USGS
science for a changing world

2022 Minerals Yearbook

INDONESIA [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

March 2025

U.S. Geological Survey, Reston, Virginia: 2025

World rankings for mineral production, shares of world production, and reserves presented in this chapter are derived from the referenced sources. Production data in this chapter may differ from data in other sources because of differences in the date of reporting.

The Mineral Industry of Indonesia

By Jaewon Chung

Globally, Indonesia was one of the major producers of coal and metallic ores. In 2022, Indonesia was the world's first-ranked producer of nickel ore, accounting for 48% of global production. It also ranked among the world's major producers of mined tin, being the second-ranked producer and accounting for an estimated 23% of total global production; zeolites, third, 11% of total production; coal, third, 8% of total production; cobalt, second, an estimated 5% of total production and 5% of the world's reserves; and bauxite, sixth, an estimated 5% of total production (excluding United States production). Other major mineral commodities produced in Indonesia included cement, copper, gold, iodine, nitrogen, and zircon (Energy Institute, 2023, p. 39; Ewing, 2024; Friedline, 2024; McRae, 2024; Merrill, 2024; Williams, 2024).

The Government continued to encourage mining companies to build local plants and to yield value-added mineral products rather than export metallic ores. Since 2009, the Government had set a goal to build 53 smelters and refineries by 2024. As of 2022, about 20 new plants had been constructed. In May 2022, Indonesia became an initial partner of the Indo-Pacific Economic Framework for Prosperity (IPEF) launched by the United States, which aimed to strengthen cooperation among member countries (Media Nikel Indonesia, 2022; White House, The, 2022).

Minerals in the National Economy

In 2022, Indonesia's real gross domestic product (GDP) growth was 5.3%; the nominal GDP was $1.32 trillion. The mining and quarrying sector accounted for 12% of the GDP in 2022 compared with 9% in 2021; the increase was attributed to a larger contribution of coal mining activities to the GDP in 2022 (6.6%) compared with that in 2021 (3.6%), which was driven by high global coal prices. The manufacturing of base metals accounted for 0.86% of the GDP in 2022 compared with 0.81% in 2021. Employment in the mining and quarrying sector was about 1.53 million people in 2022, which represented 1.1% of the country's total employment (Badan Pusat Statistik, 2023, p. 107, 109, 684, 685; Bank of Indonesia, 2023, p. 145; World Bank, The, 2023).

Government Policies and Programs

Law No. 4/2009 on Mineral and Coal Mining includes provisions that mined minerals should be processed and refined domestically, and that the export of unprocessed minerals is prohibited; the export ban went into effect on January 12, 2014. Mining companies, however, were exempted from the ban until January 11, 2017, under the conditions that they were able to meet the minimum domestic refining requirements (which differ by commodity), pay export duties, and commit to building local smelters. On January 11, 2017, the Government extended this exemption for 5 years to prevent mining companies from reducing their mining activities.

In 2020, the Ministry of Energy and Mineral Resources (MEMR) postponed the export ban until June 10, 2023, from January 11, 2022. However, a nickel-ore export ban came into effect on January 1, 2020, to secure the supply of unprocessed nickel for domestic production of nickel products. With the increasing demand for nickel used for lithium-ion batteries in electric vehicles (EVs), the Government aimed to dominate the global supply chain of EV batteries and become a hub for EV manufacturing (Ministry of Energy and Mineral Resources, 2019; Nangoy and Munthe, 2022).

In 2022, the Government revoked more than 2,000 mineral and coal mining licenses of companies that had not submitted work plans on time, even though the companies had been granted licenses for years. The President stated that the revocation was part of a governance improvement plan focused on mining and forestry licenses and was based on the Constitution, which stated that the earth, water, and natural resources of the country are controlled by the state and are used for the prosperity of the people (Cabinet Secretariat, 2022).

Production

Data on mineral production are in table 1. In 2022, notable production increases included that of mined manganese (Mn content), which increased by 8 times; mined cobalt, by 3.6 times (estimated); nickel matte, by 150% (estimated); zirconium, by 76% (estimated); smelted tin, by 64%; ferrochromium, by 54%; nickel (laterite ore), by 48%; mined gold, by 33%; mined tin, by 33% (estimated); mined copper, by 29%; nickel pig iron (NPI) (Ni content), by 29% (estimated); bauxite, by 18%; iron ore, by 17%; coal (total), by 12%; and mined silver, by 10%. Meanwhile, notable production decreases included that of titanium (ilmenite and leucoxene), which decreased by 56% (estimated); mined lead, by 38% (estimated); silicomanganese, by 27%; zeolites, by 23% (estimated); mined zinc, by 21% (estimated); and iodine, by 19%.

In 2022, the country ramped up production at existing facilities and opened new facilities for the production of mixed hydroxide precipitate (MHP), utilizing the high-pressure acid leaching (HPAL) process to recover cobalt and nickel separately from low-grade laterite ore. The increase in nickel ore production was in response to the growing global demand for lithium-ion batteries, and the increase in NPI outputs was due to the Government's strategy to process all nickel ore domestically to yield nickel products (Cobalt Institute, 2023, p. 22).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities. The Directorate General of Mineral and Coal under the MEMR managed the country's mineral resources by formulating and implementing policy on mining activities. The state-owned holding company Mining Industry Indonesia (MIND ID)

consisted of five mining and mineral-processing companies: PT Aneka Tambang Tbk (PT Antam) for bauxite and nickel; PT Freeport Indonesia Co. (PT–FI) for copper; PT Indonesia Asahan Aluminium (PT Inalum) for aluminum; PT Tambang Batubara Bukit Asam Tbk (PT Bukit Asam) for coal; and PT Timah Tbk for tin.

The state-owned Indonesia Battery Corp. (IBC), an EV battery holding company, consisted of four state-owned companies: MIND ID, PT Antam, PT Pertamina, and PT Perusahaan Listrik Negara. Other major state-owned companies included PT Bumi Resources Tbk for coal and PT Krakatau Steel Tbk for steel. Wholly or partially foreign-owned companies included PT–FI, PT Vale Indonesia Tbk, and PT Tsingshan Steel Indonesia.

Mineral Trade

Indonesia's total exports and imports of goods were valued at $292 billion and $237 billion in 2022, respectively. The country's exports of mineral products were valued at $82 billion (or 28% of total exports); those of base metals and articles of base metal were valued at $42 billion (14%). The leading export mineral commodities were coal and ferronickel, which accounted for 16% and 5% of total exports, respectively. Following the export ban on nickel ore in 2020, exports of ferronickel increased to $7 billion in 2021 and $14 billion in 2022 from $5 billion in 2020, and exports of intermediate products of nickel metallurgy increased to $1.3 billion in 2021 and $6 billion in 2022 from $760 million in 2020. Imports of mineral products were valued at $48 billion (or 20% of total imports); those of base metals and articles of base metal were valued at $24 billion (10%). The leading import mineral commodity was crude petroleum, which accounted for 10% of total imports (Badan Pusat Statistik, 2023, p. 595; Zen Innovations AG, 2023).

Commodity Review

Metals

Bauxite and Alumina, and Aluminum.—At the end of 2022, there were three alumina refineries and one aluminum smelter in operation in Indonesia. The MEMR anticipated that seven additional plants (excluding the expansion of PT Well Harvest Winning's alumina refinery) would be constructed by June 2023 when the Government planned to impose a ban on bauxite exports to boost the domestic mineral processing industry. In 2022, Indonesia mined about 30.4 million metric tons (Mt) of bauxite, of which about 19 Mt was exported. The sole destination of the exports was China (tables 1, 2; Badrie, 2022; Zen Innovations AG, 2023).

Copper and Gold.—PT–FI operated one of the world's major copper-gold mines at the Grasberg minerals district in Papua Province. As of 2022, reserves at Grasberg were estimated to be 1.62 billion metric tons of ore containing 14 Mt of copper and 820 metric tons (t) of gold. PT–FI's copper and gold production totaled 711,000 t and 55.9 t in 2022 compared with 606,000 t and 42.6 t, respectively, in 2021. The increase in copper and gold output resulted from the higher operation rates at underground mining sites after the transition from open pit to underground mining. During the year, 34% of PT–FI's copper concentrates output was sold to the Gresik smelter of PT Smelting Co. (39.5% ownership held by PT–FI) in East Java. Following a 2018 agreement with the Government of Indonesia, PT–FI continued the construction of the Manyar smelter, which had a designed copper concentrate processing capacity of 2 million metric tons per year. The Manyar smelter, which was located near the Gresik smelter, was expected to be completed in 2024 (PT Freeport Indonesia Co., 2022; Freeport-McMoRan Inc., 2023, p. 43, 44, 113).

Nickel.—Multiple nickel-processing plants started operations in 2022, including a smelter owned by PT Halmahera Jaya Feronikel (wholly owned by Harita Group), which had a production capacity of 780,000 metric tons per year (t/yr) of ferronickel (or NPI); a smelter owned by PT Huake Nickel Industry (Huayue Cobalt Co. Ltd. of China owned 70% of the shares), 60,000 t/yr of nickel matte; and an HPAL plant owned by PT QMB New Energy Materials (GEM Co. Ltd. of China, 63%), 50,000 t/yr of nickel and 4,000 t/yr of cobalt contained in MHP. To meet the domestic nickel ore processing capabilities, the Government expected 30 nickel smelters in total to be operational by 2024 (Daud, 2022; GEM Co. Ltd., 2022, p. 1–2; Media Nikel Indonesia, 2022; Setiawan, 2023).

In November 2022, a World Trade Organization (WTO) panel reached a ruling that Indonesia's export ban and domestic processing requirement on nickel ore, which had been in place since January 2020, were inconsistent with global trade rules. In December, Indonesia filed an appeal against the WTO panel's decision. The European Union, which had previously requested consultations at the WTO with Indonesia in 2019 and the establishment of a WTO panel in 2021, noted its disagreement with Indonesia's appeal (World Trade Organization, 2022).

Tin.—In 2022, the Government started considering an export ban on unwrought tin to attract investment in downstream industry and export higher value-added products, such as tin rods or tin powder. The timeline for the ban had not been decided. In the past, most of Indonesia's unwrought tin had been exported, of which China was the leading recipient. The Association of Indonesian Tin Exporters asked the Government to gradually implement the policy because the ban would reduce economic activity in the country's tin mining hub, Bangka Belitung Province, and it would take more than 2 years for the tin refiner PT Timah to modify its existing tin chemical plants to develop facilities for products such as tin rod or tin powder and to secure markets for its products (Munthe, 2022; Nangoy and others, 2022).

Mineral Fuels

Coal.—To secure a domestic supply of coal for Indonesia's powerplants, the MEMR banned coal exports for a month starting on January 1, 2022. Despite the ban that caused some coal miners to halt operations during that time, the country's coal production increased by 12% to 687 Mt in 2022 from 614 Mt in 2021. Coal exports also increased to 466 Mt (including 106 Mt of lignite) from 434 Mt in 2021. India was the leading recipient of Indonesia's coal exports (excluding lignite) followed by China, and China received most of Indonesia's lignite exports. The increases in Indonesia's coal

output and exports resulted from the global increase in coal prices, which was driven by supply disruptions from the Russia-instigated conflict in Ukraine that began in February 2022 (Christina and Nangoy, 2022; Badan Pusat Statistik, 2023, p. 631, 633; Munthe and Nangoy, 2023; Bill Sullivan, Senior Foreign Counsel, Christian Teo and Partners Law Office, written commun., February 8, 2022).

Outlook

The Government's ban on exports of bauxite, tin, and other metallic ores will likely come into effect in the near term, following the earlier nickel-ore export ban. The country's suspension of exports of such unprocessed materials may lead to increased production and exports of processed metals. Indonesia will continue aiming to be one of the major EV battery producers in the world by utilizing its vast nickel wealth. As of 2022, Indonesia was getting closer to being self-sufficient in most grades of nickel for EV batteries but was still importing other raw materials, including cobalt sulfate, graphite, lithium hydroxide, and manganese sulfate. Through IBC, the Government is likely to consider a long-term target of reducing the country's dependence on these imported battery materials (Arifin, 2022).

References Cited

Arifin, Ridwan, 2022, [Indonesia has a battery factory, this is a material that is still imported]: Detik Oto [Jakarta, Indonesia], September 20. (Accessed December 21, 2023, at https://oto.detik.com/berita/d-6301236/indonesia-punya-pabrik-baterai-ini-bahan-yang-masih-impor.) [In Indonesian.]

Badan Pusat Statistik, 2023, Statistical yearbook of Indonesia 2023: Jakarta, Indonesia, Badan Pusat Statistik, February, 780 p. (Accessed December 6, 2023, via https://www.bps.go.id/id/publication/2023/02/28/18018f9896f09f03580a614b/statistik-indonesia-2023.html.)

Badrie, Sofyan, 2022, [Smelter construction deadline before June 30, 2023]: Portonews [Jakarta, Indonesia], December 26. (Accessed December 6, 2023, at https://www.portonews.com/2022/laporan-utama/deadline-pembangunan-smelter-sebelum-30-juni-2023/.) [In Indonesian.]

Bank of Indonesia, 2023, Economic report on Indonesia 2022—Appendices: Jakarta, Indonesia, Bank of Indonesia, March 31. (Accessed December 6, 2023, at https://www.bi.go.id/en/publikasi/laporan/Documents/9_LPI2022_EN_Appendices.pdf.)

Cabinet Secretariat [Indonesia], 2022, Gov't revokes thousands of mining, forestry business licenses, cultivation rights: Jakarta, Indonesia, Cabinet Secretariat, January 6. (Accessed December 20, 2023, at https://setkab.go.id/en/govt-revokes-thousands-of-mining-forestry-business-licenses-cultivation-rights/.)

Christina, B., and Nangoy, F., 2022, Indonesia to allow only compliant firms to restart coal exports when ban ends—Official: Thomson Reuters, January 27. (Accessed December 11, 2023, at https://www.reuters.com/business/energy/indonesia-allows-171-coal-miners-resume-exports-official-2022-01-27/.)

Cobalt Institute, 2023, Cobalt market report 2022: Guildford, United Kingdom, Cobalt Institute, May, 43 p. (Accessed February 12, 2024, at https://www.cobaltinstitute.org/wp-content/uploads/2023/05/Cobalt-Market-Report-2022_final-1.pdf.)

Daud, Harianto, 2022, [Officially operating, Harita Nickel's ferronickel smelter has a capacity of 780 thousand tons per year]: TIMES Indonesia [Jakarta, Indonesia], October 19. (Accessed December 18, 2023, at https://timesindonesia.co.id/ekonomi/432924/resmi-beroperasi-smelter-feronikel-harita-nickel-berkapasitas-780-ton-per-tahun.) [In Indonesian.]

Energy Institute, 2023, Statistical review of world energy 2023: London, United Kingdom, Energy Institute, June, 60 p. (Accessed December 5, 2023, at https://www.energyinst.org/__data/assets/pdf_file/0004/1055542/EI_Stat_Review_PDF_single_3.pdf.)

Ewing, S.M., 2024, Cobalt: U.S. Geological Survey Mineral Commodity Summaries 2024, p. 62–63.

Freeport-McMoRan Inc., 2023, Annual report 2022: Phoenix, Arizona, Freeport-McMoRan Inc., March, 115 p. (Accessed December 7, 2023, at https://s22.q4cdn.com/529358580/files/doc_financials/annual/AR_2022.pdf.)

Friedline, C.A., 2024, Tin: U.S. Geological Survey Mineral Commodity Summaries 2024, p. 184–185.

GEM Co. Ltd., 2022, Announcement on the progress of the construction of the Indonesia QMB nickel resource project: Shenzhen, China, GEM Co. Ltd., July 24., 10 p. (Accessed December 18, 2023, at https://en.gem.com.cn/uploadfiles/2022/07/20220727230208799.pdf.)

McRae, M.E., 2024, Nickel: U.S. Geological Survey Mineral Commodity Summaries 2024, p. 124–125.

Media Nikel Indonesia, 2022, [Pursuing construction of 53 smelters in 2024]: Media Nikel Indonesia, June 6. (Accessed December 6, 2023, at https://nikel.co.id/2022/06/06/mengejar-pembangunan-53-smelter-di-2024/.) [In Indonesian.]

Merrill, A.M., 2024, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2024, p. 42–43.

Ministry of Energy and Mineral Resources, 2019, [Nickel ore can no longer be exported as of January 2020]: Jakarta, Indonesia, Ministry of Energy and Mineral Resources, September 2. (Accessed December 20, 2023, at https://www.esdm.go.id/id/media-center/arsip-berita/bijih-nikel-tidak-boleh-diekspor-lagi-per-januari-2020.) [In Indonesian.]

Munthe, B.C., 2022, Indonesian tin groups ask govt to consider impose export restrictions gradually: Thomson Reuters, November 28. (Accessed December 8, 2023, at https://www.reuters.com/article/indonesia-tin/indonesian-tin-groups-ask-govt-to-consider-impose-export-restrictions-gradually-idUSL4N32O1QL/.)

Munthe, B.C., and Nangoy, F., 2023, Indonesia sees record coal exports of more than 500 mln tonnes in 2023: Thomson Reuters, January 30. (Accessed December 11, 2023, at https://www.reuters.com/business/energy/indonesia-sees-record-coal-exports-more-than-500-mln-tonnes-2023-2023-01-30/.)

Nangoy, F., and Munthe, B.C., 2022, Indonesia says lithium, anode plants are being built to support EV ambitions: Thomson Reuters, November 29. (Accessed December 20, 2023, at https://www.reuters.com/markets/commodities/indonesia-says-lithium-anode-plants-are-being-built-support-ev-ambitions-2022-11-29/.)

Nangoy, F., Munthe, B.C., and Nguyen, M., 2022, Explainer—What is Indonesia's proposed tin export ban about?: Thomson Reuters, October 20. (Accessed December 8, 2023, at https://www.reuters.com/markets/commodities/what-is-indonesias-proposed-tin-export-ban-about-2022-10-20/.)

PT Freeport Indonesia Co., 2022, Freeport targets smelter progress of 50% in 2022: Jakarta, Indonesia, PT Freeport Indonesia Co., April 4. (Accessed December 8, 2023, at https://ptfi.co.id/en/news/detail/freeport-targets-smelter-progress-of-50-in-2022.)

Setiawan, V.N., 2023, [Many nickel smelter investors gather at the DPR, this is the list]: CNBC Indonesia [Jakarta, Indonesia], June 8. (Accessed December 18, 2023, at https://www.cnbcindonesia.com/news/20230608143648-4-444217/ramai-investor-smelter-nikel-ngumpul-di-dpr-ini-daftarnya.) [In Indonesian.]

White House, The, 2022, Fact sheet—In Asia, President Biden and a dozen Indo-Pacific partners launch the Indo-Pacific Economic Framework for Prosperity: Washington, DC, The White House, May 23. (Accessed December 18, 2023, at https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/23/fact-sheet-in-asia-president-biden-and-a-dozen-indo-pacific-partners-launch-the-indo-pacific-economic-framework-for-prosperity/.)

Williams J.R., 2024, Zeolites (natural): U.S. Geological Survey Mineral Commodity Summaries 2024, p. 200–201.

World Bank, The, 2023, Indonesia—Overview: Washington, DC, The World Bank. (Accessed December 6, 2023, at https://data.worldbank.org/country/indonesia.)

World Trade Organization, 2022, Dispute settlement—DS592 Indonesia—Measures relating to raw materials: World Trade Organization, December 8. (Accessed December 14, 2023, at https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds592_e.htm.)

Zen Innovations AG, 2023, Global trade tracker: Bern-Kehrsatz, Switzerland, Zen Innovations AG database. (Accessed December 20, 2023, via https://www.globaltradetracker.com.)

TABLE 1

INDONESIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2018	2019	2020	2021	2022
METALS						
Aluminum:						
Bauxite, wet basis	thousand metric tons	13,243	16,593	25,860 r	25,780 r	30,360
Alumina		842,536	1,148,422	1,162,139	1,156,039	1,200,000 e
Metal, primary		242,043	249,532	245,000	243,000	223,800
Cobalt, mine, Co content[e, 3]		1,200	1,100	1,100	2,700	9,600
Copper:						
Mine, Cu content:						
Concentrates		591,000	334,000	500,000	712,000	921,000
Solvent extraction[4]		17,071	16,777	5,377	19,045	19,551
Total		608,000	351,000	505,000	731,000	941,000
Smelter, primary		213,767	163,429	279,598	280,400	272,500
Refinery, primary:						
Electrowon		17,071	16,777	5,377	19,045	19,551
Other		213,853	163,427	263,208	270,497	290,300
Total		231,000	180,000	269,000	290,000	310,000
Ferroalloys:						
Ferrochromium		190,000	190,000	230,000	252,000	388,000
Ferronickel[e]		124,000	129,000	130,000	129,000 r	122,000
Nickel pig iron[e]		2,100,000 r	3,200,000 r	4,300,000 r	6,100,000 r	8,100,000
Silicomanganese		9,000	22,000	61,000	33,000 r	24,000
Gold, mine, Au content	kilograms	132,734	108,977	65,900	79,280 r	105,460
Iron ore, mine, iron sand, dry basis:						
Gross weight	thousand metric tons	1,321	3,450	3,620	2,980 r	3,480
Fe content	do.	661	1,730	1,800	1,490 r	1,740
Iron and steel:						
Direct-reduced iron	do.	237	120	31	24 r, e	24 e
Pig iron	do.	2,730	2,900	3,000 r	3,400 r, e	3,500 e
Steel:						
Raw steel	do.	6,183	8,565	12,871	14,300	15,570
Products, semimanufactured, rolled	do.	10,045	10,939	13,141	14,240 r	14,000 e
Lead:[e]						
Mine, Pb content		11,000	11,000	8,000	8,000	5,000
Refinery, secondary		54,000	54,000	53,000	54,000	55,000
Manganese, mine, concentrate:						
Gross weight		--	--	158,000 r	19,000 r	138,000
Mn content		--	--	55,000 r	6,000 r	48,000
Nickel, Ni content:						
Mine, laterite ore		606,000	853,000	767,000 r	1,069,000 r	1,579,000
Intermediate, mixed hydroxide precipitate		--	--	--	--	33,000 e
Smelter, matte		74,806	71,025	72,237	100,000 r, e	250,000 e
Ferronickel		24,868	25,713	25,970	25,818	24,334
Nickel pig iron[e]		270,000	380,000	600,000	850,000	1,100,000
Silver, mine, Ag content	kilograms	309,000	487,000	335,200	397,900 r	438,290
Tin:						
Mine, Sn content		82,809 r	86,947 r	65,127 r	52,467 r	70,000 e
Smelter, primary		81,427	76,389	56,200 r	34,780 r	57,140
Titanium, mineral concentrates, ilmenite and leucoxene[e]		2,000	4,000	3,000	90,000 r	40,000
Zinc, mine, Zn content[e]		21,000	25,000	20,000	14,000	11,000
Zirconium, mineral concentrates[e]		54,000	73,000	64,000	55,000	97,000
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	75,213	71,900	62,700 e	65,000 e	64,000 e
Clay:[e]						
Bentonite		6,000	6,000	5,500	5,500	5,500
Kaolin	thousand metric tons	1,400	2,700	1,700	1,600 r	1,600

See footnotes at end of table.

TABLE 1—Continued
INDONESIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2018	2019	2020	2021	2022
INDUSTRIAL MINERALS—Continued						
Feldspar[e]	thousand metric tons	730	470	280	308 [r]	300
Iodine		38	33	37	36	29
Nitrogen, ammonia, N content	thousand metric tons	5,400	6,100	5,900	6,000	6,000
Sand and gravel, industrial, silica[e]	do.	2,600	3,500	3,500	3,500	3,500
Stone, sand and gravel, construction:[e]						
Gravel	do.	22,000	27,000	24,000	26,000 [r]	26,000
Stone:						
Crushed, limestone	do.	10,700	41,000	14,000	10,000 [r]	10,000
Size and shape unspecified, marble	do.	348	321	481	941 [r]	900
Zeolites[e]	do.	130	130	130	130	100
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	138,277	148,270	127,744	139,133	150,000 [e]
Lignite	do.	120,582	124,962	118,108	128,638	140,000 [e]
Metallurgical	do.	1,693	1,870	4,000	4,357	4,400 [e]
Subbituminous	do.	297,220	341,057	313,876	341,862	393,000 [e]
Total	do.	558,000	616,000	564,000	614,000	687,000 [e]
Natural gas	million cubic meters	72,800	67,600	59,500	59,300	57,700
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	295,000	285,000	271,000	253,000	235,000
Refinery, throughput	do.	334,000	335,000	301,000	301,000	308,000

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

[1]Table includes data available through December 18, 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, dolomite, gold (refined), gypsum, lead (refined, primary), liquefied natural gas, coalbed methane, phosphate rock, pumice, salt, and sulfur may have been produced, but available information was inadequate to make reliable estimates of output.

[3]Estimated from cobalt content of nickel matte and mixed hydroxide precipitate.

[4]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.

TABLE 2
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity[e]
Aluminum:			
Bauxite	PT Aneka Tambang Tbk (PT Antam) [Mining Industry Indonesia (MIND ID) (Government, 100%), 65%, and public, 35%]	Tayan Mine, West Kalimantan	2,000
Do.	PT Cita Mineral Investindo Tbk (PT Harita Jayaraya, 60.64%, and Glencore International Investment, 31.68%)	Mines[1] in Ketapang, West Kalimantan	10,000
Do.	Supreme Global Investment Group	Laman Mine, West Kalimantan	NA
Alumina	PT Bintan Alumina Indonesia	Smelter grade alumina refinery in Bintan	2,000
Do.	PT Indonesia Chemical Alumina (PT Antam Tbk, 100%)	Tayan chemical grade alumina refinery, West Kalimantan	300
Do.	PT Well Harvest Winning (China Hongqiao Group Ltd., 56%; PT Cita Mineral Investindo Tbk, 30%; others, 14%)	Smelter grade alumina refinery in Ketapang, West Kalimantan	2,000
Metal	PT Indonesia Asahan Aluminium (PT Inalum) [MIND ID (Government), 100%]	Smelter in Kual Tanjun, North Sumatra	260
Cement	PT Indocement Tunggal Prakarsa Tbk (Heidelberg Materials, 61.5%)	Plants at Cirebon and Citeureup, West Java; Tarjun, South Kalimantan	25,000
Do.	PT Semen Baturaja (Government, 76.24%, and others, 23.76%)	Plant at Baturaja, Ogan Komering Ulu, South Sumatra	3,850
Do.	PT Semen Bosowa Maros	Plants in Banyuwangi, East Java and Maros, South Sulawesi	6,000
Do.	PT Semen Indonesia Tbk (Government, 51%, and others, 49%)	Plants at Gresik, East Java; Padang, West Sumatra; and Tonasa, South Sulawesi	34,800
Do.	PT Solusi Bangun Indonesia (PT Semen Indonesia Tbk, 83.5%)	Plants at Besar and Lhok, Aceh	3,000
Do.	do.	Plants at Cilacap, Central Java; Narogong, West Java; and Tuban, East Java	12,500
Clay, kaolin	Multiple mining establishments (12)	Mines in multiple locations	2,700
Coal:			
Metallurgical	PT Asmin Koalindo Tuhup	Mine in Murung Raya, Central Kalimantan	2,000
Subbituminous	Geo Energy Group	SDJ Mine and TBR Mine, South Kalimantan	25,000
Unspecified	PT Adaro Indonesia (New Hope Corp., 50%; PT Asminco Bara Utama, 40%; Mission Energy, 10%)	Balanga, MIP, Paringin, Tutupan, and Wara Mines, South Kalimantan; Lampunut Mine, Central Kalimantan	100,000
Do.	PT Arutmin Indonesia (PT Bumi Resources Tbk, 80%, and Bakrie Group, 20%)	Mines in Mulia, Senakin, and Satui, South Kalimantan; Mine in Asam-Asam, East Kalimantan	26,000
Do.	PT Berau Coal (PT United Tractors, 60%; PT Armadian, 30%; Nissho Iwai, 10%)	Mines in Berau, East Kalimantan	20,000
Do.	PT Borneo Indobara (PT Golden Energy Mines Tbk, 98.1%, and others, 1.9%)	Mines in Angsana, Tanah Bumbu Regency, South Kalimantan	40,000
Do.	PT Kaltim Prima Coal Co. (PT Bumi Resources Tbk, 51%; Tata Power, 30%; China Investment Corp., 19%)	Mines in Sangatta, East Kutai Regency, East Kalimantan	62,000
Do.	PT Kideco Jaya Agung (PT Indika Energy Tbk, 91%, and Samtan Co. Ltd., 9%)	Mines in Paser, East Kalimantan	35,000
Do.	PT Tambang Batubara Bukit Asam Tbk [MIND ID (Government, 100%), 65.02%, and public, 34.98%]	Banko Barat Mine, South Sumatra	25,000
Do.	do.	Muara Tiga Besar Mine, South Sumatra	15,000
Do.	do.	Tambang Air Laya Mine, South Sumatra	10,000
Do.	White Energy Co. Ltd., 51%, and PT Bayan Resources Tbk, 49%	Tabang Mine, Kutai Kartanegara, East Kalimantan	40,000
Cobalt, Co content:			
In laterite	PT Vale Indonesia Tbk (Vale Canada Ltd., 44.3%; MIND ID, 20%; Sumitomo Metal Mining Co. Ltd., 15%; others, 20.7%)	Sorowako Mine, South Sulawesi	3
In matte	do.	Smelter at Sorowako, South Sulawesi	1

See footnotes at end of table.

TABLE 2—Continued
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity[e]
Cobalt, Co content:—Continued			
In mixed hydroxide precipitate	PT Halmahera Persada Lygend (Harita Group, 63.1%, and Lygend Resources & Technology Co. Ltd., 36.9%)	Plant on Obi Island, South Halmahera	12
Do.	PT Huayue Nickel Cobalt	Plant in Morowali, Central Sulawesi	8
Do.	PT QMB New Energy Materials (GEM Co. Ltd., 63%)	do.	4
Copper:			
Mine, Cu content	PT Amman Mineral Nusa Tenggara (PT Amman Mineral Internasional, 82.2%, and PT Pukuafu Indah, 17.8%)	Batu Hijau Mine, Sumbawa Island, West Nusa Tenggara	150
Do.	PT Batutua Tembaga Raya (Merdeka Copper Gold Group)	Wetar Mine and solvent extraction-electrowinning facility, Maluku	25
Do.	PT Freeport Indonesia Co. [MIND ID (Government, 100%), 51.24%, and Freeport-McMoRan Inc., 48.76%]	Grasberg minerals district, Papua	800
Metal	PT Batutua Tembaga Raya (Merdeka Copper Gold Group)	Smelter and refinery plant in Wetar, Maluku	28
Do.	PT Smelting Co. (Mitsubishi Materials Corp., 60.5%, and PT Freeport Indonesia Co., 39.5%)	Smelter and refinery plant in Gresik, East Java	290
Feldspar	Multiple mining establishments (24)	Mines in multiple locations	2,500
Ferroalloys, gross weight:			
Ferrochromium	Nickel Mines Ltd.	Smelter in Morowali, Central Sulawesi	600
Ferronickel or nickel pig iron	PT Antam Tbk (MIND ID, 65%, and public, 35%)	Smelter at Pomalaa, Southeast Sulawesi	120
Do.	PT Central Omega Resources Tbk	Smelter in North Morowali, Central Sulawesi	NA
Do.	PT Century Metalindo	Smelter at Pomalaa, Southeast Sulawesi	50
Do.	PT Fajar Bhakti Lintas Nusantara	Smelter in Central Halmahera	NA
Do.	PT Gebe Industry Nickel	Smelter in Gresik, East Java	NA
Do.	PT Gunbuster Nickel Indonesia (Jiangsu Delong Nickel Industry Co. Ltd., 100%)	Smelter in North Morowali, Central Sulawesi	1,800
Do.	PT Halmahera Jaya Feronikel (Harita Group, 100%)	Smelter on Obi Island, South Halmahera	780
Do.	PT Hengjaya Nickel Industry and PT Ranger Nickel Industry (Nickel Industries Ltd., 80%)	Hengjaya Nickel and Ranger Nickel smelters, Morowali, Central Sulawesi	300
Do.	PT Huadi Nickel-Alloy Indonesia	Smelter in Bantaeng, South Sulawesi	350
Do.	PT Growth Java Industry (formerly PT Indoferro)	Smelter in Cilegon, Banten	NA
Do.	PT Indonesia Guan Ching Nickel and Stainless Steel	Smelter in Morowali, Central Sulawesi	NA
Do.	PT Megah Surya Pertiwi (Harita Group, 60%, and Xinxing Ductile Iron Pipes Co. Ltd., 40%)	Smelter on Obi Island, South Halmahera	240
Do.	PT Obsidian Stainless Steel (a joint venture of Xiangyu Group and Jiangsu Delong Nickel Industry Co. Ltd.)	Smelter at Morosi, Konawe, Southeast Sulawesi	2,000
Do.	PT Sulawesi Mining Investment	Smelter in Morowali, Central Sulawesi	250
Do.	PT Tsingshan Steel Indonesia	do.	2,300
Do.	PT Virtue Dragon Nickel Industry (Jiangsu Delong Nickel Industry Co. Ltd., 100%)	Smelter at Morosi, Konawe, Southeast Sulawesi	820
Do.	PT Wanatiara Persada	Smelter on Obi Island, South Halmahera	200
Do.	PT Weda Bay Nickel (Tsingshan Holding Group, 51.3%; Eramet Group, 38.7%; PT Antam Tbk, 10%)	Smelter in Central Halmahera	2,300
Gas:			
Coalbed methane million cubic meters per day	Ephindo Energy Pvt. Ltd. (PT Pertamina, 52%, and Dart Energy Ltd., 24%)	Gasfields in Sangatta, East Kalimantan	14
Natural do.	ConocoPhillips Co., 54%; Talisman Energy Inc., 36%; PT Pertamina, 10%	Gasfields in Corridor Block, South Sumatra	23
Do. do.	ExxonMobil Oil Indonesia	Gasfields in Arun and Aceh, North Sumatra	48
Do. do.	PT Pertamina (Government, 100%)	Gasfields in Sanga Sanga Block, East Kalimantan	20
Do. do.	do.	Gasfields in Mahakam Block, East Kalimantan	30
Liquefied	PT Arun LNG Co. Ltd. (Government, 55%; Mobil Oil Co., 30%; Japan Indonesia LNG Co., 15%)	Plant at Blang Lancang, Aceh, North Sumatra	12,500
Do.	PT Badak LNG Co. Ltd. (Government, 55%; HUFFCO Group, 30%; Japan Indonesia LNG Co., 15%)	Plant at Bontang, East Kalimantan	22,500

See footnotes at end of table.

TABLE 2—Continued
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Locations of main facilities	Annual capacity[e]
Gold:				
Mine, Au content	metric tons	Bluenose Gold Corp., 80%, and Zinton Investments Ltd., 20%	Buduk Mine, West Kalimantan	1
Do.	do.	Kingrose Mining Ltd., 85%, and private Indonesian investors, 15%	Way Linggo Mine, Lampung	1
Do.	do.	PT Agincourt Resources	Martabe Mine, South Tapanuli, North Sumatra	15
Do.	do.	PT Amman Mineral Nusa Tenggara (PT Amman Mineral Internasional, 82.2%, and PT Pukuafu Indah, 17.8%)	Batu Hijau Mine, Sumbawa Island, West Nusa Tenggara	5
Do.	do.	PT Antam Tbk (MIND ID, 65%, and public, 35%)	Cibalung Mine, Pandeglang, Banten	2
Do.	do.	do.	Pongor Mine, West Java	2
Do.	do.	PT Archi Indonesia Tbk (PT Rajawali Corp., 100%)	Toka Tindung Mine, North Sulawesi	10
Do.	do.	PT Freeport Indonesia Co. (MIND ID, 51.24%, and Freeport-McMoRan Inc., 48.76%)	Grasberg minerals district, Papua	85
Do.	do.	PT Indotan Halmahera Bangkit, 75%, and PT Antam Tbk, 25%	Gosowong (Toguraci) Mine, North Halmahera, North Maluku	7
Do.	do.	PT J Resource Asia Pasifik Tbk, 80%	Bakan and North Lanut Mines, North Sulawesi	6
Do.	do.	PT Merdeka Copper Gold Tbk	Tujuh Bukit Mine, Banyuwangi, East Java	6
Do.	do.	Private owner	Manado Mine, North Sulawesi	NA
Do.	do.	Straits Resources Ltd.	Mt Muro Mine, Central Kalimantan	NA
Refinery	do.	PT Antam Tbk (MIND ID, 65%, and public, 35%)	Logam Mulia refinery, Jakarta Raya, Jakarta	60
Gravel		Multiple quarrying establishments (4,279)	Multiple quarry locations	100,000
Iron and steel, raw steel		PT Dexin Steel Indonesia (Delong Steel Group, 60%)	Smelter in Morowali, Central Sulawesi	4,000
Do.		PT Ispat Indo	Smelter in Sidoarjo, East Java	700
Do.		PT Krakatau Steel Tbk (Government, 100%)	Smelter in Cilegon, West Java	4,000
Do.		PT Wahana Garuda Lestari	Smelter in Pulogadung, Jakarta	410
Lead-zinc, ore, gross weight		PT Kapuas Prima Coal Tbk (KPC)	Mine at Bintang Mengalih, Lamandau, Central Kalimantan	500
Lead, refined, primary		do.	Smelter in Pangkalanbun, Central Kalimantan	20
Manganese:				
Mine, Mn content		Gulf Manganese Corp. Ltd.	Putra Indonesia Jaya Mine, West Timor	40
Oxide		PT Primier Bumidaya Industri	Plant in Pasuruan, East Java	16
Nickel, Ni content:				
In ore		PT Antam Tbk (MIND ID, 65%, and public, 35%)	Mine at Pomalaa, Southeast Sulawesi	30
Do.		do.	Gee Island Mine, North Maluku	NA
Do.		PT Bira Mineral Nusantara (PT Resource Alam Indonesia, 70%)	Mine in Kendari, South Sulawesi	10
Do.		PT Central Omega Resources Tbk	Mine in Morowali, Central Sulawesi	15
Do.		PT Harita Guna Dharma Bhakti (Harita Group, 100%)	Kawasi Mine, North Maluku	NA
Do.		PT Hengjaya Mineralindo (Nickel Industries Ltd., 80%)	Hengjaya Mine, Morowali, Central Sulawesi	20
Do.		PT Timah Tbk (MIND ID, 65%, and public, 35%)	Timah Nickel Mine, Bombana, Southeast Sulawesi	5
Do.		PT Vale Indonesia Tbk (Vale Canada Ltd., 44.3%; MIND ID, 20%; Sumitomo Metal Mining Co. Ltd., 15%; others, 20.7%)	Sorowako Mine, South Sulawesi	72
Do.		PT Weda Bay Nickel (Tsingshan Holding Group, 51.3%; Eramet Group, 38.7%; PT Antam Tbk, 10%)	Mine at Weda Bay, Central Halmahera, North Maluku	70
Do.		Solway Investment Group	Asera Mine, Southeast Sulawesi	30
In mixed hydroxide precipitate		PT Halmahera Persada Lygend (Harita Group, 63.1%, and Lygend Resources & Technology Co. Ltd., 36.9%)	Plant on Obi Island, South Halmahera	100
Do.		PT Huayue Nickel Cobalt	Plant in Morowali, Central Sulawesi	60
Do.		PT QMB New Energy Materials (GEM Co. Ltd., 63%)	do.	50

See footnotes at end of table.

TABLE 2—Continued
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Locations of main facilities	Annual capacity[e]
Nickel, Ni content:—Continued				
In matte		PT Antam Tbk (MIND ID, 65%, and public, 35%)	Smelter at Pomalaa, Southeast Sulawesi	24
Do.		PT Huake Nickel Industry (Huayue Cobalt Co. Ltd., 70%)	Smelter in Weda Bay, North Maluku	50
Do.		PT Vale Indonesia Tbk (Vale Canada Ltd., 44.3%; MIND ID, 20%; Sumitomo Metal Mining Co. Ltd., 15%; others, 20.7%)	Smelter at Sorowako, South Sulawesi	80
Do.		Tsingshan Holding Group	Plant in Morowali, Central Sulawesi	80
Nitrogen, N content		PT Asean-Aceh Fertilizer (Government, 60%, and other members of the Association of Southeast Asian Nations, 40%)	Plants at Lhokseumawe, North Sumatra	500
Do.		PT Pupuk Iskandar Muda (Government, 100%)	do.	500
Do.		PT Pupuk Kalimantan Timur (Government, 100%)	Plant at Bontang, East Kalimantan	1,850
Do.		PT Pupuk Kujang	Plant at Cikampek, West Java	330
Do.		PT Pupuk Sriwijawa Palembang (Government, 100%)	Plant at Palembang, South Sumatra	1,440
Petroleum:				
Crude	thousand 42-gallon barrels per day	Cepu Cooperation Contract (operated by ExxonMobil Cepu Ltd., 45%)	Oilfields in Cepu Block, Central Java and East Java	165
Do.	do.	PT Caltex Pacific Indonesia (Texaco Inc., 50%, and Chevron Corp., 50%)	Oilfields in Minas, Duri, and Bangko, Sumatra Island	700
Do.	do.	PT Pertamina (Government, 100%)	Oilfields in Jatibarang, West Java, and Bunyu, offshore East Kalimantan	80
Do.	do.	do.	Oilfields offshore Sumatra Island	100
Do	do.	Total E&P Indonesie (Total S.A., 100%)	Oilfields in Handil and Bekapai, onshore and offshore East Kalimantan	180
Refined	do.	PT Pertamina (Government, 100%)	Refineries at Balikpapan, East Kalimantan; Balongan, West Java; Cilacap, Central Java; Dumai, Riau; Kasim, West Papua; Plaju, South Sumatra	1,000
Pumice		Multiple quarrying establishments	Multiple quarry locations	800
Salt		PT Puncak Keemasan Garam Dunia	Salterns in Kupang, East Nusa Tenggara	400
Silica, quartz sand		Multiple quarrying establishments	Multiple quarry locations	6,000
Silver, mine, Ag content	metric tons	PT Agincourt Resources	Martabe Mine, South Tapanuli, North Sumatra	75
Do.	do.	PT Amman Mineral Nusa Tenggara (PT Amman Mineral Internasional, 82.2%, and PT Pukuafu Indah, 17.8%)	Batu Hijau Mine, Sumbawa Island, West Nusa Tenggara	50
Do.	do.	PT Antam Tbk (MIND ID, 65%, and public, 35%)	Mine in Bogor, West Java	25
Do.	do.	PT Archi Indonesia Tbk (PT Rajawali Corp., 100%)	Toka Tindung Mine, North Sulawesi	15
Do.	do.	PT Freeport Indonesia Co. (MIND ID, 51.24%, and Freeport-McMoRan Inc., 48.76%)	Grasberg minerals district, Papua	220
Do.	do.	PT Indotan Halmahera Bangkit, 75%, and PT Antam Tbk, 25%	Gosowong (Toguraci) Mine, North Halmahera, North Maluku	8
Do.	do.	PT Merdeka Copper Gold Tbk	Tujuh Bukit Mine, Banyuwangi, East Java	20
Stone:				
Limestone		PT Afit Lintas Jaya (PT Central Omega Resources Tbk, 75%)	Quarry in North Morowali, Central Sulawesi	NA
Do.		Multiple quarrying establishments	Multiple quarry locations	40,000
Marble		do.	do.	2,000
Tin:				
Ore, Sn content		PT Timah Tbk (MIND ID, 65%, and public, 35%)	Mines onshore and offshore Bangka Belitung Islands and offshore Kundur, Riau Islands	85
Metal		do.	Kundur smelter, Kundur, Riau Islands	70
Do.		do.	Mentok smelter, West Banka, Bangka Belitung Islands	68
Zeolites		Multiple mining establishments	Mines in multiple locations	300

[e]Estimated. Do., do. Ditto. NA Not available.
[2]Metallurgical-grade bauxite.