



2015 Minerals Yearbook

KENYA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF KENYA

By Thomas R. Yager

In 2015, Kenya played a significant role in the world's production of fluor spar, ilmenite, rutile, natural soda ash, and zircon. The country's share of the world's mine production of rutile was about 9%; ilmenite, 4%; soda ash, 3%; zircon, 2%; and fluor spar, 1%. Other domestically significant mining and mineral-processing operations included cement production. Kenya was not a globally significant consumer of minerals in 2015 (Base Resources Ltd., 2016; Bedinger, 2017a, b; Bolen, 2017; McRae, 2017).

Minerals in the National Economy

In 2015, the manufacturing sector accounted for 10.3% of the country's gross domestic product; the construction sector, 4.8%; and the mining and quarrying sector, 0.9%. The value of output in the mining and quarrying sector increased by 11% in 2015. Iron and steel accounted for 2.5% of Kenya's total exports in 2015; ilmenite, rutile, and zircon, a total of 1.9%; cement, 1.5%; soda ash, 1.2%; and other minerals and mineral products, including fluor spar, glassware, salt, sand and gravel, and stone, 1.5%. Petroleum products accounted for 14% of total imports in 2015; iron and steel, 5.6%; chemical fertilizers, 1.5%; and other mineral products and mineral fuels, 2% (Kenya National Bureau of Statistics, 2016a, p. 21, 24, 126–127).

Formal employment in the mining and quarrying sector was reported to be 14,442 workers in 2015 compared with 12,850 in 2014 and 8,672 in 2011. The clay, sand, and stone quarrying subsector employed 8,317 Kenyans in 2015; chemical and fertilizer mineral mining, 2,735; and other mining and quarrying, 3,390. Employment in mineral-processing operations was reported to be at least 18,423 workers in 2015. The basic iron and steel manufacturing subsector employed 7,860 Kenyans in 2015; cement, lime, and plaster, 4,978; other nonmetallic mineral products, 3,477; glass and glass products, 1,826; and refined petroleum products, 282 (Kenya National Bureau of Statistics, 2016b, p. 75–76).

The mining and quarrying sector of Kenya is governed by the Mining Act of 1940. The natural gas and petroleum sector is governed by the Petroleum (Exploration and Production Act) of 1986. In 2014, the National Assembly passed a new bill that repealed the Mining Act of 1940. The Senate passed the bill in 2015, although it had not been signed by the President as of yearend. Depending on the President's assent, the bill would give the Government a 10% free-carried interest in new mining operations, establish a new Government-owned mining corporation, mandate employment preferences for Kenyans by companies holding mineral rights, require local sourcing for materials and services used by companies holding mineral rights, limit small-scale licenses to Kenyan citizens and corporations, and create a new tribunal for the settlement of disputes (Jorgic, 2015; Oraco & Company Advocates, 2016).

Production

In 2015, Kenya's production of various gemstones was estimated to have increased by between 77% and 82%; zircon, by 73%; gold, by 50%; rutile, by 33%; ilmenite, by 21%; and refined lead, by an estimated 10%. The output of sand and stone for construction probably increased. Between 2011 and 2015, the production of garnet other than green garnet increased by an estimated 233%; tourmaline, by an estimated 207%; green garnet, by 83%; ruby, by 76%; sapphire, by 74%; and cement, by 42%. Soda ash production decreased by 28% in 2015; fluor spar, by an estimated 15%; and aluminum, by 12%. Between 2011 and 2015, gold production decreased by 82%; fluor spar, by 46%; and soda ash, by 41% (table 1; Kenya National Bureau of Statistics, 2016a, p. 172).

Structure of the Mineral Industry

Most of Kenya's mining and mineral-processing operations were privately owned, including the diatomite, fluor spar, gemstone, mineral sands, 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 owned Kenya Petroleum Refineries Ltd. (KPRL), which remained closed in 2015, and held a 52% share in EAPC. Artisanal miners produced gemstones and gold. Diatomite, fluor spar, mineral sands, and soda ash were produced by one company each (table 2).

Commodity Review

Metals

Gold.—Artisanal miners accounted for most of Kenya's gold production. In 2015, gold production was about 300 kilograms (kg) compared with 200 kg in 2014 and 2,100 kg in 2013. Reduced production in 2014 was attributable to lower gold prices on world markets (table 1; Kenya National Bureau of Statistics, 2016a, p. 172).

Mid Migori Mining Company Ltd. (Red Rock Resources plc of the United Kingdom, 75%) was considering the development of a new mine at the Nyanza deposit, which was part of the Migori project in southwestern Kenya. The Government revoked two of Red Rock's special prospecting licenses at Migori in 2015; the company was appealing the decision as of November (Red Rock Resources plc, 2015, p. 8).

Iron Ore and Iron and Steel.—Wanjala Mining Co. mined iron ore at Kishushe in 2012; the company's mining operations were suspended by the Government in 2013 because of a legal dispute regarding land ownership. As of August 2015, the

dispute with Kishushe Ranching Cooperative Society had not been resolved (Mwadime, 2015).

Kenya's rolling mills, which included plants operated by Athi Steel Ltd., Devki Steel Mills Ltd., and Mabati Rolling Mills Ltd., produced about 600,000 metric tons per year (t/yr) of steel products. The country also imported 1.53 million metric tons (Mt) of iron and steel products in 2015 compared with about 1.2 Mt in 2014 and about 792,000 metric tons (t) in 2011. Recent increases in production and imports of iron and steel products were attributable to growth in the construction sector. In 2015, the Government signed an agreement with Sinosteel Corp. of China for the development of a new integrated steel plant with a capacity of 2.5 million metric tons per year (Mt/yr). The Government and Sinosteel were considering the development of domestic iron ore deposits to supply the plant (Jiwaji, 2014; XNews, 2015; Kenya National Bureau of Statistics, 2016a, p. 124).

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 canceled all exploration, mining, and prospecting licenses issued between January 15, 2013, and May 15, 2013, including PAW's mining license, in August 2013, because the licenses reportedly were issued without proper documentation. The company appealed the decision to the High Court of Kenya. In March 2015, the High Court upheld the Government's decision. In June, PAW filed an application with a World Bank Group-funded tribunal for arbitration (Jiwaji, 2013; 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. In 2015, Base Resources produced 444,999 t of ilmenite, 78,947 t of rutile, and 25,951 t of zircon compared with 368,239 t of ilmenite, 59,348 t of rutile, and 15,004 t of zircon in 2014. Zircon recovery rates increased to 68% in December 2015 from 53% in December 2014. The company planned to produce between 430,000 and 450,000 t of ilmenite, between 80,000 and 84,000 t of rutile, and between 27,000 and 30,000 t of zircon at Kwale in 2016. Production from the mine was exported to Europe and China (Base Resources Ltd., 2015, 2016).

Industrial Minerals

Cement.—Kenya had seven cement-producing companies with a combined capacity of nearly 8.3 Mt/yr. National cement output increased to 6.35 Mt in 2015 from 5.88 Mt in 2014 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. In 2015, Karsan Ramji & Sons Ltd. completed a new plant at Athi River with a capacity of 210,000 t/yr. Depending on regulatory approval, Karsan Ramji & Sons also planned to complete a new plant with a capacity of 210,000 t/yr near Nakuru by November 2016 (Kiarie and Njihia, 2014; Mutegi, 2015; Kenya National Bureau of Statistics, 2016a, p. 194).

ARM Cement Ltd. was engaged in the construction of a new plant in Kitui County in 2015; the capacity of the plant was

expected to be 2.5 Mt/yr. The plant could start production by 2017. Dangote Group of Nigeria's two new plants with a total capacity of 3 Mt/yr were expected to be completed by 2019. Cemtech Ltd. of India planned to start construction of its new plant at Pokot with a capacity of 1.2 Mt/yr in January 2016 (Kiarie and Njihia, 2014; Bii, 2015; Dangote Cement plc, 2016, p. 44; International Cement Review, 2016).

Cement capacity also was likely to increase because of the expansions of existing plants. National Cement Company Ltd. (a subsidiary of Devki Group of Companies) 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; it was unclear whether the expansion had been completed at yearend. 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. By 2019, domestic cement capacity was likely to increase to 17.2 Mt/yr (Kamau, 2014; Kiarie and Njihia, 2014; Mutegi, 2015).

By 2019, domestic clinker capacity was likely to increase to about 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 by 2019 and Cemtech's new plant at Pokot with a capacity of 750,000 t/yr (Kamau, 2014; Kiarie and Njihia, 2014; Dangote Cement plc, 2016, p. 44).

Cement consumption increased to 5.7 Mt in 2015 from 5.2 Mt in 2014 and 3.09 Mt in 2010 because of growth in the construction sector. From 2010 to 2015, private nonresidential and residential construction activity in Kenya's main cities increased by 103% and 55%, respectively. From 2011 to 2015, the paved road network increased to 11,378 kilometers (km) from 8,880 km (Kenya National Bureau of Statistics, 2016b, p. 216, 220, 252).

Fluorspar.—In 2015, Kenya Fluorspar Co. Ltd. (KFC) produced an estimated 63,000 t of fluorspar at its Kimwarer Mine compared with 74,000 t in 2014. Production was exported to such countries as Germany, India, and Italy. The company shut down mining operations for 2 months starting in June. KFC faced numerous challenges, including high levels of phosphorous 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; East African, The, 2016; 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 2015, the production of various gemstones was estimated to have increased by between 77% and 82% because of increased demand for lower grade gemstones in India, Sri Lanka, and Thailand (Kenya National Bureau of Statistics, 2016a, p. 172).

Nitrogen, Phosphate Rock, and Potash.—Between 2011 and 2015, Kenya's fertilizer imports were an average of about 540,000 t/yr. In September 2015, Toyota Tsusho East Africa Ltd. (a subsidiary of Toyota Tsusho Corp. of Japan) started

construction of a new fertilizer plant at Chesegem. The plant, which was likely to start production in June 2016, would have a capacity of 150,000 t/yr of compound nitrogen, phosphate, and potash fertilizers. Raw materials would be imported; the plant's production costs were expected to be 60% of that of imported fertilizers (Lagat, 2015; Kenya National Bureau of Statistics, 2016a, p. 124).

Soda Ash.—Tata Chemicals Magadi Ltd. (an indirect subsidiary of Tata Group of India) mined trona from Lake Magadi. In 2015, production decreased to 295,417 t from 409,845 t in 2014 and 468,215 t in 2013 because of the closure of one of the company's processing plants and the siltation of Lake Magadi. About 93% of soda ash production was exported to India and to African, Asian, and Middle Eastern countries in 2014 and 2015. Soda ash was consumed domestically by glass producers and by ARM in the production of sodium silicate (Kenya National Bureau of Statistics, 2016a, p. 123, 171–172).

Mineral Fuels and Related Materials

Coal.—In early September 2014, the Government awarded the tender to build a new 960-megawatt-capacity power station in Lamu County to Gulf-Centum Investments. Hebei Construction Investment Group Ltd. of China and Liketh Investments of Kenya subsequently engaged in a lawsuit to stop the project. The companies withdrew the lawsuit in June 2015. The power station was expected to take 3 years to build; coal initially would be imported from South Africa and subsequently sourced from the Mui coal basin in Kitui County (Ohito, 2014; Chao-Blasto, 2015).

Natural Gas and Petroleum.—In September 2013, KPRL's refinery shut down because of outdated equipment. The refinery remained closed at the end of 2015. Kenya relied on imported petroleum products from India to meet its domestic requirements (Kenya National Bureau of Statistics, 2016a, p. 191).

In the third quarter of 2015, Africa Oil Corp. of Canada and Tullow Oil plc of the United Kingdom drilled three exploration wells in the onshore Blocks 10BB and 13T, which were located in the South Lokichar basin. In late December, Tullow started exploration at Block 12A in Keiro basin (Kenya National Bureau of Statistics, 2016a, p. 188).

Africa Oil and Tullow were considering the development of Blocks 10BB and 13T, which were estimated to have resources of 600 million barrels. The companies had planned to start production in as early as 2017 and to ramp up production to 150,000 barrels per day in 4 years. In 2015, the startup of production was delayed until October 2022 because of the need to complete a pipeline from planned oilfields in Uganda to the Port of Lamu in Kenya. The pipeline also would transport oil from Blocks 10BB and 13T. Tullow and its joint-venture partners in Uganda planned to make an investment decision on the Ugandan oilfields and the pipeline by October 2017 (Munda, 2015; Ochieng, 2015).

Outlook

Cement production is likely to increase in the near future because of the planned increases in national capacity to 17.2 Mt/yr from 8.3 Mt/yr. Cement demand is expected to

increase because of the Government's plans to build new infrastructure, including airports, railways, and roads. The production of gypsum and limestone for use in the cement industry also is likely to increase because of the planned expansion of national clinker production capacity to 7.4 Mt/yr from 3.2 Mt/yr (Kiarie and Njihia, 2014).

Growth in the construction sector is also likely to result in increased steel demand. Kenya's steel production could increase with the planned opening of a new plant with a capacity of 2.5 Mt/yr. The new plant could lead to the development of domestic iron ore deposits.

Rutile and zircon production is likely to increase at the Kwale Mine in 2016, with ilmenite production remaining nearly unchanged. Fertilizer production is expected to increase with the opening of a new plant in 2016. Fluorspar output is likely to decrease in 2016. Crude petroleum production could start in 2022 depending on the development of Blocks 10BB and 13T. The opening of a new coal-fired power station in 2018 could lead to the development of domestic coal resources. The outlook for gemstones and soda ash will depend mostly on world market conditions.

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TABLE 1
KENYA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2011	2012	2013	2014	2015 ^c
METALS					
Aluminum, secondary ^c	14,000	16,000	18,000	17,000	15,000
Gold, mine output, Au content kilograms	1,636	3,600	2,100	200	300
Iron ore: ^c					
Gross weight	50,000	70,500 ³	-- ³	--	--
Fe content	28,000	40,000	-- ³	--	--
Lead, refined secondary ^c	1,000	1,000	940	1,000	1,100
Steel:					
Crude ^c	330,000	340,000	400,000	410,000	390,000
Semimanufactured ^c	500,000	510,000	600,000	620,000	590,000
Galvanized	268,096	255,815	306,099	284,509	256,830 ³
Titanium:					
Ilmenite concentrate	--	--	5,539	368,239	444,999 ³
Rutile concentrate	--	--	152	59,348	78,947 ³
Zircon	--	--	--	15,004	25,951 ³
INDUSTRIAL MINERALS					
Carbon dioxide gas, natural	15,197 ^r	19,919	18,436 ^r	19,450 ^r	19,750 ³
Cement, hydraulic thousand metric tons	4,478	4,694	5,059	5,883	6,353 ³
Clay: ^c					
Bentonite	70	75	80	110	110
Kaolin	1,000	1,000	1,100	1,600	1,600
Other	27,000	28,000	30,000	43,000	43,000
Diatomite	2,039 ^r	1,746 ^r	1,054	1,195 ^r	1,090 ³
Feldspar	35	35	35	40	40
Fluorspar	117,420	110,000	48,500	74,000	63,000
Gemstones, precious and semiprecious:					
Amethyst ^c kilograms	16,000	22,100 ³	20,100 ³	8,800	16,000
Aquamarine ^c do.	290	320 ³	500 ³	220	390
Cordierite, iolite ^c do.	170	200 ³	300 ³	130	230
Garnet, green do.	1,205	1,258	1,100	1,210	2,200
Garnet, other ^c do.	3,600	3,800 ³	15,100 ³	6,600	12,000
Ruby do.	6,240	6,625	5,500	6,100	11,000
Sapphire ^c do.	3,500	3,700	3,100	3,400	6,100
Tourmaline ^c do.	8,800	9,400 ³	34,300 ³	15,000	27,000

See footnotes at end of table.

TABLE 1—Continued
KENYA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2011	2012	2013	2014	2015 ^c	
INDUSTRIAL MINERALS—Continued						
Gypsum and anhydrite ⁴	6,520	6,653	5,500	5,900	6,400	
Lime ^c	52,000	55,000	55,000	57,000	57,000	
Salt, refined	253,965	230,872	207,147	223,295	242,100 ³	
Sand, industrial; glass ^c	23,000	26,000	21,000	22,000	27,000	
Soda ash	499,052	449,269	468,215	409,845	295,417 ³	
Vermiculite	515	457	400	440	440	
MINERAL FUELS AND RELATED MATERIALS						
Petroleum refinery products:						
Gasoline	thousand 42-gallon barrels	1,522	999	615	--	-- ³
Kerosene	do.	912	518	325 ^r	--	-- ³
Jet fuel	do.	2,181	1,245	770 ^r	--	-- ³
Distillate fuel oil	do.	3,203	1,786	1,153	--	-- ³
Residual fuel oil	do.	3,463	1,995	1,225	--	-- ³
Liquefied petroleum gas	do.	320	198	144	--	-- ³
Bitumen	do.	33	--	--	--	-- ³
Total	do.	11,634	6,741	4,232 ^r	--	-- ³

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through August 31, 2016.

²In addition to the commodities listed, a variety of minerals and construction materials [brick clays, gravel, murrum (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.

³Reported figure.

⁴Gypsum production excluding use in cement.

TABLE 2
KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	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.	Mombasa Cement Ltd.	Plant at Athi River	800,000.
Do.	do.	Plant at Vipengo	800,000.
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.	National Cement Company Ltd. (a subsidiary of Devki Group of Companies)	Plant at Athi River	350,000.
Do.	Karsan Ramji & Sons Ltd.	do.	210,000.

See footnotes at end of table.

TABLE 2—Continued
KENYA: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Diatomite		African Diatomite Industries Ltd.	Kariandusi and Soysambu	10,800.
Fluorspar		Kenya Fluorspar Co. Ltd. (KFC)	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 Kishushe ¹	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 ¹	29,200.
Ruby and sapphire	kilograms	Rockland Kenya Ltd.	Mine at Kasigau	6,000. ^c
Salt		Krystalline Salt Ltd.	Plant near Malindi	280,000. ^c
Do.		Kensalt Ltd.	Plant at Mombasa	200,000. ^c
Do.		Tata Chemicals Magadi Ltd.	Plant at Magadi	45,000.
Soda ash		do.	Mine at Magadi	715,000. ²
Sodium silicate		ARM Cement Ltd.	Plants at Athi River	60,000.
Steel: ³				
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. ^c
Do.		Mabati Rolling Mills Ltd.	Plant at Mombasa	200,000. ^c
Do.		Athi Steel Ltd.	Plant at Athi River	120,000. ^c
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	450,000 ilmenite; 84,000 rutile.
Zircon		do.	do.	30,000.

^cEstimated. Do., do. Ditto. NA Not available.

¹Not operating at the end of 2015.

²Only 360,000 metric tons of capacity operating at the end of 2015.

³In addition to its billet and rolled steel facilities, Kenya had several galvanized steel plants.