



2019 Minerals Yearbook

VIETNAM [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF VIETNAM

By Ji Won Moon

In 2019, Vietnam was the second-ranked producer of tungsten in the world, accounting for 5.4% of global production and 2.8% of the world's reserves. Vietnam was estimated to be the third-ranked producer of cement, accounting for 2.4% of global production. Vietnam was the 4th-ranked producer of fluorspar, accounting for 3.2% of world production and 1.6% of the world's reserves; the 5th-ranked producer of clinker, accounting for an estimated 2.4% of global production; the 9th-ranked producer of rare earths, accounting for 0.6% of global production and 18% of the world's reserves; and the 11th-ranked producer of bauxite, accounting for 1.1% of global production and 12% of the world's reserves. Other minerals produced in the country included antimony, barite, bismuth, coal, copper, iron ore, lead, manganese, natural gas, nitrogen (ammonia), crude and refined petroleum, phosphate rock, salt, tin, titanium, and zirconium. As for major processed metals, Vietnam produced refined copper, refined lead, raw steel, rolled steel products, refined tin, and zinc (smelter). A complete list of mineral commodities produced in Vietnam can be found in table 1 (Bray, 2021; Gambogi, 2021; Hatfield, 2021; McRae, 2021; Shedd, 2021).

Minerals in the National Economy

In 2019, the country's real gross domestic product (GDP) increased by 7.0% and the nominal GDP was \$262 billion.¹ The growth of the revenue in the manufacturing sector was 11.3%; the construction sector, 9.1%; and the mining and quarrying sector, 1.3%. The mining and quarrying sector, which accounted for 6.72% of the GDP in 2019, turned to growth after three consecutive years of negative growth owing to a 9.4% increase in coal production, which offset the continued decrease in the production of crude petroleum for the year. The mining and quarrying sector employed 197,000 people, which accounted for 0.36% of the country's total labor force in 2019, compared with 198,700 people in 2018 (table 1; General Statistics Office of Vietnam, 2020, p. 157, 198, 202).

Government Policies and Programs

The Vietnamese National Assembly adopted the 2010 Mineral Law (No. 60/2010/QH12) in November 2010. It became effective as of July 2011 and replaced the 1996 Mineral Law (VNM-1996-L-73762), which was amended by law No. 46/2005/QH11 in 2005. The 2010 Mineral Law supplemented the existing legal framework for mineral exploration and mining, streamlined the licensing process, and imposed more stringent financial requirements for obtaining mineral licenses (Thao and Harrison, 2017; International Labor Organization, 2020).

In May 2019, Decree No. 40/2019/ND-CP amended and supplemented articles of decrees guiding the implementation

of the Law on Environmental Protection (Decree No. 55/2014/QH13). The new decree aimed to make more-detailed environmental rules for mineral extraction activities (Food and Agriculture Organization of the United Nations, 2014).

Production

In 2019, mineral commodities for which output increased by 10% or more included diesel, by 109%; rare earths (oxide equivalent), 41%; gasoline, 37%; mined antimony (Sb content) and pig iron, 29% each; smelter copper and refined copper, 27% each; jet fuel, 24%; mined copper (concentrates, Cu content), 17%; mined manganese (Mn content) and mined titanium (mineral concentrate), 15% each; raw steel, 13%; and smelter zinc (primary), 10%. Production of mined bismuth (Bi content) decreased by 65%; mined lead (Pb content), 14%; barite, 12%; and liquefied petroleum gas, 10%. Data on mineral production are in table 1.

Structure of the Mineral Industry

The mineral industry was dominated by state-owned enterprises (SOEs), such as Vietnam National Coal and Mineral Industries Group (VINACOMIN) and Dong Bac Corp. The number of active enterprises in the mining and quarrying sector decreased to 5,106 in 2019 from 5,590 in 2018. Licensed mining and quarrying projects accumulated by foreign direct investment (FDI) totaled 108 and were valued at \$4.9 billion as of December 31, 2019. Total investment of \$35.6 million in two mining projects was added in 2019; this amount accounted for less than 0.1% of the country's total FDI value added in 2019. Table 2 is a list of major mineral industry facilities (General Statistics Office of Vietnam, 2020, p. 277, 283, 324).

Mineral Trade

In 2019, the total export value of goods increased by 8.4% to \$264 billion. The value of clinker and cement exports increased to \$1.39 billion [34 million metric tons (Mt)], or by 12.3% compared with that of 2018; the value of ore and other mineral products increased by 11.1% to \$218 million (2.93 Mt); other base metals and products thereof, by 10.9% to \$2.57 billion; and iron and steel products, by 10.1% to \$3.32 billion. The value of coal exports decreased by 47.5% to \$168 million (1.14 Mt); crude petroleum, by 7.5% to \$2.03 billion [29.1 million barrels (Mbb)]; and iron and steel, by 7.4% to \$4.21 billion (6.68 Mt). Vietnam's main export partners in 2019 for goods overall were the United States, which received 23.2% of Vietnam's total exports, by value; the countries of the European Union (combined) and China, 15.7% each; the Association of Southeast Asian Nations (ASEAN) countries (combined), 9.5%; Japan, 7.7%; and the Republic of Korea, 7.5% (General Department of Customs, 2020a; General Statistics Office of Vietnam, 2020, p. 605).

¹Where necessary, values have been converted from Vietnam dong (VND) to U.S. dollars (US\$) at the annual average exchange rate of VND23,050=US\$1.00 for 2019.

In 2019, the total import value of goods increased by 6.8% compared with that of 2018, to \$253 billion. The value of coal imports increased by 48.3% to \$3.79 billion (43.8 Mt); crude petroleum, by 30.9% to \$3.60 billion (55.8 Mbbbl); ores and other mineral products, by 27.7% to \$1.54 billion (16.3 Mt); and iron and steel products, by 11.2% to \$4.07 billion. The import value of petroleum products decreased by 22.0% to \$5.95 billion (78.2 Mbbbl); that of other base metals, by 12.0% to \$6.39 billion (1.87 Mt); other base metal products, by 7.5% to \$1.61 billion; and iron and steel, by 4.0% to \$9.51 billion (14.6 Mt). In 2019, the country's main import partners for goods overall were China, which supplied 29.8% of Vietnam's total imports, by value; the Republic of Korea, 18.5%; ASEAN countries, 12.7%; Japan, 7.7%; Taiwan, 6%; the countries of the European Union, 5.9%; and the United States, 5.7% (General Department of Customs, 2020b; General Statistics Office of Vietnam, 2020, p. 605).

Commodity Review

Metals

Bauxite and Alumina.—In 2019, Lam Dong Aluminum Co. Ltd. (LDA), which was fully owned by VINACOMIN, produced 681,650 metric tons (t) of alumina. Dak Nong Aluminum Co. Ltd. (DNA), which was also owned by VINACOMIN, produced 683,640 t of alumina, which was 5% higher than its planned production in 2019 owing to low production costs and efficient production processes. VINACOMIN planned to increase the capacity of DNA's Nhan Co alumina plant to a total of 2 million metric tons per year (Mt/yr) by installing a new 1.2-Mt/yr production line and upgrading the current line to 800,000 metric tons per year (t/yr) from 690,000 t/yr. In the long term, VINACOMIN proposed to the Ministry of Industry and Trade to increase the maximum capacity of the Nhan Co and Tan Rai alumina plants to 4 Mt/yr. VINACOMIN had been in the process of privatizing LDA and DNA after the two companies reached their designed capacity and were able to maintain stable production (Vietnam National Coal and Mineral Industries Group, 2019a, d; 2020a–c).

Copper.—Estimated production of mined copper (Cu content) increased by 17% to 30,600 t in 2019. The Sin Quyen Copper Complex was owned by VINACOMIN-Mineral Holding Corp. (VIMICO) and had reserves of 17.3 Mt of ore, which is equivalent to approximately 200,000 t of copper. The complex was conducting an expansion project to increase its open-pit mining capacity to 2.5 Mt/yr of ore from 1.1 Mt/yr. In February 2019, the second copper-sorting factory (Factory No. 2) was commissioned with a capacity of 44,200 t/yr of concentrates (23% copper content) (table 1; Vietnam Investment Review, 2017; VINACOMIN-Mineral Holding Corp., 2019).

In mid-2019, Lao Cai Copper Smelter Co., which had completed approximately 70% of the expansion project at its copper smelter plant, halted the construction to make adjustments in its planning process, construction design, and approval submission plans. Upon the completion of the expansion project, the plant was expected to have an annual production capacity of 20,000 t of smelted copper, 1,400 kilograms (kg) of gold, 620 kg of silver, and 85,000 t of sulfuric acid compared with its current annual capacity

of 10,000 t of copper, 340 kg of gold, 150 kg of silver, and 40,000 t of sulfuric acid. A trial run was expected to take place in the first quarter of 2020 (Vietnam National Coal and Mineral Industries Group, 2019b, c).

Ferroalloys.—Mintal Group Cleantech Development Co. Ltd. of China planned to build a \$2 billion ferroalloys plant in the Nghi Son Economic Zone in Thanh Hoa Province. This plant would produce carbon ferrochrome (an alloy of chromium and iron used to make stainless steel), and in its first phase would have the capacity to produce 1.5 Mt/yr of carbon ferrochrome. About 80% of the plant's raw material would be imported from South Africa, and the remaining 20% would be sourced domestically (Nguyen, 2019).

Iron and Steel.—In 2019, production of raw steel increased by 13% to 20.1 Mt from 17.8 Mt in 2018, and estimated production of steel products increased by 7.8% to 27.6 Mt from 25.6 Mt. Formosa Ha Tinh Steel Corp. (FHS), which was owned by Formosa Plastics Group of Taiwan (70% share), China Steel Holding of Taiwan (25%), and JFE Steel Corp. of Japan (5%), put two blast furnaces into full operation in 2019; the furnaces had a combined capacity of 7.5 Mt/yr (table 1; Formosa Ha Tinh Steel Corp., 2018; Vietnam Investment Review, 2019b).

In 2019, Hoa Phat Group J.S.C. had 11 subsidiary companies and produced 3.6 Mt of steel products, including 2.77 Mt of construction steel products. The company had the largest domestic market share for construction steel (26.2%) and steel pipes (31.5%) in 2019. Hoa Phat Hai Duong Steel J.S.C. produced 2.2 Mt of raw steel. Hoa Phat Dung Quat Steel J.S.C. put its first and second 1-Mt/yr-capacity furnaces into operation in June and November, respectively. The company's next two blast furnaces (the third and fourth) were expected to be completed in the second quarter of 2020 and to have a total (combined) capacity of 4 Mt/yr. In the second phase of operations (when the third and fourth blast furnaces are put into operation), production of 2 Mt of steel would be used by its rolling mill to produce hot-rolled coil and a new 0.4-Mt/yr galvanized steel plant. Hoa Phat Hung Yen Steel Co. Ltd. had a 350,000-t/yr-capacity steel billet factory in the Pho Noi A Industrial Zone as well as a steel rolling factory in Nhu Quynh Industrial Park that had the capacity to produce 350,000 t/yr of hot-rolled concrete-reinforcement bar (Bhattacharya, 2019; Hoa Phat Group J.S.C., 2019; 2020, p. 12, 13; Engel, 2020).

Nickel.—Vietnam had not produced mined nickel since 2017. In May 2019, Blackstone Minerals Ltd. (BML) of Australia entered into a binding agreement to acquire 90% of the Ta Khoa nickel properties, including the Ban Phuc nickel mine owned by Ta Khoa Mining Ltd. BML acquired these properties to increase the company's existing battery mineral assets. Operation of the Ban Phuc Mine was suspended in September 2016 owing to high operating costs and low nickel prices. BML planned to explore both sulfide vein and disseminated nickel sulfide deposits throughout the Ta Khoa project area. In December, Blackstone entered into a memorandum of understanding with Ecopro BM. Co. Ltd. of the Republic of Korea, which was an electric vehicle battery cathode manufacturer, to develop a processing facility associated with the Ta Khoa nickel project (Mir, 2019; Thu, 2019).

Rare Earths.—In 2019, the production of rare earths (rare-earth-oxide equivalent), which was estimated based on the trade data, increased by 41% to 1,300 t from 920 t in 2018. Vietnam exported 2,200 t (gross weight) of rare-earth concentrates to China compared with 1,500 t in 2018. Chinese rare-earth processing companies had become significantly dependent on imports of rare-earth ore and concentrates from Vietnam and Burma. China had reduced its domestic production quota to 45,000 t/yr in the second half of 2018 from 70,000 t/yr and stopped production by China Minmetals Rare Earth (Ganzhou) Co. Ltd. and CHALCO's Guanxi Branch, which had failed to meet the environmental protection standards in China. China also shut down most illegal mining of rare earths (table 1; Globe Newswire, 2019).

Most rare-earth mines in Vietnam were located in the northern upland Provinces of Lai Chau, Lao Cai, and Yen Bai. Khanh An Industry J.S.C. was undertaking exploration for rare-earth minerals in Son Hai Commune of Bao Thang District; the company's 4-year exploration license was issued in early 2018 (Saigon Times, The, 2019).

Tungsten.—Production of mined tungsten (W content) in 2019 decreased by 6.3% to 4,500 t from 4,800 t in 2018. Masan Tungsten LLC purchased 5,682 t of tungsten concentrates (WO₃ content) from Nui Phao Mining Co. Ltd. (NPMC) in 2019. Masan Tungsten produced 6,073 t of ammonium paratungstate (WO₃ content) using internally supplied tungsten concentrates from NPMC and externally sourced concentrates of 1,064 t (WO₃ content) (table 1; Masan Resources Corp., 2020, p. 60).

In August 2018, NPMC (a fully-owned subsidiary of Masan Resources Corp.) acquired full ownership of the Nui Phao H.C. Stark Tungsten Chemical Manufacturing Co. by purchasing the remaining 49% equity interest controlled by H.C. Stark GmbH, which was a joint-venture partner. Nui Phao H.C. Stark changed the name to Masan Tungsten LLC. In September 2019, Masan Resources announced the acquisition of H.C. Stark Group GmbH's global tungsten materials business, which would provide Masan Resources with a recycling technology platform (Masan Resources Corp., 2019, p. 9; 2020, p. 6).

Industrial Minerals

Cement.—In 2019, Vietnam's operational cement production capacity was 102 Mt/yr, which included 84 production lines. Cement production increased by 8.7% to 96.9 Mt in 2019 from 89.1 Mt in 2018. In 2019, Vietnam exported 33.9 Mt of clinker and cement (an increase of 7.3%) and earned \$1.39 billion (an increase of 12.3%). The country's main export markets in 2019 were Bangladesh, China, the Philippines, and Taiwan. Approximately two-thirds of the cement plants in Vietnam faced challenges, such as low labor productivity and low operational standards. These plants had about 1 Mt/yr of capacity each and together accounted for about 20% of the country's total cement production (table 1; Vietnam News, 2018, 2020; Vietnam Investment Review, 2019c; General Department of Customs, 2020a).

Thanh Thang Cement Corp. was approved by the Government to add two more lines to its plant at Thanh Nghi with a combined production capacity of 2.3 Mt/yr, which were expected to be commissioned in 2022 and 2026 each. State-

owned Vietnam Cement Industry Corp.'s Hong Mai cement plant planned to build a 3-Mt/yr cement plant in the Hong Mai 2 Industrial Zone in Nghe An Province. Tan Thang Cement J.S.C. was expected to commission its 2-Mt/yr Nghe An cement plant in 2020, which would increase the country's cement production lines to 86 and the country's installed capacity to 106 Mt/yr by 2020 (Global Cement, 2019a–c).

Phinma Corp. of the Philippines was in the process of investing in Song Lam Cement J.S.C. (a subsidiary of the Vissai Group), which was the largest privately owned cement company in Vietnam. The Song Lam plant would be a major supplier for Philecement Corp., which was a 60%-owned subsidiary of Phinma (Francia, 2019; Vietnam Investment Review, 2019a).

Mineral Fuels and Related Materials

Coal.—In 2019, Vietnam produced 46.4 Mt of coal, which was an increase of 9.4% compared with the 42.4 Mt produced in 2018. The demand for imported energy increased because of Vietnam's fast-growing economy and increasing electricity consumption. Coal imports (mostly from Australia and Indonesia) totaled 43.8 Mt in 2019, which was an increase of 92%. The value of coal imports was \$3.79 billion, which was an increase of 48% compared with the value in 2018 (table 1; General Department of Customs, 2020b; Ono, 2020).

Petroleum.—In 2019, Vietnam produced 96 Mbbl of crude petroleum, which was a decrease of 6.3% compared with the 102 Mbbl produced in 2018. The country's crude petroleum industry faced such challenges as the following: reserves depletion at existing key oilfields, including the Bach Ho, Chim Sao, Dai Hung, and Thang Long fields; little exploration activity for new oilfields after a 2014 plunge in the price of oil; and China's hampering offshore exploration in the region (table 1; Thomson Reuters, 2019; Vietnam National Coal and Mineral Industries Group, 2019c; Vu, 2019; Vahn and Toh, 2020).

After the Government of Vietnam canceled the drilling by Repsol S.A. of Spain in Blocks 136/03 and 07/04 owing to the dispute with China, the Government partnered with PJSC Rosneft Oil Co. of Russia (a Russian Government-owned company) to restart offshore exploration. In May 2019, Rosneft contracted Japan Drilling Co. Ltd., which commenced a drilling operation to explore for gas and condensate in Block 06.1 and Block 05.3/11 offshore Vung Tau City (Murray, 2019; Offshore Energy Today, 2019).

In 2019, the total production of the Binh Son Refining and Petrochemical J.S.C. (BSR) was approximately 55 Mbbl. Nghi Son Refinery and Petrochemical LLC (NSRP), which had commenced operations at yearend 2018 with a production capacity of 38.5 million barrels per year of petroleum fuel, had its first full year of commercial operations in 2019 and produced 35.5 Mbbl petroleum fuel during the year. The NSRP operation led to a 30.9% increase in crude petroleum imports and a 22.0% decrease in petroleum products imports in 2019. Vietnam exported gasoline for the first time owing to the commercial production by the NSRP (Binh Son Refining and Petrochemical J.S.C., 2020, p. 88; General Department of Customs, 2020b; Nghi Son Refinery and Petrochemical LLC, 2020a, b; Samanta and Vu, 2020).

Outlook

In 2020, the real GDP is forecasted to decrease by 1.6% owing to the coronavirus disease 2019 (COVID-19) global pandemic; however, it is expected to increase by 6.7% in 2021 based on accelerated public investment, increased trade with the European Union and China, and relocation of global manufacturing facilities from China to Vietnam. Starting on January 14, 2020, Vietnam is to benefit from reduced tariffs as designated by the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) signed by Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, and Singapore. These countries had a market size that accounted for 13% of the global GDP. The tariff reduction is expected to increase Vietnam's GDP by 1.32% (Vietnam National Coal and Mineral Industries Group, 2019f; Asian Development Bank, 2020, p. 215; International Monetary Fund, 2020).

Vietnam's mineral industry is expected to face challenges, such as relatively low inflow of FDI to the mining and quarrying sectors, high trade tariffs on steel products and cement owing to trade conflicts, and surging energy imports owing to increased power consumption by the industrial sector. Despite the challenges, the mineral industry is expected to continue to grow in the coming years owing to the country's overall economic expansion and the ramping up of production at recently commenced mineral projects for alumina, copper, cement, crude and refined petroleum, ferroalloys, and steel. The CPTPP is also expected to provide new opportunities for exports of some mineral commodities, such as cement, lead, nickel, rare earths, and steel.

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TABLE 1
VIETNAM: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS					
Aluminum:					
Bauxite ^c	1,150,000	1,420,000	2,800,000	3,500,000	3,350,000
Alumina	660,000	602,000	1,062,000	1,329,000	1,365,000
Antimony, mine:					
Gross weight	548	572	576	610 ^r	764
Sb content ^c	220	230	230	240	310
Bismuth, mine, Bi content	1,300 ^c	2,013	2,460	3,009	1,062
Chromium, mine, chromite	--	--	750	--	--
Cobalt, mine, Co content	277	134	--	--	--
Copper:					
Mine, concentrates:					
Gross weight	49,032	48,526	85,800 ^r	105,000 ^r	122,000
Cu content ^c	23,200	22,300	21,000	26,200 ^r	30,600
Smelter, primary	11,000	11,000	15,800	15,100	19,200
Refinery, primary	11,000	11,000	15,800	15,100	19,200
Gold, mine, Au content kilograms	539	584	557	560 ^c	540
Iron ore, mine:					
Gross weight thousand metric tons	5,086	5,770	5,515	5,588 ^r	5,591
Fe content do.	2,691	3,056	2,920	2,962 ^r	2,963
Iron and steel:					
Pig iron do.	1,700	2,600	4,250	6,449	8,300 ^c
Steel:					
Raw steel do.	4,093	7,805	11,473	17,723	20,066
Products, rolled do.	15,022	17,827	22,101	25,602	27,600 ^c
Lead:					
Mine, Pb content ^c	1,890	810	4,560	14,500 ^r	12,500
Refinery	22,000	25,000	31,000	32,000	34,000
Manganese, mine:					
Gross weight	110,000	187,000	283,000	318,000 ^r	368,000
Mn content	47,000	80,000	122,000	137,000 ^r	158,000
Nickel, mine, sulfide ore, concentrate, Ni content	8,607	4,272	--	--	--
Rare earths, mineral concentrate: ³					
Gross weight	460	400	360	1,500	2,200 ^c
Rare-earth oxide equivalent ^c	270	240	220	920	1,300
Tin:					
Mine, Sn content	4,530	4,579	5,000	5,500	5,500
Smelter, primary	4,382	4,419 ^r	4,400	4,900	4,800
Titanium, mineral concentrate, ilmenite and leucoxene ⁴	238,000	210,800	225,300	235,100 ^r	271,100
Tungsten, mine, concentrate, W content	5,600	5,200	5,400	4,800	4,500
Zinc:					
Mine, Zn content	15,000	12,000	12,000	12,000	12,000
Smelter, primary ^c	10,000	10,000	10,000	10,000	11,000
Zirconium, mineral concentrates ^{c, 5}	4,300	9,500	5,400	11,000	10,000
INDUSTRIAL MINERALS					
Barite ^c	76,000	30,000	26,000	41,000 ^r	36,000
Cement, hydraulic thousand metric tons	67,645	74,457	81,488	89,121 ^r	96,919
Fluorspar	163,000 ^c	218,876	234,905	238,702	238,003
Nitrogen, ammonia, N content thousand metric tons	1,100	970	1,100	1,050	1,100 ^c
Phosphate rock:					
Gross weight do.	2,923	3,143	4,588	4,332 ^r	4,652
P ₂ O ₅ content do.	880	940	1,400	1,300 ^r	1,400
Salt do.	1,061	982	649	997 ^r	913

See footnotes at end of table.

TABLE 1—Continued
VIETNAM: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019	
INDUSTRIAL MINERALS—Continued						
Stone, sand and gravel, construction:						
Sand and gravel:						
Gravel, including pebbles	thousand metric tons	3,247	3,210	3,084	2,977	2,926
Sand	do.	93,072	97,139	96,215	87,148 ^r	85,153
Stone, crushed	do.	262,177	286,944	277,172	269,516 ^r	266,282
MINERAL FUELS AND RELATED MATERIALS						
Coal	thousand metric tons	41,664	38,735	38,409	42,384 ^r	46,387
Natural gas	million cubic meters	10,660	10,610	9,866	10,010	10,210
Petroleum:						
Crude	thousand 42-gallon barrels	137,419	126,306	113,756	102,401	95,958
Refinery:						
Diesel	do.	22,884	21,572	18,100 ^e	22,300 ^e	46,600 ^e
Gasoline	do.	23,427	23,687	29,100 ^e	24,300 ^e	33,200 ^e
Jet fuel	do.	1,554	2,988	3,700 ^e	3,520 ^r	4,355
Liquefied petroleum gas	do.	5,202	5,684	6,900 ^e	6,433 ^r	5,769
Total	do.	53,100	53,900	57,800 ^e	56,600 ^{e,r}	89,900 ^e

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

¹Table includes data available through October 7, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, apatite, bentonite, refractory clay, gemstones, granite, graphite, gypsum, kaolin, lignite, lime, marble, pyrite, pyrophyllite, silver, and sulfur may have been produced, but available information was inadequate to make reliable estimates of output.

³China's imports from Vietnam.

⁴Estimate based on import statistics from trading partners (primarily China and Japan).

⁵Estimated figures based on Vietnam inferred exports of zirconium ore to China.

TABLE 2
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Alumina	Dak Nong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Nhan Co aluminum plant, Dak Nong Province	690
Do.	Lam Dong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Tan Rai Bauxite Aluminum Complex, Lam Dong Province	690
Antimony, mine, gross weight	Ha Giang Mechanical and Mineral J.S.C.	Mau Due Mine, Yen Minh, Ha Giang Province Ha Giang Province	1
Apatite	Apatite Vietnam Ltd. Co. [Vietnam National Chemical Group (VINACHEM), 100%]	Lao Cai Mine and Bac Nhat Son processing plant, Lao Cai Province	2,800
Barite	NA	Ao Sen deposit, Son Duong, Tuyen Quang	80
Bauxite	Vietnam National Coal and Mineral Industries Group (VINACOMIN)	Tan Rai Mine, Bao Lam, Lam Dong Province	1,700
Do.	do.	Nhan Co Mine, Dak Nong Province	1,800
Bismuth	Masan Tungsten LLC (Masan Resources Corp., 100%)	Plant in Dai Tu, Thai Nguyen Province	2
Cement	An Giang Cement Co.	An Giang cement plant, An Giang Province	400
Do.	Binh Phuoc Cement Co.	Binh Phuoc cement plant, Binh Phuoc Province	2,000
Do.	Cam Pha Cement J.S.C. [Vietnam Construction and Import-Export J.S.C. (VINACONEX), 100%]	Luongson cement plant, Hoa Binh Province	1,200
Do.	Construction Materials Corporation No.1 (FiCO) J.S.C.	DIC Binh Duong cement plant, FiCO BMT white cement plant, FiCO Hiep Phuoc cement plant, Tay Ninh FiCO cement plant	2,900
Do.	Chinfon Cement Corp. [Chinfon Vietnam Holding Co. Ltd., 70%; Vietnam People's Committee of Hai Phong City, 15.56%; Vietnam Cement Industry Corp. (VICEM), 14.44%]	Chinfon cement plant and Trang Kenh plant at Hai Phong City, Hiepphuoc plant at Ho Chi Minh City	5,000
Do.	Cong Thanh Cement J.S.C.	Cong Thanh cement plant, Thanh Hoa Province	1,000
Do.	Cao Ngan Cement J.S.C.	Cao Ngan cement plant, Thai Nguyen Province	600
Do.	Dong Son Cement Co.	Dong Son cement plant, Thai Nguyen Province	1,500
Do.	Dong Thanh Cement Co.	Dong Thanh cement plant, Dong Nai Province	1,000
Do.	Fico Tay Ninh Cement J.S.C.	Fico Tay Ninh cement plant, Cay Cay, Tan Hoa, Tan Chau, Tay Ninh Province	3,500
Do.	Ha Long J.S.C. [Vietnam Cement Industry Corp. (VICEM), 100%]	Ha Long cement plant, Ho Chi Minh City, Quang Ninh Province	2,000
Do.	Hoang Phat Vissai Group Co. Ltd.	Dong Banh cement plant, Lang Son Province	1,000
Do.	do.	Ha Nam plant, Thanh Liem, Ha Nam Province	3,000
Do.	do.	Ninh Binh cement plant, Gia Vien, Ninh Binh Province	3,600
Do.	do.	Song Lam cement plant, Du Luong, Nghe An Province	6,000
Do.	La Hien Cement J.S.C.	La Hien cement plant, Thain Nguyen Province	600
Do.	Langbang Cement Co.	Langbang cement plant, Quang Ninh Province	1,500
Do.	Long Son Cement Co.	Long Son cement plant, Thanh Hoa Province	5,000
Do.	Luckvaxi Cement Co.	Luckvaxi cement plant, Thien Hue Province	1,200
Do.	Luks Group (Vietnam Holdings) Co. Ltd.	Kim Dinh cement plant and Ninh Thuan grinding plant, Thua Thien-Hue Province	2,800
Do.	Mai Son Cement J.S.C.	Son La cement plant, Son La Province	1,200
Do.	Midland Construction Corp. (COSEVCO)	Song Gianh cement plant, Quang Binh Province	1,400
Do.	Nghi Son Cement Corp. [Taiheiyu Cement Corp., 45.5%; Vietnam Cement Industry Corp. (VICEM), 35%; Mitsubishi Materials Corp., 19.5%]	Nghi Son cement plant, Thanh Hoa Province	4,300
Do.	Phuc Son Cement Co. (Lucky Cement Co., 90%, and Hai Duong Cement Co., 10%)	Phuc Son cement plant, Hai Duong Province	4,000
Do.	Quan Trieu Cement J.S.C. (Viet Bac Mining Industry Holding Corp. Ltd., 84.9%, and others, 15.1%)	Quan Trieu cement plant, Thai Nguyen Province	820

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Cement—Continued	Quang Ninh Cement and Construction J.S.C.	Ha Tu cement plant, Lam Thach cement plant, Quang Ninh Province	2,100
Do.	Siam City Cement Vietnam Co. Ltd. [Siam City Cement Public Ltd. (SCCC), 65%, and Vietnam Cement Industry Corp. (VICEM), 35%]	Cement grinding station in Dong Nai Province	6,300
Do.	Song Lam Cement J.S.C. [Vissai Group, 92.5%, and Philecement Corp. (Phinma Group), 7.5%]	Song Lam cement plant, Bai Son, Nghe An Province	2,800
Do.	Song Thao Cement J.S.C. [Vietnam Cement Industry Corp. (VICEM), 100%]	Song Thao cement plant, Phu Tho Province	1,000
Do.	Than Long Cement (PT Semen Indonesia, 70%, and others, 30%)	Thang Long cement plant, Quang Ninh Province	2,500
Do.	Thanh Thang Cement Corp.	Bong Lang cement plant, Thanh Nghi, Ha Nam Province	1,750
Do.	Tuyen Quang Cement J.S.C. [Vietnam National Coal and Mineral Industries Group (VINACOMIN)]	Tuyen Quang cement plant, Tuyen Quang Province	910
Do.	Vietnam Cement Industry Corp. (VICEM, 100% state-owned)	Bim Son cement plant, Thanh Hoa Province	3,800
Do.	do.	But Son cement plant, Ha Nam Province	3,000
Do.	do.	Ha Tien I cement plant, Ho Chi Minh City	1,500
Do.	do.	Ha Tien II cement plant, Kien Giang Province	1,200
Do.	do.	Hai Phong cement plant, Ha Giang Province	1,700
Do.	do.	Hai Van cement plant, Da Nang City	600
Do.	do.	Hoang Mai cement plant, Nghe An Province	1,400
Do.	do.	Hoang Thach cement plant, Hai Duong Province	3,600
Do.	do.	Tam Diep cement plant, Ninh Binh Province	1,400
Do.	Vietnam Construction and Import-Export J.S.C. (VINACONEX)	Cam Pha cement grinding plant, Phu Tau Province	2,300
Do.	Vietnam Construction Materials J.S.C. (Siam Cement and Building Materials Co. Ltd., 100%)	Integrated cement plant, Tuyen Hoa, Quang Bing Province	3,100
Do.	do.	Yen Bai cement plant, Yen Bai Province	200
Do.	Vietnam Industrial Construction Corp. (VINAINCON)	Quang Son cement plant, Dong Hy, Thai Nguyen Province	1,500
Do.	X18 Cement J.S.C.	Cement X18 plant, Hoa Binh Province	100
Do.	Xuan Thanh Cement	Ha Nam cement plant, Thanh Liem, Ha Nam Province	4,500
Chromite, gross weight	Thai Nguyen Nonferrous Metals J.S.C. [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%]	Nui Nua, Thanh Hoa Province	10
Coal	Nui Beo Coal J.S.C. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 52.9%]	Le Thanh Tong, Halong City, Quang Ninh Province	NA
Do.	Vietnam National Coal and Mineral Industries Group (VINACOMIN, 100% state-owned)	Cam Pha, Cao Son, Coc Sau, Cua Ong, Deo Nai, Dong Trieu, Duong Huy, Ha Lam, Ha Long, Ha Tu, Hong Gai, Khe Cham, Mao Khe, Mong Duong, Nam Mau, Nui Beo, Quang Hanh Uong Bi, Vang Danh in Quang Ninh Province	42,000
Cobalt, mine, Co content	metric tons Ban Phuc Nickel Mines LLC (Blackstone Minerals Ltd., 90%, and Son La Mechanical Engineering J.S.C., 10%)	Ban Phuc nickel mine, Son La Province	200
Copper:			
Concentrate, Cu content	Ban Phuc Nickel Mines LLC (Blackstone Minerals Ltd., 90%, and Son La Mechanical Engineering J.S.C., 10%)	Ban Phuc nickel mine, Son La Province	4
Do.	Dong Ta Phoi J.S.C.	Ta Phoi Mine, Lao Cai Province	8
Do.	Masan Group	Nui Phao Mine, Dai Tu, Thai Nguyen Province	9
Do.	Sin Quyen-Lao Cai Mining Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Sin Quyen copper mine, Ban Vuoc and Coc My, Bat Xat, Lao Cai Province	20

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Copper:—Continued				
Refined		Lao Cai Copper Smelter Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Lao Cai smelting factory, Tang Loong Industrial Park, Bao Thang, Lao Cai Province	16
Ferrous alloys:				
Ferromanganese		Hai Duong New Resources Metallurgy Shareholding Co. (Golden Resources International Group Corp., 80%; Tan Phu Xuan Shareholdings Co., 10%; Tan An Co. Ltd., 10%)	Phu Thu Town, Kinh Mon, Hai Duong Province	37
Ferrotungsten, W content	metric tons	Asia Tungsten Products (Vietnam) Ltd. (Asia Tungsten Products Co. Ltd., 100%)	Tan Tien Industrial Zone, Vinh Bao, Hai Phong Province	4,000
Do.	do.	Vietnam Youngsun Tungsten Industry Co. Ltd. (Hong Kong Wolfram International Investment Co. Ltd., 100%)	Quang Ninh plant, Cailan Industrial Zone, Halong City, Quang Ninh Province	3,600
Fertilizer:				
Nitrogen, ammonia		Vietnam National Chemical Group (VINACHEM), of which: Ha Bac Nitrogenous Fertilizer Factory	Ha Bac fertilizer plant, Bac Giang Province	500
Do.		Ninh Binh Nitrogenous Fertiliser One-Member Co. Ltd.	Ninh Binh urea fertilizer plant, Ninh Binh Province	NA
Do.		PetroVietnam Fertilizer and Chemicals Corp.	Ca Mau fertilizer Plant, Khanh An, Ca Mau Province	NA
Do.		Phy My Nitrogenous Fertilizer and Chemical J.S.C.	Phu My, Ba Ria-Vung Tau Province	NA
Superphosphate		Lam Thao Fertilizers & Chemicals J.S.C. [Vietnam National Chemical Group (VINACHEM), 100%]	Lam Thao, Phu Tho Province	800
Fluorspar		Masan Tungsten LLC (Masan Resources Corp., 100%)	Plant in Dai Tu, Thai Nguyen Province	240
Gas, natural	million cubic meters	VietSovPetro (Vietnam Oil and Gas Group, 51%, and Zarubezhneft of Russia, 49%)	Offshore Bach Ho oilfield, Rang Dong oilfield, and Lan Tay and Lan Do gasfields	7,300
Do.	do.	Vietnam Oil and Gas Group (PetroVietnam) and operated by Cuu Long Joint Operating Co.	Su Tu Trang offshore field (Block 15.1) located in Cuu Long Basin	9,890
Gold:				
Mine, Au content	kilograms	Bong Mieu Gold Mining Co. Ltd. (Besra Gold Inc., 80%; Mineral Development Co., 10%; Quang Nam Mineral J.S.C., 10%)	Bong Mieu Mine and Nui Kem underground mine, Quang Nam Province ¹	400
Do.		Lao Cai Gold J.S.C. [VINACOMIN - Minerals Holding Corp. (VIMICO), 46%]	Minh Luong Mine, Lao Cai Province	NA
Do.		Phuoc Son Gold Co. Ltd. (Besra Gold Inc., 85%)	Bai Dat and Bai Go deposit in Phuoc Son gold property, Quang Nam Province ¹	NA
Refined	kilograms	Lao Cai Copper Smelting Enterprise [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Refinery in Tang Loong Industrial Park, Bao Thang, Lao Cai Province	550
Do.		Thai Nguyen Nonferrous Metal J.S.C.	Refinery in Phuc Xa Ward, Thai Nguyen City, Thai Nguyen Province	NA
Graphite				
		Song Da Lao Cai Mining J.S.C.	Nam Thi graphite mine, Bao Ha, Bao Yen, Lao Cai Province	NA
Iron ore, mine, Fe content				
		Thai Nguyen Black Metallurgical J.S.C.	Chom Vung Tay Mine, Dong Hy, Thai Nguyen Province	NA
Do.		Thai Nguyen Iron and Steel Corp. [Vietnam Steel Corp. (VNSTEEL), 100%]	Nguom Chang Mine, Hoa An, Cao Bang Province	177
Do.		do.	Thuyen Quang Mine, Yen Son, Tuyen Quang Province	40
Do.		do.	Tien Bo Mine, Dong Hy, Thai Nguyen Province	600
Do.		do.	Trai Cau Mine, Dong Hy, Thai Nguyen Province	180
Do.		Viet Trung Metallurgy and Mineral Co. Ltd.	Quy Xa Mine, Lao Cai Province	NA
Lead, concentrate, Pb content		Thai Nguyen Nonferrous Metal J.S.C.	Cho Dien lead-zinc mine, Ban Thi, Na Hang, Tuyen Quang Province	NA

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Manganese:				
Ore, gross weight		Danka Minerals J.S.C.	Toc Tat Mine, Quang Trung, Tra Linh, Cao Bang Province	NA
Do.		Phuc Son Manganese, Mineral, and Mechanics J.S.C.	Mine in Chiem Hoa, Tuyen Quang Province	NA
Manganese alloys		Cao Bang Manganese Industry Corp. (Danka Minerals J.S.C., 25%)	Plant in Cao Bang Province	20
Do.		Hai Duong New Resources Metallurgy Shareholding Co. (Golden Resources International Group Corp., 80%; Tan Phu Xuan Shareholdings Co., 10%; Tan An Co. Ltd., 10%)	Plant in Phu Thu, Kinh Mon, Hai Duong Province	150
Nickel, mine, Ni content	metric tons	Ban Phuc Nickel Mines LLC (Blackstone Minerals Ltd., 90%, and Son La Mechanical Engineering J.S.C., 10%)	Ban Phuc nickel mine, Son La Province ¹	6,400
Petroleum:				
Crude	thousand 42-gallon barrels per day	Chim Sao Crude Oil [Premier Oil (operator), 53.125%; Santos Ltd., 31.875%; PetroVietnam, 15%]	Dua Oil project (offshore) in Nam Con Son Basin (Block 12W)	8
Do.	do.	VietSovPetro [joint venture of Vietnam Oil and Gas Group (PetroVietnam) and Zarubezhneft of Russia]	Offshore Bach Ho, Rong, Rang Dong, Ruby, Bunga Kekwa, Dai Hung, and SuTu Trang oilfields	147
Refined	do.	Binh Son Refining and Petrochemical J.S.C. [Vietnam Oil and Gas Group (PetroVietnam), 50%; ConocoPhillips Co., 23.25%; Korea National Oil Corp., 14.25%; SK Innovation, 9%; Geopetrol S.A., 3.5%]	Dung Quat refinery, Quang Ngai Province	148
Do.	do.	Nghi Son Refinery and Petrochemical LLC [Idemitsu Kosan Co. Ltd., 35.1%; Kuwait Petroleum Europe B.V., 35.1%; Vietnam Oil and Gas Group, 25.1%; Mitsui Chemical Inc., 4.7%]	Refinery in Nghi Son Economic Zone, Thanh Hoa Province	200
Phosphate rock, gross weight		Vietnam Apatite One Member Co. Ltd. (VINAAPACO) [Vietnam National Chemical Corp. (VNCC), 100%]	Cam Duong and Tang Loong, Lao Cai Province	5,500
Rare earths:				
Ore	metric tons	Lai Chau-Vietnam National Minerals Corp. (VIMICO) Rare Earth J.S.C., and the Japanese Dong Pao Rare Earth Development Co.	Dong Pao Rare Earth Mine, Ban Hon, Tam Duong, Lai Chau Province	10,000
Processing	do.	Shin-Etsu Magnetic Minerals Vietnam Co. Ltd.	Plant in Dinh Vu Industrial Park, Hai Phong Province	2,200
Do.	do.	Vietnam Rare Earth Co. (VERX) [Shenghe Resources (Singapore), 90%, and Seidou, 10%]	Plant in Bac Ninh Industrial Zone, Bac Ninh Province	700
Do.	do.	Vietnam Rare Earth J.S.C. (VTRE)	Plant in Phu Ly City, Ha Nam Province	4,000
Silica		Cam Ranh Sand Co. (FICO)	Thuy Trieu sand deposit, Khanh Hoa Province	150
Do.		Da Nang Sand Processing Plant (Vico Silica Ltd., 100%)	Nam O sand deposit, Quang Nam Province	120
Do.		Van Hai Viglacera	Van Hai sand deposit, Quang Binh Province	200
Steel:				
Raw steel		Cao Bang Iron and Steel J.S.C.	Billet plant in Cao Bang Province	220
Do.		Formosa Ha Tinh Steel Co. (Formosa Plastics Group, 70%; China Steel Holding, 25%; JFE Steel Corp., 5%)	Plant in Vung Ang Economic Zone, Ky Anh Town, Ha Tinh Province	7,500
Do.		Hoa Phat Dung Quat Steel J.S.C. (Hoa Phat Group)	Integrated Steel Complex in Dung Quat Economic Zone, Quang Ngai Province	1,700
Do.		Hoa Phat Hai Duong Steel J.S.C. (Hoa Phat Group)	Integrated Steel Complex in Hai Duong, Kinh Mon, Hai Duong Province	2,380
Do.		Hoa Phat Hung Yen Steel Co. Ltd. (Hoa Phat Group)	Billet plant in Pho Noi A Industrial Zone, Hung Yen Province	350
Do.		Pomina Steel J.S.C.	Billet plant in Phu My Industrial Park, Tan Thanh, Ba Ria-Vung Tau Province	1,500

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Steel:—Continued			
Raw steel—Continued	Shengli (Vietnam) Special Steel Co. Ltd. [Shengli (Fuzhou) Group Corp., and Guangdong Metals and Minerals Import & Export Corp.]	Billets plant in Cau Nghin Industrial Park, Anbai, Quynh Phu, Thai Binh Province	600
Do.	Vietnam Italy Steel J.S.C. (Hai Hung Trade J.S.C., 65%; Kyoei Steel, 20%; others, 15%)	Billets plant in Nam Cau Kien Industrial Zone, Hai Pong City, Hai Pong Province	500
Do.	Vietnam Steel Corp. (VNSTEEL)	Cai Lan, Thai Nguyen Province, and Phu My, Ba Ria-Vung Tau Province	1,500
Products	China Steel Sumikin Vietnam J.S.C. (China Steel Corp., 56%; Nippon Steel & Sumitomo Metal Corp., 30%; Formosa Ha Tinh Steel Corp. (FHS), 5%; Nippon Steel & Sumikin Bussan Corp., 5%)	Sheet steel mill in Phu My, Ba Ria-Vung Tau Province	1,200
Do.	Formosa Ha Tinh Steel Co. (Formosa Plastics Group, 70%; China Steel Holding, 25%; JFE Steel Corp., 5%)	Hot-rolled coil plant, Vung Ang Economic Zone, Ky Anh, Ha Tinh Province	5,200
Do.	Hoa Phat Dung Quat Steel J.S.C. (Hoa Phat Group, 100%)	Long and construction steel plant in Dung Quat Economic Zone, Quang Ngai Province	2,000
Do.	Hoa Phat Hai Duong Steel J.S.C. (Hoa Phat Group, 100%)	Construction steel in Integrated Steel Complex, Kinh Mon, Hai Duong Province	2,380
Do.	Hoa Phat Hung Yen Steel Co. Ltd. (Hoa Phat Group)	Bar and wire plant, Nhu Quynh Industrial Park, Hung Yen Province	350
Do.	Hoa Sen Group J.S.C.	Cold-rolled steel plant, Song Than 2 Industrial Zone, Binh Duong Province	400
Do.	Kyoei Steel Vietnam Co. Ltd. (Kyoei Steel Co. Ltd., 60%; Marubeni-Itochu Steel Co. Ltd., and Metal One Corp., 20%; others, 20%)	Plant in Tam Diep Town, Ninh Binh Province	450
Do.	Lotus Group	Cold-rolled steel plant, Phu My Industrial Park in Ba Ria-Vung Tau Province	1,000
Do.	Nam Kim Steel J.S.C.	3 plants in Binh Duong Province and 1 plant in Ben Luc, Long An Province	1,400
Do.	Pomina Steel J.S.C.	Plant 1, Di An, Binh Duong Province, and Plant 2, Tan Thanh, Ba Ria-Vung Tau Province	1,500
Do.	POSCO SS VINA (POSCO Group, 100%)	Rolled steel plant, Phu My 2 Industrial Zone, Ba Ria-Vung Tau Province	1,000
Do.	POSCO-Vietnam (POSCO Group, 100%)	POSCO special steel plant, Phu My Industrial Park, Ba Ria-Vung Tau Province	3,700
Do.	POSCO VST Corp. (POSCO Group, 100%)	Cold-rolled stainless steel plant, Nhon Trach 1 Industrial Zone, Nhon Trach, Dong Nai Province	235
Do.	do.	Bar and wire rod plant, Cau Nghin Industrial Park, Anbai, Quynh Phu, Thai Binh Province	800
Do.	QH Plus J.S.C.	Construction steel processing plant in Ho Chi Minh City	NA
Do.	Southern Steel Co. Ltd. [Vietnam Steel Corp. (VNSTEEL), 100%]	Rolling mill plant, Phu My 1 Industrial Zone, Tan Thanh, Ba Ria-Vung Tau Province	400
Do.	Thai Nguyen Iron and Steel J.S.C. (TISCO) [Vietnam Steel Corp. (VNSTEEL), 100%]	Plant in Song Than 1 Industrial Zone, Di An, Binh Duong Province	150
Do.	Ton Dong A Corp.	Plant in Song Than 1 Industrial Zone, Di An, Binh Duong Province	150
Do.	do.	Steel sheet plant in Dong An 2 Industrial Park in Binh Duong Province	250
Do.	Viet Steel Corp.	Bar mill in Ba Ria-Vung Tau Province	450
Do.	Viet Trung Metallurgy and Mineral Co. Ltd. (VTM)	Lao Cai iron and steel plant, Lao Cai Province	NA

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e	
Steel:—Continued				
Products—Continued	Vietnam Italy Steel J.S.C. (Kyoei Steel, 67.7%)	Rolling mill in Pho Noi A Industrial Zone, Giai Pham, Yen My, Hung Yen Province	300	
Do.	Vietnam Japan Steel J.S.C.	Plant in Hong Bang, Hai Phong City	240	
Do.	Vietnam Shipbuilding Industry Group (VINASHIN)	Cai Lan steel plate hot-rolling plant, Ha Long City, Quang Ninh Province	1,000	
Do.	Vietnam Steel Corp. (VNSTEEL)	Plants in Cai Lan, Thai Nguyen Province, and Phu My, Ba Ria-Vung Tau Province	2,500	
Do.	Vina Kyoei Steel Ltd. Co. [Kyoei Steel Ltd., 45%; Vietnam Steel Corp. (VNSTEEL), 40%; Mitsui & Co. Ltd., 9%; Marubeni-Itochu Steel Co. Ltd., 6%]	Plant in Phu My 1 Industrial Zone, Phu My, Ba Ria-Vung Tau Province	1,000	
Do.	Vina One Steel Manufacturing Corp.	Plant in Long Hiep, Ben Luc, Long An Province	900	
Do.	VSC-POSCO Steel (VPS) [Vietnam Steel Corp. (VNSTEEL), and POSCO]	Plants in Cai Lan, Thai Nguyen Province, and Phu My, Ba Ria-Vung Tau Province	1,000	
Tin:				
Concentrate, Sn content	An Vinh Joint Stock Mineral Processing Co.	Quy Hop City, Nghe An Province	NA	
Do.	Cao Bang Minerals & Metallurgy J.S.C.	Electro-Mechanical Facility, Tinh Tuc, Cao Bang Province	4	
Do.	Nghe Tinh Nonferrous Metals J.S.C. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Quy Hop, Nghe An Province	4	
Do.	Tuyen Quang Non-Ferrous Metals J.S.C. [Doanh Tri Ltd. Co., 53.78%, and VINACOMIN - Minerals Holding Corp. (VIMICO), 46.22%]	Tan Quang City, Tuyen Quang Province	NA	
Refined	Thai Nguyen Nonferrous Metal J.S.C. [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%, and other, 49%]	Plant in Phuc Xa Ward, Thai Nguyen, Thai Nguyen Province	2	
Titanium, ilmenite				
	Bimal Minerals Co. Ltd. (Malaysia Mining Corp. and Syarikat Pendorong Sdn. Bhd., 60%, and Binh Dinh Minerals Co., 40%)	Cat Khanh, Qui Nhon, and Binh Dinh Provinces	70	
Do.	GPM Asia	Song Binh Industrial Zone, Binh Thuan Province	180	
Do.	Ha Tinh Minerals and Trading Co.	Cam Hoa, Ky Annh-Cam, Xuyen, Ky Khan, and Ky Ninh, Ha Tinh Province	450	
Do.	Hung Thinh Minerals Investment Co. Ltd.	Mine in Binh Thuan Province	NA	
Do.	Mineral Development Co. No. 4 and No. 5 [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%, and other, 49%]	Vinh City, Nghe An Province; Tuy Hoa, Dong Xuan in Phu Yen Province; and Quang Ngan, Vinh My in Thua Thien-Hu Province	50	
Do.	Quang Tri Mineral J.S.C.	Vinh Linh, Quang Tri Province	NA	
Tungsten:				
Concentrates, metric tons W content	Nui Phao Mining Co. Ltd. [Masan Resources Corp. (MRC), 100%]	Nui Phao Mine, Thai Nguyen Province	5,700	
Do.	do.	Vietnam Youngsun Tungsten Industry Co. Ltd. (Wolfram Group, 100%)	Thienke tungsten mine, Tuyen Quang Province	3,600
Smelter	do.	Masan Tungsten LLC [Masan Resources Corp. (MRC), 100%]	Ammonium paratungstate plant, Nui Phao, Dai Tu District, Thai Nguyen Province	6,500
Do.	do.	Sanher Tungsten Vietnam Co. Ltd.	Plant in Nhon Trach, Dong Nai Province	NA
Do.	do.	Tejing (Vietnam) Tungsten Co. Ltd.	Plant in Trang Bang, Tay Ninh Quang Province	9,300
Do.	do.	Vietnam Youngsun Tungsten Industry Co. Ltd. (Wolfram Group, 100%)	Ferrotungsten plant, Tuyen Quang Province	3,600

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Zinc:			
Concentrate, Zn content	Thai Nguyen Nonferrous Metal J.S.C. [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%, and others, 49%]	Cho Dien lead-zinc mine, Ban Thi, Cho Don, Bac Can Province	15
Refined	do.	Zinc electrolytic plant in Thai Nguyen Song Cong Industrial Park, Thai Nguyen Province	10
Do.	The Ta Pan Zinc-Lead Plant (a Chinese private firm, 70.2%, and Ha Giang Mineral Exploiting and Engineering Co., 29.8%)	Plant in Lung Vay, Bac Me, Ha Giang Province	6

Do., do. Ditto. NA Not available.

¹On care-and-maintenance status in 2019.