



2008 Minerals Yearbook

MALAYSIA

THE MINERAL INDUSTRY OF MALAYSIA

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Malaysia's economy was dependent on exports of manufactured goods and the service sector. As the global financial crisis spread throughout the world during the second half of 2008, Malaysia's exports decreased and industrial output declined. The contraction in exports affected the domestic demand. Private investment and consumption slowed down significantly; however, public investment and consumption remained moderate in the fourth quarter of 2008. Overall, the Malaysian economy registered a growth of 4.6% in 2008 compared with 6.3% in 2007 (Bank Negara Malaysia, 2009, p. 6-7).

Minerals in the National Economy

Malaysia's identified mineral resources were barite, bauxite, clays, coal, copper, gold, natural gas, ilmenite, iron ore, monazite, petroleum, silica, silver, struverite, tin, and zircon. During the 20th century, mineral production played an important role in Malaysia's national economy; after many years of exploitation, such minerals as barite, bauxite, copper, ilmenite, iron ore, and tin were either depleted or the capacities to produce them had decreased significantly in recent years. In terms of contributing to the country's economy, the share of the mining and quarrying sector accounted for only 17.2% of the gross domestic product in 2008 because of a decrease in the production of natural gas and oil and decreased output from the mining and quarrying sector during the fourth quarter of 2008. Owing to new infrastructure projects called for in the Ninth Malaysia Plan, the growth of the construction sector increased by 2.1% in 2008. Because of the global financial crisis, the output of the mining and manufacturing sectors was expected to decrease in 2009 (Minerals and Geoscience Department, 2008, p. 1; Department of Statistics, 2009a).

Government Policies and Programs

In Malaysia, the mineral activities are 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 and conduct inspections of the mineral exploration, mining, and related activities. The State Mineral Enactment gives the States the power to issue mineral prospecting and exploration licenses and mining leases. As of yearend 2008, the States of Kelantan, Pahang, Perak, Sabah, Selangor, and Terengganu had adopted and implemented the quarry rules outlined in section 14 of the National Land Code 1965, which regulates quarrying activities for "rock mineral" in peninsular Malaysia. The Government defines rock mineral as clay, granite, gravel, limestone, marble, peat, rock, sand, stone, and other related manufactured commodities. The Petroleum Mining Act 1966 regulates petroleum activities in Malaysia.

The prices of petroleum products in Malaysia were among the lowest in Asia because the Government fixed the price below market rates and paid subsidies to fuel retailers as compensation. Fuel subsidies were a significant part of the Government budget. The Government decided to stop paying subsidies when crude oil was \$65 per barrel or lower and planned to set floor prices for petroleum products. During the first 10 months of 2008, the Government provided \$4.7 billion in subsidies (Star, The, 2008b).

Production

Malaysia produced bauxite, coal, feldspar, gold, ilmenite, iron ore, mica, natural gas, petroleum, tin, and zircon. Malaysia had been one of the major tin producing countries in the world; owing to depleted ore resources 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 2008, production of such commodities as mined tin and tin metal increased by more than 10% whereas gold production decreased by more than 10% (table 1).

Structure of the Mineral Industry

Malaysia's mineral industry consisted of a small mining sector of coal and ferrous and nonferrous metals. Metallic and nonmetallic processing facilities were operated by private companies incorporated in Malaysia. Oil and gas exploration, production, and processing activities were owned and operated by Petroliam Nasional Berhad (Petronas), which was a state-owned company, and by joint ventures of Petronas and foreign companies (table 2).

Mineral Trade

The major export products were automotive parts, chemicals, electronics, and machinery. The volume of mineral commodity exports had declined in recent years. In 2008, the total trade increased to \$355.5 billion; of that amount, exports increased by 9.6% to \$199.0 billion and imports increased by 3.3% to \$156.5 billion. Electrical and electronic products continued to be Malaysia's leading export category and accounted for 38.5% of the total exports. Owing to higher prices on the world markets, the country's crude oil export revenue increased by 30.1% to \$12.9 billion; however, its export volume decreased by 4.3% to 16.2 million metric tons (Mt). As a result of the higher price of liquefied natural gas (LNG), the export revenue from LNG increased by 55.7% to \$12.2 billion and the export volume increased by 0.9% to 22.9 Mt. LNG was exported mainly to China, Japan, and the Republic of Korea (Department of Statistics, 2009b).

Commodity Review

Metals

Aluminum.—Malaysia did not have an aluminum refinery or smelter; most of its bauxite output, therefore, was exported to China, and Malaysia imported unwrought aluminum to meet its demand. The Government gave its approval for Sarawak Aluminium Co. (SALCO), which was a joint venture between Malaysian Cahya Mata Sarawak Berhad (CMS) and Rio Tinto Alcan (a subsidiary of Rio Tinto Ltd. of Australia), to build an aluminum smelter in Similajau, which is located about 60 kilometers (km) from the town of Bintulu in the State of Sarawak. The joint venture signed a memorandum of understanding with Sarawak Energy Berhad to supply power for the SALCO smelter. Rio Tinto Alcan was to install the Pechiney (AP) 37 aluminum smelting technology for the SALCO smelter. Initial aluminum output capacity was increased to 720,000 metric tons per year (t/yr) instead of the earlier planned capacity of 550,000 t/yr; capacity would eventually be expanded to 1.5 million metric tons per year (Mt/yr). The company would process aluminum into products, such as cables and semimanufactured products for the domestic and export markets. The total investment of the aluminum project was expected to be twice the previously planned \$2 billion because of the larger facility and the increased cost of materials. The construction of the smelter was scheduled to begin in early 2009. The smelter was expected to commence operations by the fourth quarter of 2010 and to reach full production in 2011. Raw material (alumina) would be imported from the Yarwun Alumina Refinery in Gladstone, Australia (NST Business Times, 2008; Rio Tinto Ltd., 2008).

Press Metal Sarawak Sdn Bhd, in which Press Metal Berhad held an 80% equity share, started the construction of its aluminum smelter in Mukah in the State of Sarawak in 2008. Press Metal had chosen the Aluminum Corp. of China Ltd. (Chalco) as its technical partner for the \$770 million aluminum smelter project. The Chalco's Guiyang Aluminum and Magnesium Research Institute would install the GY-200 aluminum smelting technology, which was equipped with 208 210-kiloampere prebaked cells. The initial output capacity was 50,000 t/yr and the smelter was scheduled to start up in mid-2009. When development of the Mukah smelter is completed, the smelter would have a total output capacity of 300,000 t/yr. The company signed a memorandum of understanding with Sarawak Energy Berhad to supply 510 megawatts of electricity generating capacity for the smelter by 2010 (China Metal Bulletin, 2009).

Gold.—Malaysia's gold was produced mainly from the Penjom Mine in the State of Pahang. The Penjom Mine was operated by Specific Resources Malaysia Sdn. Bhd., which was a wholly owned subsidiary of Avocet Mining plc of the United Kingdom. The company replaced smaller contractor trucks with larger, more-fuel-efficient equipment that was capable of supporting a higher mining rate and changed from a ball mill operation to a semiautogenous mill operation. The operation's capacity was increased by 25%. The company also changed from a conventional gravity and carbon-in-leach process to a

complex gravity circuit and resin-in-leach process. The recovery rate had greatly improved for highly carbonaceous gold ore, such as that mined at the Penjom Mine. The changes would allow the company to increase the mining and plant throughput and to exploit lower grade ore. The ore grade at the bottom of the Kalampong pit was lower than expected, and the company switched its mining activity to the southern areas, including Janik and Manik. The volume of the mined ore was increased by 20% but the ore grade was 3.47 grams per metric ton (g/t) gold and the recovery rate fell to 86%. As a result, gold production was 18% lower in 2008 than in 2007 (Avocet Mining plc, 2009, p. 16).

Peninsular Gold Ltd. of the United Kingdom, through its subsidiary, Raub Australian Gold Mining Sdn. Bhd., conducted a gold development project at Raub in the State of Pahang. The area around Raub had been the site of extensive gold mining in the past. The company identified 6.3 metric tons (t) (202,000 troy ounces) of gold in the tailings and expected that more gold would be found in the area. A 1-Mt/yr carbon-in-leach processing plant was built to recover gold from the tailings and was scheduled to begin operating in early 2009. The company had another gold project, Tersang, which was located a short distance from Raub and which had identified 16 t (528,000 troy ounces) of gold resources (Peninsular Gold Ltd., 2008).

Zedex Minerals Ltd. of New Zealand signed an agreement with Gladioli Enterprises Sdn Bhd. to earn a 50.05% share in the Bau gold project. The Bau project is located in the township of Bau about 37 km from the capital city, Kuching, in the State of Sarawak. The exploration area was about 828 square kilometers. The Bau area had been an important mining center during the 20th century. Exploration results indicated that in the exploration area and at the mine tailings of three deposits—Jugan, Pejiru, and Sirenggok—there was a total of 50.1 t (1,612,000 troy ounces) of gold resources. Zedex planned to review previous exploration data and to undertake further drilling to confirm the validity of existing data (Zedex Minerals Ltd., 2009, p. 7).

Iron and Steel.—Malaysia produced a small amount of low-grade iron ore from the States of Pahang, Perak, and Terengganu. Some domestic iron ore output was consumed by domestic pipe-coating plants and cement plants, however, and most of the iron ore (547,457 t) was exported to China in 2007 (the latest year for which data were available). In the same year, the country imported a total of 2.45 Mt of high-grade iron ore from, in descending order of amount received, Brazil, Chile, Mexico, and Bahrain. The country imported a total of 518,379 t of pig iron and 8.8 Mt of iron and steel scrap for steelmaking; one-half of these imports was from the United States (Minerals and Geoscience Department, 2008, p. 27-31).

Owing to the global financial crisis and slow demand for steel products in several developed countries, some Malaysian steel producers reduced their production by 35% during the last quarter of 2008. In 2008, Malaysia's steel products consumption decreased to 7.8 Mt from 8.9 Mt in 2007 owing to the slow demand for long- and flat-steel products by the construction sector. Under the Ninth Malaysia Plan, the Government planned to invest \$12.8 billion for infrastructure projects, and steel products consumption was expected to increase during the next 2 years (Southeast Asia Iron and Steel Institute, 2009).

Malaysia's leading iron and steel producer, Lion Group, through its subsidiary Lion Diversified Holdings Bhd, planned to build an ironmaking plant in Banting. Wisdri Engineering and Research Incorporation Ltd. (formerly Wuhan Iron and Steel Design and Research General Incorporation) of China was awarded the contract to design and build the blast furnace. The volume of the blast furnace would be 2,580 cubic meters with an output capacity of 2.5 Mt/yr of pig iron. Beijing Shougang International Engineering Technology Co. Ltd. of China was awarded the contract to build a 2.2-Mt/yr coke oven and a 2.8-Mt/yr sinter plant. The total investment was estimated to be \$500 million. The company also planned to install a 1.6-Mt/yr-capacity LD converter, ladle furnace, vacuum oxygen degasser, and slab caster at its steel complex in Banting. The construction of the ironmaking plant was scheduled to be completed at the end of 2009. The steelmaking output at the Banting iron and steel complex would increase to 6.5 Mt/yr from 3.3 Mt/yr in 2007. Iron ore imports would be sourced from Australia where the Group had investment in an iron ore mine (Lion Group, The, 2008).

Ann Joo Steel Bhd. (a subsidiary of Ann Joo Group) renovated its electric arc furnace to increase its steelmaking output capacity to 900,000 t/yr in 2008. In late 2007, Ann Joo awarded a contract to China's Tangshan Iron and Steel Design and Research Institute to design and build a 450-cubic-meter blast furnace and a 75-square-meter sinter machine at its plant site. The blast furnace, which would have pig iron output capacity of 500,000 t/yr, was scheduled to be put into operation in December 2008. However, owing to the global financial crisis and technical problems, startup of the blast furnace was postponed until the second quarter of 2010. Ann Joo also planned to expand the pig iron output capacity to 1.1 Mt/yr through the addition of another blast furnace, a sinter machine, and a 45-t converter under a second-phase expansion (Midf Amanah Investment Bank Berhad, 2009).

Rare Earths.—Globally, the production and resources of rare earths were dominated by China. Lynas Corp. Ltd. of Australia planned to develop the rare-earth deposit at Mount Weld in Western Australia and to ship rare-earth concentrates to Malaysia for further processing. Lynas secured approval from the Malaysian Government to build an advanced material 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 underway and was scheduled to be completed in late 2009. Initial design of the plant was to have an output capacity of 10,500 t/yr of rare-earth-oxide-equivalent products. Given the global shortfall in the supply of rare earths, Lynas planned to increase the output capacity to 21,000 t/yr in a second-phase design (Lynas Corp. Ltd., 2009, p. 15).

Tin.—Owing to depleted resources and lower ore grades after more than 100 years of active mining operations, Malaysia's tin mine production decreased to less than 3,000 t/yr. Solder production was the leading tin consuming sector in Malaysia, followed by tinplate, and pewter. Recently, tin consumption in Malaysia decreased to about 3,500 t in 2007 from more than 5,500 t in the 1990s. The decrease in tin consumption was mainly from the solder sector; consumption by other consumers remained at the same level during that period. Owing to an

increase in tin mine operating costs, Malaysian tin miners had difficulty operating profitably despite the higher demand for and price of tin. Malaysia Smelting Corp. Bhd. (MSC) was Malaysia's sole integrated tin producer; it produced 31,630 t of refined tin at its Butterworth smelter in 2008, which was about 24% more than it produced in 2007. The increase in tin production was a result of MSC's ability to source raw material from overseas markets. In 2008, Malaysia imported 20,987 t of tin concentrates compared with 20,643 t in 2007, mainly from Australia, Indonesia, and South Africa. Domestic mined tin production also increased by more than 20% in 2008 compared with that of 2007. The Republic of Korea, Singapore, Japan, and Taiwan (in descending order by volume) were the main destinations for Malaysian tin exports (Malaysia Smelting Corp. Bhd., 2009, p. 118-119; Malaysian Tin Bulletin, 2009).

Industrial Minerals

Cement.—In Malaysia, the cement industry operates under price controls, which means that prices can remain unchanged for a long period of time. To offset increases in the costs of transport, packaging, and utilities, the cement producers urged the Government to increase cement prices to match those in the region. Also, builders and developers asserted that shortages of cement were caused by the price controls. There had been no adjustment in local cement prices since 1995. In December 2006, the Government increased the cement price by 9%; however, the production costs increased by more than 40% during the same period. In 2007, the Government introduced an automatic pricing mechanism (APM), and cement was placed under this category; as a result, the price of cement was to be reviewed every 4 months. Under the APM, cement prices could be automatically adjusted to costs, and the Government ensured that there would be a reasonable profit margin to encourage investment by the cement producers. On June 5, 2008, the Government removed the ceiling prices on cement to ensure that development projects would not be delayed because of the tight supply of cement in the domestic market. The control of cement prices had discouraged producers from increasing their output volume even though the country's cement output capacity exceeded domestic demand. As a result, the development of many infrastructure projects was delayed. The Government also set the import duty for cement at 10% instead of the previous rate of between 25% and 50%, and importers in the States of Sabah and Sarawak were exempt from the requirement to obtain import licenses. On November 4, the Government abolished the 10% import duty for cement under its stimulus package. The changes were to ensure that the cement market would be more transparent and efficient (Star, The, 2008a; Bank Negara Malaysia, 2009, p. 28).

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 1.7 billion metric tons (Gt), of which 274 Mt was measured,

347 Mt was indicated, and 1.1 Gt was inferred. About 1.4 Gt of the country's resource is located in Sarawak. 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. In 2008, the State government of Sabah decided to cease the construction of a 300-megawatt coal-fired powerplant in Lahad Datu on Borneo Island to meet an increased electricity demand in the State of Sabah because the proposed plant would be located near the protected rainforest area. Coal consumption was expected to increase to 19.5 Mt in 2010 and, because domestic coal could not meet the demand, the country was expected to increase coal imports to fill the gap. Most imported coal was from Australia, China, and Indonesia (Minerals and Geoscience Department, 2009).

Natural Gas and Petroleum.—Malaysia remained a net exporter of natural gas and crude oil. Production of natural gas decreased by about 4% to 158 million cubic meters per day in 2008. The decrease of natural gas production was caused by the slow growth of external demand for LNG and an unplanned maintenance shutdown at several gasfields in Peninsular Malaysia. Production of crude oil and condensate increased by about 2% to an average of 694,000 barrels per day in 2008. The increased production of crude oil was driven by the increased output from the Kikeh oilfield in the State of Sabah; this oilfield was put into operation in 2007. The State of Sabah accounted for 21.7% the country's total production (Bank Negara Malaysia, 2009, p. 27).

The Governments of Brunei and Malaysia signed an agreement to resolve a maritime border dispute that had stopped oil exploration off Borneo Island. According to the agreement, both countries would collaborate in the exploration and exploitation of contested oil blocks. Both countries awarded exploration rights for a total of four blocks to international exploration companies where some blocks overlapped. The four blocks were estimated to contain a total of 440 million barrels of oil reserves (Star, The, 2009).

Outlook

With the global economic slowdown, Malaysia's economy is projected to grow at a slower rate during the next 3 years than in the previous several years. The expected decline of commodity

prices will likely affect export earnings and fiscal revenue. Private and public spending, however, will likely continue to support economic growth. The construction sector is expected to expand as a result of increased investment by the Government in infrastructure under the Ninth Malaysia Plan, and the demand for construction steel products will also likely increase. Several natural gas and oil projects are set to come onstream during the next several years, and the production of natural gas and oil is expected to increase.

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TABLE 1
MALAYSIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2004	2005	2006	2007	2008 ^c
METALS					
Aluminum, bauxite, gross weight	2,040	4,735	91,806	156,785	150,000
Gold, mine output, Au content ³ kilograms	4,221	4,250	3,497	2,913	2,400
Iron and steel:					
Iron ore, gross weight	663,732	949,605	667,082	802,030	800,000
Pig iron, direct-reduced iron and hot-briquetted iron thousand metric tons	1,710	1,349	1,277	1,872	1,957 ⁴
Steel, crude do.	5,698	5,296	5,834	6,895	6,423 ⁴
Lead metal, secondary ^c	54,000 ^r	71,000 ^r	73,000 ^r	73,000 ^r	73,000
Niobium (columbium)-tantalum metals, struverite, gross weight	121	552	93	52	50
Rare-earth metals, monazite, gross weight	1,683	320	894	682	650
Silver, mine output, Ag content ³ kilograms	364	401	410	295	290
Tin:					
Mine output, Sn content	2,745	2,857	2,398	2,263	2,578 ⁴
Metal, smelter	33,914	36,924	22,850	25,471 ^r	31,630 ⁴
Zirconium, zircon concentrate, gross weight	6,886	4,954	1,690	7,393	7,000
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	15,692	17,860	18,400	19,480	19,000
Clays and earth materials do.	24,221	28,757	25,081	28,102	25,000
Feldspar	79,220	117,180	142,358	358,775	300,000
Kaolin	326,928	494,511	341,223	587,508	400,000
Mica	3,544	4,542	5,152	6,118	6,000
Nitrogen, N content of ammonia	842,500	920,000	950,000	950,000	950,000
Sand and gravel thousand metric tons	18,371	17,072	25,225	22,370	22,000
Silica sand, peninsular Malaysia and Sarawak	631,402	531,891	512,277	719,221	700,000
Stone:					
Aggregate thousand metric tons	51,236	62,761	79,912	79,118	75,000
Dolomite	27,500	38,500	37,702	49,320	49,000
Limestone thousand metric tons	31,598	30,868	33,471	58,118	58,000
Titanium:					
Ilmenite concentrate, gross weight	61,471	38,196	45,649	59,310	59,000
Dioxide ^c	56,000	56,000	56,000	56,000	56,000
MINERAL FUELS AND RELATED MATERIALS					
Coal	389,176	789,356	901,801	1,074,936	1,050,000
Gas, natural:					
Gross million cubic meters	63,165	70,471	70,191	71,170	68,000
Net ⁵ do.	53,691	59,901	59,663	60,490	57,648 ⁴
Liquefied natural gas thousand metric tons	20,729	21,948	21,948	22,669	20,000
Petroleum:					
Crude and condensate thousand 42-gallon barrels	279,009	267,720	243,455	249,295 ^r	253,310 ⁴
Refinery products ^{c,6} do.	225,000	218,000	208,000	220,000	210,000

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto.

¹Table includes data available through October 30, 2009.

²In addition to the commodities listed, a variety of crude construction materials, which include clays and stone, fertilizers, and salt, is produced but not reported, and information is inadequate to make reliable estimates of output.

³Includes byproduct from tin mines in peninsular Malaysia and gold mines in peninsular Malaysia and the State of Sarawak.

⁴Reported figure.

⁵Includes production from peninsular Malaysia and the States of Sabah and Sarawak.

⁶Gross less volume of reinjected and flared.

Sources: Ministry of Primary Industry, Minerals and Geoscience Department (Kuala Lumpur), Malaysian Minerals Yearbook 2007; U.S. Geological Survey Minerals Questionnaire, 2007; and Southeast Asia Iron and Steel Institute, Steel Statistical Yearbook, 2009.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Bauxite		Johore Mining and Stevedoring Co. Sdn. Bhd. (Alcan Ltd. of Canada, 61%, and local investors and others, 39%)	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 and Bahau, Negeri Sembilan	3,400 cement; 2,800 clinker.
Do.		CMS Cement Sdn Bhd (subsidiary of Cahya Mata Sarawak Bhd)	Bintulu and Kuching, Sarawak	1,750 cement; 600 clinker.
Do.		Holcim (Malaysia) Sdn Bhd (Holcim Ltd.)	Pasir Gudang, Johor	1,200 cement.
Do.		Lafarge Malayan Cement Bhd. (subsidiary of Lafarge S.A.)	Rawang, Selangor; Kanthan, Perak, Langkawi, Kedah; and Pasir Gudang, Johor	12,950 cement; 8,200 clinker.
Do.		YTL Cement Berhad (subsidiary of YTL Group)	Bukit Sagu, Pahang; Padang Rengas, Perak; and Pasir Gudang and Wesport, Johor	5,700 cement; 4,200 clinker.
Do.		Perak-Hanjoong Simen Sdn. Bhd. (Gopeng Bhd., 45%, and Korea Heavy Industries and Construction Co. and others, 55%)	Padang Rengas, Perak	3,400 cement; 3,000 clinker.
Do.		Tasek Corp. Bhd (publicly owned company)	Ipoh, Perak	2,300 cement; 2,300 clinker.
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. (Petroleum Nasional Berhad, 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. (Petroleum Nasional Berhad, 60%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 10%)	do.	7,800.
Do.		Malaysia LNG Tiga Sdn. Bhd. (Petroleum Nasional Berhad, 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	Specific Resources Malaysia Sdn. Bhd. (joint venture of Pahang State Development Corp. and Avocet Mining Plc)	Penjom, Pahang	4,000.
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.
Crude steel		do.	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.
Nitrogen, ammonia		Asean Bintulu Fertilizer Sdn. Bhd. (Petroleum Nasional Berhad, 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 Petroleum Nasional Berhad)	Gurun, Kedah	378.
Do.		Petronas Ammonia Sdn. Bhd. (wholly owned subsidiary of Petroleum Nasional Berhad)	Kerth, Terengganu	370.

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
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.	do.	do.	184.
Do.	do.	Petronas Carigali Sdn. Bhd.	Offshore Terengganu	22.
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Offshore Sarawak	15.
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	1.2.
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 Tioxide)	Kemaman, Terengganu	56.

Do., do. Ditto.

¹All companies operated integrated plants.

