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The Mineral Industry of Malaysia

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Malaysia's economy was dependent on exports of manufactured goods and on the service sector. The slow recovery in the world economy affected the Malaysian economy, which grew at a moderate pace in 2012. The country's gross domestic product (GDP) increased by 5.6% compared with an increase of 5.1% in 2011. Malaysia's economic growth was driven mainly by domestic demand (business and household spending). Private investment increased by 7.7% and accounted for the major share of the GDP growth. The manufacturing sector grew by only 4.8% as demand remained weak for manufactured products in most of the industrialized countries in the Western Hemisphere. The growth rate of the construction sector increased by 16.5% as a result of the Government startup of several infrastructure projects in 2012. The output value of the mining and quarrying sector increased by 1.4% compared with a decrease by 5.7% in 2011, reflecting an increase in production of crude oil and condensate (Bank Negara Malaysia, 2013, p. 15−25).

Minerals in the National Economy

Malaysia has identified mineral resources of barite, bauxite, clays, coal, copper, gold, ilmenite, iron ore, limestone, monazite, natural gas, petroleum, silica, silver, struverite (tantalum), tin, and zircon. During the 20th century, mineral production played an important role in Malaysia's national economy; after many years of exploitation, however, such minerals as barite, bauxite, copper, ilmenite, iron ore, and tin were either depleted or the capacities to produce them had decreased significantly. In terms of its contribution to the country's economy, the mining and quarrying sector accounted for 8.8% of the GDP in 2012 (Bank Negara Malaysia, 2013, p. 1; Department of Statistics, 2013a, p. 26).

Government Policies and Programs

In Malaysia, mineral sector activity is governed by the Mineral Development Act 1994 and the State Mineral Enactment. The Mineral Development Act 1994 defines the power of the Federal Government to regulate mineral exploration, mining, and related activities, including the authority to conduct inspections. The State Mineral Enactment gives the States the power to issue mineral prospecting and exploration licenses and mining leases. Apart from paying a corporate tax to the Federal Government, mine and quarry operators are required to pay value-based royalties to the State in which their operation is located. Royalty rates depend on the mineral commodity and on the assessment of each of the individual States.

The Government amended the Safeguard Act 2006 (Act 657) in 2012. The Safeguard Act (amendment) 2012 allows the Government to take action to prevent serious injury to domestic industry from lower priced imported materials; the Act was to take effect on September 1, 2013. These measures do not allow the Government to target imports from a particular country but import quotas can be placed upon supplying countries (Southeast Asia Iron and Steel Institute, 2013).

Production

Malaysia produced bauxite, coal, feldspar, gold, ilmenite, iron ore, mica, natural gas, petroleum, struverite (tantalum), tin, and zircon. Malaysia had been one of the major tin-producing countries in the world; owing to depleted reserves and lower ore grades, however, tin concentrate production had decreased in recent years. The country depended on imported tin concentrates and crude tin mainly from Australia and Indonesia to meet its demand for feedstocks for its smelter and refinery. In 2012, production of such commodities as feldspar, iron ore, manganese, rutile, and mined tin increased by more than 10% whereas production of kaolin and zirconium decreased by more than 10% (Department of Statistics, 2013c, p. 71−84).

Structure of the Mineral Industry

Malaysia's mineral industry consisted of a small mining sector for coal and ferrous and nonferrous metals. Metallic and nonmetallic mineral processing facilities were operated by private companies incorporated in Malaysia. Oil and gas exploration, production, and processing activities and facilities were owned and operated by Petroliam Nasional Berhad (Petronas), which was a state-owned company, and by joint ventures of Petronas and foreign companies. Foreign investors were permitted to have a 100% equity stake in companies operating in Malaysia or to form joint ventures with local companies (table 2).

Mineral Trade

Malaysia's major export products were automotive parts, chemicals, electronics, and machinery. The volume of mineral commodity exports had declined in recent years. In 2012, total trade increased to $436.3 billion; of that amount, exports increased by 0.7% to $234.0 billion and imports increased by 5.9% to $202.3 billion. Electrical and electronic products continued to be Malaysia's leading export category and accounted for 36.5% of the total exports. The export share of liquefied natural gas (LNG) and petroleum products was 7.9% and 4.6%, respectively. Malaysia exported 23.8 million metric tons (Mt) of LNG, which was a decrease of 4.3% from that of 2011. LNG was exported to (in descending order of export value) Japan, the Republic of Korea, and China and accounted for 91% of the country's total LNG exports in 2012. Malaysia exported 11.9 Mt of crude oil, which had a total value

of $10.6 billion and was a decrease of 5.1% from the value in 2011. Crude oil was exported to (in descending order of export value) Australia, India, Thailand, Japan, China, New Zealand, and the Republic of Korea, which together accounted for 93% of the country's total crude oil exports in 2012. Malaysia's major import category was machinery and transport equipment, which accounted for 39.1% of the country's total imports. China continued to be Malaysia's leading trading partner in 2012 followed by Singapore and Japan (Department of Statistics, 2013b, p. 1–30).

Commodity Review

Metals

Aluminum.—Malaysia did not have an aluminum refinery, and most of its bauxite output was exported to other Asian countries. Press Metal Sarawak Sdn Bhd (a subsidiary of Press Metal Berhad) completed the construction of a 120,000-metric-ton-per-year (t/yr) aluminum smelter in Mukah in the State of Sarawak; the smelter was fully operational by the second half of 2012. Press Metal had chosen the Aluminum Corp. of China Ltd. (Chalco) as its technical partner for the first phase of the aluminum smelter project. Chalco's Guiyang Aluminum and Magnesium Research Institute installed the prebaked cells. The company signed a memorandum of understanding with Sarawak Energy Berhad to supply 510 megawatts (MW) of electricity-generating capacity for the smelter in 2010. After the smelter was fully operational, the company started the construction of its second potline. The second potline would be equipped with 400-kiloampere prebaked anode cells and was scheduled to be completed in 2013 increase the smelter's total output capacity to 300,000 t/yr. Sumitomo Corp. of Japan acquired a 20% share in the second phase aluminum project and had sales rights to some of the output (Press Metal Berhad, 2013a, p. 9; 2013b).

Copper.—Without any refined copper production, Malaysia relied on imported copper to meet its demand. In 2011 (the latest year for which data were available), Malaysia imported 226,017 metric tons (t) of refined copper and copper alloys and 15,972 t of copper scrap and exported 10,264 t of refined copper and copper alloys and 29,969 t of copper scrap. In 2006, Malaco Mining Sdn Bhd explored for copper and gold in the State of Pahang. After 3 years of exploration, Malaco discovered a copper deposit at Sri Jaya, and the Mengapur Mine began production in 2009; however, no production was recorded in 2010 and 2011. Monument Mining Ltd. of Canada, through its Malaysian subsidiary Monument Mengapur Sdn Bhd, acquired a 70% interest in the Mengapur polymetallic mine in February 2012. The Mengapur Mine is located 130 kilometers (km) from Monument's wholly owned Selinsing Gold Mine. In October 2012, Monument announced that the company had resolved an issue concerning iron ore material that was covering the skarn at the designated area of the Mengapur project with Cermat Aman Sdn Bhd, Phoenix Lake Sd. Bhd, and ZCM Aman Sdn Bhd. Monument did not own the iron in the "free-digging materials" in the oxide zone on the mining lease area when Monument acquired the interest in Malaco Mining Sdn Bhd. The parties agreed to form a technical committee to define the technical boundary and methods to separate the iron ore material from other metals. Monument planned to invest a significant amount of capital to develop the open pit mine and processing facilities based on base- and precious-metals production. The company planned to put the production plant into operation in 2013 (Minerals and Geoscience Department, 2012, p. 19–22; Monument Mining Ltd., 2012b, d).

Gold.—Approximately 17 gold mines were operating in Malaysia; all were located in the States of Kelantan, Pahang, and (or) Terengganu. More than 90% of mined gold was from the State of Pahang, mainly the Penjom gold mine at Penjom, the Selinsing gold mine in Bukit Selinsing Koyan, and Raub Australian Gold Mining Sdn Bhd's gold mine in Raub. The Penjom gold mine was a leading gold producer in the country. Owing to depleting resources within the mining lease area, gold production from the Penjom gold mine decreased to 1,748 kilograms (kg) (56,203 troy ounces) in 2012. The Selinsing gold mine ranked second for gold production and produced 1,487 kg (47,811 troy ounces) (Monument Mining Ltd., 2012a, p. 4; 2013; PT J Resources Asia Pasifik Tbk, 2013, p. 12).

Monument completed the treatment plant expansion at its Selinsing gold mine in 2012. The overall milling and treatment capacity increased to 1 million metric tons per year (Mt/yr) of ore from 400,000 t/yr. The total cost of the expansion was $8.6 million and included installation of an additional crusher and enlargement the tailings storage facility. The increased capacity would enable the company to increase the amount of ore to be processed at the mill when the ore grades become lower in the future. Also, Monument had identified gold mineralization on the north and south zones of the Buffalo Reef and the Selinsing mining areas (Monument Mining Ltd., 2012c).

Iron and Steel.—Malaysian's iron ore production was from small-scale mines located in the States of Johor, Pahang, Perak, and Terengganu. The low-grade iron ores were consumed by the pipe-coating industry that supplied cement plants and the oil and gas sector. The high-grade iron ore was exported to China. In 2011, Malaysia exported 5.7 Mt of high-grade iron ore to China and imported 2.8 Mt of high-grade iron ore from, in descending order of amount received, Brazil and Bahrain. The State Government of Terengganu approved iron ore mining concessions for Eastern Steel Sdn Bhd and Perwaja Holdings Bhd in Bukit Besi. In Terengganu, geologists estimated that more than 50 Mt of iron ore resources was located in the Bukit Besi area and that the iron content was about 70%. Perwaja planned to invest about $130 million to build a pelletizing plant in Kemaman, where its direct-reduced iron plant was located. Perwaja intended to mine 2 Mt/yr iron ore and to produce 1.2 Mt/yr of pellets during its first year of operation; it planned to increase the pellet production to 2.4 Mt/yr in 2013. The company estimated that production costs would be about $50 per metric ton of pellet, which was lower than the $90 to $120 per metric ton cost of imported pellet (Southeast Asia Iron and Steel Institute, 2012).

Manganese.—Malaysia's manganese resources were located in Johor, Kelantan, Pahang, and Terengganu, and the manganese content was usually less than 50%. The volume of manganese

output from Malaysia depended on the price of manganese in the world markets. Since 2005, with an increase in manganese prices in the world, Malaysia's manganese output had gradually increased. Without much domestic demand for manganese, the country exported nearly all its output to China. Pertama Ferroalloys Sdn Bhd [formerly known as ANL Manganese (Malaysia) Sdn Bhd] [a joint venture between Asia Mineral Ltd. (ANL), 51%, and customers from Japan Steel Group, Korea Steel Group, and a local Malaysian company, 49%] planned to build a manganese ferroalloys plant in the Samalaju Industry Park in Bintulu in the State of Sarawak. The ferroalloys plant was designed to produce 350,000 t/yr of ferromanganese and ferrosilicon alloys beginning in 2014. ANL signed an agreement with Sarawak Energy for the provision of 270 MW of electricity-generation capacity for 20 years. Raw materials would be sourced from Brazil, South Africa, and local mines (Minerals and Geoscience Department, 2012, p. 37).

South Africa's Assmang Ltd. and African Rainbow Minerals Ltd., China Steel Corp. of Taiwan, and Sumitomo Corp. of Japan jointly completed a feasibility study on the construction of a 163,000-t/yr ferromanganese plant in Sarawak. China Steel would invest $62.5 million to secure a 19% share of the joint-venture project and to obtain between 30,000 and 32,000 t/yr of ferromanganese alloys. Construction of the plant was scheduled to start in 2014, and production was expected to begin in 2016 (Metal-Pages Ltd., 2013).

Tin.—Malaysia's tin mines produced about 3,000 t/yr during the past several years. Resources were depleted and ore grades were lower after more than 100 years of active mining operations. The country imported tin concentrates from other countries in Asia and Africa to meet its demand. Solder production was the leading tin consuming sector in Malaysia, followed by tinplate and pewter. Tin consumption in Malaysia decreased to less than 3,000 t/yr during the past 3 years. The decrease in tin consumption was mainly the result of a decrease in demand from the solder and pewter sectors; consumption by other consumers remained at the same level during that period. Malaysia Smelting Corp. Bhd. (MSC) was Malaysia's sole integrated tin producer; it produced 37,792 t of refined tin at its Butterworth smelter in 2012, which was about 6% less than it produced in 2011. The decrease in tin production was a result of MSC's inability to source raw material from the African region because tin exports from the African region were required to meet standards set by the ITRI Tin Supply Chain Initiative (iTSCi) to ensure that tin exports from the African region are accountable and transparent. In 2012, Malaysia imported 29,719 t of tin concentrates compared with 33,031 t in 2011. Malaysia's refined tin exports decreased to 37,191 t in 2011 from 42,302 t in 2011 and went mainly to China, Japan, the Republic of Korea, Singapore, and Taiwan (Department of Statistics, 2013b, p. 27; Malaysian Tin Bulletin, 2013; Malaysia Smelting Corp. Bhd., 2013, p. 20, 166).

Industrial Minerals

Cement.—Malaysia's cement sector was dominated by three companies: Cement Industries of Malaysia Bhd, Lafarge Malaysia Cement Bhd, and YTL Cement Bhd; together, these companies accounted for about 78% of the country's total cement output capacity. Cement demand in Malaysia had fluctuated between 16 and 17 Mt/yr during the past 5 years. West Malaysia had one of the most developed infrastructures in the country, but east Malaysia remained relatively undeveloped. Under the 10th Malaysia Plan and Economic Transformation program, the Government planned to build the east coast highway from Jabur to Kuala Terenggaru and to improve rural infrastructure. Together with ongoing construction of commercial properties, the demand for cement was expected to increase during the next several years. KHD Humboldt Wedag International AG was awarded a contract by YTL Group to build an integrated cement plant, which would be located near Kuantan. The new plant would have a design capacity to produce 5,000 metric tons per day. The $130 million cement plant would have the latest environmentally friendly equipment (KHD Humboldt Wedag International AG, 2012).

Rare Earths.—Globally, the production and resources of rare earths were dominated by China. Lynas Corp. Ltd. of Australia mined the rare-earth deposit at Mount Weld in Western Australia and shipped rare-earth concentrates to Malaysia for further processing. Lynas secured approval from the Malaysian Government to build an advanced materials plant in the Gebeng III Industrial Area, which is located near the Port of Kuantan in the State of Pahang. The construction of the plant was scheduled to be completed in late 2011, but the completion date was postponed to 2012. The plant would have an initial output capacity of 11,000 t/yr of rare-earth-oxide-equivalent products. Local residents objected to the construction of the rare-earth plant in their area because they worried about the safety of storing low-level radioactive waste that could cause lasting environmental damage. They feared that Lynas's plant would be a repeat of the Mitsubishi Chemical rare-earth plant in the area, which was shut down in 1992. The Malaysia Parliamentary Committee approved the issuance of a temporary operating license to Lynas. A local environmental group applied to the High Court of Malaysia for an injunction to block Lynas's license, but the court decided to allow the rare-earth separation plant to begin operating in late 2012. The company faced technical problems on its cracking and leaching units at its Malaysian rare-earth plant. As a result, the volume of output was much less than its designed capacity. The company planned to complete the debottlenecking of these technical problems by the end of 2013. Lynas started the construction of the phase 2 expansion project to increase the output capacity to 22,000 t/yr; the expansion project was planned to be completed in late 2013 (Lynas Corporation Ltd., 2013).

Mineral Fuels

Coal.—Malaysia's coal resources are located in the States of Perak, Perlis, Sabah, Sarawak, and Selangor. Coal was produced from the areas of Bintulu, Merit-Pila, Silantek, and Tutoh in the State of Sarawak. The country has coal resources of about 1.9 billion metric tons (Gt), of which 281 Mt was measured, 378 Mt was indicated, and 1.3 Gt was inferred. About 1.5 Gt of the country's coal resource is located in Sarawak, and more than 300 Mt is located in Sabah. Owing to the lack of infrastructure,

most of the coal in the interior areas of the country had not been exploited. Coal resources located in Sabah were in the Maliau Basin Conservation area, which the Government had designated as a protected area. Mining and exploration for coal were conducted only in Sarawak.

Power-generating plants consumed about 70% of the total supply of coal (domestic production and imports), and the remaining supply was consumed by the cement and iron and steel sectors. Despite Malaysia's position as a natural gas exporter, Tenaga Nasional Berhad planned to decrease the use of natural gas at its powerplants to 49% from 72% and to shift to the use of coal because of a shortage in the supply of natural gas in the domestic market. Overall, coal demand for powerplants was likely to increase; as a result, coal consumption was expected to increase to 24 Mt in 2013.

Coal consumption was expected to increase to 36 Mt by 2020 because the demand for electricity was expected to increase, and in expectation of this increase in demand, the Government planned to build another coal-fired powerplant. The supply of domestic coal would likely not be sufficient to meet the expected increase in demand for coal, and the country was expected to increase coal imports to fill the gap. In 2011 (the latest year for which data were available), Malaysia imported 22.0 Mt of coal, which was about 2 Mt more than in 2010. Coal imports from Indonesia accounted for 72.2% of the total imports followed by Australia, 14.1%; South Africa, 11.8%; and others, 1.9% in 2011 (Minerals and Geoscience Department, 2012, p. 102–106).

Natural Gas and Petroleum.—Malaysia remained a net exporter of natural gas and crude oil. The increase in natural gas production was caused by the growth of external demand for LNG from China and Japan. The Malaysian Government offered incentives for companies to explore deeper and less-profitable fields in a bid to increase reserves as energy demand increases. Eight new fields were brought onstream in 2012, which included the Berantai field in Peninsular Malaysia and the Gumusut-Kakap and Kanowit deepwater fields in Sarawak (Petroliam Nasional Berhad, 2013, p. 43–45).

Outlook

Malaysia's economy is projected to grow at a slower rate during the next 3 years than in the previous several years because of the projected slow recovery of the global economy. Private and public spending, however, will likely continue to support economic growth. The Government is aware of the country's need to reduce its dependence on external markets and to produce a more-diversified range of goods for export. To improve the investment climate and build a more-competitive economy, the Government plans to privatize state-owned companies, sell Government land, and reassess Government subsidies. The Government plans to further relax some rules regarding foreign investment in Malaysian companies and properties, initial public offerings, and the financial sector. The construction sector is expected to expand as a result of increased investment by the Government in infrastructure under the Tenth Malaysia Plan, and the demand for construction steel products will also likely increase. Several natural gas and oil projects are set to come onstream to replace maturing fields during the next several years.

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TABLE 1
MALAYSIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2008	2009	2010	2011	2012
METALS						
Aluminum:						
Bauxite, gross weight		295,176	263,432	124,274	188,141	121,873
Aluminum		--	--	--	--	100
Copper, mine output, Cu content		--	240	--	--	--
Gold, mine output, Au content[3]	kilograms	2,489	2,794	3,765	4,219 r	4,625
Iron and steel:						
Iron ore, gross weight		981,932	1,470,186	3,465,895	8,077,879 r	10,277,849
Pig iron, direct-reduced iron, and hot-briquetted iron	thousand metric tons	1,957	2,388	2,390	2,876	2,329
Steel, crude	do.	6,423	5,354	5,693	5,941	5,612
Magnesium metal[e]		--	--	--	200	5,000
Manganese, gross weight		536,675	468,963	899,703	597,917 r	1,099,585
Niobium (columbium)-tantalum metals, struverite, gross weight		216	176	84	110	262
Silver, mine output, Ag content[3]	kilograms	349	367	436	459	1,678
Tin:						
Mine output, Sn content		2,605	2,412	2,668	3,340 r	3,726
Metal, smelter		31,691	36,407	38,737	40,267	37,792
Titanium:						
Ilmenite concentrate, gross weight		36,779	15,983	19,036	28,782	22,275
Rutile		1,834	1,502	7,567	10,810	20,008
Zirconium, zircon concentrate, gross weight		984	1,145	1,267	1,685	442
INDUSTRIAL MINERALS						
Barite		4,372	22,390	1,000	--	--
Cement, hydraulic	thousand metric tons	19,629	19,457	19,762	21,198 r	21,726
Clays and earth materials	do.	25,065	22,966	27,543	28,384 r	28,163
Feldspar		457,377	410,053	455,497	379,628	482,906
Kaolin		506,462	487,632	530,331	442,500	393,068
Mica		5,593	4,323	4,515	4,245 r	3,967
Rare earths, monazite and xeonotime, gross weight		233	25	732	779	179
Sand and gravel	thousand metric tons	24,472	17,382	30,678	37,339 r	40,000 e
Silica sand		1,466,904	630,394	932,159	1,340,013 r	931,880
Stone:						
Aggregate	thousand metric tons	75,883	86,497	101,809	118,510 r	100,000 e
Dolomite		57,900	49,000	50,900	50,000 e	50,000 e
Limestone	thousand metric tons	35,228	35,808	32,398	34,300 r	35,000 e
MINERAL FUELS AND RELATED MATERIALS						
Coal		1,166,525	2,138,390	2,397,340	2,915,788	2,951,124
Gas, natural:						
Gross	million cubic meters	68,000	65,000	72,000	73,000	74,000
Net[4]	do.	61,004	58,560	61,136	61,400	62,000
Liquefied natural gas	thousand metric tons	23,422	22,452	24,363	25,822 r	23,986
Petroleum:						
Crude and condensate	thousand 42-gallon barrels	251,811	240,479	232,100	207,696 r	212,979
Refinery products[e]	do.	210,000	200,000	210,000	215,000	215,000

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through October 5, 2013.

[2]In addition to the commodities listed, a variety of materials, which include ammonia, fertilizers, lead (secondary), and salt, is produced but not reported, and information is inadequate to make reliable estimates of output.

[3]Includes byproduct from tin mines in Peninsular Malaysia and gold mines in Peninsular Malaysia and the State of Sarawak.

[4]Includes production from Peninsular Malaysia and the States of Sabah and Sarawak.

Sources: Ministry of Primary Industry, Minerals and Geoscience Department (Kuala Lumpur), Malaysian Minerals Yearbook 2011; U.S. Geological Survey Minerals Questionnaire, 2013; and Southeast Asia Iron and Steel Institute, Steel Statistical Yearbook, 2011.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum, metal		Press Metal Sarawak Sdn Bhd (Press Metal Berhad)	Mukah, Sarawak	120.
Bauxite		Johore Mining and Stevedoring Co. Sdn. Bhd.	Teluk Rumania and Sg. Rengit, Johor	400.
Cement[1]		Cement Industries of Malaysia Bhd. (United Engineers Malaysia Bhd., 53.97%, and others, 46.03%)	Kangar, Perlis	2,000 cement; 1,650 clinker.
Do.		do.	Bahau, Negeri Sembilan	1,580 cement; 1,300 clinker.
Do.		CMS Cement Sdn Bhd (subsidiary of Cahya Mata Sarawak Bhd)	Bintulu, Sarawak	750 cement.
Do.		do.	Kuching, Sarawak	1,000 cement.
Do.		Holcim (Malaysia) Sdn Bhd (Holcim Ltd.)	Pasir Gudang, Johor	1,300 cement.
Do.		Lafarge Malaysia Cement Bhd. (subsidiary of Lafarge S.A.)	Rawang, Selangor	6,810 cement; 4,900 clinker.
Do.		do.	Kanthan, Perak, Langkawi, Kedah	5,370 cement; 3,300 clinker.
Do.		do.	Pasir Gudang, Johor	770 cement.
Do.		YTL Cement Berhad (subsidiary of YTL Group)	Bukit Sagu, Pahang	1,300 cement; 1,200 clinker.
Do.		do.	Padang Rengas, Perak	3,400 cement; 3,000 clinker.
Do.		do.	Pasir Gudang and Westport, Johor	1,000 cement.
Do.		Tasek Corp. Bhd (publicly owned company)	Ipoh, Perak	2,300 cement; 2,300 clinker.
Copper, mine		Monument Mengapur Sdn Bhd (subsidiary of Monument Mining Ltd.)	Sri Jaya, Pahang	4.
Gas:				
Natural	million cubic meters per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	45.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	3.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	80.
Liquefied		Malaysia LNG Sdn. Bhd. [Petroliam Nasional Berhad, (Petronas) 65%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 5%]	Tanjung Kidurong, Bintulu, Sarawak	8,100.
Do.		Malaysia LNG Dua Sdn. Bhd. [Petroliam Nasional Berhad, (Petronas) 60%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 10%]	do.	7,800.
Do.		Malaysia LNG Tiga Sdn. Bhd. [Petroliam Nasional Berhad, (Petronas) 60%; Shell Gas N.V., 15%; Nippon Oil LNG (Netherlands) BV, 10%; Sarawak State government, 10%; Diamond Gas Netherlands BV, 5%]	do.	6,800.
Gold, refined	kilograms	PT J Resources Asia Pasifik Tbk (J&Partners, L.P., 100%)	Penjom, Pahang	4,000.
Do.	do.	Raub Australian Gold Mining Sdn. Bhd (Peninsular Gold Ltd., 100%)	Raub, Pahang	500.
Do.	do.	Monument Mining Ltd. of Canada	Bukit Selinsing Koyan, Pahang	1,500.
Iron and steel:				
Direct-reduced iron		Lion DRI Sdn Bhd (Lion Group)	Banting, Selangor	1,540.
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd, 51%, and Maju Holdings Sdn. Bhd., 49%)	Kemaman, Terengganu	1,800.
Hot-briquetted iron		Amsteel Mills Sdn Bhd (Lion Group)	Labuan Island, offshore Sabah	880.

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel—Continued:				
Crude steel		Amsteel Mills Sdn Bhd (Lion Group)	Banting, Selangor	1,250.
Do.		do.	Klang, Selangor	750.
Do.		Ann Joo Steel Bhd (Ann Joo Group)	Prai, Penang	900.
Do.		Antara Steel Sdn. Bhd. (Lion Grop)	Pasir Gudang, Johr	600.
Do.		Kinsteel Sdn Bhd	Kuantan, Pahang	500.
Do.		Megasteel Sdn Bhd (Lion Group)	Banting, Selangor	700.
Do.		Malaysia Steel Works Bhd	Bukit Raja, Selangor	450.
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd, 51%, and Maju Holdings Sdn. Bhd., 49%)	Kermaman, Terengganu	1,500.
Do.		Southern Steel Bhd. [Camerlin (a member of Hong Leong Group Malaysia), 40.75%; Natsteel Ltd., 27.03; others, 32.22%]	Prai, Penang	1,300.
Magnesium, metal		CVM Minerals Ltd.	Kamunting Raya, Perak	15,000.
Nitrogen, ammonia		Asean Bintulu Fertilizer Sdn. Bhd. (Petroliam Nasional Berhad, (Petronas) 63.5%; P.T. Pupuk Sriwidjaja Indonesia, 13%; Thai Ministry of Finance, 13%; Philippines National Development Co., 9.5%; Singapore Temasek Holdings Pte. Ltd., 1%)	Bintulu, Sarawak	395.
Do.		Petronas Fertilizer Kedah Sdn. Bhd. [wholly owned subsidiary of Petroliam Nasional Berhad (Petronas)]	Gurun, Kedah	378.
Do.		Petronas Ammonia Sdn. Bhd. (wholly owned subsidiary of Petroliam Nasional Berhad)	Kerth, Terengganu	370.
Petroleum, crude	thousand 42-gallon barrels per day	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	390.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	100.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	184.
Do.	do.	Petronas Carigali Sdn. Bhd.	Offshore Terengganu	22.
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Offshore Sarawak	15.
Rare earths (REO equivalent)		Lynas Corp. Ltd. of Australia	Kuantan, Pahang	11.
Tin:				
Concentrate		Delima Industries Sdn. Bhd.	Dengkil, Selangor	1.1.
Do.		Maiju Sama Sdn. Bhd.	Puchong, Selangor	1.6.
Do.		New Lahat Mines Sdn. Bhd.	Lahat, Perak	0.3.
Do.		Omsam Telecommunication Sdn. Bhd.	Bakap and Batu Gajah, Perak	0.5.
Do.		Rahman Hydraulic Tin Bhd.	Klian Intan, Perak	3.
Do.		S.E.K. (M) Sdn. Bhd.	Kampar, Perak	0.4.
Do.		Tasek Abadi Sdn Bhd.	Senudong and Kampar, Perak	0.5.
Refined		Malaysia Smelting Corp. Bhd. (The Straits Trading Co. Ltd., 37.44%; Malaysia Mining Corp., 37.44%; others, 25.12%)	Butterworth, Penang	35.
Titanium dioxide		Huntsman Trioxide Sdn. Bhd. (a subsidiary of Huntsman Trioxide)	Kemaman, Terengganu	56.

Do., do. Ditto.
[1]All companies operated integrated plants.