sociedade Mineira de Cuamba EE	Cuamba	4,400. ^c
Gold	do.	Artisanal miners	Manica District	600.
Graphite		Kenmare Resources plc ³	Ancuabe	10,000.
Marble, block	cubic meters	Marmonte E.E.	Montepuez	1,500.
Natural gas	million cubic meters	Sasol Ltd. (50%)	Temane	3,100.
Niobium (columbium) and tantalum, columbite-tantalite, ore and concentrate	kilograms	Fleming Family & Partners	Marropino	315,000 ^c concentrate; 110,000 Ta ₂ O ₅ ; 47,000 Nb ₂ O ₅ . ^c
Do.	do.	Central African Mining and Exploration Company plc (CAMEC)	Zambezia Province	155,000 concentrate; 54,000 Ta ₂ O ₅ .
Do.	do.	Hegemony Resources	Naquissupa	NA.

^cEstimated; estimated data are rounded to no more than three significant digits. NA Not available.

¹Abbreviations used in this table for commodities include the following: Nb₂O₅--columbium (niobium) oxide; and Ta₂O₅--tantalum oxide.

²Not operating in 2006.

³On care and maintenance since 1999.