



# 2017–2018 Minerals Yearbook

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## VIETNAM

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# THE MINERAL INDUSTRY OF VIETNAM

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

In 2017, Vietnam was the second-ranked producer of tungsten in the world, accounting for 8.0% of the world's production and 3.0% of the world's reserves. Vietnam was the fourth-ranked producer of fluorspar, accounting for 4.2% of global production and 1.9% of world reserves. Vietnam was the fifth-ranked producer of cement, accounting for 1.9% of global production; the seventh-ranked producer of rare earths, with 0.53% of global production and 18.3% of world reserves; and the ninth-ranked producer of bauxite, with 0.78% of global production and 12.3% of world reserves. Other minerals produced in the country included antimony, coal, natural gas, lead, manganese, phosphate rock, salt, tin, titanium minerals (ilmenite and leucocene), and zircon. 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 is in table 1 (Bray, 2018, 2019; Gambogi, 2018, 2019; Shedd, 2018, 2019; Singerling, 2018; McRae, 2019; van Oss, 2019).

## Minerals in the National Economy

The real gross domestic product (GDP) increased by 6.8% in 2017. The nominal GDP increased to \$224 billion<sup>1</sup> in 2017 from \$205 billion in 2016. The growth in the industrial and construction sectors was 8.0%; the service sector, 7.4%; and the agriculture sector, 2.9%. The manufacturing and construction subsectors accounted for 17% and 6.3% of the GDP, respectively, in 2017, and increased by 14% and 8.7%, respectively, compared with that of 2016. The mining subsector accounted for 6.6% of the GDP in 2017 and decreased by 7.1% compared with that of 2016, mainly because of decreases in the production of crude petroleum and coal. The mining and quarrying sector, which included mineral fuels and nonfuel minerals, maintained its output value of \$16.7 billion in 2017. The total estimated nominal GDP accounted for by the mining and quarrying sector decreased to 7.5% from 8.1% in 2016 (General Statistics Office of Vietnam, 2018b, p. 167, 171, 173, 174, 178).

## Government Policies and Programs

The Vietnamese National Assembly adopted a new mineral law (2010 Mineral Law) in November 2010. It became effective as of July 2011 and replaced the 1996 Mineral Law (as amended in 2005). The 2010 Mineral Law supplemented the existing legal framework for mineral exploration and extraction, streamlined the licensing process, and imposed more stringent

financial conditions that must be satisfied to obtain mineral licenses (Thao and Harrison, 2017).

In March 2017, Decree No. 04/2017/ND-CP (Decree 4) replaced Decree No. 15/2011/ND-CP (Decree 15), which guaranteed the Government's financial support for 21 power projects and 2 mining projects. Decree 4 requires borrowers to satisfy additional financial obligations for the Government to support projects by issuing a Government Guarantee and Undertaking (Harrison, 2017).

In August 2017, the Deputy Prime Minister of Vietnam indicated that amendments to several laws would be approved. Among these were amendments to the law on value-added tax (VAT), in which exports "derived from natural resources or minerals where the total value of natural resources or minerals plus energy costs makes up at least 51% of the prime cost will be subject to [a] VAT" (Laws in Vietnam, 2017). However, natural resource extraction and mineral resource extraction projects licensed on or after July 1, 2016, or projects for investing in the production of goods produced from natural resources or minerals "where the total value of natural resources or minerals plus energy costs makes up at least 51% of the prime cost" are entitled to a VAT refund (Laws in Vietnam, 2017).

In November 2017, the Government issued Decree No. 126/2017/ND-CP (Decree 126), which replaced Decree No. 59/2011/ND-CP and went into effect on January 1, 2018. The Decree regulates the privatization of state-owned enterprises, when needed (Harrison and Nguyen, 2017).

## Production

In 2017, metallic mineral production increased for lead (Pb content), by 463%; bauxite, 97%; alumina, 76%; pig iron, 63%; manganese (Mn content), 53%; raw steel, 47%; copper (smelter and refinery), 44% each; rolled steel products, 24%; and bismuth, 22%. Zircon production decreased by 43%, and nickel was not produced in 2017. For industrial minerals, production of phosphate rock (gross weight) and nitrogen (ammonia, N content) increased by 46% and 13%, respectively. Decreased production was reported for salt, by 34% and barite, 13%. For mineral fuel, estimated production of jet fuel increased by 24%; gasoline, 23%; and liquefied petroleum gas, 21%. Decreased production was reported for diesel, estimated by 16%, and crude petroleum, 10%. Data on mineral production are in table 1.

## Structure of the Mineral Industry

The mineral industry is dominated by state-owned enterprises, such as Vietnam National Coal and Mineral Industries Holding Corp. Ltd. (VINACOMIN) and Dong Bac Corp. In parallel with the decrease in the portion of the GDP contributed by the

<sup>1</sup>Where necessary, values have been converted from Vietnamese dong (VND) to U.S. dollars (US\$) at an annual average exchange rate of VND22,370=US\$1.00 for 2017 and VND21,931=US\$1.00 for 2016.

mining and quarrying sector, the annual employed population in the mining and quarrying sector decreased by 10.8% to 210,600 people in 2017 from 236,600 people in 2016 and accounted for just 0.4% of the total labor force in 2017 (General Statistics Office of Vietnam, 2018c, p. 135).

Foreign investment in the mining sector was mostly for the development of bauxite, coal, and titanium deposits. In 2017, three foreign direct investment (FDI) projects in the mining and quarrying sector amounted to \$1.29 billion and accounted for 3.5% of the total FDI in Vietnam. The sector's accumulated FDI was \$3.50 billion as of December 31, 2016. Table 2 is a list of major mineral industry facilities (General Statistics Office of Vietnam, 2017, p. 139; 2018a, p. 154, 162; Australian Trade and Investment Commission, 2019).

## Mineral Trade

In 2017, the total export value of goods increased to \$214 billion, or by 21% compared with that of 2016. Exports of heavy industrial products and minerals reached \$106 billion, which was a 30% increase from that of 2016 and accounted for 50% of the country's total export value. Exports of coal increased to 2.2 million metric tons (Mt) in 2017 from 1.2 Mt in 2016, or by 83%. Exports of crude petroleum remained at approximately 50 million barrels (Mbbbl). Vietnam's main export partners in 2017 were the United States (which received 19% of Vietnam's total exports), the European Union (EU) (18%), China (17%), and the Association of Southeast Asian Nations (ASEAN) countries (10%) (General Statistics Office of Vietnam, 2018a, p. 21–22, 273, 283).

The General Department of Customs recorded that Vietnam exported 4.4 Mt of ore and minerals valued at \$167 million in 2017, of which 85%, or 3.5 Mt, was exported to China. The export revenue from China was only 51.4% of the total mineral export revenue because the price of exports to China was 60% of the average export price (Mai, 2018).

In 2017, the import value of goods was estimated to be \$211 billion, which was an increase of 21% from that of 2016. Imports of durable goods for the production of other goods and services reached \$192 billion, which was an increase of 22% compared with that of 2016, accounting for 91% of total imports. Imports of iron and steel increased by 12% to \$9 billion, and imports of refined petroleum products increased by 35% to \$7 billion. In 2017, the country's main import partners were China (28% of total import value), the Republic of Korea (22%), ASEAN countries (13%), Japan (9.9%), Taiwan (6%), the EU (5.7%), and the United States (4.4%) (General Statistics Office of Vietnam, 2018a, p. 21–22, 274, 285).

## Commodity Review

### Metals

**Bauxite and Alumina.**—Dak Nong Aluminum Co. Ltd. (DNA), which was fully owned by VINACOMIN, became operational in November 2016. DNA's Nhan Co alumina plant produced 501,000 metric tons (t) of alumina in 2017, accounting for 104% of its planned production during the first year of operation; the company exported \$185 million worth of alumina

to Hong Kong, Japan, the Republic of Korea, Singapore, Switzerland, and the United Arab Emirates (UAE). In December 2017, VINACOMIN signed an agreement to supply 300,000 metric tons per year (t/yr) of alumina to Emirates Global Aluminum PJSC of the UAE between 2018 and 2020 (bizhub, 2017; Huong, 2017a; Vietnam Investment Review, 2017; Vietnam National Coal Mineral Industries Holding Corp. Ltd., 2017; Vietnam News, 2017; Vu, 2017b).

**Copper.**—VINACOMIN - Minerals Holding Corp. (VIMICO), a joint stock company of VINACOMIN, held mining rights in Vietnam's largest copper deposit, which was located in the Sin Quyen copper complex and had reserves of 200,000 t of copper. After copper prices recovered in late 2016, production of smelted and refined copper increased by 44% in 2017, and VIMICO's sales reached \$113 million during the first 6 months of 2017—a 45% increase compared with the corresponding period in 2016. As part of its ongoing restructuring process, VINACOMIN was working on the divestment of 33.06% of its ownership (which totaled 98.06%) in VIMICO in 2017 (Luong, 2017; VietNamNet, 2017).

**Gold.**—Bong Mieu Gold Mining Co. Ltd. (BMGMC)—a subsidiary of Besra Gold, Inc. (Besra) of New Zealand—was the operator of the 500-metric-ton-per-day-capacity Bong Mieu gold mine in Phu Ninh District, Quang Nam Province; however, BMGMC had ceased all operations at the mine in June 2016. BMGMC failed to renew the license owing to disputes with Government and, in 2017, major stakeholders of Besra approved the divestment of the company's subsidiaries, including BMGMC, and the disposal of Besra's assets in Vietnam (Besra Gold Inc., 2017, 2020; Duy, 2017a).

**Iron and Steel.**—In 2017, production of raw steel increased by 47% to 11.5 Mt from 7.8 Mt in 2016, and production of steel products increased by 24% to 22.1 Mt from 17.8 Mt in 2016. Vietnam became a net exporter of raw steel, exporting more than 300,000 t for the first time in 2017. Although steel imports decreased by 14% compared with those of 2016, Vietnam remained the second-ranked importer of steel from China after the Republic of Korea, accounting for 15% of China's steel exports. The import value, however, increased by 11% to \$9.0 billion from \$8.1 billion in 2016 (table 1; Metal Bulletin, 2017a, p. 16; 2017b, p. 16; Saigon Giai Phong, 2018; General Statistics Office of Vietnam, 2018a, p. 285).

Formosa Ha Tinh Steel Corp. (FHS), which was owned by Formosa Plastic Group of Taiwan, produced 1 Mt of hot-rolled coil after the startup of the first blast furnace in late May 2017. The company planned to start the operation of the second blast furnace to produce 1 Mt of hot-rolled coil in the first half of 2018. FHS was one of the FDI projects in Vietnam at the Vung Ang Economic Zone in Ha Tinh Province (Formosa Ha Tinh Steel Corp., 2017, 2020).

**Iron Ore.**—Thach Khe Iron JSC (TIC) was established by VINACOMIN and other shareholders to exploit the Thach Khe iron ore deposit in Ha Tinh Province in 2009, which contained reserves of 544 Mt of iron ore. TIC suspended the project after testing an opencast mining operation in 2011 owing to lack of investment. The total amount invested into the project was \$80.7 million, with a shortage of \$310 million to continue with the project. In early August, the Deputy Minister of Planning

and Investment proposed that the Government immediately scrap the Thach Khe project owing to financial concerns, transportation costs, and uncertain iron ore sales (Duy, 2017b; Huong, 2017b; Vietnam News, 2018b).

**Lead.**—The production of mined lead increased by 463% to 4,560 t in 2017 from 810 t in 2016, which was lower than the 2,980 t produced in 2014 and 1,890 t produced in 2015. The increased production in Vietnam was in response to a price spike resulting from a significant increase in exports to China, which had decreased its production because of more stringent environmental inspections and related capacity closures in China (Home, 2018).

**Nickel.**—Ban Phuc Nickel Mines LLC (BPNM), which was 90%-owned by Asian Mineral Resources Ltd. (AMR) of Canada, operated the Ban Phuc nickel mine in Son La Province. The mine was placed on care-and-maintenance status in September 2016 owing to low nickel prices. In October 2017, AMR announced the initiation of a strategic review process to explore options regarding the future of BPNM (Asian Mineral Resources Ltd., 2017).

**Tungsten.**—Production of mined tungsten increased by 4% to 5,400 t in 2017 from 5,200 t in 2016. The Nui Phao Mine, owned by Masan Resources Corp. (MRC), contained proven and probable reserves of 66 Mt of ore at an average grade of 0.18% tungsten trioxide and measured and indicated resources of 73.8 Mt at grades of 7.8% fluor spar, 0.17% tungsten, 0.16% copper, and 0.08% bismuth. In February 2017, India's state-owned National Mineral Development Corporation (NMDC) announced that it had reached an agreement with MRC to acquire a minority equity stake (about 5% to 10%) in the Nui Phao Mine from MRC. The NMDC expected to sign a memorandum of understanding with MRC. A due diligence process was to be initiated after January 2018 (table 1; Financial Express Bureau, 2017; Oxford Business Group, 2017; Masan Resources Corp., 2019b).

### *Industrial Minerals*

**Cement.**—Vietnam's cement production capacity, which included 72 integrated plants and 25 grinding units, increased by 33% to 117 million metric tons per year (Mt/yr) in 2017 from 88 Mt/yr in 2016. Cement production increased by 9.4% to 81.5 Mt in 2017 from 74.5 Mt (revised) in 2016. The leading cement producer in Vietnam was state-owned Vietnam Cement Industry Corp. (VICEM), which had a 34% domestic market share. VICEM operated 17 plants with a combined production capacity of 28.7 Mt/yr and an additional 14.4 Mt/yr through holding shares of other companies in Vietnam (table 2; CemNet.com, 2018).

In March 2017, SCG Cement and Building Materials Co. Ltd., which was wholly owned by Siam Cement Group (SCG) of Thailand, purchased Vietnam Construction Material JSC, which was located in Tuyen Hoa District, Quang Binh Province, central Vietnam and had a production capacity of 3.1 Mt/yr. In October 2017, Xuan Thanh Cement in Ha Nam Province started operation of Line 2 with a capacity of 4.5 Mt/yr. Long Son Cement in Thanh Hoa Province started operation of a second production line, which increased the plant's production capacity to 5 Mt/yr from 2.5 Mt/yr. Domestic consumption rose by 6.3%

and exports increased by 1.2% in 2017. The Government had exempted exported cement products from the VAT and from a 5% export tax to encourage cement exports (CemNet.com, 2017a–c; 2018; Phoonphongphiphat, 2017; Xi Mang Xuan Thanh, 2017).

### *Mineral Fuels*

**Coal.**—In 2017, the production of coal decreased by 0.8% to 38.4 Mt from 38.7 Mt in 2016. Vietnam exported high British thermal unit (Btu) coal products, whereas it imported low Btu coal products for domestic thermal powerplants. The contribution of coal to the primary energy supply in Vietnam increased to 35% in 2015 from 14% in 2000, which increased the country's dependency on coal imports. The increase in coal consumption and imports was owing to investment of about \$2 billion each in the following coal-fired powerplant projects: the Vinh Tan 1 thermal powerplant in Binh Thuan, the Duyen Hai 2 thermal powerplant in Tra Vinh, and the Nghi Son 2 thermal powerplant in Thanh Hoa (table 1; VietNamNet, 2016; Vu, 2017a; Ariffin, 2018; General Statistics Office of Vietnam, 2018a, p. 283).

Viebac Mining Industry Holding Corp. (VVMi) was one of the four top-ranked coal-mining companies owned by VINACOMIN, and it operated three large coal mines (the Na Duong, Nui Hong, and Khanh Hoa coal mines) that accounted for about two-thirds of the country's coal reserves. VVMi's annual output was used primarily by thermal powerplants (80%) and cement manufacturing plants (10% to 15%) (VietNamNet, 2017).

**Petroleum.**—In 2017, Vietnam produced 114 Mbbl of crude petroleum and exported 49.8 Mbbl. The import volume of refined petroleum products increased by 6.7% to 94.6 Mbbl from 88.7 Mbbl in 2016. Approximately \$9 billion was invested to the Nghi Son Refinery and Petrochemical Complex (NSRP) in Tinh Gia District, Thanh Hoa Province, as a joint-venture project among Idemitsu Kosan Co. Ltd. of Japan (35.1%), Kuwait Petroleum International Ltd. (35.1%), Vietnam Oil and Gas Group (PetroVietnam) (25.1%), and Mitsui Chemicals Inc. (4.7%) of Japan. NSRP completed construction of the refinery by yearend. The refinery was expected to have a refining throughput capacity of 73 million barrels per year of crude petroleum imported from Kuwait (table 1; Nghi Son Refinery and Petrochemical LLC, 2020a, b; General Statistics Office of Vietnam, 2018a, p. 283, 286).

In July 2017, the Government ordered Repsol S.A. of Spain to halt exploration and production activity in Block 136–03 near the Vanguard Bank basin in the South China Sea after confrontation with China. The exploration lease was jointly owned by Mubadala Development Co. of the UAE, PetroVietnam, and Repsol (Maritime Executive, The, 2017).

## MINERAL INDUSTRY HIGHLIGHTS IN 2018

### Minerals in the National Economy

In 2018, the real GDP increased by 7.1% compared with an increase of 6.8% in 2017. The nominal GDP was \$245 billion<sup>2</sup> in 2018. The growth rate of the mining and quarrying sector decreased by 3.1% in 2018, and the sector accounted for 7.4% of the GDP (General Statistical Office of Vietnam 2019b, p. 185, 188, 192).

In 2018, Vietnam's steel exports—mainly to the United States, Thailand, and Cambodia—increased in quantity by 34% to 6.3 Mt, whereas imports decreased by 9.6% to 13.6 Mt. In 2018, exports of coal increased 9% to 2.4 Mt and exports of crude petroleum decreased by 41% to 29 Mbbl (General Statistical Office of Vietnam 2019a, p. 313; South East Asia Iron and Steel Institute, 2019).

In August of 2018, the Government approved a plan for the exploration for, and the extraction, processing, and use of antimony, tin, and tungsten by 2025 with a vision ultimately towards 2035. Vietnam was projected to complete exploration projects and to mine more than 5,500 t of tungsten, 3,000 t of tin, and 800 t of antimony by 2025 (Vietnam News, 2018c, e).

### Production

In 2018, significant production increases included those of rare-earth oxides, by 318%; zircon, 104%; barite (estimated), 85%; lead (Pb content), 65%; raw steel, 54%; pig iron, 52%; salt, 47%; bauxite and alumina, 25% each; diesel, 23%; bismuth (Bi content), 22%; phosphate rock (gross weight), 18%; manganese (Mn content), 17%; steel products, 16%; and primary smelted tin, 11%. Gasoline production decreased by 16%; tungsten, by 11%; and crude petroleum, by 10%. Data on mineral production are in table 1.

### Commodity Review

#### Metals

**Iron and Steel.**—In May 2018, FHS commenced production of a second blast furnace with a capacity of 3.5 Mt/yr of raw steel, which doubled the plant's raw steel production capacity to 7 Mt/yr. Hoa Phat Group planned to start production at the new Hoa Phat Dung Quat Steel Complex in 2019. The complex would have four blast furnaces with an overall production capacity of 5 Mt/yr of raw steel (South East Asia Iron and Steel Institute, 2018, p. 7; 2019, p. 7).

**Rare Earths.**—In 2018, the production of rare-earth oxides increased significantly, by 318%, to 920 t from 220 t in 2017. The Dong Pao rare-earth mine is located in Lai Chau Province in northern Vietnam. In 2018, Vietnam exported its entire production of 1,500 t of rare-earth concentrates to China (compared with 360 t exported to China in 2017). China had reduced its production quota and suspended some rare-earth mining operations owing to strengthened environmental

protection standards (table 1; Globe Newswire, 2019; United Nations, 2020).

**Tungsten.**—In 2018, tungsten production decreased by 11% compared with that of 2017 owing to the lower ore grade from the Nui Phao Mine and lower total throughput at the processing plant. In August, Nui Phao Mining Co. Ltd. (a fully owned subsidiary of MRC) consolidated ownership of the Nui Phao H.C. Stark Tungsten Chemical Manufacturing Co. by purchasing the 49% equity interest controlled by H.C. Stark GmbH of Germany (a joint-venture partner) and changed the name to Masan Tungsten LLC (Masan Resources Corp., 2019a, p. 9).

#### Industrial Minerals

**Cement.**—In 2018, 89 Mt of cement was produced in Vietnam and cement exports reached an estimated 32 Mt. Exports corresponded to the increased demand from markets after China shut down some polluting cement plants and led some others to decrease production. The country's cement output capacity was expected to reach from 120 Mt/yr to 130 Mt/yr by 2020, which would be in excess of expected domestic consumption of 93 Mt/yr. In 2018, phase 2 of the Long Son cement plant was approved. The plan included two production lines with an additional 4.6 Mt/yr on top of the 5 Mt/yr capacity of Lines 1 and 2 that Long Son Cement launched in 2016 and 2017 during phase I (CemNet.com, 2018; Long Son Cement, 2018; Vietnam News, 2018a).

#### Mineral Fuels

**Coal.**—In 2018, VINACOMIN implemented a restructuring project that involved laying off 3,000 employees and included consolidation to be brought about by increasing ownership rates and merging member companies. VINACOMIN planned to produce 40 Mt of coal, import 4.6 Mt, and consume 42 Mt in 2019 (People's Army Newspaper, 2018; Vietnam News, 2018b).

**Petroleum.**—In 2018, the Government canceled two oil projects in Block 07/03 owing to an ongoing territorial dispute with China. Nghi Son Refinery and Petrochemical LLC (NSR) released the first commercial refined product in May 2018. When the refinery reaches its full capacity, NSR was expected to be able to meet 40% of the domestic demand for fuel (Hayton, 2018; Vietnam News, 2018d; Nghi Son Refinery and Petrochemical LLC, 2020a, b).

#### Outlook

Vietnam's GDP is forecasted to retain a moderately strong growth rate of 6.8% in 2019 and 6.7% in 2020 given stable export-oriented manufacturing, inward FDI, and sustained domestic demand. The mineral industry is expected to expand in coming years, as new alumina and petroleum refining projects reach their full capacities; exports of lead, nickel, rare earths, and cement continue to increase; and FDI in energy projects remains robust (Asian Development Bank, 2019, p. 305).

<sup>2</sup>Where necessary, values have been converted from Vietnamese dong (VND) to U.S. dollars (US\$) at an annual average exchange rate of VND22,605=US\$1.00 for 2018.

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2014	2015	2016	2017	2018	
<b>METALS</b>						
Aluminum:						
Bauxite <sup>c</sup>	1,090,000	1,150,000	1,420,000 <sup>r</sup>	2,800,000	3,500,000	
Alumina	485,000	660,000	602,000	1,062,000	1,329,000	
Antimony, mine:						
Gross weight	2,745	548	572 <sup>r</sup>	576	588	
Sb content <sup>c</sup>	1,100	220	230 <sup>r</sup>	230	240	
Bismuth, mine, Bi content	670 <sup>r,e</sup>	1,300 <sup>r,e</sup>	2,013 <sup>r</sup>	2,460	3,009	
Chromium, mine, chromite	3,400	-- <sup>r</sup>	-- <sup>r</sup>	750	--	
Cobalt, mine, Co content	223	277	134	--	--	
Copper:						
Mine, concentrates:						
Gross weight	48,394	49,032	48,526 <sup>r</sup>	48,853	52,453	
Cu content <sup>c</sup>	20,800 <sup>r</sup>	23,200 <sup>r</sup>	22,300 <sup>r</sup>	21,000	22,900	
Smelter, primary	12,500	11,000	11,000	15,800	15,100	
Refinery, primary	12,500	11,000	11,000	15,800	15,100	
Gold, mine, Au content	kilograms	564 <sup>r</sup>	539 <sup>r</sup>	584 <sup>r</sup>	557	560 <sup>c</sup>
Iron ore, mine:						
Gross weight	thousand metric tons	5,130 <sup>r</sup>	5,086 <sup>r</sup>	5,770 <sup>r</sup>	5,515	5,471
Fe content, 53% Fe	do.	2,719	2,691	3,056 <sup>r</sup>	2,920	2,890
Iron and steel:						
Pig iron	do.	1,393	1,700	2,600 <sup>r</sup>	4,250	6,449
Steel:						
Raw steel	do.	3,954	4,093	7,805 <sup>r</sup>	11,473	17,723
Products, rolled	do.	12,331 <sup>r</sup>	15,022 <sup>r</sup>	17,827 <sup>r</sup>	22,101	25,602
Lead, mine, Pb content <sup>c</sup>		2,980	1,890 <sup>r</sup>	810	4,560	7,530
Manganese, mine:						
Gross weight		193,000 <sup>r</sup>	110,000 <sup>r</sup>	187,000 <sup>r</sup>	283,000	333,000
Mn content		83,000 <sup>r</sup>	47,000 <sup>r</sup>	80,000 <sup>r</sup>	122,000	143,000
Nickel, mine, sulfide ore, concentrate, Ni content		6,854	8,607	4,272 <sup>r</sup>	--	--
Rare earths, mineral concentrate: <sup>3</sup>						
Gross weight		--	460	400	360	1,500
Rare-earth-oxide equivalent <sup>c</sup>		-- <sup>r</sup>	270 <sup>r</sup>	240 <sup>r</sup>	220	920
Tin:						
Mine, Sn content		4,833	4,530	4,579	5,000	5,500
Smelter, primary		4,688	4,382	4,919	4,400	4,900
Titanium, mineral concentrate, ilmenite and leucoxene <sup>4</sup>		558,000	238,000	210,800 <sup>r</sup>	225,300	209,800
Tungsten, mine, concentrate, W content		4,000 <sup>r</sup>	5,600	5,200 <sup>r</sup>	5,400	4,800
Zinc:						
Mine, Zn content		17,000	15,000	12,000	12,000	12,000
Smelter, primary		12,000	10,000	10,000	10,000	10,000
Zirconium, zircon concentrate <sup>e,5</sup>		10,000	4,300	9,500	5,400	11,000
<b>INDUSTRIAL MINERALS</b>						
Barite <sup>c</sup>		95,000	76,000 <sup>r</sup>	30,000 <sup>r</sup>	26,000	48,000
Cement, hydraulic	thousand metric tons	60,982	67,645	74,457 <sup>r</sup>	81,488	88,953
Fluorspar		50,000 <sup>c</sup>	163,000 <sup>r,e</sup>	218,876 <sup>r</sup>	234,905	238,702
Lime <sup>c</sup>	thousand metric tons	850	840	840	840	840
Nitrogen, ammonia, N content	do.	1,100	1,100	970 <sup>r</sup>	1,100	1,050
Phosphate rock:						
Gross weight	do.	2,471	2,923 <sup>r</sup>	3,143 <sup>r</sup>	4,588	5,424
P <sub>2</sub> O <sub>5</sub> content	do.	700	880 <sup>r</sup>	940 <sup>r</sup>	1,400	1,600
Salt	do.	906	1,061	982 <sup>r</sup>	649	953

See footnotes at end of table.

TABLE 1—Continued  
VIETNAM: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2014	2015	2016	2017	2018	
INDUSTRIAL MINERALS—Continued						
Stone, sand, and gravel, construction:						
Sand and gravel, including silica sand	thousand metric tons	91,231	93,072	97,139 <sup>r</sup>	96,215	93,548
Stone, crushed	do.	244,349	262,177	286,944 <sup>r</sup>	277,172	286,003
MINERAL FUELS AND RELATED MATERIALS						
Coal, anthracite	thousand metric tons	41,086	41,664	38,735 <sup>r</sup>	38,409	42,047
Natural gas	million cubic meters	10,210	10,660	10,610	9,866	10,010
Petroleum:						
Crude	thousand 42-gallon barrels	127,494 <sup>r</sup>	137,419 <sup>r</sup>	126,306 <sup>r</sup>	113,756	102,401
Refinery:						
Diesel	do.	21,575	22,884	21,572	18,100 <sup>e</sup>	22,300 <sup>e</sup>
Gasoline	do.	18,835 <sup>r</sup>	23,427 <sup>r</sup>	23,687 <sup>r</sup>	29,100 <sup>e</sup>	24,300 <sup>e</sup>
Jet fuel	do.	769	1,554	2,988	3,700 <sup>e</sup>	3,600 <sup>e</sup>
Liquefied petroleum gas	do.	4,145 <sup>r</sup>	5,202 <sup>r</sup>	5,684 <sup>r</sup>	6,900 <sup>e</sup>	6,600 <sup>e</sup>
Total	do.	45,300 <sup>r</sup>	53,100 <sup>r</sup>	53,900 <sup>r</sup>	57,800 <sup>e</sup>	56,800 <sup>e</sup>

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through November 14, 2019. 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.

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

<sup>3</sup>China's imports from Vietnam.

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

<sup>5</sup>Estimated figures based on Vietnam's inferred exports of zirconium ore to China.

TABLE 2  
VIETNAM: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Alumina	Dak Nong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Nhan Co Aluminium Plant, Dak Nong Province	630
Do.	Lam Dong Aluminum Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Tan Rai Bauxite Aluminum Complex, Lam Dong Province	650
Antimony	Ha Giang Mechanical and Mineral JSC	Mau Due Mine, Minh Son, Bac Me District, and plant in Binh Vang Industrial Zone, Ha Giang Province	NA
Apatite	Apatite Vietnam One Member Ltd. Co. [Vietnam National Chemical Group (VINACHEM), 100%]	Bac Nhap Son Apatite Ore Plant, Lao Cai Province	2,800
Barite	NA	Ao Sen deposit, Son Duong District, Tuyen Quang Province	80
Bauxite	Vietnam National Coal and Mineral Industries Group (VINACOMIN)	Tan Rai Mine, Bao Lam District, Lam Dong Province	1,700
Do.	do.	Nhan Co Mine, Dak Nong Province	1,800
Bismuth	Masan Tungsten LLC	Nui Phao Mine, 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 Joint Stock Co. [Vietnam Construction and Import-Export Joint Stock Corp. (VINACONEX)]	Luongson cement plant, Hoa Binh Province	1,200
Do.	Construction Materials Corporation No.1 (FiCO) JSC	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, Hai Phong City; Hiepphuoc plant, Ho Chi Minh City	5,000
Do.	Cong Thanh Cement Joint Stock Co.	Cong Thanh cement plant, Thanh Hoa Province	1,000
Do.	Cao Ngan Cement Joint Stock Co.	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 Joint Stock Co (TAFiCO)	Fico Tay Ninh Cement Plant, Cay Cay, Tan Hoa Commune, Tan Chau District, Tay Ninh Province	3,500
Do.	Ha Long Joint Stock Co. [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.	Song Lam cement plant, Nghe An Province	6,000
Do.	do.	Ha Nam plant, Thanh Liem District, Ha Nam Province	3,000
Do.	do.	Vissai Ninh Binh cement plant, Gia Vien District, Ninh Binh Province	3,600
Do.	Hoang Long Cement JSC	Thanh Nai Plant, Thach My, Nam Giang, Quang Nam	350
Do.	La Hien Cement Joint Stock Co.	La Hien cement plant, Thai Nguyen Province	600
Do.	Langbang Cement Co.	Langbang cement plant, Quang Ninh Province	1,500
Do.	Long Son Cement Co.	Bim Son town, Thanh Hoa Province	5,000
Do.	Luckvaxi Cement Co.	Luckvaxi cement plant, Thua 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 Joint Stock Co.	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

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Cement—Continued	Phuc Son Cement Co. (Lucky Group of Taiwan, 90%, and Hai Duong Cement Co., 10%)	Phuc Son cement plant, Hai Duong Province	4,000
Do.	Quan Trieu Cement Joint Stock Co. [Viet Bac Mining Industry Corp. and Vietnam National Coal and Mineral Industries Group (VINACOMIN)]	Quan Trieu cement plant, Thai Nguyen Province	820
Do.	Quang Ninh Cement and Construction Joint Stock Co.	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, Dong Nai Province	6,300
Do.	So Luong Cement Plant (Vassai Group, 100%)	Nghe An Province	600
Do.	Song Thao Cement Joint Stock Co. [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.	Tuyen Quang Cement Joint Stock Co. [(Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%]	Tuyen Quang cement plant, Tuyen Quang Province	910
Do.	Vietnam Construction and Import-Export Joint Stock Corp. (VINACONEX)	Cam Pha cement grinding plant, Phu Tau Province	2,300
Do.	Vietnam Construction Materials JSC. (SCG Cement and Building Materials Co. Ltd., 100%)	Integrated cement plant, Tuyen Hoa District, Quang Binh Province	3,100
Do.	do.	Yen Bai cement plant, Yen Bai Province	200
Do.	Vietnam Cement Industry Corp. (VICEM), 100%	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 Industrial Construction Corp. (VINAINCON)	Quang Son cement plant, Dong Hy District, Thai Nguyen Province	1,500
Do.	X18 Cement Joint Stock Co.	Cement X18 plant, Hoa Binh Province	100
Do.	Xuan Thanh Cement	Plants in Ha Nam, Quang Nam, and Binh Phuoc Provinces	4,500
Chromite, gross weight	Thai Nguyen Nonferrous Metals Joint Stock Co. [VINACOMIN Minerals Holding Corp. (VIMICO), 51%]	Nui Nua, Thanh Hoa Province	10
Coal:			
Anthracite	Nui Beo Coal Joint Stock Co. [Vietnam National Coal and Mineral Industries Group (VINACOMIN), 52.9%]	Le Thanh Tong, Halong City, Quang Ninh Province	NA
Do.	Viebac Mining Industry Holding Corp. (VVMII) (VINACOMIN, 100%)	Nui Hong and Khanh Hoa coal mines, Thai Nguyen Province	NA
Do.	Vietnam National Coal and Mineral Industries Group (VINACOMIN), 100%	Cam Pha, Cao Son, Coc Sau, Cua Ong, Deo Nai, Dong Trieu, Ha Lam, Ha Tu, Hon Gai, Khe Cham, Mao Khe, Mong Duong, Uong Bi, and Vang Danh in Quang Ninh Province	42,000
Lignite	Viebac Mining Industry Holding Corp. (VVMII) (VINACOMIN, 100%)	Na Duong Mine, Loc Binh District, Lang Son Province	NA
Cobalt, mine, metric tons Co content	Ban Phuc Nickel Mines LLC. (Asian Mineral Resources, 90%)	Ban Phuc nickel mine, Son La Province	200

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
<b>Copper:</b>				
Concentrate, Cu content		Ban Phuc Nickel Mines LLC. (Asian Mineral Resources, 90%)	Ban Phuc nickel mine, Son La Province	4
Do.		Dong Ta Phoi Joint Stock Co.	Ta Phoi Mine, Lao Cai Province	NA
Do.		Masan Resources Corp. (MRC)	Nui Phao Mine, Dai Tu, Thai Nguyen Province	9
Ore		Sin Quyen Copper Complex [operated by VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Sin Quyen copper mine, Bat Xat District, Lao Cai Province	1,100
Refined		Lao Cai Copper Smelting Enterprise [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Tang Loong Industrial Park, Bao Thang District, Lao Cai Province	16
<b>Ferrous alloy:</b>				
Ferromanganese		New Resources Metallurgy (British-Vietnam joint venture)	Phu Thu Town, Kinh Mon District, Hai Duong Province	37
Ferrotungsten, W content	metric tons	Asia Tungsten products (Vietnam) Ltd. (Asia Tungsten Products Co., Ltd. of Hong Kong, 100%)	Tan Tien Industrial Zone, Vinh Bao District, Hai Phong City	4,000
Do.	do.	Vietnam Youngsun Tungsten Industry Co. Ltd. (Hong Kong Wolfram International Investment Co., Ltd.)	Cailan Industrial Zone, Quang Ninh plant, Halong City, Quang Ninh Province	3,600
<b>Fertilizer:</b>				
Nitrogen, ammonia		Ha Bac Nitrogenous Fertilizer Factory [Vietnam National Chemical Group (VINACHEM), 100%]	Ha Bac fertilizer plant, Bac Giang Province	500
Do.		Ninh Binh Nitrogenous Fertiliser One-Member Co., Ltd. [Vietnam National Chemical Group (VINACHEM), 100%]	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 JSC [Vietnam National Chemical Group (VINACHEM), 100%]	Phu My, Ba Ria-Vung Tau Province	
Superphosphate		Lam Thao Fertilizers & Chemicals JSC [Vietnam National Chemical Group (VINACHEM), 100%]	Lam Thao, Phu Tho Province	800
Fluorspar		Masan Resources Corp. (MRC)	Nui Phao Mine, Dai Tu District, 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), Cuu Long Basin	9,890
<b>Gold</b>				
Ore, Au content	kilograms	Bong Mieu Gold Mining Co. Ltd. (BMGMC) (Besra Gold Inc., 80%; Mineral Development Co., 10%; Quang Nam Mineral Joint Stock Co., 10%)	Bong Mieu Mine and Nui Kem underground mines, Quang Nam Province	400 <sup>1</sup>
Do.	do.	Phuoc Son Gold Co. Ltd. (Besra Gold Inc., 85%)	Bai Dat and Bai Go deposit in Phuoc Son gold property, Quang Nam Province	NA <sup>1</sup>
Refined	do.	Lao Cai Copper Smelting Enterprise [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Tang Loong Industrial Park, Bao Thang District, Lao Cai Province	550
Do.		Thai Nguyen Nonferrous Metal Joint Stock Co.	Phuc Xa Ward, Thai Nguyen City, Thai Nguyen	NA
Graphite		Song Da Lao Cai Mining Joint Stock Co.	Nam Thi Mine, Bao Yen District, Lao Cai Province	NA
Gypsum, products		Huy An Co.	NA	2,500
Do.		Saint-Gobain Gyproc	Nha Be District, Ho Chi Minh City	9,000
Do.		USG Boral Gypsum Vietnam Co. Ltd. (Boral Ltd., 50%, and USG Corp. 50%)	Ho Chi Minh City	20,000
Iron, ore, gross weight		Thach Khe Iron JSC (TIC) [Vietnam National Coal and Mineral Industries Group (VINACOMIN); Thang Long Minerals and Metals Co. Ltd.; Ha Tinh Minerals and Trading JSC; Vietnam Steel Corp. (VNSTEEL); Bitexco]	Thach Khe iron mine, Ha Tinh Province	NA
Do.		Thai Nguyen Iron and Steel Corp. [Vietnam Steel Corp. (VNSTEEL), 100%]	Trai Cau and Tien Bo, Thai Nguyen Province; Thach Khe, Ha Tinh Province	850
Do.		Thai Nguyen Black Metallurgical Joint Stock Co.	Chom Vung Tay Mine, Dong Hy District, Thai Nguyen Province	NA

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Lead, concentrates, Pb content		Thai Nguyen Nonferrous Metal Joint Stock Co.	Cho Dien lead-zinc mine, Ban Thi, Na Hang District, Tuyen Quang Province	NA
<b>Manganese:</b>				
Ore, gross weight		Danka Minerals Joint Stock Co.	Toc Tat Mine, Tra Linh District, Cao Bang Province	NA
Do.		Phuc Son Manganese, Mineral, and Mechanics Joint Stock Co.	Chiem Hoa District, Tuyen Quang Province	NA
Manganese alloys		Cao Bang Manganese Industry Corp. (Danka Minerals JSC, 25%)	Plant in Cao Bang Province	20
Do.		New Resources Metallurgy (British-Vietnam joint venture)	Plant in Phu Thu Town, Kinh Mon District, Hai Duong Province	120
Nickel, mine, Ni content	metric tons	Ban Phuc Nickel Mines LLC (BPNM) (Asian Mineral Resources, 90%, and Son La Mechanical Engineering JSC, 10%)	Ban Phuc nickel sulfide deposit, Son La Province	6,400 <sup>2</sup>
<b>Petroleum:</b>				
Crude	thousand 42-gallon barrels per day	Chim Sáo 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 [Vietnam Oil and Gas Group (PetroVietnam), and Zarubezhneft JSC]	Offshore Bach Ho, Rong, Rang Dong, Ruby, Bunga Kekwa, Dai Hung, and SuTu Trang oilfields	147
Refined	do.	Binh Son Refining and Petrochemical Joint Stock Co. [Vietnam Oil and Gas Group (PetroVietnam), 50%; ConocoPhillips Co., 23.25%; Korea National Oil Corp., 14.25%; SK Innovation, 9%; Geopetrol SA, 3.5%]	Dung Quat refinery, Quang Ngai Province	148
Do.	do.	Nghi Son Refinery and Petrochemical LLC (NSR) [Idemitsu Kosan Co., Ltd., 35.1%; Kuwait Petroleum Europe B.V., 35.1%; Vietnam Oil and Gas Group, 25.1%; Mitsui Chemical, 4.7%]	Refinery in Nghi Son Economic Zone, Thanh Hoa Province	200
Phosphate rock		Vietnam Apatite Limited Co. (VINAAPACO) [Vietnam National Chemical Corp. (VNCC), 100%]	Cam Duong and Tang Loong, Lao Cai Province	5,500
<b>Rare earths:</b>				
Ore	metric tons	Lai Chau-VINACOMIN - Minerals Holding Corp. (VIMICO)-Rare Earth JSC, and Dong Pao Rare Earth Development Co.	Dong Pao Rare Earth Mine, Ban Hon Commu, Tam Duong District, Lai Chau Province	10,000
Processing	do.	Shin-Etsu Magnetic Minerals Vietnam Co., Ltd.	Dinh Vu Industrial Park, Hai Phong City	2,200
Do.	do.	Vietnam Rare Earth Co. (VERX) [Shenghe Resources (Singapore), 90%, and Seidou, 10%]	Bac Ninh Industrial Zone, Bac Ninh Province	700
Do.	do.	Vietnam Rare Earth Joint Stock Co. (VTRE)	Lao Cau, 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
<b>Steel:</b>				
Raw steel		Cao Bang Iron and Steel Joint Stock Co.	Billet plant, Cao Bang Province	220
Do.		Formosa Ha Tinh Steel Corp. (FHS) (Formosa Plastic Group, 70%; China Steel Corp., 25%; JFE Steel Corp., 5%)	Vung Ang Economic Zone, Ky Anh Town, Ha Tinh Province	7,000
Do.		Hoa Phat Steel One Member Co. Ltd.	Billet plant, Hung Yen Province	NA
Do.		Pomina Steel Joint Stock Co.	Billet plant, Phu My Industrial Park, Tan Thanh District, Ba Ria-Vung Tau Province	1,500
Do.		Shengli (Vietnam) Special Steel Co. Ltd. [Shengli (Fuzhou) Group Corp., and Guangdong Metals and Minerals Import & Export Corp.]	Billet plant, Cau Nghin Industrial Park, Anbai, Quynh Phu District, Thai Binh Province	600
Do.		Vietnam Italy Steel JSC (Hai Hung Trade JSC, 65%; Kyoei Steel, 20%; others, 15%)	Billets plant, Nam Cau Kien Industrial Zone, Hai Phong City	500
Do.		Vietnam Steel Corp. (VNSTEEL)	Cai Lan, Thai Nguyen Province, and Phu My, Ba Ria-Vung Tau Province	1,500

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Steel:—Continued			
Products	China Steel Sumikin Vietnam Joint Stock Co. (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, Phu My Town, Ba Ria-Vung Tau Province	1,200
Do.	Formosa Ha Tinh Steel Corp. (FHS) (Formosa Plastic Group, 70%; China Steel Corp., 25%; JFE Steel Corp., 5%)	Hot-rolled coil plant, Vung Ang Economic Zone, Ky Anh Town, Ha Tinh Province	5,200
Do.	Hoa Phat Hai Duong Steel Joint Stock Co.	Integrated Steel Complex, Hai Duong, Kinh Mon District, Hai Duong Province	2,380
Do.	Hoa Sen Group Joint Stock Co.	Cold-rolled steel plant, Song Than 2 Industrial Zone, Binh Duong Province	400
Do.	Kyoei Steel Vietnam Co. Ltd. (Kyoei Steel Group, 60%; Metal One Corp., 20%; Marubeni-Itochu Steel Co. Ltd., 20%)	Plant in Tam Diep Township, Ninh Binh Province	300
Do.	Lotus Group	Cold-rolled steel plant, Phu My Industrial Park, Ba Ria-Vung Tau Province	1,000
Do.	Nam Kim Steel	3 plants in Binh Duong Province and 1 plant in Ben Luc District, Long An Province	1,400
Do.	Pomina Steel Joint Stock Co.	Plant 1, Song Than 2 Industrial Park, Di An, Binh Duong; Plant 2, Phu My Industrial Park, Tan Thanh District, Ba Ria-Vung Tau Province	1,500
Do.	POSCO SS VINA (POSCO Group, 100%)	Roller 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 & wire rod plant, Cau Nghin Industrial Park, Anbai, Quynh Phu District, Thai Binh Province	800
Do.	QH Plus Corp. [Nippon Steel & Sumikin Bussan Corp., 10.54%]	Construction steel processing plant, Ho Chi Minh City	NA
Do.	Southern Steel Company Ltd. [Vietnam Steel Corp. (VNSTEEL), 100%]	Rolling mill plant in Phu My 1 Industrial Zone, Tan Thanh district, Ba Ria-Vung Tau Province	400
Do.	Thai Nguyen Iron and Steel Joint Stock Co. (TISCO) [Vietnam Steel Corp. (VNSTEEL), 100%]	Plant in Song Than 1 Industrial Zone, Di An Town, Binh Duong Province	150
Do.	Ton Dong A Corp.	do.	150
Do.	do.	Steel sheet plant, Dong An 2 Industrial Park, 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	NA
Do.	Vietnam Italy Steel Joint Stock Co. (Kyoei Steel, 67.7%)	Rolling mill in Pho Noi A Industrial Zone, Giai Pham, Yen My District, Hung Yen Province	300
Do.	Vietnam Japan Steel Joint Stock Co.	Quan Toan, Hong Bang District, 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)	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 Group, 9%; Marubeni-Itochu Steel Inc., 6%]	Phu My 1 Industrial Zone, Phu My Town, Ba Ria-Vung Tau Province	1,000
Do.	Vina One Steel	Long Hiep Commune, Ben Luc, Long An Province	900
Do.	VSC-POSCO Steel (VPS) (Vietnam Steel Corp. and POSCO)	Cai Lan, Thai Nguyen Province, and Phu My, Ba Ria-Vung Tau Province	1,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>	
<b>Tin:</b>				
Concentrate, Sn content	An Vinh Joint Stock Mineral Processing Co.	Quy Hop City, Nghe An Province	NA	
Do.	Cao Bang Minerals & Metallurgy Joint Stock Co.	Electro-Mechanical Facility, Tinh Tuc City, Cao Bang Province	4	
Do.	Nghe Tinh Nonferrous Metals Joint Stock Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 100%]	Suoi Bac Mine, Quy Hop City, Nghe An Province	4	
Do.	Tuyen Quang Non-Ferrous Metals Joint Stock Co. [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 Joint Stock Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%]	Phuc Xa Ward, Thai Nguyen City, Thai Nguyen Province	2	
<b>Titanium, ilmenite</b>				
	Bimal Minerals Co. Ltd. (Malaysia Mining Corp. and Syarikat Pendorong Sdn. Bhd., 60%, and Binh Dinh Minerals Co., 40%)	Cat Khanh and Qui Nhon, Binh Dinh Province	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.	do.	NA	
Do.	Mineral Development Co. No. 4 and No. 5 [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%]	Vinh City, Nghe An Province; Tuy Hoa, Dong Xuan, Phu Yen Province; and Quang Ngai, Vinh My, Thua Thien-Hu Province	50	
Do.	Quang Tri Mineral Joint Stock Co.	Vinh Linh District, Quang Tri Province	NA	
<b>Tungsten:</b>				
Concentrates:	metric tons	Nui Phao Mining Co. Ltd. [Masan Resources Corp. (MRC), 100%]	Nui Phao Mine, Thai Nguyen Province	5,600
Do.	do.	Sanher Tungsten Vietnam Co. Ltd.	Nhon Trach District, Dong Nai Province	NA
Do.	do.	Tejing (Vietnam) Tungsten Co. Ltd.	Trang Bang District, Tay Ninh Quang Province	9,300
Do.	do.	Vietnam Youngsun Tungsten Industry Co. Ltd.	Thienke tungsten mine, Tuyen Quang Province	1,500
Refined	do.	Masan Tungsten LLC. [Masan Resources Corp. (MRC), 100%]	Ammonium paratungstate plant, Nui Phao, Dai Tu District, Thai Nguyen Province	6,500
<b>Zinc:</b>				
Concentrate, Zn content	Thai Nguyen Nonferrous Metal Joint Stock Co. [VINACOMIN - Minerals Holding Corp. (VIMICO), 51%]	Cho Dien lead-zinc mine, Ban Thi Commune, Cho Don District, Bac Kan Province	50	
Refined	Do.	Zinc electrolytic plant, Thai Nguyen Song Cong Industrial Park, Thai Nguyen Province	10	
Do.	Ta Pan Zinc-Lead Plant (a Chinese private firm, 70.2%, and Ha Giang Mineral Exploiting and Engineering Co., 29.8%)	Lung Vay, Bac Me District, Ha Giang Province	6	

<sup>c</sup>Estimated. Do., do. Ditto. NA. Not available.

<sup>1</sup>Operation was suspended in 2018.

<sup>2</sup>On care-and-maintenance status.