

# 2009 Minerals Yearbook

# **KENYA**

### THE MINERAL INDUSTRY OF KENYA

### By Thomas R. Yager

In 2009, Kenya played a significant role in the world's production of natural soda ash. The country's share of the world's mine production of soda ash amounted to 4%. Other domestically significant mining and mineral processing operations included cement, fluorspar, and petroleum refining. Kenya was not a globally significant consumer of minerals (Kostick, 2010).

#### **Minerals in the National Economy**

In 2008 (the latest year for which data were available), the manufacturing sector accounted for 10% of the gross domestic product, and mining and quarrying, 0.5%. The mining and quarrying sector grew by 3.2% in 2008 compared with 12.9% in 2007 and 4.1% in 2006. Formal employment in the mining and quarrying sector was reported to be 6,300 in 2007; employment declined by more than 500 workers in 2009 because of the closure of Kenya's only fluorspar mine. Informal employment probably decreased because of the reduction in gemstone mining (Bii, 2009; Central Bank of Kenya, 2010b, p. 16).

#### **Production**

In 2009, diatomite production increased by 221%; gold, by 210%; and cement, by 17% (table 1). Cement production increased by 56% from 2005 to 2009. The production of fluorspar decreased by 84% in 2009; refined lead, by an estimated 50%; and soda ash, by 21%. The output of most gemstones was estimated to have decreased by between 20% and 25%. Salt production in the northern part of Coast Province probably decreased because of heavy rains in late October and early November.

#### **Structure of the Mineral Industry**

Most of Kenya's mining and mineral processing operations were privately owned, including the diatomite, fluorspar, gemstone, salt, and soda ash mines, the lime plants, and the steel mills. Athi River Mining Ltd. (ARM), Bamburi Cement Ltd., and Mombasa Cement Ltd. were privately owned. The Government held a 52% share in East African Portland Cement Co. Ltd. (EAPC) and a 50% share in Kenya Petroleum Refineries Ltd. (KPRL). Artisanal miners produced gemstones and gold in areas that included Nyanza, Rift Valley, and Western Provinces.

#### **Commodity Review**

#### Metals

**Lead.**—Associated Battery Manufacturers Co. Ltd. (ABM) produced about 1,000 metric tons per year (t/yr) of refined lead from recycled batteries. By July 2009, ABM's production decreased by about 90% because of battery shortages resulting

from Chinese demand. Most of the domestic used battery supply that was previously consumed by ABM was exported to China. In June, the 20% export tax on lead and lead scrap was repealed (Kimani, 2009).

**Titanium and Zirconium.**—Development of the Kwale mineral sands deposit was on hold since December 2006. Tiomin Resources Inc. of Canada planned to produce 330,000 t/yr of ilmenite, 75,000 t/yr of rutile, and 40,000 t/yr of zircon at Kwale. In August 2008, Jinchuan Group Ltd. of China proposed an agreement with Tiomin to provide financing that would allow construction to begin. In late October 2009, Tiomin received final approval of the project from the Government. Jinchuan subsequently withdrew from its agreement with Tiomin. In December, Tiomin announced that it was seeking buyers or investors for Kwale (Moores, 2009).

#### Industrial Minerals

Cement.—Kenya had four cement producers with a combined capacity of 4.5 million metric tons per year (Mt/yr). National cement production increased to 3.32 million metric tons (Mt) in 2009 from a revised 2.83 Mt in 2008. Higher output was attributable to recent capacity expansions and increased utilization of existing capacity (Central Bank of Kenya, 2010b, p. 19).

Mombasa Cement Ltd. started production at its new plants in 2009, which had a combined capacity of 700,000 metric tons per year (t/yr). In the second half of 2009, EAPC increased its capacity to about 1.4 Mt/yr from 720,000 t/yr. ARM planned to complete the expansion of its capacity to 650,000 t/yr from 300,000 t/yr in 2010. In late October, Cemtech Sanghi Group of India received approval to build a new cement plant with an initial capacity of 600,000 t/yr. The first phase of the plant was expected to be completed by December 2011; Cemtech planned to increase the plant's capacity to 1.2 Mt/yr by December 2014 (Daily Nation, 2009; Kimanthi, 2009, p. 9; Onyango, 2009; Athi River Mining Ltd., 2010, p. 5; Bonyo, 2010).

In 2009, Kenya's cement consumption increased to about 2.5 Mt compared with 2.3 Mt in 2008 because of growth in the construction sector. Bamburi held a 58% share of the domestic cement market; EAPC, 30%; and ARM, 12% (Central Bank of Kenya, 2010a, p. 22).

**Fluorspar.**—In 2009, Kenya Fluorspar Co. (KFC) produced 15,667 metric tons (t) of fluorspar compared with 98,248 t in 2008. KFC shut down mining operations in late June 2009 because of increasing production costs and the worldwide economic crisis that reduced demand for fluorspar by hydrofluoric acid producers (Bii, 2009).

**Gemstones.**—Tsavorite, which is a green grossular garnet that obtains its color from trace amounts of chromium and vanadium, was produced in southern Kenya. Local mines employed between 10 and 50 miners each; most of the mines were not mechanized. About 2,000 Kenyans were reportedly

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employed in tsavorite mining and trading (Pardieu and Hughes, 2009).

Soda Ash.—Magadi Soda Ash Ltd. mined trona from Lake Magadi. The production of soda ash decreased to 404,904 t in 2009 from 513,415 t in 2008. Decreases in production in early 2009 were attributable to competition with lower-cost synthetic soda ash produced in China. From 2005 to 2009, 84% of Magadi's output was exported. Soda ash was consumed domestically by ARM in the production of sodium silicate, which was used in detergents, soaps, and chemical and metallurgical applications. Soda ash was also consumed by domestic glass producers (Central Bank of Kenya, 2010b, p. 19).

#### Mineral Fuels

**Petroleum.**—In October 2009, China National Offshore Oil Company Ltd. started drilling an exploration well on Block 9 in north-central Kenya. Africa Oil Corp. of Canada purchased Block 10A from Lundin Petroleum AB of Sweden in 2009; the company planned a drilling program by the second quarter of 2011. Vangold Resources Ltd. of Canada planned to drill an exploration well at Block 3A by the end of 2010 (African Power Mining & Oil Review, 2009; Vangold Resources Ltd., 2009).

#### Outlook

Cement production is likely to increase because of the increased capacity at ARM and EAPC, and the new plant to be built by Cemtech. Cement demand in Kenya is expected to increase to 2.8 Mt in 2011, 3.3 Mt in 2013, and 3.8 Mt in 2015. In Burundi, Rwanda, Tanzania, and Uganda, cement demand is likely to increase to a total of 5.6 Mt in 2015 from 3.5 Mt in 2009. The production of gypsum, limestone, and pozzolanic materials for use in the cement industry could also increase. Possible constraints on the growth of the cement industry included increasing energy and raw material costs. The relatively higher short-term costs of concrete roads compared with bitumen roads and equipment shortages in local construction companies could limit cement demand (Kimanthi, 2009, p. 9; Muwanga, 2009; Bonyo, 2010).

The outlook for fluorspar, gemstones, and soda ash depends heavily on world market conditions. Gemstone and soda ash production is likely to be limited by the worldwide financial crisis in the short term. Fluorspar mining reportedly could restart if prices increased to at least \$270 per metric ton (Roberts, 2010).

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# $\label{eq:table 1} \textbf{TABLE 1}$ KENYA: PRODUCTION OF MINERAL COMMODITIES $^1$

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2005	2006 <sup>e</sup>	2007 <sup>e</sup>	2008 <sup>e</sup>	2009 <sup>e</sup>
Aluminum, secondary <sup>e</sup>	6,000 r	6,000 <sup>r</sup>	6,000 r	6,000 r	6,000
Carbon dioxide gas, natural	8,723	9,359 3	11,028 3	22,030 3	15,711 <sup>3</sup>
Cement, hydraulic thousand metric tons	2,123	$2,174^{-3}$	$2,546^{-3}$	2,829 r, 3	$3,320^{-3}$
Clays: <sup>e</sup>					
Bentonite	50	60	70	70	65
Kaolin	780	810	910	940	850
Other	20,000	21,000	24,000	25,000	23,000
Diatomite <sup>4</sup>	243	185 <sup>3</sup>	201 3	72 3	231 3
Feldspar	22 3	25	30	30	30
Fluorspar, acid grade	97,261	83,428 <sup>3</sup>	82,000 3	98,248 <sup>3</sup>	15,667 3
Gemstones, precious and semiprecious: <sup>e</sup>					
Amethyst kilograms	73 <sup>3</sup>	75	80	60	45
Aquamarine do.	250	260	290	210	170
Cordierite, iolite do.	81 3	85	100	80	60
Green garnet do.	800	830	940	700	560
Ruby do.	5,100	5,300	6,000	4,500	3,600
Sapphire do.	3,500	3,600	4,100	3,000	2,400
Tourmaline do.	8,000	8,300	9,400	7,000	5,600
Gold, mine output, Au content <sup>4</sup> do.	616	$432^{-3}$	3,023 3	340 <sup>3</sup>	1,055 3
Gypsum and anhydrite <sup>e</sup>	9,100	9,500	11,000	11,000	11,000
Iron ore <sup>e</sup>	300 <sup>3</sup>	310	350	360	330
Lead, refined secondary	1,000	1,000	1,000	1,000	500
Lime <sup>e</sup>	50,000	50,000	50,000	50,000	45,000
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	2,294	1,527 3	1,766 r, 3	1,800 r	1,800
Kerosene do.	711	912 3	796 <sup>3</sup>	800	800
Jet fuel do.	1,626	$1,792^{-3}$	1,871 3	1,900	1,900
Distillate fuel oil do.	2,793	$2,748^{-3}$	$2,962^{-3}$	3,000	3,000
Residual fuel oil do.	3,815	$4,127^{-3}$	3,557 r, 3	3,600	3,600
Liquefied petroleum gas do.	318	365 <sup>3</sup>	383 <sup>3</sup>	380	380
Other do.	959	935 3	697 r, 3	700 <sup>r</sup>	700
Total do.	12,516	12,406 3	12,032 r,3	12,200 <sup>r</sup>	12,200
Salt, crude <sup>5</sup>	26,595	35,024 <sup>3</sup>	11,596 <sup>3</sup>	24,345 <sup>3</sup>	24,125 <sup>3</sup>
Soda ash	360,161	374,210 <sup>3</sup>	386,598 <sup>3</sup>	513,415 <sup>3</sup>	404,904 3
Stone, sand and gravel: <sup>e</sup>					
Granite for dimension stone	200	210	240	240	220
Limestone for cement thousand metric tons	1,000	1,100	1,200	1,500	1,500
Limestone for dimension stone	35,000	36,000	41,000	42,000	38,000
Marble for dimension stone	130	130	150	150	140
Sand, industrial; glass	14,000	14,000	16,000	16,000	15,000
Shale	210,000	220,000	250,000	260,000	240,000
Sulfuric acid	20,000 e	20,000	20,000	20,000	19,000

<sup>&</sup>lt;sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto.

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<sup>&</sup>lt;sup>1</sup>Table includes data available through October 4, 2010.

<sup>&</sup>lt;sup>2</sup>In addition to the commodities listed, a variety of minerals and construction materials [brick clays, gravel, murram (laterite), crushed rock, and construction sand] may be produced, but quantities are not reported, and available information is inadequate to make estimates of output.

<sup>&</sup>lt;sup>3</sup>Reported figure.

<sup>&</sup>lt;sup>4</sup>Exports.

<sup>&</sup>lt;sup>5</sup>Production by Magadi Soda Ash Ltd. only.

# ${\it TABLE~2}$ KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Com	amodity.	Major operating companies	Location of main facilities	Annual capacity
Commodity Aluminum, secondary		Booth Manufacturing Ltd.	Plant at Nairobi	4,000
Do.		Aluminium Enterprises	Plant at Kikuyu	1.200
Do.		Crystal Industries Ltd.	do.	1,000
Do.		Narcol Aluminium Rolling	Plant at Mombasa	1,000
Do.		Aluminium Extruders	Plant at Nairobi	800
Carbon dioxide gas, nat	tural	Carbacid Ltd.	Mine at Kereita	22,000 <sup>e</sup>
Cement	iuiui	Bamburi Cement Ltd. (Lafarge Group, 58.6%)	Plants at Mombasa and Nairobi	2,100,000
Do.		East African Portland Cement Co. Ltd. (EAPC)	Plant at Athi River	1.400.000
		(LaFarge Group, 41.7%; National Social Security Fund, 27%; Government, 25%)		-,,
Do.		Mombasa Cement Ltd.	Plants at Athi River and Mombasa	700,000
Do.		Athi River Mining Ltd. (ARM)	Plant at Kaloleni	300,000
Diatomite		African Diatomite Industries Ltd.	Kariandusi and Soysambu	4,000
Fluorspar		Kenya Fluorspar Ltd. (KFC)	Mine at Kerio Valley <sup>1</sup>	100,000
Garnet	kilograms	Bridges Exploration Ltd	Scorpion Mine in Taita Taveta	40
Glass		Central Glass Industries Ltd.	Plant at Nairobi	47,500
Do.		Bawazir Glass Works Ltd.	Plant at Mombasa	NA
Gold	kilograms	Artisanal miners	Mines in Nyanza, Rift Valley,	NA
			and Western Provinces	
Lead, refined secondary	I	Associated Battery Manufacturers Co. Ltd. (ABM)	Plant at Athi River	3,000
Lime		Homa Lime Company Ltd.	Plant at Koru	30,000
Do.		Athi River Mining Ltd. (ARM)	Plant at Kaloleni	25,000
Petroleum, refined	thousand 42 -gallon	Kenya Petroleum Refineries Ltd. (KPRL)	Refinery at Mombasa	32,900
	barrels	(Government, 50%, and Essar Energy		
		Overseas Ltd, 50%)		
Ruby and sapphire	kilograms	Rockland Kenya Ltd.	Mine at Kasigau	6,000 e
Salt		Kensalt Ltd.	Plant at Mombasa	120,000
Do.		Magadi Soda Ash Ltd. (Brunner Mond Group Ltd., 100%)	Plant at Magadi	45,000
Do.		Mombasa Salt Works Ltd. and others	Mines near Malindi	NA
Soda ash		Magadi Soda Ash Ltd.	Mine at Magadi	715,000
Sodium silicate		Athi River Mining Ltd. (ARM)	Plants at Athi River and Kaloleni	60,000
Steel: <sup>2</sup>				<u> </u>
Crude		Devki Steel Mills Ltd.	Plant at Nairobi	45,000
Do.		Kenya United Steel Co. Ltd. (subsidiary of	Plant at Mombasa	20,000
		Alam Group of Companies)		,
Billet		Devki Steel Mills Ltd.	Plant at Nairobi	50,000
Do.		Kenya United Steel Co. Ltd.	Plant at Mombasa	20,000 e
Rolled		Mabati Rolling Mills Ltd.	do.	100,000
Do.		Standard Rolling Mills Ltd.	do.	80,000
Do.		Devki Steel Mills Ltd.	Plant at Nairobi	36,000
Do.		Kenya United Steel Co. Ltd.	Plant at Mombasa	30,000
Sulfuric acid		Kel Chemicals Ltd.	Plant at Thika	32,000
Do.		Pan Africa Chemicals Ltd.	Plant at Webuye	NA
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<sup>&</sup>lt;sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>&</sup>lt;sup>1</sup>Not operating at the end of 2009.

<sup>&</sup>lt;sup>2</sup>In addition to its billet and rolled steel facilities, Kenya has three galvanized steel plants with a combined capacity of 175,000 metric tons per year.