



2014 Minerals Yearbook

BOTSWANA

THE MINERAL INDUSTRY OF BOTSWANA

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In 2014, Botswana was the world's leading producer of diamond by value, accounting for 24% of the value of global mined diamond production. Botswana's share of the world's mined diamond production by volume was 17%, and soda ash production, 2%. The country also produced coal, cobalt, copper, gold, nickel, platinum-group metals (PGMs), salt, sand and gravel, semiprecious gemstones, and silver. Botswana was not a globally significant consumer of minerals or mineral fuels in 2014 (Bolen, 2015; Even-Zohar, 2015; Olson, 2015a, b).

Minerals in the National Economy

In 2014, the mining and quarrying sector accounted for 22.9% of Botswana's gross domestic product, and the manufacturing sector, 5.5%. The value of output in the mining and quarrying sector increased by 4.5% in 2014 compared with that of 2013. Formal employment in the mining and quarrying sector was reported to be 23,783 workers in 2014 compared with 21,670 in 2013 (Bank of Botswana, 2015, p. S.8, S.11; Kenalemang Charles, Senior Government Mining Engineer, Botswana Department of Mines, written commun., June 14, 2015).

In the first 9 months of 2014, national exports were valued at \$6.7 billion, of which diamond accounted for 85.3%; copper and nickel, 4.9%; and soda ash, 1%. National imports were valued at \$7.48 billion in 2014, of which diamond (mostly rough diamond) accounted for 33.3%; fuels, 14.4%; metal and metal products, 4%; and salt, ores, and related products, 1% (Bank of Botswana, 2015, p. S.81–S.84, S.86).

Most of Botswana's mining and quarrying sector is governed by the Mines and Minerals Act of 1999. The petroleum subsector is governed by the Petroleum (Exploration and Production) Act of 1981. Botswana is a signatory to the Kimberley Process Certification Scheme, which is a certification system established to reduce the trade in conflict diamond. The cutting and polishing of diamond is regulated by the Diamond Cutting Act.

Production

In 2014, Botswana's soda ash production increased by 18%, and coal, by 14%. Palladium production decreased by 36% in 2014; mined nickel, by 35%; platinum and smelted nickel, by 32% each; smelted copper, by 31%; mined copper, by 26%; cobalt, by 21%; and gold, by 20% (Kenalemang Charles, Senior Government Mining Engineer, Botswana Department of Mines, written commun., June 14, 2015).

Structure of the Mineral Industry

The Government maintained an equity position in most of the major mining companies; however, the mineral industry operated mainly on a free-market basis. In mid-October 2014, MMC Norilsk Nickel of Russia agreed to sell its 85% interest in Tati Nickel Mining Ltd. to Bamangwato Concessions Ltd. (BCL)

(Government, 94%); Norilsk also agreed to sell its 6% interest in BCL. The sale had not been closed as of yearend (Engineering & Mining Journal, 2014).

Cement, cobalt, copper, diamond, gold, nickel, PGMs, salt, silver, and soda ash were produced by large-scale mines. The mineral industry also consisted of a number of small-scale mines and artisanal operations that produced agate, aggregates, bricks, dimension stone, and gold. Capacity, location, ownership, and production information were not readily available for these operations. Major commodities and the companies that produced those commodities are listed in table 2.

Commodity Review

Metals

Copper and Silver.—BCL mined copper at its Selebi-Phikwe Mines; the company smelted copper from its mining operations and the Phoenix Mine. In 2014, smelted copper production decreased to 14,628 metric tons (t) from 21,300 t in 2013. BCL and Botswana Metals Ltd. (BML) of Australia planned to engage in drilling at the Airstrip and the Dieate copper-silver projects in 2015 (table 1; ResourceStocks, 2015).

Tati Nickel Mining Co. (Pty) Ltd. (TNMC) operated the Phoenix Mine. In 2014, TNMC's copper production at the Phoenix Mine decreased to 4,950 t from a revised 6,815 t in 2013 because of lower ore grades and unscheduled closures for maintenance. At the end of 2013, total reserves at Tati's Phoenix and Selkirk Mines were 27 million metric tons (Mt) at grades of 0.19% nickel and 0.13% copper (Engineering & Mining Journal, 2014; MMC Norilsk Nickel, 2015).

In 2014, Discovery Metals Ltd. of Australia produced 21,672 t of copper in concentrate at the Boseto Mine compared with 18,274 t in 2013; silver output decreased to 22,328 kilograms (kg) from 22,590 kg. In December, Discovery announced plans to place Boseto on care-and-maintenance status by June 2015 because high strip ratios resulted in excessive production costs. The company also announced that it was negotiating with Cupric Canyon Capital LP (CCC) of the United States for the sale of Boseto (Discovery Metals Ltd., 2014, 2015).

African Copper plc of the United Kingdom (Zambia Copper Investments Ltd. of Bermuda, 84%) operated the Thakudu open pit mine and the Mowana processing plant. The company produced 9,951 t of copper in concentrate in fiscal year 2014 compared with 9,496 t in fiscal year 2013 (African Copper plc, 2014).

In late 2014, CCC was engaged in a feasibility study on a new mine at the Khoemacau copper-silver project (formerly the Ghanzi project) near Toteng. Depending on the results of the study, CCC planned to start mining in 2017 and to ramp up production to the full capacity of 50,000 metric tons per year (t/yr) of copper in concentrate by 2018. The company also planned to produce silver at Khoemacau; the prefeasibility

study yielded favorable results for a mine that would produce 30,100 t/yr of copper and 27,300 kilograms per year (kg/yr) of silver (Murray, 2013; Tassell, 2015).

Gold.—In 2014, Galane Gold Ltd. of Australia produced 958 kg of gold at the Mupane Mine compared with a revised 1,206 kg in 2013. The company was the only large-scale gold producer in Botswana. Production decreased in 2014 because of reduced recovery rates and volumes of ore milled. From 2015 through 2019, the company planned to produce about 1,400 kg/yr of gold from the Golden Eagle, the Tau Underground, and the Tekwane deposits at Mupane and low-grade ore stockpiles. Galane also planned further exploration to increase the life of the mine in 2015 (Galane Gold Ltd., 2015, p. 6, 11–15, 20).

Iron Ore.—Tsodilo Resources Ltd. of Canada held the Xaudum iron ore project in northwestern Botswana. The company hoped to identify resources of between 5 and 7 billion metric tons (Gt) of iron ore at Xaudum. In early September 2014, Tsodilo estimated that resources in Block 1 at Xaudum were 441 Mt at a grade of 29.4% iron. Tsodilo was engaged in drilling at Block 2a, which was the next target for identifying resources (African Mining, 2014b; Tsodilo Resources Ltd., 2014).

Manganese.—Discovery and joint-venture partner Japan Oil, Gas, and Metals National Corp. of Japan explored for manganese at the Lobatse Manganese project and the Kalahari Manganese project. In 2014, the companies shifted the focus of their exploration at Lobatse to copper, gold, nickel, and PGMs and relinquished a prospecting license at Kalahari because of poor prospectivity for manganese (Discovery Metals Ltd., 2015).

Nickel and Platinum-Group Metals.—BCL mined nickel at its Selebi-Phikwe Mines. The company smelted nickel from its mining operations and the Phoenix Mine. In 2014, smelted nickel production decreased to an estimated 15,000 t from 21,900 t in 2013 (table 1).

BCL and BML planned to complete an initial resource estimate at the Maibebe North nickel, copper, and PGM project in 2015. Depending on the results of subsequent scoping and feasibility studies, production could start at Maibebe North in 2016. BCL and Discovery were engaged in updating a prefeasibility study on a new mine at the Dikoloti Nickel project. The companies planned to complete the study by the third quarter of 2015. Depending on the results of the study, production could start at a pilot plant by the second quarter of 2016 (Discovery Metals Ltd., 2015; ResourceStocks, 2015).

In 2014, TNMC's nickel production at the Phoenix Mine decreased to 6,414 t from a revised 8,071 t in 2013 because of lower ore grades and unscheduled closures for maintenance. Palladium production also decreased to 1,120 kg in 2014 from a revised 1,740 kg in 2013, and platinum production, to 190 kg from a revised 280 kg (MMC Norilsk Nickel, 2015).

Industrial Minerals

Diamond.—The distribution arm of De Beers Group of Companies of Luxembourg operated a sorting center in Gaborone from where it shipped its products worldwide. The Government-owned Okavango Diamond Trading Co. was responsible for marketing the Government's portion of Debswana Diamond Co. (Pty) Ltd.'s production. Under

the Government's agreement with De Beers, Okavango had the right to market between 10% and 15% of Debswana's production (Weldon and Shor, 2014, p. 96).

Botswana's diamond trade increased as it became established as De Beers' new sorting center. The value of Botswana's rough diamond production was estimated to be \$4.01 billion in 2014, most of which was exported before any cutting and polishing. In 2014, total rough diamond exports were \$6.9 billion, of which \$3.97 billion were reported to be from domestic production (domestic exports may include some reexports from other countries). In 2013, total rough diamond exports were a revised \$6.07 billion, of which \$3.39 billion were reported to be from domestic production. Imports of rough diamond from such countries as Canada, Namibia, and South Africa were valued at \$2.41 billion in 2014 compared with a revised \$2.8 billion in 2013; the majority of the diamond was exported before any cutting and polishing (Janse, 2014; Bank of Botswana, 2015, p. S.82–S.83; Even-Zohar, 2015).

Debswana produced more than 24.2 million carats of diamond at the Damtshaa, the Jwaneng, the Letlhakane, and the Orapa Mines in 2014 compared with 22.7 million carats in 2013. In 2014, production at Orapa increased to 12.1 million carats from 11.4 million carats in 2013; at Jwaneng, to 11.3 million carats from 10.4 million carats; and at Damtshaa, to 303,000 carats from about 260,000 carats. Output at Letlhakane decreased to 548,000 carats in 2014 from about 682,000 carats in 2013 (Murray, 2014; DeBeers Group of Companies, 2015).

In November 2014, Debswana started reprocessing tailings at Jwaneng. The company planned to produce 900,000 carats per year during the next 20 years from tailings. Debswana also planned to extend the life of the open pit mining operations and allow more than 100 million carats of additional diamond production through 2028 with the Jwaneng Cut-8 project (van Wyngaardt, 2015).

Lucara Diamond Corp. of Canada operated the Karowe Mine, which produced diamond from the AK6 kimberlite. In 2014, Lucara mined 430,292 carats at Karowe compared with about 441,000 carats in 2013. The company planned to sell between 400,000 and 420,000 carats from Lucara in 2015 (Murray, 2014; Lucara Diamond Corp., 2015).

In September 2013, Kimberley Diamonds Ltd. of Australia purchased the Lerala Mine, which was on care-and-maintenance status, from Mantle Diamonds Ltd. of the United Kingdom. Kimberley planned to reopen Lerala in the fourth quarter of 2015. Production was likely to be nearly 270,000 carats and 440,000 carats in the first and second years of mining, respectively. During the estimated 7-year life of the mine, planned production was about 360,000 carats per year. Resources were estimated to be about 3.11 million carats of contained diamond, of which 2.49 million carats were reserves (Kimberley Diamonds Ltd., 2014, p. 16–17, 21).

In 2014, Gem Diamonds Ltd. of the United Kingdom started production at the new underground Ghaghoo Mine. In 2015, the company planned to reach the full capacity of between 200,000 and 220,000 carats per year for the first phase of mining. Reserves at Ghaghoo were estimated to be about 2.1 million carats of contained diamond (Projects in Progress, 2014).

In November 2014, Pangolin Diamonds Corp. of Canada announced the discovery of additional diamond indicator minerals from its soil sampling program at Malatswae. Botswana Diamonds plc of the United Kingdom and Alrosa Group of Russia engaged in drilling for diamond near Orapa. In September, the Government awarded Tsodilo a prospecting license for the BK16 kimberlite, which is located about 37 kilometers from the Orapa Mine (African Mining, 2014a, c; Inside Mining, 2015).

As of early 2014, the domestic diamond cutting and polishing industry had 21 licensed plants. About 3,200 workers were employed in diamond cutting and polishing in 2014; between 80% and 90% were Botswanan. National net exports of polished diamond were \$771 million in 2014 compared with a revised \$649 million in 2013. The growth of Botswana's diamond cutting and polishing industry was limited by high production costs, which were between \$40 and \$60 per carat compared with about \$10 per carat in India and \$17 per carat in China (Weldon and Shor, 2014, p. 99–100, 109–110; Bank of Botswana, 2015, p. S.82–S.83).

Potash, Salt, and Soda Ash.—Botswana Ash (Pty.) Ltd. (BotAsh) had the capacity to produce 650,000 t/yr of salt and 300,000 t/yr of soda ash at Sua Pan. The company's soda ash production increased to 268,529 t in 2014 from 227,913 t in 2013; salt production decreased to 515,311 t from 521,306 t. The remaining life of the mine based on brines at Sua Pan was estimated to be 21 years; BotAsh was engaged in an update of its resources in 2014 (Great Quest Metals Ltd., 2014; Kenalemang Charles, Senior Government Mining Engineer, Botswana Department of Mines, written commun., June 14, 2015).

In February 2014, Great Quest Metals Ltd. of Canada announced that tailings from BotAsh's soda ash mining were prospective for potash. Great Quest announced plans to sign an agreement with BotAsh and start a preliminary economic assessment on recovering potash from tailings. The company changed its name to Great Quest Fertilizer Ltd. in June (Great Quest Metals Ltd., 2014).

Sulfur.—BCL planned to complete a new sulfuric acid plant with a capacity of 1 million metric tons per year (Mt/yr) in the next few years. A-Cap Resources Ltd. of Australia could consume between 350,000 and 420,000 t/yr of sulfuric acid at its proposed Letlhakane uranium project; the company was considering the purchase of sulfuric acid from BCL's plant. The company was also considering the use of imported sulfur or local pyrite to produce sulfuric acid (Cornish, 2014).

Mineral Fuels and Related Minerals

Coal.—In 2014, production at the Morupule Mine increased to 1.71 Mt of coal from nearly 1.5 Mt in 2013. Coal from the Morupule Mine was used at the Morupule B power station. Morupule B was expected to reach its full capacity of 600 megawatts (MW) in 2014; the plant had not reached its full capacity at yearend, however (Murray, 2013; Statistics Botswana, 2015; Kenalemang Charles, Senior Government Mining Engineer, Botswana Department of Mines, written commun., June 14, 2015).

African Energy Resources Ltd. of Australia and First Quantum Minerals of Canada were engaged in a two-stage feasibility study on a new mine and coal-fired power station at the Sese project. The first phase was for a new mine with a capacity of 1.5 Mt/yr of thermal coal and the second phase was for a new coal-fired power station with a capacity of 300 MW. African Energy submitted the first draft of its environmental and social impact assessment in the second quarter of 2014. African Energy was considering agreements with Botswana, South Africa, and Zambia, each of which could purchase power from a dedicated 300-MW plant. Each power station would consume 1.5 Mt/yr of Sese's coal (African Energy Resources Ltd., 2014; Dickinson, 2014).

In 2013, African Energy acquired the Mmamantswe coal project, which had resources of 1.3 Gt, from Aviva Corp. Ltd. of Australia. The company was considering the production of 2.5 Mt/yr of lower quality coal at Mmamantswe for consumption by a new domestic power station and 2.5 Mt/yr of higher quality coal for export. At the end of 2014, African Energy was seeking a joint-venture partner to develop a new 600-MW power station (Williams, 2013; African Energy Resources Ltd., 2015).

In May 2014, African Energy completed a prefeasibility study with favorable results on a new mine at the Mmamabula West project. The company could produce 3 Mt/yr of thermal coal at Mmamabula West over an estimated 20-year life. Resources were estimated to be 2.4 Gt of coal (African Energy Resources Ltd., 2014; Murray, 2014).

In 2014, Walkabout Resources Ltd. of Australia was engaged in a prefeasibility study on the Takatokwane project, which had indicated resources of 748 Mt and inferred resources of 7 Gt of coal. The company was considering the development of four new mines at Takatokwane that could produce a total of 20 Mt/yr of thermal coal. Depending on the results of the prefeasibility and feasibility studies, production could start in 2020. The development of the mine depended on the Trans-Kalahari Railway (TKR) to Namibia; an investment decision on the railway was likely by 2015. The TKR could be operational starting in 2020 (Walkabout Resources Ltd., 2014).

A-Cap planned to complete a feasibility study on a new mine at its Mea project by mid-2015. Depending on the results of the study, A-Cap could start construction by the end of 2015 and produce 1 Mt/yr of coal. Resources at Mea were estimated to be 335 Mt. The company also planned to complete a resource assessment at its Bolau project by mid-2015. Coal resources associated with the uranium deposits at Letlhakane were estimated to be 107 Mt (A-Cap Resources Ltd., 2014, p. 17–22).

In early 2013, Hodges Resources Ltd. of Canada completed a scoping study with favorable results on a new mine at the Morupule South project. In the first phase, production would be 1.5 Mt/yr. Resources at Morupule South were estimated to be 2.45 Gt. In February 2014, Hodges was considering options, including a joint-venture partner or the sale of the project because of decreased coal prices on world markets (Hodges Resources Ltd., 2014).

Uranium.—At the end of 2014, A-Cap was engaged in a feasibility study on a new mine at the Letlhakane uranium project. The company planned to complete its environmental

and social impact study in the first quarter of 2015 and to apply for a mining license in the second quarter of 2015. Depending on the results of the studies, A-Cap could start production at Letlhakane between 2017 and 2018 and produce about 1,360 t/yr of uranium oxide (U₃O₈). Resources were estimated to be nearly 140,000 t of contained U₃O₈; A-Cap planned to complete an updated resource assessment in 2015 (Cornish, 2014; Modern Mining, 2015).

Outlook

Botswana's mining sector is likely to grow in the near future. Mined diamond production is expected to increase between 2015 and 2017 because of the Ghaghoo and the Lerala Mines, and coal production, between 2015 and 2022 because of the opening of the Mea and the Takatokwane Mines. Copper output was likely to decrease in 2015 and 2016 because of the shutdown of the Boseto Mine and subsequently to increase because of the Khoemacau project. Uranium mining could start in 2017 or 2018. Cut and polished diamond production also is likely to increase; growth could be constrained to specialty markets by high production costs. The growth in coal production could be constrained by limited rail capacity.

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TABLE 1
BOTSWANA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

| Commodity ² | 2010 | 2011 | 2012 | 2013 | 2014 |
|--|---------|---------|-----------|--------------------|---------------------|
| METALS | | | | | |
| Cobalt, smelter output, Co content of matte ³ | 272 | 149 | 195 | 248 | 196 |
| Copper: | | | | | |
| Mine output, Cu content of ore milled ⁴ | 48,026 | 31,929 | 35,768 | 51,254 | 38,000 |
| Smelter output, Cu content of matte ³ | 22,823 | 16,105 | 17,625 | 21,300 | 14,628 |
| Gold ⁵ kilograms | 1,774 | 1,562 | 1,522 | 1,205 ^r | 958 |
| Nickel: | | | | | |
| Mine output, Ni content of ore milled ⁴ | 24,931 | 15,675 | 17,948 | 22,848 | 14,958 |
| Smelter output, matte, gross weight ³ | 53,000 | 53,000 | 52,000 | 52,000 | 36,000 ^e |
| Smelter output, Ni content of matte ³ | 25,100 | 28,800 | 24,000 | 21,900 | 15,000 ^e |
| Platinum-group metals: | | | | | |
| Palladium kilograms | 3,328 | 2,115 | 2,613 | 1,740 ^r | 1,120 |
| Platinum do. | 560 | 373 | 435 | 280 ^r | 190 |
| Silver do. | -- | -- | 8,670 | 22,597 | 22,328 |
| INDUSTRIAL MINERALS | | | | | |
| Cement ^e | 260,000 | 260,000 | 260,000 | 260,000 | 260,000 |
| Clay, brick ^e | 170,000 | 170,000 | 170,000 | 170,000 | 170,000 |
| Diamond ⁶ thousand carats | 22,019 | 22,903 | 20,550 | 23,190 | 24,677 |
| Gemstones, semiprecious ^{e,7} kilograms | 75,000 | 80,000 | 85,000 | 90,000 | 90,000 |
| Salt ⁸ | 364,761 | 446,525 | 389,481 | 521,306 | 515,311 |
| Soda ash, natural | 240,898 | 257,851 | 248,629 | 227,913 | 268,529 |
| MINERAL FUELS AND RELATED MATERIALS | | | | | |
| Coal, bituminous | 988,240 | 787,729 | 1,454,724 | 1,495,653 | 1,711,555 |

^eEstimated; estimated data are rounded to more than three significant digits. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through July 15, 2015.

²Silver was produced and exported in the nickel-copper-cobalt matte. Dimension stone and sand and gravel also were produced, but information was inadequate to make reliable estimates of output.

³Smelter product was granulated nickel-copper-cobalt matte.

⁴Includes some product from direct smelting ore; that is, ore not reported as milled.

⁵Reported as bullion; historically included silver estimated to be about 2%.

⁶Assumed to contain about 70% gem and near gem.

⁷Principally agate.

⁸Byproduct of natural soda ash production.

TABLE 2
BOTSWANA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Metric tons unless otherwise specified)

| Commodity | | Major operating companies and major equity owners | Location of main facilities | Annual capacity |
|-------------------------|-----------------|---|---|---|
| Cement | | Portland Pretoria Cement Botswana (Pty) Ltd. | Plant at Gaborone | 400,000. |
| Do. | | Matsiloje Portland Cement Co. | Plant at Matsiloje, 45 kilometers southeast of Francistown | 36,000. |
| Clay ¹ | | Makoro Brick and Tile (Pty.) Ltd. | Makoro, 10 kilometers south of Palapye | 100,000. ^c |
| Do. | | Lobatse Clay Works (Pty.) Ltd. (Botswana Development Corp. and Interkiln Corp. joint venture) | Lobatse, 70 kilometers south-southwest of Gaborone | 70,000. ^c |
| Coal | | Morupule Colliery (Pty) Ltd. [Debswana Diamond Co. (Pty.) Ltd., 100%] | Morupule Mine, 14 kilometers west of Palapye | 3,200,000. |
| Diamond | thousand carats | Debswana Diamond Co. (Pty.) Ltd. (Government, 50%, and De Beers Centenary AG, 50%) | Jwaneng Mine near Jwaneng | 30,000. |
| Do. | do. | do. | Orapa Mine near Orapa | 20,000. |
| Do. | do. | do. | Letlhakane Mine near Letlhakane | 1,000. |
| Do. | do. | do. | Damtshaa Mine, 220 kilometers west of Francistown | 670. |
| Do. | do. | Lucara Diamond Corp. | Karowe Mine in Boteti Sub-District | 460. ^e |
| Do. | do. | Kimberley Diamonds Ltd. | Lerala Mine near Lerala ² | 400. |
| Do. | do. | Gem Diamonds Ltd. | Ghaghoo Mine | 210. |
| Gemstones, semiprecious | kilograms | Agate Botswana (Pty.) Ltd. | Processing plant at Pilane, 45 kilometers north of Gaborone | 70,000. ^c |
| Do. | do. | Masa Semi-Precious Stones (Pty.) Ltd. | Bobonong, east of Selebi-Phikwe | 20,000. ^c |
| Gold | do. | Galane Gold Ltd. | Mupane Mine, 30 kilometers southeast of Francistown | 2,000. |
| Nickel-copper-cobalt | | Bamangwato Concessions Ltd. (BCL), (Government, 94%, and OJSC MMC Norilsk Nickel, 6%) | Selebi-Phikwe Mines, 350 kilometers northeast of Gaborone | 3,000,000 ore matte content (of which 30,000 nickel, 25,000 copper, 400 cobalt). |
| Do. | | Tati Nickel Mining Co. (Pty.) Ltd. (TNMC) (OJSC MMC Norilsk Nickel, 85%, and Government, 15%) | Phoenix and Selkirk ² Mines, 23 kilometers east of Francistown | 5,000,000 ore matte content (of which 21,000 nickel, 12,500 copper, 800 cobalt, 4,400 kilograms palladium, 700 kilograms platinum). |
| Do. | | Discovery Metals Ltd. | Boseto Mine | 36,000 copper. |
| Do. | | African Copper plc (Zambia Copper Investments Ltd., 84%) | Thakudu Mine | 10,000 ^e copper. |
| Salt | | Botswana Ash (Pty.) Ltd. (BotAsh) (Government, 50%, and Chlor Alkali Holdings, 50%) | Sua Pan, 450 kilometers north of Gaborone | 650,000. |
| Silver | kilograms | Discovery Metals Ltd. | Boesto Mine | 34,000. |
| Soda ash | | Botswana Ash (Pty.) Ltd. (BotAsh) | Sua Pan | 300,000. |

^cEstimated. Do., do. Ditto.

¹For brick and tiles.

²Not operating at the end of 2014.