



2012 Minerals Yearbook

PHILIPPINES [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF THE PHILIPPINES

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In 2012, nickel was one of the most valuable mineral commodities produced in the Philippines. Other mineral commodities for which domestic production was significant to the national economy included cement, chromium, copper, gold, marine salt, and silver (table 1).

Minerals in the National Economy

The mining and quarrying sector contributed about 1.14% of the Philippines' gross domestic product (GDP) (at constant 2000 prices) in 2012 compared with 1.19% in 2011. The construction sector contributed 5.4% of the GDP compared with 5% in 2011. The value of metallic mineral production was \$2.386 billion,¹ which was a decrease of 16% from the value of \$2.839 billion in 2011. The value of gold produced in 2012 amounted to \$831.9 million (0.6% of the GDP) (Bangko Sentral ng Pilipinas, 2013; Mines and Geosciences Bureau, 2013c).

Government Policies and Programs

The 1995 Philippine Mining Act regulates mineral resource development, requires the Government to monitor mineral activity (production, trade, and value) and maintain a database of mineral reserves, and encourages direct investment by the private and public sectors in mineral exploration and development activities in the Philippines. The Government grants exploration permits to qualified applicants to explore for mineral resources. Exploration permits are valid for a period of 2 years and are renewable for not more than 4 years for exploration of nonmetallic minerals and 6 years for exploration of metallic minerals (Mines and Geosciences Bureau, 2013d).

The 1995 Philippine Mining Act allows for three types of mining agreements. Each type of mining agreement is valid for 25 years and is renewable for an additional 25 years. The first is a mineral agreement in which the Government grants a domestic investor (a Filipino individual or corporation) an exclusive right to conduct mining operations in the contracted area. The second type of mining agreement is a Financial or Technical Assistance Agreement (FTAA), which is available to domestic and foreign corporations for a maximum area of 81,000 hectares (ha) onshore or 324,000 ha offshore. The third type of agreement is a mineral production-sharing agreement for properties with a maximum area of 16,200 ha; it is open to domestic and foreign corporations (Mines and Geosciences Bureau, 2013d).

The Philippine Government approved Executive Order 79 on July 6, 2012. The Executive Order imposed a moratorium on the approval of new mining projects until Congress passes a law to increase royalty fees. The Executive Order proposes an increase in royalty fees to 5% from 2%. The new policy bans

mining in agricultural lands, fishery zones, island ecosystems, and tourist destinations. The Executive Order also changes the rules for the acquisition of new mining permits by establishing a bidding process rather than the previously used "first come, first served" approach. Small-scale mining activities are limited to certain areas of the country, and small-scale mining of metallic minerals is prohibited except for mining of chromite, gold, and silver. The use of mercury is prohibited in small-scale mining operations. Existing mining agreements, concessions, contracts, and projects that were approved before the Executive Order was signed are exempted from the new rules; however, the Executive Order authorizes the Department of Environmental and Natural Resources of the Philippines (DENR) to review all existing mining contracts and renegotiate the contract terms with the contractors. The DENR is also in charge of implementing the Extractive Industries Transparency Initiative, which is an international effort designed to set the standards for transparency in the management of revenue derived from extractive industries, such as mining and oil and natural gas extraction. Executive Order 79 also proposes the creation of a Mining Industry Coordinating Council, which would be an interagency body in charge of conducting dialogue with stakeholders, reviewing all existing mining-related laws and regulations, conducting public auctions for mining tenements, ensuring that contractors have the proper environmental insurance coverage and perpetual liability, and implementing other industry reforms (Mines and Geosciences Bureau, 2012; Mining Weekly, 2012; Office of the President of the Philippines, 2012).

In September, the DENR announced a temporary suspension of Executive Order 79 because of ambiguity in the provisions related to the renewal of expiring mining contracts. The temporary suspension was put in place while new amendments were issued to address the ambiguous provisions. According to the Chamber of Mines of the Philippines, Executive Order 79 mandates renegotiation of the terms of all mining contracts (even those eligible for renewal), which effectively shortens the total maximum agreement period to 25 years from 50 years (Andrade, 2012).

In December, the Mines and Geosciences Bureau (MGB) announced that it planned to lift the ban that prohibits the issuance of new mining permits by March 2013. The MGB also added that it would increase mining permit fees, although the amount of the increases was not specified. The MGB was waiting for the release of a revised map indicating the specific areas banned from mining activity before lifting the ban. The updated map was being created by the National Mapping and Resources Information Agency (GMA News Online, 2012).

Production

In 2012, the Philippines produced 424,000 metric tons (t) of nickel, which was an increase of 93.6% compared with

¹Where necessary, values have been converted from Philippine pesos (PHP) to U.S. dollars (US\$) at the annual rate of PHP42.23=US\$1.00 for 2012 and PHP43.31=US\$1.00 for 2011.

that of 2011. Other metals for which production increased significantly compared with that of 2011 included silver (48.2%) and chromite (43.7%). Production data for industrial minerals and mineral fuels were not available; hence the production numbers in table 1 are estimated. The metals for which production decreased in 2012 included smelted copper (53%), gold (49.4%), refined copper (40%), and iron ore (26.1%) (table 1).

Structure of the Mineral Industry

In 2012, an estimated 252,000 people, or 0.6% of the total number of people employed in the country, worked in the mining and quarrying industry (Mines and Geosciences Bureau, 2013a). Some of the main producers of mineral commodities in the Philippines were CGA Mining Ltd. of Australia (gold and silver); Lafayette Mining Ltd. of Australia (copper, gold, and silver); Lepanto Consolidated Mining Co. of the Philippines (copper, gold, and silver); Nickel Asia Corp. of the Philippines (nickel); Philex Mining Corp. of Canada (copper, gold, and silver); and TVI Resources Development Philippine Inc. (gold and silver), which was the Philippines affiliate of TVI Pacific Inc. of Canada. The country's major mineral industry facilities are listed in table 2.

Mineral Trade

In 2012, total trade between the Philippines and the world increased by 5% to \$114.2 billion from \$108.8 billion in 2011. The country's total exports were valued at \$52.1 billion compared with \$48.3 billion in 2011, which was an increase of 7.9%; also, the total value of imports in 2012 increased by 2.7% to \$62.1 billion from \$60.5 billion in 2011. Exports of refined copper were valued at \$505 million, which was a decrease of 58.3% compared with the value in 2011; exports of gold were valued at \$480.6 million, which was an increase of 10.2% compared with the value in 2011; and petroleum products exports were valued at \$465 million, which was a decrease of 28.2% compared with the value in 2011. Imports of iron and steel and mineral fuels and related materials were valued at \$15.1 billion in 2012, which was about 24% of the country's total import value (National Statistics Office of the Philippines, 2013).

In 2012, the Philippines' leading trading partner was Japan, which accounted for 14.3% (\$16.4 billion) of the country's total trade, broken down as \$9.9 billion in exports to Japan, and \$6.5 billion in imports from Japan. The second ranked trading partner was the United States, which accounted for 12.7% of total trade; exports to and imports from the United States were valued at \$7.417 billion and \$7.124 billion, respectively. The country's third and fourth ranked trading partners were China and Singapore, which accounted for 11.2% and 8.1% of the Philippines' total trade, respectively. Exports to China were valued at \$6.17 billion, and imports from China were valued at \$6.68 billion. Exports to Singapore were valued at \$4.867 billion, and imports from Singapore were valued at \$4.405 billion. Total trade with the European Union accounted for \$10.571 billion, which was equivalent to 9.3% of total trade (National Statistics Office of the Philippines, 2013).

Commodity Review

Metals

Copper, Gold, Silver, and Zinc.—In 2012, the mined copper production in the country totaled 65,444 t of metal content, which was an increase of 2.5% compared with the 63,835 t produced in 2011. Copper mine output at Carmen Copper Corp.'s Toledo Copper Complex was a reported 40,783 t compared with 32,206 t in 2011 (an increase of 27%), and at Rapu-Rapu Processing Inc.'s polymetallic project, production reached 7,760 t compared with 6,810 t in 2011 (an increase of 14%). At Philex Mining Corp.'s Padcal copper project, however, production decreased by 41.2% to a reported 10,118 t in 2012 from 17,216 t in 2011. Copper production also decreased at TVI Resources' Canatuan mining project by 11% (Mines and Geosciences Bureau, 2013b).

Gold production decreased by 49.4% to 15,762 kg in 2012 from 31,120 kg in 2011 (table 1). Based on gold purchases made by the Bangko Sentral ng Pilipinas (Philippines Central Bank) in 2012, small-scale mines produced 709 kg of gold compared with 17,389 kg of gold in 2011. At the Padcal copper project, gold production dropped by 49% to 2,218 kg in 2012 from 4,358 kg in 2011. Some gold production increases were reported at polymetallic projects that produced gold as a byproduct, such as at Rapu-Rapu's polymetallic project, where production increased by 131% to 2,016 kg of gold in 2012 from 874 kg of gold in 2011; at the Toledo Copper Complex, where production increased by 100% to 426 kg of gold from 213 kg of gold in 2011; at Canatuan, where production increased by 64% to 350 kg of gold from 214 kg of gold in 2011; and at the Victoria gold project (which was owned by Lepanto Consolidated Mining Co.), where production increased by 61% to 910 kg of gold from 564 kg of gold in 2011 (Mines and Geosciences Bureau, 2013b).

On January 27, Indophil Resources NL of Australia (37.5% interest) received notice from Xstrata plc of the United Kingdom (62.5% interest) about the revised estimates on the mineral resources at the Tampakan project. The reestimation increased Tampakan's mineral resources (indicated, inferred, and measured) to 2.94 billion metric tons of ore at a grade of 0.51% copper at a cutoff grade of 0.2% copper and 0.19 gram per metric ton (g/t) gold, which represented 15 Mt of copper and 547,000 kg of gold (reported as 17.6 million troy ounces). The feasibility study concluded that the project had the potential to produce an average of 450,000 t/yr of copper during the first 5 years of production, and an average of 375,000 t/yr of copper and about 11,200 kilograms per year (kg/yr) of gold (reported as 360,000 troy ounces per year) for a minimum of 17 years. The project was projected to cost a total of \$5.9 billion. On December 12, Sagittarius Mines, Inc. (SMI) [a joint venture between GlencoreXstrata (62.5%) and Indophil Resources NL (37.5%)], which was the operator of the Tampakan project, announced that it had provided the Government with a revised development plan, which estimated that production would begin in 2019 rather than in 2016 (the previous target date). The Tampakan project is located in South Cotabato Province near the town of Tampakan on the southern island of Mindanao. In

June 2010, South Cotabato Province banned the use of open pit mining as a method to extract mineral resources in the Province after passing an environmental code that was implemented in October of that year. The ban in South Cotabato Province was likely to affect mostly the Tampakan copper and gold mining project (Indophil Resources NL, 2013, p. 3, 14).

In August, SMI entered into a joint-development agreement with Alsons Energy Development Corp. (AEDC), a local powerplant developer, to determine the feasibility of constructing a coal-fired powerplant to meet the Tampakan project's power demand. The proposed powerplant was to be located in the town of Maasim, Sarangani Province (Indophil Resources NL, 2013, p. 3).

In April, Crazy Horse Resources Inc. of Canada reported the completion of a prefeasibility study based on a 15-million-metric-ton-per-year (Mt/yr) operation at the Taysan property. The Taysan property covers a total area of 11,254 ha and is located in Batangas Province, Luzon Island, about 100 km south of Manila and 20 km east of the Provincial capital of Batangas City. The property consists of a copper and gold porphyry deposit with an estimated measured and indicated resource of about 460 Mt at a cutoff rate of 0.1% copper; contained copper was estimated to be about 1.18 Mt; contained gold, about 47,000 kg (reported as 1.5 million troy ounces); contained silver, about 383,000 kg (reported as 12.3 million troy ounces); and contained magnetite, 14.9 Mt. The cost of developing the property was estimated to be \$521 million, and the life of the mine was expected to be 24 years (Crazy Horse Resources Inc., 2012).

On September 25, Mindoro Resources Ltd. of Canada and TVI Pacific signed the following four joint-venture agreements: the Agata mining joint-venture, the Agata processing joint-venture, the Pan de Azucar joint-venture, and the Pan de Azucar processing joint-venture. Under the agreements, TVI would earn a 60% interest in each joint venture by developing and operating the projects and complying with requirements, such as funding the developments with \$2 million during the first year, and \$500,000 thereafter, and performing and completing feasibility studies. Feasibility studies for each of the developments were planned for 2013, and additional exploratory drilling was scheduled for the Pan de Azucar area to define copper and gold mineral resources (Mindoro Resources Ltd., 2013, p. 4, 7).

On July 24, Red Mountain Mining Ltd. of Australia signed a share-sale agreement with Mindoro Resources to acquire a 100% interest in Mindoro Resources's Batangas gold project, which is located 120 km south of Manila in Batangas Province, Luzon Island. The project, which covers an area of 270 square kilometers (km²), includes the Archangel and the Lobo areas (which are under a mineral production-sharing agreement), and El Paso and the Talahib areas, which are under a copper-gold exploration permit. In addition, the company acquired a 75% interest in the Tapian San Francisco joint-venture copper-gold project, which is located in Surigao Province in Northern Mindanao; this transaction was completed on October 30. After the acquisition of the projects, Red Mountain completed a 1,800-meter diamond-drilling program at Archangel. The company also determined the indicated and inferred mineral resources at the Batangas gold project to be

5.78 Mt at an average grade of 2.2 g/t gold and 3.3 g/t silver for about 12,700 kg of contained gold (reported as 408,000 contained troy ounces of gold) and about 18,800 kg of contained silver (reported as 606,000 contained troy ounces of silver) at an 0.85 g/t gold cutoff grade (Red Mountain Mining Ltd., 2013).

Throughout 2012, Metals Exploration plc of the United Kingdom focused on preparing and readying the mining site of the Runruno copper, gold, and molybdenum project, which would include such infrastructure features as road access, the main processing plant, and other buildings. Exploration on site continued during the year, mainly in the Magnetite Creek and Malilibeg South areas. The company estimated the gold resources for the Malilibeg South area to be 7.55 Mt at an average grade of 1.4 g/t gold for approximately 10,600 kg of gold (reported as 340,000 troy ounces). The company also carried out other exploration activities in the area, such as geochemical and geophysical studies, mapping, and soil sampling, and a diamond drilling program to determine additional gold mineralization and the potential for porphyry copper mineralization. The Runruno polymetallic project, which is located in Nueva Viscaya Province about 322 km north of Manila, was planned to be an open pit mining operation. As of March 2011 (the latest date for which a resource estimate was available), the Runruno resources were estimated to be 43,200 kg of gold (reported as 1.39 million troy ounces) and 11,600 t of molybdenum (reported as 25.6 million pounds) (Metals Exploration plc., 2013).

In June 2011, OceanaGold Corp. of Australia (92% interest) announced that it had begun the construction of its Didipio gold-copper project, which is located on the north of the island of Luzon in northern Philippines, approximately 270 km north of the capital city of Manila. Production from the Didipio Mine commenced during the fourth quarter of 2012, and the first copper concentrate was produced in December 2012. The project, which was developed at a cost of \$250 million, was expected to start commercial production during the second quarter of 2013. The initial throughput was projected to be 2.5 Mt/yr, and the company expected production to reach full capacity of 3.5 Mt/yr by 2014. The project was under an FTAA for an area of about 158 km² and had an estimated mine life of 16 years as an open pit mining operation, and approximately 8 additional years as an underground operation. The FTAA agreement allowed OceanaGold to share its net revenue with the Government at a basis of 60/40, of which 60% of the revenue would be the Government's portion. The company forecasted annual production of more than 3,100 kg of gold (reported as 100,000 troy ounces), and 14,000 t of copper in concentrate. The measured and indicated resources of the Didipio Mine were approximately 66,600 kg of gold (reported as 2.14 million troy ounces), and 290,000 t of copper; reserves were estimated to be about 52,300 kg of gold (reported as 1.68 million troy ounces) and 230,000 t of copper. Also in 2012, OceanaGold announced the completion of the construction of a mineral processing facility located to the north of the Didipio Mine. In July 2012, OceanaGold announced that it had signed an agreement with Trafigura Beheer BV from the Netherlands for the sale and purchase of 100% of the copper and gold concentrate output from the Didipio Mine. The agreement was valid for a minimum of 5 years. OceanaGold planned to conduct a feasibility study

in 2012 to increase the processing facility's capacity to 5 Mt/yr from 3.5 Mt/yr, which was expected to increase production to about 4,700 kg/yr of gold (reported as 150,000 troy ounces per year) and 20,000 t/yr of copper (OceanaGold Corp., 2013a; 2013b, p. 23; 2013c).

Nickel.—During 2012, a drilling program was conducted in the Zambales Chromite Mining Corp. tenement, which is located approximately 5 kilometers (km) to the north of the Acoje nickel project on Luzon Island. ENK plc of the United Kingdom (40%) and local partner Montemina Resources Corp. (60%), which owned Zambales, estimated that the inferred resources at the Zambales property were 23.5 million metric tons (Mt) at average grades of 1.18% nickel and 0.05% cobalt (ENK plc, 2012, p. 10).

In 2012, the production of nickel increased by about 93.6% to 424,000 t from 219,000 t (revised) in 2011 (table 1). In January, Intex Resources ASA of Norway announced its partnership, through a memorandum of understanding, with MCC8 Group Co. Ltd. of China for the construction of the Philippines' first refined nickel plant. The plant, which would be located on the island of Mindoro, was to process low-grade lateritic nickel ore to produce nickel metal (Lucas, 2012).

Nickel Asia Corp. announced that construction of the Taganito high-pressure acid-leach (HPAL) hydrometallurgical processing plant was on schedule during 2012. The project, which was managed by Taganito HPAL Nickel Corp., was expected to start commercial operations by the last quarter of 2013. Sumitomo Metal Mining Co. Ltd. of Japan (the majority shareholder) reported the total costs of the project to be approximately \$1.7 billion. When completed and in full production, the Taganito plant would have a production capacity of 30,000 metric tons per year (t/yr) of contained nickel in the form of nickel and cobalt sulfide; an expansion project was also planned for 2016 to increase the plant's capacity to 36,000 t/yr of contained nickel (Nickel Asia Corp., 2012, p. 13).

In October 2011, ENK produced its first 50 kilograms (kg) of nickel hydroxide during the trial phase of the pilot plant at its Acoje nickel project on Luzon Island. The company expected to produce about 2.4 t/yr of nickel hydroxide when the plant is fully operational. Production was expected to commence formally in mid-2013. During 2012, the company finalized a feasibility study and completed a drilling program to try to identify additional resources within the tenement. The Acoje project covers an area of 3,765 ha and had estimated indicated and inferred resources of 50.14 Mt at grades of 1.08% nickel and 0.05% cobalt (ENK plc, 2012, p. 8, 9).

Industrial Minerals

Cement.—In 2012, the production of cement in the Philippines increased by about 18% to 18.9 Mt from 16 Mt (table 1). APC Group Inc. of the United States announced in July that it planned to resume the construction of a \$200 million cement plant in Cebu. The cement plant, which had a design capacity of 1.5 Mt/yr, was expected to be completed by 2014 (International Cement Review, 2012).

In September, Cemex Corp. Philippines announced a plan to invest \$65 million in a capacity expansion project at the

company's APO plant. The expansion, which was planned to begin in early 2014, would increase the plant's annual capacity by 1.5 Mt/yr (Global Cement, 2012).

Outlook

The DENR has forecasted that investments in the mineral industry may reach \$14 billion in the next 5 to 6 years, according to the Philippines Chamber of Mines (Mining Weekly, 2012). During 2012, the adoption of Executive Order 79, which extended the moratorium on the approval of new mining projects and proposed an increase in royalty fees, among other regulatory changes, caused an atmosphere of uncertainty among the foreign investors. In the wake of the approval of the order, it remains to be seen how the changes will affect the mineral industry as a whole.

In the next several years, the Philippines expect several mining investment projects that started in 2011 and 2012 to be commissioned. Among the projects are the Cemex Philippines APO plant expansion project (2014), the Taganito nickel and cobalt plant expansion (2016), and the Tampakan copper-gold project (2019).

Production in the Philippines' industrial minerals and construction materials sector increased steadily during 2012, partly as a result of increased demand in the Southeast Asia region. The Philippines is likely to be a key supplier and producer of a number of mineral commodities, as well as a significant producer of such metals as chromium, nickel, and zinc. The production of metallic minerals will continue to be important to the economy of the Philippines as many established projects have started to expand their facilities and production capacities. Similarly, the production of copper, gold, and nickel is expected to increase as major exploration activities result in new discoveries and increases in resources and as proposed developments are commissioned in the near future.

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TABLE 1
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012
METALS					
Chromium, chromite, gross weight	15,268	14,322	14,807	25,483	36,628
Cobalt, mine output, Co content ³	1,200 ^e	1,500 ^e	2,200	2,200 ^e	2,600
Copper:					
Mine output, Cu content	21,235	49,060	58,412	63,835	65,444
Metal:					
Smelter	239,700	230,100	216,200	205,000	97,000
Refined	174,600	178,000	171,900	164,000	98,400
Gold, mine output, Au content kilograms	35,726	37,047	40,847	31,120	15,762
Iron and steel:					
Iron ore, gross weight	--	--	--	468,000	346,000
Iron ore, Fe content (62.5%)	--	--	--	292,608	216,176
Metal, steel, crude thousand metric tons	711	824	1,050	1,200	1,200 ^e
Lead, metal, secondary, refined	34,000	32,000	30,000	34,000	32,000
Manganese:					
Gross weight	12,800	8,500	11,300	4,300	5,000
Mn content (43%)	5,500	3,600	4,900	1,900	2,000
Nickel, mine output, Ni content ^{4,5}	90,000 ^r	128,500 ^r	207,000 ^r	219,000 ^r	424,000
Silver, mine output, Ag content kilograms	14,224	33,808	41,004	45,530	67,477
Zinc, mine output, Zn content	1,619	10,035	9,268	18,170	19,559

See footnotes at end of table.

TABLE 1—Continued
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012	
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	13,369	14,865	15,900	16,063	18,907
Clays:						
Bentonite		1,422	1,413	1,475	2,087	2,000 ^e
Red		7,181	7,357	7,050	8,243	8,300 ^e
White		8,745	8,519	8,857	12,246	12,300 ^e
Other		5,601	5,599	5,878	8,143	8,200 ^e
Feldspar		15,838	16,394	15,882	22,050	22,000 ^e
Lime		4,299	4,327	4,524	5,934	6,000 ^e
Perlite		4,593	4,606	4,756	6,272	6,300 ^e
Phosphate rock		2,271	2,257	2,308	2,778	2,800 ^e
Salt, marine		510,059	516,066	557,644	720,146	720,000 ^e
Sand and gravel:						
Silica sand	thousand metric tons	270	284	296	352	350 ^e
Other ⁶	thousand cubic meters	46,659	46,602	49,009	58,815	59,000 ^e
Stone:						
Crushed, broken, other ⁷	do.	3,077	3,069	3,258	4,259	4,300 ^e
Dolomite		1,150,035	1,176,991	1,259,152	1,431,118	1,430,000 ^e
Limestone ⁸	thousand metric tons	31,528	33,090	35,540	42,526	42,500 ^e
Marble, dimension, unfinished	cubic meters	5,410	5,629	6,001	8,043	8,000 ^e
Pumice		2,063	2,064	2,274	2,797	2,800 ^e
Tuff		17,570	18,830	19,166	22,106	22,100 ^e
Volcanic cinder ⁹	cubic meters	6,519	6,686	7,325	9,219	9,200 ^e
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	thousand metric tons	3,610	4,687	6,650	6,881	7,000 ^e
Gas, natural, gross	million cubic meters	3,881	3,909	3,681	3,975	4,000 ^e
Petroleum:						
Crude	thousand 42-gallon barrels	965	2,920	3,059	2,326	2,500 ^e
Refinery products: ^e						
Liquefied petroleum gas	do.	3,556 ¹⁰	3,286 ¹⁰	3,500	3,500	3,500
Gasoline	do.	11,988 ¹⁰	9,153 ¹⁰	9,000	9,000	9,000
Jet fuel	do.	46,000	46,000	46,000	46,000	46,000
Kerosene	do.	6,596 ¹⁰	1,002 ¹⁰	1,000	1,000	1,000
Distillate fuel oil	do.	23,871 ¹⁰	17,541 ¹⁰	17,500	17,500	17,500
Residual fuel oil	do.	15,975 ¹⁰	10,776 ¹⁰	10,000	10,000	10,000
Refinery fuel and losses	do.	2,307 ¹⁰	2,068 ¹⁰	2,000	2,000	2,000
Other	do.	2,882 ¹⁰	4,635 ¹⁰	4,500	4,500	4,500
Total	do.	113,000	94,500	93,500	93,500	93,500

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ¹Revised. do. Ditto. -- Zero.

¹Table includes data available through December 23, 2013.

²In addition to the commodities listed, the Philippines produces platinum-group metals as byproducts of other metal production, quartz, and sulfur, but available information is inadequate to make reliable estimates of output.

³The majority of the nickel laterite produced in the Philippines is exported to China, but whether cobalt content is recovered is not known.

⁴Production of mined nickel (Ni content) was reported by the Government as follows, in metric tons: 2008—80,644; 2009—139,744; 2010—184,330; 2011—319,363 (revised); and 2012—317,621. The numbers in the table have been adjusted to take into account data received from individual company sources as well as trade statistics (see footnote 5).

⁵Data compiled using trade data from the United Nations Comtrade database for nickel ores and concentrates exported from the Philippines to Australia, China, and Japan.

⁶Includes "pebbles" and "soil" not further described.

⁷Includes materials described as rock, crushed or broken/blasted; stones, cobbles, and boulders; pebbles; rock aggregates; and broken adobe.

⁸Includes limestone for agriculture, cement manufacturing, industrial use, and other.

⁹Reported as "black cinder" for the years 2008–11 by the Philippines Mines and Geosciences Bureau.

¹⁰Reported figure.

TABLE 2
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Cement	Eagle Cement Co.	Plant located in Akle, San Ildefonso, Bulacan	1,500,000.	
Do.	Fortune Cement Corp.	Bulacan plant at Norzagaray, Bulacan Province; Batangas plant at Taysan, Batangas Province	2,100,000.	
Do.	Holcim Philippines, Inc.	Bulacan plant at Norzagaray, Bulacan Province; Davao plant at Barrio Ilang, Davao City; La Union plant at Bacnotan, La Union Province; Lugait plant at Lugait, Misamis Oriental Province	7,200,000.	
Do.	Solid Cement Corp., APO Cement Corp., and Cemex Philippines Group of Companies	Cement plants at three locations— Naga, Cebu Province (APO Cement Corp.); Antipolo City, Rizal Province (Solid Cement Corp.); Binangonan, Rizal Province (Rizal Cement Corp.)	4,300,000.	
Chromite, Cr content	Consolidated Mines Inc. (owner) and Benguet Corp. (operator)	Masinloc chromite mine (Coto chromite deposit) located in Coto 27 kilometers east of the Port of Mansiloc in Zambales Province	5,000.	
Do.	Heritage Resources Mining Corp.	Homonhon chromite project	17,000.	
Do.	Krominco Inc.	Dinagat chromite project—Redondo Mine (Mt. Redondo deposit) located in the Municipality of Loreto, Dinagat Island	26,000.	
Copper, Cu content of concentrate	Carmen Copper Corp.	Toledo Copper Complex, located in the Central Highlands of Cebu, Cebu Island	20,000.	
Do.	Lafayette Mining Ltd., 75%, and LG International and Korean Resources Corp., 25%	Rapu-Rapu Mine under the Rapu-Rapu polymetallic project, located in Albay Province	36,000.	
Do.	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines located in Mankayan, Benguet Province	200.	
Do.	Philex Mining Corp. (through its subsidiary Philex Gold Inc.), 81%	Padcal copper project located in Tuba, Benguet Province, Island of Luzon	21,000.	
Do.	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	10,000.	
Do.	Glencore International plc.	Philippine Associated Smelting and Refining Corp. (PASAR), located in Isabel, Leyte Province	250,000 smelter; 173,000 refinery.	
Gold, Au content	kilograms	APEX Mining Company Inc.	APEX Maco operation	100.
Do.	do.	CGA Mining Ltd.	Masbate gold project, located 350 kilometers south of Manila, Masbate Island	6,000.
Do.	do.	Lafayette Mining Ltd., 75%, and LG International and Korean Resources Corp., 25%	Rapu-Rapu Mine under the Rapu-Rapu polymetallic project, located in Albay Province	1,500.
Do.	do.	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines located in Mankayan, Benguet Province	2,000.
Do.	do.	Philex Mining Corp. (through its subsidiary Philex Gold Inc.), 81%	Padcal Mine (Sto. Tomas II deposit) located in Tuba, Benguet Province, Island of Luzon	5,000.
Do.	do.	Philippine Mining Development Corp.	Diwalwal Direct State Development Project at Mount Diwalwal in Davao del Norte Province	100.
Do.	do.	Philsaga Mining Corp.	Banahaw Gold Project	NA.
Do.	do.	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	500.

See footnotes at end of table.

TABLE 2—Continued
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Nickel, Ni content	CRAU Mineral Resources Corp.	Santa Cruz-Candelaria nickel project located in Zambales Province	1,000.	
Do.	CTP Construction & Mining Corp.	Adlay-Cagdianao-Tandawa (ACT) nickel project, located in Barangay Adlay, Municipality of Carrascal, Province of Surigao del Sur	10,000.	
Do.	Hinatuan Mining Corp.	South Dinagat project located on Nonoc Island	4,000.	
Do.	Nickel Asia Corp., 100%	Cagdianao nickel project located near Barangay Valencia on Dinagat Island	10,000.	
Do.	do.	Tagana-an nickel project located on Hinatuan Island	30,000.	
Do.	Nickel Asia Corp., 65%; Pacific Metals Co. Ltd., 33.5%; Sojitz Philippines, 1.5%	Claver nickel project (Taganito) located in Surigao del Norte Province, Mindanao Island	16,000.	
Do.	Nickel Asia Corp., 60%; Pacific Metals Co. Ltd., 36%; Sojitz Philippines, 4%	Rio Tuba nickel project, located in Barrio Rio Tuba, Municipality of Bataraza in Palawan Province.	5,000.	
Do.	SR Metals, Inc.	SR Nickel project, Tubay Mine, located in Tubay, Agusan del Norte Province	25,000.	
Do.	Toledo Mining Corporation Plc., 56.1%	Berong nickel project located on Palawan Island	10,000.	
Nickel, mine and plant	Coral Bay Nickel Corp. (Sumitomo Metal Mining Co. Ltd., 54%; Mitsui & Co. Ltd. 18%; Rio Tuba Nickel Mining Corp., 10%; Nickel Asia Corp., 6%)	Coral Bay nickel high-pressure acid-leach (HPAL) plant located on Palawan Island	24,000 nickel; 1,800 cobalt.	
Silver, kilograms Ag content	Lafayette Mining Ltd., 75%, and LG International and Korean Resources Corp., 25%	Rapu-Rapu Mine under the Rapu-Rapu polymetallic project, located in Albay Province	18,000.	
Do.	do.	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines located in Mankayan, Benguet Province	4,000.
Do.	do.	Philex Mining Corp. (through its subsidiary Philex Gold Inc.), 81%	Padcal Mine (Santo Tomas II deposit) located in Tuba, Benguet Province, Island of Luzon	5,000.
Do.	do.	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	17,000.
Zinc, Zn content	Lafayette Mining Ltd., 75%, and LG International and Korean Resources Corp., 25%	Rapu-Rapu Mine under the Rapu-Rapu polymetallic project, located in Albay Province	8,000.	

Do., do. Ditto. NA Not available.