



2012 Minerals Yearbook

ZIMBABWE

THE MINERAL INDUSTRY OF ZIMBABWE

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As estimated by the International Monetary Fund, Zimbabwe's real gross domestic product (GDP) increased by an estimated 4.4% in 2012 compared with that of 2011. The nominal GDP was estimated to be \$9.8 billion. Zimbabwe's diverse mineral output included about 9% of the world's diamond production (by volume), an estimated 6% of the world's platinum production, and about 4% of the world's palladium output (International Monetary Fund, 2013, p. 25; Kimberley Process Certification Scheme, 2013; Loferski, 2013).

The Ministry of Mines and Mining Development manages the mineral sector in accordance with the Mines and Minerals Act (chapter 21:05); the Mining (General) Regulations, 1977; and their amendments. Mining operations also are regulated by sections of the Environmental Management Act of 2002 (chapter 20:27) and its 2007 amendment, the Explosive Act, the Forest Act, the Parks and Wildlife Act, the Public Health Act, and the Suppression of Money Laundering Act. The Ministry of Youth Development, Indigenisation and Empowerment monitors mineral operations for compliance with the Indigenisation and Economic Empowerment Act (Chapter 14:33) of 2007, the Indigenisation and Economic Empowerment (General) Regulations (Statutory Instrument 21 of 2010), and General Notice 114 of 2011—Indigenisation and Economic Empowerment (General) Regulations, 2011. With Statutory Instrument 11 of 2012, the Ministry of Mines and Mining Development significantly increased fees associated with mineral exploration and mining. The fees were listed in the Mining (General) (Amendment) Regulations, 2012 (no. 16). The annual ground rent due to the Government was increased to \$3,000 per hectare for diamond claims; to \$1,000 per hectare for platinum claims compared with \$10 per hectare in 2011; to \$500 per ordinary block for chrome; and to \$100 per hectare for coal, coalbed methane, and nuclear-energy source material (Ministry of Mines and Mining Development, 2012).

Minerals in the National Economy

Of the approximately 30 minerals and mineral-based commodities produced in Zimbabwe, diamond, gold, and platinum-group metals (PGMs) were the most economically significant. In accordance with the Minerals Marketing Corp. of Zimbabwe Act [as modified by the Minerals Marketing Corp. (Exemption) Regulations, 1983, and the Precious Stones Trade Act, 1978], state-owned Minerals Marketing Corp. of Zimbabwe (MMCZ) officially marketed much of the mineral production of Zimbabwe. Notable official exceptions were gold and PGMs.

In addition to Fidelity Printers & Refiners (Private) Ltd., which is a subsidiary of the Reserve Bank of Zimbabwe (RBZ), the RBZ's monetary policy statement of February 2, 2009, authorizes organizations that hold appropriate permits to export gold. Mining companies that produced PGM concentrates and smelter matte in Zimbabwe directly shipped the PGM concentrates and matte to processing facilities in South Africa.

Mining royalties are based on the value of minerals or mineral-bearing products that are shipped from the mine site. Royalties are payable to the Zimbabwe Revenue Authority, and new rates were instituted on January 1, 2012. The royalty rate for diamond is 15%; for platinum and precious stones other than diamond, 10%; for gold, 7%; for other precious metals, 4%; for base metals, coalbed methane, and industrial minerals, 2%; and for coal, 1% (Zimbabwe Revenue Authority, undated).

Production

In 2012, production of diamond and gold and the estimated production of cement, coal, coke, lithium minerals, PGMs, and silver increased notably compared with that of 2011. Production volumes of chromite, granite, and nickel ore and the estimated production volumes of refined copper, graphite, refined nickel, and phosphate rock were estimated to have decreased significantly in 2012 compared with those of 2011 (table 1).

Structure of the Mineral Industry

Domestic and international investment companies, domestic and international mining companies, Government-owned companies, mining cooperatives, multinational cement companies, and small-scale miners managed mineral operations in Zimbabwe. With some exceptions, ownership of mineral operations in Zimbabwe by domestic or international nonindigenous corporations or people was limited by statute. State-owned companies involved in the mineral sector included MMCZ, Zimbabwe Mining Development Corp. (ZMDC), and subsidiaries of state-owned Industrial Development Corporation of Zimbabwe Ltd., which produced industrial minerals and mineral-based commodities (table 2).

Commodity Review

Metals

Chromium and Ferroalloys.—In 2011, the Government reinstated its ban on the export of chromite ore, including briquets and concentrate. The ban was instituted to encourage the construction of new smelters, which would allow Zimbabwe to export value-added ferrochrome instead of chromite ore; however, owing to low international ferrochrome demand, operations at most of the existing smelters in Zimbabwe were suspended in 2012. The ban, which effectively resulted in lower domestic prices for chromite, adversely affected small-scale chrome miners, many of which suspended mining operations. Others, such as Dakota Mining (Private) Ltd., filed for bankruptcy. Zimbabwe Alloys Ltd. (Zim Alloys) reportedly stopped mining in early 2012, and in September, Zimbabwe Mining and Smelting Co. (Private) Ltd. (Zimasco) suspended purchases of some chromite ore from small-scale miners (Herald, The, 2012b, c; Metal Bulletin, 2012c).

The Government announced in June that the ban would again be lifted temporarily. Discussions on measures to replace the ban, such as new taxes to discourage exports and the installation of truck weigh stations at Chikalawala and Nyamapanda, continued at yearend (Nkala, 2012; Herald, The, 2013).

Foreign companies were investing in the ferroalloys sector in 2012. Afrochine Smelting (Private) Ltd., which was a subsidiary of the Tsingshan Group of China, began to build two smelters with a total capacity of 40,000 t/yr of ferrochrome, and proposed to build an additional four smelters. POSCO of the Republic of Korea signed an agreement with Anchor Holdings (Private) Ltd. of Zimbabwe and Gurta AG of Switzerland to acquire partial interest in Maranatha Ferrochrome (Private) Ltd. (Penfold, 2012).

Government-owned ZESA Holdings (Private) Ltd. (ZESA) raised the price of electricity in Zimbabwe to \$0.099 per kilowatt-hour from \$0.06 per kilowatt-hour in late 2011. Owing in part to the higher-than-planned electricity costs, operations were suspended at many of the smaller capacity ferrochrome smelters. Operations also were affected at the larger capacity smelters. Zim Alloys started the rehabilitation of three of its four ferrochrome furnaces in 2012. At Zimasco, ferrochrome production operations were reduced to about 40% of capacity in October owing to cash flow problems. Staff were placed on compulsory rotational leave and work shifts were reduced to about two weeks per month. One of the plant's six electric-arc furnaces was placed on care-and-maintenance status, and the scheduled rehabilitation of another furnace was suspended (Herald, The, 2012c; Metal Bulletin, 2012a; Penfold, 2012; Zimbabwean, The, 2012, 2013).

Cobalt.—Cobalt was contained in the copper-gold-nickel-PGM ore that was produced by the Mimosa, the Ngezi, and the Unki Mines. Concentrated ore and smelter matte were exported to South Africa, where cobalt hydroxide was recovered from the concentrate from Mimosa, cobalt compounds may have been recovered from smelter matte from the Ngezi Mine, and cobalt sulfate may have been recovered from concentrate from the Unki Mine. Cobalt hydroxide was recovered in Zimbabwe by Empress Nickel Refinery from smelter matte that was imported from Botswana. In past years, cobalt hydroxide also had been recovered by BSR Ltd. from domestic copper-nickel ore from the Shangani and the Trojan nickel mines.

Copper and Nickel.—In 2012, Bindura Nickel Corporation Ltd., which was a subsidiary of Mwana Africa PLC of the United Kingdom, completed refinancing and restructuring of its debt. Bindura also resolved labor issues that stemmed from the suspension of mining operations in 2008. The restart of mining operations at the Trojan Mine began in September with the rehabilitation of the milling, flotation, and concentrate facilities above ground. Production of nickel concentrate was expected to resume in early 2013. Bindura's nickel smelter and refinery remained on care-and-maintenance status in 2012. Bindura also completed an 18-hole 8,040-m drill program at the Trojan Mine that had begun in 2010. The company expected to use the drilling data to update its reserve and resource estimates in 2013 (NewsDay, 2012a; Mwana Africa PLC, 2013, p. 8).

RioZim Ltd. reported that financial distress in 2012 would result in the restructuring of the company. The Empress Nickel Refinery and other base-metal assets were expected to be

transferred to RioZim's new Rio Base Metals operating segment in 2013. In July, RioZim terminated its long-term toll-refining agreement with Centametal AG of Switzerland, which resulted in a liability of \$13.6 million. After a delivery of refined metal valued at \$7 million in 2012, RioZim's remaining debt to Centametal was \$6.6 million, which was scheduled to be repaid at the rate of \$1.2 million per year, starting in 2014 (Herald, The, 2012a; Invictus Capital (Private) Ltd., 2012, p. 5).

Under the Centametal tolling agreement, RioZim had refined nickel-copper smelter matte for Centametal that was delivered from BCL Ltd. of Botswana. In 2012, BCL agreed to sell low-sulfur matte directly to RioZim. RioZim produced about 3,000 metric tons (t) of refined copper and nickel metal from imported smelter matte in 2012 compared with about 8,600 t of copper and nickel metal that was toll refined in 2011. In 2013, RioZim expected to install a new 20-metric-ton-per-day (t/d)-capacity oxygen plant and to rehabilitate the existing 17-t/d-capacity oxygen plant. RioZim also was evaluating the installation of a 15,000- to 30,000-metric-ton-per-year (t/yr)-capacity pressure-leach circuit, which would allow the Empress refinery to process high-sulfur matte from other sources (Invictus Capital (Private) Ltd., 2012, p. 11; RioZim Ltd., 2013, p. 11, 13).

Iron and Steel and Iron Ore.—In late 2012, the Government requested that negotiations concerning the agreement under which NewZim Steel Private Ltd. was to rehabilitate the former Zimbabwe Iron and Steel Company (Private) Ltd. (Zisco) be completed. Discussions continued at yearend. NewZim Steel, which was established as a joint venture of a consortium of domestic and international companies (60% equity interest) and the Government (40% interest), was led by Essar Africa Holdings Ltd. of Mauritius, which was a subsidiary of Essar Group of India. In 2010, Essar Africa Holdings had agreed to invest \$750 million in the project, which would include guaranteeing the repayment of Zisco's debt (including domestic trade liabilities, foreign debt, and unpaid employee salaries and associated benefits), and to provide working capital for the resumption of steel operations. Essar Africa Holdings proposed to restore the steel plant's production capacity to 1.2 million metric tons per year (Mt/yr) within 3 years after the agreement was made final (Essar Group, 2011a, b; Dube, 2013).

Essar Africa Holdings (80% interest) and the Government (20% interest) also established NewZim Minerals Private Ltd. as a mining joint venture. As part of the Zisco negotiations with the Ministry of Industry and Commerce, NewZim Minerals acquired the Zisco subsidiary Buchwa Iron Mining Co. (BIMCO). Essar Africa Holdings' acquisition of Zisco and BIMCO remained controversial owing, in part, to BIMCO's undeveloped Mwanesi iron ore deposit, which the Ministry of Mines and Mining Development valued at more than \$30 billion. In August, the Government ordered Essar Africa Holdings to reorganize NewZim joint ventures, in accordance with the indigenization law. ZMDC was expected to acquire 51% equity interest in NewZim Minerals. In early 2013, the President's Office assumed the lead in the Government's negotiations to proceed with the 2010 agreement with Essar Africa Holdings (Essar Group, 2011a; Bell, 2012; Dube, 2012; Chifera, 2013).

Platinum-Group Metals.—The Ngezi Mine, which was operated by Zimbabwe Platinum Mines (Private) Ltd. (a subsidiary of Zimplats Holdings Ltd. of Guernsey, United Kingdom) produced about 4.7 million metric tons (Mt) of ore in 2012, which was an increase of about 4% compared with the amount of ore produced in 2011. A planned furnace re-line and a subsequent fire resulted in a loss of 66 days of production for the smelter in 2012; as a consequence, Zimplats' matte production decreased by 26% compared with that of 2011. Metal content of smelter matte that was sold in 2012 was 2,741 t of nickel, 1,990 t of copper, and 8.4 t of precious metals, which included gold, palladium, platinum, and rhodium. While the smelter was out of commission, some concentrate was sold, and the remainder was stockpiled. In early 2013, Zimplats Holdings sold 51% of Zimbabwe Platinum Mines for \$971 million. Payment was to be deducted from future dividend distributions to the new owners, which included the National Indigenisation and Economic Empowerment Fund (31% equity interest), a local community share ownership trust (10%), and an employee share ownership trust (10%) (Zimplats Holdings Ltd., 2012a, b; 2013).

The Mimosa Mine, which was operated by Mimosa Holdings (Private) Ltd. of Mauritius, produced about 2.3 Mt of ore in 2012. Exported concentrated ore contained 3,171 t of nickel, 2,426 t of copper, 88 t of cobalt, about 3.4 t of platinum, 2.6 t of palladium, 452 kilograms (kg) of gold, and 269 kg of rhodium (Aquarius Platinum Ltd., 2012a, p. 12; 2013a, p. 12).

Mimosa Holdings was owned by Mimosa Investment Holdings Ltd. (which was a joint venture of Aquarius Platinum Ltd. of Bermuda and Impala Platinum Holdings Ltd. of South Africa), and the Zvishavane Community Share Ownership Trust. In February, the Empowerment Minister proposed that Impala Platinum divest its entire stake in Mimosa. In December, Mimosa Investment Holdings agreed to divest 51% of Mimosa Holdings for \$550 million and to provide a loan mechanism for payment by the other owners, which included the National Indigenisation and Economic Empowerment Fund (31% equity interest) and an employee share ownership trust that was to be established (10%) (Aquarius Platinum Ltd., 2012b; Mataranyika, 2012).

In 2012, Unki Mines (Private) Ltd., which was a subsidiary of Anglo American Platinum Ltd. of South Africa, produced 1.535 Mt of ore compared with 1.28 Mt of ore in 2011. Exported concentrate was smelted in South Africa; about 1,300 t of copper, 1,000 t of nickel, 2 t of platinum, 1.38 t of palladium, 227 kg of gold, and 162 kg of rhodium were recovered from the concentrate. In November, Anglo American Platinum agreed to divest 51% equity interest in Unki Mines, according to the Government's proposed indigenization plan. By June 30, 2013, 21% equity interest would be transferred to the National Indigenisation and Economic Empowerment Fund, a community ownership trust would receive 10%, an employee trust would receive 10%, and 10% would be sold to a domestic consortium. Payment would be deducted from future dividend distributions to the new owners. The Government agreed to pay \$142 million to Anglo American Platinum for the Bougai and the Kironde mineral right claims that Anglo American Platinum formerly held. The claims were reassigned by the Government in 2008 (Anglo American Platinum Ltd., 2013, p. 62, 102).

Increased annual ground rental fees for mineral exploration and mining claims were announced in Statutory Instrument 11 of 2012. The new fees adversely affected exploration and mining companies in several commodity sectors. Rental fees due for Mimosa's 1,300-hectare claims were expected to increase to \$1.3 million per year from \$13,000 per year. In 2012, Zimplats' claims encompassed 48,535 hectares, and the new fees were expected to be \$48.5 million per year compared with about \$485,350 in 2011 (Aquarius Platinum Ltd., 2013b, p. 16).

Tin.—In June, Burnstone Mine of South Africa reportedly won a bid to form a joint venture with ZMDC for the purpose of reopening the Kamativi Mine; however, Great Basin Gold Ltd. of Canada, whose subsidiary Southgold Exploration (Proprietary) Ltd. of South Africa owned the Burnstone Mine in South Africa, denied that its Burnstone operation was involved in the Kamativi bid. At yearend, the Government announced that ZMDC was seeking other joint-venture partners to restart operations at Kamativi owing to Burnstone Mine's failure to pay commitment fees. Formal mining operations had ceased at Kamativi in 1994 owing to low international tin prices and low ore grades (Independent Online, 2012; Katunga, 2012; Metal Bulletin, 2012b).

Tungsten.—Premier African Minerals Ltd. of the British Virgin Islands completed a five-hole 1,302-meter diamond drilling program at its RHA Tungsten Project, which was located about 20 kilometers (km) southeast of Hwange. Premier proposed to restart mining at RHA in late 2013 or early 2014. The property contained the former R.H.A. tungsten mine, which had been operational from 1931 until 1979 (Bartholomew, 1990, p. 136; Premier African Minerals Ltd., 2013).

Industrial Minerals

Diamond.—Murowa Diamonds (Private) Ltd., which was a subsidiary of the joint venture of Rio Tinto plc and RioZim Ltd., recovered 403,000 carats of diamond from the Murowa Mine in 2012 compared with 367,000 carats of diamond in 2011. The Murowa Mine was located about 60 km from Zvishavane (Rio Tinto plc, 2013, p. 49).

Limpopo Mineral Resources Ltd. (formerly River Ranch Ltd.) suspended operations at the River Ranch Mine and subsequently filed for liquidation in 2012. Limpopo, which was a joint venture of Rani Investment LLC of the United Arab Emirates (80% equity interest) and Khupukile Resources Ltd. of Zimbabwe (20%), initially had attempted to sell 100% of the operation to Khupukile Resources and then, prior to filing for liquidation, to sell the operation to ZMDC (NewsDay, 2012b).

Graphite.—AMG Advanced Metallurgical Group N.V. of the Netherlands acquired 100% of the equity of Graphite Kropmühl AG of Germany in 2012. Subsequently, Graphite Kropmühl, which held interest in the Lynx graphite mine, was reorganized as a segment of AMG (AMG Advanced Metallurgical Group N.V., 2013, p. 75, 93).

Nitrogen.—In early 2012, TA Holdings Ltd. announced that a subsidiary (Sable Chemical Industries Ltd.) planned to shift to the production of ammonia using coal gasification by 2017 owing to the high cost of electricity. The Sable facility's electrolysis plant was to be closed by yearend 2012, and Sable

planned to use imported ammonia to produce ammonium nitrate fertilizer until the gasification technology was installed. Design work on a coal gassifier began in 2012 and was based on the evaluation of samples of coal from the Sengwa coal mine. The significant increase in international ammonia prices in 2012, however, resulted in Sable limiting ammonia imports and planning to retain the electrolysis technology until the coal gasification plant was operational or until ammonia prices decreased significantly (TA Holdings Ltd., 2012, p. 5; 2013, p. 5).

Phosphate Rock.—Financial problems at the fertilizer producer Zimbabwe Phosphate Industries Ltd. in 2012 resulted in the suspension of phosphate rock mining operations at Dorowa Minerals (Private) Ltd. Both companies were subsidiaries of state-owned Chemplex Corporation Limited Group (NewsdzeZimbabwe, 2012).

Mineral Fuels and Other Sources of Energy

Coal and Coke.—Hwange Colliery Company Ltd. reported sales of about 1.7 Mt of coal in 2012 compared with about 2.5 Mt in 2011. The decrease in sales was attributed to lower demand from Zimbabwe Power Co. Coke sales, however, increased to 228,201 t in 2012 from 74,877 t in 2011. The increase in coke sales was attributed to sales to South Africa and Zambia. New excavators and trucks were scheduled to be added to the Hwange Colliery operation's fleet in 2013. The new equipment was expected to restore annual output to more than 3.5 Mt of coal by 2014. Makomo Resources (Private) Ltd. installed another crushing and screening plant, which increased the production capacity of its operations at the Entuba coalfields. Makomo's output was expected to reach about 3.6 Mt/yr of coal by yearend 2013 from about 1.4 Mt/yr in 2011. Hwange Coal Gasification Co. proposed to increase coke output to 200,000 t/yr from 144,000 t/yr [Chronicle, The, 2012; 2013; Hwange Colliery Company Ltd., 2013; Makomo Resources (Private) Ltd., 2013].

Electrical Power.—Zimbabwe Power Co. (ZPC) was the electrical-power-generation subsidiary of state-owned ZESA Holdings. Other ZESA subsidiaries were responsible for the distribution and transmission of electrical power. Since 2007, despite electricity imports that accounted for about 20% to 35% of the daily national demand, Zimbabwe had established country-wide load shedding owing to the inability of operational electrical-power generating facilities to meet demand. Load shedding adversely affected underground mining operations and surface processing plants that did not have a dedicated source of electrical power. The country's main power-generating facilities included the 920-megawatt (MW) Hwange coal-fired power station and the 750-MW Kariba South hydroelectric plant (Zimbabwe Power Co., 2013a, b; ZESA Holdings Private Ltd., undated a, b).

For the past several years, ZPC has evaluated the building of several additional power-generating facilities, which included a 600-MW expansion of the Hwange powerplant. In 2012, ZPC awarded an engineering, procurement, and construction (turnkey) contract to Sinohydro Corp. of China for a 300-MW expansion of the Kariba South hydroelectric facility, and ZPC completed a feasibility study of the installation of a 30-MW hydroelectric powerplant on the Gairezi River

near Nyanga. The Gairezi powerplant was expected to take 2 to 3 years to build and become operational. The Kariba South expansion project, which was to be built adjacent to the Kariba South power station, was expected to take about 4 years to complete. ZPC also considered converting two small thermal powerplants at Mutare and Zvishavane into solar-powered plants. The mineral industry was expected to benefit from the availability of the proposed additional electrical power (Marawanyika, 2012; Musarurwa, 2012; Moyo, 2013).

Outlook

Zimbabwe has abundant mineral resources and a well-developed transportation system. In the short term, the anticipated continuation of the rehabilitation of the mining industry and the expected result (the expansion of production) could be a basis for the growth of Zimbabwe's GDP; however, mineral sector activities are expected to continue to be constrained by ongoing political issues. The divestment of nonindigenous investors' equity interest, which is required by the Indigenization and Economic Empowerment Act, is expected to constrain foreign investment in the Zimbabwe mineral industry. Shortages of electrical power, fuel, and skilled employees also are expected to continue to affect mineral sector operations adversely in the near term (Frost & Sullivan Ltd., 2011; International Monetary Fund, 2012, p. 20; 2013, p. 8).

Decreases of international mineral commodity prices pose a notable downside risk for the country's economy; however, the potential exists for significant increases in diamond, gold, and PGM production, subject to the constraints described above. Increased output of (or the resumption of the production of) other mineral commodities in Zimbabwe, such as chromite, ferrochrome, graphite, lithium, nickel metal and ore, phosphate rock, and vermiculite, may take place if domestic and international demand increase (International Monetary Fund, 2013, p. 8).

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TABLE 1
ZIMBABWE: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
METALS					
Chromite, gross weight	442,584 ⁴	193,673 ⁴	510,000	599,079 ⁴	408,475 ⁴
Cobalt, metal content ⁵	85	74	79	86	88
Copper:					
Mine output, concentrate, Cu content	2,827 ⁴	3,572 ⁴	4,700	6,000	6,300
Metal, refinery output, refined/cathode, primary	3,072 ⁴	4,000	4,545 ⁴	4,355 ⁴	900
Gold kilograms	3,579 ⁴	4,965 ⁴	9,100	12,824 ⁴	14,742 ⁴
Iron and steel:					
Mine output, iron ore:					
Gross weight thousand metric tons	3 ⁴	--	--	--	--
Fe content do.	1 ⁴	--	--	--	--
Metal:					
Steel, crude do.	10	14	14	15	15
Ferroalloys:					
Ferrochromium	145,430 ⁴	72,223 ⁴	146,000	140,000 ^r	137,534 ⁴
Ferrosilicon chromium	1,612 ^{r,4}	603 ^r	-- ^r	-- ^r	--
Nickel:					
Mine output, concentrate, Ni content	6,354 ⁴	4,858 ⁴	6,200	7,992 ⁴	7,899 ⁴
Refinery output, refined metal:					
Refined from domestic materials	3,400	--	--	--	--
Toll refined from imported materials ⁶	10,300	5,000	4,039 ⁴	3,715 ⁴	2,000
Total	13,700	5,000	4,039 ⁴	3,715 ⁴	2,000
Platinum-group metals:					
Iridium kilograms	151 ⁴	209 ⁴	220	220	240
Palladium do.	4,386 ⁴	5,680	7,000	8,241 ⁴	9,000
Platinum do.	5,642 ⁴	6,849 ⁴	8,800	10,826 ⁴	11,900
Rhodium do.	860	900	900	900	990
Ruthenium do.	630	650	700	700	760
Total do.	11,700 ⁴	14,300	17,600	20,900	22,900
Silver do.	150	200	400	550	600
INDUSTRIAL MINERALS					
Asbestos	11,489 ⁴	4,971 ⁴	2,400	--	--
Cement, hydraulic thousand metric tons	400	700	800	1,000	1,100
Clays, common	600	600	600	700	700
Diamond:					
Gem carats	700,000	900,000	NA	NA	NA
Industrial do.	100,000	100,000	NA	NA	NA
Total ⁴ do.	797,198	963,502	8,435,244	8,502,648	12,060,163
Graphite	5,134 ⁴	2,463 ⁴	4,000 ^r	7,000 ^r	6,000
Lithium minerals, gross weight	50,000	50,000	47,000 ^r	48,000 ^r	53,000
Magnesite	2,549 ⁴	449 ⁴	--	--	--
Mica	150,000	1,000	1,000	1,000	1,000
Nitrogen, N content of ammonia	20,000	14,000	29,000	26,000	25,000
Perlite	3,000	3,000	1,000	1,000	1,000
Phosphate rock, marketable concentrate	21,051 ⁴	20,000	63,000	60,000	20,000

See footnotes at end of table.

TABLE 1—Continued
ZIMBABWE: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
INDUSTRIAL MINERALS—Continued					
Stone, sand and gravel:					
Granite, black	1,000	500	700	500	--
Limestone	50	40	50	50	50
Sulfur:					
Pyrite:					
Gross weight	30,308 ⁴	-- ⁴	-- ⁴	--	--
S content (32.6%)	9,900 ⁴	--	--	--	--
Byproduct acid, metallurgical and coal process gas, S content	1,000	1,000	1,000	1,000	1,000
Total	10,900	1,000	1,000	1,000	1,000
Talc	200	200	--	--	--
Vermiculite	16,123 ⁴	3,211 ⁴	--	--	--
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	1,947 ⁴	1,750	2,668 ^{r,4}	2,562 ^{r,4}	3,500
Coke, including metallurgical	112 ⁴	43 ⁴	180	240	370

¹Revised. do. Ditto. NA Not available. -- Zero.

²Estimated data are rounded to no more than three significant digits; may not add to totals shown.

³Table includes data available through August 6, 2013.

³In addition to the commodities listed, secondary aluminum; corundum; feldspar; such gemstones as amethyst, aquamarine, emerald, iolite, and tourmaline; kaolin; kyanite; secondary lead; and ores of antimony, tantalum, tin, and tungsten may be produced, but information is inadequate to estimate output.

⁴Reported figure.

⁵Includes metal content of cobalt compounds recovered from exported ore and smelter matte, and may include cobalt content of cobalt hydroxide recovered by BSR Ltd. from nickel-copper matte imported for toll refining. Does not include cobalt compounds recovered from the Ngezi Mine or cobalt sulfate recovered from the Unki Mine.

⁶Toll-refined data include part of the output from the Bindura refinery and all the production from the Empress refinery, which processes imported nickel matte from Botswana.

TABLE 2
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Asbestos	African Associated Mines (Private) Ltd.	Shabanie Mine, Zvishavane	2,400,000 ¹
Do.	do.	Gaths Mine, Mashava	1,400,000 ¹
Cement:			
Clinker	Portland Holdings Ltd. [Pretoria Portland Cement Company Ltd. (PPC)]	Colleen Bawn, about 115 kilometers southeast of Bulawayo	1,000,000
Portland	Lafarge Cement Zimbabwe Ltd. (Lafarge, S.A.)	Harare	450,000
Do.	Portland Holdings Ltd. [Pretoria Portland Cement Company Ltd. (PPC)]	Bulawayo	800,000
Do.	Sino-Zimbabwe Cement Company Ltd. (China Building Material Industrial Corporation for Foreign Economic Cooperation and Industrial Development Corp.)	Gweru	300,000
Chromite	Local cooperatives and small-scale miners	Mines on the southern Great Dyke	340,000 ¹
Do.	do.	Mines on the northern Great Dyke	230,000 ¹
Do.	Zimbabwe Alloys Ltd. (Zim Alloys)	Inyala Mine	60,000 ¹
Do.	Zimbabwe Mining and Smelting Co. (Private) Ltd. (Zimasco) [Zimasco Consolidated Enterprises Ltd. (ZCE)]	Mining operations near Darwendale, Lalapanzi, Mutorashanga, Ngezi, and south of Shurugwi	300,000
Coal	Coal Zimbabwe (Private) Ltd. (Steelmakers Zimbabwe (Private) Ltd.)	Chiredzi, about 130 kilometers southeast of Masvingo	1,200,000
Do.	Hwange Colliery Company Ltd. [Government, 37.07%; Messina Investments Ltd., 15.08%; Mittal Steel African Investments, 9.76%; London Register, 6.87%; National Social Security Authority, 6.16%]	3 Main underground mine, the Chaba open pit mine, and the JKL open pit mine, Hwange	5,000,000
Do.	Makoma Resources (Private) Ltd.	Entuba coalfields, near Hwange	2,400,000
Do.	Sengwa Colliery (Private) Ltd. (RioZim Ltd.)	Sengwa Colliery, about 200 kilometers northeast of Kadoma	5,000,000 ¹
Do.	Tulicoal (Private) Ltd. [Senzile Mining (Private) Ltd.]	do.	1,200,000 ¹
Cobalt:			
Ore, cobalt content	Bindura Nickel Corporation Ltd. (Mwana Africa PLC)	Trojan Mine at Bindura and Shangani Mine, about 100 kilometers northeast of Bulawayo	800 ¹
Do.	Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd., Impala Platinum Holdings Ltd., and Zvishavane Community Share Ownership Trust)	Mimosa Mine, east of Zvishavane	88
Do.	Unki Mines (Private) Ltd. (Anglo Platinum Ltd.)	Unki Mine, southeast of Shurugwi	NA
Do.	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Ngezi Mine, which includes the Ngwarati Mine (also known as Portal 1), the Rukodzi Mine (Portal 2), and the Bimha Mine (Portal 4)	NA
Hydroxide	BSR Ltd. (Bindura Nickel Corporation Ltd., 100%)	Bindura	700 ¹
Do.	Empress Nickel Refinery (RioZim Ltd.)	Eiffle Flats, near Kadoma	NA
Coke	Hwange Coal Gasification Company (Private) Ltd. [Taiyuan Sanxing Coal Gasification Co., Hwange Colliery Company Ltd., and Stoat Mining (Private) Ltd.]	Hwange	144,000
Do.	Hwange Colliery Company Ltd. [Government, 37.07%; Messina Investments Ltd., 15.08%; Mittal Steel African Investments, 9.76%; London Register, 6.87%; National Social Security Authority, 6.16%]	do.	230,000

See footnotes at end of table.

TABLE 2—Continued
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Copper:				
Ore, copper content		Bindura Nickel Corporation Ltd. (Mwana Africa PLC)	Trojan Mine at Bindura and Shangani Mine, about 100 kilometers northeast of Bulawayo	1,600 ¹
Do.		Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd., Impala Platinum Holdings Ltd., and Zvishavane Community Share Ownership Trust)	Mimosa Mine, east of Zvishavane	3,000
Do.		Unki Mines (Private) Ltd. (Anglo Platinum Ltd.)	Unki Mine, southeast of Shurugwi	1,000
Do.		Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Ngezi Mine, which includes the Ngwarati Mine (also known as Portal 1), the Rukodzi Mine (Portal 2), and the Bimha Mine (Portal 4)	3,000
Refined		Empress Nickel Refinery (RioZim Ltd.)	Eiffle Flats, near Kadoma	6,000
Diamond	carats	Anjin Investments (Private) Ltd. [joint venture of Anhui Foreign Economic Construction Group and Matt Bronze (Private) Ltd.]	Marange deposit in the Chiadzwe area	NA ^{2,3}
Do.	do.	Diamond Mining Corporation (Private) Ltd. [joint venture of Pure Diam and Zimbabwe Mining Development Corp. (ZMDC)]	do.	NA ^{2,3}
Do.	do.	Marange Resources (Private) Ltd. [Zimbabwe Mining Development Corp. (ZMDC)]	do.	NA ^{2,3}
Do.	do.	Mbada Mining (Private) Ltd. [Grandwell Holdings Ltd., Marange Resources (Private) Ltd., and Transfrontier Mining Company Ltd.]	do.	NA ^{2,3}
Do.	do.	Murowa Diamonds (Private) Ltd. (Rio Tinto plc and RioZim Ltd.)	Murowa Mine, near Zvishavane	403,000
Do.	do.	Limpopo Minerals Resources Ltd (Rani Investment LLC, 80%, and Khupukile Resources Ltd., 20%)	River Ranch Mine, near Beitbridge	NA ^{1,2}
Do.	do.	Sino Zimbabwe Development (Private) Ltd. [Zimbabwe Mining Development Corp. (ZMDC)]	Marange deposit in the Chiadzwe area	NA ^{2,3}
Gold	kilograms	Artisanal miners, including small-scale miners and syndicates	Various locations	3,000 ^e
Do.	do.	Bilboes Holding (Private) Ltd.	The Bubi, the Isabella, the McCays, and the When Mines	10 ^e
Do.	do.	Blanket Mine (1983) (Private) Ltd. [Caledonia Mining Corp., 49%; National Indigenisation and Economic Empowerment Fund, 16%; Fremiro, 15%; Blanket Employee Trust Services (Private) Ltd., 10%; Gwanda Community Share Ownership Trust, 10%]	Blanket Mine, about 140 kilometers south of Bulawayo	1,300 ^e
Do.	do.	Casmyn Mining Zimbabwe (Private) Ltd. (New Dawn Mining Corp.)	Turk-Angelus Mine, 56 kilometers northeast of Bulawayo	550 ^e
Do.	do.	DTZ-OZGEO (Private) Ltd. (Joint venture of Development Trust of Zimbabwe and JSC Zarubezhgeologia)	Placer mining operations at Penhalonga, about 15 kilometres	400 ^e
Do.	do.	Duration Gold Ltd. (Clarity Capital Group)	Vubachikwe Mine, near Gwanda	200 ^e
Do.	do.	do.	Athens Mine, Mvuma	100 ^e
Do.	do.	do.	Gaika Mine, Kwe Kwe	30 ^e
Do.	do.	do.	Sunace Mine, about 31 kilometers north of Bulawayo	5 ^e
Do.	do.	Falcon Gold Zimbabwe Ltd. (New Dawn Mining Corp., 85%)	Golden Quarry Mine, about 7 kilometers north of Shurugwi	300 ^e
Do.	do.	do.	Dalny Complex, about 33 kilometers northwest of Chegutu	250 ^e
Do.	do.	F.A. Stewart (Private) Ltd.	Jessie Mine, east of Gwanda	150 ^e

See footnotes at end of table.

TABLE 2—Continued
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Gold—Continued	kilograms	Jena Mine (Private) Ltd. [Zimbabwe Mining Development Corp. (ZMDC)]	Jena Mine	400 ^e
Do.	do.	John Mack and Co.	Golden Valley Mine	500 ^e
Do.	do.	Matebeland Minerals (Private) Ltd.	Turk Mine	600 ^e
Do.	do.	Metallon Gold Zimbabwe (Private) Ltd. (Metallion Corp.)	Arcturus Mine, 32 km east of Harare	500 ^e
Do.	do.	do.	How Mine, about 24 kilometers southeast of Bulawayo	1,300 ^e
Do.	do.	do.	Mazowe Mine, Mazowe	400 ^e
Do.	do.	do.	Redwing Mine, Penhalonga	200 ^e
Do.	do.	do.	Shamva Mine, Shamva	700 ^e
Do.	do.	Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd., Impala Platinum Holdings Ltd., and Zvishavane Community Share Ownership Trust)	Mimosa Mine, east of Zvishavane	NA
Do.	do.	Mwana Africa PLC	Freda Rebecca Mine, Bindura	2,400 ^e
Do.	do.	Olympus Mines Ltd. (Central African Gold Ltd.)	Camperdown Mine, north of Shurugwi	50 ^e
Do.	do.	do.	Old Nic Mine, Bulawayo	20 ^e
Do.	do.	Pan Reef Mining Company (Private) Ltd.	Indarama Mine	50 ^{e,2}
Do.	do.	RioZim Ltd.	Renco Mine, 75 kilometers south-southeast of Masvingo	1,000 ^e
Do.	do.	Sabi Gold Mines [Zimbabwe Mining Development Corp. (ZMDC)]	Sabi Mine	200 ^e
Do.	do.	Unki Mines (Private) Ltd. (Anglo Platinum Ltd.)	Unki Mine, southeast of Shurugwi	NA
Do.	do.	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Ngezi Mine, which includes the Ngwarati Mine (also known as Portal 1), the Rukodzi Mine (Portal 2), and the Bimha Mine (Portal 4)	NA
Graphite		Zimbabwe German Graphite Mines (Private) Ltd. [Graphite Kropfmühl division of AMG Advanced Metallurgical Group N.V. and Zimbabwe Mining Development Corp. (ZMDC)]	Lynx Graphite Mine, Karoi	NA
Iron and steel:				
Ferroalloys, ferrochromium		CINA	Smelter at Gweru	5,000 ^{e,1}
Do.		Jin An Corp. and Xin Yu Mining Corp.	do.	5,000 ^{e,1}
Do.		Maranatha Ferrochrome (Private) Ltd.	Smelter at Eiffel Flats	28,000 ¹
Do.		MonaChrome	Smelter at Chegutu	5,000 ^{e,1}
Do.		Olliken Ferro Alloys (Private) Ltd.	Smelter at Kwekwe	25,000 ¹
Do.		Wel Mining	Smelter at Gweru	5,000 ^{e,1}
Do.		Zimbabwe Alloys Ltd. (Zim Alloys)	do.	45,000
Do.		Zimbabwe Mining and Smelting Co. (Private) Ltd. (Zimasco) [Zimasco Consolidated Enterprises Ltd. (ZCE)]	Smelter at Kwekwe	180,000
Iron:				
Iron ore, gross weight		NewZim Minerals Private Ltd. (Essar Africa Holdings Ltd., 80%, and Government, 20%)	Ripple Creek Mine, near Redcliff	600,000
Sponge iron		Steelmakers Zimbabwe (Private) Ltd. (Steelmakers Ltd.)	Masvingo	54,000
Steel:				
Crude steel		NewZim Steel Private Ltd. (Essar Africa Holdings Ltd., 53.4%, and Government, 35.6%)	Blast furnace at Redcliff, near Gweru	72,000 ^{1,4}
Do.		Steelmakers Zimbabwe (Private) Ltd. (Steelmakers Ltd.)	Electric arc furnace at Redcliff	15,000
Rolled steel		Lancashire Steel (Private) Ltd. [Zimbabwe Iron and Steel Company (Private) Ltd. (Zisco)]	Wire rod mill at Kwekwe	120,000
Do.		Steelmakers Zimbabwe (Private) Ltd. (Steelmakers Ltd.)	Rolling mill at Redcliff	36,000

See footnotes at end of table.

TABLE 2—Continued
ZIMBABWE: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Lithium	Bikita Minerals (Private) Ltd.	Bikita Mine, 60 kilometers east of Masvingo	55,000
Nickel:			
Ore	Bindura Nickel Corporation Ltd. (Mwana Africa PLC)	Trojan Mine at Bindura and Shangani Mine, about 100 kilometers northeast of Bulawayo	80,000 ¹
Ore, Ni content	Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd., Impala Platinum Holdings Ltd., and Zvishavane Community Share Ownership Trust)	Mimosa Mine, east of Zvishavane	3,000
Do.	Unki Mines (Private) Ltd. (Anglo Platinum Ltd.)	Unki Mine, southeast of Shurugwi	1,000
Do.	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Ngezi Mine, which includes the Ngwarati Mine (also known as Portal 1), the Rukodzi Mine (Portal 2), and the Bimha Mine (Portal 4)	4,000
Refined metal	BSR Ltd. (Bindura Nickel Corporation Ltd., 100%)	Bindura	15,600 ¹
Do.	Empress Nickel Refinery (RioZim Ltd.)	Eiffle Flats, near Kadoma	9,000
Nitrogen (ammonium nitrate)	Sable Chemical Industries Ltd. [TA Holdings Ltd., 51%; Chemplex Corporation Ltd., 36%; Yara Zimbabwe (Private) Ltd., 12%)	Electrolysis plant north of Kwekwe	240,000
Phosphate	Dorowa Minerals (Private) Ltd. (Chemplex Corporation Ltd.)	Dorowa Mine, 90 kilometers west of Mutare	155,000 ¹
Platinum-group metals:			
Ore	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Ngezi Mine, which includes the Ngwarati Mine (also known as Portal 1), the Rukodzi Mine (Portal 2), and the Bimha Mine (Portal 4)	2,200,000
Do.	Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd., Impala Platinum Holdings Ltd., Zvishavane Community Share Ownership Trust)	Mimosa Mine, east of Zvishavane	1,800,000
Do.	Unki Mines (Private) Ltd. (Anglo American Platinum Ltd.)	Unki Mine, southeast of Shurugwi	1,440,000
Concentrate	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Selous concentrator	2,180,000
Do.	Mimosa Holdings (Private) Ltd. (Aquarius Platinum Ltd. and Impala Platinum Holdings Ltd.)	Mimosa concentrator, east of Zvishavane	1,900,000
Smelter matte	Zimbabwe Platinum Mines (Private) Ltd. (Zimplats Holdings Ltd.)	Selous smelter	72,000
Pyrite	Iron Duke Pyrites (GAT Investments (Private) Ltd.)	Iron Duke Mine	NA ¹
Vermiculite	Samrec Vermiculite Zimbabwe (Private) Ltd.	Shawa Mine, near Dorowa	39,000
Do.	Dinidza Vermiculite Mining Co. (Private) Ltd.	Dinidza Mine, near Dorowa	10,000

⁶Estimated. Do., do. Ditto. NA Not available.

¹Operations suspended.

²Ownership disputed.

³Under development or redevelopment.

⁴Nominal capacity 1,000,000 metric tons per year. Blast furnaces awaiting refurbishment.