

# THE MINERAL INDUSTRY OF ZIMBABWE

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The Republic of Zimbabwe is a landlocked nation in southern Africa that is surrounded by Zambia to the north, Mozambique to the east, South Africa to the south, and Botswana to the west. It covers an area of 390,580 square kilometers. Based on purchasing power parity, the gross domestic product (GDP) in 2004 was estimated to be \$27.09 billion,<sup>1</sup> and the GDP per capita was \$2,309. For the sixth year in a row, the real GDP growth rate declined. The 4.2% decline in real GDP growth in 2004 followed a drop of 10.4% in 2003. Inflation had peaked at 623% in January 2004 before declining to low triple digits by yearend (Muñoz, 2005, p. 23; International Monetary Fund, 2005<sup>2</sup>).

The mineral industry produced about 40 minerals or mineral-based commodities chiefly from small- and medium-scale mines. Despite the constraints of a deteriorating economy and uncertain political climate, several commodities, which included chromite, gold, graphite, lithium minerals, nickel, platinum-group metals (PGM), silver, tantalum, and vermiculite, posted production increases in 2004.

Mining and mineral-commodity companies continued production operations in 2004 despite Zimbabwe's hyperinflation. Additional uncertainty within the industry was caused by current or proposed Government policies. Varied ratios of official and unofficial foreign exchange rates used in the Government's foreign exchange policy differed by commodity and often adversely affected companies that exported production. Companies also were battered by increased domestic costs, such as fuel, electricity, and wages, and shortages of electricity, fuel, and spare parts, which often resulted in reduced equipment maintenance and development exploration. Local commercial interest rates dropped to an average of 202.5% in 2004 from 346% in 2003 (Coorey and others, 2005, p. 97).

## Government Policies and Legislation

In April, a draft version of the Mines and Minerals Amendment Bill, 2004 was released. The legislation proposed that private mining companies transfer 50% of the total shares of Zimbabwe operations to "historically disadvantaged persons" within a 3-year period. Larger publicly held companies would be required to sell 25% of their interest in Zimbabwean operations within the same timeframe. In October, a new version of the legislation was released that proposed that

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<sup>1</sup>Where necessary, values have been converted from Zimbabwe dollars (Z\$) to U.S. dollars (US\$) at the official rate of Z\$824 = US\$1.00 or at the average auction rate of Z\$5,300 for 2004. In 2003, the official rate was Z\$55 = US\$1.00 until March and Z\$824 = US\$1.00 for the remainder of the year.

<sup>2</sup>References that include a section mark (§) are found in the Internet References Cited section.

20% of the equity interest in Zimbabwe mines be transferred to "historically disadvantaged persons" within 2 years after Parliamentary approval, 25% within 7 years, and a total of 30% within 10 years (Mining Journal, 2004; Reuters, 2004§).

In December, the corporate tax rate was reduced to 15%. The new rate was backdated to January 1, 2004. The 3% royalty that had been imposed on gold production in January 2004 also was abolished (Aquarius Platinum Ltd., 2005, p. 10; Madiala, 2005§).

## Trade

Most of the exports from and the imports to landlocked Zimbabwe were shipped through South Africa. In 2004, Zimbabwe again posted a negative balance of trade. The trade balance was estimated to be -\$310 million in 2004, -\$108 million in 2003, -\$18 million in 2002, and \$323 million in 2001. Exports [free on board (f.o.b)] were valued at \$1.68 billion in 2004. The Government's poorly planned and often violent Fast Track Land Reform Program had badly damaged the commercial farming sector, which was the nation's traditional source of exports and foreign exchange. After the Government instituted a "Look East" policy in 2003, exports to the West dropped, but the percentage of total imports from the West remained at about the same level. About 30.2% of Zimbabwean exports was sent to South Africa in 2004 compared with 20.6% in 2003 and 16.8% in 2002. In 2004, Switzerland received 6% of Zimbabwean exports; the United Kingdom, 5.9%; China, 4.8%; and Germany, 4% (Coorey and others, 2005, p. 103-105).

In 2004, the value of manufacturing exports was estimated to be \$620.9 million. Manufacturing exports included ferroalloys, which had an estimated value of \$185.1 million in 2004 (a 55% increase compared with 2003), and iron and steel, which had an estimated value of \$22.9 million. Mineral exports, which were estimated to be \$604.2 million in 2004, exceeded agricultural exports, which were estimated to be \$384.2 million, for the first time in years. The increased value of mineral exports was attributed to increased gold and PGM exports and world market prices for nickel. Historically a major export, gold exports rebounded to 20.9 metric tons (t) in 2004 from 13 t in 2003. In terms of value, gold exports in 2004 were \$262.8 compared with \$152.3 in 2003. In response to a 187% increase in the volume of platinum exports, the estimated value of platinum exports jumped to \$174.4 million in 2004 from \$77.4 million in 2003. The estimated value of nickel exports reached \$95.7 million in 2004, which was up from a provisional \$68.5 million in 2003 (Coorey and others, 2005, p. 103-105, 107).

In 2004, as in 2003, the majority of Zimbabwean imports were from South Africa. Total imports (f.o.b.) were valued at \$1.99 billion, of which machinery and transportation equipment accounted for 21%; chemicals, 20.2%; and petroleum products, 17.2% (Coorey and others, 2005, p. 106-107).

## Commodity Review

### Metals

**Chromium.**—Zimbabwe chromite production was used by the Gweru smelter of Zimbabwe Alloys Mines Ltd. (ZimAlloys), which was owned by Anglo American plc, and the Kwekwe smelter of Zimbabwe Mining and Smelting Co. (Pvt.) Ltd. (Zimasco) to produce high-carbon ferrochromium. In 2004, production of high-carbon ferrochromium declined by 21% to 193,077 t. Zimasco, which was the larger of the two plants, closed three of its six furnaces in April because of monetary losses under the Government's mandated foreign exchange conversion program. The furnaces were restarted about a month later after the Reserve Bank of Zimbabwe announced a revision to the monetary policy. In 2004, ZimAlloys produced about 31,000 t of high-carbon ferroalloys compared with 39,179 t in 2003. No low-carbon ferrochromium was produced during the year. The ZimAlloys plant had been reconfigured in 2001 to produce only high-carbon ferrochromium (Anglo American plc, 2005, p. 118; Magnowski, 2004).

**Gold.**—By law, all gold had to be sold to Fidelity Printers and Refiners (a subsidiary of the Reserve Bank of Zimbabwe). In January 2004, the Zimbabwe Mining Development Corp. reopened the Sabi Mine, which it had placed on care and maintenance in 2001 because of outstanding debts. In September, Mwana Africa Holdings acquired the Freda-Rebecca gold mine at Bindura from AngloGold Ashanti Ltd.

An estimated 300,000 to 1 million artisanal gold miners worked in Zimbabwe, especially along the Angwa, the Gwayi, the Manyame, the Mazowe, the Munyati, the Mupfure, the Mupfufuruzi, the Odzi, the Ruenya, the Ruya, the Sanyati, the Thuli, and the Umzingwani Rivers. General environmental degradation of riparian areas was caused by deforestation for fuel wood for the informal miner settlements; the lack of waste disposal facilities; the miners' extensive pitting, tailings piles, and tunneling, which also resulted in the rapid silting of downstream agricultural reservoirs; and the release of liquid mercury and mercury vapor. Miners also suffered from the lack of adequate health services and clean drinking water (White, 2004; Boese-O'Reilly and others, 2004§; Shoko and Veiga, 2004§).

**Iron and Steel.**—The Government-controlled Zimbabwe Iron and Steel Company (ZISCO) steel plant had the capacity to produce 800,000 metric tons per year (t/yr) of crude steel, but the company's lack of working capital resulted in shortages of raw materials that reduced ZISCO's operating levels to about 20% of capacity (Kadzere, 2004§).

**Nickel.**—Bindura Nickel Corp. Ltd. (BNC) began another evaluation of the Hunter Road nickel deposit, which was located near Gweru. BNC (a subsidiary of Mwana Africa Holdings) operated the Shangani and the Trojan nickel mines and a nickel smelter and refinery at Bindura. Previous studies had estimated that the Hunter Road deposit contained 30 million metric tons (Mt) of ore at a grade of 0.6% nickel. Positive results from the evaluation, which was expected to be completed in 2005, and a proposed bankable feasibility study scheduled for 2006 could result in mine construction at Hunter Road beginning in 2008;

initial nickel production could begin by 2010 (Zhuwakinyu, 2004§).

As a result of Rio Tinto plc's focus on the Murowa diamond operation, Rio Tinto's interest in the Empress nickel refinery, which processed matte supplied from Botswana on a toll basis, was spun off to Rio Tinto Zimbabwe Ltd. (Antwerp Facets News Service, 2004§).

**Platinum-Group Metals.**—Makwiro Platinum Mines (Pvt.) Ltd., which was owned by Zimbabwe Platinum Mines Ltd. (Zimplats) (70%) and Impala Platinum Mines Ltd. (Implats) (30%), operated the Ngezi open pit and underground platinum mines and the Selous metallurgical complex, which was located 77 kilometers (km) to the north of Ngezi. White PGM matte output from the Selous smelter was refined by Implats Refining Services facilities in South Africa. In 2004, Makwiro mined 1.773 Mt of ore from the open pit and 210,000 t from the trial underground mine. At the concentrator, 2.05 Mt of ore was milled, and the Selous smelter received 81,704 t of concentrate to process. In 2004, Makwiro sold 2,730 kilograms (kg) of platinum; 2,310 kg of palladium; 310 kg of gold; and 250 kg of rhodium, which was recovered from the smelter matte. Additionally, 1,602 t of nickel and 1,131 t of copper were sold. Late in the year, the mining contract for the open pit operation was renewed for 3 years, and the mining operation increased to 7 days per week from 6 (Zimbabwe Platinum Mines Ltd., 2005).

Mimosa Investments Ltd. (formerly Zimasco Consolidated Enterprise Platinum Ltd.) of Mauritius operated the Mimosa underground mine near Zvishavane at the southern end of the Great Dyke; Mimosa was a 50-50 partnership between Aquarius Platinum Ltd. of Australia and Implats. In 2004, the PGM concentrate produced by Mimosa that was sold to Implats Refining Services contained 1,884 kg of platinum, 1,387 kg of palladium, 260 kg of gold, and 152 kg of rhodium. Additionally, 1,717 t of nickel, 1,405 t of copper, and 53 t of cobalt were recovered from Mimosa concentrates produced in 2004 (Aquarius Platinum Ltd., 2005, p. 11-12).

### Industrial Minerals

**Cement.**—The cement sector in Zimbabwe continued to be affected adversely by the country's hyperinflation. In 2004, cement prices increased by 80% under a cement price monitoring program that replaced Government price controls that had been in effect from 2001 to 2003 (Bhasera, 2004§).

Domestic cement demand declined because of the uncertainty generated by the country's economic situation and the increased cement prices that adversely affected the country's construction industry. Because of the reduced domestic demand for cement, Portland Holdings Ltd. (Porthold) (a subsidiary of Pretoria Portland Cement Co. Ltd. of South Africa) continued to export a significant volume of its cement production. In 2003, Porthold rehabilitated the Colleen Bawn plant while the plant was temporarily idled because of the lack of coal and diesel fuel. Coal shortages also resulted in the 6-week suspension of production in early 2004 by Circle Cement Ltd., in which the Lafarge Group held a 76% interest. Circle Cement's plant closed again in June and July while the company completed a major renovation of its facilities. In 2003, Sino-Zimbabwe

Cement Co. Ltd. (a joint venture of China Building Material Industrial Corp. for Foreign Econo-Technical Cooperation of China and Industrial Development Corp. of Zimbabwe) had temporarily suspended operations in response to the shortages of foreign currency and fuel (International Cement Review, 2004).

**Diamond.**—Commercial diamond production from the Murowa Diamond (Pvt.) Ltd. operation began in late 2004. Production averaged about 20,000 carats per month from the mine, which was located near Zvishavane. Originally a joint venture between Rio Tinto Zimbabwe and Rio Tinto, the ownership structure on the Murowa operation was changed in July, when Rio Tinto increased its interest in Murowa Diamond to 78% after a swap of its 56% interest in Rio Tinto Zimbabwe for a proportionate share of Murowa Diamond. Rio Tinto Zimbabwe became an independent company, retained 22% interest in the Murowa Mine, and subsequently changed its name to RioZim Ltd. (Antwerp Facets News Service, 2004§; Njini, 2004a§).

**Graphite.**—Because of risks associated with the political situation in Zimbabwe, Graphit Kropfmühl AG wrote off its remaining investment of about \$150,000 (€120,000) in the Zimbabwe German Graphite Mines (Pvt.) Ltd. after the March 2004 promulgation of International Accounting Standard 36—Impairment of Assets. Graphit Kropfmühl retained a 50% equity interest in Zimbabwe German Graphite Mines, which increased production by about 34% in 2004 (Graphit Kropfmühl AG, 2005, p. 14, 36).

**Vermiculite.**—Dinidza Vermiculite Mining (Pvt.) Ltd. resumed production in 2003 after a management change and plant rehabilitation. Plant output was expected to ramp up to 40,000 t/yr of salable product by 2005. Samrec Vermiculite (Pvt.) Ltd. (a subsidiary of the Imerys Group of France) operated the Shawa mine and plant at Dorowa. Both open pit mines excavated ore without drilling or blasting operations (Dinidza Vermiculite Mining (Pvt.) Ltd., 2004§).

### *Mineral Fuels*

Zimbabwe had no domestic reserves of oil or gas and depended on coal, hydropower, and imports to meet its energy requirements. The rising international price of imported petroleum products resulted in a significant increase in the cost of imported fuels, which were valued at \$342 million (at the official exchange rate) in 2004 compared with a provisional \$110 million in 2003. Fuel and electrical power shortages remained major problems in Zimbabwe during the year. Zimbabwe Electricity Supply Authority (ZESA), which was the Government-owned electricity generating company, spent about \$120 million in 2004 to import electrical energy from the Democratic Republic of the Congo, Mozambique, South Africa, and Zambia (Coorey and others, 2005, p. 106).

**Coal.**—In 2004, Wankie Colliery Co. Ltd., which operated the country's only coal mine near Hwange, changed its name to Hwange Colliery Co. Ltd. The Government remained the owner of a significant proportion of Hwange's equity. Coal production dropped again in 2004. Part of the decline was attributed to the closure in October of Hwange's 600,000-t/yr capacity M-Block underground mine after reserves were depleted. Production of

coking and steam coal continued from the open pit mine. In 2004, development work continued on the underground 1.8-million-metric-ton-per-year-capacity 3 Main Mine. Hwange expected to begin production of coking coal from the 3 Main Mine in early 2005 and planned to double its coke production capacity to 400,000 t/yr (Wankie Colliery Co. Ltd. 2004; p. 23; Bain, 2004§; Herald, The, 2004§).

In 2004, Hwange proposed the development of an open pit mine on its Chaba concession, which was located about 6 km from the Hwange Power Station. Production from Chaba would cover the expected increased demand from the proposed expansion of the electricity-generating plant that ZESA originally proposed to complete by 2007. In 2004, however, ZESA lobbied for the transfer of the development rights to the Chaba concession to itself from Hwange. Expectations that Chinese and Indian investors would fund proposed expansions of ZESA's Hwange and Kariba South powerplants reportedly had failed because the international investors had requested coal mining rights that ZESA did not have to offer (Njini, 2004b§).

Also in early 2004, Beta Holding (Pvt.) Ltd. of Zimbabwe leased the Sengwa coal mine from Rio Tinto Zimbabwe. Subsidiary companies of Beta that could use coal for fuel included brick and tile producers. The open pit Sengwa Mine initially had been proposed in the early 1990s to provide fuel for the ferrochrome industry. In the mid-1990s, the Sengwa Mine was developed to be the source of fuel for the Government's Gokwe North power project, which was never built (Marawanyika, 2004§).

Coal-bed methane projects in western Zimbabwe included the Lubimbi exploration area that Hwange discovered in 2004 and the Lupane Gas Project for which the Industrial Development Corp. continued to seek development funding.

**Petroleum.**—The Government mulled the recommissioning of the country's former oil refinery at Feruka, which had closed in 1967 after the United Nations sanctions that were imposed on the former Government of Rhodesia resulted in the suspension of crude oil imports. The Feruka facility subsequently was converted to an oil storage terminal. The costs to rehabilitate and upgrade the remnants of the 40-year-old refinery were expected to be more than the cost of building a new refinery.

### **Outlook**

The short-term outlook for the mining sector in Zimbabwe is not favorable. Currency regulations make it difficult for Zimbabwean companies, especially cement, coal, ferroalloys, gold, and steel operations, to benefit from the continued global trend of increased commodity prices. A residual effect of the rampant hyperinflation that continued to affect numerous mining operations adversely would be reduced equipment maintenance and deferred development exploration, both of which effectively shorten the potential operating lives of mines. Government intervention in the economy and in state-run industries has been a major contributor to the growing number of closed mines and suspended projects that are undermining the ability of the mining sector to continue to generate foreign export earnings.

The significant impact of the Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS)

epidemic, which was estimated to affect 24.6% of the adult population in Zimbabwe, is expected to haunt the remaining workforce for years to come (Coorey and others, 2005, p. 6).

The Zimbabwe mineral sector remains attractive in the long term, especially for small- and medium-scale mining companies. The country has abundant mineral resources, and a well-developed infrastructure network remains in place. In the past dozen years, most of major multinational mineral commodity companies that had operations in Zimbabwe have withdrawn. New funding, primarily funneled through the cement, diamond, gold, and PGM sectors, has entered the country and prevented the total collapse of the minerals sector. Regional and small international companies continued to acquire Zimbabwean mining assets, especially in the gold sector, at what is hoped to be rock-bottom prices with the expectation that the economic climate will eventually improve. Platinum projects being undertaken by South African companies have been able to proceed with logistical support from South Africa to overcome fuel and other shortages.

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## Major Sources of Information

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

(Metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004 <sup>p</sup>
<b>METALS</b>					
Chromite, gross weight	668,043	780,150	749,339	637,099	668,391
Cobalt, metal <sup>2</sup>	79	95	99	79	59
Columbium (niobium) and tantalum, mine output, Ta content	1	21	338	4	14
<b>Copper:</b>					
Mine output, concentrate, Cu content	2,104	2,057	2,502	2,767	2,383
<b>Metal:</b>					
Smelter output, blister/anode, primary <sup>c</sup>	14,500	2,160	--	--	--
Refinery output, refined/cathode, primary	10,200	8,000	7,200	7,200	7,000 <sup>e</sup>
Gold kilograms	22,069	18,050	15,469	12,564	21,330
<b>Iron and steel:</b>					
<b>Mine output, iron ore:</b>					
Gross weight thousand metric tons	451	361	272	367	283
Fe content <sup>e</sup> do.	225	180	136	184	140
<b>Metal:</b>					
Pig iron do.	277	156	122	131	150 <sup>e</sup>
Steel, crude do.	258	149	105	152	180 <sup>e</sup>
<b>Ferroalloys:</b>					
Ferrochromium	244,379	243,534	258,164	245,299	193,077
Ferrosilicon chromium thousand metric tons	20	17	--	--	1
<b>Nickel:</b>					
Mine output, concentrate, Ni content	8,160 <sup>e</sup>	10,120	8,092	9,516 <sup>f</sup>	9,776
<b>Refinery output, refined metal:</b>					
Refined from domestic materials	6,678	7,440	6,765	9,517	9,520 <sup>e</sup>
Toll refined from imported materials <sup>3</sup>	12,931	12,084	10,812	3,140	4,600 <sup>e</sup>
Total refined nickel metal	19,609	19,524	17,577	12,657	14,200 <sup>e</sup>
<b>Platinum-group metals:</b>					
Palladium kilograms	366	371	1,943	3,449	3,564
Platinum do.	505	519	2,306	4,270	4,438
Rhodium do.	40	42	218	377	374
Ruthenium do.	NA	NA	178	322	300
Iridium do.	NA	NA	84	152 <sup>f</sup>	135
Osmium do.	NA	NA	NA	NA	NA
Total	911	932	4,729	8,570 <sup>f</sup>	8,811
Silver kilograms	3,799	3,449	1,711	747	3,216
<b>INDUSTRIAL MINERALS</b>					
Asbestos thousand metric tons	152	136	168	147	104
Barite	5,032	7,464	--	--	--
Cement, hydraulic <sup>c</sup> thousand metric tons	1,000	800	600	400 <sup>f</sup>	400
Clays <sup>4</sup>	589	2,247	3,789	--	500 <sup>e</sup>
Diamond carats	23,028	--	--	--	44,454
Feldspar	2,059	1,055	591	246	1
Fluorspar	--	--	250	--	--
<b>Gemstones:</b>					
Amethyst kilograms	10,376	840	NA	NA	NA
Emerald do.	33	57	NA	NA	NA
Graphite	11,838	11,836	9,912	7,675	10,267
Kyanite	10,970	9,682	5,657	745	210
Lithium minerals, gross weight	37,914	36,103	33,172	12,131	13,710
Magnesite	4,029	2,439	2,366	1,333	749
Nitrogen, N content of ammonia	58,400	57,500	60,900	56,300 <sup>f</sup>	47,500
Perlite <sup>e</sup>	5,000	5,000	5,000	5,000	4,000
Phosphate rock, marketable concentrate	77,662	86,611	107,854	95,496	83,391

See footnotes at end of table.

TABLE 1--Continued  
ZIMBABWE: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004 <sup>p</sup>
<b>INDUSTRIAL MINERALS--Continued</b>					
Stone, sand and gravel:	130,000	385,532	408,550	190,372 <sup>r</sup>	8,825
Granite, black	1,500	3,799	3,169	922	41
Limestone	121 <sup>e</sup>	28	6,790	2,356	1
Silica <sup>5</sup>					
do.					
Sulfur:					
Pyrite:	69,119	98,037	87,592	93,010	81,795
Gross weight	22,530	31,960	28,560 <sup>r</sup>	30,320 <sup>r</sup>	26,670
S content (32.6%)	2,500	2,000	2,000	2,000	1,900
Byproduct acid, metallurgical and coal process gas <sup>e</sup>	25,030	33,960	30,600 <sup>r,e</sup>	32,300 <sup>r,e</sup>	28,600 <sup>e</sup>
Total	989	1,273	911	196 <sup>r</sup>	--
Talc	16,215	11,632	23,803	20,016	27,150
Vermiculite					
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, bituminous	600	245	224	228 <sup>r</sup>	180 <sup>e</sup>
Coke, metallurgical <sup>e</sup>					

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>p</sup>Preliminary. <sup>r</sup>Revised. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through October 26, 2005.

<sup>2</sup>"Metal" includes metal content of compounds/salts and may include cobalt recovered from nickel-copper matte imported for toll refining.

<sup>3</sup>Toll-refined data includes part of the output from the Bindura Refinery and all of the production from the Empress Refinery, which processes imported nickel matte from Botswana.

<sup>4</sup>Includes fire clay.

<sup>5</sup>Includes rough and ground quartz and silica sand.