



2007 Minerals Yearbook

MALAYSIA

THE MINERAL INDUSTRY OF MALAYSIA

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The Malaysian economy expanded by 6.3% in 2007, compared with 5.9% in 2006. The growth was driven by domestic demand from both the private and the public sectors. During the past several years, the Malaysian economy had diversified into the service sector, which became the main driver of growth and accounted for about 50% of the gross domestic product. In 2007, the service sector continued to perform well, with a 9.7% rate of growth. The construction and the mining sectors rebounded from several years of negative growth to positive growth of 4.6% and 3.2%, respectively, in 2007. Reflecting weaker overseas demand, the manufacturing sector grew at a rate of only 3.1% in 2007 compared with 7.1% in 2006. The decline was owing mainly to the decrease in exports of electrical and electronics products (Bank Negara Malaysia, 2008, 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 mining decreased to 6.3% in 2006 (the latest year for which data were available) from 6.7% in 2005. Activity in the mining and mineral fuel sectors was expected to increase during the next several years because the new oilfields and gasfields discovered during the past several years in the State of Sabah were expected to begin production soon. Owing to new infrastructure projects called for in the Ninth Malaysia Plan, the construction sector was expected to expand during the next several years (Minerals and Geoscience Department, 2007, p. 1).

Government Policies and Programs

The Malaysian Government continued its policy of pursuing balanced growth and a stable political and social environment. The Government's 15-year Third Industrial Master Plan is directed at making the manufacturing and service sectors more knowledge-intensive and productive and, as a result, more globally competitive. Under the plan, the Government would promote investment and export products that had growth potential and identify sectors, such as biotechnology, chemicals, electrical and electronics, and medical and optical, to be the strategic industries for development. The Government planned to invest \$15 billion in the metals sector to sustain and expand the exports of iron and steel products, targeting particularly the southeastern Asian markets. The Government recognized the

problem that the supply of skilled workers had not matched the pace of demand, and the industrial plan included measures to help alleviate the problem.

Production

Malaysia produced bauxite, coal, feldspar, gold, ilmenite, iron ore, mica, natural gas, petroleum, tin, and zircon. Malaysia was 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 2007, production of such commodities as bauxite, coal, feldspar, ilmenite, iron ore, iron and steel, kaolin, limestone, silica sand, tin metal, and zircon increased 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. Owing to higher prices for metals and mineral fuels on the world markets, however, the share of mineral exports, which included petroleum and natural gas, to total exports (in terms of value) increased to 14% in 2007 from 13.5% in 2006. Iron and steel products and nonmetallic minerals accounted for only 2.4% of the total export value. The higher percentage share of these commodities was driven mainly by higher prices and, to a lesser extent, by an increase in the volume of exports. China was Malaysia's leading mineral exporting destination followed by Singapore, Japan, Indonesia, and India. Indonesia was the leading country from which Malaysia imported minerals followed by Australia, Brazil, Chile, South Africa, and China. Coal, which was the leading imported commodity, came mainly from (in descending order of amount imported) Indonesia, Australia, and Vietnam. Iron ore was imported from Brazil, Chile, and Mexico, and tin concentrate was imported from South Africa, Australia, and Indonesia (Minerals and Geoscience Department, 2008).

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. In 2007, Malaysia's unwrought aluminum and aluminum alloy imports and exports totaled 2.7 million metric tons (Mt) and 580,626 metric tons (t), respectively. The Government approved Sarawak Aluminium Co., which was a joint venture between Malaysian Cahya Mata Sarawak Berhad (CMS) and Rio Tinto Ltd. of Australia, to build a 550,000-metric-ton-per-year (t/yr) aluminum smelter in Similajau, which is located about 60 kilometers (km) from the town of Bintulu in the State of Sarawak. The capacity of the proposed \$2 billion aluminum smelter would be expanded to 1.5 million metric tons per year (Mt/yr). Rio Tinto Alcan Ltd., a subsidiary of Rio Tinto, would have a 60% share of the Sarawak Aluminium Co. and CMS would hold a 40% share. Feasibility studies on the project were expected to take between 12 and 15 months to complete, and 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. The electricity for the smelter would come from the Bakun Hydroelectric Dam, which was under construction. Domestic demand for aluminum had increased during the past several years and was expected to grow by about 6.5% per year for the next 5 years. Products from the Sarawak smelter would be sold to customers in Malaysia and would be exported to southeast Asian countries (Rio Tinto Ltd., 2008).

Copper.—Malaysia relied on imported copper to meet its demand. Imports of refined copper and copper alloy decreased to 183,741 t and 2,000,755 t, respectively, in 2007 from 919,477 t and 7,392,341 t, respectively, in 2006 owing to the decline in demand from the electronics sector. Several copper deposits had been found in Bambangan, Bidu-Bidu Hill, Gunung Nungkok, Karang, Kiabau, Pinanduan, and Tampang in the State of Sabah. The government of the State of Sabah had not approved the development of any of these copper deposits (Minerals and Geoscience Department, 2008, p. 45).

Gold.—Malaysia's gold was produced mainly from the Penjom Mine in the State of Pahang and at other small-scale gold operations in the States of Kelantan, Pahang, and Terengganu. 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. During 2007, the company replaced smaller contractor trucks with larger, more-fuel-efficient equipment capable of supporting a higher mining rate and changed from a ball mill operation to a semiautogenous mill operation. 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 at the Penjom Mine. The operation capacity of the plant was increased by 25%. The changes would allow the company to

increase the mining and plant throughput to exploit lower grade ore. The mined ore increased by 27% but the ore grade was 21% lower at 4.18 grams per metric ton (g/t). As a result, gold production was 13% lower in 2007 compared with that of 2006 (Avocet Mining plc, 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 (km²). The Bau area had been an important mining center from 1820 to 1997. Reportedly, Bukit Young Goldmines mined about 29 t (933,000 troy ounces) of gold in the area during that time. Exploration results indicated that the two deposits, Jugan and Pejiru, which were located 14 km apart, had a total of 28.2 t (907,000 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., 2008, p. 7).

Hong Kong-based CMNC Goldmine Ltd. [a subsidiary of China Metal Mining (Group) Co. Ltd.], signed a memorandum of understanding with the Kelantan State Economic Development Corp. to lease the prospecting mining area at Sokor for 10 years. The Sokor gold field covered an area of 2,370 acres in the District of Tanah Merah, State of Kelantan. A company, CMNM Mining Group Sdn Bhd, was set up to undertake the exploration and exploitation project in Kelantan. CMNC held an 80% stake in CMNM and the State had a 10% stake; the remaining 10% was owned by local business people. Exploration work started in 2007 (Star, The, 2007b).

Iron and Steel.—Malaysia produced a small amount of low-grade iron ore from the States of Pahang, Perak, and Terengganu. Domestic iron ore output was consumed by domestic pipe-coating plants and cement plants, and part of the iron ore (197,195 t) was exported to China in 2006 (the latest year for which data were available). In the same year, the country imported a total of 2.15 Mt of high-grade iron ore from, in descending order of amount received, Brazil, Chile, Bahrain, and Sweden. The country imported a total of 442,579 t of pig iron and sponge iron and 5.4 Mt iron and steel scrap for steelmaking; one-half of these imports was from the United States (Minerals and Geoscience Department, 2007, p. 27-31).

In 2007, Malaysia's steel products consumption increased to 8.9 Mt, which contributed to the increased demand for long- and flat-steel products by the construction sector. Under the Ninth Malaysia Plan, the Government would invest \$12.8 billion in infrastructure projects, and steel products consumption was expected to increase during the next 2 years.

Malayawata Bhd was a privately owned steel company that was located in the Prai Industrial hub in the State of Penang. In 2000, the Ann Joo Group acquired a 30% share of Malayawata and, in 2006, Malayawata became a subsidiary of the Ann Joo Group and changed its name to Ann Joo Steel Bhd. During the past 2 years, Ann Joo 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 would be the first to be built in Malaysia, and it was scheduled to be put into operation in December 2008. After the completion, Ann Joo would have a pig iron output capacity of 500,000 t/yr. 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 (Southeast Asia Iron and Steel Institute, 2008a).

Malaysia's leading iron and steel producer, Lion Group, invested \$300 million to build a direct-reduced iron (DRI) plant that would use the Midrex® technology and would have an output capacity of 1.54 Mt/yr; the plant was to be located in Banting, State of Selangor. The increased supply of DRI would help reduce the country's dependence on scrap and pig iron as raw material for steelmaking. The DRI plant was scheduled to be put into operation in early 2008. Imports of iron ore to Malaysia were expected to increase in the future. The Group's subsidiary, Lion Diversified Holdings Bhd, planned to build an ironmaking plant in Banting. Wisdri Engineering and Research Incorporation Ltd. (the former Wuhan Iron and Steel Design and Research General Incorporation) of China was awarded the contract to design and build the blast furnace, coke furnace, and sinter plant. The volume of the blast furnace would be 2,580 cubic meters with an output capacity of 2.5 Mt/yr of pig iron. The construction of the ironmaking plant was scheduled to be completed at the end of 2009. After completion, iron ore consumption would increase to more than 70% and scrap consumption would decrease to less than 30%; the steelmaking output at the Banting iron and steel complex would increase to 5 Mt/yr from 3.3 Mt/yr in 2007 through the installation of a converter and a ladle furnace. Iron ore imports would be sourced from Australia where the Group had investment in an iron ore mine (Lion Group, The, 2008).

The Government conducted a feasibility study on gradually liberalizing the local ceiling prices for steel bars and billets. In 2007, the price for bars and billets was increased three times. Steel producers indicated that the potential removal of ceiling prices could enhance the transparency issues that had been plaguing the industry. The trading prices of billets in the regional markets were about \$245 per metric ton higher than those in the domestic market in 2007. The liberalization of exports and imports of steel products would help local steel producers capitalize on the shortage of billets in the regional steel markets (Southeast Asia Iron and Steel Institute, 2008b).

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 during the past 4 years despite higher tin prices during the past several years. The demand for tin was rising because it was used as raw material in the manufacture of flame retardants, industrial paint pigments, and lead-free solders for the electronics industry. 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 and produced only 25,263 t of refined tin at its Butterworth smelter owing to a shortage of raw materials. In 2007, Malaysia imported 19,993 t of tin concentrates compared with 12,224 t

in 2006, mainly from Australia, Indonesia, and South Africa. During the past 2 years, MSC diversified its core operations into Australia, China, Indonesia, and the Philippines. MSC held a 75% interest in PT Koba Tin in Indonesia and planned to build a tin smelter in China with investors from the Province of Guangxi, China, and Taiwan (Minerals and Geoscience Department, 2008, p. 131).

Industrial Minerals

Cement.—In Malaysia, cement was a controlled item; that is, it was among essential goods for which prices could 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 for an increase in cement prices to match those in the region. Also, builders and developers asserted that the shortage of cement was caused by the price controls. In 2007, the Government introduced an automatic pricing mechanism (APM), and cement was placed under that 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 was a reasonable profit margin to encourage investment by the cement producers. At the same time, the import duty for cement was levied at 10%, and importers in the States of Sabah and Sarawak were exempted from getting import licenses. The changes were to ensure that the cement market would be more transparent and efficient (Star, The, 2007a).

According to the Cement and Concrete Association of Malaysia, the country had an installed capacity for cement of 28.5 Mt in 2007. Since 2003, domestic cement demand had been stagnant at 15 to 16 Mt/yr. In 2007, domestic cement consumption was about 15.9 Mt. The Malaysian cement industry expected that the annual growth rate of cement consumption would be 3% to 5% during the next 2 years because of the increased demand from the construction- and infrastructure-related activities under the Ninth Malaysia Plan. Cement producers urged the Government to remove all import duties, impose an export or windfall tax, and ban exports on clinker and cement because cement producers could easily meet domestic demand and still could export cement. The shortage of cement in peninsular Malaysia was caused by the shortage of bagged cement because many transporters were reluctant to carry bagged cement, given the increase in the price of fuel. Even though the Government allowed an additional 20% loading permissible weight for trucks and tankers on all Federal roads in peninsular Malaysia, Federal roads in east Malaysia and state roads nationwide were not covered. Before price liberalization, the return on investment for the cement industry was only 3%; therefore, cement producers were reluctant to expand their output capacities. Even though the Government issued licenses for more than 14 Mt/yr of capacity expansion, no expansion or new plant had come online since 1997. The Malaysian cement industry was dominated by three producers—Cement Industries of Malaysia Bhd, Lafarge Malaysian Cement Bhd, and YTL Cement Bhd, which together accounted for about 77% of total output capacity (Star, The, 2008).

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 reserves of 1.7 billion metric tons (Gt), of which about 1.4 Gt is located in Sarawak. Mining and exploration for coal were conducted only in Sarawak. Owing to increased mine output, Malaysia's coal production increased by 19% in 2007. 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 2007, Malaysia imported a total of 10.7 Mt of coal compared with 10.3 Mt in 2006. 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, 2008, p. 36).

Natural Gas and Petroleum.—Malaysia remained a net exporter of natural gas and crude oil. Production of natural gas increased to 165 million cubic meters per day in 2007 from 163 million cubic meters per day in 2006. Production of crude oil and condensate increased to an average of 695,000 barrels per day (bbl/d) in 2007 from 667,000 bbl/d in 2006. The higher production of crude oil was driven by the increased output in the States of Sabah from the Kikeh oilfield, which was put into operation in 2007. The output of condensate accounted for about 19% of the total production. The increase in the production of natural gas was owing to the recommencement of a gas liquefaction train at the liquefied natural gas (LNG) 2 plant in the State of Sarawak. The country exported about 50% of its natural gas in the form of LNG and crude oil and condensate (Bank Negara Malaysia, 2008, p. 20).

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 valued at about \$12.4 billion in 2007 and were a significant part of the Government budget. The Government planned to restructure its fuel-subsidy scheme and

to use the subsidy fund for new economic development projects. The prices of fuels were expected to increase in 2008 (China Post, 2008).

Outlook

With the global economic slowdown, Malaysia's economy is projected to grow at a slower rate during the next 3 years compared with previous years. The Government's intent to reduce fuel subsidies may affect the economic growth. Private and public spending, however, will likely continue to support the 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	2003	2004	2005	2006	2007
METALS					
Aluminum, bauxite, gross weight	5,732	2,040	4,735	91,806	156,785
Gold, mine output, Au content ³	4,739	4,221	4,250	3,497	2,913
Iron and steel:					
Iron ore, gross weight	596,612	663,732	949,605	667,082	802,030
Pig iron, direct-reduced iron and hot-briquetted iron	1,600	1,710	1,349	1,277 ^r	1,872
Steel, crude	3,960	5,698	5,296	5,834 ^r	6,895
Lead metal, secondary ^c	40,000	40,000	40,000	42,000	42,000
Niobium (columbium)-tantalum metals, struverite, gross weight	2,619	121	552	93	52
Rare-earth metals, monazite, gross weight	795	1,683	320	894	682
Silver, mine output, Ag content ³	--	364	401	410	295
Tin:					
Mine output, Sn content	3,359	2,745	2,857	2,398	2,263
Metal, smelter	18,250	33,914	36,924	22,850	25,263
Zirconium, zircon concentrate, gross weight	3,456	6,886	4,954	1,690	7,393
INDUSTRIAL MINERALS					
Barite	--	--	--	-- ^r	--
Cement, hydraulic	17,243	15,692	17,860	18,400 ^c	19,480
Clays and earth materials	23,909	24,221	28,757	25,081 ^r	28,102
Feldspar	42,662	79,220	117,180	142,358	358,775
Kaolin	425,942	326,928	494,511	341,223	587,508
Mica	3,609	3,544	4,542	5,152	6,118
Nitrogen, N content of ammonia	909,500	842,500	920,000	950,000 ^c	950,000 ^c
Sand and gravel	17,955	18,371	17,072	25,225	22,370
Silica sand, peninsular Malaysia and Sarawak	533,617	631,402	531,891	512,277	719,221
Stone:					
Aggregate	85,142	51,236	62,761	79,912	79,118
Dolomite	--	27,500	38,500	37,702	49,320
Limestone	33,397	31,598	30,868	33,471	58,118
Titanium:					
Ilmenite concentrate, gross weight	95,148	61,471	38,196	45,649	59,310
Dioxide ^c	56,000	56,000	56,000	56,000	56,000
MINERAL FUELS AND RELATED MATERIALS					
Coal	172,820	389,176	789,356	901,801	1,074,936
Gas, natural: ⁴					
Gross	60,941	63,165	70,471	70,191	71,170
Net ⁵	51,800	53,691	59,901	59,663	60,490
Liquefied natural gas	17,311	20,729	21,948	21,948	22,669
Petroleum: ⁴					
Crude and condensate	269,370	279,009	267,720	243,455 ^r	253,675
Refinery products ^{c,6}	200,000	225,000	218,000	208,000	220,000

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

¹Table includes data available through October 30, 2008.

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.

⁴Includes production from peninsular Malaysia and the States of Sabah and Sarawak.

⁵Gross less volume of reinjected and flared.

⁶Includes liquefied petroleum gas, naphthas, and lubricants.

Sources: Ministry of Primary Industry, Minerals and Geoscience Department (Kuala Lumpur), Malaysian Minerals Yearbook 2006; U.S. Geological Survey Minerals Questionnaire, 2007; and Southeast Asia Iron and Steel Institute, Steel Statistical Yearbook, 2008.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(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. of Switzerland)	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 2007

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum, crude	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	390.
Do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	100.
Do.	Sarawak Shell Bhd.	Offshore Sarawak	184.
Do.	do.	do.	184.
Do.	Petronas Carigali Sdn. Bhd.	Offshore Terengganu	22.
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 of the United Kingdom)	Kemaman, Terengganu	56.

Do., do. Ditto.

¹All companies operated integrated plants.