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The Mineral Industry of Malaysia

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In 2016, Malaysia was the 14th-ranked global producer of bauxite, down from 3d in 2015, and it remained the 10th-ranked global producer of mined tin. Malaysia accounted for 5.3% of global tin reserves. Malaysia's real gross domestic product (GDP) was valued at $247 billion[1] [1.108 trillion Malaysia ringgits (MYR)] in 2016—a 4.2% increase compared with the GDP in 2015, which had increased by 5.0%. This slower rate of growth was attributed to low commodity prices and decreasing growth in the value of exports. The service sector remained the leading contributor to the GDP in 2016, accounting for 54.2% of the GDP, followed by the manufacturing sector, which accounted for 23.0% of the GDP (Anderson, 2017, 2018; Bank Negara Malaysia, 2017, p. 3, 18, 23; Bray, 2017, 2018).

Minerals in the National Economy

Minerals mined and extracted in Malaysia included barite, bauxite, clay, coal, gold, ilmenite, iron ore, limestone, monazite, natural gas, petroleum, silica, silver, struverite (niobium-tantalum mineral), tin, and zircon. In addition to these, Malaysia had identified mineral resources of copper. The mining and quarrying sector, which accounted for 8.8% of the GDP, increased by 2.7% in 2016 compared with 4.7% in 2015. In 2016, 97,000 people were reported to be employed by the mining and quarrying sector, down from 104,000 in 2015. Following Indonesia's ban on the export of bauxite in January 2014, Malaysia became an important source of bauxite for China. In 2015, Malaysia accounted for 40% of China's imported bauxite, up from 10% in 2014. In 2016, Malaysia's export of bauxite to China decreased by 69% to 7.45 million metric tons (Mt), and accounted for only 14% of China's total bauxite imports following the Government of Malaysia's 2016 prohibition on bauxite mining (Alumina & Aluminum Monthly, 2016, p. 10, 18; 2017, p. 9; Bank Negara Malaysia, 2017, p. 18, 23, P5).

Government Policies and Programs

On January 6, 2016, the Government announced a 3-month prohibition on bauxite mining, which came into effect on January 15. The prohibition was an effort to halt water contamination and large-scale environmental damage that was attributed to the rapid expansion of bauxite mining that took place in 2014–15. Along with the prohibition on mining, the Government announced that no new export licenses for bauxite would be issued for the duration of the ban. On April 8, the Government announced a 3-month extension of the ban from April 15 to July 15 and, on June 30, the Government extended the ban for another 2 months until September 15. The extensions were an effort to allow the remaining bauxite stockpiled at ports to be exported. As the stockpiles of bauxite were not cleared by September, the Government announced on September 7 that the prohibition would be extended until December 31 (Arumugam, 2016; Raghu and Pakiam, 2016; Thomson Reuters, 2016b).

Malaysia's mineral sector 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 and inspect 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. 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 petroleum industry is governed by the Petroleum Development Act 1974, which established the state-owned Petroliam Nasional Berhad (Petronas). The act grants exclusive rights in the ownership, exploration, and extraction of petroleum in Malaysia, both onshore and offshore, to Petronas. The Environmental Quality Order 1987 governs environmental aspects of the mineral industry. Under the order, all mining leases larger than 250 hectares require an environmental protection plan that must be approved by the Department of Environment (Malaysian Chamber of Mines, 2018a, b).

Production

The production of bauxite decreased by 97% to an estimated 1.0 Mt following an 885% increase in 2015. Other notable decreases in production included that of gold (mine production, Au content), 55%; direct-reduced iron, 31%; raw steel, 27%; feldspar, 26%; ilmenite and leucoxene, 26%; zircon, 21%; tin (smelter production, primary), 11%; niobium (mine production, struverite concentrate), and cement, 10% each. Significant increases in production included that of rutile, 1,820%; rare-earth mineral concentrates (monazite and xenotime), 233%; rare-earth mineral concentrates (rare-earth oxide equivalent), 180%; silicon (ferrosilicon), 170%; aluminum (metal, primary), 55%; manganese ore (gross weight and Mn content), 42% each; rare-earth compounds (rare-earth-oxide equivalent), 21%; clay and shale (unspecified), construction sand and gravel, and silica, 15% each: crushed stone, iron ore, and silver, 14% each; and kaolin, 11% (table 1).

Structure of the Mineral Industry

Malaysia's mines, quarries, and metal- and industrial mineral-processing facilities were operated by private domestic companies and subsidiaries of international companies incorporated in Malaysia. The mining and quarrying sector is regulated by Malaysia's Ministry of National Resources and Environment. Petronas, together with its subsidiaries, operated as an integrated petroleum and gas company in Malaysia

[1]Where necessary, values have been converted from Malaysia ringgits (MYR) to U.S. dollars (US$) at an average annual exchange rate of MYR4.4850=US$1.00 for 2016.

and internationally. Petronas engaged in the exploration, development, production (liquefaction, manufacturing, and refining), transportation, and sale (trading and marketing) of crude petroleum and natural gas products. It also owned and operated a network of retail stations (table 2; Bloomberg LP, 2018).

Mineral Trade

In 2016, Malaysia's exports were valued at about $175 billion (MYR786 billion), which was an increase of 1.1% compared with that of 2015, and imports were valued at about $156 billion (MYR699 billion), which was an increase of 1.9% compared with that of 2015. Manufactured goods remained Malaysia's leading export, increasing in value by 3.2% in 2016 and accounting for 82.2% of the total value of exports. Mining goods accounted for 8.2% of exported goods and decreased in value to $14.3 billion (MYR64.3 billion), or by 19.8% compared with that of 2015. Within mining goods, the value of liquefied natural gas (LNG) exports decreased by 28.2% to $7.1 billion (MYR32.0 billion) and the value of crude petroleum decreased by 14.6% to $5.0 billion (MYR22.3 billion). The export value of minerals, excluding petroleum and natural gas, decreased by 8.7% to $1.2 billion (MYR5.47 billion) compared with that of 2015. Metallic minerals accounted for 87.7% of mineral exports followed by nonmetallic minerals (11.1%) and coal (1.2%). The value of exported metallic minerals decreased by 12% to about $1.1 billion (MYR4.8 billion) owing to a 77% decrease in the value of bauxite exports. The value of nonmetallic mineral exports increased by 18% to $139 million (MYR622 million) owing to increased exports of rock aggregates (crushed stone and sand and gravel), limestone flux, and zircon. The export value of coal (undifferentiated) increased by 82% to $15 million (MYR66 million). In order of value, major minerals exported in 2016 were iron ore, bauxite, copper ore, rock aggregates, limestone flux, zircon, and manganese (Malaysia External Trade Development Corp., 2017, p. 1, 2, 5, 8–9; Ministry of Natural Resource and Environment Malaysia, 2017, p. 2–3).

China remained Malaysia's leading trading partner, in terms of total trade value, despite a 2.9% decrease in the value of exports to $22 billion (MYR99 billion) in 2016. This decrease was owing to decreases in the export of bauxite, manufactured goods, LNG, petroleum products, manufactures of metal, and electrical and electronic goods as well as natural rubber and agricultural products. The value of exports to Singapore increased by 5.6% and were valued at $26 billion (MYR114 billion), making Singapore the leading destination for Malaysia's exports in 2016. This increase was owing to higher exports of electrical and electronic products, optical and scientific equipment, machinery, transportation equipment, and petroleum products. Exports to the United States increased by 8.9% to $18 billion (MYR80 billion), of which manufactured goods accounted for 96%. This increase was owing to an 11% increase in the export of electrical and electronic goods, which was valued at $980 million (MYR4.4 billion). Exports to Japan were valued at $14 billion (MYR63 billion)—a 13% decrease that was attributed to the nearly 32% decrease in mining good exports. This decrease in mining good exports was owing to the lower global prices for LNG. Exports to other Association of Southeast Asian Nations (ASEAN) member countries (Burma, Brunei, Cambodia, Indonesia, Laos, the Philippines, Singapore, Thailand, and Vietnam) increased by 5.4% to $52 billion (MYR231 billion) and accounted for 29% of the total value of exports (Malaysia External Trade Development Corp., 2017, p. 2–6).

In 2016, China remained Malaysia's leading source for imports, accounting for 20% of total imports, followed by Singapore, 10%; Japan, 8.2%; and the United States, 8.0%. ASEAN member countries accounted for 25% of Malaysia's total imports. Electrical and electronic products accounted for 30% of total imports, followed by chemicals and chemical products, 9.7%; machinery, equipment, and parts, 9.3%; and petroleum products, 7.5%. The value of mineral imports, excluding petroleum and natural gas, increased by 17% to $2.8 million (MYR12.5 billion). Coal accounted for 48% of mineral imports, followed by metallic minerals (46%) and nonmetallic minerals (6%). The value of metallic minerals and coal imports increased by 22% and 16%, respectively, whereas the value of nonmetallic minerals decreased by 7.9%. In order of value, major minerals imported in 2016 were coal, iron ore, tin ore and concentrate, gold, copper ore and concentrate, zircon, and manganese (Malaysia External Trade Development Corp., 2017, p. 3, 19).

Commodity Review

Metals

Bauxite and Alumina.—Despite the prohibition on bauxite mining from January 15 to the end of the year, an estimated 1.0 Mt of bauxite was produced in Malaysia in 2016. Illegal mining was reported to be taking place in the State of Pahang. Bauxite was being stockpiled in three locations within the Kuantan District of Pahang, the central mining area, the port at the town Gebeng, and the town of Felda. These stockpiles were estimated to contain 3.6 Mt of bauxite in April, 5.4 Mt in June, 4.13 Mt in September, and 2.95 Mt in December. These stockpiles remained an immediate environmental concern as rain during the monsoon season could potentially cause polluted runoff from the stockpiles and further contaminate nearby rivers. In 2016, the combined bauxite resources in the States of Pahang, Sabah, Sarawak, and Terengganu were estimated to be 170 Mt (Arumugam, 2016; Thomson Reuters, 2016a, b; Ministry of Natural Resource and Environment Malaysia, 2017, p. 20).

Rare Earths.—Lynas Malaysia Sdn Bhd, which was a wholly owned subsidiary of Lynas Corp. Ltd. of Australia, owned and operated the Lynas Advanced Materials Plant (LAMP), located outside of Kuantan, Pahang, which processed rare-earth concentrates produced at the company's Mount Weld rare-earth operation in Western Australia, Australia. In March, Lynas Malaysia commissioned the fourth and final train in the solvent extraction section of the LAMP; thus the company achieved 100% of the plant's design capacity of 22,000 metric tons per year (t/yr) of separated rare-earth-oxide products. In September, the LAMP's operating license was renewed for 3 years (Lynas Corp. Ltd., 2016, p. 5–6, 12).

Tin.—In 2016, a total of 17 tin mines operated in Malaysia, of which 8 mines were in the State of Perak; 5 were in Pahang; 2, in Johor; 1, in Terengganu; and 1, in Kedah. Malaysia Smelting Corp. Bhp. (MSC) operated its smelter at

Butterworth, Penang, and was the sole producer of refined tin metal in the country. MSC remained the second-ranked supplier of refined tin in the world, despite operating its smelter at well below its capacity of 40,000 t/yr. MSC produced refined tin from both domestic and imported ores and concentrates. In 2016, Malaysia imported 30,536 metric tons of tin ores and concentrates, with the Democratic Republic of the Congo [Congo (Kinshasa)] supplying 27% of the imports; Australia, 26%; Nigeria, 17%; Brazil, 8%; Indonesia, 5%; Rwanda, 5%; Bolivia, 4%; and Burma, 2%. Multiple minerals were produced as byproducts of tin mining, processing, and smelting in Malaysia, including monazite and xenotime (rare-earth ore minerals), ilmenite and rutile (titanium ore minerals), struverite (tantalum-niobium ore minerals), and zircon (Malaysia Smelting Corp. Bhd., 2017, p. 4–5; Ministry of Natural Resource and Environment Malaysia, 2017, p. 43, 50, 53, 55, 59, 63).

Outlook

Malaysia's GDP was expected to increase by between 4.3% and 4.8% in 2017, and the output value of the mining and quarrying sector was forecasted to increase by 3%. Crude petroleum production was expected to begin at the offshore Malikai oilfield, which was operated by Royal Dutch Shell plc of the Netherlands. The prohibition on bauxite mining was expected to be extended into 2017, as bauxite stockpiles in the Kuantan District had not been cleared by the end of the year. With Lynas's LAMP achieving full capacity early in the year, Malaysia's imports of rare-earth mineral concentrates will likely increase. The LAMP will maintain a secure and long-term supply of mineral concentrates from the company's Mount Weld operation in Australia that was estimated to have a mine life of 25 years (Lynas Corp. Ltd., 2016, p. 12; Thomson Reuters, 2016a: Bank Negara Malaysia, 2017, p. 78).

References Cited

Alumina & Aluminum Monthly, 2016, Malaysia to ban bauxite exploitation, bauxite export to China to be affected: Beijing Antaike Information Development Co. Ltd., February, 18 p.

Alumina & Aluminum Monthly, 2017, Bauxite imports down 7.35% in 2016: Beijing Antaike Information Development Co. Ltd., February, 21 p.

Anderson, C.S., 2017, Tin: U.S. Geological Survey Mineral Commodity Summaries 2017, p. 174–175.

Anderson, C.S., 2018, Tin: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 172–173.

Arumugam, Tharanya, 2016, Govt extends moratorium on bauxite-mining for two more months: New Straits Times [Kuala Lumpur, Malaysia], June 30. (Accessed March 28, 2018, at https://www.nst.com.my/news/2016/06/155680/govt-extends-moratorium-bauxite-mining-two-more-months.)

Bank Negara Malaysia, 2017, Annual report 2016: Kuala Lumpur, Malaysia, Bank Negara Malaysia, 155 p. (Accessed March 28, 2018, at http://www.bnm.gov.my/files/publication/ar/en/2016/ar2016_book.pdf.)

Bloomberg LP, 2018, Petroliam Nasional Berhad: Bloomberg LP. (Accessed March 28, 2018, at https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=884391.)

Bray, E.L., 2017, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2017, p. 32–33.

Bray, E.L., 2018, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 30–31.

Lynas Corp. Ltd., 2016, 2016 annual report: Kuantan, Malaysia, Lynas Corp. Ltd., 96 p. (Accessed March 29, 2018, at https://www.lynascorp.com/Shared%20Documents/Investors%20and%20media/Reporting%20Centre/Annual%20reports/2016/161026%20Annual%20Report%201609698.pdf.)

Malaysia External Trade Development Corp., 2017, Trade performance for the year of 2016 and the month of December 2016: Kuala Lumpur, Malaysia, Malaysia External Trade Development Corp. (Accessed March 28, 2017, at http://www.matrade.gov.my/en/component/joomdoc/Trade%20Statistics/Malaysias%20Trade%20Performances/Malaysia%20Trade%20Performances%202016/PR201612Eng.pdf/download.)

Malaysian Chamber of Mines, 2018a, Guidelines to doing mining business in Malaysia: Kuala Lumpur, Malaysia, Malaysian Chamber of Mines. (Accessed March 28, 2018, at http://malaysianminerals.com/index.php?Option=com_content&task=view&id=247&Itemid=180.)

Malaysian Chamber of Mines, 2018b, Mineral Legislation: Kuala Lumpur, Malaysia, Malaysian Chamber of Mines. (Accessed March 28, 2018, at http://malaysianminerals.com/index.php?option=com_content&task=view&id=218&Itemid=168.)

Malaysia Smelting Corp. Bhd., 2017, Annual report 2016: Pulau Indah, Malaysia, Malaysia Smelting Corp. Bhd., 196 p. (Accessed March 29, 2018, at http://ir.chartnexus.com/msmelt/pdf/ar2016.pdf.)

Ministry of Natural Resources and Environment Malaysia, 2017, Malaysian minerals yearbook 2016: Kuala Lumpur, Malaysia, Ministry of Natural Resources and Environment Malaysia, 120 p.

Raghu, Anuradha, and Pakiam, Ranjeetha, 2016, Malaysia to ban bauxite mining for 3 months to cut pollution: Bloomberg LP, January 6. (Accessed March 28, 2018, at https://www.bloomberg.com/news/articles/2016-01-06/malaysia-to-ban-bauxite-mining-for-3-months-to-fight-pollution.)

Thomson Reuters, 2016a, Malaysia extends bauxite mining ban for another three months: Thomson Reuters, December 22. (Accessed March 28, 2018, at https://www.reuters.com/article/malaysia-bauxite/update-1-malaysia-extends-bauxite-mining-ban-until-year-end-idUSL3N1BJ24R.)

Thomson Reuters, 2016b, Update 1—Malaysia extends bauxite mining ban until year-end: Thomson Reuters, September 7. (Accessed March 28, 2018, at https://www.reuters.com/article/malaysia-bauxite/update-1-malaysia-extends-bauxite-mining-ban-until-year-end-idUSL3N1BJ24R.)

TABLE 1
MALAYSIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2012	2013	2014	2015	2016
METALS						
Aluminum:						
Bauxite		121,873	208,770	3,665,000 r	35,000,000 r	1,000,000 e
Aluminum metal, primary		120,000 e	290,772	400,000 e	400,000 r, e	620,000
Gold, mine production, Au content	kilograms	4,625	3,823	4,308	4,732	2,149
Iron and steel:						
Direct-reduced iron	thousand metric tons	2,010 r	140 r	1,330 r	960 r	660
Raw steel	do.	5,612	4,693	4,316	3,784 r	2,764
Iron ore, mine production:						
Gross weight	do.	12,144 r	12,134	9,615	1,625 r	1,847
Fe content	do.	6,072 r	6,067 r	4,808 r	813 r	924
Magnesium metal, primary		-- r	150 r, e	-- r	-- r	--
Manganese, mine production:						
Gross weight		1,099,585	1,125,127 r	835,429 r	480,727 r	681,667
Mn content[e]		429,000	439,000	326,000	187,000	266,000
Niobium, mine production, struverite concentrate		262	190	255 e	86 e	77
Rare earths:						
Mineral concentrate, monazite and xenotime:						
Gross weight		179	358	455	565	1,880
Rare-earth-oxide equivalent[e]		100	180	240	310	869
Rare-earth compounds, rare-earth-oxide equivalent		--	1,138	7,190	10,900	13,172
Silicon, ferrosilicon		--	--	8,641	46,832	126,261
Silver, mine production, Ag content	kilograms	1,628	361	533	945	1,075
Tin:						
Mine production, Sn content		3,725	3,697	3,777	4,125 r	4,071
Smelter production, primary		37,823	32,633	35,018	30,260 r	26,849
Titanium, mineral concentrates:						
Ilmenite and leucoxene		22,275	16,043	8,159	5,814	4,316
Rutile		20,008	5,983	3,069	198	3,810
Zirconium mineral concentrates, zircon		442	379	677	826	653 e
INDUSTRIAL MINERALS						
Barite		--	500	14,456 r	-- r	--
Cement, hydraulic	thousand metric tons	22,060 r	22,860 r	24,280 r	24,710 r	22,330
Clay and shale:						
Kaolin		424,622	263,339	207,694	255,448	284,023
Unspecified	thousand metric tons	30,690	29,831 r	30,867 r	8,150 r	9,371
Feldspar, mine production		482,906	314,399 r	378,446	442,980 r	326,648
Lime[e]		1,100,000	1,100,000	1,400,000	1,500,000	1,600,000
Mica		3,967	4,242	5,689	4,788	4,716
Nitrogen, ammonia, N content[e]		940,000	990,000	980,000	990,000	990,000
Stone, sand, and gravel:						
Sand and gravel, construction, unspecified	thousand metric tons	28,592	35,577	29,862	40,578	46,665
Silica, mine production, unspecified		931,880	1,243,660	1,922,874 r	9,002,867 r	10,353,297
Stone, crushed, unspecified	thousand metric tons	110,339	150,000	140,000	160,000	182,556
Stone, dimension, limestone	do.	36,580	18,000	24,000	28,000	27,187
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite	thousand metric tons	31	30	27	25	24
Bituminous	do.	1	1	39	37	36
Lignite	do.	144	156	179	171	157
Subbituminous	do.	2,765	2,720	2,443	2,326	2,198
Total	do.	2,941 r	2,907	2,688	2,559	2,415
Liquefied natural gas	do.	23,986	25,957	26,057	25,154 r	25,273
Natural gas, marketable	million cubic meters	62,000	64,000	65,421 r	63,433 r	64,428

See footnotes at end of table.

TABLE 1—Continued

MALAYSIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2012	2013	2014	2015	2016
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	214,317	208,141	210,000 e	240,000 e	245,000 e
Refinery production	do.	204,000 r	199,000 r	187,000 r	172,000 r	181,000

eEstimated. rRevised. do. Ditto. -- Zero.

[1]Table includes data available through March 14, 2018. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

[2]In addition to the commodities listed, fertilizers, lead (secondary), and salt may have been produced in Malaysia, but available information was inadequate to make reliable estimates of output.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(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, 80%, and Sumitomo Corp., 20%)	Mukah, Sarawak smelter	120.
Do.	do.	Two smelters in Similaijau, Sarawak	450.
Bauxite	AA Sawit Sdn. Bhd.	Pengerang Johor	150.[e]
Do.	Johor Mining & Stevedoring Sdn. Bhd.	Teluk Ramunia. Johor	150.[e]
Do.	Tropical City Sdn. Bhd.	Pengerang Johor	150.[e]
Do.	Multiple small producers	Pahang	NA.
Cement	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. (Cahya Mata Sarawak Bhd..)	Bintulu, Sarawak	750 cement.
Do.	do.	Kuching, Sarawak	1,000 cement.
Do.	Lafarge Malaysia Cement Bhd. (LafargeHolcim Ltd.)	Pasir Gudang, Johor	1,190 cement.
Do.	do.	Rawang, Selangor, Langkawi, Kedah	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 (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.
Clay, kaolin	Kongsimaju Sdn. Bhd.	Bidor, Perak	NA.
Gold:			
Mine output, kilograms Au content	PT J Resources Asia Pasifik Tbk (J&Partners, L.P., 100%)	Penjom, Pahang	2,500.
Do. do.	Monument Mining Ltd. of Canada	Bukit Selinsing Koyan, Pahang	2,000.
Do. do.	Raub Australian Gold Mining Sdn. Bhd. (Peninsular Gold Ltd., 100%)	Raub, Pahang	700.
Refined do.	Monument Mining Ltd. of Canada	Bukit Selinsing Koyan, Pahang	1,500.
Iron and steel:			
Iron ore	Generasi Karisma Sdn. Bhd.	Maokil, Johor	NA.
Do.	Limemax Sdn. Bhd. (ZCM Minerals Sdn. Bhd.)	Pelepah Kanan, Johor	NA.
Do.	LF Resources Corp. Sdn. Bhd.	Sungai Petani, Kedah	NA.
Do.	Berlian Impresif Sdn. Bhd.	do.	NA.
Do.	Bestagold Resources Sdn. Bhd.	Merbok, Kedah	NA.
Do.	Permodalan Kedah Bhd.	Gurun, Kedah	NA.
Do.	SP Mega Mineral Sdn. Bhd.	Merbok, Kedah	NA.
Do.	Bahatera Parmaslogam Rasharta (M) Sdn. Bhd.	Sokor, Kelantan	NA.
Do.	SMGB Group Sdn. Bhd.	Galas, Kelantan	NA.
Do.	ZCM Resources Sdn. Bhd.	Jerantut, Pahang	NA.
Direct-reduced iron	Lion DRI Sdn. Bhd. (The 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. (The Lion Group)	Labuan Island, offshore Sabah	880.

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(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. (The 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. (The Lion Group)	Pasir Gudang, Johor	600.
Do.		Kinsteel Sdn. Bhd.	Kuantan, Pahang	500.
Do.		Megasteel Sdn. Bhd. (The 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
Liquefied natural gas		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.
Magnesium, metal		CVM Minerals Ltd.	Kamunting Raya, Perak	15.
Manganese, ore		Chini Highland Mining Sdn. Bhd.	Chini, Pahang	NA.
Do.		Pekan Mining Industries Sdn. Bhd.	do.	NA.
Mica		Tasik Mahir Sdn. Bhd.	Bidor, Perak	NA.
Do.		Techcera (M) Sdn. Bhd.	do.	NA.
Natural gas	million cubic meters	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	16,400.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	1,100.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	29,200.
Nitrogen, ammonia, N content		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)	Kertih, Terengganu	370.
Petroleum:				
Crude	thousand 42-gallon barrels	ExxonMobil Exploration and Production Malaysia, Inc.	Offshore Terengganu	140,000.
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Offshore Sabah	22,000.
Do.	do.	Sarawak Shell Bhd.	Offshore Sarawak	55,000.
Do.	do.	PETRONAS Carigali Sdn. Bhd.	Offshore Terengganu	8,000.
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Offshore Sarawak	14,000.
Refinery production				
Do.	do.	PETRONAS Penapisan (Melaka) Sdn. Bhd. (PP(M)SB)	Melaka refinery, Train 1	36,000.
Do.	do.	Malaysian Refining Co. Sdn. Bhd.	Melaka refinery, Train 2	62,000.
Do.	do.	PETRONAS Penapisan (Terengganu) Sdn. Bhd. (PP(T)SB)	Kertih Refinery	17,000.
Rare earths (REO equivalent), rare-earth compounds		Lynas Corp. Ltd.	Kuantan, Pahang	22.

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Tin:				
Concentrate, Sn content	metric tons	Delima Industries Sdn. Bhd.	Dengkil, Selangor	1,100.
Do.	do.	Maiju Sama Sdn. Bhd.	Puchong, Selangor	1,600.
Do.	do.	New Lahat Mines Sdn. Bhd.	Lahat, Perak	300.
Do.	do.	Omsam Telecommunication Sdn. Bhd.	Bakap and Batu Gajah, Perak	500.
Do.	do.	Rahman Hydraulic Tin Bhd.	Klian Intan, Perak	3,000.
Do.	do.	S.E.K. (M) Sdn. Bhd.	Kampar, Perak	400.
Do.	do.	Tasek Abadi Sdn. Bhd.	Senudong and Kampar, Perak	500.
Refined		Malaysia Smelting Corp. Bhd. (The Straits Trading Co. Ltd., 37.44%; Malaysia Mining Corp., 37.44%; others, 25.12%)	Butterworth, Penang	40.
Titanium dioxide		Huntsman Trioxide Sdn. Bhd. (a subsidiary of Huntsman Trioxide)	Kemaman, Terengganu	56.

[e]Estimated. Do., do. Ditto. NA Not available.