



2019 Minerals Yearbook

ZAMBIA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF ZAMBIA

By James J. Barry

In 2019, Zambia ranked seventh in the world in the output of mined copper and it accounted for an estimated 4% of the world's production. In addition to copper, Zambia was a leading world producer of gemstones, particularly emerald. The president of the Zambia Chamber of Mines reported that the country accounted for 20% of the world's production of emerald. The country also produced cement; coal; cobalt; gold; lime; limestone; manganese; other gemstones, such as amethyst, beryl, and tourmaline; refined petroleum products; raw steel; and sulfuric acid (Chama, 2019b; Giuliani and Groat, 2019, p. 476; Flanagan, 2020).

Minerals in the National Economy

In 2019, the preliminary estimate of Zambia's nominal gross domestic product (GDP) was \$17.1 billion¹ and real GDP increased by an estimated 1.9% compared with a 4% increase in 2018. The mining and quarrying sector accounted for 13.2% of the GDP, and the sector was estimated to have contracted by 5.5% compared with an increase of 6.3% in 2018. In 2019, the mining and quarrying sector employed 73,203 people, accounting for 2.4% of total employment. Of those working in the mining and quarrying sector, 46% were artisanal and small-scale miners (Ministry of Finance, 2020, p. 7, 71, 73; Zambia Statistics Agency, 2020, p. 23, 36).

In 2019, the value of total exports decreased by 20% owing largely to a decrease in both the value and quantity of copper exports (the value of copper exports decreased by 25% and the quantity decreased by 20%). Copper exports accounted for 69% of the value of all goods exported in 2019. The mineral commodities for which the export values increased included gemstones, by 1,291.1%; cement and lime (combined), 48.5%, and gold, 32.7%. In addition to copper, the mineral commodities for which the export values decreased included cobalt, by 63%; manganese ores and concentrates (combined), 32.1%; refinery products, 20.9%; and sulfuric acid, 13.1% (Bank of Zambia, 2020, p. 17, 19, 20).

Government Policies and Programs

The mining sector is regulated by Act No. 11 of 2015 (also known as the Mines and Mineral Development Act of 2015), which replaced Act No. 7 of 2008 (also known as the Mines and Mineral Development Act of 2008). The Mines and Mineral Development Act of 2015 established guidelines for exploration licenses; large- and small-scale mining licenses; import and export permits; mining rights; safety, health and environmental protections; and mineral trading permits. 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 [also known as the Petroleum (Exploration and Production) Act of 2008] (LEX Africa, 2019, p. 78–82).

In September 2018, the Government announced changes to the mining tax regime, which took effect in 2019. The changes increase the sliding scale for royalties to 5.5%–7.5% from 4%–6%. The actual royalty depends on commodity prices—higher prices result in a higher royalty, and lower prices result in a lower royalty. Additionally, there is a 10% tax on copper when the price exceeds \$7,500 per metric ton (t). Finally, a 15% export duty is imposed on precious metals and gemstones and a 5% import duty is imposed on copper and cobalt concentrates. In December 2019, the Government announced that as of January 1, 2020, the 15% export duty would be suspended for all gemstone exports, with the exception of diamond (Mfula, 2018, 2019).

Production

Production of gemstones increased owing to efficiencies made in the production of, and reporting by, artisanal and small-scale miners and the mining of high-grade veins at large emerald mines. Notable increases in production included that of amethyst, by 102%; tourmaline, 100%; emerald, 28.3%; beryl, 25.8%; sulfuric acid, 17.9%; and gold, 11.8%. Notable decreases in production included that of refined copper (not including electrowon), by 51.6%; mined cobalt, 49.7%; manganese (elemental content), 29.3%; smelter copper, 23%; and electrowon copper, 19.7%. Data on mineral production are in table 1 (Ministry of Finance, 2020, p. 11).

Structure of the Mineral Industry

Many of the country's large copper mining and processing operations were located in 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 Investments Holdings Plc (ZCCM-IH). The mining sector is administered by the Ministry of Mines and Minerals Development. The Ministry of Commerce, Trade and Industry oversees the industrial manufacturing sector. Data on the capacity and ownership of selected mineral operations are in table 2.

Commodity Review

Metals

Cobalt and Copper.—In 2019, mined copper production was 655,500 t, which was a decrease of about 3% compared with the 677,300 t produced in 2018. Contributing factors in the decreased production included lower ore grades at the

¹Where necessary, values have been converted from Zambian Kwacha (ZMK) to U.S. dollars (US\$) at the annual average exchange rate of 12.8973ZMW=US\$1.00 for 2019.

Kansanshi Mine (owned by Kansanshi Mining plc, which was a subsidiary of First Quantum Minerals Ltd. of Canada) and ore body and reserves nearing depletion at the Chibuluma South Mine [owned by Chibuluma Mines Plc, which was a joint venture between Metorex Ltd. of China (75%) and ZCCM-IH (25%)]. In 2019 Zambia produced 262,000 t of refined copper and 638,500 t of smelter copper compared with 425,000 t of refined copper and 828,700 t of smelter copper in 2018, which were decreases of 38% and 23%, respectively. These decreases were attributed to a decrease in imports of copper ore and concentrates, power supply interruptions, and the planned shutdown of the Mufulira smelter [owned by Mopani Copper Mines plc, which was jointly owned by Glencore plc of Switzerland (73.1%), First Quantum Minerals (16.9%), and ZCCM-IH (10%)] for a complete refurbishment of the smelter (table 1; Argus Metals International, 2019; First Quantum Minerals Ltd., 2020, p. 7; Glencore plc, 2020, p. 6; Metorex Ltd., undated).

In August, Jubilee Metals Group Plc completed the acquisition of the Sable zinc refinery, making it part of Jubilee's integrated Kabwe operation. In November, the refinery was brought into operation and produced 110 t of copper plate by yearend. Jubilee planned to bring Sable's cobalt circuit and zinc production into operation in the second quarter of 2020. Kabwe had mine tailings with a Joint Ore Reserves Committee (JORC)-complaint estimated resource of 3.2 million metric tons (Mt) containing 356,843 t of zinc, 351,386 t of lead, and 1.26% equivalent vanadium pentoxide. In addition to using the mineral resources at Kabwe, the company planned to use zinc and copper feed from third party sources (Jubilee Metals Group Plc, 2020a, b).

In 2019, mined cobalt production was 420 t, which was a decrease of almost 50% compared with the 835 t produced in 2018. The decrease was attributed to lower copper production during the year, as Zambian cobalt is a byproduct of copper production. In 2019, cobalt metal production was an estimated 1,500 t, which was a decrease of 7% compared with the 1,613 t produced in 2018 (table 1; Ministry of Finance, 2020, p. 11).

Gold.—In 2019, gold output from the Kansanshi Mine and smelter, which were operated by First Quantum, increased by almost 12% to 4,522 kilograms (kg) from 4,044 kg produced in 2018. The increased production was credited to operational enhancements made during the second quarter. The Kansanshi Mine was the sole source of gold production in the country from a large-scale producer. Gold was also produced by artisanal and small-scale miners; however, the amount produced was not reported (table 2; First Quantum Minerals Ltd., 2020, p. 23, 24).

In December, in an effort to encourage more mining activity on active mining licenses and to raise revenue, the Government announced a plan to have the Bank of Zambia buy 40,000 kg of gold in 2020. Additionally, the gold purchasing plan was intended to further formalize the artisanal and small-scale gold mining sector in Zambia, prevent environmental damage from illegal mining, and provide a domestic market with competitive prices for the miners. ZCCM-IH planned to set up centers to purchase the gold directly. To this end, ZCCM-IH's board of directors approved a proposal to establish a joint venture with Karma Mining Services and Rural Development Company of Sudan in which ZCCM-IH would hold a 55% share, and Karma, 45%.

The joint venture would create a gold purchasing and processing operation catering to artisanal and small-scale miners (London Stock Exchange, 2019; Zambia Consolidated Copper Mines Investments Holdings Plc, 2019a).

Manganese.—In 2019, manganese production was estimated to be 20,500 t, which was a 29% decrease from the estimated production of 29,000 t in 2018. The decrease in production was attributed to slowed economic activity and increased producer costs associated with the new mining tax regime. Despite this decreased production, there was still notable manganese exploration and development activity. Kabundi Mining Resources Ltd. (a subsidiary of ZCCM-IH) was prepared to commence mining operations at the Serenje Mine as soon as the company received approval from the Zambia Environmental Management Agency. In January, Hu-Cheng Mining of China announced that it would be constructing a \$15 million, 40,000-metric-ton-per-year-capacity manganese smelter in the Kapiri Mposhi District of Central Province (Africa Intelligence, 2019; Mining Hub, The, 2019; Zambia Consolidated Copper Mines Investments Holdings Plc, 2019b; Ministry of Finance, 2020, p. 59).

Nickel.—In 2019, the Munali Mine, which was owned by Consolidated Nickel Mines Ltd. of the United Kingdom, restarted mining operations and produced 3,000 t of nickel concentrate. Consolidated Nickel planned to ramp-up mine production to a projected 3,300 t of nickel concentrate in 2020 and 4,000 t in 2021. The Munali Mine, which is located 70 kilometers south of Lusaka, had measured JORC-compliant reserves of 3.35 Mt at a grade of 1.02% nickel (Consolidated Nickel Mines Ltd., 2020a; 2020b, p. 2).

Industrial Minerals

Gemstones.—In 2019, Zambia's production of amethyst, beryl, emerald, and tourmaline was 1,104,372 kg, 8,300 kg, 15,400 kg, and an estimated 12,000 kg, respectively. Gemfields Group Ltd. of Guernsey [United Kingdom], which owned the Kagem and the Mbuva-Chibolele Mines, was the leading producer of emerald in the country; the company produced a combined 8,920 kg of emerald and beryl in 2019. In 2019, Grizzly Mining Ltd., which was the only other large-scale producer of gemstones in Zambia, discovered a 50-kg emerald crystal, which was reportedly the heaviest ever produced in the world. Gemstone production was largely performed by artisanal and small-scale miners, who held 504 active mining licenses in 2018 (the latest year for which data were available) (table 1; Chama, 2019a; Lusaka Times, 2019; Gemfields Group Ltd., 2020, p. 20; Zambia Extractives Industry Transparency Initiative, 2020).

Outlook

Zambia's real GDP is projected to contract by 4.8% in 2020, predominantly owing to the global economic slowdown resulting from the coronavirus disease 2019 (COVID-19) pandemic. The mineral industry is likely to benefit from growing global demand for manganese, which will be the primary driver for the continuing development of manganese mining projects. New metal processing facilities—specifically,

Hu-Cheng’s manganese smelter and the Sable refinery—will provide new mineral commodity revenue streams. Continuing formalization of the artisanal and small-scale mining sector is likely to boost gold mining production, similar to that which has taken place for gemstones. Mining companies still face increased costs and uncertainty from the recent changes in the mineral fiscal regime; however, the Government’s suspension of the 15% gemstone export duty will ease some of that burden. The suspension may also be a signal that the fiscal regime may change yet again to one that would be more mutually beneficial to both the mineral industry and the Government (International Monetary Fund, 2020, p. 147).

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TABLE 1
ZAMBIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS					
Bismuth, refinery, Bi content ³	40	--	--	--	--
Cobalt:					
Mine, Co content ⁴	1,700 ^e	600 ^e	990	835 ^r	420
Refinery, metal ⁵	2,997	4,725	2,520	1,613	1,500 ⁶
Copper:					
Mine, concentrates, Cu content	558,600	595,500	628,400	677,300	655,500
Refinery:					
Primary:					
Electrowon	158,700	167,300	165,700	176,800	141,900
Other	312,800	230,600	264,800	248,200	120,100
Total	471,500	397,900	430,500	425,000	262,000
Smelter, primary ⁷	648,800	698,100	787,900	828,700	638,500
Gold, mine, Au content ⁸	4,238	4,610	4,565	4,044 ^r	4,522
Iron and steel, raw steel	52,000	45,000	54,000 ^e	75,000 ^e	75,000 ^e
Manganese, mine:					
Gross weight	130,000 ^e	120,000 ^e	98,220	87,997	62,000 ^e
Mn content ^e	45,000	40,000	37,000	29,000	20,500
Nickel, mine, concentrate, Ni content	--	--	--	--	3,000
INDUSTRIAL MINERALS					
Cement, hydraulic	1,800,000 ^e	2,000,000 ^e	2,210,307	2,751,073	2,480,000 ^e
Gemstones:					
Amethyst	992,000	964,548	749,425	546,821	1,104,372
Beryl ^c	17,000	26,000	21,000	6,600	8,300
Emerald ^c	36,000	49,000	38,000	12,000	15,400
Tourmaline	18,000	18,000	18,000 ^e	6,000 ^e	12,000 ^e
Lime, calcined ^e	280	300	310	320	290
Stone, crushed, limestone	3,000 ^e	3,100 ^e	4,122	3,413	3,310 ^e
Sulfur, compounds, sulfuric acid:					
Gross weight	481,364	523,906	594,533	593,983	700,303
S content, 32.6%	156,925	170,793	193,818	193,638	228,299
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	103,439	129,470	208,608	344,717	335,042
Petroleum, refinery	4,305 ^r	3,760 ^r	4,287 ^r	4,670 ^r	4,839

^eEstimated. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through November 12, 2020. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

²In addition to the commodities listed, clays, lead, palladium, platinum, selenium, and silver 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), except as noted.

⁶Reported by Eurasian Resource Group.

⁷Includes low-grade electrowon.

⁸Does not include artisanal and small-scale production.

TABLE 2
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(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 (LafargeHolcim Ltd.)	Chilanga I and II plants, about 15 kilometers south of Lusaka	950,000.
Do.	do.	Plant in Ndola, Copperbelt Province	550,000.
Do.	Scirocco Enterprises Ltd.	About 18 kilometers southwest of Lusaka	100,000.
Do.	Sinoma Mpande Limestone Ltd. (China National Building Materials Co. Ltd.)	Plant in Chongwe, Mashonaland East Province	1,000,000.
Do.	Zambezi Portland Cement Ltd.	Plant in Ndola, Copperbelt Province	800,000.
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, ¹ near Sinazongwe	240,000.
Copper and cobalt:			
Ore and concentrate	Lubambe Copper Mine Ltd. [African Rainbow Minerals Ltd., 40%; Vale S.A., 40%; 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.	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 Luanshya	1,500,000 ore.
Do.	do.	Luanshya North Mine, Luanshya	4,500,000 ore.
Do.	do.	Luanshya slag recovery from tailings, Luanshya	500,000 slag, which yeilds 3,500 copper in concentrate.
Do.	Kalumbila Minerals Ltd. (First Quantum Minerals Ltd., 100%)	Sentinel Mine, Northwestern Province	NA.
Do.	Kansashi Mining plc [First Quantum Minerals Ltd., 80%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Kansashi Mine, north of Solwezi, Northwestern Province	12,000,000 sulfide ore, 8,800,000 oxide ore, 8,600,000 mixed ore.
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 (Chimiwungo and Malundwe pits), 20 kilometers west of Chingola	21,000,000 ore.
Do.	Mkushi Copper Joint Venture Ltd. (Seringa Mining Ltd., 51%, and Katanga Resources Ltd., 49%)	Mkushi heap leach facility, Central Province	NA.

See footnotes at end of table.

TABLE 2—Continued
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(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	Mopani Copper Mines plc [Glencore plc, 73.1%; First Quantum Minerals Ltd., 16.9%; 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, Copperbelt Province	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 near Kitwe	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.	Jubilee Metals Group Plc.	Sable copper leach and electrowinning plant at Kabwe	14,000 copper cathode, 600 cobalt carbonate.
Do.	Kansanshi Mining plc [First Quantum Minerals Ltd., 80%, 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, Copperbelt Province	NA.
Do.	do.	Mufulira (ISASMELT) smelter, ² Copperbelt Province	200,000 copper anode.
Do.	do.	Mufulira refinery, Copperbelt Province	275,000 copper cathode.
Do.	do.	Nkana solvent extraction plant, southwest of Kitwe	15,000 copper cathode.
Do.	do.	Nkana cobalt plant, ¹ southwest of Kitwe	2,800 cobalt metal.
Do.	Sino-Metals Leach Zambia Ltd. [China Nonferrous Metals Mining (Group) Co. Ltd., Sino-Africa Mining Investments Ltd., NFC Africa Mining plc, and China Hainan Construction Co. Ltd.]	Chambishi near Kitwe	8,000 copper cathode.
Do.	do.	Mwambashi Mine, Kalulushi, Copperbelt Province	600,000.

See footnotes at end of table.

TABLE 2—Continued
ZAMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gemstones:			
Amethyst	Artisanal miners	Various locations	NA.
Do.	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	Artisanal miners	Various locations	NA.
Do.	Grizzly Mining Ltd.	Lufwanyama Mine, Copperbelt Province	NA.
Do.	Kagem Mining Ltd. [Hagura Mining Ltd. (Gemfields PLC, 100%), 75%, and Government of Zambia, 25%]	Mbuva-Chibolele, Kafubu, Copperbelt Province	NA.
Do.	rams do.	Kagem Mine, Ndola District, Copperbelt Province	6,600.
Tourmaline	Artisanal miners	Various locations	NA.
Gold, Au content of ore	rams do.	do.	NA.
Do.	Kansanshi Mining plc [First Quantum Minerals Ltd., 80%, 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)	Steel factory in Kafue	100,000.
Lead, metal, secondary	Pagrik Zambia Ltd.	Recycling facility in Lusaka	1,000.
Lime, quicklime	Ndola Lime Company Ltd. [Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 100%]	Plant in Ndola	300,000. ³
Do.	Neelkanth Lime Ltd.	NA	144,000. ⁴
Limestone	Dangote Quarries (Zambia) Ltd.	Quarry in Ndola	NA.
Manganese	Green Core Enterprises	Mine in Mansa area, Luapula Province	240,000.
Do.	Primarily small-scale miners	Mines in Mansa area, Luapula Province and Mkushi area, Central Province	120,000.
Nickel, Ni content of ore	Consolidated Nickel Mines Ltd.	Munali Mine, about 70 kilometers south of Lusaka	4,000.
Petroleum, refined	allon 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, gross weight	do.	Nchanga acid plant in Chingola	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%, and Zambia Consolidated Copper Mines Investments Holdings Plc (ZCCM-IH), 20%]	Kansanshi smelter, north of Solwezi, Northwestern Province	1,000,000.

Do., do. Ditto. NA Not available.

¹Operations suspended and facility placed on care-and-maintenance status.

²Smelter was shut down during the second half of 2019 for planned maintenance.

³Plant had the capacity to produce up to 5,000 metric tons per year of hydrated lime (slaked) from quicklime.

⁴Plant had the capacity to produce up to 27,000 metric tons per year of hydrated lime.