



2022 Minerals Yearbook

PHILIPPINES [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF THE PHILIPPINES

By Ji Won Moon

In 2022, the Philippines was the second-ranked producer of nickel, accounting for 11% (estimated) of global production and approximately 3.7% of the world's reserves; it was the fifth-ranked producer of cobalt, accounting for 2.0% of global production and 2.4% (estimated) of the world's reserves. The country also produced other mineral commodities, such as cement, chromium, clay, coal, copper, feldspar, gold, iron ore, natural gas, petroleum, salt, scandium, silver, steel, and stone (table 1; Ewing, 2024; McRae, 2024).

Minerals in the National Economy

In 2022, the real gross domestic product (GDP) of the Philippines increased by 7.6% compared with an increase of 5.7% in 2021. The nominal GDP was \$392 billion (PHP22.0 trillion).¹ In 2022, the mining and quarrying sector accounted for 1.3% of the GDP compared with 1.0% in 2021; the output of the sector increased by 51% in 2022 compared with increasing by 35% in 2021. Net foreign direct investment (FDI) in the mining and quarrying sector in 2022 was \$4.99 million, accounting for less than 0.1% of the total net FDI. In 2022, the mining and quarrying sector employed 206,000 people compared with 186,000 people in 2021, and the sector accounted for 0.45% of total employment in the country (Bangko Sentral ng Pilipinas, 2023; Mines and Geosciences Bureau, 2023b, p. 1; Philippine Statistics Authority, 2023a, p. 1, 4, 10, 13).

In 2022, as reported by the Mines and Geosciences Bureau (2023a), the value of “metallic mineral” production in the Philippines increased by 32% to \$4.24 billion. Of this amount, the production value of nickel ore and its products, including mixed nickel-cobalt sulfide and scandium oxalate, accounted for 49% of the total; gold, 38%; copper, 11%; and chromite, iron ore, and silver, a combined 2%. The value of the nonmetallic mineral production also increased by 46% to \$1.37 billion. These significant increases were attributable to the increase in the mine production of copper, gold, and silver in the Philippines, and the strong metal prices following the global raw material supply chain disruptions related to the coronavirus disease 2019 (COVID-19) pandemic and to Russia's war against Ukraine (Philippine Resources, 2022; Mines and Geosciences Bureau, 2023a, p. 1; 2023b, p. 1).

Government Policies and Programs

The principal laws and regulations that regulate the mineral industry in the Philippines are the Philippine Mining Act of 1995 (Mining Act), the Clean Air Act of 1999, the Clean Water Act of 2004, and the Department of Environment and Natural Resources (DENR) Administrative Order No. 2010–21.

¹Where necessary, values have been converted from Philippine pesos (PHP) to U.S. dollars (US\$) at the annual average exchange rates of PHP56.120=US\$1.00 for 2022 and PHP50.774=US\$1.00 for 2021.

The Oil Exploration and Development Act (Presidential Decree No. 87) of 1972 mandates that the Government undertake petroleum exploration and production. The Coal Development Act (Presidential Decree No. 972) of 1976 mandates that the Government undertake active exploration, development, and production of coal resources or execute coal operating contracts. The DENR canceled 73 exploration-stage projects in February 2017, and in April 2017, announced (by DAO No. 2017–10) a ban on new open pit mining after issuing a permanent closure order to 22 of 41 operating open pit mines that had failed to pass audits for environmental violations (Department of Energy, 1972; Deutsche Welle, 2017; Philippine Extractive Industries Transparency Initiative, 2018, p. 6, 15, 17, 18; Bunye, 2019).

In 2021, the Philippines started to lift some restrictions on the mineral industry to aid economic recovery as the COVID-19 pandemic waned: in April, Implementing Rules and Regulation (IRR) of Executive Order (EO) 130 lifted the moratorium on new mining imposed by EO 79 in 2012; in August, DENR Administrative Order (DAO) No. 2021–25 provided the procedures and requirements for the processing and approval of new mining applications; and in December, the DAO No. 2021–40 lifted the 4-year-old ban on open pit mining for copper, gold, silver, and polymetallic ores that was imposed in 2017. In 2022, the country had more than 11 pending open pit mining projects. As to fiscal measures for the mineral industry, the Government was planning some new taxation policies to collect value-added taxes from the intermediate mineral products exports as an alternative to increasing taxes on mining (Dela Cruz, 2021; Ignacio, 2021; Mines and Geosciences Bureau, 2021; Yumol, 2021; Pangalanga, 2022; Panti, 2022).

Production

Mineral commodities for which output increased by 10% or more in 2022 compared with output in 2021 included volcanic cinder, which increased by 15 times; perlite, by 437%; chromite, by 380%; marble (dimension), by 358%; bentonite, by 273%; pozzolan (for cement), by 100%; volcanic tuff, by 86%; silver (mine, Ag content), by 82%; kaolin, by 75%; zeolites, by 57%; shale, by 47%; clay (unspecified), by 31%; lime, by 30%; scandium oxalate, by 26%; sea salt, by 24% (estimated); copper (mine, Cu content) and gold (mine, Au content), by 15% each; coal, by 12%; lead (refinery, secondary), by 12% (estimated); and iron ore (Fe content), by 11%. Production of phosphate rock resumed in 2022. Production of pumice decreased by 88%; petroleum refinery products, by 40%; dolomite, by 32%; crushed stone (other), by 27%; petroleum condensate, by 18% (estimated); copper (smelter, primary), by 16%; crude petroleum, by 12%; copper (refinery, primary), by 11%; nickel (mine, laterite ore, Ni content), by 11% (estimated); and silica, by 10%. Data on mineral production are in table 1.

Structure of the Mineral Industry

Production of metals was dominated by privately owned enterprises (including foreign owned enterprises) under mineral production-sharing agreements with the Government. The Mines and Geosciences Bureau (MGB) under the DENR reported that, as of 2022, the Philippines had 56 operating metal mines, including 33 nickel mines, 12 gold-silver mines, 4 chromite mines, 4 iron ore mines, and 3 copper-gold-silver mines. In 2022, the Philippines had a total of 705 approved mining tenements compared with 673 in 2021. The approved tenements consisted of 302 mineral production-sharing agreements, 242 industrial sand and gravel permits, 115 processing plant permits, and 46 exploration permits. Table 2 is a list of major mineral industry facilities (Mines and Geosciences Bureau, 2023b).

Mineral Trade

In 2022, total goods exports from the Philippines increased to \$78.8 billion from \$74.7 billion in 2021. The export value of mineral products increased to \$7.27 billion, or by 8.2% compared with that in 2021, and accounted for 9.2% of the value of total exports. Exports of nickel concentrates, nickel-cobalt sulfide mixture, and scandium oxalate increased by 15% to \$3.84 billion; gold, by 13% to \$1.00 billion; copper concentrates, by 35% to \$429 million; iron ore, by 2% to \$81.8 million; and chromium ore, by 37% to \$16.2 million. Copper metal exports decreased by 8.8% to \$1.90 billion (Philippine Statistics Authority, 2023b, table 6).

In 2022, total goods imports to the Philippines increased by 17% to \$137 billion from \$117 billion in 2021. The import value of mineral fuels, lubricants, and related materials increased to \$23.8 billion, or by 75% compared with that in 2021, and accounted for 17% of the value of total imports. Imports of other mineral fuel products increased by 57% to \$14.4 billion; coal and coke, by 119% to \$5.72 billion; and crude petroleum, by 100% to \$3.71 billion. Imports of iron and steel increased by 8.8% to \$5.77 billion; metal products, by 2.5% to \$2.32 billion; nonmetallic mineral manufactures, by 6.6% to \$2.05 billion; and metalliferous ores, by 74% to \$1.65 billion. Imports of nonferrous metals decreased by 0.9% to \$1.43 billion (Philippine Statistics Authority, 2023b, table 13).

Commodity Review

Metals

Chromite.—Mined chromite production increased significantly in 2022. Taganito HPAL Nickel Corp. (a subsidiary of Sumitomo Metal Mining Co. Ltd. of Japan) produced 70,364 metric tons (t) from the Taganito HPAL project, which was an increase of 436% from the amount produced in 2021, and Techiron Resources Inc. produced 77,128 t from the Homonhon chromite project, which was an increase of 338%. Taganito HPAL decided to construct a chromite recovery plant in 2017 and commenced production of chromite concentrate in March 2021 as a byproduct of the production of nickel-cobalt mixed sulfide. The plant was ramping up production in 2022 (Sumitomo Metal Mining Co. Ltd., 2017; 2023, p. 88;

Philippine Resources, 2021b; Mines and Geoscience Bureau, 2023c).

Copper and Gold.—Mined copper and gold production in 2022 increased by 15% each to 59,509 t and 29,007 kilograms (kg), respectively, owing mainly to the output increases of OceanaGold Philippines Inc., which was fully owned by OceanaGold Corp. of Canada. In 2022, after its Didipio Mine returned to full production, OceanaGold Philippines produced 64,547 t of copper concentrate and 3,258 kg of gold, which were increases of 529% and 605%, respectively, compared with production in 2021. The Didipio Mine was expected to produce up to 14,000 t of copper and 4,000 kg of gold in 2023, and the mine's remaining life was expected to be about 10 years. The company planned to start resource conversion drilling of the two mineralized structures recently discovered outside of the current resource (table 1; Mines and Geosciences Bureau, 2023c, p. 1, 2; OceanaGold Corp., 2023a; 2023b, p. 1, 7).

TVI Resource Development Philippines Inc., which owned and operated the Balabag gold-silver project, increased production by 368% to 1,103 kg of gold in 2022 through ramping up and optimization of operations. The company commenced commercial production at Balabag in November 2021 (TVI Pacific Inc., 2022; Mines and Geosciences Bureau, 2023c, p. 2).

Carmen Copper Corp., which was fully owned by Atlas Consolidated Mining and Development Corp., produced 136,759 t of copper concentrate in 2022 (which was a decrease of 6% compared with production in 2021) owing to a lower milled amount. The company was engaged in a \$107 million project to construct new sorting and crushing facilities and an airstrip site waste rock dump at its Toledo copper mine in Cebu Province (Mines and Geosciences Bureau, 2023c, p. 2; Rivera, 2023).

In January, Philex Mining Corp. announced the completion of a mine feasibility study for the Boyongan deposit at its Silangan copper-gold project in Surigao del Norte Province, which had been delayed owing to the 2017 ban on new open pit mining. Philex Mining planned to start mining at a level of 700,000 metric tons per year (t/yr) of ore in 2025 and to increase the mined amount to 1.3 million metric tons per year (Mt/yr) of ore by the sixth year of operation and to 2.7 Mt/yr by the ninth year. The mine life was expected to be 28 years. Philex Mining's Padcal Mine, which was an underground mine and accounted for 22% of copper production in the Philippines in 2022, was scheduled to cease operations by yearend 2024. In October, the company was considering extending the Padcal Mine's operation until 2027. As of December 31, 2022, the remaining reserves at Padcal were 40.7 million metric tons (Mt) grading 0.21 gram per metric ton gold and 0.17% copper (Gomez, 2022; Jocson, 2022; Lagare, 2022b; Sarmiento, 2022; Mines and Geosciences Bureau, 2023c, p. 2; Philex Mining Corp., 2023, p. 25).

In May, the South Cotabato Province lifted a 12-year-old provincial ban on the Tampakan copper-gold project owned by Alsons Consolidated Resources Inc. and operated by Sagittarius Mines Inc. following the nationwide removal of the ban on open pit mining by the Government in December 2021. The Tampakan project, once completed, was expected to produce 375,000 t/yr of copper and 11.2 t/yr of gold for 17 years.

Its commercial operation was expected to start up during the last quarter of 2026 (Sarmiento, 2022; Dela Cruz, 2023).

Iron and Steel.—In June, Mount Zynai 0304 Mining Corp. and Shenzhou Mining Corp. of China started construction of the first integrated ore smelter and steel mill project at the Mount Zynai Industrial Park in Davao City, Zamboanga Sibugay Province. Iron ore would be provided by Czarstone Mining Corp. from the Provinces of Zamboanga del Sur and Zamboanga del Norte. Construction was expected to take 3 to 4 years and, once completed, the project would have the capacity to produce 1.5 Mt/yr of steel products (Borneo Bulletin, 2022; South East Asia Iron and Steel Institute, 2022).

Iron Ore.—In 2022, the Philippines produced 75,771 t of iron ore from two active mines. In April 2021, JDVC Resources Corp., which was owned by Apollo Global Capital Inc., deployed a vessel (*MB Siphon 1*) for trial operation of the country's first large-scale offshore iron ore mining project of the seabed close to Gonzaga, Cagayan Province. According to Memorandum Circular No. 2016–05, which established offshore mining guidelines in the Philippines, the MGB authorized JDVC Resources to conduct the offshore mining project because the site is located 1,500 meters (m) away from the shoreline and thus would not damage coastal and marine environments. Inclement weather and ongoing discussions with concerned government agencies about the need for preventive measures to be put in place to avoid oil spills delayed the trial operation; the company had been planning to collect black sands from as far down as 200 m below sea level using a deep-sea siphon vessel, but the vessel was not approved to operate in 2022. The sands would be processed at an inland facility to increase the iron ore grade to between 62% and 65%. The probable reserves at this offshore project were estimated to be 631 Mt of black sand (pure magnetite). JDVC expected resources to be sufficient to produce 3.65 Mt/yr of iron ore during a mine life of 47 years (Reyes, 2019; Philippine Resources, 2021a; Lagare, 2022a; Domingo, 2023; JDVC Resources Corp., 2023; Mines and Geosciences Bureau, 2023c, p. 2).

Nickel.—The production of mined nickel (Ni content in laterite ore) in the Philippines decreased by 11% to 345,000 t (estimated) in 2022 because 44% of the 32 listed nickel mines did not produce at all in the first quarter owing largely to unfavorable weather conditions. The amount of nickel ore (gross weight) mined decreased to 29.4 Mt in 2022 from 32.9 Mt in 2021. Taganito Mining Corp. produced 5.57 Mt of direct-shipping ore in Surigao del Norte Province, which accounted for 19% of the total nickel mined in the Philippines in 2022, followed by Rio Tuba Nickel Mining Corp. in Palawan Province, 3.03 Mt (10%); CTP Construction & Mining Corp. in Surigao del Sur Province, including the Adlay and Dahican nickel projects, 2.94 Mt (10%); and Carrascal Nickel Corp. in Surigao del Sur Province, 2.87 Mt (9.8%) (table 1; Philippine Resources, 2022; Mines and Geosciences Bureau, 2023a, p. 2; 2023c, p. 3).

In September, Ipilan Nickel Corp., which was a subsidiary of Global Ferronickel Holdings Inc., shipped the first exports of nickel ore—54,700 t (wet)—from Brooke's Point, Palawan Province, to China. The total production at Brooke's Point in 2022 was 318,003 t (dry). Global Ferronickel estimated a mine

life of more than 10 years and planned to ramp up its production to 1.5 Mt/yr of nickel ore (wet). In 2022, the SRMI-VBMC Dinagat project, which was located in Dinagat Island Province and owned by Vista Buena Mining Corp. and operated by SR Metal Inc., commenced operations and produced 295,504 t (dry) of nickel ore; the Banaybanay project in Davao Oriental Province, which was owned by Riverbend Consolidated Mining Corp. and operated by ARC Nickel Resources Inc., commenced production and produced 272,180 t (dry); and the Shangfil chromite-nickel project in Zambales Province, which was owned by Shangfil Mining & Trading Corp., commenced production and produced 40,000 t (dry) (Global Ferronickel Holdings Inc., 2022; Talavera, 2022; Zambales Chromite Mining Co. Inc., 2022, p. 2; Mines and Geosciences Bureau, 2023c, p. 3).

Industrial Minerals

Cement.—In 2022, the Philippines had 14 integrated cement plants with a total production capacity of 46.8 Mt/yr. Cement production in 2022 increased by 6% to 28.7 Mt (estimated) compared with that in 2021. Vietnam provided 76% of the total amount of cement (10.5 Mt) imported by the Philippines in 2022 compared with 73% (10.2 Mt) in 2021. In December, the Philippines Department of Trade and Industry decided to impose antidumping duties on cement imported from Vietnam. The 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; Philippine Daily Inquirer, 2022; United Nations, 2023).

In 2022, Solid Cement Corp., which was wholly owned by Cemex Holdings Philippines Inc., continued with the construction of a new 1.5-Mt/yr production line at its existing integrated plant in Antipolo, Rizal Province. The new line was expected to be completed in March 2024. In December, San Miguel Equity Investment Inc. acquired an 88.5% stake in Eagle Cement Corp. of San Ildefonso, Bulacan Province, which had a cement-production capacity of 8.1 Mt/yr. San Miguel continued with the construction of a 2-Mt/yr cement plant in Mindanao, which was expected to begin operations in May 2023. Taiheiyō Cement Philippines Inc. started construction of an additional production line with a capacity of 3 Mt/yr at its San Fernando plant in Cebu Province; the line was expected to commence production in mid-2024 (table 2; Global Cement, 2022b, c; Perilli, 2022; Taiheiyō Cement Corp., 2022, p. 1; Cemex Holdings Philippines Inc., 2023, p. 22; San Miguel Corp., 2023, p. 245).

Mineral Fuels

Coal.—Coal production in the Philippines increased by 12% to 16.1 Mt in 2022. Coal reserves decreased by 4.4% to approximately 350 Mt in 2022 compared with those in 2021. In December, Abacus Coal Exploration and Development Corp., which was owned by AbaCore Capital Holdings Inc. and Oriental Vision Mining Philippines Inc., received approval from the National Commission on Indigenous Peoples for the production of 187,000 t/yr of coal in Surigao del Sur Province (table 1; Reyes, 2019; Department of Energy, 2020; Flores, 2022; Philippine Statistics Authority, 2023c).

Outlook

According to the International Monetary Fund, the real GDP growth of the Philippines is projected to be about 6% in the next few years. Following the lifting of bans on open pit mining and new mining projects in 2021 and the reactivation of various mining projects in 2022, the mineral commodity output of the Philippines is expected to increase in the coming years. Specifically, copper and gold production may increase as a result of new exploration and feasibility study activities and the reactivation of existing projects; nickel output may increase as the newly commissioned nickel projects ramp up production in the next few years; cement production may increase owing to the expansion and new construction of capacities in Cebu and Rizal Provinces; and steel output may increase if the first integrated steel complex in Davao City comes online as planned. In addition, the delayed trial operation of offshore iron mining may start in the short term and, if successful, may increase the output of iron ore in the country. The Government is expected to continue to protect the domestic cement industry using antidumping countermeasures on cement imports (International Monetary Fund, 2023; Penarroyo, 2023).

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TABLE 1
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2018	2019	2020	2021	2022	
METALS						
Chromium, mine, chromite	45,011	36,423	35,112	30,721	147,492	
Cobalt, mine, Co content ^{e,3}	3,600	4,300	4,100	3,600	3,900	
Copper:						
Mine, concentrates, Cu content	69,933	71,892	60,856	51,586	59,509	
Smelter, primary	170,900	217,800	247,000	219,800	185,000	
Refinery, primary	170,800	217,300	220,900	206,200	184,000	
Gold, mine, Au content	kilograms	20,765	20,646	21,030	25,332	29,007
Iron ore, mine:						
Gross weight	--	--	42,795	68,191	75,771	
Fe content	--	--	26,700	42,600	47,400	
Iron and steel:						
Raw steel	1,475,000	1,915,000	892,000	1,555,000 ^r	1,550,000	
Products, hot-rolled	4,864,000	4,727,000	3,658,000	3,700,000 ^e	3,690,000 ^e	
Lead, refinery, secondary ^e	10,000	10,000	10,000	9,800	11,000	
Nickel, Ni content:						
Mine, laterite ore	344,966	323,325	328,372	387,047	345,000 ^e	
Intermediate, nickel-cobalt sulfide	48,633	51,144	49,647	43,493	46,700 ^e	
Rare earths, scandium oxalate	kilograms	1,618	4,355	4,490 ^e	5,600 ^e	7,050 ^e
Silver, mine, Ag content	do.	29,782	31,267	24,024	30,856	56,227
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	27,700	27,700	23,000 ^e	27,000 ^e	28,700 ^e
Clay:						
Bentonite	4,558	6,329	4,720	6,059	22,603	
Kaolin	10,000 ^e	10,000 ^e	41,000	28,200	49,300	
Unspecified	251,064	235,228	191,907	105,633	138,011	
Lime	128,650	142,568	159,141	147,577	191,305	
Perlite	9,696	6,608	-- ^e	4,631	24,878	
Phosphate rock:						
Gross weight	1,236	740	570	--	70	
P ₂ O ₅ content	420	250	190	--	25	
Pumice and related materials:						
Pumice	792	114	4,010	2,020	242	
Volcanic tuff	30,241	26,297	26,100	29,100	54,100	
Salt, sea salt ^e	192,000	190,000	120,000	41,000	51,000	
Sand and gravel, industrial, silica	thousand metric tons	1,220	1,225	660	908	818
Stone, sand and gravel, construction:						
Sand and gravel	do.	47,107	40,793	32,600	34,500	36,800
Stone:						
Crushed:						
Dolomite	1,560,737	1,521,681	1,180,899	1,471,771	1,006,160	
Limestone ⁴	thousand metric tons	28,723	27,624	23,067	31,466	29,576
Pozzolan, for cement	37,516	634,982	1,048,334	1,150,585	2,298,900	
Shale	2,360,913	2,728,902	2,142,439	3,505,376	5,152,685	
Volcanic cinder	9,200 ^e	9,200 ^e	6,300	280	4,200	
Other ⁵	thousand metric tons	12,057	14,623	10,774	21,100 ^r	15,500
Dimension, marble	224,786	922	194,000	55,700	255,000	
Zeolites	3,600	5,222	6,126	4,391	6,900	
MINERAL FUELS AND RELATED MATERIALS						
Coal	thousand metric tons	13,056	15,273	13,267	14,407 ^r	16,078
Natural gas, gross	million cubic meters	4,268	4,401	4,011	3,427	3,215
Petroleum:						
Crude	thousand 42-gallon barrels	1,264	776	700	632	559 ^e
Condensate	do.	4,061	4,406	3,494	2,936	2,410 ^e
Refinery products	do.	86,000	59,500	34,600	28,800	17,284

See footnotes at end of table.

TABLE 1—Continued
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

⁰Estimated. ¹Revised. do. Ditto. -- Zero.

¹Table includes data available through November 13, 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 cobalt, feldspar, refined gold, platinum-group metals as byproducts of other metal production, quartz, sulfur, refined tin (secondary), and refined tungsten (secondary) may have been produced, but available information was inadequate to make reliable estimates of output.

³Cobalt contained in the following materials: nickel-cobalt sulfide produced in the Philippines and lateritic nickel ore exported to Australia.

⁴Includes limestone for agriculture, cement manufacturing, industrial use, and other.

⁵Includes materials described as aggregates; basalt; boulders; limestone for construction; mixed aggregates; pebbles; sandstone; and stones, cobbles, and boulders.

TABLE 2
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c	
Cement	thousand metric tons	APO Cement Corp. (Cemex Holding Philippines Inc., 100%)	APO cement plant, Naga, Cebu Province	3,800
Do.	do.	Big Boss Cement Inc. [SM Investments Corp. (SMIC), 100%]	Pampanga grinding plant, Porac, Pampanga Province	1,500
Do.	do.	Eagle Cement Corp. (San Miguel Equity Investments Inc., 88.5%, and other, 11.5%)	Bulacan cement plant (three production lines), Akle, San Ildefonso, Bulacan Province	8,100
Do.	do.	do.	Grinding plant in Limay, Bataan Province	480
Do.	do.	Goodfound Cement Corp.	Mayon plant, Camalig, Albay Province	830
Do.	do.	Holcim Philippines Inc. (Holcim Ltd., 85.7%, and others, 14.3%)	Bulacan plant, Norzagaray, Bulacan Province; Lugait plant, Lugait, Misamis Oriental Province; Mabini grinding plant, Mabini, Batangas Province	5,200
Do.	do.	do.	Davao plant, Davao City, Davao del Sur Province	2,400
Do.	do.	do.	La Union plant, Bacnotan, La Union Province	1,800
Do.	do.	Petra Cement Inc. [SM Investments Corp. (SMIC), 100%]	Zamboanga grinding plant, Roxas, Zamboanga del Norte Province	1,000
Do.	do.	Philcement Corp. (Phinma Corp., 100%)	Bataan grinding plant and terminal facility, Mariveles, Bataan Province	2,000
Do.	do.	Republic Cement & Building Materials Inc. [AEV CRH Holdings Inc., 99.1% (Aboitiz Equity Ventures, 60%, and CRH Holdings, 40%)]	Batangas plant, Taysan, Batangas Province; Bulacan plant, Norzagaray, Bulacan Province; Danao plant, Danao City, Cebu Province; Iligan plant, Iligan City, Lanao del Norte Province; Norzagaray plant, Norzagaray, Bulacan Province; Teresa plant, Teresa, Rizal Province	9,500
Do.	do.	San Miguel Northern Cement Inc. (San Miguel Corp., 100%)	Cement plant in Sison, Pangasinan Province	6,900
Do.	do.	Solid Cement Corp. (Cemex Holdings Philippines Inc., 100%)	Antipolo cement plant, Antipolo, Rizal Province	1,900
Do.	do.	Taiheiyo Cement Philippines Inc. (Taiheiyo Cement Corp., 100%)	San Fernando cement plant, San Fernando, Cebu Province	1,300
Chromite		Chromiteking Inc. (owner), and Techiron Resources Inc. (operator)	Homonhon chromite project, Guiuan, Eastern Samar Province	77,000
Do.		Krominco Inc.	Redondo Mine, Loreto, Dinagat Island Province ¹	26,000
Do.		Mt. Sinai Mining Exploration and Development Corp.	Mine in Homonhon Island, Guiuan, Eastern Samar Province ²	NA
Do.		Shangfil Mining and Trading Corp.	Mine in Santa Cruz, Zambales Province ²	NA
Do.		Taganito HPAL Nickel Corp. [Sumitomo Metal Mining Co. Ltd. (operator), 75%; Mitsui Co. Ltd., 15%; Nickel Asia Corp., 10%]	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province, Mindanao Island	70,500
Clay		Orophil Stonecraft Inc.	Mine in Baao, Camarines Sur Province	NA
Do.		UBS Marketing Corp.	Mine in Legazpi, Albay Province	NA
Coal	thousand metric tons	Semirara Mining and Power Corp. (DMCI Holdings Inc., 56.65%, and others, 43.35%)	Mines in Caluya, Antique Province	14,300
Cobalt:				
Mine, Co content		Rio Tuba Nickel Mining Corp. (Nickel Asia Corp., 60%; Pacific Metals Co. Ltd., 36%; Sojitz Corp., 4%)	Rio Tuba nickel project, Barrio Rio Tuba, Bataraza Municipality, Palawan Province	1,500
Do.		Taganito Mining Corp. (Nickel Asia Corp., 65%; Pacific Metals Co. Ltd., 33.5%; Sojitz Corp., 1.5%)	Taganito Mine, Claver, Surigao del Norte Province	3,000
Refined		Coral Bay Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 84.375%, and Nickel Asia Corp., 15.625%)	Coral Bay nickel high-pressure acid-leach (HPAL) plant, Rio Tuba, Bataraza, Palawan Province	1,300
Do.		Taganito HPAL Nickel Corp. (Sumitomo Metal Mining Co. Ltd. (operator), 75%; Mitsui Co. Ltd., 15%; Nickel Asia Corp., 10%)	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province, Mindanao Island	2,650

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Copper:				
Mine, Cu content		Carmen Copper Corp. (Atlas Consolidated Mining and Development Corp., 100%)	Toledo copper mine (Carmen mining area), Toledo, Cebu Province	38,000
Do.		Lepanto Consolidated Mining Corp.	Lepanto Mines, Mankayan, Benguet Province	320
Do.		OceanaGold Philippines Inc. (OceanaGold Corp., 100%)	Didipio copper-gold mine, Nagtipunan, Quirino Province	15,000
Do.		Philex Mining Corp.	Padcal copper mine, Tuba and Itogon, Benguet Province	12,000
Refined		Philippine Associated Smelting and Refining Corp. (PASAR) (Glencore International AG, 78.2%, and others, 21.8%)	Smelter and refinery at Leyte Industrial Development Estate in Isabel, Leyte Province	215,000
Feldspar		Paladino Management & Development Corp., 60%, and AIM Exploration Inc., 40%	Ravel Mine, Pasuquin, Ilocos Norte Province	NA
Gold:				
Mine, Au content	kilograms	Apex Mining Co. Inc.	Maco gold mine, Mabini, Davao de Oro Province	2,850
Do.	do.	Benguet Corp.	Acupan Mine, Itogon, Benguet Province	290
Do.	do.	Carmen Copper Corp. (Atlas Consolidated Mining and Development Corp., 100%)	Toledo copper mine (Carmen mining area), Toledo, Cebu Province	700
Do.	do.	Filminera Resources Corp. (mine owner) (Zoom Mineral Holdings Inc., 60%, and B2Gold Corp., 40%), and Philippines Gold Processing & Refining Corp. (plant owner) (B2Gold Corp., 100%)	Masbate gold mine and processing plant, Aroroy, Masbate Province	6,600
Do.	do.	FCF Minerals Corp. (Metals Exploration plc, 100%)	Runruno gold-molybdenum mine, Kasibu, Nueva Vizcaya Province	2,200
Do.	do.	Greenstone Resources Corp. (TVI Resource Development Philippines Inc., 100%)	Siana gold mine, Tubod, Surigao del Norte Province ¹	320
Do.	do.	Itogon-Suyoc Resources Inc. (ISRI) (Apex Mining Co. Ltd., 100%)	Sangilo Mine, Itogon, Benguet Province	270
Do.	do.	Lepanto Consolidated Mining Corp.	Victoria Mine, Mankayan, Benguet Province	600
Do.	do.	OceanaGold Philippines Inc. (OceanaGold Corp., 100%)	Didipio copper-gold mine, Nagtipunan, Quirino Province	3,300
Do.	do.	Philex Mining Corp.	Padcal copper mine, Tuba and Itogon, Benguet Province	1,500
Do.	do.	Philsaga Mining Corp. (mine owner) (Ten Sixty Four Ltd., 40%, and others, 60%) and Mindanao Mineral Processing and Refining Corp. (plant owner) (Ten Sixty Four Ltd., 100%)	Co-O gold mine and processing plant, Rosario Bunawan, Agusan del Sur Province	2,700
Do.	do.	Tribal Mining Corp.	Kematu gold-silver mine, T'boli, South Cotabato Province	50
Do.	do.	TVI Resource Development Philippine Inc. (TVI Pacific Inc., 30.66%)	Balabag gold-silver mine, Bayog, Zamboanga del Sur Province	1,100
Refined	do.	Bangko Sentral ng Pilipinas	Refinery and Mint, Quezon City	6,900
Iron ore, concentrate		Atro Mining-Vitali Inc. [Atro International (FZE), 100%]	Mine in Vitali, Zamboanga del Sur Province ²	43,000
Do.		Ore Asia Mining and Development Corp.	Camachin iron mine, Dona Remedios Trinidad, Bulacan Province	73,000
Do.		Strong Built Mining Development Corp. (owner), and MacArthur Iron Sand Projects Corp. (operator)	Mine in San Pedro, MacArthur, Leyte Province	3,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Lime	H.T. Mining Products Resources Corp.	Apogan factory, Tinandog, Atimon, Quezon Province	44,000
Do.	Unichamp Mineral Philippines Inc.	Plant in Rio Tuba Economic Processing Zone, Palawan Province	146,000
Do.	Upward Agro Industrial Corp.	Plant in Bacolod, Negros Occidental Province	NA
Natural gas million cubic meters	Malampaya Energy Group (Udenna Group), 90%, and Philippine National Oil Co. (PNOC) Exploration Corp., 10%	Malampaya gasfield (Block SC 38), 80 kilometers offshore Palawan Province	4,300
Nickel, Ni content:			
Mine	AAM-PHIL Natural Resources Exploration and Development Corp.	Dinagat chromite-nickel project, Esperanza, Loreto, Dinagat Islands Province ²	1,800
Do.	Adnama Mining Resources Inc.	Urbiztondo nickel project, Claver, Surigao del Norte Province	3,300
Do.	Agata Mining Ventures Inc. (TVI Resource Development Philippines Inc., 60%; Minimax Mineral Exploration Corp., 25%; MRL Nickel Philippines Inc., 15%)	Agata nickel laterite project, Tubay, Agusan del Norte Province	13,500
Do.	Benguet Corp. Resources Management Corp. (BRMC) (Benguet Corp., 100%)	Santa Cruz nickel mining project, Santa Cruz, Zambales Province	3,800
Do.	Berong Nickel Corp. (DMCI Holdings Inc., 74.8%, and Atlas Mining Co. Ltd., 25.2%)	Berong nickel project, Quezon, Palawan Province ²	8,600
Do.	Cagdianao Mining Corp. (Nickel Asia Corp., 100%)	Cagdianao nickel project, Valencia, Dinagat Islands Province	19,000
Do.	Carrascal Nickel Corp.	Carrascal nickel project, Bon-ot, Carrascal, Surigao del Sur Province	24,400
Do.	Century Peak Holding Corp.	Esperanza nickel project, Panamaon, Loreto, Dinagat Islands Province	51,600
Do.	Cit nickel Mines and Development Corp. (Oriental Peninsula Resource Group Inc.)	Toronto Narra Mine and Pulot Sofronio Nickel Mine, Palawan Province	11,000
Do.	CTP Construction & Mining Corp.	Adlay nickel project, Adlay, Carrascal, Surigao del Sur Province	26,100
Do.	do.	Dahican nickel project, Mindanao, Surigao del Sur Province	2,600
Do.	Dinapigue Mining Corp. (Nickel Asia Corp., 100%)	Isabela nickel mining project, Dimaluade, Dinapigue, Isabela Province	14,500
Do.	Emir Mineral Resources Corp.	Homonhon laterite nickel project, Homonhon Island, Guiuan, Eastern Samar Province	6,700
Do.	Eramen Minerals Inc.	Eramen Santa Cruz Mining Project, Santa Cruz, Zambales Province	20,300
Do.	Global Ferronickel Holdings Inc. (owner), and Platinum Group Metals Corp. (operator)	Cagdianao nickel project, Claver, Surigao del Norte Province	24,900
Do.	Hinatuan Mining Corp. (Nickel Asia Corp., 100%)	Tagana-an nickel project, Hinatuan Island, Surigao del Norte Province	3,200
Do.	Ipilan Nickel Corp. (Global Ferronickel Holdings Inc.)	Ipilan nickel project, Saamin, Quezon, Palawan Province	2,900
Do.	Libjo Mining Corp.	Libjo nickel laterite mining project, Lone, Dinagat Islands Province	3,500
Do.	LNL Archipelago Minerals Inc.	LNL AM Santa Cruz mining project, Santa Cruz, Zambales Province	12,300
Do.	Marcventures Mining and Development Corp.	Cantilan nickel project, Cantilan, Surigao del Sur Province	11,400
Do.	Nickelace Inc.	Homonhon nickel-iron project	3,600

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Nickel, Ni content:—Continued				
Mine—Continued		Rio Tuba Nickel Mining Corp. (Nickel Asia Corp., 60%; Pacific Metals Co. Ltd., 36%; Sojitz Corp., 4%)	Rio Tuba nickel project, Rio Tuba, Bataraza, Palawan Province	36,000
Do.		Riverbend Consolidated Mining Corp. (owner), and ARC Nickel Resources Inc. (operator)	Banaybanay nickel laterite mining project, Banaybanay, Davao Oriental Province	3,200
Do.		Shangfil Mining & Trading Corp.	Shangfil chromite & nickel mining project, Bolitoc, Santa Cruz, Zambales Province	500
Do.		SR Metals Inc.	Tubay nickel project, Tubay, Agusan del Norte Province	10,200
Do.		Taganito Mining Corp. (Nickel Asia Corp., 65%; Pacific Metals Co. Ltd., 33.5%; Sojitz Corp., 1.5%)	Taganito Mine, Claver, Surigao del Norte Province	74,100
Do.		Vista Buena Mining Corp. (owner), and SR Metal Inc. (operator)	SRMI-VBMC Dinagat project, Tubajon, Dinagat Island Province	3,500
Do.		Zambales Diversified Metals Corp. (DMCI Holdings Inc., 100%)	Santa Cruz-Candelaria nickel project, Zambales Province	9,200
Intermediate product		Coral Bay Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 84.375%, and Nickel Asia Corp., 15.625%)	Coral Bay nickel high-pressure acid-leach (HPAL) plant, Rio Tuba, Bataraza, Palawan Province	24,000
Do.		Taganito HPAL Nickel Corp. [Sumitomo Metal Mining Co. Ltd. (operator), 75%; Mitsui Co. Ltd., 15%; Nickel Asia Corp., 10%]	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province	36,000
Petroleum:				
Crude	thousand 42-gallon barrels	China International Mining Petroleum Co. Ltd. (CIMP, operator) (Polyard Petroleum International Group Ltd., 50.4%; Skywealth Group Holdings Ltd., 16%; Phil-Mal Energy International Inc., 4%; others, 29.6%)	Alegria oilfield (Block SC 49), Alegria and offshore Cebu Province	130
Do.	do.	Nido Production (Galoc) Pty Ltd. (Tamarind Resources Pte Ltd., 78.83%; The Philodril Corp., 10.18%; Oriental Petroleum and Minerals Corp., 7.78%; PXP Energy Corp., 3.21%)	Galoc oilfield (Block SC 14C1), 60 kilometers northwest of Culion Island, Palawan Province	750
Condensate	do.	Malampaya Energy Group (Udenna Group), 90%, and Philippine National Oil Co. (PNOC) Exploration Corp., 10%	Malampaya gasfield (Block SC 38), 80 kilometers offshore Palawan Province	4,000
Refinery	do.	Petron Corp. (SEA Refinery Corp., 50.1%; San Miguel Corp., 18.2%; others, 31.7%)	Petron Bataan refinery, Limay, Bataan Province	65,700
Rare earths, scandium oxalate	kilograms	Taganito HPAL Nickel Corp. (Sumitomo Metal Mining Co. Ltd. (operator), 75%; Mitsui Co. Ltd., 15%; Nickel Asia Corp., 10%)	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province	21,000
Salt		JALD Industries Corp.	Salterns in Mindoro Occidental Province	96,000
Do.		Pacific Farms Inc. (Salinas Corp., 100%)	Salterns in Bolinao, Pangasinan Province	35,000
Do.		Small scale salterns	Salterns in Dasol, Pangasinan Province	18,000
Silver, mine, Ag content	kilograms	Apex Mining Co. Inc.	Maco gold mine, Mabini, Davao de Oro Province	12,000
Do.	do.	Benguet Corp.	Acupan Mine, Itogon, Benguet Province	90
Do.	do.	Carmen Copper Corp. (Atlas Consolidated Mining and Development Corp., 100%)	Toledo copper mine (Carmen mining area), Toledo, Cebu Province	1,200
Do.	do.	FCF Minerals Corp. (Metals Exploration plc, 100%)	Runruno gold-molybdenum mine, Kasibu, Nueva Vizcaya Province	1,350

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^c
Silver, mine, Ag content— Continued	kilograms	Filminer Resources Corp. (mine owner and operator), and Philippines Gold Processing & Refining Corp. (processing plant owner and developer) (B2Gold Corp., 100%)	Masbate gold mine, Aroroy, Masbate Province	6,100
Do.	do.	Greenstone Resources Corp. (TVI Resource Development Philippines Inc., 100%)	Siana gold mine, Tubod, Surigao del Norte Province ¹	400
Do.	do.	Itoyon-Suyoc Resources Inc. (Apex Mining Co. Ltd., 100%)	Sangilo (or Itoyon-Suyoc) Mine, Mankayan, Benguet Province	30
Do.	do.	Lepanto Consolidated Mining Co.	Lepanto Mine, Mankayan, Benguet Province	1,500
Do.	do.	OceanaGold Philippines Inc. (OceanaGold Corp., 100%)	Didipio copper-gold mine, Nagtipunan, Quirino Province	5,700
Do.	do.	Philex Mining Corp.	Padcal copper mine, Tuba and Itoyon, Benguet Province	2,200
Do.	do.	Philsaga Mining Corp. (mine owner) (Ten Sixty Four Ltd., 40%, and others, 60%) and Mindanao Mineral Processing and Refining Corp. (plant owner) (Ten Sixty Four Ltd., 100%)	Co-O gold mine and processing plant, Rosario Bunawan, Agusan del Sur Province	1,260
Do.	do.	Tribal Mining Corp.	Kematu gold-silver mine, T'boli, South Cotabato Province	110
Do.	do.	TVI Resource Development Philippine Inc. (TVI Pacific Inc., 30.66%, and others, 69.34%)	Balabag gold-silver mine, Bayog, Zamboanga del Sur Province	26,000
Steel:				
Raw	thousand metric tons	Calaca Works (Steel Asia Manufacturing Corp.)	Integrated plant in Calaca, Batangas Province	500
Do.	do.	Philippine Sinter Corp. (JFE Steel Corp.)	Plant in Villanueva, Misamis Oriental Province	5,300
Products	do.	Capitol Steel Corp.	Plant in Quezon City, Metro Manila	500
Do.	do.	Cathay Pacific Steel Corp. (CAPASCO)	do.	300
Do.	do.	JFE Shoji Steel Philippines Inc. (JFE Shoji Corp.)	Plant in Binan, Laguna Province	NA
Do.	do.	PAG-ASA Steel Works Inc.	Plant in Pasig, Metro Manila	800
Do.	do.	Sagarthama Steel Trading Corp.	Binan steel plant, Binan, Laguna Province	NA
Do.	do.	Steel Asia Manufacturing Corp., of which: Calaca Works (M3)	Includes: Integrated plant in Calaca, Batangas Province	500
Do.	do.	Carcar Works (M4)	Rebar plant in Cebu Province	300
Do.	do.	Compostela Steel Inc.	Plant in Compostela, Cebu Province	1,000
Do.	do.	Davao Works (M5)	Rebar plant in Davao, Davao del Sur Province	600
Do.	do.	Meycauayan Works (M1, M2)	2 rebar plants in Meycauayan, Bulacan Province	600
Do.	do.	Villanueva Works (M6)	Plant in Misamis Oriental Province	250
Do.	do.	Steel Corporation of the Philippines (Philsteel Holding Corp.)	Plant in Balayan, Batangas Province	600
Stone:				
Crushed, limestone		Eagle Cement Co. (Far East Cement Corp., 60.2%, and others, 39.8%)	Quarry in San Ildefonso, Bulacan Province	NA
Do.		Holcim Mining and Development Corp. (HMDC)	Quarries in Bacnotan and Balaogan, La Union Province	NA
Do.		do.	Quarries in Davao City, Davao del Sur Province, and Maasim, Sarangani Province	NA
Do.		do.	Quarries in Lugait, Misamis Oriental Province	NA
Do.		do.	Quarries in Kiwalan and Iligan City, Lanao del Norte Province	NA
Do.		do.	Quarry in Norzagaray, Bulacan Province	NA

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity ^e
Stone:—Continued			
Crushed, limestone— Continued	Northern Cement Corp.	Quarry in Sison, Pangasinan Province	NA
Do.	Republic Cement Land and Resources Inc.	Quarries in Norzagaray and San Jose del Monte, Bulacan Province	NA
Do.	Republic Cement Mindanao Inc.	Quarry in Iligan City, Lanao del Norte Province	NA
Do.	Republic Cement & Building Materials Inc.	Quarry in Norzagaray, Bulacan Province	NA
Do.	do.	Quarry in Taysan, Batangas Province	NA
Do.	do.	Quarry in Teresa, Rizal Province	NA
Dimension, marble	Quarry Venture Philippines Inc.	Quarries in Cebu, Naga, Pinamungahan, and Toledo Municipalities, Cebu Province	NA
Do.	Teresa Marble Corp.	Quarry in Antipolo City, Rizal Province	NA
Tin, refined, secondary	O.M. Manufacturing Philippines Inc. (O.M. Co. Ltd., 100%)	Plant in Rosario, Cavite Province	1,000
Tungsten, refinery, secondary	Philippine Chuangxin Industrial Co. Inc.	Plant in Marilao, Bulacan Province	NA

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

¹Under suspension in 2022.

²No production 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.