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2020–2021 Minerals Yearbook

MALAYSIA [ADVANCE RELEASE]

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The Mineral Industry of Malaysia

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Note: In this chapter, information for 2020 is followed by information for 2021.

In 2020, Malaysia's mineral industry extracted primarily metallic ores as well as crude petroleum and natural gas. The country also produced a considerable amount of refined tin, from both domestically produced and imported tin concentrates, and rare-earth oxide (REO) compounds, mostly from imported rare-earth mineral concentrates. Malaysia was the world's 3d-ranked producer of smelted tin (accounting for 7% of global output), the 10th-ranked producer of manganese ore (2%), and the 11th-ranked producer of mined tin (1%). Malaysia had been the world's fourth-ranked producer of bauxite in 2015 (accounting for 12% of global output, not including U.S. production), but the Government had placed a ban on bauxite mining in 2016, and Malaysia had not been among the top 10 producers since 2017, accounting for less than 1% of global output per year (Bray, 2022a, p. 10.14; 2022b; Merrill, 2022a, b; Schnebele, 2022).

Minerals in the National Economy

In 2020, Malaysia's nominal gross domestic product (GDP) was $337 billion. The real GDP decreased by 5.6% owing to the effects of the coronavirus disease 2019 (COVID-19) pandemic in early 2020 that disrupted global supply and demand. Starting in March 2020, given the increase in COVID-19 cases, the Government of Malaysia implemented several phases of a "movement control order" that required the complete or partial closure of all businesses, including those in the mineral industry, except essential services (Prime Minister's Office, 2020; Bank Negara Malaysia, 2021a, p. 7; World Bank, The, 2022).

The mining, quarrying, and oil and gas extraction sector accounted for 6.8% of the GDP in 2020, and the output of this sector decreased by 10.0% compared with that in 2019. The change was attributed to the decreased production of crude petroleum and natural gas driven by weak global demand, maintenance closures of some key facilities, and the disruptions to production activities in other mining segments resulting from pandemic containment measures. Employment in the mining, quarrying, and oil and gas extraction sector decreased by 10% to 82,200 people and represented 0.55% of total employment in the country (Bank Negara Malaysia, 2021b, p. 31; Department of Statistics, 2022b).

Government Policies and Programs

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. Mine and quarry operators are required to pay value-based royalties to the State in which their operation is located. The Mineral Development (Licensing) Regulations 2016 contains regulations that require a license to possess, purchase, sell, store, or transport any mineral ores, as well as carry out any mineral-processing activities. The Mineral Development (Effluent) Regulations 2016 sets parameters for the concentration of contaminates in effluent from onshore mineral exploration and mining activities (Attorney General's Chambers, 2016a, p. 9–14; 2016b, p. 22–26).

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. The petroleum industry is governed by the Petroleum Development Act 1974, which established Petroliam Nasional Bhd. (PETRONAS). The Act grants exclusive rights for the ownership, exploration, and extraction of petroleum, both onshore and offshore, in Malaysia to PETRONAS (Malaysian Chamber of Mines, 2021a, b).

In March 2019, the Government lifted its 3-year ban on bauxite mining in the State of Pahang (although not in other States and Territories). The ban first went into place in January 2016 following the environmental damage and water contamination caused by the rapid expansion of unregulated bauxite mining and runoff from stockpiles in eastern Pahang in 2014–15. To restart operations, bauxite companies were required to register with the Department of Director General of Lands and Mines (under the Ministry of Energy and Natural Resources) and comply with new standard operating procedures. These new procedures set a bauxite export cap of 600,000 metric tons per month and mandate the creation of a buffer zone between mining sites and residential areas (Thomson Reuters, 2019a, b).

Production

Notable increases in output of mineral commodities in 2020 included that of rare-earth mineral concentrates (REO equivalent), which increased by an estimated 52%; iron ore, 29%; direct-reduced iron, 26%; and cement (hydraulic), 24%. The increase in iron ore output was attributed to increased demand from China and local steel mills (Department of Mineral and Geoscience, 2021, p. 35).

Notable decreases in production included that of zirconium, by 65%; sand and gravel (for construction), 49%; mined gold, 46%; feldspar, 40%; mined silver, 38%; bauxite, 35%; clay (unspecified), 33%; ferrosilicon, 27%; struvite concentrate, 25%; mined manganese, 23%; ferromanganese, 19%; silica and mined tin, 18% each; rare-earth compounds (REO equivalent), 17%; kaolin and refined petroleum products, 16% each; rutile, 14%; smelted tin (primary), 12%; and natural gas, 10%. These decreases in production were likely owing to the economic

disruptions driven by the COVID-19 pandemic. Data on mineral production are in table 1.

Structure of the Mineral Industry

Malaysia's mines, quarries, and metallic and industrial mineral processing facilities were operated by private domestic companies and subsidiaries of international companies incorporated in Malaysia. The mining, quarrying, and oil and gas extraction sector is regulated by the Ministry of Energy and Natural Resources. PETRONAS, together with its subsidiaries, operated as an integrated petroleum and gas company in Malaysia and internationally. PETRONAS engaged in the exploration, development, production (extraction, 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 gasoline and diesel stations (Petroliam Nasional Bhd., 2020, p. 3, 9–11). Table 2 is a list of major mineral industry facilities.

Mineral Trade

In 2020, Malaysia's total exports were valued at about $234 billion.[1] The main mineral export commodities included petroleum products, which accounted for 6.3% of total exports, manufactured metals (3.7%), liquefied natural gas (LNG) (3.0%), iron and steel products (2.4%), crude petroleum (1.9%), nonmetallic mineral products (0.9%), and metalliferous ores and metal scrap (including tin; 0.8%) (Department of Statistics, 2021, p. 17; 2022a, table IV).

Malaysia's total imports were valued at about $191 billion. The main mineral import commodities included petroleum products (which accounted for 7.5% of total imports), manufactured metals (5.9%), iron and steel products (3.1%), crude petroleum (2.3%), metallic ores and metal scrap (1.4%), and nonmetallic mineral products (0.8%) (Department of Statistics, 2021, p. 18; 2022a, table V).

Commodity Review

Metals

Bauxite and Alumina.—With the issuance of new bauxite mining licenses starting in January 2020, Malaysia's bauxite output was expected to increase in 2020; however, it returned to the level of 2018, showing a decrease of 35% to about 590,000 t from 901,000 t in 2019. The decrease was a result of the partial mine closure imposed by the movement control order to control the spread of COVID-19. In 2020, the country exported about 322,000 t (valued at $11.1 million) of bauxite, which was a decrease from the 912,000 t exported in 2019. China was the sole destination for Malaysia's bauxite export in 2020 (table 1; Bauer, 2020; United Nations Statistics Division, 2022).

Ferroalloys.—Because of the COVID-19 pandemic, Malaysia's leading ferroalloy manufacturer, OM Materials (Sarawak) Sdn. Bhd. (OM Sarawak), had a lack of foreign skilled workers in 2020 and could run only 12 (6 each for ferrosilicon and manganese alloys) out of 16 furnaces at its plant in Sarawak. The four idled furnaces were all for the production of ferrosilicon. As a result, OM Sarawak produced about 167,400 t of ferrosilicon in 2020 compared with 230,700 t in 2019. The company's production of manganese alloys, including silicomanganese and ferromanganese, decreased to 227,400 t in 2020 from 248,200 t in 2019. OM Sarawak was owned by OM Holdings Ltd. of Singapore (75%) and Cahya Mata Sarawak Bhd. (25%) (OM Holdings Ltd., 2021, p. 6, 11).

Rare Earths.—The country's sole REO compound producer, 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) in Pahang. The plant was an integrated rare-earths refinery that processed rare-earth concentrates produced at Lynas Corp.'s Mount Weld operation in Western Australia, Australia. The company's REO compound output decreased by 17% to about 14,600 t in 2020. The decrease was due to the 6-week shutdown of the LAMP starting in late March in accordance with the Government's pandemic-related movement control order (table 1; Lynas Corp. Ltd., 2020, p. 8; 2021, p. 5).

In February, the operating license for the LAMP was renewed to March 2023 under some key conditions. Lynas Malaysia was required to (1) begin the development of a permanent disposal facility for water leach purification residue by early March 2021, (2) start operations at a cracking and leaching plant outside of Malaysia before July 2023, and then (3) cease imports of raw minerals containing naturally occurring radioactive material (Lynas Corp. Ltd., 2020, p. 7).

Tin.—Malaysia Smelting Corp. Bhd. (MSC), through its subsidiary Rahman Hydraulic Tin Bhd. (RHT), operated Malaysia's leading tin mine—the RHT Mine at Klian Intan, Perak. Owing to the Government's movement control order, the mine suspended operations between March and April 2020. The RHT Mine extracted 2,350 t of tin (Sn content) in concentrates, which was the same amount as in 2019. Despite the pandemic, the output remained constant owing to the opening of an additional part of the mine for production and to new technologies adopted during the year (Malaysia Smelting Corp. Bhd., 2021, p. 17, 20).

In 2020, MSC was the sole producer of refined tin in the country and remained the world's third-ranked supplier of refined tin. The company produced 22,300 t of refined tin in 2020 compared with 25,800 t in 2019, and it exported 15,500 t. MSC continued to relocate its smelting operations from Butterworth to Pulau Indah. During the year, MSC commenced operations of a new furnace with a more efficient process and a top submerged lance (TSL) system at the Pulau Indah smelter, which had a production capacity of 60,000 metric tons per year (t/yr). The company anticipated that smelter output at Pulau Indah would be increased gradually to full capacity by early 2022 (Malaysia Smelting Corp. Bhd., 2021, p. 18–19, 23).

MINERAL INDUSTRY HIGHLIGHTS IN 2021

In 2021, Malaysia's real GDP increased by 3.1%; the nominal GDP was $373 billion. The GDP growth was a result of the

[1]Where necessary, values have been converted from Malaysia ringgit (MYR) to U.S. dollars (US$) at the annual average exchange rates of MYR4.14=US$1.00 for 2019, MYR4.20=US$1.00 for 2020, and MYR4.14=US$1.00 for 2021.

economic recovery from the COVID-19 pandemic and the increase in exports. The mining, quarrying, and oil and gas extraction sector accounted for 6.7% of the GDP and employed 81,900 people, representing 0.54% of the country's total employment (Bank Negara Malaysia, 2022a, p. 9; 2022b, p. 28; Department of Statistics, 2022b; World Bank, The, 2022).

Malaysia's exports and imports totaled about $299 billion and $238 billion, respectively. The main mineral export commodities included petroleum products (accounting for 7.7% of total exports), manufactured metals (5.0%), LNG (3.0%), iron and steel products (2.4%), crude petroleum (1.6%), and metallic ores and metal scrap (including tin) (0.8%). The main mineral import commodities included petroleum products (accounting for 9.1% of total imports), manufactured metals (5.5%), iron and steel products (3.4%), metallic ores and metal scrap (1.6%), crude petroleum (1.4%), and nonmetallic mineral products (0.7%) (Department of Statistics, 2021, p. 17–18; 2022a, tables IV–V).

Production

Notable increases in output of mineral commodities included that of mined tin, which increased by an estimated 69%; bauxite, 53%; refined petroleum products, 16%; and feldspar (estimated) and silicomanganese, 11% each. Notable decreases in production included that of rare-earth mineral concentrates (REO equivalent), by an estimated 40%; smelted tin (primary), 27%; ferrosilicon, 22%; and ferromanganese, 20% (table 1).

Commodity Review

Metals

Aluminum.—In October, Press Metal Sarawak Sdn. Bhd. started full operations at the phase 3 expansion of its aluminum smelter at Samalaju; the smelter had a production capacity of 320,000 t/yr. The company operated three smelters at Mukah and Samalaju, Sarawak. The phase 3 expansion increased the company's total capacity to 1 million metric tons per year from 760,000 t/yr. Press Metal Sarawak's smelting plants used alumina imported from China as feedstock for the production of aluminum ingots and billets (table 2; Department of Mineral and Geoscience, 2021, p. 20; Press Metal Aluminium Holdings Bhd., 2022, p. 23, 106).

Niobium (Columbium), Tantalum, and Zirconium.—Malaysia had no active mines for niobium, tantalum, and zirconium; struverite (niobium- and tantalum-bearing mineral) and zircon ($ZrSiO_4$, the primary source of zirconium) were produced as byproducts of alluvial tin mining through the processing of mine tailings (locally known as "amang"). In the country, tantalum was also produced as a byproduct of smelting cassiterite ore concentrates for tin production. Domestic ceramics and refractory plants and foundries were the major consumers of zircon. In 2021, struverite and zircon were extracted and processed at mineral facilities in the State of Perak, and the production of struverite and zircon was estimated to be 9 t and 170 t, respectively (table 1; Department of Mineral and Geoscience, 2021, p. 48–49, 59–62).

Tin.—In 2021, MSC extracted 2,408 t of tin (Sn content in concentrates) at the RHT Mine, which was the same amount as in 2020. As of yearend 2021, total tin resources (measured, indicated, and inferred) at the mine were estimated to be about 19.4 million cubic meters at an average grade of 2.42 kilograms per cubic meter tin and containing 47,000 t of tin. To enhance the extractability of tin ore, MSC implemented an infill drilling program at the northwestern part of the mine pit in 2021; the company anticipated that this area would be mined in 2022 (Malaysia Smelting Corp. Bhd., 2022, p. 17).

MSC received more than 10% of its smelting input from the RHT Mine and the remaining amounts from local artisanal tin miners and from African countries and Australia. In 2021, MSC produced 16,600 t of refined tin compared with 22,300 t in 2020; the decrease was due to the temporary halt in operations per the Government's movement control order. MSC exported 10,300 t of refined tin in 2021, of which Japan was the leading destination, accounting for 41%, followed by the Republic of Korea, 18%, and the United States, 12% (Malaysia Smelting Corp. Bhd., 2022, p. 16, 18, 187).

Outlook

With the issuance of new licenses for bauxite mining, Malaysia's bauxite production is expected to increase in the medium term, although it is uncertain if or when the production can reach the highs of 2014–15. Aluminum production is also expected to increase because Press Metal increased its production capacity in 2021. Tin concentrates and refined tin production are expected to increase once MSC conducts an infill drilling program at the RHT Mine and ramps up to full capacity at the Pulau Indah smelter. With Lynas' expansion plan at the Mount Weld Mine in Australia and the PDF project in Malaysia, Malaysia's imports of rare-earth mineral concentrates and the output of REO compounds will likely increase (Lynas Corp. Ltd., 2021, p. 14).

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TABLE 1

MALAYSIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2017	2018	2019	2020	2021
METALS						
Aluminum:						
Bauxite		2,000,000 e	589,684	900,561	589,684	900,561
Metal, primary[e]		700,000	750,000	760,000	760,000	760,000
Ferroalloys:						
Ferromanganese		264,555	315,000 r	266,000	215,000	173,000
Ferrosilicon		174,540	220,515	230,735	167,443	131,059
Silicomanganese		230,535	283,414	312,000	301,000	335,000
Gold, mine, Au content	kilograms	2,124	2,520	3,151	1,716	1,800 e
Iron ore, mine:						
Gross weight	thousand metric tons	3,920	3,354	4,160	5,371	4,984
Fe content	do.	2,450	2,090	2,600	3,360	3,120
Iron and steel:						
Direct-reduced iron	do.	570	743	595	747	700 e
Raw steel	do.	3,215	4,108	6,820	6,620	6,500 e
Manganese, mine:						
Gross weight		1,226,106	1,262,725	1,130,749	869,864	913,357
Mn content[e]		478,000	492,000	441,000	339,000	356,000
Niobium and tantalum, mine, struverite concentrate[e, 3]		61	274	12	9	9
Rare earths:						
Mineral concentrates, monazite and xenotime:						
Gross weight		306	1,654	114	165 e	100
Rare-earth oxide equivalent[e]		180	990	66	100	60
Compounds, rare-earth oxide equivalent[4]		17,264	18,556	17,613	14,564	15,616
Silver, mine, Ag content	kilograms	1,404	1,542 r	686 r	423	440 e
Tin:						
Mine, Sn content		3,894	3,868	3,611	2,963	5,000 e
Smelter, primary		27,200	27,341 r	25,673 r	22,598	16,400
Titanium, mineral concentrate:						
Ilmenite and leucoxene		6,363	14,158	2,334	2,548	2,700 e
Rutile		5,266	5,070	5,947	5,136	5,400 e
Zirconium, zircon[3]		1,595	509 r	449 r	157	170 e
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	18,800	17,556 r	16,102 r	19,936	20,900 e
Clay:						
Kaolin		321,685	496,219	400,722 r	336,565	340,000 e
Unspecified	thousand metric tons	9,400 r, e	8,326	9,151 r	6,132	6,400 e
Feldspar		411,204	414,441	241,189 r	144,487	160,000 e
Lime		1,600,000 e	1,446,629 r	1,628,058 r	1,478,250	1,500,000 e
Mica		4,787	4,388 r	4,358 r	4,083	4,300 e
Sand and gravel, industrial, silica	thousand metric tons	10,000 e	4,064	4,705	3,853	3,900 e
Stone, sand and gravel, construction:						
Sand and gravel	do.	47,000 e	44,919	69,425 r	35,681	37,000 e
Stone, dimension, limestone	do.	27,000 e	23,033	22,298	22,378	23,500 e
MINERAL FUELS AND RELATED MATERIALS						
Coal, subbituminous	thousand metric tons	2,989 r	2,653 r	3,459 r	3,264	3,119
Natural gas, marketable	million cubic meters	79,600 r	76,100 r	76,400 r	68,700	74,200
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	241,000 r	238,000 r	223,000 r	203,000	187,000
Refinery products	do.	208,000 r	207,000 r	214,000	179,000	208,000

[e]Estimated. [r]Revised. do. Ditto.

[1]Table includes data available through November 7, 2022. 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, ammonia, fertilizers, refined gold, lead (secondary), lignite, liquefied natural gas, magnesium metal, salt, and tantalum (smelted) may have been produced, but available information was inadequate to make reliable estimates of output.

[3]Byproduct of tin mining and mineral processing.

[4]Rare-earth compounds were produced mostly from imported rare-earth mineral concentrates.

TABLE 2
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(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 Aluminium Holdings Bhd., 80%, and Sumitomo Corp., 20%)	Smelter in Mukah, Sarawak	120
Do.	do.	Two smelters in Samalaju, Sarawak	960
Bauxite	AA Sawit Sdn. Bhd.	Mine in Pengerang, Johor	500 [e]
Do.	Johor Mining & Stevedoring Sdn. Bhd.	Mine in Teluk Ramunia, Johor	150 [e]
Do.	Tropical City Sdn. Bhd.	Mine in Pengerang, Johor	150 [e]
Do.	Multiple private producers	Mines in Pahang	3,700
Cement:			
Clinker and portland, each	Cement Industries of Malaysia Bhd. (United Engineers Malaysia Bhd., 53.97%, and others, 46.03%)	Plants in Kangar, Perlis and Bahau, Negeri Sembilan	7,000
Do.	CMS Cement Sdn. Bhd. (Cahya Mata Sarawak Bhd.)	Plant in Siburan, Sarawak	1,000
Do.	Malayan Cement Bhd. (YTL Cement Bhd., 76.98%)	Plant in Langkawi, Kedah	3,300
Do.	do.	Plant in Kanthan, Perak	3,000
Do.	Tasek Corp. Bhd.	Plant in Ipoh, Perak	2,300
Do.	YTL Cement Bhd. (YTL Group, 100%)	Plant in Bukit Sagu, Pahang	1,200
Do.	do.	Plant in Padang Rengas, Perak	3,000
Do.	do.	Plant in Pulau Indah, Selangor	NA
Portland	CMS Cement Sdn. Bhd. (Cahya Mata Sarawak Bhd.)	Plants in Bintulu and Kuching, Sarawak	2,000
Do.	Malayan Cement Bhd. (YTL Cement Bhd., 76.98%)	2 plants in Pasir Gudang, Johor	2,000
Do.	YTL Cement Bhd. (YTL Group, 100%)	Plant in Pasir Gudang, Johor	1,000
Clay, kaolin	Kongsimaju Sdn. Bhd.	Quarry in Bidor, Perak	NA
Coal	Global Minerals Sdn. Bhd.	Merit Pila Mine, Sarawak	NA
Do.	Multiple producers in Sarawak	Mines in Sarawak	NA
Feldspar	Multiple producers	2 mines in Kelantan, 2 mines in Negeri Sembilan, and 1 mine in Pahang	500
Ferroalloys:			
Ferromanganese	OM Materials (Sarawak) Sdn. Bhd. (OM Holdings Ltd., 75%, and Cahya Mata Sarawak Bhd., 25%)	Plant in Samalaju industrial park, Bintulu, Sarawak	150
Do.	Pertama Ferroalloys Sdn. Bhd. (Asia Minerals Ltd., 60%; Nippon Denok Co. Ltd., 25%; Carbon Capital Corp. Sdn. Bhd., 8%; Shinsho Corp., 7%)	do.	50
Do.	Sakura Ferroalloys Sdn. Bhd. (Assmang Ltd., 54.36%; Sumitomo Corp., 26.64%; China Steel Corp., 19%)	do.	25
Ferrosilicon	OM Materials (Sarawak) Sdn. Bhd. (OM Holdings Ltd., 75%, and Cahya Mata Sarawak Bhd., 25%)	do.	235
Do.	Pertama Ferroalloys Sdn. Bhd. (Asia Minerals Ltd., 60%; Nippon Denok Co. Ltd., 25%; Carbon Capital Corp. Sdn. Bhd., 8%; Shinsho Corp., 7%)	do.	60
Silicomanganese	OM Materials (Sarawak) Sdn. Bhd. (OM Holdings Ltd., 75%, and Cahya Mata Sarawak Bhd., 25%)	do.	150
Do.	Pertama Ferroalloys Sdn. Bhd. (Asia Minerals Ltd., 60%; Nippon Denok Co. Ltd., 25%; Carbon Capital Corp. Sdn. Bhd., 8%; Shinsho Corp., 7%)	do.	120
Do.	Sakura Ferroalloys Sdn. Bhd. (Assmang Ltd., 54.36%; Sumitomo Corp., 26.64%; China Steel Corp., 19%)	do.	67
Gold, mine, Au content kilograms	Monument Mining Ltd.	Mine in Bukit Selinsing Koyan, Pahang	2,000
Do. do.	PT J Resources Asia Pasifik Tbk (J&Partners L.P., 100%)	Mine in Penjom, Pahang	2,500

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron ore		Bahatera Parmaslogam Rasharta (M) Sdn. Bhd.	Mine in Sokor, Kelantan	NA
Do.		Berlian Impresif Sdn. Bhd.	Mine in Sungai Petani, Kedah	NA
Do.		Bestagold Resources Sdn. Bhd.	Mine in Merbok, Kedah	NA
Do.		Generasi Karisma Sdn. Bhd.	Mine in Maokil, Johor	NA
Do.		LF Resources Corp. Sdn. Bhd.	Mine in Sungai Petani, Kedah	NA
Do.		Limemax Sdn. Bhd. (ZCM Minerals Sdn. Bhd., 100%)	Mine in Pelepah Kanan, Johor	NA
Do.		Permodalan Kedah Bhd.	Mine in Gunrun, Kedah	NA
Do.		SMGB Group Sdn. Bhd.	Mine in Galas, Kelantan	NA
Do.		SP Mega Mineral Sdn. Bhd.	Mine in Merbok, Kedah	NA
Do.		ZCM Resources Sdn. Bhd.	Mine in Jerantut, Pahang	NA
Iron and steel:				
Direct-reduced iron		Lion DRI Sdn. Bhd. (The Lion Group, 100%)	Plant in Banting, Selangor	1,540
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd., 51%, and Maju Holdings Sdn. Bhd., 49%)	Plant in Kemaman, Terengganu	1,800
Hot-briquetted iron		Antara Steel Sdn. Bhd. (Esteel Enterprise Pte Ltd., 100%)	Plant on Labuan Island, offshore Sabah	900
Raw steel		Amsteel Mills Sdn. Bhd. (The Lion Group, 100%)	Plant in Banting, Selangor	1,250
Do.		do.	Plant in Klang, Selangor	750
Do.		Ann Joo Steel Bhd. (Ann Joo Group, 100%)	Plant in Prai, Penang	900
Do.		Eden Flame Sdn. Bhd. (Esteel Enterprise Pte Ltd., 100%)	Plant in Pasir Gudang, Johor	1,050
Do.		Megasteel Sdn. Bhd. (The Lion Group, 100%)	Plant in Banting, Selangor	700
Do.		Malaysia Steel Works Bhd.	Plant in Bukit Raja, Selangor	450
Do.		Perwaja Steel Sdn. Bhd. (Kinsteel Bhd., 51%, and Maju Holdings Sdn. Bhd., 49%)	Plant in Kemaman, Terengganu	1,500
Do.		Southern Steel Bhd. [Camerlin (a member of Hong Leong Group Malaysia), 40.75%; Natsteel Ltd., 27.03%; others, 32.22%]	Plant in Prai, Penang	1,300
Magnesium, metal		Ding He Mining Holdings Ltd.	Plant in Kamunting Raya, Perak	15
Manganese, ore		Chini Highland Mining Sdn. Bhd.	Mine in Chini, Pahang	NA
Do.		Pekan Mining Industries Sdn. Bhd.	do.	NA
Mica		Tasik Mahir Sdn. Bhd.	Mine in Bidor, Perak	NA
Do.		Techcera (M) Sdn. Bhd.	do.	NA
Natural gas	million cubic meters	ExxonMobil Exploration and Production Malaysia Inc.	Platform offshore Terengganu	16,400
Do.	do.	Petroleum Sarawak Bhd. (PETROS) (Sarawak State government)	Platform offshore Sarawak	NA
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Platform offshore Sabah	1,100
Do.	do.	Sarawak Shell Bhd.	Platform offshore Sarawak	29,000
Natural gas, liquefied		Malaysia LNG Dua Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS), 60%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 10%]	Plant in Tanjung Kidurong, Bintulu, Sarawak	10,000
Do.		Malaysia LNG Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS), 65%; Shell Gas N.V., 15%; Mitsubishi Corp., 15%; Sarawak State government, 5%]	do.	10,000
Do.		Malaysia LNG Tiga Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS), 60%; Shell Gas N.V., 15%; Nippon Oil LNG (Netherlands) BV, 10%; Sarawak State government, 10%; Diamond Gas Netherlands BV, 5%]	do.	9,000
Nitrogen, ammonia, N content		Asean Bintulu Fertilizer Sdn. Bhd. [Petroliam Nasional Bhd. (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%]	Plant in Bintulu, Sarawak	400

See footnotes at end of table.

TABLE 2—Continued
MALAYSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nitrogen, ammonia, N content—Continued		Petronas Ammonia Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS) (Government, 100%), 100%]	Plant in Kerteh, Terengganu	370
Do.		Petronas Fertilizer Kedah Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS) (Government, 100%), 100%]	Plant in Gurun, Kedah	380
Petroleum:				
Crude	thousand 42-gallon barrels	ExxonMobil Exploration and Production Malaysia Inc.	Platform offshore Terengganu	140,000
Do.	do.	Murphy Sarawak Oil Co. Ltd.	Platform offshore Sarawak	14,000
Do.	do.	Petroleum Sarawak Bhd. (PETROS) (Sarawak State government)	do.	NA
Do.	do.	PETRONAS Carigali Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS) (Government, 100%), 100%]	Platform offshore Terengganu	8,000
Do.	do.	Sabah Shell Petroleum Co. Ltd.	Platform offshore Sabah	22,000
Do.	do.	Sarawak Shell Bhd.	Platform offshore Sarawak	55,000
Refinery	do.	Hengyuan Refining Co. Bhd. (Malaysia Hengyuan International Ltd., 51%, and others, 49%)	Hengyuan Refinery, Port Dickson, Negeri Sembilan	49,000
Do.	do.	Kemaman Bitumen Co.	KBC Refinery in Kemaman, Terengganu	36,000
Do.	do.	Malaysian Refining Co. Sdn. Bhd. [Petroliam Nasional Bhd. (PETRONAS) (Government, 100%), 100%]	Melaka Refinery (Train 2), Malacca	58,000
Do.	do.	Petroliam Nasional Bhd. (PETRONAS) (Government, 100%), 100%	Pengerang Integrated Complex, Southern Johor	102,000
Do.	do.	PETRONAS Penapisan (Melaka) Sdn. Bhd. (PP(M)SB) [PETRONAS (Government, 100%), 100%]	Melaka Refinery (Train 1), Malacca	32,000
Do.	do.	PETRONAS Penapisan (Terengganu) Sdn. Bhd. (PP(T)SB) [PETRONAS (Government, 100%), 100%]	Kerteh Refinery, Terengganu	41,000
Do.	do.	Petron Corp. (SEA Refinery Corp., 50.1%; San Miguel Corp., 18.2%; others, 31.7%)	Refinery in Port Dickson, Negeri Sembilan	29,000
Rare-earth compounds, rare-earth-oxide equivalent		Lynas Malaysia Sdn. Bhd. (Lynas Corp. Ltd., 100%)	Lynas Advanced Materials Plant (LAMP) at Gebeng, Kuantan, Pahang	22
Tin:				
Concentrate, Sn content	metric tons	Delima Industries Sdn. Bhd.	Mine in Dengkil, Selangor	1,100
Do.	do.	Mariju Sama Sdn. Bhd.	Mine in Puchong, Selangor	1,600
Do.	do.	New Lahat Mines Sdn. Bhd.	Mine in Lahat, Perak	300
Do.	do.	Omsam Telecommunication Sdn. Bhd.	Mines in Bakap and Batu Gajah, Perak	500
Do.	do.	Rahman Hydraulic Tin Bhd. (Malaysia Smelting Corp. Bhd., 100%)	RHT Mine, Klian Intan, Perak	3,000
Do.	do.	S.E.K. (M) Sdn. Bhd.	Mine in Kampar, Perak	400
Do.	do.	Tasik Abadi Sdn. Bhd.	do.	500
Refined		Malaysia Smelting Corp. Bhd. (MSC) (The Straits Trading Co. Ltd., 52%, and others, 48%)	Butterworth smelter,[1] Butterworth, Penang	40
Do.		do.	Pulau Indah smelter,[1] Port Klang	60
Titanium dioxide		Venator Materials PLC	Plant in Kemaman, Terengganu	56

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

[1]Tantalum was produced as a byproduct of tin production.