



# 2014 Minerals Yearbook

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## KENYA

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# THE MINERAL INDUSTRY OF KENYA

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In 2014, Kenya played a significant role in the world's production of natural soda ash and fluorspar. The country's share of the world's mine production of soda ash was 3.3%, and fluorspar, 1.1%. Other domestically significant mining and mineral processing operations included cement production and ilmenite, rutile, and zircon mining. Kenya was not a globally significant consumer of minerals (Bolen, 2016; McRae, 2016).

The mining and quarrying sector of Kenya was governed by the Mining Act of 1986. The natural gas and petroleum sector was governed by the Petroleum Exploration and Production Act of 1986. In 2013, the Ministry of Mines canceled all exploration, mining, and prospecting licenses issued between January 15, 2013, and May 15, 2013. A total of 43 licenses were revoked. In 2013, the Ministry also increased royalty rates on niobium, rare earths, and titanium minerals to 10% from 3%, and on gold, to 5% from 2.5% (Metal Bulletin, 2013; Mutai, 2014).

The proposed Mining Bill 2014 would establish a Mineral Rights Board to make recommendations to the Ministry of Mines on the status of mineral rights agreements, royalty rates, and areas to open to artisanal mining. The bill also would give the Government a 10% interest in new mining operations. At yearend, the bill had been approved by the National Assembly but not by the Senate (Mutai, 2014; Jorgic, 2015).

## Minerals in the National Economy

In 2014, the manufacturing sector accounted for 10% of the gross domestic product; the construction sector, 4.8%; and the mining and quarrying sector, 0.8%. The value of output in the mining and quarrying sector increased by 14.2% in 2014. Formal employment in the mining and quarrying sector was reported to be 12,850 workers in 2014 compared with 9,384 in 2013. The increase in mining employment was broad based, with employment increasing in all subsectors. The clay, sand, and stone quarrying subsector employed 7,275 Kenyans in 2014; chemical and fertilizer mineral mining, 2,456; and other mining and quarrying, 3,119. The basic iron and steel manufacturing subsector employed 7,831 Kenyans in 2014; cement, lime, and plaster, 4,847; other nonmetallic mineral products, 3,399; glass and glass products, 1,796; and petroleum products, 286 (Kenya National Bureau of Statistics, 2015b, p. 53–54, 56, 226–227).

## Production

In 2014, Kenya's production of kaolin increased by an estimated 45%; other clays, by an estimated 43%; bentonite, by an estimated 38%; cement, by 16%; ruby, by 11%; and green garnet, by 10%. Ilmenite and rutile production increased and zircon mining started in 2014 as the Kwale Mine had its first full year of production. The output of sand and stone for construction probably increased. Gold production decreased by 90% in 2014; diatomite, by 84%; carbon dioxide, by 13%; and

soda ash, by 12%. The production of amethyst, aquamarine, cordierite, other garnet, and tourmaline was estimated to have decreased by between 56% and 57% in 2014. Petroleum refining shut down in 2013 (table 1; Kenya National Bureau of Statistics, 2015b, p. 137; 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, fluorspar, gemstone, salt, and soda ash mines; the lime plants; and the steel mills except for the 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 200 kilograms (kg) in 2014 compared with 2,100 kg in 2013. Decreased output was primarily attributable to decreased gold prices. Between the start of 2013 and the end of 2014, gold prices decreased by nearly 29% (American Metal Market, 2013, 2014; Kenya National Bureau of Statistics, 2015a, p. 176–177). In 2014, Red Rock Resources plc (ABG) of the United Kingdom was engaged in a feasibility study of a new mine at the Nyanza deposit, which was part of the Mikei project. Depending on the results of the study, Red Rock could produce about 500 kilograms per year of gold during a mine life as long as 9 years (Barradas, 2015).

**Iron Ore and Iron and Steel.**—Wanjala Mining Co. mined iron ore at Kishushe in 2012; the company's mining license was revoked by the Government in 2013. In early 2014, the Government announced that an Indian company had expressed interest in mining about 1 million metric tons per year (Mt/yr) of iron ore at Kishushe (African Mining, 2014).

Kenya's rolling mills produced about 600,000 metric tons per year (t/yr) of steel products. The country also imported about 1.2 million metric tons (Mt) of steel products in 2014 compared with about 1.22 Mt in 2013 and about 717,000 metric tons (t) in 2010. Recent increases in production and imports were attributable to growth in the construction sector (Jiwaji, 2014; Kenya National Bureau of Statistics, 2015b, p. 83).

**Niobium (Columbium) and Rare Earths.**—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. Rare-earth resources

at Mrima Hill were estimated to be 159 Mt at a grade of 3.86% rare-earth oxides. The Government revoked PAW's mining license in August 2013; the company was appealing the decision at the end of 2014 (Pacific Wildcat Resources Corp., 2013; Wafula, 2015).

**Titanium and Zirconium.**—In December 2013, Base Resources Ltd. of Australia started mining at the Kwale mineral sands deposit. By yearend, the company had produced 5,539 t of ilmenite and 152 t of rutile. In 2014, production increased to 368,239 t of ilmenite and 59,348 t of rutile. Base Resources also produced 15,004 t of zircon in 2014; zircon recovery rates were about 53% compared with 94% for rutile. By September 2015, the company planned to produce at Kwale's capacity of 360,000 t/yr of ilmenite, 80,000 t/yr of rutile, and 30,000 t/yr of zircon (Cornish, 2014; Base Resources Ltd., 2015).

### *Industrial Minerals*

**Cement.**—Kenya had six cement-producing companies with a combined capacity of nearly 8.1 Mt/yr. National cement output increased to 5.88 Mt in 2014 from 5.06 Mt in 2013 and 3.71 Mt in 2010. Increased cement production in recent years was attributable to the opening of new plants and the expansion of existing plants (Kenya National Bureau of Statistics, 2015b, p. 129; Kiarie and Njihia, 2015).

By 2018, domestic cement capacity was likely to increase to 17.4 Mt/yr. 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 2.9 Mt/yr. The construction of the plant was likely to take between 3 and 4 years. At yearend, ARM had not started construction. National Cement Ltd. (a subsidiary of Devki Group) planned to increase cement production capacity at its Athi River plant to 1.7 Mt/yr from 350,000 t/yr by 2016. EAPC also planned to increase its capacity to 2 Mt/yr from 1.3 Mt/yr by 2015. Other projects included Dangote Group of Nigeria's new plant in Kitui County with a capacity of 3 Mt/yr, Cemtech Ltd. of India's new plant at Pokot with a capacity of 1.2 Mt/yr, and Karsan Ramji & Sons Ltd.'s new plant at Athi River with a capacity of 220,000 t/yr. Savannah Cement Ltd. planned to increase production to its full capacity of 1.5 Mt/yr by the second half of 2017; the company was producing at 50% of capacity in 2014 (Kamau, 2014; Mwakio, 2014; Kiarie and Njihia, 2015; Muasya, 2015).

By 2018, domestic clinker capacity was likely to increase to 7.4 Mt/yr from 3.2 Mt/yr. Savannah Cement planned to complete a new clinker plant at Athi River with a capacity of 1.2 Mt/yr by the end of 2017. National Cement planned to build a new plant at Kajiado with a capacity of 1.1 Mt/yr by 2016. Other projects included Dangote's new plant with a capacity of 1.2 Mt/yr and Cemtech Ltd. of India's new plant at Pokot with a capacity of 750,000 t/yr (Kamau, 2014; Kiarie and Njihia, 2015).

Cement consumption increased to 5.2 Mt in 2014 from 4.27 Mt in 2013 and 3.09 Mt in 2010 because of growth in the construction sector. From 2010 to 2014, private nonresidential and residential construction activity in Kenya's main cities increased by 81% and 53%, respectively. During the same period, the paved road network increased to 11,274 kilometers (km) from 8,879 km (Kenya National Bureau of Statistics, 2015b, p. 124, 129, 170).

**Fluorspar.**—In 2014, Kenya Fluorspar Co. Ltd. (KFC) produced 74,000 t of fluorspar at its Kimwarer Mine compared with 48,500 t in 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, July 2, 2015).

**Gemstones.**—Amethyst, aquamarine, cordierite, garnet, ruby, sapphire, tourmaline, and other gemstones were mined in Kenya. In 2014, the production of various gemstones other than green garnet and ruby was estimated to have decreased by between 55% and 57% because of decreased prices on world markets (Kenya National Bureau of Statistics, 2015a, p. 176).

**Soda Ash.**—Tata Chemicals Magadi Ltd. (an indirect subsidiary of Tata Group of India) mined trona from Lake Magadi. In 2014, output decreased to 409,845 t from 468,215 t in 2013 as the company closed its premium-grade plant because of high energy costs. Nearly 97% of soda ash 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, 2015a, p. 73, 141, 175).

### *Mineral Fuels and Related Materials*

**Coal.**—In early September 2014, the Government awarded the tender to build a new 960-megawatt power station in Lamu County to Gulf-Centum Investments. The power station was expected to be completed by 2016; coal initially would be imported from South Africa and subsequently sourced from the Mui coal basin in Kitui County. In late September, Hebei Construction Investment Group Ltd. of China and Liketh Investments of Kenya engaged in a lawsuit to stop the project because of alleged improprieties in the tender process for the power station. At yearend, the issue was still under litigation (Ohito, 2014; Chao-Blasto, 2015).

**Natural Gas and Petroleum.**—In 2014, Africa Oil Corp. of Canada and Tullow Oil plc of the United Kingdom drilled numerous wells in the onshore Blocks 10BB and 13T with successful results, including the Kodos-1 well. Africa Oil and Tullow planned to submit their field development plan to the Government in 2015; the companies could start crude petroleum production in 2017 depending on approval of the plan by the fourth quarter of 2015. Planned production in Blocks 10BB and 13T was between 100,000 and 120,000 barrels per day (Ecobank Research Division, 2014, p. 1; Africa Oil Corp., 2015).

BG Group plc of the United Kingdom drilled the Sunbird-1 well in Block L10A in January; the well was prospective for natural gas and petroleum. Ophir Energy plc of the United Kingdom delayed plans to drill a well in Block L9 from the third quarter of 2014 to the first half of 2015. Anadarko Petroleum Corp. of the United States was expected to drill wells at offshore Blocks L7 and L11 in 2015. The company abandoned the Kubwa well and subsequently started drilling at offshore Block L11B. FAR Ltd. of Australia planned to drill a well in

Block L6 by the end of the first quarter of 2015. Afren plc of the United Kingdom planned to drill wells in Blocks L17 and L18 in 2015 (Ecobank Research Division, 2014, p. 3; Rach, 2014).

In September 2013, production at KPRL's refinery shut down because of outdated equipment. The refinery remained closed at the end of 2014 (Public Investments Committee of the National Assembly of Kenya, 2014, p. 18; Kenya National Bureau of Statistics, 2015b, p. 141).

## Outlook

Cement production is likely to increase in the near future because of the planned increases in national capacity to 17.4 Mt/yr from 8.1 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 is likely to increase; clinker production capacity is likely to increase to 7.4 Mt/yr from 3.2 Mt/yr. The increases in gypsum, limestone, and pozzolanic materials output are expected to be less than that of cement because several new cement plants would use imported clinker (Kiarie and Njihia, 2015).

In 2015, rutile and zircon production is likely to increase at the Kwale Mine. Soda ash production is expected to decrease because of the closure of the premium-grade plant in 2014. Fluorspar output is also likely to decrease in 2015. Crude petroleum production could start in 2017.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2010	2011	2012	2013	2014
METALS					
Aluminum, secondary <sup>c</sup>	13,000 <sup>r</sup>	14,000 <sup>r</sup>	16,000 <sup>r</sup>	18,000 <sup>r</sup>	17,000
Gold, mine output, Au content kilograms	2,355	1,636	3,600	2,100	200
Iron ore <sup>c</sup>					
Gross weight	30,000	50,000	70,500 <sup>3</sup>	-- <sup>3</sup>	--
Fe content	17,000	28,000	40,000	-- <sup>3</sup>	--
Lead, refined secondary <sup>c</sup>	750	1,000	1,000	940 <sup>r</sup>	1,000
Steel:					
Crude <sup>c</sup>	290,000	330,000	340,000	400,000	410,000
Semimanufactured <sup>c</sup>	440,000	500,000	510,000	600,000	620,000
Galvanized	201,410	268,096	255,815	306,099 <sup>r</sup>	284,509
Titanium:					
Ilmenite concentrate	--	--	--	5,539	368,239
Rutile concentrate	--	--	--	152	59,348
Zircon	--	--	--	--	15,004
INDUSTRIAL MINERALS					
Carbon dioxide gas, natural	16,345	16,275	19,919	17,283 <sup>r</sup>	15,069
Cement, hydraulic thousand metric tons	3,710	4,478	4,694 <sup>r</sup>	5,059	5,883
Clays: <sup>c</sup>					
Bentonite	70	70	75	80	110
Kaolin	970	1,000	1,000	1,100	1,600
Other	26,000	27,000	28,000	30,000	43,000
Diatomite	224	713	1,731	1,054	168
Feldspar <sup>c</sup>	30	35	35	35	40
Fluorspar, acid grade	44,500	117,420	110,000	48,500	74,000
Gemstones, precious and semiprecious:					
Amethyst <sup>c</sup> kilograms	10,000	16,000	22,100 <sup>3</sup>	20,100 <sup>3</sup>	8,800
Aquamarine <sup>c</sup> do.	260	290	320 <sup>3</sup>	500 <sup>3</sup>	220
Cordierite, iolite <sup>c</sup> do.	140	170	200 <sup>3</sup>	300 <sup>3</sup>	130
Garnet, green do.	1,075	1,205	1,258	1,100	1,210
Garnet, other <sup>c</sup> do.	3,200	3,600	3,800 <sup>3</sup>	15,100 <sup>3</sup>	6,600
Ruby do.	5,450	6,240	6,625	5,500	6,100
Sapphire <sup>c</sup> do.	3,000	3,500	3,700	3,100	3,400
Tourmaline <sup>c</sup> do.	8,200	8,800	9,400 <sup>3</sup>	34,300 <sup>3</sup>	15,000
Gypsum and anhydrite <sup>4</sup>	5,500	6,520	6,653	5,500	5,900
Lime <sup>c</sup>	52,000	52,000	55,000	55,000	57,000
Salt, refined	241,514 <sup>r</sup>	253,965 <sup>r</sup>	230,872 <sup>r</sup>	207,147	223,295
Sand, industrial; glass <sup>c</sup>	35,000 <sup>r</sup>	23,000 <sup>r</sup>	26,000 <sup>r</sup>	21,000 <sup>r</sup>	22,000
Soda ash	473,689	499,052	449,269	468,215	409,845
Sulfuric acid <sup>c</sup>	21,000	22,000	22,000	23,000	24,000
Vermiculite	395	515	457	400	440
MINERAL FUELS AND RELATED MATERIALS					
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	1,547	1,522	999	615	--
Kerosene do.	812	912	518	325 <sup>r</sup>	--
Jet fuel do.	1,935	2,181	1,245	769 <sup>r</sup>	--
Distillate fuel oil do.	2,933	3,203	1,786	1,153	--
Residual fuel oil do.	2,994	3,463	1,995	1,225	--
Liquefied petroleum gas do.	339	320	198	144	--
Bitumen do.	97	33	--	--	--
Total do.	10,657	11,634	6,741	4,231 <sup>r</sup>	--

<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 December 7, 2015.

<sup>2</sup>In addition to the commodities listed, a variety of gemstones and construction materials, such as brick clays, gravel, murram (laterite), crushed rock, and construction sand, may have been produced, but quantities were not reported, and available information was 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 2014

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Aluminum, secondary		Kaluworks Ltd.	Plant at Mombasa	15,000.
Do.		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, natural		Carbacid Ltd.	do.	35,000.
Cement		Bamburi Cement Ltd. (Lafarge Group, 58.6%)	Plants at Bamburi and Mombasa	2,300,000.
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.		do.	Plant at Vipengo	800,000.
Do.		National Cement Company Ltd. (a subsidiary of Devki Group of Companies)	Plant at Athi River	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		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. <sup>2</sup>
Sodium silicate		ARM Cement Ltd.	Plants at Athi River	60,000.
Steel: <sup>3</sup>				
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.

See footnotes at end of table.

TABLE 2  
KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
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	360,000 ilmenite; 80,000 rutile.
Zircon	do.	do.	30,000.

<sup>8</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Not operating at the end of 2014.

<sup>2</sup>Only 360,000 metric tons of capacity operating at the end of 2014.

<sup>3</sup>In addition to its billet and rolled steel facilities, Kenya had several galvanized-steel plants.