



2017–2018 Minerals Yearbook

ZAMBIA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF ZAMBIA

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Note: In this chapter, information for 2017 is followed by information for 2018.

The mineral industry of Zambia in 2017 was dominated by its copper production, which accounted for 4.0% of the world's mined copper production. The country also produced cement, coal, cobalt, raw steel, gemstones (amethyst, beryl, emerald, and tourmaline), gold, lime, manganese, refined petroleum products, silver, stone, and sulfur (Flanagan, 2019).

Minerals in the National Economy

In 2017, Zambia's nominal gross domestic product (GDP) was \$25.8 billion and real GDP increased by 4.1% compared with an increase of 3.8% in 2016. The mining and quarrying sector accounted for 14.8% of the GDP. The output of that sector increased by 3.0% in 2017 compared with an increase of 7.3% in 2016. Total export earnings increased by 25.7% owing to higher copper and cobalt export earnings. Copper export volumes increased by 9.2%. Although the amount of cobalt exports decreased to 2,676 metric tons (t) from 4,981 t in 2016, cobalt export earnings were 10.5% higher than in 2016 owing to an increase in commodity prices (Bank of Zambia, 2018, p. 14–15, 21; Ministry of Finance, 2018, p. 55, 57).

Government Policies and Programs

The mining sector is regulated by Act No. 11 of 2015 (the Mines and Mineral Development Act of 2015), which replaced Act No. 7 of 2008 (the Mines and Mineral Development Act of 2008). The Mines and Mineral Development Act of 2015 established guidelines for exploration licenses for both large- and small-scale mines; import and export permits; mining rights; safety, health and environmental protections; and mineral trading permits. In June 2016, the 2015 act was amended by Act No. 14 of 2016 [the Mines and Mineral Development (Amendment) Act of 2016] which redefined the mineral royalty rates to 5% for all base metals (except copper), mineral fuels, and industrial minerals, and to 6% for gemstones and precious metals. For copper, the law establishes a royalty rate of 4% when the copper price (in dollars per metric ton) is less than \$4,500, 5% when the price is between \$4,500 and \$6,000, and 6% when the price is more than \$6,000. Investment in most types of mineral operations are covered by the Zambia Development Agency Act of 2006, although minerals produced for the construction industry, such as clay, sand, and most types of stone, are excluded. Petroleum exploration and production are regulated by Act No. 10 of 2008 [the Petroleum (Exploration and Production) Act of 2008] (Government of Zambia, 2016, p. 1–3; International Comparative Legal Guides, 2017).

Production

Notable mineral commodity production increases included that of cobalt (mined), by 65%; bituminous coal, 61%;

limestone, 33%; raw steel, an estimated 20%; refined copper, 15%; sulfur (content) and smelter copper, 13% each; and cement, an estimated 11%. Notable mineral commodity production decreases included that of refined cobalt, by 47%; amethyst and emerald, 22% each; beryl, 19%; manganese (gross weight), 18%; and petroleum, 11%. Data on mineral production are in table 1.

Structure of the Mineral Industry

Many of the country's large copper mining and mineral-processing operations were located in the Copperbelt Province in north-central Zambia. The Government retained minority interest in most of the large copper projects through its holding company Zambia Consolidated Copper Mines (ZCCM–IH) Investments Holdings Plc. The mining sector was administered by the Ministry of Mines and Minerals Development. The Ministry of Commerce, Trade and Industry oversaw the industrial manufacturing sector. Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Cobalt and Copper.—In 2017, copper production was 628,400 t, which was an increase of 6% compared with that of 2016. Kansanshi Mining plc (a subsidiary of First Quantum Minerals Ltd. of Canada) had the following three operations in Northwestern Province: the Kansanshi Mine, the Kansanshi smelter, and the Sentinel Mine. Output from the Kansanshi Mine included 172,059 t of copper contained in concentrate and 78,742 t of copper cathode compared with 173,604 t and 79,668 t, respectively, in 2016. Total copper production at the Kansanshi Mine was 250,801 t, which was a decrease from the 253,272 t produced in 2016. In 2017, the Kansanshi smelter processed 1,211,740 t of concentrate to produce 297,553 t of copper anode. The smelter was designed to process 1.2 million metric tons per year of copper concentrate to produce 340,000 metric tons per year (t/yr) of copper metal. In its first full year of commercial production, the Sentinel Mine produced 190,683 t of copper contained in concentrate (First Quantum Minerals Ltd., 2017; 2018, p. 20, 38).

In 2017, EMR Capital of Australia acquired an 80% interest in the Lubambe copper mine (which was previously held by African Rainbow Minerals Ltd. of South Africa and Vale S.A. of Brazil) and ZCCM–IH held the remaining 20%. In 2017, the Lubambe copper mine produced 44,680 t of copper concentrate and 18,299 t of copper contained in concentrate compared with 51,391 t and 20,937, respectively, in 2016. The mine continued operating at a target of 80,000 metric tons per month as a strategy to manage operating losses and to preserve the ore

body while implementing a strategy to upgrade the underground dewatering infrastructure (African Rainbow Minerals Ltd., 2018, p. 66; ZCCM Investments Holdings PLC, 2019).

In 2017, Chambishi Metals Plc [a subsidiary of Eurasian Resources Group S.a.r.l. of Luxembourg] operated the Chambishi cobalt plant located 75 kilometers northwest of Ndola. In 2017, the company produced 2,520 t of cobalt metal compared with 4,725 t in 2016. The decrease in production was attributed to lower feed exports from Boss Mining Sprl of the Democratic Republic of the Congo [Congo (Kinshasa)], where most of its cobalt was sourced (table 2; Cobalt Development Institute, 2019; Haywood, 2017).

In 2017, NFC Africa Mining plc, which was a subsidiary of China Nonferrous Metal Mining (Group) Co. Ltd. (CNMC), continued developing the Chambishi Southeast Mine. The mine was expected to be completed in the third quarter of 2018 and to have a designed production capacity of 63,000 t/yr of copper in concentrate. In its first full year of commercial production, the Mwambashi Mine produced 523,000 t of copper ore. The Mwambashi strip mine was expected to produce 600,000 t/yr of copper ore (China Nonferrous Metal Mining (Group) Co. Ltd., 2018, p. 7, 23, 36).

Gold.—In 2017, gold output from the Kansanshi Mine and smelter, which were operated by First Quantum, decreased by 5% to 4,372 kilograms (kg) from about 4,610 kg produced in 2016 owing to lower concentrate production. The Kansanshi Mine was the sole source of gold production from a large-scale producer in the country. There was additional gold production by artisanal and small-scale miners. In 2017, Cradle Arc Plc of the United Kingdom, was in the process of establishing a joint venture with Singa Holdings Zambia Private Ltd. (Singa) for the operation of the Matala and the Dunrobin gold assets. If granted, Singa could potentially acquire the Matala and the Dunrobin deposits for \$2.5 million (Financial Times, 2018; First Quantum Minerals Ltd., 2018, p. 22).

Lead and Zinc.—In 2017, Jubilee Platinum Plc of the United Kingdom (Jubilee) formed a joint venture with BMR Mining plc (BMR) to recover zinc, lead, and vanadium from mine tailings and slag stockpiles at the Kabwe Project. Jubilee held an 87.5% stake, and BMR held the remaining 12.5%. In December 2017, the Mining Cadastre Department of Zambia terminated the mining rights of the Kabwe Project. Stakeholders had 30 days to appeal this decision (Jubilee Platinum Plc, 2017, p. 1–3; BMR Group plc, 2018).

Industrial Minerals

Cement.—In 2017, Lafarge Zambia Plc produced 887,000 t of cement compared with 831,000 t in 2016. The increase was due to rising commodity prices. Dangote Cement Plc of Nigeria, through its subsidiary Dangote Industries (Zambia) Ltd., continued operations at the Ndola cement plant, which started operating in 2016. Dangote's sales increased by 5% in 2017, despite heavy rains that affected construction and delays to Government payments (Dangote Cement Plc, 2018, p. 35; Lafarge Zambia Plc, 2018, p. 4, 93).

MINERAL INDUSTRY HIGHLIGHTS IN 2018

In 2018, Zambia's nominal GDP was \$27.5 billion and real GDP increased by 3.7% compared with that of 2017. Mining and quarrying output accounted for 10.7% of real GDP and increased by 3.7%. In 2018, mining and quarrying employed 84,536 people, accounting for 2.9% of the country's total employment. In September, the Government announced changes to the mining tax regime that would take effect in 2019. The changes included increasing the sliding scale for royalties to a range of 5.5% to 7.5% from a range of 4% to 6%. The actual royalty would depend on commodity prices, with higher prices resulting in a higher royalty and lower prices resulting in a lower royalty. Additionally, there would be a 10% tax on copper when the price exceeds \$7,500 per metric ton. Finally, a 15% export duty would be imposed on precious metals and a 5% import duty would be imposed on copper and cobalt concentrates (Mfula, 2018; Ministry of Finance, 2019, p. 54–56; Zambia Statistics Agency, 2019, p. 28–29).

Notable mineral commodity production increases in 2018 included that of refinery petroleum, by 70%; coal, 65%; raw steel, 39%; and cement, 24%. The Ministry of Finance attributed decreases in gemstone production to small-scale miners underreporting their production returns; production decreases included that of beryl, by 69%; emerald, 68%; tourmaline, 67%; and amethyst, 27%. Other notable decreases in production included that of refined cobalt, by 36%; manganese (content), 22%; limestone, 17%; and gold, 15% (table 1; Ministry of Finance, 2019, p. 10).

In August 2018, CNMC's Chambishi Southeast Mine commenced trial production. At full production, the Chambishi Southeast Mine was expected to produce approximately 63,000 t/yr of copper contained in concentrate and 1,000 t/yr of cobalt; however, the expected date for reaching full production had not been announced (Luk, 2018; China Nonferrous Metal Mining (Group) Co. Ltd., 2019, p. 8).

In April 2018, Jubilee Metals Group Plc (formerly Jubilee Platinum Plc) and BMR had their mining rights for the Kabwe lead-zinc-vanadium project reinstated by the Minister of Mines and Mineral Development. In August 2018, Jubilee gained full control of Kabwe, acquiring an 87.5% interest in the project, with BMR holding the remaining 12.5%. Jubilee anticipated Kabwe to produce 15,000 t/yr of lead, 1,500 t/yr of vanadium, and 8,000 t/yr of zinc. Jubilee was in the process of securing the acquisition of the Sable Zinc refinery, currently on care-and-maintenance status, for processing the metals at Kabwe. Jubilee targeted production to begin in the third quarter of 2019 (Jubilee Metals Group Plc, 2018, p. 5, 14; 2019a; 2019b, p. 2, 4, 5).

Outlook

Zambia's GDP is expected to grow between 4% and 5% in 2019, supported by the mining, construction, and wholesale and retail trade sectors. The mining sector is expected to benefit from the Kabwe Mine commencing operations and the Chambishi Southeast Mine extension reaching full production. The effect of the new mining tax regime may have negative implications on growth in the sector, however, potentially discouraging exploration and development investment (Ministry of Finance, 2018, p. 52).

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TABLE 1
ZAMBIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2014	2015	2016	2017	2018
METALS					
Bismuth, refinery, Bi content ³	180	40	--	--	--
Cobalt:					
Mine, Co content ⁴	2,300 ^{r,c}	1,700 ^c	600 ^c	990	897
Refinery, metal ⁵	4,317	2,997	4,725	2,520	1,613
Copper:					
Mine, concentrates, Cu content	517,100	558,600	595,500 ^r	628,400	677,300
Refinery:					
Primary:					
Electrowon	190,000	158,700	167,300 ^r	165,700	176,800
Other	288,800	312,800	230,600 ^r	264,800	248,200
Total	478,800	471,500	397,900	430,500	425,000
Smelter, primary, includes low-grade electrowon	525,800	648,800	698,100 ^r	787,900	828,700
Gold, mine, Au content	kilograms 4,803	4,238	4,610	4,565	3,899
Iron and steel, raw steel	86,400 ^r	52,000 ^r	45,000 ^r	54,000 ^c	75,000 ^c
Manganese, mine:					
Gross weight	130,000 ^c	130,000 ^c	120,000 ^c	98,220	87,997
Mn content ^c	45,000	45,000	40,000	37,000	29,000
Silver, mine, Ag content	kilograms 15,000	15,000	15,000	15,000	15,000
INDUSTRIAL MINERALS					
Cement, hydraulic	1,900,000 ^{r,c}	1,800,000 ^{r,c}	2,000,000 ^{r,c}	2,210,307	2,751,073
Gemstones:					
Amethyst	kilograms 1,150,000	992,000 ^r	964,548	749,425	546,821
Beryl ^c	do. 11,000	17,000	26,000	21,000	6,600
Emerald ^c	do. 18,000	36,000	49,000	38,000	12,000
Tourmaline	do. 19,000	18,000	18,000	18,000 ^c	6,000 ^c
Lime, calcined ^c	thousand metric tons 280 ^r	280 ^r	300 ^r	310	320
Stone, crushed, limestone	do. 2,900 ^c	3,000 ^c	3,100 ^c	4,122	3,413
Sulfur, compounds, sulfuric acid:					
Gross weight	612,598 ^r	481,364 ^r	523,906 ^r	594,533	593,983
S content, 32.6% S	199,707 ^r	156,925 ^r	170,793 ^r	193,818	193,638
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	153,151	103,439	129,470 ^r	208,608	344,717
Petroleum, refinery	thousand 42-gallon barrels 4,825	4,431	4,500 ^c	4,000	6,800 ^c

^cEstimated. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through November 20, 2019. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

²In addition to the commodities listed, bismuth, clay, lead, palladium, platinum, pyrite ore, sand and gravel (construction), and selenium may have been produced, but available information was inadequate to make reliable estimates of output.

³Bismuth recovered from smoke at the Chambishi copper smelter.

⁴Estimated production of mined cobalt was revised downward based on an analysis of available information, including reports from Darton Commodities Ltd.

⁵Production reported by the Cobalt Institute (formerly Cobalt Development Institute).

TABLE 2
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Bismuth	Chambishi Copper Smelter, Ltd. [China Nonferrous Metal Mining (Group) Co. Ltd., 60%, and Yunnan Copper Industry (Group) Co. Ltd., 40%]	Chambishi copper smelter, 75 kilometers northwest of Ndola	NA.
Cement	Dangote Industries (Zambia) Ltd. (Dangote Cement Plc, 100%)	Plant in Ndola, Copperbelt Province	1,500,000.
Do.	Lafarge Zambia Plc (Pan African Cement Ltd., 50%, and Financiere Lafarge S.A., 34%)	Chilanga II plant, about 15 kilometers south of Lusaka	830,000.
Do.	do.	Ndola, Copperbelt Province	450,000.
Do.	do.	Chilanga I plant, about 15 kilometers south of Lusaka	200,000.
Do.	Scirocco Enterprises Ltd.	About 18 kilometers southwest of Lusaka	100,000.
Do.	Zambezi Portland Cement Ltd.	Ndola, Copperbelt Province	510,000.
Coal, bituminous	Maamba Collieries Ltd. [Nava Bharat consortium, 65%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 35%]	Siankondobo coalfield, 350 kilometers south of Lusaka, Sinazongwe District	400,000.
Do.	Nkandabwe Coal Mine Ltd. [Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 100%]	Kandabwe Mine, near Sinazongwe ¹	240,000.
Copper and cobalt:			
Ore and concentrate	Lubambe Copper Mine Ltd. [EMR Capital, 80%; Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Lubambe copper mine, near Chililabombwe	2,500,000 ore, which yields about 45,000 copper in concentrate.
Do.	Jin Tuo Investments Ltd. (Jinchuan Group International Resources Co. Ltd., 100%)	Munali nickel mine, ¹ about 60 kilometers south of Lusaka	1,200,000 ore, which yields about 1,700 copper and 500 cobalt coproduct.
Do.	Chibuluma Mines plc [Metorex Ltd.(Jinchuan Group International Resources Co. Ltd., 100%), 85%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 15%]	Chibuluma South Mine, about 12 kilometers west of Kitwe	600,000 ore, which yields about 19,000 copper in concentrate.
Do.	CNMC Luanshya Copper Mines PLC. [NFC Africa Mining plc, 80%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Baluba Center underground mine ¹	1,500,000 ore.
Do.	do.	Luanshya North Mine, Luanshya	4,500,000 ore.
Do.	do.	Luanshya slag recovery, Luanshya	500,000 slag, which yeilds 3,500 copper in concentrate.
Do.	Kansanshi Mining plc [First Quantum Minerals Ltd., 80.0%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Kansanshi Mine, north of Solwezi, Northwestern Province	12,000,000 sulfide ore, 8,800,000 oxide ore, 8,600,000 mixed ore.
Do.	do.	Sentinel Mine, Northwestern Province	NA.
Do.	Konkola Copper Mines plc (KCM) [Vedanta Resources plc., 80%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Chingola open pit A and Nchanga open pit, Chingola	4,500,000 ore.
Do.	do.	Nchanga underground mine, Chingola	2,800,000 ore.
Do.	do.	Konkola Mine, Chililabombwe	2,400,000 ore.
Do.	do.	Fitwaola open pit, Chingola	NA.
Do.	do.	Reprocessing material from the TD3a, the TD3b, the TD5, and the TD7 tailings dams, Chingola	NA.
Do.	Lumwana Mining Company Ltd. (Barrick Gold Corp., 100%)	Lumwana Mine (Chimwiungo and Malundwe pits), 20 kilometers west of Chingola	21,000,000 ore.

See footnotes at end of table.

TABLE 2—Continued
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Copper and cobalt—Continued:			
Ore and concentrate— Continued	Mkushi Copper Joint Venture Ltd. (Seringa Mining Ltd., 51%, and Katanga Resources Ltd., 49%)	Mkushi heap leach	NA.
Do.	Mopani Copper Mines plc [Glencore plc, 73.1%, First Quantum Minerals Ltd., 16.9%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 10%]	Nkana Mine, includes the Central, the Mindola North, the Mindola Sub-Vertical, and the South Ore Body shafts for underground operations, and the Area A, the Area E, and the Mindola open pits, southwest of Kitwe	5,500,000 ore.
Do.	do.	Mufulira Mine	2,500,000 ore.
Do.	NFC Africa Mining plc [China Nonferrous Metal Mining (Group) Co. Ltd., 85%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 15%]	Chambishi Main Mine, 75 kilometers northwest of Ndola	2,145,000 ore, which yields about 50,000 copper in concentrate.
Do.	do.	Chambishi West Mine, 75 kilometers northwest of Ndola	990,000 ore.
Metal	Chambishi Metals Plc [Eurasian Resources Group, S.a.r.l. (ERG), 90%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 10%]	Chambishi cobalt plant, 75 kilometers northwest of Ndola	27,000 copper cathode, 5,500 cobalt metal.
Do.	Chambishi Copper Smelter Company, Ltd. [China Nonferrous Metal Mining (Group) Co. Ltd., 60%, and Yunnan Copper Industry (Group) Co. Ltd., 40%]	Chambishi copper smelter	250,000 copper anode (blister copper).
Do.	CNMC Luanshya Copper Mines PLC. (NFC Africa Mining plc, 100%)	Muliashi leach plant, Luanshya	40,000 copper cathode.
Do.	First Quantum Mining and Operations Ltd. (First Quantum Minerals Ltd., 100%)	Bwana Mkubwa solvent extraction–electrowinning plant	52,000 copper cathode.
Do.	Kansanshi Mining plc [First Quantum Minerals Ltd., 80.0%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 20%]	Kansanshi smelter, Northwestern Province	340,000 copper cathode.
Do.	Konkola Copper Mines plc [Vedanta Resources plc, 79.4%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 20.6%]	Nchanga tailings leach plant at Chingola	80,000 copper cathode.
Do.	do.	Nchanga copper smelter, Chingola	311,000 copper anode (blister copper), 3,000 copper-cobalt alloy.
Do.	do.	Nkana copper refinery, Kitwe	300,000 copper cathode.
Do.	Mopani Copper Mines plc [Glencore plc; 73.1%, First Quantum Minerals Ltd., 16.9%; Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM—IH), 10%]	Mufulira West heap-leach facility	NA.
Do.	do.	Mufulira (ISASMELT) smelter	200,000 copper anode.
Do.	do.	Mufulira refinery	275,000 copper cathode.
Do.	do.	Nkana solvent extraction plant, southwest of Kitwe	15,000 copper cathode.
Do.	do.	Nkana cobalt plant, southwest of Kitwe ¹	2,800 cobalt metal.
Do.	Sable Zinc Kabwe Ltd. (Glencore plc, 100%)	Sable copper leach and electrowinning plant ¹ at Kabwe	14,000 copper cathode, 600 cobalt carbonate.
Do.	Sino-Metals Leach Zambia Ltd. [China Nonferrous Metals Mining (Group) Co. Ltd., Sino-Africa Mining Investments Ltd., NFC Africa Mining plc, China Hainan Construction Co. Ltd.]	Chambishi	8,000 copper cathode.
Do.	do.	Mwambashi Mine, Kalulushi, Copperbelt	600,000.

See footnotes at end of table.

TABLE 2—Continued
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gemstones:				
Amethyst		Kariba Minerals Ltd. (Gemfields PLC, 50%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 50%)	Kariba Mine, Mapatizya area, Kolomo District, Southern Province	1,100.
Beryl and emerald	kilograms	Kagem Mining Ltd. (Hagura Mining Ltd. (Gemfields PLC, 100%), 75%, and Government of Zambia, 25%)	Kagem Mine, Ndola District, Copperbelt Province	6,600.
Tourmaline	do.	Artisanal miners	Various locations	NA.
Gold, Au content of ore	do.	do.	Various locations including: Luano District, Central Province; Mumbwa District, Central Province; Petauke District, Eastern Province; Rufunsa District, Lusaka Province; and Vubwi District, Eastern Province	NA.
Do.		Kansanshi Mining plc [First Quantum Minerals Ltd., 80.0%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Kansanshi Mine, north of Solwezi, Northwestern Province	5,300.
Iron and steel, crude steel		Universal Mining and Chemical Industries Ltd. (Trade Kings Group)	Kafue	100,000.
Lead, metal, secondary		Pagrik Zambia Ltd.	Lusaka	1,000.
Lime, quicklime		Ndola Lime Company Ltd. [Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 100%]	Ndola	300,000. ²
Do.		Neelkanth Lime Ltd.	NA	144,000. ³
Manganese		Kaboko Mining Ltd.	Mansa area, Luapula Province	120,000.
Do.		Primarily small-scale miners	Mansa area, Luapula Province, and Mkushi area, Central Province	120,000.
Nickel, Ni content of ore		Jin Tuo Investments Ltd. (Jinchuan Group International Resources Co. Ltd., 100%)	Munali Mine, about 60 kilometers south of Lusaka ^{1,4}	10,500.
Petroleum, refined	42-gallon barrels	Indeni Petroleum Refinery Ltd. (Government, 100%)	Indeni refinery at Ndola	10,000,000.
Sulfur:				
Pyrite ore, gross weight		Konkola Copper Mines plc [Vedanta Resources plc, 79.4%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20.6%]	Nampundwe Mine, 48 kilometers west of Lusaka	300,000.
Sulfuric acid		do.	Nchanga acid plant	675,000.
Do.		Chambishi Copper Smelter Company, Ltd. [China Nonferrous Metal Mining (Group) Co. Ltd., 60%, and Yunnan Copper Industry (Group) Co. Ltd., 40%]	Chambishi copper smelter, 75 kilometers northwest of Ndola	600,000.
Do.		Kansanshi Mining plc [First Quantum Minerals Ltd., 80.0%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Kansanshi smelter, north of Solwezi, Northwestern Province	NA.
Do.		do.	Kansanshi smelter, north of Solwezi	1,000,000.

Do., do. Ditto. NA Not available.

¹Operations suspended. Facility on care-and-maintenance status.

²Plant had the capacity to produce up to 5,000 metric tons per year of hydrated lime (slaked) from quicklime.

³Plant had the capacity to produce up to 27,000 metric tons per year of hydrated lime.

⁴Operated by Mabiza Resources Ltd. (Consolidated Nickel Mines Ltd., 100%) through a lease agreement with listed owners.