



# 2009 Minerals Yearbook

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## PHILIPPINES

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# THE MINERAL INDUSTRY OF THE PHILIPPINES

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In 2009, the Philippines produced about 10% of the total world production of nickel (Kuck, 2011). Other mineral commodities produced in the Philippines included cement, chromium, copper, gold, marine salt, and silver (table 1).

## Minerals in the National Economy

In 2009, the mining and quarrying sector (at constant 1985 prices) contributed 2% of the Philippines' gross domestic product (GDP) compared with 1.70% in 2008, which was an increase of 17.6%. The construction sector contributed 5% of the GDP compared with 4.6% in 2008, which represented an increase of 8.7% (Bangko Sentral ng Pilipinas, 2010).

## Government Policies and Programs

The 1995 Philippine Mining Act regulates mineral resources development, requires the Government to maintain an inventory of mineral reserves, and encourages direct investment in mineral exploration and development activities in the Philippines. The Government grants exploration permits to qualified applicants to explore for mineral resources; the exploration permit is valid for a period of 2 years and is renewable for not more than 4 years for exploration of nonmetallic minerals and 6 years for exploration of metallic minerals (Mines and Geosciences Bureau, 2010b).

The 1995 Philippine Mining Act allows for three types of mining agreements. The first is a mineral agreement in which the Government grants a domestic contractor (a Filipino individual or corporation) an exclusive right to conduct mining operations in the contracted area. The agreement is valid for 25 years and is renewable for another 25 years. 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; this agreement is valid for a period of 25 years and is renewable for another 25-year period. The third type of agreement is a mineral production-sharing agreement for properties with a maximum area of 16,200 ha; this permit, which is open to domestic and foreign corporations, is valid for a period of 25 years and is renewable for another 25-year period (Mines and Geosciences Bureau, 2010b).

In July 2009, the Department of Environment and Natural Resources (DENR) of the Philippines updated its mining permits acquisition process to be more transparent and faster for the applicant. The application review process was shortened to a period of 7 weeks from a previously lengthy process of 17 weeks (Mining Journal, 2009).

## Production

In 2009, the Philippines Department of Energy reported a 203% increase in the production of crude petroleum to

2,920,000 barrels (bbl) from 965,000 bbl in 2008. Mineral production also increased, mainly in the metals sector, for the following commodities: zinc, by 520%; silver, 138%; copper ore, 131%; nickel, 70%; and coal, 30%. The mineral commodities for which production decreased significantly were mineral fuels and related materials and included kerosene, production of which decreased by 85%; residual and distillate fuel oil, by 33% and 27%, respectively; gasoline, 24%; and liquefied petroleum gas, 8% (table 1).

## Structure of the Mineral Industry

The significant producers of mineral commodities in the Philippines were Lepanto Consolidated Mining Co. (gold and silver); Philex Mining Corp. of Canada (copper, gold, and silver); Sumitomo Metal Mining Co. Ltd. (nickel); and TVI Resources Development Philippine Inc., which was the Philippine affiliate of TVI Pacific Inc. of Canada (gold and silver). The country's major mineral industry facilities are listed in table 2.

## Mineral Trade

In 2009, total trade in the Philippines decreased by about 23% to \$81.528 billion from \$105.824 billion in 2008. The country's total exports were valued at \$38.436 billion compared with \$49.078 billion in 2008, which represented a decrease of 21.7%. Likewise, the total value of imports in 2009 decreased by 24.1% to \$43.092 billion from \$56.746 billion in the previous year. Exports of cathodes and sections of cathodes of refined copper were valued at \$687.98 million (or 1.8% of the country's total export value) compared with \$1.309 billion in 2008, which was a decrease of 47.4%. Imports of iron and steel and mineral fuels and related materials were valued at \$8.3 billion in 2009 (about 19.3% of the country's total import value) compared with \$14.01 billion in 2008, which represented a decrease of 41% (National Statistics Office of the Philippines, 2010).

The Philippines' main trading partners included China, Japan, the Netherlands, the Republic of Korea, Singapore, Taiwan, Thailand, and the United States. In 2009, the Philippines' leading trading partner was the United States, which accounted for 14.6% of the country's total trade; exports to and imports from the United States were valued at \$6.789 billion and \$5.113 billion, respectively. The total trade in 2009 between the Philippines and the United States was valued at \$11.902 billion compared with \$15.429 billion in 2008, which represented a decrease of about 23% in trade between the two countries. The second ranked trading partner was Japan, which accounted for 14.2% of total trade; exports to Japan were valued at \$6.208 billion and imports from Japan were valued at \$5.363 billion. Total trade between the two countries was \$11.571 billion in 2009 compared with \$14.311 billion in 2008 (a decrease of about 19%). The country's third and fourth

ranked trading partners were China and Singapore, which accounted for 8.3% and 7.6% of the Philippines' total trade, respectively. Exports to China were valued at \$2.934 billion and imports from China were valued at \$3.807 billion, for a total of \$6.741 billion in 2009 compared with \$9.715 billion in 2008, or a decrease of more than 30%. Exports to Singapore were valued at \$2.477 billion and imports from Singapore were valued at \$3.724 billion for a total of \$6.201 billion in 2009 compared with \$8.552 billion in 2008, or a decrease of 27.5% (National Statistics Office of the Philippines, 2010).

In March 2009, the Philippine Government signed the Japan-Philippine Economic Partnership Agreement, which allowed the import of up to 175,000 metric tons (t) of hot- and cold-rolled coil and tin plates from Japan tax-free. The trade agreement allowed end users to avoid the payment of tariffs on the Japanese steel, which has a distinctive thickness and alloy content that is not produced in the Philippines. The Government expected to increase the volume of the tax-exempt product progressively to 187,500 t in 2010 and 200,000 t in 2011 (South East Asia Iron & Steel Institute, 2009).

## Commodity Review

### Metals

**Copper.**—In 2009, the mined copper production in the country totaled 49,060 t of metal content, which represented an increase of 131% compared with the 21,235 t produced in 2008. Two copper mine projects that reported zero production in 2008 reported production in 2009; these were the Toledo copper complex (18,105 t of copper) and the Canatuan mining project (9,423 t of copper). Copper mine output of 15,313 t was also reported by the Padcal copper project compared with 18,792 t in 2008 (a decrease of 18.5%), and the Rapu-Rapu polymetallic project reported production of 6,219 t compared with 936 t in 2008, which was an increase of 564%. Smelter and refined copper production increased by 1.3% and 3.1%, respectively, in 2009 (table 1; Mines and Geosciences Bureau, 2010a).

In March, TVI Pacific Inc. announced that the company had started commercial operations in the Canatuan sulfide project, which was part of the Canatuan polymetallic mine project located in Zamboanga del Norte Province in Mindanao. The sulfide project included the construction of a new plant to process ore from a copper- and zinc-bearing sulfide zone, and a tailings dam. The project was commissioned in November 2008 and reached commercial production status in March 2009. As part of the Canatuan project, the company announced that it had begun the construction of a zinc circuit in October 2009 and that the circuit was anticipated to be fully functional in April 2010 (TVI Pacific Inc., 2009, p. 2, 11). In August 2009, Carmen Copper Corp. (formerly known as Altas Consolidated Mining and Development Corp.) announced its plans to increase copper concentrate production at its Toledo Mine. The mining and milling production rate at the mine, which is located in central Cebu Province, would increase by 75% to 35,000 metric tons per day (t/d) from 20,000 t/d (Reuters, 2009).

**Gold.**—Gold production in the Philippines increased by 3.7% to 37,047 kilograms (kg) in 2009 from 35,726 kg (revised)

in 2008 (table 1). Based on gold purchases by the Bangko Sentral ng Pilipinas (Philippines Central Bank), small-scale mines produced 26,112 kg in 2009 compared with 28,198 kg (revised) in 2008, which was a decrease of 7.4%. In 2009, TVI Pacific Inc's Canatuan polymetallic mining project reported gold production of 208 kg of gold compared with zero production in 2008 (Bangko Sentral ng Pilipinas, 2009; Mines and Geosciences Bureau, 2010a). In 2009, CGA Mining Ltd. of Australia announced that its Masbate gold project started operations by having its first pour of gold on May 12. The \$178 million operation produced 2,286 kg of gold in 2009. The project was expected to produce more than 6,000 kilograms per year (kg/yr) of gold; expansion of the project was planned for 2011 (CGA Mining Ltd., 2009; Mines and Geosciences Bureau, 2010a).

In October 2009, Metals Exploration plc of the United Kingdom announced that the Philippine Government had granted the company an FTAA to develop its 100%-owned Runruno gold-molybdenum project. As part of the agreement, the company had the legal title to the project for 25 years and had the right to mine, explore, process, and export minerals from the contracted area with the company's commitment of an investment of \$50 million in the project. The agreement was renewable for another 25 years. The company was expecting to start the construction stage in mid-2010 and was aiming to start production in 2011. Runruno estimated the mine's gold production capacity to be 3,000 kg/yr; the production capacity for molybdenum was undisclosed (Ward, 2009).

The Red 5 Ltd. company announced its plans to start construction of the Siana gold project in 2010 after the final regulatory approval was granted by the Philippine Government in November 2009. The project, which was located in Surigao del Norte Province in Mindanao and estimated to cost \$73 million, would include an open pit and an underground mine. The company estimated a mine life of 10 years and a total production of nearly 26,500 kg (850,000 troy ounces) of gold (Asia Miner, The, 2009).

**Nickel.**—In 2009, nickel production increased by 70.3% to 137,351 t from 80,644 t (revised) in 2008 (table 1). Major increases in nickel production were reported from the following projects: the Adlay-Cagdianao-Tandawa nickel project (to 60,971 t in 2009 from 12,409 t in 2008), the Cagdianao nickel project (to 15,077 t from 4,585 t), the SR Metal project (to 10,116 t from 5,314 t), and the Tagana-an nickel project (to 10,883 t from 1,600 t) (Mines and Geosciences Bureau, 2010a).

Rusina Mining NL of Australia announced in early 2009 its intention to start the development of its Acoje nickel project, which is located in Zambales, by 2010. The development had an estimated cost of nearly \$500 million, an estimated mine life of 10 years, and a total resource of about 35 million metric tons of nickel ore. The company expected to start nickel production from the project in 2011. The plant was estimated to have the capacity to process 3,000 metric tons per year of laterite ore (Abs-cbnnews.com, 2009). Later, on December 9, Rusina and its joint-venture partner European Nickel plc announced the opening of the Acoje nickel heap-leach trial pad and pilot plant located on Luzon Island (London Stock Exchange plc, 2009).

In 2009, Sumitomo Metal Mining Co. Ltd. of Japan decided to implement its Taganito nickel project, which is located in the northeastern part of the island of Mindanao, and expected it to begin commercial production in fiscal year 2013. The \$1.3 billion project would involve the construction of a high-pressure acid-leach (HPAL) processing plant with an annual capacity of 30,000 t of nickel. Sumitomo also had interests in Coral Bay Nickel Corp.'s ore-processing plant, which started production in 2008; the plant uses HPAL technology to process low-grade nickel oxides. In December 2009, Sumitomo completed a transaction of \$22 million to increase its capital investment in Nickel Asia Corp. to 25% (from its previous 8.5% interest). The increase in its equity stake increased the company's interests in the Coral Bay project (Sumitomo Metal Mining Co. Ltd., 2009a, p. 16, 36, 45; 2009b). In June 2009, Sumitomo announced the completion of a \$500 million investment in the Palawan nickel plant to double its capacity to 20,000 t. The plant was located in the municipality of Bataraza in Palawan Province (Inquirer.net, 2009).

In October 2009, the DMCI Mining Corp. announced that it had signed an agreement with Benguet Corp. to conduct exploration, development, and mining activities in a 1,400-ha area in the Santa Cruz nickel project, which is located in the Santa Cruz area of Zambales. The agreement also covered the mining and sale of 2% nickel ore, or up to 200,000 t of ore annually for a period of 3 years (Loyola, 2009).

## Outlook

In 2009, mineral production in the Philippines was influenced by the world market prices and major increases in the production of such metals as copper, nickel, silver, and zinc, and such mineral fuels as coal and crude petroleum. The future of the mineral production sector in the Philippines will be dependent on the performance of the many projects that started reporting production between 2008 and 2009, and the many new and expanded mining projects that are expected to be commissioned between 2011 and 2013, which include the Acoje nickel project, the Canatuan polymetallic mining project, the Runruno gold-molybdenum project, and Taganito nickel project. The construction of new projects will also affect the industrial mineral and construction sectors, as they might benefit from the new projects coming online.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2005	2006	2007	2008	2009
<b>METALS</b>					
Chromium, chromite, gross weight	38,081	46,728	31,592	15,268	16,000 <sup>e</sup>
Cobalt, mine output, Co content	300	900	1,000	1,200 <sup>f,e</sup>	1,500 <sup>e</sup>
Copper:					
Mine output, Cu content	16,320	17,161	22,862	21,235	49,060
Metal:					
Smelter	201,300	239,600	220,000	246,700	250,000 <sup>e</sup>
Refined	172,000	181,000	160,200	174,600 <sup>f</sup>	180,000 <sup>p</sup>
Gold, mine output, Au content kilograms	37,490	36,141	38,792	35,726 <sup>f</sup>	37,047
Iron and steel, steel, crude thousand metric tons	470	558	718	711	700 <sup>e</sup>
Lead, metal, secondary refined	30,000	30,000	34,000 <sup>f</sup>	34,000 <sup>f</sup>	40,000 <sup>p</sup>
Nickel, mine output, Ni content	26,636	64,705	91,367	80,644 <sup>f</sup>	137,351
Silver, mine output, Ag content kilograms	19,150	23,502	27,754	14,224 <sup>f</sup>	33,808
Zinc, Zn content	--	--	7,394	1,619	10,035
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic thousand metric tons	15,494	12,033	13,048	13,369	14,865
Clays:					
Bentonite	1,000	1,000	1,148	1,422	1,413
Red	3,530	5,420	6,742	7,181	7,357
White	12,220	7,138	7,224	8,745	8,519
Other	13,400	4,901	4,883	5,601	5,599
Feldspar	11,850	15,176	14,837	15,838	16,394
Lime	9,000 <sup>e</sup>	3,313	3,822	4,299	4,327
Perlite	4,410	4,352	4,515	4,593	4,606
Phosphate rock	2,180	1,963	1,961	2,271	2,257
Pyrite and pyrrhotite, including cuprous, gross weight <sup>c</sup>	300,000	300,000	300,000	300,000	300,000
Salt, marine	420,950	418,210	437,689	510,059	516,066
Sand and gravel:					
Silica sand thousand metric tons	224	179	221	270	284
Other <sup>3</sup> thousand cubic meters	36,792	38,455	40,076	46,659	46,602
Stone:					
Dolomite	874,730	1,083,269	1,092,748	1,150,035	1,176,991
Limestone <sup>4</sup> thousand metric tons	21,112	21,888	26,419	31,528	33,090
Marble, dimension, unfinished cubic meters	5,120	3,964	4,791	5,410	5,629
Volcanic cinder <sup>5</sup> do.	8,660	6,378	6,177	6,519	6,686
Tuff	17,850	17,590	16,490	17,570	18,830
Quartz <sup>c</sup>	50,000	50,000	50,000	50,000	50,000
Crushed, broken, other <sup>6</sup> thousand cubic meters	2,500 <sup>e</sup>	2,735	2,810	3,077	3,069
Sulfur, all forms <sup>e</sup>	180,000	180,000	180,000	180,000	180,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, all grades thousand metric tons	3,165	2,529	3,401	3,610	4,687
Petroleum:					
Crude thousand 42-gallon barrels	208	181	184	965	2,920
Refinery products: <sup>e</sup>					
Liquefied petroleum gas do.	31,000	31,000	2,951 <sup>7</sup>	3,556 <sup>7</sup>	3,286 <sup>7</sup>
Gasoline do.	128,000	128,000	12,491 <sup>7</sup>	11,988 <sup>f,7</sup>	9,153 <sup>7</sup>
Jet fuel do.	46,000	46,000	46,000	46,000	46,000
Kerosene do.	18,000	18,000	7,277 <sup>7</sup>	6,596 <sup>7</sup>	1,002 <sup>7</sup>
Distillate fuel oil do.	170,000	170,000	170,000	23,871 <sup>7</sup>	17,541 <sup>7</sup>
Residual fuel oil do.	234,000	234,000	21,226 <sup>7</sup>	15,975 <sup>7</sup>	10,776 <sup>7</sup>
Refinery fuel and losses do.	230,000	230,000	230,000	2,307 <sup>f,7</sup>	2,068 <sup>7</sup>
Other do.	225,000	225,000	1,725 <sup>7</sup>	2,882 <sup>f,7</sup>	4,635 <sup>7</sup>
Total do.	1,080,000	1,080,000	492,000	113,000 <sup>f</sup>	94,500

See footnotes at end of table.

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

<sup>6</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>†</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through October 25, 2010.

<sup>2</sup>In addition to the commodities listed, the Philippines produced platinum-group metals as byproducts of other metal production, but available information is inadequate to make estimates of output.

<sup>3</sup>Includes "pebbles" and "soil" not further described.

<sup>4</sup>Include limestone for agriculture, cement manufacturing, industrial, and other.

<sup>5</sup>Reported as "black cinder" for years 2006-09 by the Philippines Mines and Geosciences Bureau.

<sup>6</sup>Includes materials described as rock, crushed or broken/blasted; stones, cobbles, and boulders; pebbles; rock aggregates; and broken adobe.

<sup>7</sup>Reported figure.

TABLE 2  
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Cement	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 Rizal Cement Corp.	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	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.	Krominco Inc.	Dinagat chromite project—Redondo Mine (Mt. Redondo deposit) located in the Municipality of Loreto, Dinagat Island	26,000.	
Do.	Heritage Resources Mining Corp.	Homonhon chromite project	17,000.	
Copper	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines located in Mankayan, Benguet Province	200.	
Do.	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	10,000.	
Do.	Carmen Copper Corp.	Toledo Copper Complex, located in the Central Highlands of Cebu, Cebu Island	20,000.	
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.	Glencore International AG	Philippine Associated Smelting and Refining Corp. (PASAR), located in Isabel, Leyte Province	250,000 smelter; 173,000 refinery.	
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.	
Gold	kilograms	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.

See footnotes at end of table.

TABLE 2—Continued  
PHILIPPINES: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold— Continued	kilograms	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	500.
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.	Philippine Mining Development Corp.	Diwalwal Direct State Development Project at Mount Diwalwal in Davao del Norte Province	100.
Do.	do.	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.
Nickel		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 in southwest Philippines	20,000.
Do.		Nickel Asia Corp., 100%	Cagdianao nickel project located near Barangay Valencia on Dinagat Island	10,000.
Do.		Hinatuan Mining Corp.	South Dinagat project located on Nonoc Island	4,000.
Do.		do.	Tagana-an nickel project located on Hinatuan Island	30,000.
Do.		Nickel Asia Corp., 65%, and Pacific Metals Co. Ltd. and Sojitz Philippines, 35%	Claver nickel project (Taganito) located in Surigao del Norte Province, Mindanao Island	12,000.
Do.		Nickel Asia Corp., 60%, and Pacific Metals Co. Ltd. and Sojitz Philippines, 40%	Rio Tuba nickel project, located in Barrio Rio Tuba, Municipality of Bataraza in Palawan Province.	5,000.
Do.		Toledo Mining Corporation Plc., 56.1%	Berong nickel project located on Palawan Island	10,000.
Do.		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.		SR Metals, Inc.	SR Nickel project, Tubay Mine, located in Tubay, Agusan del Norte Province	25,000.
Silver	kilograms	Lepanto Consolidated Mining Co.	Victoria and Teresa Mines located in Mankayan, Benguet Province	4,000.
Do.	do.	TVI Resources Development Philippine Inc., 100%	Canatuan project, located east of Siocon, Province of Zamboanga del Norte, Mindanao Island	17,000.
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	18,000.
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.
Zinc		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.