THE MINERAL INDUSTRY OF

THE PHILIPPINES

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The Republic of the Philippines, which is a developing democratic republic, is located just north of the equator about 1,100 kilometers (km) east of the coast of the mainland of Southeast Asia. The country is an archipelago that comprises 7,000 islands, of which fewer than 900 are inhabited by the country's 78 million people; the major islands are Luzon in the north, Visayas in the middle, and Mindanao in the south. The archipelago is within the "Pacific Rim of Fire," which is so-called because of the intense volcanic activity at the margins of the tectonic plates and is well-known for epithermal gold, porphyry copper-gold, and volcanic-hosted massive sulfide deposits (U.S. Department of State, 2001§[1]).

The Philippines has been a significant producer of chromite, copper, gold, and nickel, and ranked among the world's top 10 producers. Other important mineral commodities are coal, gypsum, silver, and sulfur. Significant deposits of clay, limestone, marble, phosphate, and silica also exist. As late as the 1990s, the mineral industry, which was considered to be the backbone of the country's economy, contributed about 30% to the country's gross domestic product (GDP). By 2001, however, the mining industry's contribution had dropped to a mere 1.8% of the $71,500 million GDP (Asian Journal of Mining, 2001; Resource Information Unit, 2002, p. 21; U.S. Embassy, Manila, Philippines, 2002). This has been attributed to the effects of low international metal prices accompanied by high operating and production costs, political instability, labor problems, a global slump in exploration expenditures, and such natural disasters as earthquakes, floods, landslides, tsunamis, typhoons, and volcanic eruptions.

The growth rate of the GDP in the Philippines decelerated from 4.0% in 2000 to 3.4% in 2001 owing mainly to the worldwide economic slowdown, political disruptions, and consequent investor confidence. All three major economic sectors expanded during the year. The agriculture, industry, and services sectors grew by 3.9%, 1.9%, and 4.3%, respectively (Asian Development Bank, 2001§).

Additionally, the lack of international investor confidence was the result of the foreign equity requirement of a 60-to-40 Filipino-to-foreign ratio under the Philippines' mining law. The law allows 100% foreign ownership under the finalized Financial or Technical Assistance Agreement (FTAA). The finalized FTAAs have not been favorably received because of the unattractiveness of the overall fiscal incentives (Resource Information Unit, 2002, p. 21).

Government Policies and Programs

The Department of Environment and Natural Resources (DENR) was attempting to eliminate the bottlenecks that have slowed down the approval of mining permits and the resolution of mining disputes. It also was trying to extend the duration of existing permits (Asian Journal of Mining, 2002). At yearend, the Natural Resources Development Corp. (NRDC), which is the corporate arm of the DENR, proposed to take over the operation of three idled copper and gold mines in an attempt to revive their production. In doing so, the NRDC also was trying to attract foreign companies to invest in the three companies (North Davao Mining Corp., Batong Buhay Gold Mines, and Bagacay Mines), which have been inactive for about 15 years (Metal Bulletin, 2002).

The Philippine Mining Act (Republic Act 7942) was enacted in March 1995. It provides three major forms of mining rights—Exploration Permit (EP), Mineral Agreement (Mineral Production Sharing, Co-Production, and Joint Venture), and the FTAA. EPs and the FTAA are modes of entry for foreign companies to have 100% ownership. An EP is limited for a maximum period of 8 years by which time it should be converted to either a Mineral Agreement or an FTAA. Mineral Agreements are limited to Filipino corporations (minimum 60-to-40 Filipino-to-foreign ratio). FTAAs are 25-year contracts that involve a minimum investment commitment of $50 million for infrastructure and mine development (Tanchuling and Villaluna, 1998, p. 2-3).

Japan was the primary market for the country's mineral products. Nearly all the Philippines' copper concentrates and nickel production were exported to Japan.

Commodity Review

Metals

Copper.—In October, the Philippine Associated Smelting and Refining Corp. (PASAR) agreed to supply Minmetals of China a minimum of 24,000 metric tons (t) of copper cathode during 2002. According to the contract signed by Minmetals, PASAR, and the Philippines National Power Corp. (Napocor), Minmetals would supply Napocor with coal for its power stations, Napocor would supply electricity to PASAR's smelter in the central Philippines; and PASAR would supply an estimated $50 million worth of copper cathodes and byproducts to Minmetals (Mining Journal, 2001b).

Gold and Silver.—In July, Manila Mining Corp. suspended operations at its Placer Mine in Surigao del Norte on Mindanao Island following the effects of a typhoon-related landslip in the Heine pit. During the temporary closure, Manila Mining focused on drilling to convert resources to reserve status (Mining Journal, 2001a).

In September, Calgary, Canada-based TVI Pacific Inc. reactivated its existing metals processing plant at Zamboanga del Norte Province as a precursor to the development of its wholly owned Canatuan gold-silver project. The plant was to process 80 metric tons per day (t/d) of existing tailings that contained 5.5 grams per metric ton (g/t) gold and 200 g/t silver within a 15-month period. In the meantime, TVI will begin an

[1]References that include a section twist (§) are found in the Internet References Cited section.

exploration program at Canatuan that could increase the project's reserves. Following the start of mining at Canatuan, the plant will operate at 250 t/d and increase to 500 t/d as oxide ore is processed during a 5- to 6-year period. Capital costs for plant startup were estimated to be $170,000 (Mining Journal, 2001d).

In November, Philex Gold Inc. determined that further development at its underground Bulawan gold-silver mine on Negros Island in Negros Occidental Province would not be economic, although development of the first four production lines and related draw points at the 70-meter (m) level were near completion. Philex, however, would continue to extract the remaining broken ore, which was estimated to be about 300,000 t, for as long as positive cashflow existed. The company would write down the mine's assets and deferred exploration costs, which were estimated to be $40 million. Philex expected the mine to continue operating into the first quarter of 2002 when it would be placed on care and maintenance (Mining Journal, 2001c).

Nickel.—Hinatuan Corp. on Hinatuan Island, Surigao del Norte Province, mined nickel silicate ore for shipment to Japan's Pacific Metals Co. Ltd. and limonitic ore for shipment to BHP Billiton Ltd.'s Yabulu Refinery in Townsville, Australia, until midyear 2001 when both ore types were depleted. Cagdianao Mining Corp., which was a sister company that produced nickel on Surigao del Norte Province's nearby Dinagat Island, was to make up the shipments to Australia. Adverse weather, however, prevented this from happening for the remainder of 2001 (Resource Information Unit, 2002, p. 154).

Mineral Fuels

In October, exploration underneath the Malampaya Gasfield revealed an estimated 85 million barrels of oil condensate. Shell Philippines Exploration anticipated that crude oil production would increase to 35,000 to 50,000 barrels per day by 2003. In addition, six other offshore explorations have begun in the Malampaya Basin led by Nido Petroleum Ltd., Philippines National Oil Co., PNOC Exploration Corp., Trans-Asia Oil and Energy Corp., Unocal Corp., and Philodrill Corp. (U.S. Energy Information Administration, 2002§).

Infrastructure

The transportation infrastructure of the Philippines was moderately developed. Of the 199,950 km of roads, 39,590 km was paved, and 160,360 km was unpaved. Inland waterways, of which 3,219 km was usable for shallow draft (less than 1.5-m vessels), were of little importance to the transportation industry. The public sector railway system consisted of 492 km of narrow-gauge (1.067-m) track. Of the 266 airports, 76 had permanent-surface runways. International shipping ports included Batangas, Cagayan de Oro, Cebu, Davao, Guimaras Island, Iligan, Iloilo, Jolo, Legaspi, Manila, Masao, Puerto Princesa, San Fernando, Subic Bay, and Zamboanga. The merchant marine fleet included 168 bulk or combination bulk ore freighters, 47 petroleum-oil-lubricant tankers, 13 liquefied gas tankers, 5 chemical tankers, and 2 specialized tankers. Pipelines included 357 km for petroleum products (U.S. Central Intelligence Agency, 2001§).

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Major Sources of Information

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Major Publications

Central Bank of the Philippines, Manila: Statistical Bulletin and Annual Report.

Chamber of Mines of the Philippines, Manila: Newsletter and Annual Report.

Mines and Geosciences Bureau, Manila: Mineral News Service and Annual Report.

TABLE 1
PHILIPPINES: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/		1997	1998	1999	2000	2001 e/
METALS						
Chromium, chromite, gross weight		87,500	53,871	19,566	20,920 r/	2,569 3/
Copper:						
Mine output, Cu content		48,600	45,400	34,600 r/	129,768 r/	20,322 3/
Metal:						
Smelter		206,160	161,600 r/	162,000 r/	-- r/	-- 3/
Refined		146,630	152,431	147,982	-- r/	-- 3/
Gold, mine output, Au content	kilograms	32,671	34,038	31,050	36,540 r/	33,840 3/
Iron and steel, steel, crude	thousand tons	980 r/	860 r/	-- r/	-- r/	--
Lead, metal, secondary refined		17,000 e/	17,000 e/	12,389	16,218	16,000
Nickel, mine output, Ni content		18,137	23,713 r/	20,689 r/	17,388 r/	27,359 3/
Silver, mine output, Ag content	kilograms	19,625	18,220	18,214	23,534	33,600
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	14,681	12,888	12,566	11,959	8,653 3/
Clays:						
Bentonite		8,000 e/	3,900	1,844	2,800 r/	5,128 3/
Red		800 e/	1,180	--	-- e/	4,983 3/
White		6,000 e/	1,783	5,465	1,598 r/	5,111 3/
Other		800,000 e/	6,000	--	771	800
Feldspar		25,000 e/	2,938	16,909	6,500 r/	33,122 3/
Lime		10,000 e/	5,997	7,829 r/	9,000	9,000
Magnesite e/		700	700	700	700	700
Perlite		20,000 e/	6,356	10,265	5,650 r/	6,000
Phosphate:						
Guano		50 e/	25 e/	--	--	31 3/
Phosphate rock	thousand tons	30,000 e/	8,000	181,000	434,000	450,000
Pyrite and pyrrhotite (including cuprous), gross weight e/		320,000	320,000	320,000	300,000	300,000
Salt, marine		686,500	727,754	704,347	589,528	600,000
Sand and gravel:						
Silica sand	thousand tons	21	16	64	70	70
Other e/ 4/	thousand cubic meters	15,000	15,000	15,000	15,000	15,000
Stone:						
Dolomite		675,000 e/	210,230	839,102	823,302	802,189 3/
Limestone 5/	thousand tons	10,216	27,714	16,738	22,244	23,000
Marble (dimension), unfinished	cubic meters	300,000 e/	98,000	9,826	14,804	15,000
Volcanic cinder e/	do.	2,000	2,000	2,000	2,000	2,000
Tuff		3,000 e/	1,540	1,460	1,662	1,500
Quartz e/		50,000	50,000	50,000	50,000	50,000
Crushed, broken, other 6/	thousand cubic meters	1,000 e/	1,570	2,388	2,684	2,500
Sulfur, all forms e/		103,000	132,000	133,000 r/ 3/	134,000 r/ 3/	170,000
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	thousand tons	1,000	900	1,300	1,300	1,500
Petroleum:						
Crude	thousand 42-gallon barrels	292	300 e/	400	400 e/	400
Refinery products: e/						
Liquefied petroleum gas	do.	5,475 3/	5,110 3/	5,500	5,500	6,000
Gasoline	do.	18,615 3/	19,345 3/	18,500	18,500	19,000
Jet fuel	do.	6,570 3/	8,380 3/	6,500	6,500	7,000
Kerosene	do.	4,380 3/	4,380 3/	4,500	4,500	5,000
Distillate fuel oil	do.	40,150 3/	36,865 3/	40,000	40,000	40,000
Residual fuel oil	do.	47,450 3/	42,340 3/	47,000	47,000	47,000
Other	do.	9,855 3/	12,775 3/	10,000	10,000	10,000
Refinery fuel and losses	do.	5,110 3/	4,745 3/	5,000	5,000	5,000
Total	do.	137,605 3/	133,940 3/	137,000	137,000	139,000

e/ Estimated; estimated data are rounded to no more than three significant digits. r/ Revised. -- Zero.

1/ Table includes data through August 26, 2002.

2/ In addition to the commodities listed, the Philippines produced platinum-group metals as byproducts of other metals, but output was not reported quantitatively, and no basis is available to make reliable estimates.

3/ Reported figure.

4/ Included "pebbles" and "soil" not further described.

5/ Excluded limestone for road construction.

6/ Included materials described as rock, crushed or broken; stones, cobbles, and boulders; rock aggregates; and broken adobe.

TABLE 2
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2001

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Cement		Rizal Cement Co. Inc., 100%	Binangonan plant, Rizal Province, Luzon Island	964
Do.		Davao Union Cement Corp., 100%	Davao City plant, Davao del Sur Province, Mindanao Island	648
Do.		Iligan Cement Corp., 100%	Iligan City plant, Lanao del Norte Province, Mindanao Island	420
Chromite, concentrate		Benguet Corp., 100%	Masinloc open cut mine, 150 kilometers northwest of Manila, Zambales Province, Luzon Island	105
Coal		PNOC Coal Corp., 100%	Diplahan open cut mine, Mindanao Island	200
Do.		Semirara Coal Corp., 100%	Panian open cut mine, Antique Province, northern Semirara Island	1,500
Copper, metal content		Philex Mining Corp., 100%	Padcal (Santo Tomas II) underground mine, south of Baguio City, Benguet Province, Luzon Island	8
Do.		Manila Mining Corp., 100%	Placer open cut mine, 50 kilometers southeast of Surigao, Surigao del Norte Province, Mindanao Island	5
Do.		Lepanto Consolidated Mining Co. Inc., 100%	Victoria underground mine, 80 kilometers north of Baguio City, Benguet Province, Luzon Island	1
Gold, ore throughput	million tons	Philex Gold Inc., 100%	Bulawan underground mine, 20 kilometers southeast of Sipalay, Negros Occidental Province, Negros Island	1
Do.	do.	TVI Pacific Inc., 100%	Canatuan open-pit mine, east of Siocon, Zamboanga del Norte Province, Mindanao Island	1
Do.	do.	Philex Mining Corp., 100%	Padcal (Santo Tomas II) underground mine, south of Baguio City, Benguet Province, Luzon Island	8
Do.	do.	Manila Mining Corp., 100%	Placer open cut mine, 50 kilometers southeast of Surigao, Surigao del Norte Province, Mindanao Island	4
Do.	do.	Lepanto Consolidated Mining Co. Inc., 100%	Victoria underground mine, 80 kilometers north of Baguio City, Benguet Province, Luzon Island	1
Nickel, ore		Cagdianao Mining Corp., 100%	Cagdianao open cut mine, Surigao del Norte Province, Dinagat Island	177
Do.		Rio Tuba Nickel Mining Corp., 100%	Rio Tuba open cut mine, Bataraza, Palawan Province, Palawan Island	400
Do.		Taganito Mining Corp., 100%	Taganito open cut mine, Claver, Surigao	400
Nickel		Philnico Mining and Industrial Corp., 90%; and Asset Privatization Trust (Government of the Philippines), 10%. Impala Platinum Holdings Ltd. earning 25%	Nickel mine-smelter-refinery complex on a 60-hectare site 20 kilometers east-northeast of Surigao City, Nonoc Island, Surigao del Norte Province	NA
Petroleum products	thousand 42-gallon barrels	Caltex (Philippines) Inc., 100%	Caltex Batangas Refinery, Batangas Province, Luzon Island	84
Do.	do.	Petron Corp., operator [Philippine National Oil Co. (Government), 100%]	Petron Bataan Refinery, Bataan Province, Luzon Island	180
Do.	do.	Pilipinas Shell Petroleum Corp., 100%	Shell Batangas Refinery, Batangas Province, Luzon Island	137
Silver, ore throughput	million tons	Philex Gold Inc., 100%	Bulawan underground mine, 20 kilometers southeast of Sipalay, Negros Occidental Province, Negros Island	1
Do.	do.	Philex Mining Corp., 100%	Padcal (Santo Tomas II) underground mine, south of Baguio City, Benguet Province, Luzon Island	8
Do.	do.	TVI Pacific Inc., 100%	Canatuan open-pit mine, east of Siocon, Zamboanga del Norte Province, Mindanao Island	1
Steel		National Steel Corp., operator. [Wing Tiek Holdings of Malaysia, 100%]	Iligan, Lanao del Norte Province, Mindanao Island	350

e/ Estimated. NA Not available.