

# 2013 Minerals Yearbook

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## KENYA

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# THE MINERAL INDUSTRY OF KENYA

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In 2013, 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 nearly 4% (Dolley, 2014). Other domestically significant mining and mineral processing operations included cement and petroleum refining. Kenya was not a globally significant consumer of minerals.

In 2012, the Government issued regulations requiring mining companies to cede at least 35% of the shares in their new Kenyan operations to domestic companies and investors. The proposed Mining Act, 2013, which was not enacted at yearend, would replace the regulations with a 10% free-carried Government interest in large mining operations (Jiwaji, 2013).

In August 2013, the Government canceled all exploration, mining, and prospecting licenses issued between January 15, 2013, and May 15, 2013, because the licenses reportedly were issued without proper documentation. A total of 43 licenses were revoked. The Government also increased royalty rates on niobium, rare earths, and titanium minerals to 10% from 3%; on coal, to 8% from 4%; and on gold, to 5% from 2.5% (Jiwaji, 2013; Metal Bulletin, 2013; Kushner, 2014).

## Minerals in the National Economy

In 2013, the manufacturing sector accounted for 8.9% of the gross domestic product; the construction sector, 4.4%; and the mining and quarrying sector, 0.6%. The value of output in the mining and quarrying sector increased by 7.4% in 2013. Formal employment in the mining and quarrying sector was reported to be 9,414 workers in 2013 compared with 9,001 in 2012. The clay, sand, and stone quarrying subsector employed 5,146 Kenyans in 2013; chemical and fertilizer mineral mining, 1,732; and other mining and quarrying, 2,536. The basic iron and steel manufacturing subsector employed 7,680 Kenyans in 2013; the subsector that produced cement, lime, and plaster, 4,916; other nonmetallic mineral products, 3,412; glass and glass products, 1,789; and petroleum products, 301 (Kenya National Bureau of Statistics, 2014, p. 55, 57, 230–231).

## Production

In 2013, Kenya's production of garnet other than green garnet increased by 297% compared with that of 2012; tourmaline, by 265%; aquamarine, by 56%; iolite, by 50%; aluminum, by an estimated 21%; crude and semimanufactured steel, by an estimated 18% each, and salt, by an estimated 16%. The output of fluor spar decreased by 56% in 2013; gold, by 42%; diatomite, by 39%; refined petroleum products, by an estimated 38%; gypsum and ruby, by 17% each; sapphire, by an estimated 16%; green garnet, by 13%; and vermiculite, by 12%. Ilmenite and rutile mining started in 2013 and iron ore mining shut down (table 1; Kenya National Bureau of Statistics, 2014, p. 141, 144; Shadrack Kimomo, Chief Geologist, Kenya Ministry of Mines, written commun., July 17, 2014).

## Structure of the Mineral Industry

Most of Kenya's mining and mineral processing operations were privately owned, including the diatomite, fluor spar, gemstone, salt, and soda ash mines; the lime plants; and the steel mills except for Numerical Machining Complex Ltd. All cement plants except for East Africa Portland Cement Company Ltd. (EAPC) were privately owned. The Government held a 52% share in EAPC and a 50% share in Kenya Petroleum Refineries Ltd. (KPRL). Artisanal miners produced gemstones and gold.

## Commodity Review

### Metals

**Gold.**—Artisanal miners accounted for most of Kenya's gold production, which was about 2,100 kilograms (kg) in 2013 compared with 3,600 kg (revised) in 2012. Decreased production could be attributable to decreased gold prices (Kenya National Bureau of Statistics, 2014, p. 141).

In 2013, African Barrick Gold plc (ABG) of the United Kingdom engaged in soil sampling and drilling operations at its West Kenya Joint Venture project near Lake Victoria. ABG planned further exploration in 2014 (African Barrick Gold plc, 2014, p. 24).

**Iron Ore and Iron and Steel.**—Wanjala Mining Co. mined iron ore at Kishushe in 2012. The company's mining license and at least eight iron ore exploration licenses were revoked by the Government in August 2013 (Metal Bulletin, 2013).

Kenya's rolling mills produced about 600,000 metric tons per year (t/yr) of steel products. The country also imported about 1.22 million metric tons (Mt) of steel products in 2013 compared with about 778,000 metric tons (t) in 2012. Recent increases in production and imports were attributable to growth in the construction sector (Jiwaji, 2014; Kenya National Bureau of Statistics, 2014, p. 87).

**Niobium (Columbium).**—In July 2013, Pacific Wildcat Resources Corp. (PAW) of Canada estimated that niobium resources at the Mrima Hill project were 142 Mt at a grade of 0.71% niobium pentoxide. The Government revoked PAW's mining license in August; the company was appealing the decision at yearend (Pacific Wildcat Resources Corp., 2013; Industrial Minerals, 2014).

**Titanium and Zirconium.**—In December 2013, Base Resources Ltd. of Australia started mining at the Kwale mineral sands deposit. By yearend, Base Resources had produced 5,539 t of ilmenite and 152 t of rutile. The life of the mine was estimated to be 13 years. During the first 7 years of the project, ilmenite production was likely to be 330,000 t/yr; rutile, 79,000 t/yr; and zircon, 30,000 t/yr. In the subsequent 6 years, production was expected to decline to an average of 200,000 t/yr of ilmenite, 55,000 t/yr of rutile, and 19,000 t/yr of zircon (Ollett, 2013; Base Resources Ltd., 2014).

## Industrial Minerals

**Cement.**—Kenya had six cement-producing companies with a combined capacity of about 7.5 million metric tons per year (Mt/yr). National cement output increased to 5.06 Mt in 2013 from 4.64 Mt in 2012 and 2.83 Mt in 2008. Increased cement production was attributable to the opening of new plants and the expansion of existing plants. ARM Cement Ltd. planned to start construction of a new plant in Kitui County in late 2014; the capacity of the plant was expected to be 2.5 Mt/yr. Dangote Group of Nigeria was likely to complete a new plant with a planned capacity of 1.5 Mt/yr by 2016. Cemtech Ltd. (a subsidiary of Sanghi Group of India) was expected to complete its new plant with a capacity of more than 1.2 Mt/yr by late 2014 or early 2015. EAPC also planned to increase its capacity to 2 Mt/yr from 1.3 Mt/yr by 2015 (Bamburi Cement Ltd., 2013, p. 9; Global Cement, 2013a, b; International Cement Review, 2013; Kenya National Bureau of Statistics, 2014, p. 133; Kiarie and Njihia, 2014, p. 8).

Cement consumption increased to 4.3 Mt in 2013 from 4.03 Mt in 2012 and 2.16 Mt in 2008 because of growth in the construction sector. From 2008 to 2013, residential and nonresidential construction activity in Kenya's main cities increased by 119% and 115%, respectively. During the same period, the paved road network increased to 11,230 kilometers (km) from 8,879 km (Kenya National Bureau of Statistics, 2014, p. 129, 133, 173).

**Fluorspar.**—In 2013, Kenya Fluorspar Co. Ltd. (KFC) produced 48,500 t of fluorspar at its Kimwarer Mine compared with 110,000 t in 2012; the company was not producing in October 2013. KFC faced numerous challenges, including high levels of phosphorus in its ore, expensive power and transportation costs, the lack of a domestic market, low prices for fluorspar on global markets, and shortages of skilled labor (DeSimone, 2013; Pablo Dyre, Head of Sales and Marketing, Kenya Fluorspar Co., written commun, March 8, 2013).

**Rare Earths.**—In July 2013, PAW estimated that rare-earth resources at Mrima Hill were 159 Mt at a grade of 3.86% rare-earth oxides. The Mrima Hill deposit contained a high-grade zone that had resources of 26.4 Mt at a grade of 7.05% rare-earth oxides (Pacific Wildcat Resources Corp., 2013).

**Soda Ash.**—Tata Chemicals Magadi Ltd. (an indirect subsidiary of Tata Group of India) mined trona from Lake Magadi. In 2013, output increased to 468,215 t from 449,269 t (revised) in 2012. At least 94% of the company's production was exported to India and to African, Asian, and Middle Eastern countries in 2013; soda ash accounted for 2% of the value of total national exports. Soda ash was consumed domestically by glass producers and by ARM in the production of sodium silicate (Kenya National Bureau of Statistics, 2014, p. 73, 141, 175).

## Mineral Fuels

**Coal.**—In early December 2013, the Government announced plans to sign an agreement with Fenxi Mining Industry Co. of China to develop Blocks C and D at Mwingi, which is located 143 km northeast of Nairobi. Fenxi was expected to start mining by mid-2016; coal from Mwingi would be used in a new

900-megawatt-capacity power station in Lamu County (Doya, 2013).

**Natural Gas and Petroleum.**—In 2013, Tullow Oil plc of the United Kingdom drilled the Etuko-1 well at onshore Block 10BB and the Ekales-1 well at onshore Block 13T with successful results. Africa Oil Corp. of Canada drilled the Bahasi-1 well at onshore Block 9. Anadarko Petroleum Corp. of the United States drilled the Kubwa well at offshore Block L7 in 2013. The company abandoned the Kubwa well and subsequently started drilling at offshore Block L11B. BG Group plc of the United Kingdom planned to start drilling at offshore Blocks L10A and L10B in the Lamu basin in 2014 (Lewis, 2013).

In 2013, production at KPRL's refinery decreased to about 11,500 barrels per day (bbl/d) from 18,500 bbl/d in 2012; output was limited by the refinery's outdated equipment. Essar Energy Overseas Ltd. of Mauritius was considering an upgrade that would increase output to the refinery's nameplate capacity of 80,000 bbl/d by 2018. In 2013, the company decided not to proceed with the expansion because of its high cost. The refinery was shut down in early September (Public Investments Committee of the National Assembly of Kenya, 2014, p. 18).

## Outlook

Cement production is likely to increase between 2014 and 2018 because of the planned increases in national capacity to 13.4 Mt/yr from 7.5 Mt/yr. Cement demand is expected to increase because of the Government's plans to build new infrastructure; growth in the construction sector is also likely to result in increased steel production. The production of gypsum, limestone, and pozzolanic materials for use in the cement industry also could increase.

In 2014, zircon production is likely to start and ilmenite and rutile production is likely to increase sharply as the Kwale Mine has its first full year of production. Coal production could start by mid-2016. The outlook for fluorspar, gemstones, and soda ash depends heavily on world market conditions.

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TABLE 1  
KENYA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2009	2010	2011	2012	2013
Aluminum, secondary <sup>c</sup>	7,100 <sup>r</sup>	7,800 <sup>r</sup>	8,900 <sup>r</sup>	9,100 <sup>r</sup>	11,000
Carbon dioxide gas, natural	15,711	16,345	16,275	19,919 <sup>r</sup>	18,900
Cement, hydraulic thousand metric tons	3,320	3,710	4,478	4,640	5,059
Clays: <sup>e</sup>					
Bentonite	65	70	70 <sup>r</sup>	75	80
Kaolin	900	970 <sup>r</sup>	1,000 <sup>r</sup>	1,000 <sup>r</sup>	1,100
Other	24,000	26,000	27,000 <sup>r</sup>	28,000	30,000
Diatomite	231	224	713	1,731 <sup>r</sup>	1,054
Feldspar <sup>c</sup>	30	30	35	35	35
Fluorspar, acid grade	15,667	44,500	117,420	110,000	48,500
Gemstones, precious and semiprecious:					
Amethyst <sup>c</sup> kilograms	5,000 <sup>r</sup>	10,000 <sup>r</sup>	16,000 <sup>r</sup>	22,100 <sup>r,3</sup>	20,100 <sup>3</sup>
Aquamarine <sup>c</sup> do.	230 <sup>r</sup>	260 <sup>r</sup>	290 <sup>r</sup>	320 <sup>r,3</sup>	500 <sup>3</sup>
Cordierite, iolite <sup>c</sup> do.	110 <sup>r</sup>	140 <sup>r</sup>	170 <sup>r</sup>	200 <sup>r,3</sup>	300 <sup>3</sup>
Garnet, green do.	965	1,075	1,205	1,258 <sup>r</sup>	1,100
Garnet, other <sup>c</sup> do.	2,900	3,200	3,600	3,800 <sup>3</sup>	15,100 <sup>3</sup>
Ruby do.	5,575	5,450	6,240	6,625 <sup>r</sup>	5,500
Sapphire <sup>c</sup> do.	3,100 <sup>r</sup>	3,000 <sup>r</sup>	3,500 <sup>r</sup>	3,700 <sup>r</sup>	3,100
Tourmaline <sup>c</sup> do.	7,600 <sup>r</sup>	8,200 <sup>r</sup>	8,800 <sup>r</sup>	9,400 <sup>r,3</sup>	34,300 <sup>3</sup>
Gold, mine output, Au content do.	1,055	2,355	1,636	3,600 <sup>r</sup>	2,100
Gypsum and anhydrite <sup>4</sup>	5,345	5,500	6,520	6,653 <sup>r</sup>	5,500
Iron ore: <sup>e</sup>					
Gross weight	10,000 <sup>r</sup>	30,000 <sup>r</sup>	50,000 <sup>r</sup>	70,500 <sup>r,3</sup>	-- <sup>3</sup>
Fe content	5,700 <sup>r</sup>	17,000 <sup>r</sup>	28,000 <sup>r</sup>	40,000 <sup>r</sup>	-- <sup>3</sup>
Lead, refined secondary <sup>c</sup>	500	750 <sup>r</sup>	1,000 <sup>r</sup>	1,000 <sup>r</sup>	1,000
Lime <sup>c</sup>	50,000 <sup>r</sup>	52,000 <sup>r</sup>	52,000 <sup>r</sup>	55,000 <sup>r</sup>	55,000
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	1,340	1,547	1,522	999 <sup>r</sup>	615
Kerosene do.	835	812 <sup>r</sup>	912 <sup>r</sup>	518 <sup>r</sup>	320 <sup>e</sup>
Jet fuel do.	1,990	1,935	2,181 <sup>r</sup>	1,245 <sup>r</sup>	770 <sup>e</sup>
Distillate fuel oil do.	2,907	2,933	3,203	1,786 <sup>r</sup>	1,153
Residual fuel oil do.	3,316	2,994	3,463	1,995 <sup>r</sup>	1,225
Liquefied petroleum gas do.	341	339	320	198 <sup>r</sup>	144
Bitumen do.	2	97	33	--	--
Total do.	10,731 <sup>r</sup>	10,657 <sup>r</sup>	11,634 <sup>r</sup>	6,741 <sup>r</sup>	4,200 <sup>e</sup>
Salt, crude <sup>c</sup>	220,000 <sup>r</sup>	230,000 <sup>r</sup>	280,000 <sup>r</sup>	320,000 <sup>r</sup>	370,000
Sand, industrial; glass <sup>c</sup>	15,000	16,000 <sup>r</sup>	17,000 <sup>r</sup>	18,000	19,000
Soda ash	404,904	473,689	499,052	449,269 <sup>r</sup>	468,215
Steel:					
Crude <sup>c</sup>	270,000 <sup>r</sup>	290,000 <sup>r</sup>	330,000 <sup>r</sup>	340,000 <sup>r</sup>	400,000
Semimanufactured <sup>c</sup>	400,000 <sup>r</sup>	440,000 <sup>r</sup>	500,000	510,000 <sup>r</sup>	600,000
Galvanized	182,151	201,410	268,096	255,815	277,754
Sulfuric acid <sup>c</sup>	19,000	21,000 <sup>r</sup>	22,000 <sup>r</sup>	22,000 <sup>r</sup>	23,000
Titanium:					
Ilmenite concentrate	--	--	--	--	5,539
Rutile concentrate	--	--	--	--	152
Vermiculite	315	395	515	457 <sup>r</sup>	400

<sup>c</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. -- Zero.

<sup>1</sup>Table includes data available through January 9, 2015.

<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 reliable estimates of output.

<sup>3</sup>Reported figure.

<sup>4</sup>Gypsum production for use in cement only.

TABLE 2  
KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
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.
Do.		Kaluworks Ltd.	Plant at Mombasa	NA.
Carbon dioxide gas, natural		Carbacid Ltd.	Plant at Nairobi	35,000.
Cement		Bamburi Cement Ltd. (Lafarge Group, 58.6%)	Plants at Bamburi and Mombasa	2,500,000.
Do.		Savannah Cement Ltd. (Savannah Heights, 40%; Wan-Ho, 40%; Acme Cement, 20%)	Plant at Athi River	1,500,000.
Do.		East African Portland Cement Company Ltd. (EAPC) [Lafarge Group, 41.7%; National Social Security Fund (Government-owned), 27%; Government, 25%]	do.	1,300,000.
Do.		ARM Cement Ltd.	Plant at Nairobi	650,000.
Do.		do.	Plant at Kaloleni	350,000.
Do.		Mombasa Cement Ltd.	Plant at Athi River	800,000.
Do.		National Cement Company Ltd. (a subsidiary of Devki Group of Companies)	do.	350,000.
Diatomite		African Diatomite Industries Ltd.	Kariandusi and Soysambu	10,800.
Fluorspar		Kenya Fluorspar Ltd.	Mine at Kimwarer	120,000.
Glass		Central Glass Industries Ltd.	Plant at Nairobi	51,000.
Do.		Milly Glass Works Ltd.	Plant at Mombasa	45,000.
Gold	kilograms	Artisanal miners	Mines in Nyanza, Rift Valley, and Western Provinces	NA.
Iron ore		Wanjala Mining Co.	Mine at Wanjala <sup>1</sup>	10,000.
Lead, refined secondary		Associated Battery Manufacturers Company Ltd.	Plant at Athi River	3,000.
Lime		Homa Lime Company Ltd.	Plant at Koru	33,000.
Do.		ARM Cement Ltd.	Plant at Kaloleni	25,000.
Petroleum, refined	thousand 42-gallon barrels	Kenya Petroleum Refineries Ltd. (KPRL) (Government, 50%, and Essar Energy Overseas Ltd., 50%)	Refinery at Mombasa <sup>1</sup>	29,200.
Ruby and sapphire	kilograms	Rockland Kenya Ltd.	Mine at Kasigau	6,000. <sup>c</sup>
Salt		Krystalline Salt Ltd.	Plant near Malindi	280,000. <sup>c</sup>
Do.		Kensalt Ltd.	Plant at Mombasa	200,000. <sup>c</sup>
Do.		Tata Chemicals Magadi Ltd.	Plant at Magadi	45,000.
Soda ash		do.	Mine at Magadi	715,000.
Sodium silicate		ARM Cement Ltd.	Plants at Athi River and Kaloleni	60,000.
Steel:				
Crude		Devki Steel Mills Ltd.	Three plants in Kenya	250,000.
Do.		Athi Steel Ltd.	Plant at Athi River	120,000.
Do.		Numerical Machining Complex	Plant at Nairobi	20,000.
Do.		Kenya United Steel Company Ltd. (subsidiary of Alam Group of Companies)	Plant at Mombasa	20,000.
Rolled		Devki Steel Mills Ltd.	Three plants in Kenya	250,000. <sup>c</sup>
Do.		Mabati Rolling Mills Ltd.	Plant at Mombasa	200,000. <sup>c</sup>
Do.		Athi Steel Ltd.	Plant at Athi River	120,000. <sup>c</sup>
Do.		Numerical Machining Complex	Plant at Nairobi	100,000.
Do.		Tarmal Wire Products Ltd.	Plant at Mombasa	84,000.
Do.		Standard Rolling Mills Ltd.	do.	80,000.
Do.		Kenya United Steel Company Ltd.	do.	30,000.
Sulfuric acid		Kel Chemicals Ltd.	Plant at Thika	14,600.
Do.		Pan Africa Chemicals Ltd.	Plant at Webuye	NA.
Titanium		Base Resources Ltd.	Mine in Kwale County	330,000 ilmenite; 79,000 rutile.
Zircon		do.	do.	30,000.

<sup>c</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Not operating at the end of 2013.