



2022 Minerals Yearbook

VIETNAM [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF VIETNAM

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In 2022, Vietnam was the 2d-ranked producer of tungsten in the world, accounting for an estimated 5.7% of global production and 2.6% of the world's reserves; the 3d-ranked producer of cement, accounting for an estimated 2.9% of global production; the 5th-ranked producer of fluor spar, accounting for an estimated 2.7% of global production and 1.9% of the world's reserves; the 6th-ranked producer of rare earths, accounting for an estimated 1.4% of global production and 17% of the world's reserves; and the 11th-ranked producer of bauxite, accounting for 1.0% of global production and 19% of the world's reserves. Other minerals produced in the country included antimony, coal, natural gas, lead, manganese, phosphate rock, salt, tin, titanium minerals (ilmenite and leucosene), and zirconium. Vietnam also produced the following processed minerals: refined copper, rolled steel products, and refined tin and zinc. A complete list of mineral commodities produced in Vietnam can be found in table 1 (Cordier, 2023; Hatfield, 2023; McRae, 2023; Merrill, 2023; Shedd, 2023).

Minerals in the National Economy

In 2022, the real gross domestic product (GDP) increased by 8.0% owing mainly to the recovery of the economy following the winding down of the coronavirus disease 2019 (COVID-19) pandemic. The nominal GDP was \$409 billion.¹ In 2022, the output value of the manufacturing and construction sectors accounted for 25% and 6.2% of the GDP, respectively, and the output of these two sectors increased by 13% and 17%, respectively, compared with that in 2021. The output value of the mineral sector accounted for 2.8% of the GDP in 2022, and the sector's output increased by 30% compared with that in 2021. Within the mineral sector, the output value of mining support services increased by 50%; that of the mining of coal increased by 4.9%; of the extraction of crude petroleum and natural gas, by 3.6%; of the mining of metallic ores, by 3.5%; and of other mining and quarrying, by 0.6%. In the manufacturing sector, the output value of the manufacturing of coke and refined petroleum products and of the manufacturing of nonmetallic products increased by 8.9% and 6.1%, respectively, and that of the manufacturing of basic metals decreased by 2.3%. In 2022, the number of people employed in the mineral sector increased by 12% to 196,000 from 175,100 in 2021 and accounted for 0.4% of the total labor force (General Statistics Office of Vietnam, 2023, p. 171, 173, 235, 243, 247, 249, 315, 316).

In 2022, domestic investment in the mineral sector increased by 3.2% to \$1.25 billion. Foreign direct investment (FDI) in the mineral sector was \$19.7 million. At yearend 2022, Vietnam had 108 projects funded through FDI in the mineral

sector, accounting for 0.3% of the country's total number of accumulated FDI projects; the accumulated capital in the mineral sector was \$4.89 billion, accounting for 1.1% of the total accumulated FDI capital. The country also had 68 overseas direct investment projects in the mineral sector that had a combined investment value of \$6.96 billion (General Statistics Office of Vietnam, 2023, p. 337, 348, 354, 361).

Government Policies and Programs

The principal laws and regulations that govern the mineral industry are the Mineral Law of 1996 (VNM-1996-L-73762), as amended in 2005 and 2010, and the Petroleum Law of 1993 (No. 18-L/CTN), as amended in 2000 and 2008. In November, the National Assembly passed an amendment to the Petroleum Law that was to become effective on July 1, 2024. The amendment, which was intended to attract new investors and retain current investors, increased the mineral prospecting contract period to 10 years from 7 years and the petroleum contract period to 30 years from 25 years, removed the requirement that contractors participate in the tender, and allowed a contract to cover multiple areas (replacing the previous two-block-per-project restriction) (Thao and Harrison, 2017, p. 227; Bui and others, 2021; Anh and Anh, 2022).

Production

In 2022, mineral commodities for which output increased by 10% or more included rare earths (rare-earth-oxide equivalent), by an estimated 764%; gravel (construction), by 49%; sand (construction), by 28%; lead (mine, Pb content), by an estimated 24%, and titanium mineral concentrates (ilmenite and leucosene), by 10%. Mineral commodities for which output decreased by 10% or more included graphite, by an estimated 58%; zirconium (mineral concentrates), by an estimated 42%; iron ore (Fe content), by 40%; tungsten (mine, W content), by an estimated 21%; petroleum refinery products, by an estimated 19%; pig iron and salt, by 18% each; raw steel, by 13%; steel products, by 12%; and lime, by an estimated 10%. Data on mineral production are in table 1.

Structure of the Mineral Industry

In 2022, the number of newly established enterprises in Vietnam's mineral industry was 730 compared with 647 in 2021. The total number of registered enterprises in the mineral industry increased by 1.2% to 5,483. In 2022, there were 3,236 active mineral enterprises in Vietnam, including 242 for the mining of metallic ore, 138 for mining support services, 85 for the mining of coal, 9 for the extraction of crude petroleum and natural gas, and 2,762 for other mineral activity. State-owned enterprises accounted for 99% of coal production; privately owned enterprises accounted for 63% of steel products output and 49% of cement production; and foreign-owned

¹Where necessary, values have been converted from Vietnamese dong (VND) to U.S. dollars (US\$) at the annual average exchange rates of VND23,277=US\$1.00 for 2022 and VND23,161=US\$1.00 for 2021.

enterprises accounted for 97% of crude petroleum production and 66% of raw steel production. Table 2 is a list of major mineral industry facilities (General Statistics Office of Vietnam, 2023, p. 329, 330, 395, 398, 404).

Mineral Trade

In 2022, the total value of goods exports increased by 10% to \$371 billion compared with that in 2021. Exports of iron and steel products increased in value by 17% to \$4.65 billion; basic metal and products, by 21% to \$4.53 billion; crude petroleum, by 32% to \$2.31 billion; refined petroleum, by 42% to \$2.04 billion; precious stones, precious metals, and products, by 29% to \$1.08 billion; and coal, by 67% to \$411 million. The value of exports of raw steel decreased by 32% to \$7.99 billion, and that of clinker and cement decreased by 21% to \$1.38 billion. In 2022, Vietnam's main export partners were, in order of export value, the United States (which received 29% of Vietnam's total exports), China (including Hong Kong) (18%), the Republic of Korea and Japan (6.5% each), and the Netherlands (2.8%) (General Statistics Office of Vietnam, 2023, p. 731, 732, 736–739, 740).

In 2022, the total value of goods imports increased by 7.8% to \$359 billion compared with that in 2021. Imports of refined petroleum products increased in value by 113% to \$8.97 billion; crude petroleum, by 50% to \$7.81 billion; coal, by 60% to \$7.16 billion; and basic metal products, by 21% to \$2.02 billion. The value of imports of ore and other minerals decreased by 32% to \$2.61 billion, and that of iron and steel scrap decreased by 31% to \$1.93 billion. In 2022, the country's main import partners were, in order of import value, China (including Hong Kong) (which supplied 33% of Vietnam's total imports), the Republic of Korea (17%), Japan (6.5%), Taiwan (6.3%), and the United States (4.0%) (General Statistics Office of Vietnam, 2023, p. 731, 742, 746, 748–750).

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—Lam Dong Aluminum Co. Ltd. (LDA) produced 735,200 metric tons (t) of alumina in 2022, which accounted for 52% of Vietnam's total alumina production. In April, state-owned Vietnam National Coal and Mineral Industries Group (VINACOMIN), which fully owned LDA and Dak Nong Aluminum Co. Ltd., proposed to increase bauxite production by 23% to approximately 4.2 million metric tons (Mt) at its mines and to increase alumina production by approximately 12% to 800,000 metric tons per year (t/yr) at its processing facilities. As of 2022, VINACOMIN had 260 Mt of bauxite reserves in the country (tables 1, 2; Dung, 2022; Minh, 2022; Vietnam National Coal and Mineral Industries Group, 2022).

Dak Nong Province accounted for 73% of the country's total bauxite reserves of 5,800 Mt (Tran Kim Phuong, Vietnam Union of Geological Sciences, written commun., December 20, 2020). The provincial government was reviewing several aluminum-related project proposals in 2022. In April, Hoa Phat Group Joint Stock Co. (JSC) submitted a proposal to build a

5-million-metric-ton-per-year (Mt/yr) bauxite processing plant, a 2-Mt/yr alumina plant, and a 500,000-t/yr aluminum electrolysis plant. Viet Phuong Group had submitted a proposal for the Dak Glong project, which would include a 2-Mt/yr alumina plant and a 600,000-t/yr aluminum plant. In June, the Duc Giang Chemical Group's plan for a \$2.45 billion project was approved; the project was to include three bauxite processing plants with a total capacity of 5.8 Mt/yr, an alumina plant, and a wind power plant in Tuy Duc and Dak Song Districts. The SOVICO Group was awaiting approval to build some bauxite mining facilities and an aluminum processing industrial park, which would comprise an alumina plant, an aluminum electrolysis plant, and a finished products plant; all the facilities would be in Dak Nong Province. During the year, local government agencies in Lam Dong Province approved a plan by Truong Hai Group (formerly Thaco Auto Corp.) to construct a new bauxite mine with a planned production capacity of 1.3 Mt/yr and a 300,000-t/yr alumina plant in Bao Lam District, Lam Dong Province (Tran Kim Phuong, Vietnam Union of Geological Sciences, written commun., December 20, 2020; Dung, 2022; Kinh Doanh Phat triend, 2022; Thanh, 2022).

Iron and Steel.—In 2022, production of pig iron decreased by 18% to 12.4 Mt; raw steel, by 13% to 20.0 Mt; and finished steel products, by 12% to 29.3 Mt. Exports of steel also decreased by 36% to 8.4 Mt. These decreases were likely attributable to low consumption in the domestic real estate market, the increased cost of input materials, and China's zero-COVID policy, which disrupted the supply chain of raw materials originating from China. The Hoa Phat Group was a leading producer, accounting for 42% (2.6 Mt) of the country's production of hot-rolled coil, 35% (4.2 Mt) of steel for construction, and 29% (750,000 t) of steel pipes. In the first quarter of 2022, the company started the Hoa Phat Dung Quat Steel Integrated Complex No. 2 project in Quang Ngai Province to expand its hot-rolled coil production capacity to 8.6 Mt/yr from 5.6 Mt/yr and its raw steel production capacity to more than 14 Mt/yr from 8.5 Mt/yr by 2025. Hoa Sen Group JSC remained the leading producer of galvanized steel in Vietnam in 2022, accounting for a 29% share of the domestic market and a 30% share of the export market (table 1; Vietnam News, 2022a; Hoa Phat Group JSC, 2023, p. 12, 13, 50, 64; Hoa Sen Group JSC, 2023, p. 8, 37; Ngan, 2023; Nam Kim Steel JSC, 2023, p. 57).

In April, Nam Kim Steel JSC decided to start construction of the Nam Kim Phu My coated steel plant at the Dai Duong Industrial Park in Ba Ria-Vung Tau Province; the plant would have the capacity to produce 1.2-Mt/yr of coated steel products. In May, Vina Roma Quang Tri Steel JSC proposed the construction of a 4.5-Mt/yr-capacity iron and steel complex at the Quang Tri Southeast Economic Zone in Quang Tri Province. The company planned to invest \$650 million to build a 1.1-Mt/yr-capacity plant in the first phase of the project, \$390 million to increase the capacity by 1.1 Mt/yr in the second phase, and \$1 billion to increase the capacity by an additional 2.3 Mt/yr in the third phase. In November, the Binh Dinh provincial government approved the construction of a \$2.2 billion steel complex project in Hoai Nhon District by Long Son Phu My Iron & Steel Co. Ltd., which was 100% owned by Long Son Petrochemicals Co. Ltd. The company was to build the first steel mill in the province through three

phases of construction, for a total capacity of 5.4 Mt/yr of steel products. The first phase was expected to be completed in 2024 (Hong, 2022; Rogers, 2022; Vy, 2022).

Iron Ore.—Thach Khe Iron JSC (TIC) had suspended its Thach Khe iron ore mine in Ha Tinh Province since 2011; the Thach Khe Mine was estimated to be the leading iron mine in Southeast Asia, in terms of reserves. In April 2022, TIC published its assessment of the environmental and infrastructure measures needed for the company to transport 5 Mt/yr of iron ore from the Thach Khe Mine to the Vung Ang Port. According to the company's assessment, any environmental impacts of the transport were expected to be alleviated through reuse of water from boreholes, adoption of a mining process that would not use chemicals, and construction of a \$3.7 million Thach Tri water treatment plant. In June, the Prime Minister requested the Ha Tinh provincial government to coordinate with relevant agencies, investors, and scientists to make a thorough feasibility review of the proposed project. Reserves at Thach Khe were estimated to be between 370 and 750 Mt, and the mine life was expected to be from 52 to 80 years (Oanh, 2022; Vietnam News, 2022b).

Nickel.—Ban Phuc Nickel Mines LLC (BPNM), which was 90%-owned by Blackstone Minerals Ltd. of Australia, was in the development phase of an integrated Ta Khoa project in Son La Province. The project would include the Ban Phuc nickel mine and a refinery to produce battery-grade nickel-cobalt-manganese precursor for the lithium-ion battery industry. In December, the company validated the ongoing definitive feasibility study for the project. Updated drilling results at the King Snake massive sulfide vein at Ban Phuc showed grades of up to 4.3% nickel, 4.37% copper, and 18.2 grams per metric ton (g/t) platinum-group elements (PGEs). The drilling work at the Suoi Phang portion of the project, which was located 10 kilometers northwest of King Snake, resulted in grades of 2.42% nickel, 0.52% copper, 0.06% cobalt, and 0.05 g/t PGEs. The project's refinery, which was to be located at Gia Phu, Phu Yen, Son La Province, was expected to start operations in 2025 (table 2; Birney, 2022; Nguyen, 2022; Blackstone Minerals Ltd., 2023).

Rare Earths.—Vietnam's production of rare earths (rare-earth-oxide equivalent) in 2022 increased by approximately 760% to 3,800 t (estimated), and China imported all the production. In 2022, China increased imports of rare earths from Burma, Laos, and Vietnam to provide inexpensive feedstock for China's domestic downstream industries. In December, Vietnam Rare Earth JSC signed a cooperation agreement with Australia Strategic Materials Ltd. (ASM) for the long-term supply of rare earth oxides to provide feedstock to ASM. Vietnam Rare Earth planned to extract ore from the Yen Phu rare earths deposit in Yan Bai Province, which had 30,000 t of rare-earth reserves (rare-earth-element equivalent), and to export between 1,000 and 2,000 t of rare-earth oxides to a metal plant in the Republic of Korea, which would produce high-purity metals, alloys, and powders (table 1; Duc, 2022; Australia Strategic Materials Ltd., 2023; Hui, 2023; Nguyen, 2023; United Nations, 2023; Willing, 2023).

Tungsten.—Production of mined tungsten decreased by 21% to 3,800 t (estimated) in 2022. Masan High-Tech Materials Corp. was in the process shifting its focus from the mining

and processing of minerals to the manufacturing of high-tech materials by 2025. The company submitted a proposal to the Thai Nguyen provincial government for the construction of the Dong Bang Smelter Factory (which would have a production capacity of 12,600 t/yr of tungsten and 450 kilograms per year of gold), a tungsten recycling plant, and a tungsten powder and alloy factory in Vietnam. H.C. Starck Tungsten Powders of Germany, which had been fully owned by Masan High-Tech since 2020, was expected to transport tungsten intermediates (after initial processing of tungsten scarp and waste) to Masan Tungsten Co. in Vietnam to complete the final steps of the recycling process until 2024. In November, Masan High-Tech announced that the ore reserves at the Nui Phao Mine in Thai Nguyen Province were 44.1 Mt and that the remaining mine life would be 12 years according to the drilling results in 2020 and 2021 (table 1; Masan High-Tech Materials Corp., 2022; 2023, p. 5; Vietnam Business Forum, 2022).

Industrial Minerals

Cement.—Vietnam's cement production increased by 6% to 117.6 Mt/yr in 2022. In October, Dai Duong JSC, which was owned by Ocean Mineral Investment JSC, started the construction of the 2.3-Mt/yr-capacity line No. 1 at Nghi Son, Thanh Hoa Province. Long Thanh Cement JSC upgraded the capacity of its cement plant at Tan Tao, Ha Nam Province, to 2.3 Mt/yr from 0.91 Mt/yr. In October, Thaingroup JSC commissioned the 4.5-Mt/yr-capacity Minh Tam cement plant at Hon Quan, Binh Phuoc Province. In December, Siam City Cement Vietnam Co. Ltd., which was owned by Siam City Cement Public Co. Ltd. (SCCC) of Thailand (65%) and the state-owned Vietnam Cement Industry Corp. (VICEM) (35%), launched the construction of a second grinding station mill with a production capacity of 1.3-Mt/yr at the Thi Vai plant in Ba Ria-Vung Tau Province (table 2; CemNet.com, 2018, 2020; Global Cement, 2022b–d).

Vietnam's domestic sales of cement increased by 8% to 67.8 Mt, of which VICEM accounted for 21.4 Mt. VICEM, which was the country's leading cement producer, had 32% of the domestic market share. In 2022, exports of cement decreased by 33.5% to 27.2 Mt compared with an increase of 18% in 2021. Cement exports to China accounted for 35% of the total cement exports in 2022 compared with 63% in 2021, and the Philippines accounted for 30% compared with 18% in 2021. In December, the Philippines' Department of Trade and Industry decided to impose antidumping duties on cement imported from Vietnam. Duties were expected to be from 4% to 28% of the export price of ordinary portland cement and from 3% to 55% of the price of blended cement (table 1; Global Cement, 2022a; CemNet.com, 2023; Zen Innovations AG, 2023).

Outlook

According to the Asian Development Bank, Vietnam's real GDP is forecasted to increase at moderate rates in the next few years owing to the combined effects of China's reopening and recovery following the COVID-19 pandemic. Decreases in trade and FDI inflow are expected to continue in the short term. The mineral industry, however, is expected to expand in the coming years owing to the continued development of the proposed and approved bauxite projects, positive feasibility study results of

and possible subsequent progress on major iron ore and nickel projects, and ongoing expansions and new construction of rare earth, steel, and tungsten projects (Asian Development Bank, 2023, p. 242, 243).

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TABLE 1
VIETNAM: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²		2018	2019	2020	2021	2022
METALS						
Aluminum:						
Bauxite ^e		3,500,000	3,350,000	3,580,000 ^r	3,670,000 ^r	3,750,000
Alumina		1,329,000	1,365,000	1,422,000	1,394,000 ^r	1,426,000
Antimony, mine:						
Gross weight		610	990	780	670 ^r	629
Sb content ^e		240	400	310	270 ^r	250
Bismuth, mine, Bi content		2,590	917	993	2,067	1,938
Copper:						
Mine, concentrates:						
Gross weight		105,000	117,000	123,000	136,000 ^r	139,000
Cu content ^e		26,200	29,200	30,800	33,900 ^r	34,700
Smelter, primary		15,100	19,200	20,300 ^{r,e}	22,300 ^{r,e}	22,800 ^e
Refinery, primary		15,100	19,200	20,300 ^{r,e}	22,300 ^{r,e}	22,800 ^e
Gold, mine, Au content	kilograms	560 ^e	540	550 ^e	600 ^e	600 ^e
Iron ore, mine:						
Gross weight	thousand metric tons	5,588	6,106	3,560	3,084 ^r	1,843
Fe content	do.	2,962	3,236	1,890	1,640 ^r	977
Iron and steel:						
Pig iron	do.	8,323	9,836	12,500	15,000 ^e	12,374
Steel:						
Raw steel	do.	15,471	17,469	19,900	23,019	20,004
Products, rolled	do.	20,239	21,969	31,280	33,300 ^r	29,300
Lead:						
Mine, Pb content ^e		14,500	12,400 ^r	13,900	16,600	20,600
Refinery		32,000	34,000	34,000	35,000	36,000 ^e
Manganese, mine, concentrate:						
Gross weight		267,000	246,000	279,000 ^r	339,000 ^r	362,000
Mn content		115,000	106,000	120,000 ^r	146,000	155,000
Rare earths, mineral concentrate: ³						
Gross weight		1,500	2,200 ^e	1,200 ^e	730 ^e	6,400 ^e
Rare-earth oxide equivalent ^e		920	1,300	690	440	3,800
Tin:						
Mine, Sn content		5,500	5,500	5,400 ^e	5,400 ^e	5,900 ^e
Smelter, primary		4,900	4,800	4,600 ^e	4,600 ^e	5,000 ^e
Titanium, mineral concentrate, ilmenite and leucoxene ⁴		235,100	216,700	268,800	300,000 ^r	331,500
Tungsten, mine, concentrate, W content		4,800	4,500	4,225	4,800 ^r	3,800 ^e
Zinc:						
Mine, Zn content		12,000	12,000	12,000 ^e	12,000 ^e	13,000 ^e
Smelter, primary ^e		10,000	11,000	10,000	10,000	10,000
Zirconium, mineral concentrates ^{e, 5}		11,000	6,200	11,000	31,000 ^r	18,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	89,121	105,533	112,283	111,199 ^r	117,626
Fluorspar		238,702	238,003	219,920	215,027	217,975
Graphite, crystalline flake ^e		1,500	3,500	3,700	1,200	500
Lime ^{e, 5}		697,000	665,000	541,000	591,000	532,000
Nitrogen, ammonia, N content	thousand metric tons	1,100	1,150	1,000	1,220 ^r	1,180
Phosphate rock:						
Gross weight	do.	4,332	4,490	2,022	2,713 ^r	2,514
P ₂ O ₅ content	do.	1,300	1,350	607	814 ^r	754

See footnotes at end of table.

TABLE 1—Continued
VIETNAM: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²		2018	2019	2020	2021	2022
INDUSTRIAL MINERALS—Continued						
Salt	thousand metric tons	997	945	1,135	1,208 [†]	987
Stone, sand and gravel, construction:						
Sand and gravel:						
Gravel, including pebbles	do.	2,977	2,966	2,509	3,529 [†]	5,254
Sand	do.	87,148	86,401	66,106	54,673 [†]	70,113
Stone, crushed	do.	269,516	274,222	214,472	269,400 [†]	265,800
MINERAL FUELS AND RELATED MATERIALS						
Coal	do.	42,384	47,158	44,598	48,316 [†]	49,855
Natural gas	million cubic meters	10,010	10,200	9,160	7,460	8,080
Petroleum:						
Crude	thousand 42-gallon barrels	87,887	80,952	70,740	66,708	65,829
Refinery products ^c	do.	57,600	91,200	84,100	101,000	81,900

^cEstimated. [†]Revised. do. Ditto.

¹Table includes data available through September 5, 2023. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

²In addition to the commodities listed, refined antimony, barite, bentonite, chromite, refractory clay, cobalt, ferroalloys, gemstones, refined gold, granite, gypsum (synthetic), kaolin, lignite, marble, nickel, pyrite, pyrophyllite, silica, silver, sulfur, and vanadium chemicals may have been produced, but available information was inadequate to make reliable estimates of output.

³China's imports from Vietnam.

⁴Estimated figures based on Vietnam's inferred exports of zirconium ore to China.

⁵Partner countries' imports from Vietnam.

TABLE 2
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Alumina	Dak Nong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 91%, and others, 9%]	Nhan Co Aluminium Plant, Dak R'Lap, Dak Nong	720
Do.	Lam Dong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Tan Rai Bauxite Aluminum Complex, Bao Lam, Lam Dong	720
Antimony:			
Mine, Sb content	Ha Giang Mineral and Mechanics JSC	Mau Due Mine, Yen Minh, Ha Giang	1
Refinery	do.	Man Due Refinery, Nguyen Trai, Ha Giang	1
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	1,700
Do.	do.	Nhan Co Mine, Dak R'Lap, Dak Nong	1,800
Bismuth	metric tons Nui Phao Mining Co. Ltd. (NPMC) [Masan High-Tech Materials Corp., 100%]	Nui Phao Mine, Dai Tu, Thai Nguyen	2,100
Cement	An Giang Cement Co.	My Thanh Plant, Long Xuyen, An Giang	400
Do.	Cam Pha Cement JSC [Army Telecommunication Industry Group (Viettel), 100%]	Cam Pha Plant, Cam Pha, Quang Ninh	2,300
Do.	do.	Cam Pha Plant, Tan Thanh, Ba Ria-Vung Tau	1,480
Do.	Can Tho - Hau Giang Cement Co. Ltd.	Can Tho Plant, Chau Thanh, Hau Giang	500
Do.	Cao Ngan Cement JSC	Cao Ngan Plant, Dong Hy, Thai Nguyen	600
Do.	Chinfon Cement Corp. (PT Cemindo Gemilang TBK, 70%, and others, 30%)	Chinfon Plant, Thuy Nguyen, Hai Phong City	4,000
Do.	do.	Hiep Phuoc Plant, Ho Chi Minh City	1,600
Do.	Cong Thanh Cement JSC	Cong Thanh Plant, Tinh Gia, Thanh Hoa	4,500
Do.	do.	Grinding plant, Nhon Trach, Dong Nai	1,000
Do.	Dai Duong JSC (Ocean Minerals Investment JSC)	Dai Dudong Plant, Nghi Son, Thanh Hoa	2,300
Do.	Dong Lam Cement JSC	Dong Lam Plant, Phong Dien, Thua Thien-Hue	2,000
Do.	FiCO Cement JSC (FiCO-YTL)	DIC Binh Duong Plant, Tan Uyen, Binh Duong	300
Do.	do.	FiCO Hiep Phuoc Plant, Nha Be, Ho Chi Minh City	1,000
Do.	do.	FiCO Tay Ninh Plant, Tan Chau, Tay Ninh	1,500
Do.	Ha Tien Cement JSC [Vietnam Cement Industry Corp. (VICEM), 79.7%, and others, 20.3%]	Binh Phuoc Plant, Binh Long, Binh Phuoc	1,200
Do.	do.	Long An Plant, Can Duoc, Long An	500
Do.	do.	Kien Luong Plant, Kien Giang	2,000
Do.	do.	Phu Huu Plant, Ho Chi Minh City	1,000
Do.	He Duong Cement JSC	Ninh Binh Plant, Hoa Lu, Ninh Binh	1,800
Do.	Hoang Phat Vissai Group Co. Ltd.:	Of which:	
	Do Luong Cement JSC	Plant in Do Luong, Nghe An	6,000
Do.	Dong Banh Cement JSC	Dong Banh Plant, Dong Banh, Lang Son	1,000
Do.	Ha Nam Cement JSC	Ha Nam Plant, Thanh Liem, Ha Nam	3,000
Do.	Ninh Binh Cement JSC	Ninh Binh Plant, Gia Vien, Ninh Binh	3,600
Do.	La Hien Cement JSC [VINACOMIN-Viet Bac Mining Industry Corp. (VVMi), 99.8%, and others, 0.2%]	La Hien Plant, Vo Nhai, Thai Nguyen	600
Do.	Long Son Cement Co.	Long Son Plant, Thanh Hoa	4,600
Do.	Long Thanh Cement JSC	Plant in Tan Tao, Ha Nam	2,300
Do.	Luks Cement (Vietnam) Ltd. [Luks Group (Vietnam Holdings) Co. Ltd.]	Kim Dinh Plant, Huong Tra, Thua Thien-Hue; Ninh Thuan Plant, Thuan Bac, Ninh Thuan	2,800
Do.	Mai Son Cement JSC (Northern Cement Trading JSC)	Mai Son Plant, Mai Son, Son La	1,200
Do.	Nghi Son Cement Co. [Taiheiyo Cement Corp., 45.5%; Vietnam Cement Industry Corp. (VICEM), 35%; Mitsubishi Materials Corp., 19.5%]	Nghi Son Plant, Tinh Gia, Thanh Hoa	4,300
Do.	Phuc Son Cement Co. (Lucky Cement Co., 90%, and Hai Duong Cement Co., 10%)	Phuc Son Plant, Kinh Mon, Hai Duong	3,600
Do.	Quan Trieu Cement JSC [VINACOMIN-Viet Bac Mining Industry Corp. (VVMi), 85.2%, and others, 14.8%]	Quan Trieu Plant, Dai Tu, Thai Nguyen	1,000

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(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 JSC	Lam That Plant, Uong Bi, Quang Ninh	1,000
Do.	Quang Son Cement Co. Ltd. [Vietnam Industrial Construction Corp. (VINAINCON)]	Quang Son Plant, Dong Hy, Thai Nguyen	1,500
Do.	Siam City Cement Vietnam Co. Ltd. [Siam City Cement Public Co. Ltd. (SCCC), 65%, and Vietnam Cement Industry Corp. (VICEM), 35%]	Cat Lai Plant, District 2, Ho Chi Minh City	500
Do.	do.	Hiep Phuoc Plant, Thanh Pho, Ho Chi Minh City	1,100
Do.	do.	Hon Chong Plant, Kien Luong, Kien Giang	2,300
Do.	do.	Nhon Trach Plant, Dong Nai	800
Do.	Song Lam Cement JSC [Hoang Phat Vissai Group Co. Ltd., 92.5%, and Philtcement Corp. (Phinma Group), 7.5%]	Song Lam Plant, Du Long, Nghe An	3,600
Do.	Tan Quang Cement JSC [VINACOMIN-Viet Bac Mining Industry Corp. (VVM)]	Tan Quang Plant, Trang Da, Tuyen Quang	910
Do.	Tan Thang Cement JSC	Thai Nguyen Plant, Quynh Luu, Nghe An	2,000
Do.	Tay Do Cement JSC	Ha Tien 2 Plant, Can Tho City	1,400
Do.	Thaigroup JSC (formerly Xuan Thanh Group)	Ha Nam Plant, Thanh Liem, Ha Nam	5,500
Do.	do.	Minh Tam Plant, Hon Quan, Binh Phuoc	4,500
Do.	do.	Thach My Plant, Nam Giang, Quang Nam	1,700
Do.	Thang Long Cement JSC (PT Semen Indonesia, 70%, and others, 30%)	Hiep Phuoc Plant, Nha Be, Ho Chi Minh City; Thang Long Plant, Ha Long, Quang Ninh	2,300
Do.	Thanh Thang Cement Corp.	Thanh Thang Plant, Thanh Liem, Ha Nam	1,750
Do.	Trung Son Cement JSC	Trung Son Plant, Luong Son, Hoa Binh	910
Do.	Tuyen Quang Cement JSC	Tuyen Quang Plant, Yen Son, Tuyen Quang	210
Do.	Vietnam Cement Industry Corp. (VICEM):	Of which:	
	Bim Son Cement JSC	Bim Son Plant, Bim Son, Thanh Hoa	3,800
Do.	But Son Cement JSC	But Son Plant, Thanh Son, Ha Nam	3,000
Do.	Ha Long Cement JSC	Ha Long Plant, Ha Long, Quang Ninh	2,000
Do.	Hai Phong Cement Co.	Hai Phong Plant, Thuy Nguyen, Hai Phong	1,400
Do.	Hai Van Cement JSC	Hai Van Plant, Lien Chieu, Da Nang City	500
Do.	Hoang Mai Cement JSC	Hoang Mai Plant, Quynh Luu, Nghe An	1,400
Do.	Hoang Thach Cement Co. Ltd.	Hoang Thach Plant, Kinh Mon, Hai Duong	3,200
Do.	Song Thao Cement JSC	Song Thao Plant, Thanh Ba, Phu Tho	910
Do.	Tam Diep Cement Co.	Tam Diep Plant, Tam Diep, Ninh Binh	1,400
Do.	Vietnam Construction Materials JSC (Siam Cement and Building Materials Co. Ltd., 100%)	Song Gianh Plant, Tuyen Hoa, Quang Binh	2,000
Do.	do.	Van Hoa Plant, Tuyen Hoa, Quang Binh	1,800
Do.	X18 Cement JSC	Cement X18 Plant, Hoa Binh	380
Do.	Yen Bai Cement and Minerals JSC	Yen Bai Plant, Yen Binh, Yen Bai	350
Chromite, gross weight	Thai Nguyen Nonferrous Metals JSC [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%, and others, 49%]	Mine in Nui Nua, Thanh Hoa	10
Do.	NA	Co Dinh Mine, Nong Cong, Thanh Hoa	NA
Coal	PT Vietmindo Energitama	Dong Vong Mine, Uong Bi, Quang Ninh	350
Do.	do.	Uong Thuong Mine, Ha Long, Quang Ninh	350
Do.	Vietbac Mining Industry Holding Corp. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Khanh Hoa Mine, Thanh Pho, Thai Nguyen	800
Do.	do.	Na Duong Mine, Loc Binh, Lang Son	1,200
Do.	do.	Nui Hong Mine, Dai Tu, Thai Nguyen	500
Do.	Vietnam National Coal and Mineral Industries Group (VINACOMIN):	Of which:	
	Cao Son Coal JSC	Cao Son Mine, Van Don, Quang Ninh	6,400
Do.	Coc Sau Coal JSC	Coc Sau Mine, Van Don, Quang Ninh	1,900
Do.	Deo Nai Coal JSC	Deo Nai Mine, Cam Pha, Quang Ninh	2,500
Do.	Duong Huy Coal Co.	Duong Huy Mine, Cam Pha, Quang Ninh	2,200
Do.	Ha Lam Coal JSC	Ha Lam Mine, Ha Long, Quang Ninh	2,400

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c	
Coal—Continued	Vietnam National Coal and Mineral Industries Group (VINACOMIN):	Of which:		
	Ha Long Coal Co.	Khe Cham Mine, Van Don, Quang Ninh	1,800	
Do.	Ha Tu Coal JSC	Ha Tu Mine, Thanh Pho Ha Long, Quang Ninh	2,500	
Do.	Hon Gai Coal Co.	Giap Khau Mine, Ha Long, Quang Ninh	2,200	
Do.	Khe Cham Coal Ltd. Co.	Khe Cham Mine, Cam Pha, Quang Ninh	1,700	
Do.	Mao Khe Coal Co.	Mao Khe Mine, Dong Trieu, Quang Ninh	2,100	
Do.	Mong Duong Coal JSC	Mong Duong Mine, Van Don, Quang Ninh	1,600	
Do.	Nam Mau Coal Co.	Nam Mau Mine, Uong Bi, Quang Ninh	2,000	
Do.	Nui Beo Coal JSC	Nui Beo Mine, Ha Long, Quang Ninh	1,400	
Do.	Thong Nhat Coal Co.	Thong Nhat Mine, Cam Pha, Quang Ninh	1,900	
Do.	Quang Hanh Coal Co.	Nga Hai Mine, Cam Pha, Quang Ninh	3,100	
Do.	Uong Bi Coal Co.	Tan Dan Mine, Uông Bí City, Quang Ninh	2,700	
Do.	Vang Danh Coal JSC	Vang Dahn Coal Mine, Uong Bi, Quang Ninh	4,300	
Cobalt, mine, Co content	Ban Phuc Nickel Mines LLC (Blackstone Minerals Ltd., 90%, and Son La Mechanical Engineering JSC, 10%)	Ban Phuc nickel mine, Bac Yen, Son La	NA	
Copper:				
Mine, Cu content	do.	do.	4	
Do.	Dong Ta Phoi JSC	Ta Phoi Mine, Lao Cai	10	
Do.	Nui Phao Mining Co. Ltd. (NPMC) [Masan High-Tech Materials Corp., 100%]	Nui Phao Mine, Dai Tu, Thai Nguyen	10	
Do.	Sin Quyen-Lao Cai Copper Mining Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Sin Quyen copper mine, Ban Vuoc and Coc My, Bat Xat, Lao Cai	30	
Refined	Lao Cai Copper Refining Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Lao Cai copper refining factory, Tang Loong Industrial Park, Bao Thang, Lao Cai	10	
do.	do.	Lao Cai copper refining factory 2, Ban Qua, Bat Xat, Lao Cai	20	
do.	LiOA Electrical Equipment Co. Ltd.	Factory in Van Lam, Hung Yen; Factory in Bien Hoa, Dong Nai	40	
Ferrous alloys:				
Ferromanganese	Vietnam Hai Duong New Resources Metallurgy Shareholding Co. (Golden Resources International Group Corp., 80%, and others, 20%)	Plant in Phu Thu, Kinh Mon, Hai Duong	45	
Ferrotungsten, W content	metric tons Asia Tungsten Products (Vietnam) Ltd. (ATC) (Asia Tungsten Products Co. Ltd., 100%)	Plant in Tan Tien Industrial Zone, Vinh Bao, Hai Phong City	4,000	
Fluorspar	Nui Phao Mining Co. Ltd. (NPMC) [Masan High-Tech Materials Corp., 100%]	Nui Phao Mine, Dai Tu, Thai Nguyen	220	
Gas, natural	million cubic meters Cuu Long Joint Operating Co. [PetroVietnam Exploration Production Corp. Ltd. (PVEP), 50%; Perenco plc, 23.25%; Korea National Oil Corp., 14.25%; SK Erathon Co. Ltd., 9%; Geopetrol SA, 3.5%]	Su Tu offshore oilfields (Su Tu Den, Su Tu Nau, Su Tu Trang, and Su Tu Vang) (Block 15-1), Cuu Long Basin	740	
Do.	do.	Idemitsu Gas Production (Vietnam) Co. Ltd. (operator), 43.08%; INPEX Con Son Co. Ltd., 36.92%; Vietnam National Oil and Gas Group (PetroVietnam), 20.00%	Sao Vang and Dai Nguyet offshore gasfields (Block 5-1b and 5-1c)	1,160
Do.	do.	Japan Vietnam Petroleum Co. Ltd. (operator), 64.5%, and PetroVietnam Exploration Production Corp. Ltd. (PVEP), 35.5%	Phuong Dong offshore oilfield (Block 15-2), Cuu Long Basin	30
Do.	do.	Japan Vietnam Petroleum Co. Ltd. (operator), 38.35%; Batavia Oil B.V., 30.5%; PetroVietnam Exploration Production Corp. Ltd. (PVEP), 30%	Rang Dong offshore oilfield (Block 15-2), Cuu Long Basin	30
Do.	do.	Korean consortium [Korea National Oil Corp. (operator), 39.75%, and LG International Corp., Daesung Industrial Co. Ltd., Posco Daewoo Corp., Hyundai Corp., and Seoul City Gas Co. Ltd., 35.25%], and Vietnam Oil and Gas Group (PetroVietnam) (25%)	Rong Doi offshore gasfield (Block 11-2), Nam Con Son Basin	1,200

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Gas, natural—Continued	million cubic meters	ONGC Videsh Ltd., 45%; Zarubezhneft EP Vietnam B.V. (operator), 35%; Vietnam National Oil and Gas Group (PetroVietnam), 20%	Lan Do and Lan Tay offshore gasfields (Block 6–1), Nam Con Son Basin	4,200
Do.	do.	VietSovPetro (Vietnam Oil and Gas Group, 51%, and Zarubezhneft JSC, 49%)	Bach Ho and Rong offshore oilfields (Block 9–1), Cuu Long Basin	90
Gold:				
Mine, Au content	kilograms	Bong Mieu Gold Mining Co. Ltd. (Olympus Pacific Minerals Inc., 80%; Mineral Development Co., 10%; Quang Nam Mineral JSC, 10%)	Bong Mieu open-pit and underground mine, Phu Ninh, Quang Nam ¹	510
Do.	do.	Lao Cai Gold JSC [VINACOMIN - Minerals Holding Corp. (VIMICO), 46%, and others, 54%]	Minh Luong Mine, Van Ban, Lao Cai ²	610
Do.	do.	Phuoc Son Gold Co. Ltd. (Olympus Pacific Minerals Inc., 85%, and Mien Trung Industrial Co., 15%)	Phuoc Son Mine, Phuoc Son, Quang Nam ²	1,360
Refined	do.	Lao Cai Copper Refining Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Lao Cai copper refining factory, Tang Loong Industrial Park, Bao Thang, Lao Cai	340
do.	do.	do.	Lao Cai copper refining factory 2, Ban Qua, Bat Xat, Lao Cai	1,000
Graphite		Song Da Lao Cai Mining JSC	Nam Thi Mine, Bao Yen, Lao Cai	NA
Do.		Vietnam Graphite Group	Mine in Yen Thai, Van Yen, Yen Bai	40
Do.		do.	Floatation plant in Bao Dap, Tran Yen, Yen Bai	24
Gypsum, synthetic		Dong Son Resources Co. Ltd.	Plant in Bao Dap, Tran Yen, Yen Bai	48
Iron ore, mine, Fe content		An Thong Mineral Investment JSC (Hoa Phat Group JSC, 100%)	Mine in Tran Phu, Ha Giang	190
Do.		Thai Nguyen Black Metallurgical JSC	Chom Vung Tay Mine, Dong Hy, Thai Nguyen	NA
Do.		Thai Nguyen Iron and Steel Corp. (TISCO) [Vietnam Steel Corp. (VNSTEEL), 100%]	Nguom Chang Mine, Hoa An, Cao Bang	177
Do.		do.	Phuc Ninh Mine, Yen Son, Tuyen Quang	40
Do.		do.	Tien Tien Mine, Dong Hy, Thai Nguyen	600
Do.		do.	Trai Cau Mine, Dong Hy, Thai Nguyen	180
Do.		Viet Trung Metallurgy and Mineral Co. Ltd. (Kunming Iron and Steel Group, 45%; Vietnam Steel Group, 45%; provincial government, 10%)	Quy Xa Mine, Van Ban, Bao Thang, Lao Cai	530
Lead:				
Mine, concentrate, Pb content		Bac Kan Nonferrous Metal One Member LLC (Thai Nguyen Nonferrous Metal JSC, 100%)	Cho Dien lead-zinc mine, Ban Thi, Cho Don, Bac Kan	17
Refinery		Thye Ming (Vietnam) Industrial Co. Ltd.	Ben Cat refinery, Binh Duong	40
Lime		No. 18 Son Ha Minerals Co. Ltd.	Plant in Thanh Son, Kim Bang, Ha Nam	240
Manganese:				
Ore, gross weight		Cao Bang Manganese Industry JSC (CAMICO), 74.6%, and Danka Minerals JSC, 25.4%	Toc Tat Mine, Quang Trung, Tra Linh, Cao Bang	NA
Do.		Phuc Son Manganese, Mineral, and Mechanics JSC	Mine in Chiem Hoa, Tuyen Quang	NA
Manganese alloys		Cao Bang Manganese Industry JSC (CAMICO), 74.6%, and Danka Minerals JSC, 25.4%	Plant in Cao Bang	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 Town, Kinh Mon, Hai Duong	150
Nickel, mine, Ni content	metric tons	Ban Phuc Nickel Mines LLC (Blackstone Minerals Ltd., 90%, and Son La Mechanical Engineering JSC, 10%)	Ban Phuc nickel mine, Son La	44
Nitrogen, ammonia		Ha Bac Fertilizer and Chemical JSC [Vietnam National Chemical Group (VINACHEM), 100%]	Ha Bac fertilizer plant, Tho Xuong, Bac Giang	240
Do.		PetroVietnam Fertilizer and Chemicals Corp. JSC (PVFCCo) [Vietnam Oil and Gas Group (PetroVietnam), 59.59%, and others, 40.41%]	Phu My fertilizer plant, Phu My, Ba Ria-Vung Tau	540

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^e
Petroleum:				
Crude, including condensate	thousand 42-gallon barrels	Chim Sao Crude Oil [Harbour Energy plc (operator), 53.13%; PT Medco Daya Abadi Lestari, 31.87%; Vietnam Oil and Gas Group (PetroVietnam), 15%]	Chim Sao and Dua offshore oilfields (Block 12W), Nam Con Son Basin	1,460
Do.	do.	Cuu Long Joint Operating Co. [PetroVietnam Exploration Production Corp. Ltd. (PVEP), 50%; Perenco plc, 23.25%; Korea National Oil Corp., 14.25%; SK Innovation, 9%; Geopetrol SA, 3.5%]	Su Tu offshore oilfields (Su Tu Den, Su Tu Nau, Su Tu Trang, and Su Tu Vang) (Block 15–1), Cuu Long Basin	13,500
Do.	do.	Idemitsu Gas Production (Vietnam) Co. Ltd. (operator), 43.08%; INPEX Con Son Co. Ltd., 36.92%; Vietnam Oil and Gas Group (PetroVietnam), 20.00%	Sao Vang and Dai Nguyet offshore gasfields (Block 5–1b and 5–1c)	1,500
Do.	do.	Japan Vietnam Petroleum Co. Ltd. (operator), 64.5%, and PetroVietnam Exploration Production Corp. Ltd. (PVEP), 35.5%	Phuong Dong offshore oilfield (Block 15–2), Cuu Long Basin	650
Do.	do.	Japan Vietnam Petroleum Co. Ltd. (operator), 38.35%; Batavia Oil B.V., 30.5%; PetroVietnam Exploration Production Corp. Ltd. (PVEP), 30%	Rang Dong offshore oilfield (Block 15–2), Cuu Long Basin	650
Do.	do.	ONGC Videsh Ltd., 45%; Zarubezhneft EP Vietnam B.V. (operator), 35%; Vietnam Oil and Gas Group (PetroVietnam), 20%	Lan Tay and Lan Do offshore oilfields (Block 6–1), Nam Con Son Basin	59,400
Do.	do.	VietSovPetro JVC [Vietnam Oil and Gas Group (PetroVietnam), 51%, and Zarubezhneft JSC, 49%]	Bach Ho and Rong offshore oilfields (Block 9–1), Cuu Long Basin	23,000
Do.	do.	VietSovPetro JVC [Vietnam Oil and Gas Group (PetroVietnam), 58.05%; Zarubezhneft JSC, 26.95%; Bitexco Group, 15%]	Ca Tam oilfield (Block 9–3/12), Cuu Long Basin	3,300
Refined	do.	Binh Son Refining and Petrochemical JSC [Vietnam Oil and Gas Group (PetroVietnam), 100%]	Dung Quat refinery, Quang Ngai	58,000
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 (PetroVietnam), 25.1%; Mitsui Chemicals Inc., 4.7%]	Refinery in Nghi Son Economic Zone, Thanh Hoa	73,000
Phosphate rock, gross weight		Vietnam Apatite One Member Co. Ltd. (VINAAPACO) [Vietnam National Chemical Corp. (VNCC), 100%]	Lao Cai Mine and Bac Nhac Son processing plant, Lao Cai	1,000
Rare earths:				
Concentrate	metric tons	Dong Pao Rare Earth Development Co. (Sojitz and Toyota Tsusho Corp., and Lai Chau-VIMICO-Rare Earth JSC)	Dong Pao rare earth mine, Ban Hon, Tam Duong, Lai Chau	1,000
Do.	do.	Thai Duong Group	Mine in Yen Bai	NA
Refined	do.	Shin-Etsu Magnetic Minerals Vietnam Co. Ltd. (Shin-Etsu Chemical Co. Ltd., 100%)	Plant in Dinh Vu Industrial Park, Hai Phong City	2,200
Do.	do.	Vietnam Rare Earth Co. Ltd. (VERX) [Shenghe Resources (Singapore), 90%, and Seidou, 10%]	Plant in Bac Ninh Industrial Zone, Bac Ninh	1,000
Do.	do.	Vietnam Rare Earth JSC (VTRE)	Plant in Lao Cau, Phu Ly City, Ha Nam	4,000
Silica		Cam Ranh FICO Sand Co. (FICO Corp. JSC, 100%)	Thuy Trieu sand deposit, Cam Lam, Khanh Hoa	500
Do.		Vico Mining Co. Ltd. [Vietnam Export Import Service & Investment JSC (VICOSIMEX), 100%]	Sand deposit in Phong Binhm Phong Dien, Thua Thien-Hue	185
Do.		Viglacera Van Hai JSC (Viglacera Corp., 95.02%)	Van Hai sand deposit, Quang Ninh	200
Do.		Viet Phuong Group	Phong Dien sand deposit, Thua Thien-Hue	1,000
Silver, refined	kilograms	Lao Cai Copper Refining Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Lao Cai copper refining factory, Tang Loong Industrial Park, Bao Thang, Lao Cai	150
Do.	do.	do.	Lao Cai copper refining factory 2, Ban Qua, Bat Xat, Lao Cai	1,000

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Steel:			
Raw steel	Cao Bang Iron and Steel JSC [VINACOMIN - Mineral Holding Corp. (VIMICO), 100%]	Billet plant, Cao Bang City, Cao Bang	220
Do.	Formosa Ha Tinh Steel Corp. (FHS) (Formosa Plastic Group, 50%; China Steel Holding, 20%; JFE Steel Corp., 5%; others, 25%)	Plant in Vung Ang Economic Zone, Ky Anh, Ha Tinh	7,100
Do.	Hoa Phat Dung Quat Steel JSC (Hoa Phat Group JSC, 99.2%, and others, 0.8%)	Steel integrated complex, Binh Son, Quang Ngai	5,600
Do.	Hoa Phat Hai Duong Steel JSC (Hoa Phat Group JSC, 85%; ACB Hanoi Investment JSC, 10%; others, 5%)	Steel integrated complex, Kinh Mon, Hai Duong	2,500
Do.	Hoa Phat Hung Yen Steel Co. Ltd. (Hoa Phat Group JSC, 100%)	Plant in Yen My, Hung Yen	350
Do.	Pomina Steel JSC (ThiepViet Co. Ltd., 52.11%, and others, 47.89%)	Plant in Phu My Industrial Park, Tan Thanh, Ba Ria-Vung Tau	1,500
Do.	Posco Yamato Vina Steel JSC (PYVINA) (Posco Holdings Inc., 51%; Yamato Kogyo Co. Ltd., 30%; Siam Yamato Steel Co. Ltd., 19%)	Billet plant, Phu My 2 Industrial Zone, Ba Ria-Vung Tau	1,000
Do.	Shengli Vietnam Special Steel Co. Ltd. [Fujian Shengli Intelligence Industrial Technology Co. Ltd., and Guangdong Metals and Minerals Import & Export Corp.]	Billet plant, Cau Nghin Industrial Park, Quynh Phu, Thai Binh	700
Do.	Vietnam Italy Steel JSC (Kyoiei Steel Ltd., 73.8%; Thai Hung Trading JSC, 20%; others, 6.2%)	Billet plant, Nam Cau Kien Industrial Zone, Thuy Nguyen, Hai Phong City	550
Do.	Vietnam Steel Corp. (VNSTEEL) (Government, 100%): Da Nang Steel JSC	Of which: Billet plant, Lien Chieu, Da Nang City	100
Do.	Nha Be Steel JSC-VNSTEEL	Billet plant, Nhon Trach, Dong Nai City	150
Do.	Southern Steel One Member LLC-VNSTEEL	Billet plant, Phu My, Ba Ria-Vung Tau	500
Do.	Thu Duc Steel JSC-VNSTEEL	Billet plant, Thu Duc, Ho Chi Minh City	50
Do.	Viet Trung Metallurgy and Mineral Co. Ltd. (VTM)	Lao Cai iron and steel plant, Bao Thang, Lao Cai	500
Products	China Steel and Nippon Steel Vietnam JSC (CSVC) [China Steel Corp., 56%; Nippon Steel Corp., 30%; Formosa Ha Tinh Steel Corp. (FHS), 5%; Nippon Steel Trading Corp., 5%; others, 4%]	Sheet steel mill, Phu My, Ba Ria-Vung Tau	1,200
Do.	Formosa Ha Tinh Steel Corp. (FHS) (Formosa Plastic Group, 70%; China Steel Holding, 25%; JFE Steel Corp., 5%)	Hot-rolled coil plant, Vung Ang Economic Zone, Ky Anh, Ha Tinh	5,100
Do.	Hoa Phat Dung Quat Steel JSC (Hoa Phat Group JSC, 99.2%, and others, 0.8%)	Iron and steel integrated complex, Dung Quat Economic Zone, Quang Ngai	5,000
Do.	Hoa Phat Hai Duong Steel JSC (Hoa Phat Group JSC, 85%; ACB Hanoi Investment JSC, 10%; others, 5%)	Iron and steel integrated complex, Kinh Mon, Hai Duong	2,500
Do.	Hoa Phat Hung Yen Steel Co. Ltd. (Hoa Phat Group JSC, 100%)	Bar and wire plant, Nhu Quynh Industrial Park, Hung Yen	400
Do.	Hoa Sen Group JSC: Branch of Hoa Sen Group JSC	Of which: Steel sheet plant in Phu My, Ba Ria-Vung Tau	1,200
Do.	Hoa Sen Nghe An One Member LLC	Plant in Hoang Mai, Nghe An	1,000
Do.	Hoa Sen Nhon Hoi - Binh Dinh One Member LLC	Plant in Hoang Sa, Binh Dinh	1,000
Do.	Hoa Sen Steel Sheet One Member Co. Ltd.	Binh Duong steel sheet plant, Di An, Binh Duc	1,200
Do.	Kyoiei Steel Vietnam Co. Ltd. (Kyoiei Steel Singapore Corp. Pte. Ltd., 100%)	Plant in Tam Diep, Ninh Binh	450
Do.	Nam Kim Steel JSC	3 plants in Binh Duong, and 1 plant in Ben Luc, Long An	1,400
Do.	Nippon Steel Corp.	3 plants in Que Vo, Bac Ninh; Phu My, Ba Ria-Vung Tau; and Soc Son, Hanoi	100
Do.	Pomina Steel JSC	Plant 1, Di An, Binh Duong, and Plant 2, Tan Thanh, Ba Ria-Vung Tau	1,100

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c	
Steel:—Continued				
Products—Continued	Posco Yamato Vina Steel JSC (PYVINA) (Posco Holdings Inc., 51%; Yamato Kogyo Co. Ltd., 30%; Siam Yamato Steel Co. Ltd., 19%)	Rolled steel plant, Phu My 2 Industrial Zone, Ba Ria-Vung Tau	500	
Do.	Posco-Vietnam Co. Ltd.	Cold-rolled steel sheet plant, Phu My, Tan Thanh, Ba Ria-Vung Tau	1,200	
Do.	Posco Vietnam Stainless Steel Corp. (Posco-VST) (Posco Holdings Inc., 100%)	Cold-rolled stainless-steel plant, Nhon Trach 1 Industrial Zone, Nhon Trach, Dong Nai	250	
Do.	Shengli Vietnam Special Steel Co. Ltd. (Fujian Shengli Intelligence Industrial Technology Co. Ltd., and Guangdong Metals and Minerals Import & Export Corp.)	Bar & wire rod plant, Cau Nghin Industrial Park, Anbai, Quynh Phu, Thai Binh	800	
Do.	Thai Nguyen Iron and Steel JSC (TISCO) [Vietnam Steel Corp. (VNSTEEL), 100%]	Plant in Cam Gia, Thai Nguyen	1,000	
Do.	Ton Dong A Corp.	Galvanized sheet plant, Song Than Industrial Zone, Di An, Binh Duong	250	
Do.	do.	Thu Dau Mot sheet plant, Dong An, Ben Cat, Binh Duong	800	
Do.	Vietnam American Steel Corp. (VAS)	An Hung Tuong steel plant, Thanh Hoa	500	
Do.	Vietnam Italy Steel JSC (VIS) (Kyoei Steel Ltd., 67.7%, and others, 32.3%)	Rolling mill in Pho Noi A Industrial Zone, Giai Pham, Yen My, Hung Yen	350	
Do.	Vietnam Shipbuilding Industry Group (VINASHIN)	Cai Lan steel plate hot-rolling plant, Ha Long, Quang Ninh	1,000	
Do.	Vietnam Steel Corp. (VNSTEEL) (Government, 100%); Da Nang Steel JSC	Of which: Mill plant, Lien Chieu, Da Nang City	100	
Do.	Nha Be Steel JSC-VNSTEEL	Mill plant, Nhon Trach, Dong Nai City	180	
Do.	Southern Steel One Member LLC-VNSTEEL	Mill plant, Phu My, Ba Ria-Vung Tau	400	
Do.	Thu Duc Steel JSC-VNSTEEL	Mill plant, Thu Duc, Ho Chi Minh City	150	
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	1,000	
Do.	Vina One Steel Manufacturing Corp.	Plant in Ben Luc, Long An	1,200	
Tin:				
Mine, concentrate, Sn content	metric tons	Cao Bang Minerals & Metallurgy JSC	Tinh Tuc tin mine, Tinh Tuc, Cao Bang	150
Do.	do.	Nghe Tinh Nonferrous Metals JSC (Thai Nguyen Import Export JSC, 27.26%, and others, 72.74%)	Suoi Bac tin mine, Quy Hop, Nghe An	1,500
Do.	do.	VQB Mineral and Trading Group JSC	Mine in Ha Giang	1,500
Smelter	do.	An Vinh Joint Stock Mineral Processing Co.	Smelter in Quy Hop, Nghe An	NA
Do.	do.	Cao Bang Minerals & Metallurgy JSC	Electro-Mechanical Facility, Tinh Tuc, Nguyen Binh, Cao Bang	150
Do.	do.	Thai Nguyen Mining and Metallurgy Co. Ltd. [Institute of Mining and Metallurgy Science and Technology (VIMLUKI)]	Smelter in Thai Nguyen, Thai Nguyen	540
Do.	do.	Tuyen Quang Non-Ferrous Metals JSC [Doanh Tri Co. Ltd., 53.78%, and VINACOMIN - Minerals Holding Corp. (VIMICO), 46.22%]	Smelter in Trang Da, Tuyen Quang,	NA
Do.	do.	VQB Mineral and Trading Group JSC	Smelter in My Hao, Hung Yen	1,000
Titanium, ilmenite				
Do.	Bimal Minerals Co. Ltd. [Malaysia Mining Corp. and Syarikat Pendorong Sdn. Bhd., 60%, and Binh Dinh Minerals JSC (BIMICO), 40%]	Mines in Cat Khanh and Qui Nhon, Binh Dinh	60	
Do.	Ha Tinh Minerals and Trading Corp. JSC (MITRACO)	Mines in Cam Hoa, Khanh Hoa; Cam Xuyen and Ky Anh, Ha Tinh	450	
Do.	Hung Thinh Minerals Investment Co. Ltd.	Mines in Binh Thuan	100	
Do.	Quang Tri Mineral JSC	Mine in Vinh Linh, Quang Tri	NA	

See footnotes at end of table.

TABLE 2—Continued
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Tungsten:				
Concentrates, W content	metric tons	Nui Phao Mining Co. Ltd. (NPMC) [Masan High-Tech Materials Corp., 100%]	Nui Phao Mine, Thai Nguyen	4,000
Smelter, WO ₃ content	do.	Masan Tungsten Co. [Masan High-Tech Materials Corp., 100%]	Ammonium paratungstate plant, Nui Phao, Dai Tu, Thai Nguyen	11,000
Do.	do.	Tungsten Vietnam JSC	Sodium tungstate plant, Song Cong, Thai Nguyen	NA
Vanadium, chemical	do.	Tejing (Vietnam) Tungsten Co. Ltd.	Plant in Trang Bang, Tay Ninh	9,300
Zinc:				
Mine, concentrate		Bac Kan Nonferrous Metal One Member LLC (Thai Nguyen Nonferrous Metal JSC, 100%)	Cho Dien lead-zinc mine, Ban Thi, Cho Don, Bac Kan	18
Refined		Thai Nguyen Electrolytic Zinc Factory (Thai Nguyen Nonferrous Metal JSC, 100%)	Zinc electrolytic plant, Song Cong, Thai Nguyen	12
Zirconium:				
Concentrate	metric tons	Bimal Minerals Co. Ltd. [Malaysia Mining Corp. and Syarikat Pendorong Sdn. Bhd., 60%, and Binh Dinh Minerals JSC (BIMICO), 40%]	Mines in Cat Khanh and Qui Nhon, Binh Dinh	2,500
Do.		Ha Tinh Minerals and Trading Corp. JSC (MITRACO)	Mines in Cam Hoa, Khanh Hoa; Cam Xuyen and Ky Anh, Ha Tinh	NA
Do.		Hung Thinh Minerals Investment Co. Ltd.	Mines in Binh Thuan	NA
Do.		Quang Tri Mineral JSC	Mine in Vinh Linh, Quang Tri	NA
Chemical	metric tons	Vietnam Rare Elements Chemical JSC (VREC) (Daiichi Kigenso Kagaku Kogyo Co. Ltd., 100%)	Zirconium oxychloride plant, Ba Ria-Vung Tau	13,300

^cEstimated. Do., do. Ditto. NA Not available.

¹Closed in 2022.

²On care-and-maintenance status in 2022.

**First-order administrative division names conform to spellings in the U.S. Central Intelligence Agency's "The World Factbook" (<https://www.cia.gov/the-world-factbook/field/administrative-divisions/>) and may include the use of anglicized forms of the names.