



2005 Minerals Yearbook

KENYA

THE MINERAL INDUSTRY OF KENYA

By Thomas R. Yager

The mineral industry in the East African country of Kenya was noted chiefly for its production of fluorspar and soda ash. Other industrial minerals produced in recent years included bentonite, diatomite, feldspar, gypsum, kaolin, and silica sand. Building materials produced included cement, granite, limestone, marble, and shale. Kenya produced small amounts of gold, iron ore, lead, secondary aluminum and steel. The country also produced carbon dioxide gas, lime, gemstones, and refined petroleum products (table 1).

In 2005, Kenya's real gross domestic product (GDP) increased by 4.7% after rising by 4.3% in 2004. The nominal GDP was about \$48 billion based on purchasing power parity; the per capita GDP based on purchasing power parity was about \$1,400. In 2005, manufacturing accounted for 10.5% of the GDP; building and construction, 4%; electricity and water, 2%; and mining and quarrying, less than 1% (Central Bank of Kenya, 2006b, p. 19; International Monetary Fund, 2006¹).

The mining and quarrying sector grew by 2.7% in 2005 compared with 2.2% in 2004 and 3.5% in 2003. Growth in 2005 was attributable to higher production of soda ash and carbon dioxide, ruby, sapphire, and tourmaline. The manufacturing sector grew by 5% in 2005; building and construction, 7.2%; and electricity and water, 0.1% (Central Bank of Kenya, 2006b, p. 19).

Commodity Review

Metals

Gold.—Artisanal miners produced gold in the Nyanza, the Rift Valley, and the Western Provinces. National exports of gold amounted to 616 kilograms (kg) in 2005 compared with 567 kg in 2004 and 1,545 kg in 2001. Gold accounted for 11% of the value of Kenya's mineral exports in 2005. Kansai Mining Corp. of Canada and Mid Migori Mining Company Ltd. were engaged in a joint venture to explore for gold in the Migori District of Nyanza Province. AfriOre Ltd. of South Africa explored for gold in the Siaya District of Nyanza Province and the Kakamega District of Western Province. International Gold Exploration AB of Sweden had properties in the Nyanza and the Rift Valley Provinces; the company sought joint-venture partners for gold exploration (E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Iron and Steel.—Kenya's four rolling mills had a capacity of 220,000 metric tons per year (t/yr) and relied upon imported billet; the capacity of the country's three galvanized steel plants amounted to 210,000 t/yr. In 2005, national production of galvanized sheets increased to 175,700 metric tons (t) from 157,600 t in 2004 and 137,200 t in 2003 (Central Bureau of Statistics, 2006). The International Iron and Steel Institute

(2005, p. 84) estimated that Kenya's apparent consumption of finished steel increased to 507,000 t in 2004 from 442,000 t in 2003 and 359,000 t in 1999.

Titanium and Zirconium.—Tiomin Resources Inc. of Canada held licenses for the Kilifi, the Kwale, the Mambui, and the Vipongo heavy mineral sands deposits. The company planned to mine at Kwale; Tiomin expected to begin the 20-month construction phase in early 2006. Tiomin was expected to produce 330,000 metric tons per year (t/yr) of ilmenite, 75,000 t/yr of rutile, and 40,000 t/yr of zircon. By the end of November 2005, Tiomin had negotiated contracts for the purchase of all the rutile and zircon and about two-thirds of the ilmenite to be produced over the expected 11-year life of the mine (Tiomin Resources Inc., 2005a, b).

Industrial Minerals

Carbon Dioxide.—Carbacid Ltd. produced natural carbon dioxide gas in the Kaimbu District. In 2005, production was 8,723 t compared with 5,982 t in 2004 and 5,645 t in 2001. The company supplied domestic and export markets; consumers included beer and soft drink manufacturers (E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Cement.—In 2005, Kenya had three cement producers with a combined capacity of 2.82 million metric tons per year (Mt/yr). National cement production increased to 2.12 Mt in 2005 from 1.79 Mt in 2004 and 1.66 Mt in 2003. Production at Bamburi Cement Ltd. was limited by the capacity of the company's clinker plant. East African Portland Cement Co. Ltd. (EAPC) produced at a rate of 600,000 t/yr in 2005; the company planned an expansion that would increase its production to 1 Mt/yr. The expansion was expected to be completed in 2007 at a cost of \$11 million. Athi River Mining Ltd. (ARM) produced at a rate of 120,000 t/yr in 2005; the company planned to increase its capacity to 300,000 t/yr by early 2006 (Mulunda, 2005; Central Bank of Kenya, 2006a, p. 19; Swan and Klotnick, undated).

In 2004, Bamburi had a 57% share of the domestic cement market; EAPC, 35%; and ARM, 7%. In 2005, Kenya's cement consumption amounted to about 1.57 Mt compared with nearly 1.42 Mt in 2004; the increase was partially attributable to growth in the residential construction sector (Central Bank of Kenya, 2006a, p. 21; Swan and Klotnick, undated).

Fluorspar.—Kenya Fluorspar Ltd. produced acid-grade fluorspar in the Keiro Valley for export markets. Exports amounted to 109,594 t in 2005 compared with 117,986 t in 2004 and 118,850 t in 2001. In 2005, the value of fluorspar exports was \$1.45 million, or 17% of mineral exports (E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Gemstones.—Kenya produced gemstones that included amethyst, aquamarine, cordierite, green garnet (tsavorite), ruby, sapphire, and tourmaline. The production of amethyst, aquamarine, and cordierite declined in 2005 (table 1). Gemstones

¹A reference that includes a section mark (§) is found in the Internet Reference Cited section.

accounted for about 1% of the reported value of Kenya's mineral production (E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Rockland Kenya Ltd., which operated the John Saul ruby mine, was the leading producer and exporter of ruby. Ruby and pink sapphire were discovered near Baringo in July 2005. Small amounts of sapphire were also mined at Garba Tula and Takana. National ruby production increased to an estimated 5,100 kg in 2005 from 4,758 kg in 2004, and sapphire, to an estimated 3,500 kg from 2,000 kg in 2004 (Austin and others, 2005).

The Scorpion Mine increased production of tsavorite, which is a green grossular garnet that obtains its color from trace amounts of chromium and vanadium, to between 3 and 4 kilograms per month (kg/mo) with the discovery of new resources at the mine. National production of green garnet, however, declined to an estimated 800 kg in 2005 from 1,603 kg in 2004. A deposit of color-change garnet was discovered near Taita Taveta in late 2004; production amounted to less than 1 kg/mo (Austin and others, 2005).

Salt.—Magadi Soda Ash Ltd. (a subsidiary of Brunner Mond Group Ltd.) extracted salt from Lake Magadi as a byproduct of the soda ash production process. Output from Lake Magadi was 26,595 t compared with 31,139 t in 2004. Salt producers on the Indian Ocean coast included Kema Salt Ltd., Kensalt Ltd., Kurawa Salt Ltd., Krystalline Salt Ltd., Malindi Salt Works, and Mombasa Salt Works Ltd. National salt production was estimated to be 60,000 t in 2004 and 52,000 t in 2005 (E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Soda Ash.—Magadi mined trona from Lake Magadi. The production of soda ash increased to 360,161 t in 2005 from 355,380 t in 2004 and 297,780 t in 2001. Magadi's production of soda ash and crushed refined soda accounted for 77% of the value of Kenya's mineral production in 2005. The company was building a new processing plant that would increase production capacity to 715,000 t/yr from 350,000 t/yr. The plant was expected to be completed in mid-2006 at a cost of \$98 million (Brunner Mond Group, 2004, 2006; E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

From 2001 through 2005, about 90% of Kenya's soda ash production was exported. In 2005, the value of soda ash exports amounted to \$5.26 million, or 63% of mineral exports. Soda ash was consumed domestically by ARM in the production of sodium silicate, which was used in detergents, soaps, and chemical and metallurgical applications. ARM accounted for about 70% of sodium silicate sales in East Africa (Swan and Klotnick, undated; E.S. Osumo, Mines and Geology Department, written commun., July 7, 2006).

Mineral Fuels

Petroleum.—Kenya Petroleum Refineries Ltd. (KPRL) produced refined petroleum products from imported crude petroleum. In 2005, the company's output of refined petroleum products decreased by about 4% (table 1). KPRL supplied most of the residual fuel oil; about 65% of the diesel, gasoline, and kerosene; and about 60% of the liquefied petroleum gas (LPG) consumed in Kenya. The company planned to upgrade the

refinery to increase LPG production to nearly 1.2 million barrels per year (Senelwa, 2005).

A joint venture of Woodside Energy Ltd. of Australia (50%), Dana Petroleum plc (30%), and Star Petroleum International (Kenya) Ltd. (20%) [a subsidiary of Global Petroleum Ltd. of Australia] was engaged in natural gas and petroleum exploration at offshore Blocks L5 and L7. Exploration wells were expected to be drilled in these properties in 2006. Afrex Ltd. and Pancontinental Oil and Gas NL of Australia had a joint-venture agreement for exploration in offshore Blocks L6, L8, and L9. In February 2005, Pancontinental's board of directors reached an agreement with Afrex's shareholders for the purchase of Afrex by Pancontinental (Pancontinental Oil and Gas NL, 2005; Dana Petroleum plc, 2006).

Infrastructure

The state-owned Kenya Electricity Generating Co. Ltd. (Kengen) generated most of Kenya's electric power. Kengen planned to complete construction of the 60-megawatt (MW) Sondu Miriu hydroelectric plant by the end of 2007. A proposed second phase would add 21 MW of capacity at Sondu Miriu. The costs of the first phase were estimated to be \$128 million, and the second phase, about \$55 million. In 2005, the European Investment Bank agreed to loan \$39.7 million to Kengen for the expansion of the Olakaria II geothermal plant. The plant's capacity was expected to increase to 105 MW from 70 MW. Kengen planned to sell 30% of its shares on the Nairobi Stock Exchange by the end of the first quarter of 2006 (Kenya Electricity Generating Co. Ltd., 2005b; Ochieng, 2005).

Kenya produced 5,519 gigawatthours (GWh) of electricity in 2005, which was an increase of 9.7% compared with that of 2004. In 2005, hydroelectric sources accounted for 54.5% of the country's total supply of electricity; thermal, 27.3%; and geothermal, 18.3%. Electricity consumption increased by 6.8% in 2005. Peak power demand amounted to 920 MW of capacity in July 2005 compared with 830 MW in July 2004 and 785 MW in July 2003. By July 2008, peak power demand was expected to increase to 1,370 MW of capacity (Kenya Electricity Generating Co. Ltd., 2005a; Central Bank of Kenya, 2006a, p. 19).

Outlook

Kenya's GDP was forecasted to grow by 3.3% in 2006 and 4.9% in 2007. Cement demand was likely to increase because of higher Government expenditures on residential and road construction. The Government planned to spend nearly \$180 million on road construction in fiscal year 2005-06, which was an increase of 300% compared with that of fiscal year 2004-05. If the recent broad-based increase in world minerals demand continues, the outlook for Kenyan production of fluorspar, soda ash, and titanium minerals is likely to be positive (Mulunda, 2005; International Monetary Fund, 2006§).

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TABLE 1
KENYA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2001	2002 ^e	2003 ^e	2004 ^e	2005 ^e
Aluminum, secondary	2,400 ^e	2,400	2,400	2,400	2,400
Carbon dioxide gas, natural	5,645	5,662 ³	4,614 ^{r,3}	5,982 ^{r,3}	8,723 ³
Cement, hydraulic	1,319	1,463 ³	1,658 ³	1,789 ³	2,123 ³
Clays:					
Bentonite	50	50	50	50	60
Kaolin	700	720 ^r	740 ^r	760 ^r	780
Other	18,000	18,000	19,000	20,000 ^r	20,000
Diatomite ⁴	441	1,333 ³	353 ³	330 ^{r,3}	243 ³
Feldspar	73	60 ^r	50 ^r	40 ^r	22 ³
Fluorspar, acid grade ⁴	118,850	85,015 ³	95,278 ³	117,986 ^{r,3}	109,594 ³
Gemstones, precious and semiprecious:					
Amethyst ⁴	800 ^{r,e}	500 ^r	300 ^r	82 ^{r,3}	73 ³
Aquamarine ⁴	180 ^{r,e}	230 ^r	280 ^r	331 ^{r,3}	250
Cordierite, iolite ⁴	230 ^{r,e}	190 ^r	140 ^r	92 ^{r,3}	81 ³
Green garnet	1,600 ^{r,e}	1,100 ^r	600 ^r	1,603 ^{r,3}	800
Ruby	5,862	3,043 ³	2,310 ^{r,3}	4,758 ^{r,3}	5,100
Sapphire	3,400 ^{r,e}	1,800 ^r	1,400 ^r	2,000 ^r	3,500
Tourmaline	15,000 ^{r,e}	11,000 ^r	7,000 ^r	4,000 ^r	8,000
Gold, mine output, Au content ⁴	1,545	1,477 ³	1,543 ³	567 ^{r,3}	616 ³
Gypsum and anhydrite	8,200	8,400 ^r	8,700 ^r	8,900 ^r	9,100
Iron ore	920	900 ^r	700 ^r	500 ^r	300 ³
Lead, refined secondary	1,000	1,000 ³	1,000 ³	1,000 ³	1,000 ³
Lime	50,000 ^{r,e}	50,000 ^r	50,000 ^r	90,000 ^r	90,000
Petroleum refinery products:					
Gasoline	2,329	2,158 ³	2,243 ^{r,3}	2,346 ^{r,3}	2,200
Kerosene and jet fuel	2,518	2,148 ³	2,298 ^{r,3}	2,416 ^{r,3}	2,300
Distillate fuel oil	3,253	3,021 ³	3,066 ^{r,3}	2,887 ^{r,3}	2,800
Residual fuel oil	3,563	3,550 ³	3,490 ^{r,3}	4,129 ^{r,3}	4,000
Liquefied petroleum gas	325	278 ³	499 ^{r,3}	313 ^{r,3}	300
Other	110 ^e	100	110 ^r	110 ^r	100
Total	12,100 ^e	11,300	11,700 ^r	12,200 ^r	11,700
Salt, crude	33,000 ^{r,e}	46,000 ^r	48,000 ^r	60,000 ^r	52,000
Soda ash	297,780	304,110 ³	352,560 ³	353,835 ^{r,3}	360,161 ³
Stone, sand and gravel:					
Granite for dimension stone	180 ^e	180	190	200 ^r	200
Limestone for cement	640 ^e	710	800	870 ^r	1,000
Limestone for dimension stone	32,000	32,000 ³	33,000	34,000	35,000
Marble for dimension stone	120 ^e	120	130	130	130
Sand, industrial; glass	12,000 ^e	12,000	13,000	13,000	13,000
Shale	190,000 ^e	190,000	200,000	210,000 ^r	210,000
Sulfuric acid	20,000	20,000 ³	20,000 ³	20,000	20,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised.

¹Table includes data available through November 9, 2006.

²In addition to the commodities listed, a variety of minerals and construction materials [brick clays, coal, gravel, meerscham, mica, murrum (laterite), crushed rock, and construction sand] may be produced, but quantities are not reported, and available information is inadequate to make estimates of output.

³Reported figure.

⁴Exports.

TABLE 2
KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Carbon dioxide gas, natural		Carbacid Ltd.	Mine at Kereita	10,000. ^e
Cement		Bamburi Cement Ltd.	Plant at Mombasa	1,100,000.
Do.		do.	Plant at Nairobi	1,000,000.
Do.		East African Portland Cement Co. Ltd. (EAPC)	Plant at Athi River	600,000.
Do.		Athi River Mining Ltd. (ARM)	Plant at Kaloleni	120,000.
Diatomite		African Diatomite Industries Ltd.	Kariandusi and Soysambu	4,000.
Fluorspar		Kenya Fluorspar Ltd.	Mine at Kerio Valley	120,000.
Garnet	kilograms	Bridges Exploration Ltd	Scorpion Mine in Taita Taveta	40.
Glass		Central Glass Industries Ltd.	Plant at Nairobi	51,100.
Do.		Impala Glass Industries Ltd.	do.	NA.
Gold	kilograms	Artisanal miners	Mines in Nyanza, Rift Valley, and Western Provinces	NA.
Lead, refined secondary		Associated Battery Manufacturers Co. Ltd.	Plant at Athi River	3,000.
Lime		Athi River Mining Ltd.	Plant at Kaloleni	75,000.
Do.		Homa Lime Company Ltd	Plant at Koru	30,000.
Petroleum, refined	thousand 42-gallon barrels	Kenya Petroleum Refineries Ltd. [Government, 50%; British Petroleum plc, Caltex Oil (Kenya) Ltd., and Royal Dutch/Shell Group, 50%]	Refinery at Mombasa	32,850.
Ruby	kilograms	Rockland Kenya Ltd.	Mine at Kasigau	1,500. ^e
Salt		Magadi Soda Ash Ltd. (Brunner Mond Group Ltd., 100%)	Mine at Magadi	40,000.
Do.		Krystalline Salt Ltd.	Mine at Nairobi	NA.
Do.		Mombasa Salt Works Ltd.	Mine at Mombasa	NA.
Soda ash		Magadi Soda Ash Ltd.	Mine at Magadi	350,000.
Sodium silicate		Athi River Mining Ltd.	Plants at Athi River and Kalol	40,000.
Steel: ¹				
Crude ²		Kenya United Steel Co. Ltd. (E.A. Wire Industries Ltd., 81%)	Plant at Mombasa	20,000.
Rolled		Mabati Rolling Mills Ltd.	do.	120,000.
Do.		Standard Rolling Mills Ltd.	do.	40,000.
Do.		Kenya United Steel Co. Ltd.	do.	30,000.
Do.		Steelmakers Ltd.	do.	30,000.
Sulfuric acid		Kel Chemicals Ltd.	Plant at Thika	32,000.
Do.		East African Heavy Chemicals	Plant at Webuye	NA.
Vermiculite ³		Kenmag Investments Ltd.	Mine at Lodosoit	2,000.

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

¹In addition to its crude and rolled steel facilities, Kenya has three galvanized steel plants with a capacity of 210,000 metric tons per year.

²Has not operated since 1998.

³Has not operated since 2000.