



2019 Minerals Yearbook

PHILIPPINES [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF THE PHILIPPINES

By Ji Won Moon

In 2019, the Philippines was the world's second-ranked producer of nickel and accounted for 12% of the world's production and 5.1% of the world's reserves. The Philippines was also the fourth-ranked producer of cobalt and accounted for 3.5% of the world's production and 3.7% of the world's reserves. The country also produced other mineral commodities, such as cement, chromium, clay, coal, copper, feldspar, gold, natural gas, petroleum, salt, silver, and stone (table 1; McRae, 2021; Shedd, 2021).

Minerals in the National Economy

In 2019, the growth rate of the Philippines' real gross domestic product (GDP) was 6.0% compared with 6.3% in 2018. The nominal GDP was \$376 billion¹ (PHP19.5 trillion). The industrial sector, which accounted for 30.2% of the GDP in 2019, had a growth rate of 4.7% compared with 7.3% in 2018. Within the industrial sector, the mining and quarrying subsector accounted for 0.8% of the GDP in 2019 and had a growth rate of 3.6% compared with 2.0% in 2018. The mining and quarrying subsector employed 190,000 people compared with 207,000 people in 2018 (Mines and Geosciences Bureau, 2020b; Philippine Statistics Authority, 2020b, p. 30, 33, 35).

In 2019, as reported by the Mines and Geosciences Bureau (2020a), the value of the Philippines' "metallic mineral" production increased by 7.0% to \$2.52 billion (PHP 130.7 billion). The main mineral commodities produced were nickel ore and its products, including mixed nickel-cobalt sulfide and scandium oxalate (valued at \$1.23 billion), gold (\$914 million), and copper (\$356 million). The increase in the total value of metallic mineral production was attributed to the significant (15%) increase in the output value of mined nickel and its products. In 2019, the annual average price of nickel increased by 6.4%, and that of gold, by 9.6% (Mines and Geosciences Bureau, 2020a, b).

Government Policies and Programs

The principal laws that regulate the mineral industry of 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 for the implementing rules and regulations known as Mining Act IRR. Presidential Decree No. 87 (Oil Exploration and Development Act) of 1972 mandates that the Government undertake petroleum exploration and production. Presidential Decree No. 972 (Coal Development Act) of 1976 authorizes the Government to undertake active exploration, development, and production of coal resources and to execute coal operating contracts. The DENR announced a ban

on new open pit mining in April 2017 after issuing a permanent closure order to 22 out of 41 operating open pit mines and canceling 73 exploration-stage projects in February (Deutsche Welle, 2017; Philippine Extractive Industries Transparency Initiative, 2018, p. 6, 15, 17, 18; Bunye, 2019).

Production

In 2019, production of rare earths (scandium oxalate) increased by 169%; zeolites, by 45%; bentonite, by 39%; copper (primary smelter and primary refinery), by 27% each; crushed stone (other), by 21%; coal (bituminous and subbituminous), by an estimated 17% each; and lime, by 11%. Production of pumice decreased by 86%; liquefied petroleum gas, by 44%; refinery products (other), by 43%; phosphate rock (gross weight and P₂O₅ content), by 40% each; crude petroleum, by 39%; perlite, by 32%; gasoline, by 31%; diesel, by 30%; chromite, by 29%; kerosene, by 23%; and sand and gravel (construction) and volcanic tuff, by 13% each (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. The Mines and Geosciences Bureau under the DENR reported that, as of 2019, the Philippines had 50 operating metal mines, including 31 nickel mines, 10 gold-silver mines, 3 chromite mines, 3 copper-gold-silver mines, and 3 iron ore mines. The country also had two gold-processing plants, two nickel-processing plants, and one copper smelter. In 2019, the Philippines had a total of 512 approved mining tenements compared with 466 in 2018. The approved tenements consisted of 300 mineral production-sharing agreements, 133 industrial sand and gravel permits, 64 processing plant permits, and 15 exploration permits. Table 2 is a list of major mineral industry facilities (Mines and Geosciences Bureau, 2020b).

Mineral Trade

In 2019, the Philippines' total exports, by value, increased by 1.5% to \$70.3 billion from \$69.3 billion in 2018. Exports of mineral products, which accounted for 6.4% of total exports, increased in value by 10.8% to \$4.48 billion. The mineral exports included copper metal (valued at \$1.25 billion), gold (\$830 million), and copper concentrates (\$426 million), and mineral products, including chromium, iron, nickel concentrates and nickel-cobalt sulfide mixture, and others (\$1.46 billion) (Philippine Statistics Authority, 2020a, p. 1, 6).

In 2019, the Philippines' total imports, by value, decreased by 4.8% to \$107 billion from \$113 billion in 2018. The import value of mineral fuels, lubricants, and related materials, which accounted for 12% of total imports, decreased by 8.7% to \$12.8 billion from \$14.0 billion in 2018. Of this amount,

¹Where necessary, values have been converted from Philippine pesos (PHP) to U.S. dollars (US\$) at an annual average exchange rate of PHP51.796=US\$1.00 for 2019 and PHP52.661=US\$1.00 for 2018.

crude petroleum accounted for \$3.39 billion; coal and coke, \$1.68 billion; and other products, \$7.76 billion. The import value of metalliferous ores decreased by 71.7% to \$449 million; iron and steel, by 29.4% to \$4.23 billion; nonferrous metals, by 17.2% to \$1.15 billion; and nonmetallic mineral manufactures, by 3.1% to \$1.78 billion. Metal products imports increased by 3.6% to \$2.16 billion (Philippine Statistics Authority, 2020a, p. 1, 12).

Commodity Review

Metals

Copper.—Mined copper production in 2019 increased by 2.8% to 71,892 metric tons (t) from 69,933 t in 2018, whereas the price of copper decreased by 8.5% compared with that in 2018. In March 2019, Philex Mining Corp., which fully owned Silangan Mindanao Mining Co. Inc., announced that the commercial production of copper and gold at its Silangan copper-gold project would be delayed from 2018 to 2022 owing to a ban on new open pit mining. Philex Mining pursued an infrastructure design to use underground mining to extract ores from the project, which was composed of the Boyongan deposit and the Bayugo deposit. The Bayugo deposit was held by the company through a joint venture with Manila Mining Corp. Silangan Mine was expected to produce 4 million metric tons per year (Mt/yr) of ore grading 0.63% copper and 1.2 gram per metric ton gold for an estimated mine life of 22 years. In 2019, Philex Mining accounted for 14% of copper production in the Philippines and 8% of gold and silver production. The company's Padcal Mine was expected to close in 2022 after 61 years of operation (table 1; Cruz, 2019b; Romero, 2019; Mines and Geosciences Bureau, 2020b, c).

Gold.—Despite the decrease in mined gold production by 0.57% to 20,646 kilograms (kg) in 2019 from 20,765 kg in 2018, the total value increased by 6% owing to the increase in the world price by 10% to \$44,719 per kilogram. In 2019, Philippines Gold Processing & Refining Corp. produced 6,760 kg of gold, followed by Mindanao Mineral Processing and Refining Corp., which produced 3,243 kg at the Co-O gold mine. During the year, OceanaGold Philippines Inc., which suspended production in October during the renewal process of a 25-year operating license, produced 2,651 kg at the Didipio Mine in Nueva Vizcaya Province. FCF Minerals Corp. also produced 2,133 kg of gold. The combined gold output of these companies accounted for approximately 72% of the country's gold production (table 1; Cruz, 2019d; Mines and Geosciences Bureau, 2020a).

Iron and Steel.—In December 2018, Hebei Iron and Steel Group Corp. (HBIS) and Huili Investment Fund of China, Steel Asia Manufacturing Corp. (Steel Asia), and the state-owned Phividec Industrial Authority signed a memorandum for the \$4.4 billion two-phase Philippine Iron and Steel Project. The project, which would be located in Misamis Oriental Province on Mindanao Island, would be the Philippines' first integrated steel complex that would have the capacity to produce 8 Mt/yr of intermediate steel products. In the \$3.3 billion first phase, 4.5 Mt/yr of hot-rolled coil and 0.6 Mt/yr of slab were expected to be produced (Xu and Daly, 2018).

On September 1, 2019, Steel Asia and HBIS signed another memorandum regarding a \$1 billion investment for an integrated steel mill in Lemery, Batangas Province. Panhua Group Co. Ltd. of China was also in the process of starting to build a \$3.5 billion integrated steel plant in Misamis Oriental Province after signing an agreement with the Philippine Economic Zone Authority (PEZA). The design capacity would be 10 Mt/yr of steel slab and galvanized steel for domestic consumption and export to the United States, the European Union, and Russia (Crismundo, 2019; Desiderio, 2019).

Nickel.—The production of nickel (Ni content) in laterite ore decreased by 6.3% to 323,325 t, and that in mixed nickel-cobalt sulfide intermediate increased by 5.2% to 51,144 t. The average world price of nickel metal increased to \$13,898 per metric ton in 2019 from \$13,103 per metric ton in 2018. The production of direct-shipping nickel ore, mixed nickel-cobalt sulfide intermediate, and scandium oxalate accounted for 49% of the value of total metallic mineral production in the country in 2019 (table 1; Mines and Geosciences Bureau, 2020a).

Taganito Mining Corp. in Surigao del Norte Province produced 83,052 t of mined nickel (Ni content), which accounted for 25.7% of the total nickel mined in the Philippines in 2019. Other major producers included Platinum Group Metals Corp. in Surigao del Norte Province and Rio Tuba Nickel Mining Corp. in Palawan Province, which accounted for 13.1% and 12.9% of the total nickel mine output, respectively. Out of 31 nickel mines in 2019, 13 mines were either under care-and-maintenance status or were suspended from operating owing to environment-related issues. In September 2019, Strong Built Mining Development Corp. and Zambales Diversified Metals Corp., which were among 13 companies that had filed motions for reconsideration with the DENR, were recommended by the Mines and Geosciences Bureau to have their suspension orders lifted (Gomez, 2019; Mines and Geosciences Bureau, 2020a, c).

The regional government of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) suspended operations of all four mining companies in Tawi-Tawi Province owing to an ongoing review of mining policy in the BARMM in 2019. SR Languyan Mining Corp., which was the country's major exporter of high-grade nickel ore, was expected to shut its mining operation at yearend 2019 owing to ore depletion. In August 2019, Indonesia moved up its restriction on nickel ore exports from January 2022 to January 2020. The Philippines' nickel production and exports to China were expected to increase in 2020. It could be challenging for the country to increase exports, however, because most mines outside of the BARMM produced lower-grade laterite ore that had nickel content of between 1.3% and 1.5% (Cruz, 2019a, c; Galang, 2019).

Scandium.—Taganito HPAL Nickel Corp. in Surigao del Norte Province, which was a 75%-owned subsidiary of Sumitomo Metal Mining Co. Ltd. of Japan, had been producing nickel-cobalt mixed sulfide as a primary product. In January 2019, the company, which was the only producer in the country, reached full commercial production of scandium oxalate as a byproduct. Production of scandium oxalate increased by 169% to 4,355 kg in 2019 from 1,618 kg in 2018. Scandium is used mainly for aluminum-scandium alloys and solid oxide fuel cells. Other uses for scandium include ceramics, electronics, lasers,

lighting, and radioactive isotopes (table 1; Nozaki, 2019, p. 41; Gambogi, 2021).

Industrial Minerals

Cement.—The Philippines was estimated to produce 30.5 million metric tons (Mt) of cement in 2019 compared with 28.5 Mt in 2018. In February, Holcim Philippines Inc. completed a capacity expansion at the La Union cement plant to 1.8 Mt/yr from 1 Mt/yr. Solid Cement Corp. (a wholly owned subsidiary of Cemex Holdings Philippines Inc.) planned to install a new line at its Antipolo cement plant in Rizal Province by the second quarter of 2021, which would increase the plant's production capacity to 3.4 Mt/yr from 1.9 Mt/yr. Big Boss Cement Inc. and Petra Cement Inc., which had the same shareholders, were in the process of constructing the four-line Pampanga grinding plant and the two-line Zamboanga grinding plant, respectively. Completed construction would increase the companies' total (combined) cement production capacity by 3 Mt/yr by 2020. Two production lines at the Pampanga plant and one line at Zamboanga plant were completed in 2019 (table 1; Global Cement, 2019a, b, d; Cabuag, 2020).

In May 2019, LafargeHolcim Ltd. of Switzerland signed an agreement with San Miguel Corp. to divest its 85.7% shareholding in Holcim Philippines Inc., which operated four integrated cement plants and one grinding plant, owing to the highly competitive market, excess production capacity, and an increase of inexpensive cement and clinker imports. CRH plc of Ireland, which operated six plants with a recently expanded 7.5-Mt/yr cement production capacity, was also in the process of divesting all its Philippine assets. The Philippines' cement and clinker imports increased to 10.9 Mt in 2019 from 3.7 Mt in 2015. Accordingly, limestone production decreased significantly, to approximately 28 Mt in 2018 and 2019 from more than 75 Mt until 2017 (table 1; Bizley, 2019; Global Cement, 2019c; LafargeHolcim Ltd., 2019; Perilli, 2019; United Nations, 2020).

Mineral Fuels

Coal.—Total coal production in the Philippines was 15.3 Mt in 2019 compared with 13.0 Mt in 2018. One-third of the coal production was consumed domestically and the rest was exported, mostly to China. In 2019, the Philippines' demand for coal was 33.1 Mt, and 81% of the demand was met by imports, mostly from Indonesia (90%), South Africa (4.8%), and Australia (2.6%). The top five energy companies in the country planned to increase the generation capacity of coal-fired powerplants from 14.6 gigawatts (GW) to a proposed 21.8 GW in response to the high cost of electricity (Mindanao Examiner, 2019; Department of Energy, 2020a–d).

Outlook

In 2020, it is anticipated that the Government will continue to lift operation suspensions at some mines, which may have positive effects on the mineral industry. The mineral industry is expected to be supported by a steady increase in the market prices of gold and nickel, and a potential increase in nickel demand following Indonesia's export ban of raw nickel ore in 2020. In the long term, potential decreases in the output of

metallic minerals because of decreasing ore grades could be compensated for by removal of the ban on large-scale open pit mines (Ali, 2019; Ignacio, 2020).

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TABLE 1
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS					
Chromium, mine, chromite	15,502	25,745	20,849	45,011	31,743
Cobalt, mine, Co content ^{c,3}	4,300	4,000	4,600	4,600	4,600
Copper:					
Mine, concentrates, Cu content	83,835	83,649	68,156	69,933	71,892
Smelter, primary	189,200	215,000	240,000	170,900	217,800
Refinery, primary	153,000	185,100	205,000	170,800	217,300
Gold, mine, Au content kilograms	21,314	23,053	22,749	20,765	20,646
Iron ore, mine:					
Gross weight	107,119	17,088	--	--	--
Fe content	68,000	11,000	--	--	--
Iron and steel:					
Raw steel	968,000	1,075,000	1,378,000	1,475,000 ^r	1,400,000
Products, hot rolled	4,013,000	4,346,000	4,300,000	4,864,000 ^r	4,900,000 ^e
Lead, refinery, secondary ^c	28,000	14,000	10,000	10,000	10,000
Nickel, Ni content:					
Mine, laterite ore	415,021	300,506	339,377	344,966 ^r	323,325
Intermediate, nickel-cobalt sulfide	51,733	48,371	50,553	48,633	51,144
Rare earths, scandium oxalate kilograms	--	--	--	1,618	4,355
Silver, mine, Ag content do.	29,952	35,186	31,737	29,782	31,267
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	24,050	25,000 ^e	26,000 ^e	28,500 ^{r,e}	30,500 ^e
Clay:					
Bentonite	3,477	3,231	2,618	4,558 ^r	6,329
Kaolin	8,179	10,059	10,000 ^e	10,000 ^e	10,000 ^e
Unspecified	433,793 ^r	406,054 ^r	332,644 ^r	251,064 ^r	235,228
Feldspar	38,067	46,630	47,000 ^e	47,000 ^e	47,000 ^e
Lime	22,538	173,968	135,618	128,650 ^r	142,568
Perlite	18,575	21,645	11,545	9,696	6,608
Phosphate rock:					
Gross weight	5,437	8,019	8,600	1,236 ^r	740
P ₂ O ₅ content	1,850	2,700	2,900	420 ^r	250
Pumice and related materials:					
Pumice	6,261	8,306	9,911 ^r	792 ^r	114
Volcanic tuff	40,775	47,966	48,000 ^e	30,241 ^r	26,297
Salt, sea salt ^e	131,000	128,000	125,000	192,000 ^r	190,000
Sand and gravel, industrial, silica thousand metric tons	438	502	507	1,220	1,225
Stone, sand and gravel, construction:					
Sand and gravel do.	170,280	194,646	27,439 ^r	47,107 ^r	40,793
Stone:					
Crushed:					
Dolomite	3,073,695	1,839,178	1,584,507	1,560,737	1,521,681
Limestone ⁴ thousand metric tons	75,657	75,255	77,909	28,723 ^r	27,624
Volcanic cinder	7,736	8,658	9,200 ^e	9,200 ^e	9,200 ^e
Other ⁵ thousand metric tons	11,330	12,088	14,303	12,057 ^r	14,623
Dimension, marble	67,494	93,304	229,130	224,786	220,000 ^e
Zeolites	8,468	6,177	4,127	3,600	5,222
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous ^e thousand metric tons	793	876	929	914	1,070
Subbituminous do.	7,378	11,211	11,932	12,100 ^e	14,200 ^e
Natural gas, gross million cubic meters	3,468	3,977	3,940	4,376	4,406

See footnotes at end of table.

TABLE 1—Continued
 PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Condensate	thousand 42-gallon barrels	3,746	4,136	3,914	4,061	4,406
Crude	do.	2,410	2,014	1,587	1,264	776
Refinery:						
Diesel	do.	28,937	29,136	27,762	33,181	23,333
Fuel oil	do.	6,363	5,155	6,467	4,881	4,644
Gasoline	do.	17,120	18,903	18,557	20,989	14,562
Kerosene	do.	7,651	8,436	7,507	8,444	6,544
Liquefied petroleum gas	do.	5,303	5,390	5,196	5,924	3,331
Other	do.	10,378	11,092	10,492	12,539	7,085
Total:	do.	75,800	78,100	76,000	86,000	59,500

⁶Estimated. ⁷Revised. do. Ditto. -- Zero.

¹Table includes data available through November 17, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, platinum-group metals as byproducts of other metal production, quartz, and sulfur 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; boulder; limestone for construction; mixed aggregates; pebbles; sandstone; and stones, cobbles and boulders.

TABLE 2
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Bauxite		Alumina Mining Philippines Inc. (Marcventures Holdings Inc., 100%)	Motiong, San Jose De Buan and Wright in Samar Province	NA
Do.		Bauxite Resources Inc. (Marcventures Holdings Inc., 100%)	Gandara, San Jose de Buan and Wright in Samar Province	NA
Cement	thousand metric tons	APO Cement Corp. (Cemex Holding Philippines Inc., 100%)	APO cement plant, Naga, Cebu Province	3,800
Do.	do.	Eagle Cement Co. (Far East Cement Corp., 60.2%, and other, 39.8%)	Bulacan cement plant (three production lines) in Barangay Akle, San Ildefonso, Bulacan	7,100
Do.	do.	Holcim Philippines Inc. (LafargeHolcim Ltd., 85.7%, and others, 14.3%)	Bulacan plant, Norzagaray, Bulacan Province; Davao plant, Davao del Sur Province; La Union plant, Bacnotan, La Union Province; Lugait plant, Lugait, Misamis Oriental Province; Mabini cement grinding plant, Batangas Province	10,000
Do.	do.	Northern Cement Corp. (San Miguel Corp, 70%, and Norther Cement Corp., 30%)	Plant at Labayug, Sison, Pangasinan Province	1,460
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, Ilagan City, Lanao del Norte Province; Norzagaray plant, Norzagaray, Bulacan Province; Teresa plant, Teresa, Rizal Province	7,500
Do.	do.	Solid Cement Crop. (Cemex Holdings Philippines Inc., 100%)	Antipolo cement plant, Antipolo, Rizal Province	1,900
Do.	do.	Taiheiyo Cement Philippines Inc.	Taiheiyo cement plant, San Fernando, Cebu Province	2,400
Chromite		Consolidated Mines Inc. (owner), and Benguet Corp. (operator)	Masinloc chromite mine, Coto, Zambales Province	5,000
Do.		Chromiteking Inc. (owner), and Techiron Resources Inc. (operator)	Chromiteking-Techiron Homonhon Mining Project, Homonhon Island, Eastern Samar Province	17,000
Do.		Krominco Inc.	Dinagat chromite project (Redondo Mine), Loreto Municipality, Dinagat Island	26,000 ^{1,2}
Do.		Million Link Chrome Ltd. (CCIL Mining and Mineral Resources Corp. and Million Link Investment Ltd.)	Pinagrealan, Candelaria Municipality, Zambales Province	NA
Clay		Orophil Stonecraft Inc.	Mine at Baao, Camarines Sur Province	NA
Do.		UBS Marketing Corp.	Mine at Legazpi, Albay Province	NA
Coal	thousand metric tons	Semirara Mining and Power Corp. (DMCI Holdings Inc., 56.65%)	Mines at Semirara Island, Antique Province	12,900
Cobalt:				
Mine, Co content		Rio Tuba Nickel Mining Corp. (Nickel Asia Corp., 60%, and Pacific Metals Co. Ltd., 36%)	Rio Tuba nickel project, Barrio Rio Tuba, Bataraza Municipality, Palawan Province	1,500
Refined		Coral Bay Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 54%; Sojitz Philippines Corp., 18%; Nickel Asia Corp., 10%; Rio Tuba Nickel Mining Corp., 10%)	Coral Bay nickel high-pressure acid-leach (HPLA) plant, Rio Tuba, Bataraza Municipality, Palawan Province	1,800
Do.		Taganito Mining Corp. (Nickel Asia Corp., 65%; Pacific Metals Co. Ltd., 33.5%; Sojitz Corp., 1.5%).	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province	3,100
Copper:				
Mine, Cu content		Carmen Copper Corp. (Atlas Consolidated Mining and Development Corp., 100%)	Toledo copper mine (Biga, Carmen, and Lutopan deposits), Cebu Province	48,000
Do.		Lepanto Consolidated Mining Corp.	Victoria and Teresa Mines, Mankayan, Benguet Province	700

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity ⁶
Copper:—Continued					
Mine, Cu content—Continued		OceanaGold Philippines Inc. (OceanaGold Corp., 100%)		Didipio copper-gold mine, Nueva Vizcaya Province	25,000 ³
Do.		Philex Mining Corp.		Padcal copper mine, Tuba and Itogon, Benguet Province	21,000
Refinery		Philippine Associated Smelting and Refining Corp. (PASAR) (Glencore International plc., 78.2%)		Refinery and smelter at Leyte Industrial Development Estate, Isabel, Leyte Province	215,000
Feldspar		Paladino Management & Development Corp., 60%, and AIM Exploration Inc., 40%		NA.	NA
Gold:					
Mine, Au content	kilograms	APEX Mining Co. Inc.		Maco gold operation, Municipalities of Maco and Mabini, Mindanao Island	2,000
Do.	do.	Benguet Corp.		Acupan gold project (gold and nickel), Benguet Province	300 ¹
Do.	do.	Carmen Copper Corp. (wholly owned by Atlas Consolidated Mining and Development Corp.)		Toledo copper mine (Biga, Carmen, and Lutopan deposits), Cebu Province	1,200
Do.	do.	Filminera Resources Corp. (mine owner and operator), and Philippines Gold Processing & Refining Corp. (processing plant owner and developer)		Masbate gold mine, Aroroy, Masbate Province	6,800
Do.	do.	FCF Minerals Corp. (Metals Exploration, Plc., 100%)		Runruno gold-molybdenium project, Nueva Viscaya Province in Luzon Island	3,000
Do.	do.	Greenstone Resources Corp. (affiliated to Red 5 Philippines Ltd.)		Siana gold project, Surigao del Norte province, Mindanao Island	1,000 ⁴
Do.	do.	Itogon-Suyoc Resources Inc. (Apex Mining Co. Ltd., 100%)		Sangilo mine in Itogon and Suyoc mine in Mankayan, Benguet Province	100
Do.	do.	Lepanto Consolidated Mining Corp.		Victoria and Teresa Mines, Mankayan, Benguet Province	1,000
Do.	do.	OceanaGold Philippines Inc. (OceanaGold Corp., 100%)		Didipio copper-gold mine, Nueva Viscaya Province	4,000 ³
Do.	do.	Philex Mining Corp.		Padcal copper mine, Tuba and Itogon, Benguet Province	5,000
Do.	do.	Philippine Mining Development Corp. (PMDC)		Diwalwal Direct State Development Project, Compostela Valley and Davao del Norte Province	100
Do.	do.	Philsaga Mining Corp., and Mindanao Mineral Processing and Refining Corp. (Medusa Mining Ltd.)		Co-O gold mine in Agusan del Sur Province	3,500
Do.	do.	RTG Mining Inc.		Mabilo gold-copper project, Camarines Norte Province, Eastern Luzon Island	1,300
Refined	do.	Bangko Sentral ng Pilipinas		Mint and Refinery Operations Department, Quezon City	NA.
Iron ore		Ore Asia Mining and Development Corp.		Camachin iron ore mining project, Dona Remedios Trinidad, Bulacan Province	40,000 ¹
Do.		Strong Built Mining Development Corp.		San Pedro, MacArthur, Leyte Province	NA ^{2,3}
Lime		H.T. Mining Products Resources Corp.		Barangay Tinandog, Atimon Quezon Province	40,000
Do.		Unichamp Mineral Philippines Inc.		Rio Tuba Economic Processing Zone, Palawan Province	135,000
Do.		Upward Agro Industrial Corp.		Bacolod, Negros Occidental Province	NA
Natural gas	million cubic meters	Consortium of Shell Philippines Exploration B.V. (SPEX) (Royal Dutch Shell), 45%; Udenna Corp., 45%; Philippine National Oil Co. Exploration Corp., 10%		Malampaya gasfield, 50 kilometers offshore of Palawan Island	4,300

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^f
Nickel, mine, Ni content		AAMPFIL Natural Resources Exploration	Dinagat chromite-nickel project	2,000 ^{1,2}
Do.		Agata Mining Ventures Inc. (TVI Resources Development Philippines Inc., 60%; Minimax Mineral Exploration Corp., 25%; MRL Nickel Philippines Inc. 15%)	Agata nickel laterite project, Jabonga, Santiago, and Tubay Municipalities, Agusan del Norte Province	21,000
Do.		Berong Nickel Corp. (DMCI Holdings Inc., 75%, and Atlas Mining Co. Ltd., 25%)	Berong nickel project, located on Palawan Island	37,000
Do.		Cagdianao Mining Corp., (Nickel Asia Corp., 100%)	Cagdianao nickel project located near Barangay Valencia, Dinagat Island Province	45,000
Do.		Carrascal Nickel Corp.	Carrascal nickel project, Bon-ot, Carrascal, Surigao del Sur Province	20,000
Do.		Cit nickel Mines and Development Corp.	Toronto Narra Mine and Pulot Sofronio nickel mine, Palawan Province	5,000 ³
Do.		CTP Construction & Mining Corp.	Adlay-Cagdianao-Tandawa (ACT) nickel project, located at Barangay Adlay, Carrascal municipality, Surigao del Sur Province	32,000 ¹
Do.		Hinatuan Mining Corp. (Nickel Asia Corp., 100%)	Tagana-an nickel project, Talavera, Surigao del Norte Province, Hinatuan Island	25,000 ¹
Do.		Libjo Mining Corp.	Libjo Nickel Laterite Mining Project, Municipalities of Tubajon and Libjo, Dinagat Islands Province	6,500 ^{1,2}
Do.		Marcventures Mining and Development Corp.	Cantilan Nickel Project, Cantilan, Surigao del Sur Province	10,000 ¹
Do.		Pacific Nickel Philippines Inc.	South Dinagat nickel project, Nonoc Island	2,300
Do.		Platinum Group Metals Corp. (Global Ferronickel Holdings Inc., 100%)	Cagdianao Nickel Project, Surigao del Norte Province	55,000 ¹
Do.		Rio Tuba Nickel Mining Corp. (Nickel Asia Corp., 60%; Pacific Metals Co. Ltd., 36%; others, 4%)	Rio Tuba nickel project, Barrio Rio Tuba, Bataraza Municipality in Palawan Province	30,000
Do.		San Roque (SR) Metals Inc.	SR nickel project, Tubay Mine, Tubay, Agusan del Norte Province	25,000
Do.		Taganito Mining Corp. (Nickel Asia Corp., 65%)	Taganito mine, Municipality of Claver, Surigao del Norte Province	84,000
Do.		Zambales Diversified Metals Corp. (a subsidiary of DMCI Holdings Inc.)	Santa Cruz-Candelaria nickel project, Zambales Province	3,500
Nickel, refined		Coral Bay Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 54%; Sojitz Philippines Corp., 18%; Nickel Asia Corp., 10%; Rio Tuba Nickel Mining Corp., 10%)	Coral Bay nickel high-pressure acid-leach (HPLA) plant, Rio Tuba, Bataraza Municipality, Palawan Province	24,000
Do.		Taganito HPAL Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 75%; Mitsui Co. Ltd., 15%; Nickel Asia Corp., 10%)	Taganito nickel high-pressure acid-leach (HPAL) plant, Surigao del Norte Province, Mindanao Island	36,000
Petroleum:				
Crude	42-gallon barrels	China International Mining Petroleum Co. Ltd. (CIMP)	Alegria oilfield, onshore of Cebu	10,000
Do.	do.	Consortium of Philodrill Corp., Alcorn Petroleum, Oriental Petroleum, Nido Production, AC Energy Philippines Inc., Forum Energy Plc.	Nido (14A) and Matinloc (14B) oilfields, northwestern Palawan Province	NA ⁵
Do.	do.	Galoc Production Co. WLL	Galoc oilfield, 60 kilometers northwest of Cuion Island, Palawan Province	780,000
Refinery	thousand 42-gallon barrels	Petron Corp. (SEA Refinery Corp, 50.1%; San Miguel Corp. 18.2%; others, 31.7%)	Petron Bataan refinery, Limay, Bataan Province	65,700
Do.	do.	Pilipinas Shell Petroleum Corp.	Tabangao refinery, Batangas City, Batangas Province	40,150
Phosphate rock		Philippine Phosphate Fertilizer Corp.	Quarries, Isabel, Leyte Province	NA

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Salt		JALD Industries Corp.	Salterns, Occidental Mindoro Province	960,000
Silver, mine, Ag content	kilograms	APEX Mining Co. Inc.	Maco gold operation, Municipalities of Maco and Mabini, Mindanao Island	9,630
Do.	do.	Benguet Corp.	Acupan mine, Itogon Municipality, Benguet Province	300 ¹
Do.	do.	Carmen Copper Corp. (Atlas Consolidated Mining and Development Corp., 100%)	Toledo copper mine (Biga, Carmen, and Lutopan deposits), Cebu Province	3,000
Do.	do.	Filminera Resources Corp. (mine owner and operator), and Philippines Gold Processing & Refining Corp. (processing plant owner and developer)	Masbate gold mine, Aroroy, Masbate Province	5,000
Do.	do.	Greenstone Resources Corp. (affiliated to Red 5 Philippines Ltd.)	Siana gold project, Surigao del Norte Province, Mindanao Island	1,000 ⁴
Do.	do.	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines, Mankayan, Benguet Province	4,000
Do.	do.	OceanaGold Philippines Inc. (OceanaGold Corp., 100%)	Didipio copper-gold mine, Nueva Vizcaya Province	9,000 ¹
Do.	do.	Philex Mining Corp.	Padcal copper mine, Tuba and Itogon, Benguet Province	5,000
Do.	do.	Philsaga Mining Corp., and Mindanao Mineral Processing and Refining Corp. (Medusa Mining Ltd.)	Co-O gold mine in Agusan del Sur Province	1,000
Do.	do.	TVI Resources Development Philippine Inc., 100%	Balabag gold-silver project, Balabag, Zamboanga del Norte Province	NA ¹
Steel, products		Cathay Metal Corp. (CAMECO)	Quezon City, Metro Manila	NA
Do.		Cathay Pacific Steel Corp. (CAPASCO)	do.	NA
Do.		Henro Steel Corp.	Meycauayan City, Bulacan Province	NA
Do.		Maxima Steel Mills Corp.	Valenzuela City, Metro Manila	NA
Do.		Sagarthama Steel Trading Corp.	Binan City, Laguna province	NA
Do.		Somico Steel Mill Corp.	Aguado, Trece Martires, Cavite City	NA
Do.	thousand metric tons	Steel Asia Manufacturing Corp.	11 plants in Luzon, Visayas, and Mindanao	2,100
Tin, refined		O.M. Manufacturing Philippines Inc. (O.M. Co. Ltd.)	Rosario, Cavite Province	NA

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

¹Properties under closure order February 2017.

²Properties under resolved order December 2018.

³Properties under suspension order February 2017.

⁴Properties under suspension order February 2019.

⁵Operation closed in the first quarter of 2019.