2020–2021 Minerals Yearbook

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The Mineral Industry of Australia

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

Australia continued to be among the world's leading producers of such mineral commodities as alumina, bauxite, coal, cobalt, copper, gem and industrial diamond, gold, ilmenite, iron ore, lead, lithium, manganese, nickel, rare earths, rutile, salt, silver, tin, uranium, zinc, and zircon. In 2020, Australia's lithium production accounted for 48% of world production (not including United States production); iron ore, 37%; zircon and industrial garnet, 33% each; rutile, 31% (not including United States production); bauxite, 27% (not including United States production); industrial diamond, 24%; manganese, 18%; alumina, 15%; gold, lead, and zinc, 11% each; rare earths, 9%; nickel, 7%; ilmenite and silver, 6% each; and cobalt and copper, 4% each. Australia was ranked second in global uranium production, accounting for approximately 13% of the world's production, and fourth in global coal production, accounting for 8% of the world's production (table 1; Anderson, 2022; BP p.l.c., 2022, p. 38; Bray, 2022a, b; Cordier, 2022; Flanagan, 2022; Gambogi, 2022a, b; Jaskula, 2022; Klochko, 2022; McRae, 2022; Olson, 2022a, b; Schnebele, 2022; Sheaffer, 2022; Shedd, 2022; Tolcin, 2022; Tuck, 2022; World Nuclear Association, 2022).

Minerals in the National Economy

According to the International Monetary Fund, Australia's nominal gross domestic product (GDP) was 1.97 trillion Australia dollars (AUD) ($1.36 trillion)[1] in 2020 and real GDP decreased by 2.1% compared with that in 2019. According to the Australian Bureau of Statistics (2022b), the gross value added of the mineral industry decreased by 0.1% to AUD228 billion ($157 billion), accounting for 11.3% of the country's GDP compared with 11.1% in 2019. Iron ore mining accounted for 60% of the mineral sector's gross value added, followed by natural gas and petroleum extraction, 16%; other mining (which includes nonferrous metals, industrial minerals, and uranium), 11%; coal mining, 8%; and exploration and mining services, 4%. The gross value added of iron ore mining increased by 2.1% compared with that in 2019; however, that of coal mining decreased by 5.5%; the mining of other minerals, including nonferrous metals, industrial minerals, and uranium, by 1.5%; and natural gas and petroleum extraction and exploration and mining support services, by less than 0.2% each (Australian Bureau of Statistics, 2022b; International Monetary Fund, 2022).

Capital expenditure towards the mineral industry totaled AUD35.2 billion ($24.2 billion) in 2020, which was an increase of 3.7% compared with that in 2019. Investment in metallic ore mining enterprises increased by 33% to AUD18.3 billion ($12.6 billion), and investment in exploration and other mining service enterprises increased by 2% to AUD1.46 billion ($1.0 billion). Investments in nonmetallic mineral mining decreased by 27% to AUD854 million ($590 million); natural gas and petroleum extraction, by 20% to AUD8.15 billion ($5.62 billion); and coal mining, by 13% to AUD6.37 billion ($4.39 billion) (Department of Industry, Science and Resources, 2022, table 13).

The mineral industry employed 187,347 people at the end of June 2020 compared with 178,756 in 2019, which accounted for about 1.5% of Australia's total employment. Metallic ore mining accounted for 42% of employment in the mineral industry, followed by coal mining, and exploration and other mining services, 21% each; natural gas and petroleum extraction, 9%; and nonmetallic mineral mining and quarrying, 7%. Employment increased in the coal mining, metallic ore mining, and exploration and other mining services compared with that in 2019, whereas employment in nonmetallic mineral mining and natural gas and petroleum extraction decreased (Australian Bureau of Statistics, 2022a, c).

In 2020, expenditures on exploration decreased to AUD3.85 billion ($2.65 billion) from AUD4.05 billion ($2.82 billion) in 2019. Nonpetroleum mineral exploration accounted for 73% of total exploration expenditures in 2020, whereas onshore petroleum exploration accounted for 17%, and offshore petroleum exploration, 10%. Exploration expenditures for onshore petroleum increased by 8.6%, and that for nonpetroleum minerals, by 5.8%. Exploration expenditures for offshore petroleum decreased by 51% (Australian Bureau of Statistics, 2022d).

In 2020, the net inflow of foreign direct investment (FDI) toward Australia totaled AUD24.3 billion ($16.7 billion), which was a 57% decrease compared with that in 2019. This decrease was likely attributable to divestment of AUD8.9 billion ($6.1 billion) from the mineral industry compared with the investment of AUD5.8 billion ($4.0 billion) in 2019. The leading source of FDI was Japan, which invested AUD20.4 billion ($14.1 billion) in 2020, followed by the United Kingdom, AUD5.3 billion ($3.7 billion); and Singapore, AUD4.6 billion ($3.2 billion). The country with the largest divestment was the United States, which divested AUD13.8 billion ($9.5 billion), followed by Bermuda, AUD2.4 billion ($1.6 billion); and Thailand, AUD725 million ($500 million). The stock of FDI at the end of 2020 was AUD1.03 trillion ($711 billion), of which the mineral industry accounted for the largest share (35%) followed by the manufacturing industry (12%). The United States accounted for 19% of FDI stocks at the end of the year. Other countries with large shares of FDI stocks included Japan, 13%; the United Kingdom, 12%; Netherlands 5.1%; and Canada, 4.5% (Department of Foreign Affairs and Trade, 2022b, p. 57, 60, 61, 66).

[1] Where necessary, values have been converted from Australian dollars (AUD) to U.S. dollars (US$) at the annual average exchange rates of AUD1.332=US$1.00 for 2021, AUD1.452=US$1.00 for 2020, and AUD1.439=US$1.00 for 2019.

Government Policies and Programs

Land ownership in Australia is divided into two categories: freehold land, which grants the most complete ownership of the land and includes land that is held by traditional owner groups, such as Aboriginal and Torres Strait Islander land groups; and nonfreehold land or public land, commonly known as Crown land. Mineral resources, irrespective of whether they are located on freehold or Crown land, are owned by the Government of Australia. The right to exploit these minerals is under the jurisdiction of the respective State governments (Australian Trade and Investment Commission, 2022).

In Australia's three-tiered Government system—local, State or Territories, and Federal—each State or Territory establishes its own mineral sector legal framework and has the authority to grant mining rights. Mineral resources are considered owned by either the Federal or State governments. The Federal Government invests in the collection and release of geoscientific data through the Department of Industry, Science and Resources, Geoscience Australia, and the Commonwealth Scientific and Industrial Research Organization. The Federal Government sets national policy regarding the mineral sector, including the regulation of offshore mining operations, FDI guidelines, and taxation policy. The administration of offshore mineral resources is overseen by the National Offshore Petroleum Titles Administrator. States and Territories manage and allocate mineral and petroleum property rights onshore and in coastal waters. They also regulate mining operations and oversee the adherence to environmental, occupational health, and safety laws; collect royalties; and oversee other mineral-related laws and regulations that are not covered by the Constitution of Australia (Geoscience Australia, 2020, p. 18–20).

Production

Mineral commodities for which output increased by 10% or more in 2020 compared with that in 2019 included magnesite, by 463% (estimated); tungsten, 400% (estimated); antimony (mine, Sb content), 92%; refined cadmium, 85%; perlite, 76% (estimated); lead (refined, primary), 49%; phosphate rock (P_2O_5 content), 42%; nickel matte, 24%; kaolin, 14% (estimated); fuller's earth, 13% (estimated); and ilmenite and leucoxene, 10%. Mineral commodities for which output decreased by 10% or more included aviation fuel, 66%; lignite, 51% (estimated); tantalum, 37%; fuel oil, 28%; ferromanganese, 27%; anthracite (estimated) and gasoline, 17% each; abrasives (natural garnet) and diamond (gem-grade and industrial-grade) (estimated), 16% each; zirconium (mineral concentrates), 15%; bentonite, 13% (estimated); silicon metal, 12% (estimated); cobalt (refined), 11%; and lithium (spodumene concentrate) and subbituminous coal (estimated), 10% each. Data on mineral production are in table 1.

Structure of the Mineral Industry

The Federal Government of Australia and the State and Territory governments did not engage in the exploration for, nor development of, mineral resources. All exploration and mining operations were undertaken by private entities. The mineral industry had the largest share of foreign ownership among all of Australia's industries. At the end of June 2019 (which was the most recent year for which comprehensive data were available), 38.8% of mining businesses were solely foreign owned: 23.4% were greater than 50% foreign owned; 7.4% were between 10% and 50% foreign owned; 8.0% were less than 10% foreign owned; and 22.4% were solely domestic owned. Table 2 is a list of major mineral industry facilities (Geoscience Australia, 2020, p. 18; Department of Foreign Affairs and Trade, 2022b, p. 42).

Mineral Trade

In 2020, Australia's total goods exports were valued at AUD364 billion ($251 billion), which was a decrease of 6.7% compared with that in 2019. Australia's nonfuel mineral exports were valued at AUD188 billion ($129 billion) in 2020, which was an increase of 12% compared with that in 2019. The value of Australia's mineral fuel exports decreased by 29% to AUD90.4 billion ($62.3 billion) in 2020. The leading mineral commodity in terms of export value was iron ore, which was valued at AUD117 billion ($80.5 billion), followed by liquefied natural gas (LNG), AUD36.2 billion ($24.9 billion); metallurgical coal, AUD26.7 billion ($18.4 billion); gold, AUD25.5 billion ($17.6 billion); and thermal coal, AUD16.6 billion ($11.4 billion). The export value of refined silver increased by 77%, followed by iron ore, 22%; copper ore and concentrate, 14%; and nickel intermediate and refined nickel, 11%. The export value of opal decreased by 57%, followed by other gemstones (which includes cut and polished sapphire), 54%; rough sapphire, 41%; metallurgical coal, 35%; crude petroleum, 34%; diamond, 31%; thermal coal, 27%; LNG, 26%; steel, 25%; zinc ore and concentrate, 20%; refined petroleum, 19%; alumina (including aluminum hydroxide), 18%; and refined copper, 11%. In 2020, Australia's major export partners were China (which received 41% of Australia's total exports), Japan (12%), the Republic of Korea (6.6%), the United States (5.4%), and the United Kingdom (4.1%) (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, table 17).

Goods exports to China in 2020 decreased by 0.9% to AUD148 billion ($102 billion). Australia's major mineral commodity exports to China included iron ore (including pellets), which amounted to 700 million metric tons (Mt) in 2020; thermal coal, 35 Mt; metallurgical coal, 34 Mt; zinc concentrate, 1.34 Mt; copper ore and concentrate, 810,000 metric tons (t); refined copper, 206,000 t; lead concentrate, 138,000 t; refined zinc, 132,000 t; and crude petroleum (including other refinery feedstock), 9.6 million barrels (Mbbl) (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, tables 24, 25, 28, 29, 31, 36).

Exports to Japan in 2020 decreased by 22% to AUD44.9 billion ($30.9 billion). Australia's major mineral commodity exports to Japan included thermal coal, which amounted to 73 Mt in 2020; iron ore (including pellets), 52 Mt; metallurgical coal (45% high quality and 55% other), 31 Mt; aluminum, 313,000 t; copper ore and concentrate, 175,000 t; zinc concentrate, 137,00 t; lead concentrate, 32,000 t; and crude petroleum (including other refinery feedstock), 1.0 Mbbl (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, tables 23–25, 28, 29, 31, 36).

Exports to the Republic of Korea in 2020 decreased by 7.3% to AUD24.1 billion ($16.6 billion). In 2020, the Republic of Korea was a substantial importer of aluminum (508,000 t), zinc concentrate (426,000 t), and lead concentrate (141,000 t) from Australia, receiving 36%, 19%, and 44% of Australia's total exports of those commodities, respectively, by volume. The Republic of Korea also imported 53 Mt of iron ore and 2.6 Mbbl of crude petroleum (including other refinery feedstock) from Australia in 2020. India received 26% of Australia's metallurgical coal exports. Malaysia and Taiwan were substantial importers of refined copper from Australia, receiving 18% and 9% of Australia's exports, respectively. The United Kingdom was the leading importer of Australia's gold bullion (refined and unrefined), receiving 47% of Australia's exports, followed by the United States, 22% and Hong Kong, 7% (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, tables 23–25, 27–29, 31, 36).

In 2020, Australia's total goods imports decreased in value by 5.1% to AUD305 billion ($210 billion). The value of Australia's mineral imports decreased by 25% to AUD38.9 billion ($26.8 billion). Australia's leading mineral import by value was petroleum refinery products, which were valued at AUD16.8 billion ($11.6 billion), followed by gold bullion (refined and unrefined), AUD9.1 billion ($6.3 billion), and crude petroleum (including other refinery feedstock), AUD6.2 billion ($4.3 billion). The leading supplier of Australia's crude petroleum (including other refinery feedstock) imports of 94.6 Mbbl in 2020 was Malaysia, which accounted for 30% of Australia's imports, followed by the United Arab Emirates, 16%; New Zealand, 5%; and Indonesia and Vietnam, 3% each. Morocco accounted for 26% of Australia's imports of phosphate rock, followed by China, 8% (Department of Foreign Affairs and Trade, 2022a, p. 6; Department of Industry, Science and Resources, 2022, tables 19, 31, 32).

Commodity Review

Metals

Bauxite and Alumina.—Western Australia remained Australia's leading bauxite-producing State, accounting for nearly 52% of the country's bauxite production in 2020, followed by Queensland, 36%, and the Northern Territory, 12%. In 2020, Rio Tinto plc produced 35 Mt of bauxite from the Weipa-Ely project, which included the Amrun, the Andoom, and the East Weipa Mines, and 12.3 Mt from the Gove Mine. At yearend 2020, probable and proven reserves of the Amrun Mine were 1.04 billion metric tons (Gt); the East Weipa and Andoom Mines, 100 Mt; and the Gove Mine, 80 Mt. Alcoa of Australia Ltd. (Alcoa Corp. of the United States, 60%, and Alumina Ltd., 40%), which operated the Darling Range Mines project, produced 34.8 Mt of bauxite in 2020. The probable and proven reserves of the Darling Range Mines project were 139 Mt and the mining rights to the deposit were set to expire in 2024. More than approximately 98% of the 35.4 Mt of bauxite exported in 2020 was imported by China (tables 2, 3; Alcoa Corp., 2021, p. 6; Department of Industry, Science and Resources, 2022, table 23; Rio Tinto plc, 2021, p. 339, 341; United Nations, 2023).

Cobalt, Copper, and Nickel.—Western Australia remained Australia's sole nickel-producing State. Nickel West was an integrated nickel business operated by BHP Group Ltd.; it included mines, an ore processing plant, a smelter, and a refinery. In 2020, Nickel West produced 81,000 t of nickel (Ni content in refined nickel products, primarily briquets and powder). As of June 30, proved and probable reserves at the Yakabindie Mine were 163 Mt containing 929,000 t of nickel during a mine life of 15 years; the Mt. Keith Mine, 84 Mt containing 478,000 t of nickel, 15 years; the Leinster Mine, 10.4 Mt containing 120,000 t of nickel, 8 years; the Venus Mine, 8.6 Mt containing 129,000 t of nickel, 12 years; and the Cliff Mine, 1 Mt containing 19,000 t of nickel, 3 years. The Savannah Mine, which was owned by Panoramic Resources Ltd., had restarted operations in 2018; in fiscal year 2020 (which began on July 1, 2019, and ended on June 30, 2020), the mine produced 50,535 t of concentrate containing 3,417 t of nickel, 2,215 t of copper, and 176 t of cobalt. The Savannah Mine suspended operations again in April 2020 owing to the coronavirus disease 2019 (COVID-19) pandemic and the falling nickel price. The mine had 8.3 Mt of reserves grading 1.23% nickel, 0.59% copper, and 0.08% cobalt as of July 2020 (BHP Group Ltd., 2020, p. 302; Panoramic Resources Ltd., 2020, p. 4, 5; 2023).

Gold.—Western Australia remained Australia's leading gold-producing State, accounting for 67% of the country's gold production in 2020, followed by New South Wales, 12%; Victoria, 8%; the Northern Territory, 5%; and Queensland and South Australia, 4% each. Tasmania also produced a minor amount of gold. The country's leading gold mines included the Cadia East Mine, which was owned by Newcrest Mining Ltd. and produced 25,600 kilograms (kg) of gold in 2020; the Boddington Mine, which was owned by Newmont Mining Corp. and produced 20,800 kg; and the Fosterville Mine, which was owned by Kirkland Lake Gold Ltd. and produced 19,900 kg. Production commenced at the Gruyere Mine in the eastern goldfields of Western Australia in June 2019. In 2020, the Gruyere Mine, which was operated by a joint venture of Gold Roads Resources Ltd. (50%) and Gold Fields Ltd. of South Africa (50%), produced approximately 8,030 kg of gold, ramping up from production of 3,100 kg of gold in 2019 and approaching the annual capacity of 9,000 kg (table 2; Arnoldi, 2021; Gold Road Resources Ltd., 2021, p. 18; Department of Industry, Science and Resources, 2022, table 27).

Iron Ore.—Western Australia remained Australia's leading iron-ore-producing State, accounting for more than 99% of the country's total iron ore production in 2020. South Australia and Tasmania accounted for 0.6% and 0.3%, respectively. The Pilbara Region in northwestern Western Australia was the country's major iron-ore-producing region and where Rio Tinto, which was the leading iron ore producer in Australia, owned 16 mines and 4 port terminals. In 2020, Rio Tinto produced 333.4 Mt of iron ore compared with 326.7 Mt in 2019. The $2.6-billion Gudai-Darri (formerly known as Koodaideri) replacement iron ore mine was on schedule to start up operations by early 2022. This first phase of the Gudai-Darri Mine would have a production capacity of 43 million metric tons per year (Mt/yr) of iron ore (table 2; Rio Tinto plc, 2021, p. 33, 43, 44; Department of Industry, Science and Resources, 2022, table 28).

Lead, Silver, and Zinc.—Queensland remained Australia's leading lead-, silver-, and zinc-producing State. In 2020, Queensland accounted for 60% of the country's lead ore and concentrate (Pb content) production, followed by New South Wales, 20%; the Northern Territory, 11%; Tasmania, 7%; and Western Australia, 1%. Queensland accounted for 65% of the country's silver production, followed by New South Wales, 12%; Western Australia, 9%; Tasmania, 8%; and the Northern Territory and South Australia, 3% each. Queensland accounted for 57% of the country's zinc ore and concentrate (Zn content) production, followed by the Northern Territory, 21%; New South Wales, 9%; Tasmania, 7%; and Western Australia, 6% (Department of Industry, Science and Resources, 2022, tables 29, 33, 36).

Glencore plc of Switzerland owned the Mount Isa Mines, including the George Fisher Mine and the Lady Loretta Mine in Queensland. Production of zinc at Mount Isa increased by 6% to 633,500 t; silver, by 3% to 230 t; and lead, by 2% to 216,800 t. In 2020, MMG Ltd. recorded its highest annual production at the Dugald River Mine in Queensland, which had commenced operations in November 2017. MMG produced 177,704 t of zinc and 23,847 t of lead in concentrate, which were increases of 4% and 3% compared with production in 2019, respectively. The company also sold 49 t of silver from the Dugald River Mine in 2020, which was an increase of 33% from the amount sold in 2019 (Glencore plc, 2021, p. 66, 68; MMG Ltd., 2021a, p. 5, 29, 30; 2021b).

Australia's production of primary refined lead increased by 49% in 2020 compared with a decrease of 42% in 2019. The decrease in 2019 was owing mainly to the temporary shutdown of the Port Pirie smelter, which was fully owned by Nyrstar NV of the Netherlands (a company that was listed on the Brussels Stock Exchange). The smelter was not in operation for more than 3 months in 2019 because of technical difficulties and equipment refurbishing activities. In May 2020, the Belgian Financial Services and Markets Authority announced an expanded investigation into Nyrstar and the mine, including obtaining such information as the expected profit and cost for redevelopment of the Port Pirie smelter and the solvency and liquidity position of the company (table 1; Home, 2019; Batteries International, 2021; Nyrstar NV, 2021, p. 11).

Industrial Minerals

Lithium.—In 2020, Pilbara Minerals Ltd. produced 180,851 t of spodumene concentrate at its Pilgangoora lithium-tantalum project compared with 151,981 t in 2019. As of June 2020, the proved and probable reserves of the Pilgangoora Mine were 104.6 Mt grading 1.26% lithium oxide and 120 parts per million tantalum pentoxide. Production of spodumene concentrate and tantalite concentrate at the Pilgangoora Mine was at the lowest level in the fourth quarter of 2019 and the first quarter of 2020 (except for during the third quarter of 2018) owing to ramping up after starting up operations, weak market conditions in China, decreased demand, and low lithium prices (Pilbara Minerals Ltd., 2019, p. 15; 2020, p. 17, 19; 2021, p. 18; Brown, 2020).

Mineral Resources Ltd. owned a 50% interest in and served as the operator of the Mount Marion Mine. The mine produced 416,000 t of spodumene concentrate in 2020 compared with 386,000 t in 2019. Mineral Resources had a 40% interest in the Wodgina Mine, which was the largest known hard-rock lithium mine in the world. The mine was placed to care-and-maintenance status in 2020 to preserve resources owing to the unfavorable market conditions during the COVID-19 pandemic. Mineral Resources also had a 40% interest in the Kemerton lithium hydroxide plant in West Australia, which was under construction in 2020. The Kemerton plant would be fed by the nearby Greenbushes Mine and have a nameplate capacity of 50,000 metric tons per year of lithium hydroxide. Commercial production at the Kemerton plant was expected to be mid-2022 (Mineral Resources Ltd., 2020, p. 24, 25; 2021, p. 22, 23; 2022, p. 38; Albemarle Corp., 2021, p. 10).

Mineral Fuels and Related Materials

Coal.—In 2020, Queensland remained Australia's leading State in the production of coal (all types), accounting for 52% of the coal produced in the country, followed by New South Wales, 46%; and Western Australia, 1%. Tasmania also produced a minor amount of coal. Open pit mines accounted for 83% of total production of 542 Mt in 2020. The Loy Yang Mine, which was owned by AGL Energy Ltd., was the country's leading coal mine in terms of output and produced 20.9 Mt of coal in 2020, followed by the Moolarben Mine (owned by Yancoal Australia Ltd., which was a subsidiary of Yankuang Energy Group Co. of China), 19.7 Mt; the Goonyella Riverside Mine and the Mount Arthur Mine (owned by BHP Group Ltd.), 17.5 Mt and 16.1 Mt, respectively; and the Rolleston Mine (owned by Glencore plc), 14.6 Mt (table 2; Mining Technology, 2021; Department of Industry, Science and Resources, 2022, table 24).

In 2020, global seaborne coal trade was affected by the COVID-19 pandemic and low energy demand. China also embargoed importing coal from Australia in November after Australia called for an international investigation into the origin of COVID-19. Glencore produced 106.2 Mt of coal, which was a decrease of 24% from that in 2019; 7.6 Mt of coking coal, a decrease of 17%; and 67 Mt of thermal coal, a decrease of 16%. BHP produced 19 Mt of thermal coal, which was a decrease of 17%, and 41 Mt of metallurgical coal, which was a decrease of 1% (BHP Group Ltd., 2020a, p. 82; 2021, p. 69; Glencore plc, 2021, p. 59, 67; Uren, 2021).

MINERAL INDUSTRY HIGHLIGHTS IN 2021

Minerals in the National Economy

According to the International Monetary Fund, Australia's real GDP in 2021 increased by 4.9% and the nominal GDP was $1.64 trillion. According to the Australian Bureau of Statistics, in 2021, the mineral industry (including exploration and mining support services) accounted for 10.5% of the GDP. The gross value added of the mineral industry decreased by 2.0% to AUD223 billion ($167 billion) in 2021. Iron ore mining accounted for 61% of the gross output of the mineral sector, followed by natural gas and petroleum extraction, 17%; the mining of other minerals, including nonferrous metals, industrial minerals, and uranium, 10%; coal mining, 8%; and exploration and mining services, 5%. The gross value added of exploration and mining services and of natural gas and petroleum extraction increased by 3.4% and 0.1%, respectively. That of the mining of other minerals (which includes nonferrous metals, industrial minerals, and uranium) decreased by 5.9%; coal mining, 5.5%; and iron ore mining, 0.3% (Australian Bureau of Statistics, 2022b; International Monetary Fund, 2022).

Investments in the mineral industry totaled AUD38.1 billion ($28.6 billion) in 2021, which was an increase of 8.3% compared with that in 2020. Investments in nonmetallic mining enterprises increased by 59% to AUD1.35 billion ($1.01 billion), followed by natural gas and petroleum extraction, by 11% to AUD9.08 billion ($6.82 billion); and metal ore mining, by 9% to AUD20.0 billion ($15.0 billion). Investment in exploration and other mining service decreased by 9% to AUD1.33 billion ($1.00 billion), and coal mining, by 1% to AUD6.27 billion ($4.71 billion) (Department of Industry, Science and Resources, 2022, table 13).

The mineral industry employed 188,823 people at the end of June 2021, which was a 0.8% increase compared with that in 2020. Metallic ore mining accounted for 42% of mineral industry employment, followed by exploration and other mining services, 22%; coal mining, 20%; natural gas and petroleum extraction, 9%; and nonmetallic mineral mining and quarrying, 7%. In 2021, employment in nonmetallic ore extraction increased by 6.9%; exploration and other mining services, 3.5%; metallic ore mining, 1.4%; and petroleum and natural gas extraction, 1.3%. Employment in coal mining decreased by 5.4% (Australian Bureau of Statistics, 2022a, c).

In 2021, the net inflow of FDI toward Australia was valued at AUD33.4 billion ($25.1 billion), which was a 37% increase compared with that in 2020. The increase was likely attributable to investment of AUD4.5 billion ($3.3 billion) in the mineral industry compared with the divestment of AUD8.9 billion ($6.1 billion) in 2020. The leading source of FDI was the United Kingdom, which invested AUD9.3 billion ($7.0 billion) in 2021, followed by Canada, AUD8.8 billion ($6.6 billion), and Singapore, AUD8.1 billion ($6.1 billion). The country with the largest divestment was the United States, which divested AUD8.8 billion ($6.6 billion), followed by Luxembourg, AUD1.3 billion ($950 million), and New Zealand, AUD709 million ($532 million). The stock of FDI at the end of 2021 was AUD1.06 trillion ($797 billion), of which the mineral industry accounted for the largest share (34%), followed by the manufacturing industry (11%). The United States accounted for 17% of the FDI stocks at the end of the year, followed by Japan, 13%; the United Kingdom, 12%; Canada, 5.5%; and the Netherlands, 5.2% (Department of Foreign Affairs and Trade, 2022b, p. 57, 60, 61, 66).

Production

Notable increases in output of the mineral commodities in 2021 included that of lignite, by 102% (estimated); magnesite, 50% (estimated); lithium (spodumene concentrate), 39%; nickel matte, 38%; tungsten, 30% (estimated); lead (refined, primary), 22%; rare earths (mineral concentrate, rare-earth-oxide equivalent), 20% (estimated); silicon metal, 19% (estimated); and perlite, 17% (estimated). Output of feldspar decreased by 87% (estimated); fuel oil, 41%; uranium (mine, U content), 39%; aviation fuel, 35%; refined petroleum (other), 23%; refined petroleum (total, throughput), 22%; diesel, 19%; lead (refined, secondary) (estimated) and gasoline, 17% each; cobalt (refined), nickel (refined), and palladium (mine, Pd content) (estimated), 15% each; liquefied petroleum gas, 14%; antimony (mine, Sb content), 13%; refined gold, 12%; nickel (mine, Ni content), 11%; and copper (refined, other), 10% (table 1).

Mineral Trade

In 2021, Australia's total goods exports were valued at AUD460 billion ($345 billion), which was an increase of 26% compared with that in 2020. Australia's nonfuel mineral exports totaled AUD232 billion ($174 billion) in 2021, which was an increase of 23% compared with that in 2020. The value of Australia's mineral fuel exports increased by 42% to AUD128 billion ($96.4 billion) in 2021. The leading mineral commodity in terms of export value was iron ore, which was valued at AUD155 billion ($116 billion), followed by LNG, AUD49.8 billion ($37.4 billion); metallurgical coal, AUD36.8 billion ($27.7 billion); thermal coal, AUD26.7 billion ($20 billion); and gold, AUD23.3 billion ($17.5 billion). The largest percent increase in exports, by value, was that of rough sapphire, which increased by 125%, followed by tin, 88%; thermal coal, 60%; crude petroleum, 59%; other gemstones (which includes cut and polished sapphire), 39%; metallurgical coal, LNG, and refined silver, 38% each; zinc ore and concentrate, 33%; iron ore, 32%; aluminum metal, 31%; nickel ore and concentrate, 27%; refined copper, 26%; intermediate and refined nickel and lead, 14% each; and alumina (including aluminum hydroxide), 11%. The largest percent decrease, by value, was that of diamond, which decreased by 45% in 2021, followed by refined petroleum, 24%; bauxite, 15%; and steel, 13%. In 2021, Australia's major export trading partners were China (which received 39% of Australia's exports, by value), Japan (14%), the Republic of Korea (8.1%), India (4.3%), and the United States (3.6%) (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, table 17).

Goods exports to China in 2021 increased by 22% to AUD180 billion ($135 billion). In 2021, Australia's major mineral commodity exports to China included iron ore (including pellets), 722 Mt; zinc concentrate, 1.03 Mt; refined copper, 155,000 t; refined zinc, 116,000 t; lead concentrate, 98,000 t; and crude petroleum (including other refinery feedstock), 1.8 Mbbl. China did not import metallurgical and thermal coal and copper ore and concentrate from Australia in 2021 (Department of Industry, Science and Resources, 2022, tables 24, 25, 28, 29, 31, 36).

Exports from Australia to Japan in 2021 increased by 43% to AUD64.1 billion ($48.1 billion). In 2021, Australia's major mineral commodity exports to Japan included thermal coal, 81 Mt; iron ore (including pellets), 59 Mt; metallurgical coal (45% high quality and 55% other), 39 Mt; aluminum, 398,000 t; zinc concentrate, 158,00 t; lead concentrate, 38,000 t; and crude petroleum (including other refinery feedstock), 2.8 Mbbl (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, tables 23, 24, 28, 29, 31, 36).

In 2021, the Republic of Korea was a substantial importer of zinc concentrate (578,000 t), aluminum (187,000 t), and lead concentrate (185,000 t) from Australia, receiving 27%, 14%, and 56% of Australia's total exports of those commodities, respectively, by volume. The Republic of Korea also imported 55 Mt of iron ore and 7.5 Mbbl of crude petroleum (including other refinery feedstock) from Australia in 2021. India accounted for 32% Australia's metallurgical coal exports. Malaysia and Taiwan were substantial importers of refined copper from Australia, receiving 21% and 12% of Australia's exports, respectively. China received the largest share of Australia's gold bullion (refined and unrefined) exports, receiving 36%, followed by Hong Kong, 15%, and Singapore, 12% (Department of Foreign Affairs and Trade, 2022a, p. 3; Department of Industry, Science and Resources, 2022, tables 23–25, 27–29, 31, 36).

In 2021, Australia's total goods imports increased by 13% to AUD343 billion ($258 billion). The value of Australia's mineral imports increased by 27% to AUD49.3 billion ($37.0 billion). Australia's leading mineral import was petroleum refinery products valued at AUD26.7 billion ($20.1 billion), followed by crude petroleum (including other refinery feedstock), AUD7.7 billion ($5.7 billion), and gold bullion (refined and unrefined), AUD6.5 billion ($4.9 billion). Australia's leading supplier of crude petroleum (including other refinery feedstock) imports (totaling 80 Mbbl in 2021) was Malaysia, which accounted for 43% of Australia's imports, followed by New Zealand, 6%; and Indonesia, Singapore, and Vietnam, 5% each. Morocco and Nauru accounted for 8% each of Australia's imports of phosphate rock (Department of Foreign Affairs and Trade, 2022a, p. 6; Department of Industry, Science and Resources, 2022, tables 19, 31, 32).

Commodity Review

Metals

Gold.—In 2021, Australia produced 315 t of gold, of which Western Australia accounted for 70%, followed by New South Wales, 10%, and Victoria, 7%. The leading gold mines in 2021 were Newmont Mining's Boddington Mine, which produced 21,600 kg of gold; Newcrest Mining's Cadia East Mine, 18,600 kg; Kirkland Lake's Fosterville Mine, 15,900 kg; Northern Star Resource Ltd.'s Kalgoorlie Super Pit Mine, 15,200 kg; and Newmont Mining's Tanami Mine, 15,100 kg. Red River Resources Ltd. began operations at its Hillgrove Mine in December 2020 and produced 120 kg of gold in 2021. Capricorn Metals Ltd. started commercial production at the Karlawinda gold mine located 65 kilometers (km) southwest of Newman, Western Australia, and poured the first dore in June; the mine produced 960 kg of gold in 2021 (tables 1, 2; Red River Resources Ltd., 2021, p. 18; 2022, p. 8; Ballard, 2022; Department of Industry, Science and Resources, 2022, table 27; Capricorn Metals Ltd., 2023).

Iron Ore.—In 2021, Australia's production of iron ore increased slightly to 922 Mt from 918 Mt in 2020. Rio Tinto produced 319.7 Mt in 2021, which was a decrease of 4% compared with that in 2020. The company completed the $800 million Western Turner Syncline phase 2 mine (a part of the Greater Tom Price operations) and started production in October to sustain iron ore production capacity in the Pilbara region of Western Australia. As of 2021, Rio Tinto operated a network of 17 iron ore mines in Australia (table 1; Rio Tinto plc, 2022, p. 40, 42, 46).

BHP owned Western Australia Iron Ore (WAIO), which was an integrated system comprising four processing hubs and five mines. Each processing hub was operated by a joint venture in which BHP had an 85% interest. In 2021, WAIO's production increased by 1% to a record 252 Mt, which was attributed to record production at the Jimblebar Mine and Mining Area C. The South Flank Mine, which was part of Mining Area C, started commercial production in May and was expected to ramp up to full-capacity production of 80 Mt/yr in the next 3 years (BHP Group Ltd., 2021, p. 22, 23).

Lithium and Tantalum.—In 2021, Pilbara Minerals produced 324,217 t of spodumene concentrate and 58.3 t of tantalite concentrate. The 79% production increase of spodumene concentrate was attributed to Pilbara Minerals' acquisition of Altura Mining Ltd.'s Altura lithium mine in January. As of June 2019, the Altura Mine's proved and probable reserves were 37.6 Mt grading 1.08% lithium oxide. Altura Mining shifted focus on the Mallina lithium project (tenement E47/2983) after re-establishing its earn-in agreement (51% interest) with Sayona Mining Ltd. and planned to start a drilling program. The project is located 80 km to the west of the Wodgina and Pilgangoora lithium mining areas. In late 2021, after 2 years on care-and-maintenance status, MARBL JV announced that the Wodgina Mine would recommence production in response to the increased global demand for lithium. Among the three processing trains, Train 1 was expected to start producing spodumene concentrate in May 2022 (Altura Mining Ltd., 2020, p. 10; 2021, p. 8, 9; Pilbara Minerals Ltd., 2020, p. 17; 2021, p. 18; 2022, p. 16; Mineral Resources Ltd., 2022, p. 37).

Mineral Fuels

Coal.—In 2021, Queensland remained Australia's leading State for the production of coal (all types), accounting for 55% of the coal production in the country, followed by New South Wales, 44%; and Western Australia, 1%. In 2021, 20.9 Mt of coal was produced at the Loy Yang Mine, followed by the Goonyella Riverside Mine, 18.9 Mt; the Moolarben Mine, 18.4 Mt; the Mount Arthur Mine, 14.9 Mt; and the Yallourn Mine, 14 Mt (table 2; Department of Industry, Science and Resources, 2022, table 24; Mining Technology, 2022).

In 2021, Australia's exports of coal accounted for 58% of the global seaborne trade in metallurgical coal for steel mills and 21% in thermal coal for powerplants. The country had been subject to China's embargo on coal from Australia since November 2020; China had previously received more than one-third of Australia's metallurgical coal exports, which in turn accounted for approximately 55% of China's metallurgical coal imports in 2019 and 2020. In 2021, Australia expanded its coal exports market to include India, Japan, the Republic of Korea, and Taiwan and produced approximately 554 Mt of coal, which was an increase of 6% compared with that in 2020 (table 1; Pande and Mohanty, 2021; Uren, 2021).

Reserves and Resources

Under Australia's National Classification System for Identified Mineral Resources, economic demonstrated resources (EDR) is a collective term for mineral resources that the Government of Australia has determined are economical. Notable EDR increases in 2021 compared with those in 2020 were the resources of platinum-group elements, by 131%; scandium, 21%; molybdenum, 20%; and iron ore (gross weight), 10%. Notable EDR decreases were the resources of diamond, by 88%, and bauxite, 31%. Accessible economic demonstrated resources, or AEDR, for select minerals at the end of 2021 are shown in table 5 (Geoscience Australia, 2022).

In 2021, expenditures on exploration increased by 23% to AUD4.73 billion ($3.55 billion). Nonpetroleum mineral exploration accounted for 76% of total exploration expenditures in 2021, whereas onshore petroleum exploration accounted for 15%, and offshore petroleum exploration, 8%. Exploration expenditures for nonpetroleum minerals increased by 28%; onshore petroleum, by 12%; and offshore petroleum, by 2.2%. In 2021, for exploration of minerals other than petroleum, identified deposits accounted for 66% of the exploration expenditures and new deposits accounted for the remaining 34%. A total of 13,211 km was drilled for exploration of minerals other than petroleum; this was a 23% increase compared with the total drilled in 2020. Gold deposits represented the largest share of exploration expenditures among minerals other than petroleum in 2021, accounting for 44% of the total, followed by iron ore deposits, 16%; copper deposits, 15%; other minerals, which included construction sand and gravel, crushed stone, garnet, staurolite tin, and tungsten (scheelite and wolframite), 8.1%; nickel-cobalt deposits, 6.6%; coal (undifferentiated), 6.3%; silver-lead-zinc deposits, 2.0%; mineral sands, 1.3%; uranium, 0.3%; and diamond, 0.2%. Exploration expenditures on diamond increased by 87% in 2021, followed by uranium, 84%; copper, 65%; other minerals, 51%; iron ore and silver-lead-zinc, 41% each; nickel-cobalt, 30%; mineral sands, 25%; and gold, 21%. Exploration expenditures decreased only for coal (undifferentiated) in 2021, by 22%. Total expenditures on petroleum exploration were AUD1.12 billion ($842 million) in 2021, which was a 12% increase compared with that in 2020. Offshore exploration accounted for 36% of total expenditures on petroleum exportation. Drilling accounted for 66% of total onshore exploration expenditures, and for 29% of offshore expenditures (Australian Bureau of Statistics, 2022d–h).

Outlook

According to the International Monetary Fund, the growth rate of Australia's real GDP is expected to be 3.8% in 2022. Overall investment in mining is expected to continue to increase, considering anticipated increases in FDI inflows to the mineral industry and the expected growth in global demand for raw materials following the winding down of the COVID-19 pandemic. Coal production is likely to continue to increase owing to Australia's obtaining new markets for its coal exports following China's restriction on coal imports from Australia. In the next several years, mining activities are expected to expand as Australia's mineral industry recovers from the COVID-19 pandemic. Significant production increases are expected at some major projects, including the Wodgina lithium-tantalum mine, the Hillgrove gold mine, and the South Frank iron mine (International Monetary Fund, 2022).

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TABLE 1

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1,2]

(Metric tons, gross weight, unless otherwise specified)

Commodity		2017	2018	2019	2020	2021
METALS						
Aluminum:						
Bauxite	thousand metric tons	89,421	95,948	105,544	103,627	103,056
Alumina	do.	20,486	20,062	20,239	20,836	20,359
Metal, primary	do.	1,487	1,574	1,570	1,585	1,565
Antimony, mine, Sb content[3]		3,115	2,173	2,032	3,903	3,380
Cadmium, refinery, primary		541 r	402 r	204 r	378	402
Cobalt, Co content:						
Mine, laterite ore, Ni concentrate, and Zn concentrate[4]		5,034	4,878	5,741 r	5,626	5,295
Refinery, metal powder and oxide-hydroxide		3,000	3,200	3,700	3,300	2,800
Copper:						
Mine:						
Concentrates, Cu content	thousand metric tons	823	888	900 r	855	790
Solvent extraction[5]	do.	26	23	25	25	23
Smelter, primary	do.	360	361	401	399	367
Refinery, primary:						
Electrowon	do.	26	23	25	25	23
Other	do.	360	354	402 r	403	362
Ferroalloys:[6]						
Ferromanganese		125,100	148,300	114,000	83,000	90,000
Silicomanganese		120,200	112,900	95,000	101,000	99,000
Gold:						
Mine, Au content	kilograms	292,022 r	313,028	326,304 r	327,889	315,051
Refinery, primary and secondary	do.	327,609	342,706	323,708	303,914	267,431
Iron ore, mine:						
Gross weight	thousand metric tons	885,357	903,850 r	917,046 r	918,063	922,159
Fe content	do.	548,297	560,055 r	567,957 r	569,199	571,739
Iron and steel:						
Pig iron	do.	3,758	3,882	3,664	3,723	3,751
Raw steel	do.	5,335	5,775 r	5,493	5,489	5,808
Lead:						
Mine, Pb content		395,190 r	446,571 r	500,985 r	494,271	485,487
Refinery:						
Primary		168,300	155,482	89,888	133,879	163,000
Secondary, excluding remelt[e]		43,000	33,000	35,000	35,000	29,000
Manganese, mine, ore:						
Gross weight	thousand metric tons	6,473	8,193	7,545	7,976	7,911
Mn content	do.	2,821	3,475	3,177	3,331	3,255
Nickel:						
Mine, Ni content	thousand metric tons	185	160	159	169	151
Smelter, matte[7]	do.	37	11	17	21	29
Refinery[8]		108,500	114,517	106,470	115,800	98,970
Platinum-group metals, mine, elemental content:[e, 9]						
Palladium	kilograms	600	420	380	410	350
Platinum	do.	170	120	110	110	100
Total	do.	770	540	490	520	450
Rare earths, mineral concentrate, rare-earth-oxide equivalent[e]		19,000	21,000	20,000	20,000	24,000
Silicon, metal[e]		50,000	40,000	49,000 r	43,000	51,000
Silver:						
Mine, Ag content		1,120	1,254	1,325	1,337	1,330
Refinery		1,019	865	928	936	931
Tantalum, mine, tantalite concentrate, Ta content	kilograms	20,000	32,000	67,000	42,000	44,000
Tin, mine, Sn content		7,402	6,871	7,738	8,118	8,772

See footnotes at end of table.

TABLE 1—Continued

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1,2]

(Metric tons, gross weight, unless otherwise specified)

Commodity		2017	2018	2019	2020	2021
METALS—Continued						
Titanium, mineral concentrates:						
Ilmenite and leucoxene	thousand metric tons	1,500	1,400	1,000 r	1,100	1,000 e
Rutile	do.	300	200	200	200	200 e
Tungsten, mine, concentrate, W content[e]		20	20	20	100	130
Zinc:						
Mine, Zn content	thousand metric tons	852	1,147 r	1,337 r	1,315	1,315
Smelter, primary	do.	462	490	436	447	462
Zirconium, mineral concentrates	do.	505	530	470	400	400 e
INDUSTRIAL MINERALS						
Abrasives, garnet, natural		363,573	360,133	352,978	296,051	321,340
Barite		8,958	6,534	1,982	--	1,127
Cement, hydraulic[e]	thousand metric tons	9,700	10,200	9,900 r	9,600	9,800
Clay:[e]						
Bentonite		102,000 r	71,800 r	49,500 r	43,000	43,000
Fuller's earth, attapulgite		12,000	10,000	8,000 r	9,000	9,000
Kaolin		213,000 r	168,000 r	149,000 r	170,000	170,000
Diamond, natural:						
Gem	thousand carats	343 e	281 e	260 e	219 e	--
Industrial	do.	16,800 e	13,800 e	12,700 e	10,700 e	--
Total	do.	17,100 e	14,100 e	13,000 e	10,900 e	--
Diatomite[e]		12,000	11,000	11,000	11,000	11,000
Feldspar, includes nepheline syenite[e]		9,500 r	9,500 r	9,000 r	9,000	1,200
Gypsum, mine	thousand metric tons	1,397	1,400 e	1,400 e	1,400 e	1,400 e
Lime[e]		2,000,000	2,000,000	1,980,000	1,980,000	2,000,000
Lithium, spodumene, concentrates		1,706,618	1,965,910 r	1,587,980 r	1,427,380	1,985,670
Magnesite[e, 10]		210,000	265,000	320,000	1,800,000	2,700,000
Nitrogen, ammonia, N content[e]		1,300,000	1,300,000	1,500,000 r	1,600,000	1,700,000
Perlite[e]		1,300 r	1,800 r	1,700 r	3,000	3,500
Phosphate rock:[e]						
Gross weight		3,000,000	2,500,000 r	2,200,000 r	2,500,000	2,500,000
P_2O_5 content		750,000	680,000	480,000 r	680,000	680,000
Salt	thousand metric tons	11,675	12,894	11,474	11,542	12,000 e
Stone, sand and gravel, construction:[e]						
Sand and gravel	do.	29,000	29,000	29,000	29,000	29,000
Stone, crushed	do.	25,000	25,000	25,000	25,000	25,000
Talc and related materials, chlorite, pyrophyllite, steatite[e]		110,000	100,000	100,000	100,000	100,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:[e]						
Anthracite	thousand metric tons	7,330 r	7,570 r	9,180 r	7,610	8,240
Bituminous	do.	248,000 r	275,000 r	282,000 r	262,000	265,000
Lignite	do.	65,700 r	54,600 r	49,900 r	24,400	49,400
Metallurgical	do.	210,000	213,000 r	218,000 r	199,000	202,000
Subbituminous	do.	31,000 r	33,500 r	30,500 r	27,600	29,300
Coke, metallurgical	do.	2,622 r	2,522 r	2,664 r	2,459	2,439
Liquefied natural gas	do.	53,306 r	64,025 r	107,782 r	115,914	122,341
Natural gas, marketable	million cubic meters	113,805	130,987	154,485	154,263	156,519
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	96,089 r	103,499 r	131,664 r	128,570	122,211
Refinery:						
Throughput	do.	178,586	187,754	180,593	151,973	118,877
Products:						
Aviation fuel	do.	23,392	23,855	24,374	8,259	5,330
Diesel	do.	55,059	57,047	54,945	53,311	43,059
Fuel oil	do.	4,528	5,419	5,499	3,949	2,320

See footnotes at end of table.

TABLE 1—Continued

AUSTRALIA: PRODUCTION OF MINERAL COMMODITIES[1,2]

(Metric tons, gross weight, unless otherwise specified)

Commodity		2017	2018	2019	2020	2021
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:—Continued						
Refinery:—Continued						
Products:—Continued						
Gasoline	do.	70,253	70,967	66,923	55,808	46,283
Liquefied petroleum gas	do.	6,568 r	3,407 r	3,487 r	3,319	2,844
Other	do.	14,806	18,105	20,748	22,214	17,160
Uranium, mine, U content		5,710 r	6,560 r	6,550 r	6,170	3,790

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

[1]Table includes data available through January 31, 2023. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]In addition to the commodities listed, Australia produced dimension stone, dolomite, jade, kyanite, opal, sapphire, silica, sulfuric acid, and secondary tin metal, but available information was inadequate to make reliable estimates of output.

[3]Antimony content of antimony ore and concentrate, lead concentrates, and lead-zinc concentrates.

[4]Cobalt content of lateritic nickel ore and nickel concentrate reported by the Government of Western Australia.

[5]The copper content of solvent extraction output at the mine level is the same as electrowon refinery output because copper produced in the solvent extraction and electrowinning process is typically reported only at the refinery level.

[6]Reported by the International Manganese Institute.

[7]Figures exclude toll-refined material.

[8]Products with a nickel content of 99% or more. Includes electrolytic nickel, pellets, briquettes and powder.

[9]Platinum-group metals (PGM) recovered from nickel ore that is processed domestically. PGM in exported nickel ore are extracted in the importing countries, such as Japan, and are thought to be included in the production figures for those countries.

[10]Estimates are based on reported data for the calendar year by the Dept. of State Development, South Australia and for the fiscal year, ending June 30 by the Queensland Department of Natural Resources and Mines.

TABLE 2
AUSTRALIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Aluminum:			
Bauxite	Amrun Mine (Rio Tinto Ltd., 100%)	South of Weipa, QLD	22,800
Do.	Andoom and East Weipa Mines (Rio Tinto Ltd., 100%)	Weipa, QLD	12,700
Do.	Bald Hill Mine[3] (Australian Bauxite Ltd., 100%)	Campbell Town, TAS	40
Do.	Bauxite Hills Mine (Metro Mining Ltd., 100%)	95 km north of Weipa, QLD	3,500
Do.	Boddington-Worsley open pit bauxite mine {Worsley Alumina Pty. Ltd., manager [South32 Ltd., 86%; Japan Alumina Associates (Australia) Pty. Ltd.,10%; Sojitz Alumina Pty. Ltd., 4%]}	14 km south of Boddington, WA	19,000
Do.	Gulkula Mine (Gulkula Mining Co., 100%)	20 km south of Nhulunbuy, NT	
Do.	Gove open pit bauxite mine [Pacific Aluminum (Rio Tinto Ltd., 100%)]	15 km southeast of Nhulunbuy, NT	13,000
Do.	Hey Point Mine (Green Coast Resources Pty. Ltd., 100%)	Near Weipa, QLD	1,500
Do.	Huntly open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)]	80 km south of Perth, WA	26,000
Do.	Willowdale open pit bauxite mine [Alcoa of Australia Ltd. (Alcoa Corp., 60%, and Alumina Ltd., 40%)]	130 km south of Perth, WA	10,000
Alumina, refinery	Kwinana alumina refinery [Alcoa of Australia Ltd. (Alcoa World Corp., 60%, and Alumina Ltd., 40%)]	Kwinana, WA	2,200
Do.	Pinjarra alumina refinery [Alcoa of Australia Ltd. (Alcoa World Corp., 60%, and Alumina Ltd., 40%)]	Pinjarra, WA	4,200
Do.	Queensland alumina refinery [Queensland Alumina Ltd., operator (Rio Tinto Ltd., 80%, and United Company RUSAL, 20%)]	Gladstone Region, QLD	3,950
Do.	Wagerup alumina refinery [Alcoa of Australia Ltd. (Alcoa World Corp., 60%, and Alumina Ltd., 40%)]	Wagerup, WA	2,850
Do.	Worsley alumina refinery {Worsley Alumina Pty. Ltd., manager [South32 Ltd., 86%; Japan Alumina Associates (Australia) Pty. Ltd., 10%; Sojitz Alumina Pty. Ltd., 4%]}	Worsley, 20 km northwest of Collie, WA	4,600
Do.	Yarwun alumina refinery (Rio Tinto Ltd., 100%)	Gladstone Region, QLD	3,200
Metal, smelter	Bell Bay aluminum smelter [Pacific Aluminum (Rio Tinto Ltd., 100%)]	Bell Bay, TAS	195
Do.	Boyne Island aluminum smelter [Boyne Smelters Ltd., operator (Rio Tinto Alcan, 59.39%; YKK Aluminum, 9.5%; UACJ Australia, 9.43%; Southern Cross Aluminum, 7.57%; Ryowa Development, 5.27%; Ryowa Development II, 6.34%; Sumitomo Chemical Co. Ltd., 2.5%)]	Boyne Island, QLD	584
Do.	Portland aluminum smelter [Alcoa of Australia, 55%, manager; China International Trust Investment Co. (China state-owned company), 22.5%; Marubeni Australia Pty. Ltd., 22.5%]	Portland, VIC	358
Do.	Tomago aluminum smelter {Tomago Aluminium Co. Pty. Ltd., operator [Pacific Aluminum, 51.55% (Rio Tinto Ltd., 100%); Gove Aluminium Finance Ltd., 36.05%; Hydro Aluminium, 12.40%]}	Tomago, NSW	590
Antimony	Costerfield underground antimony-gold mine [AGD Mining, operator (Mandalay Resources Ltd., 100%)]	50 km east and southeast of Bendigo, VIC	4
Do.	Hillgrove Mine[4] (Red River Resources Ltd., 100%)	25 km east of Armidale, NSW	10
Cement	Adelaide Brighton Cement Pty. Ltd., 100%	Angaston, SA	250
Do.	do.	Birkenhead, SA	1,200
Do.	do.	Geelong, VIC	800
Do.	do.	Munster, SA	590
Do.	Blue Circle Southern Cement Ltd. (Boral Ltd., 100%)	Berrima, NSW	1,200
Do.	do.	Maldon, NSW	700
Do.	do.	Waurn Ponds, VIC	250
Do.	Cement Australia Pty. Ltd. (Hanson Ltd. and Holcim Australia Pty. Ltd.)	Brisbane, QLD	1,200
Do.	do.	Gladstone, QLD	1,700
Do.	do.	Railton, TAS	1,000
Do.	Cockburn Cement Ltd., 100%	Munster, 30 km south of Perth, WA	700

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Clay:			
Bentonite	Arumpo open pit bentonite mine (Arumpo Bentonite Pty. Ltd., 100%)	95 km northeast of Mildura, NSW	30
Do.	Cedars open pit bentonite mine (PCP Douglass Pty. Ltd., 100%)	10 km southwest of Yarraman, QLD	20
Do.	Cressfield open pit bentonite mine (Sibelco Group through Sibelco Australia Ltd., 100%)	15 km north of Scone, NSW	12
Do.	Mantuan Downs (Pacific Enviromin Ltd., 100%)	West of Springsure, QLD	100
Do.	Miles open pit bentonite mine (Unimin Australia Ltd., 100%)	350 km west of Brisbane, QLD	100
Kaolin	Axedale Clays open pit kaolin mine (E Clay Pty. Ltd., 100%)	18 km east of Bendigo, VIC	50
Do.	Pittong open pit kaolin mine (Imerys Minerals Australia Pty. Ltd., 100%)	35 km southwest of Ballarat, VIC	110
Do.	Skardon River open pit kaolin mine (Queensland Kaolin Pty. Ltd., 96.6%, and private, 3.4%)	85 km north of Weipa, QLD	150
Coal	Airly coal mine (Banpu Public Co. Ltd. through Centennial Coal Co. Ltd., 100%)	42 km northwest of Lithgow, NSW	1,900
Do.	Angus Place longwall coal mine[4] (Centennial Coal Co. Ltd., 50%, and SK Kores Australia Pty. Ltd., 50%)	16 km northwest of Lithgow, NSW	4,000
Do.	Appin longwall coal mine [Illawarra Coal Holdings Pty. Ltd., operator (South32 Ltd., 100%)]	40 northwest of Wollongong, NSW	8,800
Do.	Ashton open pit and underground coal mine (Yancoal Australia Ltd., 90%, and Itochu Corp., 10%)	14 km northwest of Singleton, NSW	4,000
Do.	Austar underground coal mine [Yancoal Australia Ltd., 100% (Centennial Coal Co. Ltd., 100%)]	65 km west of Newcastle, NSW	2,000
Do.	Baal Bone coal mine [Oakbridge Pty. Ltd., 74.1% (Glencore plc, 100%); Sumitomo Corp., 5%; Toyota Tsusho Mining (Australia) Pty. Ltd., 4.75%; private, 14.44%]	24 km northwest of Lithgow, NSW	2,500
Do.	Baralaba North coal mine (Baralaba Coal Co., 100%)	8 km south of Baralaba, QLD	4,100
Do.	Bengalla open pit coal mine (New Hope Corp. Ltd., 40%; Wesfarmers Ltd., 40%; Mitsui & Co. Ltd., 10%; Taiwan Power Co., 10%)	5 km west of Muswellbrook, NSW	8,600
Do.	Blackwater open pit coal mine (includes South Blackwater) [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	195 km west of Rockhampton, QLD	14,000
Do.	Broadmeadow open pit and underground coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	30 km north of Moranbah, QLD	3,000
Do.	Bulga open pit coal mine [Oakbridge Pty. Ltd., manager (Glencore plc, 68.25%; Nippon Steel Australia Pty. Ltd., 12.5%; Toyota Tsusho Mining (Australia) Pty. Ltd., 4.38%; private, 13.3%)]	16 km southwest of Singleton, NSW	10,000
Do.	Burton open pit coal mine (Peabody Energy Corp., 95%, and Thiess Pty. Ltd., 5%)	150 km southwest of Mackay, QLD	5,800
Do.	Byerwen Mine (Qcoal Pty Ltd., 80%, and JFE Steel Corp., 20%)	20 km west of Glendale, QLD	3,000
Do.	Callide coal mine (Anglo Coal Pty. Ltd., 100%)	120 km southwest of the Port of Gladstone, QLD	10,700
Do.	Caval Ridge open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	160 km west of Mackay, QLD	5,500
Do.	Carborough Downs underground coal mine (Vale SA, 80%; Nippon Steel & Sumitomo Metal Corp. 5%; POSCO Australia Pty. Ltd., 5%; Tata Steel Ltd., 5%; JFE Shoji, 2.5%; JFE Steel, 2.5%)	Bowen basin, QLD	2,500
Do.	Clarence underground coal mine [Banpu Public Co. Ltd. through Centennial Coal Co., 85%, and SK Energy Australia Pty. Ltd., 15%)	10 km east of Lithgow, NSW	2,600
Do.	Clermont coal mine [GS Coal Pty. Ltd. (Glencore plc and Sumitomo Corp.)]	12 km north of Clermont, QLD	12,000
Do.	Commodore open pit coal mine {Roche Mining Pty. Ltd., operator [Intergen (Australia) Pty. Ltd., 100%]}	80 km southwest of Toowoomba, QLD	3,600

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Coal—Continued			
Do.	Cook underground mine[4] (Qcoal Pty. Ltd., 100%)	27 km south of Blackwater, QLD	2,000
Do.	Coppabella open pit coal mine (Macarthur Coal Ltd., 73.3%, and others, 26.7%)	140 km southwest of Mackay, QLD	4,000
Do.	Cumnock No. 1 Colliery mine (Cumnock No. 1 Colliery Pty. Ltd., 100%)	28 km northwest of Singleton, NSW	3,000
Do.	Curragh open pit coal mine (Wesfarmers Ltd., 100%)	70 km east of Emerald, QLD	9,000
Do.	Dartbrook coal mine[4] (Anglo Coal Holdings Australia Ltd., 77.3%)	70 km north of Singleton, NSW	3,750
Do.	Daunia open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	30 km east of Moranbah, QLD	4,500
Do.	Drake Mine (Qcoal Pty Ltd., 100%)	17 km south of Collinsville, QLD	6,000
Do.	Dawson coal complex (includes Moura, Taroom, and Theodore) [Anglo American plc, 51%, and Mitsui & Co. (Australia) Ltd., 49%]	230 km west of Bundaberg, QLD	7,000
Do.	Dendrobium underground coal mine [Dendrobium Coal Pty. Ltd., operator (South32 Ltd., 100%)]	15 km southwest of Wollongong, NSW	5,200
Do.	Donaldson open pit coal mine (Donaldson Coal Pty. Ltd., 100%)	5 km southeast of Maitland, NSW	2,500
Do.	Drayton open pit coal mine [Anglo Coal Holdings Australia Ltd., 88.2%, manager; Mitsui Coal Development Australia Pty. Ltd., 3.8%; Mitsui Mining (Australia) Pty. Ltd., 3%; others, 5%]	35 km northwest of Singleton, NSW	5,000
Do.	Duralie open pit coal mine (Gloucester Coal Ltd., 100%)	110 km north of Newcastle, NSW	2,000
Do.	Elouera underground coal mine (Gujarat NRE Resources NL, 100%)	15 km southwest of Wollongong, NSW	2,000
Do.	Ensham-Yongala open pit coal mine [Idemitsu Kosan Co. Ltd., 85%; J-Power (Australia) Pty. Ltd., 10%; LG International (Australia) Pty. Ltd., 5%]	40 km northeast of Emerald, QLD	9,000
Do.	Ewington II open pit coal mine (Griffin Coal Mining Co. Pty. Ltd., 100%)	8 km east of Collie, WA	1,000
Do.	Foxleigh open pit coal mine [Foxleigh Mining Pty. Ltd., 100% (Realm Resources Ltd., 70%; POSCO Australia Pty. Ltd., 20%; Nippon Steel & Sumitomo Metal Australia Pty. Ltd., 10%)]	Bowen basin, QLD	3,600
Do.	German Creek and German Creek East open pit and underground coal mines [Anglo American plc, 70%, and Mitsui & Co. (Australia) Ltd., 30%]	275 km west-northwest of Rockhampton, QLD	6,000
Do.	Glennies Creek longwall coal mine (CVRD Inco Ltd., 85%; Nippon Steel Australia Pty. Ltd., 5%; POSCO Australia Pty. Ltd., 5%; private, 5%)	12 km north of Singleton, NSW	2,800
Do.	Goonyella Riverside open pit coal mines [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	140 km southwest of Mackay, QLD	19,000
Do.	Gregory Crinum open pit and underground coal mine (Sojitz Corp., 100%)	60 km north of Emerald, QLD	5,500
Do.	Hunter Valley Operations (includes Carrington Chestnut, Howick, Hunter Valley No. 1, Lemington, Riverview open pit coal mines) (Rio Tinto Ltd., 80%)	10 km west and 25 km north of Singleton, NSW	15,000
Do.	Hail Creek open pit coal mine (Rio Tinto Ltd., 82%; Nippon Steel Australia Pty. Ltd., 8%; Marubeni Coal Pty. Ltd., 6.67%; Sumisho Coal Development Pty. Ltd., 3.33%)	100 km west of Mackay, QLD	8,000
Do.	Integra underground mine [HV Coking Coal Pty. Ltd. (Glencore plc, 100%)]	10 km northwest of Singleton, NSW	1,000
Do.	Isaac Plains open pit coal mine[4] (Sumitomo Corp., 50%, and Vale SA, 50%)	7 km southeast of Moranbah, QLD	1,600
Do.	Isaac Plains East open pit coal mine (Sumitomo Corp., 50%, and Vale SA, 50%)	do.	2,000
Do.	Jax Mine (Qcoal Pty Ltd., 100%)	15 km south of Collinsville, QLD	1,800

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Coal—Continued	Jellinbah East open pit coal mine (Queensland Coal Mine Management Pty. Ltd., 70%; Marubeni Coal Pty. Ltd., 15%; Sojitz Australia Ltd., 15%)	90 km east of Emerald, QLD	4,000
Do.	Kestrel underground coal mine (Rio Tinto Ltd., 80%, and Mitsubishi Corp., 20%)	40 km north-northeast of Emerald, QLD	5,500
Do.	Liddell open pit coal mine [Liddell Coal Operations Pty. Ltd. (Glencore plc, 67.5%, and Mitsui Matushima Australia Pty. Ltd., 32.5%)]	25 km northwest of Singleton, NSW	4,000
Do.	Loy Yang open pit coal mine (AGL Energy Ltd., 100%)	165 km east of Melbourne, VIC	21,000
Do.	Mondalong underground coal mine (Centennial Coal Co. Ltd., 100%)	35 km southwest of Newcastle, NSW	4,500
Do.	Moorvale open pit coal mine (Macarthur Coal Ltd., 73.3%; CITIC Resources Australia Pty. Ltd., 14%; Sojitz Australia Ltd., 7%; Nippon Steel Australia Pty. Ltd., 2%)	10 km south of Coppabella, QLD	3,400
Do.	Moolarben Mine [Yancoal Australia Ltd. (Yankuang Energy Group Co. Ltd., 62.26%, and others, 37.74%)]	Ulan, NSW	18,400
Do.	Moranbah North longwall coal mine (Anglo American plc, 88%; Nippon Steel Australia Pty. Ltd., 5%; others, 7%)	150 km southwest of Mackay, QLD	5,800
Do.	Mount Arthur open pit coal mine (BHP Group Ltd., 100%)	5 km southwest of Muswellbrook, NSW	15,000
Do.	Mount Owen open pit coal mine (Glencore plc, 100%)	20 km northwest of Singleton, NSW	7,700
Do.	Mount Thorley open pit coal mine [Yancoal Australia Ltd. (Yanzhou Coal Mining Co., 62.26%; Cinda International Holdings Ltd., 15.89%; other, 21.85%), 80%, and POSCO Australia Pty. Ltd., 20%]	14 km southwest of Singleton, NSW	12,000
Do.	Mount Pleasant Mine (Mach Energy Australia Pty. Ltd., 100%)	3 km south of Muswellbrook, NSW	10,500
Do.	Muja open pit coal mine (The Griffin Coal Mining Co. Pty. Ltd., 100%)	18 km southeast of Collie, WA	2,000
Do.	Muswellbrook No. 2 open pit coal mine (Muswellbrook Coal Co., 100%)	4 km northeast of Muswellbrook, NSW	1,700
Do.	Myuna underground coal mine (Centennial Coal Co. Ltd., 100%)	35 km south of Newcastle, NSW	2,000
Do.	New Acland open pit coal mine (New Hope Corp. Ltd., 100%)	35 km northwest of Toowoomba, QLD	3,750
Do.	Newlands-Collinsville-Abbot Point open pit coal mine (Glencore plc, 55%; Itochu Corp., 35%; Sumitomo Corp., 10%)	130 km west of Mackay, QLD	15,000
Do.	Newstan Colliery longwall coal mine[4] (Banpu Public Co. Ltd., 100%)	30 km southwest of Newcastle, NSW	4,000
Do.	North Goonyella underground coal mine (Peabody Energy Corp., 100%)	40 km north of Moranbah, QLD	3,000
Do.	Norwich Park open pit coal mine[4] [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	85 km north-northeast of Emerald, QLD	5,000
Do.	Oaky Creek longwall and Alliance open pit coal mines (Glencore plc, 55%; Sumitomo Coal Australia Pty. Ltd., 25%; Itochu Corp., 20%)	300 km west-northwest of Rockhampton, QLD	9,500
Do.	Peak Downs open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Development Pty. Ltd., 50%)]	145 km north of Emerald, QLD	9,000
Do.	Poitrel open pit coal mine (Stanmore Resources Ltd., 100%)	Bowen basin, QLD	3,100
Do.	Premier open pit coal mine (Wesfarmers Premier Coal Ltd., 100%)	10 km southeast of Collie, WA	4,000
Do.	Ravensworth-Narama open pit coal mine (includes Ravensworth East) (Glencore plc, 90%, and Itochu Corp., 10%)	20 km northwest of Singleton, NSW	3,500
Do.	Rixs Creek open pit coal mine (Bloomfield Colliers Pty. Ltd., 100%)	5 km northwest of Singleton, NSW	2,000
Do.	Rolleston open pit coal mine (Glencore plc, 75%; Itochu Corp., 12.5%; Sumitomo Corp., 12.5%)	90 km south-southeast of Emerald, QLD	8,000
Do.	Saraji open pit coal mine [BHP Mitsubishi Alliance, manager (BHP Group Ltd., 50%, and Mitsubishi Corp., 50%)]	125 km north of Emerald, QLD	6,500
Do.	Sonoma Mine (Qcoal Pty. Ltd., 85.5%; JFE Steel Corp., 9.5%; China Steel Corp., 5%)	6 km south of Collinsville, QLD	4,000
Do.	South Walker Creek open pit and underground coal mine [BHP Group Ltd., 80%, and Mitsui & Co. (Australia) Ltd., 20%]	90 km southwest of Mackay, QLD	5,300

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Coal—Continued		Springvale underground coal mine (Banpu Public Co. Ltd. through Centennial Coal Co. Ltd., 50%, and SK Kores Australia Pty. Ltd., 50%)	16 km northwest of Lithgow, NSW	4,500
Do.		Tahmoor longwall coal mine (includes Tahmoor North and Bargo) [Austral Coal Ltd., operator (Glencore plc, 100%)]	70 km southwest of Sydney, NSW	2,500
Do.		Tarong-Meandu open pit coal mine (Rio Tinto Ltd., 100%)	85 km north of Toowoomba, QLD	7,000
Do.		Ulan underground coal mine (Glencore plc, 90%, and Mitsubishi Corp., 10%)	45 km northwest of Mudgee, NSW	5,000
Do.		United Collieries underground coal mine (Glencore plc, 95%, and private, 5%)	15 km west of Singleton, NSW	3,000
Do.		Wambo open pit and underground coal mine (Peabody Energy Corp., 100%)	30 km from Singleton, NSW	6,000
Do.		Warkworth coal mine [Yancoal Australia Ltd. (Yanzhou Coal Mining Co., 62.26%; Cinda International Holdings Ltd., 15.89%; other, 21.85%), 80%, and POSCO Australia Pty. Ltd., 20%]	15 km southwest of Singleton, NSW	1,300
Do.		West Cliff longwall coal mine (South32 Ltd., 100%)	43 km northwest of Wollongong, NSW	2,300
Do.		West Wallsend longwall coal mine (Glencore plc, 70%; Marubeni Coal Pty. Ltd., 17%; private, 13%)	25 km southwest of Newcastle, NSW	2,500
Do.		Yallourn open pit lignite mine (EnergyAustralia Pty. Ltd., 100%)	140 km southeast of Melbourne, VIC	14,000
Cobalt, mine production, Co content	metric tons	Murrin Murrin open pit nickel-cobalt mine (Minara Resources Ltd., 60%, and Glencore plc, 40%)	60 km east of Leonora, WA	2,000
Do.	do.	Radio Hill underground nickel-cobalt mine (Fox Resources Ltd., 100%)	35 km south of Karratha, WA	200
Do.	do.	Ravensthorpe open pit mine[4] (First Quantum Minerals Ltd., 100%)	155 km west of Esperance, WA	1,400
Do.	do.	Savannah underground mine (Panoramic Resources Ltd., 100%)	120 km north of Halls Creek, WA	250
Copper:				
Mine production, Cu content		Boddington open pit and underground gold mine (Newmont Mining Corp., 100%)	130 km southeast of Perth, WA	35
Do.		Cadia Valley mining complex (includes Cadia East, Cadia Hill, and Ridgeway) (Newcrest Mining Ltd., 100%)	25 km south-southwest of Orange, NSW	90
Do.		Capricorn Copper Mine (Capricorn Copper Pty. Ltd., 100%)	125 km northwest of Mount Isa, QLD	30
Do.		Carrapateena Mine (Oz Mineral Ltd.)	160 km north of Port Augusta, SA	65
Do.		Cobar underground copper mine (Glencore plc, 100%)	12 km northwest of Cobar, NSW	30
Do.		DeGrussa underground gold-copper mine (Sandfire Resources NL, 100%)	150 km north of Meekatharra, WA	300
Do.		Eloise underground copper mine (FMR Investments Pty. Ltd., 100%)	60 km southeast of Cloncurry, QLD	70
Do.		Ernest Henry open pit and underground copper-gold mine (Glencore plc, 100%)	35 km northeast of Cloncurry, QLD	115
Do.		Golden Grove underground zinc-copper mine [EMR Golden Grove Pty. Ltd. (EMR Capital Pty. Ltd., 100%)]	225 km east of Geraldton, WA	20
Do.		Lady Annie copper (solvent extraction-electrowinning) mine (CST Mining Group Ltd., 100%)	100 km north-northwest of Mount Isa, QLD	19
Do.		Leichhardt copper mine[4] (Cape Lambert Resources Ltd., 100%)	110 km northwest of Cloncurry, QLD	10
Do.		Mount Gordon open pit copper (solvent extraction-electrowinning) mine (Aditya Birla Minerals Ltd., 100%)	120 km north of Mount Isa, QLD	50
Do.		Mount Isa underground copper-lead-zinc-silver mine (includes Enterprise, George Fisher, and Lady Loretta Mines) (Glencore plc, 100%)	Mount Isa, QLD	190
Do.		Mount Lyell underground copper-gold mine [Copper Mines of Tasmania Pty. Ltd. (Vedanta Ltd. 100%)]	2 km northeast of Queenstown, TAS	35
Do.		Nifty open pit copper (solvent extraction-electrowinning) mine (Aditya Birla Minerals Ltd., 100%)	200 km southeast of Marble Bar, WA	25
Do.		Northparkes open pit and underground copper-gold mine (China Molybdenum Co. Ltd., 80%; Sumitomo Metal Mining Oceania Pty. Ltd., 13.3%; SC Mineral Resources Pty. Ltd., 6.7%)	30 km northwest of Parkes, NSW	90

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Copper:—Continued				
Mine production, Cu content—Continued		Olympic Dam underground copper-silver-gold-uranium mine [BHP Olympic Dam Corp. Pty. Ltd., operator (BHP Group Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	235
Do.		Osborne underground copper-gold mine (Ivanhoe Australia Ltd., 100%)	120 km northeast of Boulia, QLD	22
Do.		Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance) (New Gold Inc., 100%)	8 km south of Cobar, NSW	3
Do.		Prominent Hill open pit and underground copper-gold mine (OZ Minerals Ltd., 100%)	650 km northwest of Adelaide, SA	140
Do.		Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	2
Do.		Savannah underground mine (Panoramic Resources Ltd., 100%)	120 km north of Halls Creek, WA	3
Do.		Telfer copper-gold mine (Newcrest Mining Ltd., 100%)	400 km east-southeast of Port Hedland, WA	NA
Do.		Tritton underground mine (Straits Resources Ltd., 100%)	Nyngan, NSW	30
Smelter		Mount Isa copper smelter (Glencore plc, 100%)	Mount Isa, QLD	250
Do.		Olympic Dam copper smelter [Olympic Dam Operations Pty. Ltd., operator (BHP Group Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	70
Refinery		Olympic Dam copper refinery [Olympic Dam Operations Pty. Ltd., operator (BHP Group Ltd., 100%)]	do.	235
Do.		Townsville copper refinery (Glencore plc, 100%)	Townsville, QLD	300
Diamond	thousand carats	Argyle diamond mine [Argyle Diamonds Ltd., operator (Rio Tinto Ltd., 100%)]	120 km southwest of Kununurra, WA	20,000
Do.	do.	Ellendale Mine[4] (Gibb River Diamonds Ltd., 100%)	130 km east-southeast of Derby, WA	700
Do.	do.	Merlin diamond mine[4] (Merlin Diamonds Ltd., 100%)	100 km south of Borroloola, NT	100
Diatomite		Barraba open pit diatomite mine (Australia Diatomite Mining Pty. Ltd., 100%)	85 km north-northwest of Tamworth, NSW	25
Do.		Mount Sylvia Mine (Mount Sylvia Diatomite Pty. Ltd.)	35 km southeast of Toowoomba, QLD	NA
Do.		Conjuboy Mine (Greenvale Silicon Pty. Ltd.)	45 km northwest of Greenvale, QLD	NA
Feldspar		Broken Hill open pit feldspar mine (includes Bakers, Lady Beryl, and Spar Ridge) (Unimin Australia Ltd., 100%)	42 km southwest of Broken Hill, NSW	15
Garnet		Port Gregory open pit industrial garnet mine (GMA Garnet Pty. Ltd., 100%)	100 km north of Geraldton, WA	400
Gemstone, opal		Many small producers	Andamooka and Coober Pedy areas, SA; Lightning Ridge area, NSW	NA
Gold:				
Mine production, Au content	kilograms	Agnew and Lawlers open pit and underground gold mine (Gold Fields Ltd., 100%)	23 km west of Leinster, WA	8,600
Do.	do.	Boddington open pit and underground gold mine (Newmont Mining Corp., 100%)	130 km southeast of Perth, WA	21,600
Do.	do.	Bronzewing underground gold mine (includes Cockburn, Corboys, Mount Joel, Mount McClure, and Venus, Success Mines) (Audax Resources Ltd., 100%)	65 km northeast of Leinster, WA	9,000
Do.	do.	Burnside open pit mines (includes Union Reefs, Brocks Creek, North Point, Princess Louise, Rising Tide, Zapopan, Fountain Head) (Crocodile Gold Corp., 100%)	Pine Creek, NT	6,500
Do.	do.	Cadia Valley mining complex (includes Cadia East, Cadia Hill, and Ridgeway Mines) (Newcrest Mining Ltd., 100%)	25 km south-southwest of Orange, NSW	18,600
Do.	do.	Doolgunna open pit and underground gold-copper mine (includes DeGrussa) (Sandfire Resources NL, 100%)	140 km north of Meekatharra, WA	270
Do.	do.	Ernest Henry open pit copper-gold mine (Glencore plc, 100%)	35 km northeast of Cloncurry, QLD	3,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Gold:—Continued				
Mine production, Au content—Continued	kilograms	Fosterville open pit mine (Agnico Eagle Mines Ltd., 100%)	130 km north of Melbourne, VIC	15,900
Do.	do.	Garden Well gold mine (Regis Resources Ltd., 100%)	350 km northeast of Kalgoorlie, WA	5,200
Do.	do.	Granny Smith open pit gold mine (includes Wallaby) (Gold Fields Ltd., 100%)	20 km south of Laverton, WA	8,700
Do.	do.	Gruyere Mine (Gold Fields Ltd., 50%, and Gold Roads Resources Ltd., 50%)	1,000 km northeast of Perth, WA	9,000
Do.	do.	Gwalia underground gold mine (St Barbara Ltd., 100%)	3 km south of Leonora, WA	2,600
Do.	do.	Henty underground gold-silver mine (Unity Mining Ltd., 100%)	30 km north of Queenstown, TAS	3,700
Do.	do.	Hillgrove Mine (Red River Resources Ltd., 100%)	Hillgrove, NSW	120
Do.	do.	Jundee-Nimary open pit and underground gold mine (Newmont Mining Corp., 100%)	45 km northeast of Wiluna, WA	12,000
Do.	do.	Kalgoorlie open pit and underground gold mine [Kalgoorlie Consolidated Gold Mine Pty. Ltd., operator (Ardea Resources Ltd., 100%)]	Southeast corner of the Kalgoorlie Boulder Township, WA	20,000
Do.	do.	Kalgoorlie Super Pit Mine (Northern Star Resources Ltd., 100%)	Fimiston, WA	15,200
Do.	do.	Kanowna Belle underground gold mine (Barrick Gold Corp., 100%)	18 km northeast of Kalgoorlie, WA	7,000
Do.	do.	Karlawinda gold mine (Capricorn Metals Ltd., 100%)	65 km southwest of Newman, WA	960
Do.	do.	Moolart Well gold mine (Regis Resources Ltd., 100%)	100 km north of Laverton, WA	3,000
Do.	do.	Mount Lyell underground copper-gold mine [Copper Mines of Tasmania Pty. Ltd. (Vedanta Ltd. 100%)]	2 km northeast of Queenstown, TAS	1,000
Do.	do.	Mount Magnet open pit and underground gold mine (includes Hill 50 and Star) (Ramelins Resources Ltd., 100%)	2 km from Mount Magnet, WA	8,500
Do.	do.	Mount Morgan Mine (Dacian Gold Ltd., 100%)	25 km west of Laverton, WA	4,500
Do.	do.	Norseman underground gold mine (Norseman Gold Plc, 100%)	Norseman, WA	3,700
Do.	do.	Northparkes open pit and underground copper-gold mine (China Molybdenum Co. Ltd., 80%, and Sumitomo Metal Mining Oceania Pty. Ltd., 20%)	30 km north of Parkes, NSW	1,550
Do.	do.	Osborne underground copper-gold mine (Ivanhoe Australia Ltd., 100%)	120 km northeast of Boulia, QLD	1,000
Do.	do.	Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Group Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	1,500
Do.	do.	Paddington open pit and underground gold operation [Norton Gold Fields Ltd. (Zijin Mining Group Co. Ltd., 100%)]	35 km north of Kalgoorlie, WA	5,000
Do.	do.	Pajingo underground gold mine (includes Vera-Nancy) (Evolution Mining Ltd., 100%)	60 km south-southeast of Charters Towers, QLD	6,400
Do.	do.	Plutonic open pit and underground gold mine (Barrick Gold Corp., 100%	180 km northeast of Meekatharra, WA	8,000
Do.	do.	Prominent Hill open pit copper-gold mine (OZ Minerals Ltd., 100%)	650 km northwest of Adelaide, SA	2,200
Do.	do.	Ravenswood open pit mine (includes Nolans, Sarsfield, and Mount Wright) (Resolute Mining Ltd., 100%)	100 km south of Townsville, QLD	3,000
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	1,000
Do.	do.	Saint Ives open pit and underground gold mine (Gold Fields Ltd., 100%)	75 km south-southeast of Kalgoorlie, WA	15,000
Do.	do.	Selwyn underground copper-gold mine (Barrick Gold Corp., 100%)	160 km southeast of Mount Isa, QLD	700
Do.	do.	Stawell underground gold mine (Perseverance Corp. Ltd., 100%)	250 km west of Melbourne, VIC	3,000
Do.	do.	Sunrise Dam open pit gold mine (includes Cleo Mine) (AngloGold Ashanti Ltd., 100%)	55 km south of Laverton, WA	15,000
Do.	do.	Tanami open pit gold mine (Newmont Gold Corp., 100%)	650 km northwest of Alice Springs, NT	15,100
Do.	do.	Telfer copper-gold mine (Newcrest Mining Ltd., 100%)	400 km east-southeast of Port Hedland, WA	15,000
Do.	do.	Trident gold mine (Alacer Gold Corp., 100%)	Higginsville, WA	5,000
Do.	do.	Tropicana gold mine (AngloGold Ashanti Australia Pty. Ltd., 70%, and Independence Group NL, 30%)	330 km northeast of Kalgoorlie, WA	11,800
Do.	do.	Wiluna open pit and underground gold mine (Apex Minerals NL, 100%)	7 km south of Wiluna, WA	3,300

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Gold:—Continued				
Smelter	kilograms	Gidji Roaster gold smelter (Kalgoorlie Consolidated Gold Mines Pty. Ltd., 100%)	Kalgoorlie, WA	24,300
Refinery	do.	Perth Mint Refinery [Gold Corp., operator (Government of Western Australia, 100%)]	Newburn, WA	400,000
Gypsum		Dredging of gypsum from surface of Lake MacLeod (Rio Tinto Ltd., 68.4%)	Lake MacLeod, WA	900
Do.		Lake MacDonnell open pit gypsum mine (Gypsum Resources Australia Pty. Ltd., 100%)	Point Thevenard, SA	1,400
Iron ore, mine		Area C Mine (BHP Group Ltd., 85%; ITOCHU Minerals & Energy of Australia Pty Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%)	180 km east of Port Hedland, Pilbara region, WA	42,000
Do.		Channar Mine {Channar Joint Mining Venture [Hamersley Iron Pty. Ltd., 60% (Rio Tinto Ltd., 100%), and China Iron and Steel Industry & Trade Group Corp. (SINOSTEEL) (a China state-owned company), 40%]}	70 km south of Tom Price, WA	10,600
Do.		Cloudbreak iron ore mine (includes Chichester Range, Christmas Creek, WhiteKnight, Mount Lewin, Mount Nicholas, and Flinders) (Fortescue Metals Group Ltd., 100%)	Chichester Ranges, East Pilbara, WA	55,000
Do.		Eastern Range open pit iron ore mine {Bao-HI Ranges Joint Venture, 100% [Hamersley Iron Pty. Ltd., 54% (Rio Tinto Ltd., 100%), and Shanghai Baosteel Group Corp., 46%]}	10 km east of Paraburdoo, WA	10,000
Do.		Extension Hill/Iron Hill open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	85 km of Perenjori, WA	3,200
Do.		Hamersley operations (includes Brockman 2, Brockman 4, Gudai-Darri, Marandoo, Mount Tom Price, Nammuldi, Paraburdoo, Silvergrass, Western Turner Syncline, and Yandicoogina open pit iron ore mines) [Hamersley Iron Pty. Ltd. (Rio Tinto Ltd., 100%)]	30 to 85 km northeast, northwest, and south of Tom Price, WA	200,000
Do.		Hope Downs 1 Mine [Hope Downs Iron Ore Pty. Ltd. (Hancock Prospecting Pty. Ltd., 100%), 50%, and Rio Tinto Ltd., 50%]	75 km northwest of Newman, Pilbara region, WA	49,000
Do.		Hope Downs 4 Mine [Hope Downs Iron Ore Pty. Ltd. (Hancock Prospecting Pty. Ltd., 100%), 50%, and Rio Tinto Ltd., 50%]	Pilbara region, WA	15,000
Do.		Jimblebar open pit iron ore mine (Includes ore from Wheelarra JV) [BHP Iron Ore (Jimblebar) Pty. Ltd. (BHP Group Ltd., 85%; ITOCHU Minerals and Energy of Australia, 8%; Mitsui Iron Ore Exploration and Mining Pty. Ltd., 7%)]	40 km east of Newman, WA	20,000
Do.		Karara open pit iron ore mine (Anshan Iron and Steel Group Corp., 50%, and Gindalbie Metals Ltd., 50%)	110 km south of Yalgoo, WA	8,000
Do.		Koolan Island open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	140 north of Derby, WA	4,000
Do.		Koolyanobbing Central open pit iron ore mine (Portman Ltd., 100%)	50 km north-northeast of Southern Cross, WA	6,000
Do.		Mount Gould open pit iron ore mine (Unimin Australia Ltd., 100%)	160 km west of Meekatharra, WA	6,000
Do.		Mount Newman open pit iron ore mine (BHP Group Ltd., 85%; Mitsui-ITOCHU Iron Iron Pty. Ltd. 10%; ITOCHU Minerals and Energy of Australia, 5%)	Within 13 km of Newman, Pilbara region, WA	42,000
Do.		Pannawonica (includes Mesa A and J) open pit iron ore mine [Robe River Iron Associates, manager (Rio Tinto Ltd., 53%; Mitsui & Co., 33%; Nippon Steel & Sumitomo Metal Corp., 14%)]	130 km south-southwest of Dampier, Pilbara region, WA	25,500
Do.		Roy Hill Mine (Hancock Prospecting Pty. Ltd., 70%; Marubeni Corp., 15%; POSCO Australia Pty. Ltd., 12.5%; China Steel Corp., 2.5%)	340 km southeast of Port Hedland, WA	55,000
Do.		Sino Iron iron ore mine (CITIC Pacific Mining Management Pty. Ltd., 80%, and China Metallurgical Group Corp., 20%)	Cape Preston, 100 km southwest of Karratha, Pilbara region, WA	2,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Iron ore, mine—Continued	Savage River open pit iron ore mine (Grange Resources Ltd., 100%)	100 km southwest of Burnie, TAS	2,400
Do.	Tallering Peak open pit iron ore mine (Mount Gibson Iron Ltd., 100%)	120 northeast of Geraldton, WA	3,000
Do.	West Angelas open pit iron ore mine [Robe River Iron Associates, manager (Rio Tinto Ltd., 53%; Mitsui & Co. Ltd., 33%; Nippon Steel & Sumitomo Metal Corp., 14%)]	110 km west of Newman, Pilbara region, WA	34,600
Do.	Whyalla open pit iron ore mines (Arrium Steel Ltd., 100%)	270 km northwest of Adelaide, SA	2,600
Do.	Yandi open pit iron ore mine (BHP Group Ltd., 85%, manager; ITOCHU Minerals & Energy of Australia Pty. Ltd., 8%; Mitsui Iron Ore Corp. Pty. Ltd., 7%)	92 km north of Newman, Pilbara region, WA	47,000
Iron and steel:			
Pig iron	Hismelt pig iron plant [Hismelt Corp. Pty. Ltd. (Rio Tinto Ltd., 60%; Nucor Corp., 25%; Mitsubishi Corp., 10%; Shougang Corp., 5%)]	Kwinana, WA	800
Steel	Laverton Steel Mill (Arrium Steel Ltd., 100%)	Laverton, Melbourne, VIC	700
Do.	Port Kembla steelworks (Blue Scope Steel Ltd., 100%)	Port Kembla, NSW	2,600
Do.	Smorgon Steel Group Ltd.	Waratch, NSW	285
Do.	Sydney Steel Mill (Arrium Steel Ltd., 100%)	Sydney, NSW	600
Do.	Whyalla steelworks (Arrium Steel Ltd., 100%)	Whyalla, SA	1,200
Lead:			
Mine production, Pb content	Angas zinc mine (Terramin Australia Ltd., 100%)	2 km from Strathalbyn, SA	10
Do.	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	90
Do.	Cannington underground silver-lead-zinc mine (South32 Ltd., 100%)	85 km southwest of McKinlay, QLD	265
Do.	Century open pit zinc-silver-lead mine (MMG Ltd., 100%)	250 km north of Mount Isa, QLD	90
Do.	Dugald River Mine (MMG Ltd., 100%)	65 km northwest of Cloncurry, QLD	25
Do.	Endeavor underground zinc-silver-lead mine (CBH Resources Ltd., 100%)	40 km northwest of Cobar, NSW	45
Do.	Hellyer underground zinc-lead-copper-silver mine (NQ Minerals Plc., 100%)	80 km south-southwest of Burnie, TAS	25
Do.	McArthur River open pit mine [McArthur River Mining Pty. Ltd., operator (Glencore plc, 100%)]	60 km southwest of Borroloola, NT	170
Do.	Mount Isa underground copper-lead-zinc-silver mine (also includes Enterprise, George Fisher, Hilton, and Lady Loretta Mines) (Glencore plc, 100%)	Mount Isa, QLD	150
Do.	Rosebery underground zinc-lead-silver-copper-gold mine [MMG Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	25
Smelter	Mount Isa smelter (Glencore plc, 100%)	Mount Isa, QLD	240
Do.	Port Pirie smelter (Nyrstar NV, 100%)	5 km north of Queenstown, TAS	235
Lithium:			
Direct shipping ore	Wodgina Mine[4] [MARBL Lithium Joint Venture (Albemarle Corp., 60%, and Mineral Resources Ltd., 40%)]	100 km south of Port Hedland, WA	3,500
Spodumene, concentrate	Altura lithium mine (Pilbara Minerals Ltd., 100%)	90 km south of Port Hedland, WA	220
Do.	Bald Hill lithium and tantalum mine[4] (Alita Resources Ltd., 100%)	50 km southeast of Kambalda, WA	150
Do.	Greenbushes open pit and underground tantalite-spodumene mine [Talison Lithium Australia Pty. Ltd., operator (Albemarle Corp., 49%; Tianqi Lithium Corp., 26.01%; IGO Ltd., 24.99%)]	70 km southeast of Bunbury, WA	740
Do.	Mount Cattlin spodumene mine (Galaxy Resources Ltd., 100%)	2 km north of Ravensthorpe, WA	180
Do.	Mount Marion spodumene mine [Reed Industrial Minerals Pty. Ltd. (Mineral Resources Ltd., 50%, and Jiangxi Ganfeng Lithium Co. Ltd., 50%)]	40 km southwest of Kalgoorlie, WA	500
Do.	Pilgangoora lithium-tantalum mine (Pilbara Minerals Ltd., 100%)	120 km south of Port Hedland, WA	330

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Magnesite		Kunwarara open pit magnesite mine (includes Marlborough) [Queensland Magnesia Pty. Ltd. (Sibelco Group, 100%)]	70 km northwest of Rockhampton, QLD	NA
Do.		Salt Creek open pit mine (Agricola Mining Pty. Ltd., 100%)	70 km southeast of Meningie, SA	NA
Do.		Thuddungra Mine (Orind Australia Pty. Ltd., 100%)	38 km northwest of Young, NSW	80
Manganese:				
Mine production, concentrate		Bootu Creek open pit manganese mine (OM Holding Ltd., 100%)	110 km north of Tennant Creek, NT	600
Do.		Groote Eylandt open pit manganese mine [Groote Eylandt Mining Co., operator (BHP Group Ltd., 60%, and Anglo American Corp., 40%)]	Groote Eylandt, NT	3,100
Do.		Woodie Woodie open pit manganese mine (includes Bells and East Pilbara leases) [Pilbara Manganese Pty. Ltd., operator (Consolidated Minerals Ltd., 100%)]	400 km southeast of Port Hedland, WA	1,000
Alloys		Bell Bay Smelter [Tasmanian Electro Metallurgical Co. Pty. Ltd., operator (BHP Group Ltd., 100%)]	Bell Bay, TAS	250
Natural gas:				
Gas	million cubic meters per day	Gorgon project (Chevron Corp., 47.3%; ExxonMobil Corp., 25%; Royal Dutch Shell plc, 25%; Osaka Gas Ltd., 1.25%; Tokyo Gas Co. Ltd., 1%; JERA Co. Inc., 0.417%)	Barrow Island, WA	64
Do.	do.	Ichthys Project (INPEX, 66.245%; Total S.A., 26%; CPC Corp., 2.625%; Tokyo Gas Co. Ltd., 1.515%; Osaka Gas Co. Ltd., 1.2%; Kansai Electric Power Co. Inc., 1.2%; JERA Co. Inc., 0.735%; Toho Gas Co. Ltd., 0.420%)	South of Darwin, NT	33
Do.	do.	North West Shelf gas operations {Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]}	130 km offshore Dampier, WA	20
Do.	do.	Pluto and Xena fields {Woodside Petroleum Pty. Ltd., manager, 90% [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]; Kansai Electric Power Co., 5%; Tokyo Gas Co. Ltd., 5%}	Burrup Peninsula, WA	NA
Liquefied natural gas	million metric tons	Australia Pacific LNG facility (ConocoPhillips Co., 37.5%; Origin Energy Ltd., 37.5%; Sinopec Corp., 25%)	Curtis Island, QLD	9
Do.	do.	Darwin LNG facility [ConocoPhillips Co., 56.9%; Santos Ltd., 11.5%; INPEX, 11.4%; Eni S.p.A., 11%; JERA Co. Inc. and Tokyo Gas Co. Ltd., 9.2% (combined)]	Darwin, NT	4
Do.	do.	Gladstone LNG facility (Santos Ltd., 30%; PETRONAS, 27.5%; Total SA, 27.5%; Korea Gas Corp., 15%)	Bowen basin, QLD	8
Do.	do.	Gorgon project (Chevron Corp., 47.3%; ExxonMobil Corp., 25%; Royal Dutch Shell plc, 25%; Osaka Gas Ltd., 1.25%; Tokyo Gas Co. Ltd., 1%; JERA Co. Inc., 0.417%)	Barrow Island, WA	16
Do.	do.	Ichthys project (INPEX, 66.245%; Total S.A., 26%; CPC Corp., 2.625%; Tokyo Gas Co. Ltd., 1.515%; Osaka Gas Co. Ltd., 1.2%; Kansai Electric Power Co. Inc., 1.2%; JERA Co. Inc., 0.735%; Toho Gas Co. Ltd., 0.420%)	South of Darwin, NT	9
Do.	do.	North West Shelf project{Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]}	Burrup Peninsula, WA	17

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Natural gas:—Continued				
Liquefied natural gas—Continued	million metric tons	Pluto LNG {Woodside Petroleum Pty. Ltd., manager, 90% [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]; Kansai Electric Power Co., 5%; Tokyo Gas Co. Ltd., 5%}	Burrup Peninsula, WA	5
Do.	do.	Prelude Floating LNG platform (Royal Dutch Shell plc, 67.5%; INPEX, 17.5%; Korea Gas Corp., 10%; CPC Corp., 5%)	Browse Basin, NT	4
Do.	do.	Queensland Curtis LNG (Royal Dutch Shell plc, 100%)	Curtis Island, QLD	9
Do.	do.	Wheatstone project [Chevron Corp., 64.14%; Kuwait Foreign Petroleum Exploration Co. (KUFPEC), 13.4%; Woodside Petroleum Ltd., 13%; PE Wheatstone Pty. Ltd., 8%; Kyushu Electric Power Co., 1.46%]	12 km west of Onslow, WA	9
Nickel:				
Mine production, Ni content		Avebury nickel mine[4] (includes Bison, North Avebury, Saxon, and West Viking) (Hartree Mineral LLC, 100%)	Near Zeehan, TAS	7
Do.		Beta Hunt nickel-gold mine (includes Beta Hunt, and East Alpha deposits) [Salt Lake Mining Pty. Ltd. (Royal Nickel Corp., 100%)]	60 km south of Kalgoorlie, WA	3
Do.		Black Swan underground nickel mine[4] (includes Silver Swan) (Poseidon Nickel Ltd., 100%)	53 km northeast of Kalgoorlie, WA	10
Do.		Forrestania project (includes Fly Fox underground nickel mine and Spotted Quoll open pit nickel mine) (Western Areas Ltd., 100%)	100 km north of Ravensthorpe, WA	25
Do.		Lake Johnston underground nickel mine[4] (includes Maggie Hays, Maggie Hays Lake, and Emily Ann) (Poseidon Nickel Ltd., 100%)	120 km west of Norseman, WA	12
Do.		Lanfranchi underground mine[4] (includes Deacon, Schmitz, Tramway, and Winner) (Black Mountain Metals LLC, 100%)	42 km south of Kambalda, WA	10
Do.		Leinster nickel operation (includes Cliffs, Leinster, and Venus Mines, and Leinster concentrator) (BHP Group Ltd., 100%)	10 km north of Leinster, WA	44
Do.		Long underground mine[4] (Mincor Resources NL, 100%)	Near Kambalda East, WA	10
Do.		Miitel underground nickel mine[4] (Mincor Resources NL, 100%)	do.	5
Do.		Mount Keith nickel operation (includes Mount Keith and Yakabindie Mines, and Mount Keith concentrator) (BHP Group Ltd., 100%)	70 km south-southeast of Wiluna, WA	40
Do.		Murrin Murrin open pit nickel-cobalt mine [Minara Resources Ltd. (Glencore plc, 100%)]	60 km east of Leonora, WA	40
Do.		Odysseus nickel mine[4] (Western Areas Ltd., 100%)	50 km north of Leinster, WA	13
Do.		Radio Hill underground nickel-cobalt mine (Fox Resources Ltd., 100%)	35 km south of Karratha, WA	4
Do.		Ravensthorpe open pit mine (First Quantum Minerals Ltd., 70%, and POSCO Australia Pty. Ltd., 30%)	Ravensthorpe, WA	17
Do.		Savannah underground mine (Panoramic Resources Ltd., 100%)	120 km north of Halls Creek, WA	8
Smelter		Kalgoorlie nickel smelter (BHP Group Ltd., 100%)	Kalgoorlie, WA	110
Refinery		Kwinana nickel refinery (BHP Group Ltd., 100%)	Kwinana, WA	83
Do.		Murrin Murrin nickel refinery [Minara Resources Ltd. (Glencore plc, 100%)]	Murrin Murrin, WA	45
Petroleum:				
Condensate	thousand 42-gallon barrels per day	Gorgon project (Chevron Corp., 47.3%; ExxonMobil Corp., 25%; Royal Dutch Shell plc, 25%; Osaka Gas Ltd., 1.25%; Tokyo Gas Co. Ltd., 1%; JERA Co. Inc., 0.417%)	Barrow Island, WA	6
Do.	do.	North West Shelf gas operations {Woodside Petroleum Pty. Ltd., manager [BHP Petroleum Pty. Ltd., BP Australia Holdings Ltd., Chevron Asiatic Ltd., Japan Australia LNG (MIMI) Pty. Ltd., Shell Development (Australia) Pty. Ltd., and Woodside Petroleum Ltd., 16.67% each]}	130 km offshore Dampier, WA	60

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Petroleum:—Continued				
Condensate—Continued	thousand 42-gallon barrels per day	Prelude Floating LNG platform (Royal Dutch Shell plc, 67.5%; INPEX, 17.5%; Korea Gas Corp., 10%; CPC Corp., 5%)	Browse Basin, NT	NA
Refinery	do.	Altona Refinery (ExxonMobil Corp., 100%)	13 km southeast of Melbourne, VIC	120
Do.	do.	Bulwer Island Refinery [BP Amoco Refinery (Bulwer Island) Pty. Ltd., 100%]	Bulwer Island, QLD	69
Do.	do.	Geelong Refinery [Shell Refining (Australia) Pty. Ltd., 100%]	Geelong, VIC	110
Do.	do.	Kurnell Refinery (Caltex Australia Ltd., 100%)	Kurnell, NSW	114
Do.	do.	Kwinana Refinery [BP Amoco Refinery (Kwinana) Pty. Ltd., 100%]	Kwinana, WA	138
Do.	do.	Lytton Refinery (Caltex Australia Ltd., 100%)	Lytton, QLD	106
Phosphate rock		Phosphate Hill-Duchess open pit phosphate mine (Incitec Pivot Ltd., 100%)	140 km northwest of Mount Isa, QLD	2,200
Rare earths, Rare-earth oxide equivalent	metric tons	Mount Weld Mine (Lynas Corp. Ltd., 100%)	Mount Weld, WA	21,000
Salt		Dampier Salt solar evaporation salt pans (Rio Tinto Ltd., 68%; Marubeni Corp., 22%; Sojitz Corp., 10%)	Near Dampier, WA	4,000
Do.		Lake MacLeod solar salt and gypsum evaporation pans (Rio Tinto Ltd., 68%; Marubeni Corp., 22%; Sojitz Corp., 10%)	65 km north of Carnarvon, WA	900
Do.		Port Hedland solar salt fields (Rio Tinto Ltd., 68.4%)	Port Hedland, WA	3,000
Silica		Kemerton silica sands dredge [Kemerton Silica Sand Pty. Ltd. (Touchu Corp., 67%, and Toyota Tsusho Corp., 33%)]	35 km northeast of Bunbury, WA	450
Silver:				
Mine production, Ag content	kilograms	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	81,200
Do.	do.	Cannington underground silver-lead-zinc mine (BHP Group Ltd., 100%)	85 km southwest of McKinlay, QLD	700,000
Do.	do.	Century open pit zinc-silver-lead mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	250 km north of Mount Isa, QLD	3,000
Do.	do.	Dugald River Mine (MMG Ltd., 100%)	65 km northwest of Cloncurry, QLD	38,000
Do.	do.	Endeavor underground zinc-silver-lead mine (CBH Resources Ltd., 100%)	40 km northwest of Cobar, NSW	35,000
Do.	do.	Hellyer underground zinc-lead-silver mine (NQ Minerals plc., 100%)	80 km south-southwest of Burnie, TAS	60,000
Do.	do.	Henty underground gold-silver mine (Barrick Gold Ltd., 100%)	30 km north of Queenstown, TAS	1,100
Do.	do.	Mount Isa underground copper-lead-zinc-silver mines (also includes Enterprise, George Fisher, Hilton, and Lady Loretta Mines) (Glencore plc, 100%)	Mount Isa, QLD	375,000
Do.	do.	Olympic Dam underground copper-silver-gold-uranium mine [Olympic Dam Operations Pty. Ltd., operator (BHP Group Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	27,000
Do.	do.	Peak underground gold-zinc-lead-copper-silver underground mine (includes New Cobar, New Occidental, and Perseverance) (GoldCorp Inc., 100%)	8 km south of Cobar, NSW	6,000
Do.	do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	35,000
Smelter	do.	Port Pirie smelter (Nyrstar NV, 100%)	Port Pirie, SA	450,000
Refinery	do.	Perth Refinery [AGR Management Services Ltd. (Australian Gold Alliance Pty. Ltd., 40%; Western Australian Mint, 40%; Johnson Matthey (Australian) Ltd., 20%]	Newburn, WA	NA

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Stone, dolomite		Ardrossan metallurgical dolomite quarry (OneSteel Ltd., 100%)	Northern York Peninsula, SA	650
Do.		Cookes Hill Mine (includes Nickol River and Warrawoona) (Haoma Mining NL, 100%)	Near Port Hedland, WA	400
Talc		Three Springs open pit talc mine (Imerys SA, 100%)	330 km north of Perth, WA	150
Tantalum, tantalite, mine production, Ta_2O_5 content		Bald Hill lithium-tantalum mine (Alliance Mineral Assets Ltd., 100%)	50 km southeast of Kambalda, WA	NA
Do.		Greenbushes open pit and underground tantalite-spodumene mine (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	NA
Do.		Pilgangoora lithium-tantalum project (Pilbara Minerals Ltd., 100%)	120 km south of Port Hedland, WA	NA
Do.		Wodgina open pit tantalite mine (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	NA
Tin:				
Mine production, Sn content	metric tons	Greenbushes open pit and underground tantalite-spodumene mine (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	1,000
Do.	do.	Mount Bischoff open pit mine[4] [Bluestone Mines Tasmania Joint Venture Pty. Ltd. (Metal X Ltd., 50%, and Greentech Technology International Ltd., 50%)]	55 km southwest of Burnie, TAS	6,000
Do.	do.	Renison Bell underground tin mine [Bluestone Mines Tasmania Joint Venture Pty. Ltd. (Metal X Ltd., 50%, and Greentech Technology International Ltd., 50%)]	136 km south of Burnie, TAS	4,000
Smelter	do.	Greenbushes smelter (Global Advanced Metals Ltd., 100%)	70 km southeast of Bunbury, WA	1,000
Titanium, mineral sands (ilmenite, rutile, and zircon)		Broken Hill region mines (Cristal Australia Pty. Ltd., 100%)	120 km north of Mildura, NSW	NA
Do.		Capel open pit heavy-mineral sands mine (Iluka Resources Ltd., 100%)	7 km north of Capel, WA	NA
Do.		Murray Basin heavy-mineral sands mine (Iluka Resources Ltd., 100%)	80 km southeast of Mildura, VIC	NA
Do.		North Stradbroke Island heavy-mineral sands dredge (Stradbroke Rutile Pty. Ltd., 100%)	35 km east of Brisbane, QLD	NA
Do.		Tiwest Joint Venture heavy-mineral sands dredge (Exxaro Resources Ltd., 50%, and Tronox Inc., 50%)	180 km north of Perth, WA	NA
Tungsten, mine production, W content	metric tons	Kara magnetite-scheelite mine (Tasmania Mines Ltd., 100%)	30 km south of Burnie, TAS	50
Do.	do.	Mount Carbine tungsten mine (Carbine Tungsten Ltd., 100%)	75 km west of Caims, QLD	4,000
Do.	do.	Wolfram Camp molybdenum-tungsten mine (Almonty Industries Inc., 100%)	85 km west of Caims, QLD	500
Uranium, mine production, U_3O_8 content	do.	Beverley in situ leach uranium operation[4] (Heathgate Resources Pty. Ltd., 100%)	300 km northeast of Port Augusta, SA	1,000
Do.	do.	Four Mile uranium mine [Quasar Resources Pty Ltd., 100% (a subsidiary of Heathgate Resources Pty Ltd.)]	300 km northeast of Port Augusta, SA	1,200
Do.	do.	Honeymoon uranium mine[4] (Boss Resources Ltd., 100%)	75 km northwest of Broken Hill, SA	400
Do.	do.	Olympic Dam underground copper-silver-gold-uranium mine [BHP Billiton Olympic Dam Corp. Pty. Ltd., operator (BHP Group Ltd., 100%)]	Roxby Downs, 80 km north of Woomera, SA	4,400
Do.	do.	Ranger open pit uranium mine [Energy Resources of Australia Ltd., 100% (Rio Tinto plc, 68.4%, and public 31.6%)]	230 km east of Darwin, NT	5,000
Vanadium, mine production, V_2O_5 content	do.	Windimurra vanadium mine[4] (Atlantic Vanadium Pty Ltd., 100%)	100 km east-southeast of Mount Magnet, WA	8

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Facilities, major operating companies, and major equity owners	Location of main facilities[1, 2]	Annual capacity[e]
Zinc:			
Mine production, Zn content	Angas zinc mine (Terramin Australia Ltd., 100%)	2 km from Strathalbyn, SA	24
Do.	Broken Hill underground silver-zinc-lead mine (Shenzhen Zhongjin Lingnan Nonfemet Co. Ltd., 50.1%, and Perilya Ltd., 49.9%)	Broken Hill, NSW	360
Do.	Cannington underground silver-lead-zinc mine (BHP Group Ltd., 100%)	85 km southwest of McKinlay, QLD	100
Do.	Century open pit zinc-silver-lead mine (New Century Resources Ltd., 100%)	250 km north of Mount Isa, QLD	500
Do.	Dugald River Mine (MMG Ltd., 100%)	65 km northwest of Cloncurry, QLD	180
Do.	Endeavor underground zinc-silver-lead mine [CBH Resources Ltd. (Toho Zinc Co. Ltd., 100%)]	40 km northwest of Cobar, NSW	125
Do.	Golden Grove underground zinc-copper mine (EMR Capital Pty. Ltd., 100%)	225 km east of Geraldton, WA	150
Do.	Hellyer underground zinc-lead-silver mine (NQ Minerals Plc., 100%)	80 km south-southwest of Burnie, TAS	130
Do.	Jaguar underground mine (Jabiru Metals Ltd., 100%)	250 km north of Kalgoorlie, WA	420
Do.	McArthur River open pit mine [McArthur River Mining Pty. Ltd., operator (Glencore plc, 100%)]	60 km southwest of Borroloola, NT	280
Do.	Mount Isa underground copper-lead-zinc-silver mines (also includes Enterprise, George Fisher, and Lady Loretta Mines) (Glencore plc, 100%)	Mount Isa, QLD	175
Do.	Peak gold-zinc-lead-copper-silver underground mines (includes New Cobar, New Occidental, and Perseverance) (New Gold Inc., 100%)	8 km south of Cobar, NSW	8
Do.	Rosebery underground zinc-lead-silver-copper-gold mine [Minerals and Metals Group Australia Ltd., operator (China Minmetals Nonferrous Metals Co. Ltd., 100%)]	35 km north of Queenstown, TAS	100
Smelter	Port Pirie smelter (Nyrstar NV, 100%)	5 km north of Queenstown, TAS	45
Do.	Hobart smelter (Nyrstar NV, 100%)	Hobart, TAS	320
Refinery	Sun Metals zinc refinery [Sun Metals Corp. Pty. Ltd., operator (Korea Zinc Co., 100%)]	Townsville, QLD	170

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

[1]Abbreviations used for States and Territories in this table include the following: NSW—New South Wales; NT—Northern Territory; QLD—Queensland; SA—South Australia; TAS—Tasmania; VIC—Victoria; WA—Western Australia.

[2]Abbreviation(s) used for unit(s) of measure in this table include the following: km—kilometer.

[3]Produces low-grade bauxite for use by the cement and fertilizer sectors.

[4]On care-and-maintenance status in 2021.

TABLE 3
AUSTRALIA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2020 AND 2021

(Thousand metric tons unless otherwise specified)

Commodity		2020 Quantity		2020 Value (million dollars)		2021 Quantity		2021 Value (million dollars)	
METALS									
Aluminum:									
Bauxite		37,446		1,026		35,392		951	
Alumina		18,237		4,804		18,383		5,832	
Metal		1,406		2,466		1,369		3,516	
Copper:									
Ores and concentrates, gross weight		1,745		4,923		1,640		5,794	
Refined metal		396		2,357		371		3,237	
Total Cu content		887		NA		849		NA	
Gold, bullion, refined and unrefined	metric tons	307		17,556		257		17,478	
Iron and steel:									
Iron ore, gross weight[1]		867,230		80,519		871,257		116,108	
Raw steel		893		640		688		608	
Scrap		2,003		591		2,012		901	
Lead:									
Ores and concentrates, gross weight		317		558		333		703	
Refined metal		138		257		119		267	
Bullion[2]		158		359		183		490	
Total Pb content		516	e	NA		535	e	NA	
Nickel:									
Ores and concentrates, gross weight		221		311		204		432	
Refined and intermediate, gross weight		137	e	1,791		128	e	2,218	
Total Ni content		177	e	NA		160	e	NA	
Silver, bullion, refined	metric tons	242		153		274		231	
Tin, ores and concentrates:									
Gross weight	do.	14,990		120		15,610		247	
Sn content	do.	7,749		NA		8,134		NA	
Titanium:									
Ilmenite concentrate		1,560	e	NA		1,560	e	NA	
Leucoxene concentrate		145	e	NA		96	e	NA	
Rutile concentrate		312	e	NA		312	e	NA	
Synthetic rutile		527	e	NA		527	e	NA	
Titanium dioxide pigment		167	e	NA		203	e	NA	
Zinc:									
Ores and concentrates, gross weight		2,240		1,328		2,103		1,930	
Refined metal		464		940		405		1,116	
Total Zn content		1,496		NA		1,343		NA	
Zirconium, mineral concentrates, zircon		861	e	NA		861	e	NA	
INDUSTRIAL MINERALS									
Gemstones:									
Diamond:									
Gem	carats	39,000		177		39,000		174	
Industrial	do.	NA		1		--		--	
Unsorted	do.	11,300,000	e	112	e	31,000	e	NA	
Total	do.	11,300,000	e	290	e	70,000	e	174	e
Opal:									
Rough		NA		3		NA		7	
Cut and polished		NA		14		NA		7	
Total		NA		17		NA		14	
Sapphire, rough		NA		3		NA		7	
Other[3]		NA		10		NA		15	

See footnotes at end of table.

TABLE 3—Continued
AUSTRALIA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2020 AND 2021

(Thousand metric tons unless otherwise specified)

Commodity		2020		2021	
		Quantity	Value (million dollars)	Quantity	Value (million dollars)
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Metallurgical	million metric tons	172	18,419	167	27,658
Thermal	do.	200	11,449	199	20,019
Liquefied natural gas[4]	do.	78	24,938	81	37,396
Petroleum:					
Crude[5]	thousand 42-gallon barrels	104,279	4,574	104,383	7,937
Refinery products	do.	6,591	356	3,430	297
Uranium oxide (U_3O_8)	metric tons	7,273	516	4,474	345

[e]Estimated; estimated data and totals are rounded to no more than three significant digits. do. Ditto. NA Not available.
[1]Includes iron ores, concentrates, lump, and pellets.
[2]Lead bullion includes a substantial precious metal content, mainly silver.
[3]Includes cut and polished sapphires.
[4]Includes reexports.
[5]Includes other refinery feedstock.

TABLE 4
AUSTRALIA: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2020 AND 2021

(Thousand metric tons unless otherwise specified)

Commodity		2020 Quantity	2020 Value (million dollars)	2021 Quantity	2021 Value (million dollars)
METALS					
Aluminum:					
Bauxite		4	2	6	3
Alumina		7	8	9	8
Metal		55	102	76	194
Gold, bullion, refined and unrefined		NA	6,260	NA	4,865
Iron and steel:					
Ferroalloys		57	71	56	91
Iron ore, gross weight[1]		888	76	864	128
Raw steel		1,838	1,799	2,246	2,606
Nickel, primary products[2]		NA	44	NA	40
Phosphate rock		289	22	335	29
Silver, bullion, refined		NA	676	NA	560
Tin, refined	metric tons	257	6	253	10
INDUSTRIAL MINERALS					
Gemstones, diamond:					
Dust and powder	thousand carats	873	1	2,522	1
Gem	do.	240	366	375	513
Industrial	do.	(3)	(3)	54	1
Total	do.	1,110 [4]	367	2,950 [4]	515 [4]
MINERAL FUELS AND RELATED MATERIALS					
Petroleum:					
Crude[5]	thousand 42-gallon barrels	94,621	4,257	79,990	5,743
Refinery products	do.	224,081	11,589	255,670	20,071

[1]Includes limonite ore used in the production of refined nickel products.
[2]Includes matte, sinter, and intermediate products; ferronickel, unwrought nickel metal, and alloys and scrap. Also includes the value of limonite ore use
[3]Less than 1/2 unit.
[4]Total is rounded to no more than three significant digits.
[5]Includes other refinery feedstock.

Source: Australian Government, Department of Industry, Science and Resources, 2022, Resources and energy quarterly, December 2022.

TABLE 5

AUSTRALIA: RESERVES OF MAJOR MINERAL COMMODITIES IN 2021

Commodity		Reserves[1]
Antimony, Sb content	thousand metric tons	137
Bauxite	million metric tons	3,570
Coal:		
Anthracite and bituminous, recoverable[2]	billion metric tons	75
Lignite, recoverable[3]	do.	74
Cobalt, Co content	thousand metric tons	1,580
Copper, Cu content	million metric tons	100
Diamond	thousand carats	1,280
Gold, Au content	metric tons	12,000
Graphite	thousand metric tons	7,970
Iron ore:		
Gross weight	billion metric tons	57
Fe content	do.	26
Lead, Pb content	million metric tons	36
Lithium, Li content	thousand metric tons	6,700
Magnesite, $MgCO_3$ content	million metric tons	286
Manganese ore	do.	277
Molybdenum, Mo content	thousand metric tons	483
Nickel, Ni content	do.	21,700
Niobium, Nb content	do.	216
Platinum-group metals (Ir, Os, Pd, Pt, Rh, Ru)[4]	metric tons	248
Phosphate rock:		
Gross weight	million metric tons	1,080
P_2O_5 content	do.	178
Potash, K_2O content	do.	44
Rare earths (rare-earth-oxides plus Y_2O_3)	thousand metric tons	4,260
Scandium, Sc content	do.	37
Silver, Ag content	do.	94
Tantalum, Ta content	do.	104
Tin, Sn content	do.	585
Titanium:		
Ilmenite	million metric tons	274
Rutile	do.	34
Tungsten, W content	thousand metric tons	570
Uranium, U content	do.	1,230
Vanadium, V content	do.	8,110
Zinc, Zn content	million metric tons	66
Zirconium, Zircon	do.	79

do. Ditto.

[1]Accessible Economic Demonstrated Resources (AEDR) as of December 2020, as reported by Geoscience Australia. AEDR refers to the portion of total Economic Demonstrated Resources (EDR), which include Joint Ore Reserves Committee (JORC)-compliant reserves, and measured and indicated resources, that is accessible for mining. It excludes resources that are inaccessible for mining because of environmental restrictions, government policies, or military lands.

[2]Reported as black coal by Geoscience Australia.

[3]Reported as brown coal by Geoscience Australia.

[4]Platinum-group metals are produced as a byproduct of nickel-cobalt mining; platinum-group-metal reserves and resources of these producers are not reported.