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2022 Minerals Yearbook

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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 Saudi Arabia

By Mowafa Taib

Saudi Arabia exported aluminum, ammonia, cement, copper, gold, iron and steel, crude petroleum, refined petroleum products, phosphate fertilizers, silver, sulfur, titanium sponge, urea, and zinc. The country also produced basalt, dolomite, feldspar, granite, gypsum, iron and steel, kaolin, secondary lead, limestone, magnesite, marble, petroleum coke, phosphate rock, pyrophyllite, salt, sand and gravel (construction and industrial), and schist. In 2022, Saudi Arabia held the world's second-largest proven crude petroleum reserves after Venezuela, which were estimated to be 267.2 billion barrels and accounted for 17.1% of the world's total. The country also held the world's fifth-largest proven natural gas reserves, which were estimated to be 9.5 trillion cubic meters and accounted for 4.5% of the world's total (table 1; Organization of the Petroleum Exporting Countries, 2022, p. 10, 22, 76).

In 2022, Saudi Arabia was the world's 2d-ranked producer of natural gas liquids (NGL) after the United States and accounted for 12.8% of the world's total; the 3d-ranked producer of crude petroleum after the United States and Russia and accounted for 12.9% of the world's total; the 4th-ranked producer of diammonium phosphate (DAP), sulfur, and direct-reduced iron (DRI), and accounted for 9.4%, 9.2%, and 5.1%, respectively of the world's total; the 5th-ranked producer of titanium sponge and accounted for 35.9% of the world's total (excluding United States production); the 5th-ranked producer of refined petroleum products and accounted for 3.6% of the world's total; the 6th-ranked producer of nitrogen (fixed)-ammonia and accounted for 2.9% of the world's total; the 7th-ranked producer of alumina and accounted for 1.4% of the world's total; the 8th-ranked producer of bauxite (excluding United States production) and accounted for 1.3% of the world's total; the 10th-ranked producer of cement, felspar, and magnesium compounds and accounted for 1.3%, 2.1%, and 1.6%, respectively of the world's total; and the 13th-ranked producer of gypsum and accounted for 2.6% of the world's total (Energy Institute, 2023, p. 17, 20, 21, 25, 30; International Fertilizer Association, 2023; Midrex Technologies Inc., 2023, p. 2; Apodaca, 2024a, b; Crangle, 2024; Gambogi, 2024; Hatfield, 2024; Jasinski, 2024; Londono, 2024a, b; Merrill, 2024).

Minerals in the National Economy

In 2022, Saudi Arabia was the leading economy in the Middle East and North Africa region and the world's 17th-ranked economy in terms of the value of its nominal gross domestic product (GDP), which was $1.11 trillion[1] in 2022. The country's real GDP increased by 8.7% in 2022 compared with an increase of 3.9% in 2021. The increase was mainly attributed to higher crude petroleum prices on the world market. The price of Saudi Arabia Arabian light crude averaged $101.64 per barrel in 2022 compared with $70.65 per barrel in 2021. The mining and quarrying, and industrial sector activities, which included fuel and nonfuel mineral production, contributed 38.7% to the country's GDP in 2022 compared with 35.5% in 2021. The crude petroleum and natural gas sector's contribution to the GDP was about 37.0%, and that of the nonfuel mining sector was 0.3%. The contribution to the GDP of the manufacturing sector, which included aluminum, electricity, fertilizer, and steel production and natural gas processing and petroleum refining, increased to 14.7% in 2022 from 13.5% in 2021; that of the building and construction sector decreased to 4.6% from 5.2%. The mining sector employed 250,000 people in Saudi Arabia in 2021, which accounted for 1.6% of the country's labor force (Organization of the Petroleum Exporting Countries, 2022, p. 66; Saudi Central Bank, 2024, p. 31–33, 59).

Government Policies and Programs

The Mining Investment Law was the legal framework of the mining sector in Saudi Arabia in 2022. The law, which became effective in 2021, was expected to speed up foreign investment in the mining sector and to help reduce the country's dependence on the hydrocarbon sector by increasing the contribution of nonfuel sectors to the country's GDP. The law provides new facilities to investors to secure financing and supports exploration and geologic survey activities for the country's untapped mineral resources. The mining investment code allows mining rights to be granted to corporations and (or) individuals with technical and financial competence and expertise. The law and its implementing regulations established six types of mining permits that have various valid periods for different classes of minerals (U.S. International Trade Administration, 2021; Ministry of Industry and Mineral Resources, 2023, p. 4–5, 22).

The Deputy Ministry of Mineral Resources (DMR), within the Ministry of Industry and Mineral Resources, supervises the country's mining activities, promotes investments, provides services, and issues mining licenses and concessions in the country. By the end of 2022, the DMR had issued a total of 2,272 valid permits, including 1,383 building materials and quarry permits, 635 mineral exploration permits, 178 mining production permits, 43 prospection permits, and 33 surplus mineral ores permits (Ministry of Industry and Mineral Resources, 2023, p. 1; Saudi Gazette, 2023).

Production

Notable increases in Saudi Arabia's mineral commodity production in 2022 compared with production in 2021 included gravel, which increased by an estimated 93%; titanium sponge, by 70%; raw steel, by 13%; crude petroleum (total liquids), common sand, and marble block, by 11% each; and DRI,

[1]Where necessary, values have been converted from Saudi riyals (SAR) to U.S. dollars (US$) at the annual average exchange rate of SAR3.75=US$1.00 for 2022 and 2021.

silver, and urea, by 10% each. Production of silicomanganese decreased by 17% in 2022. Data on mineral production are in table 1.

Structure of the Mineral Industry

In 2022, the Government owned 98.5% of Saudi Arabian Oil Co. (Saudi Aramco or Aramco) and had a majority interest in several companies that operated in the mineral fuels sector. The Government also played a significant role in supporting the private mineral sector through its Public Investment Fund and the Saudi Industrial Development Fund. Major mining and mineral-processing companies that operated in Saudi Arabia in 2022 included Al Masane Al Kobra Mining Co. (AMAK), Al-Ittefaq Group, Saudi Arabian Mining Co. (Ma'aden), and Saudi Arabic Basic Industries Corp. (SABIC). The country had 18 publicly traded cement companies (table 2).

Ma'aden was a joint-stock company owned by the Public Investment Fund (67.78%) and private investors (the remaining 32.22% were free-floating shares). Through its subsidiaries and joint ventures, Ma'aden produced alumina, aluminum, metallurgical and nonmetallurgical (low-grade) bauxite, copper, phosphate fertilizers, gold, kaolin, magnesite, phosphate rock, silver, and zinc. Ma'aden subsidiaries included six wholly owned companies and six joint ventures. The wholly owned companies included Ma'aden Gold and Base Metals Co. (MGBM), Ma'aden Industrial Minerals Co. (MIMC), Ma'aden Infrastructure Co., Ma'aden Marketing and Distribution Co., and Ma'aden Rolling Co. The joint ventures included Ma'aden Aluminum Co. (MAC), which was a joint venture of Ma'aden (74.9%) and Alcoa Inc. of the United States (25.1%); Ma'aden Bauxite and Alumina Co. (MBAC), which was a joint venture of Ma'aden (74.9%) and Alcoa Inc. (25.1%); Ma'aden Phosphate Co. (MPC), which was owned by Ma'aden (70%) and SABIC (30%); Ma'aden Wa'ad Al-Shamal Phosphate Co. (MWSPC), which was owned by Ma'aden (60%), Mosaic Co. of the United States (25%), and SABIC (15%); and Ma'aden Barrick Copper Co. (MBCC), which was a 50–50 joint venture of Ma'aden and Barrick Gold Corp. of Canada. Ma'aden employed 6,311 people in 2022 (table 2; Saudi Arabian Mining Co., 2022, p. 130; 2023, p. 44; Barrick Gold Corp., 2023, p. 30).

Mineral Trade

Saudi Arabia's total exports increased by 49% to $442 billion in 2022 from $286 billion in 2021. Petroleum exports, which included crude petroleum and refined petroleum products, increased by 61% to $326 billion in 2022 from $202 billion in 2021. The increase was mainly attributed to the increase of crude petroleum prices on world market. The value of Saudi Arabia's imports increased by 22% to $258.8 billion in 2022 from $213.0 billion in 2021 (Organization of the Petroleum Exporting Countries, 2021, p. 10; 2022, p. 10, 66).

In terms of volume, Saudi Arabia's crude and refined petroleum product exports increased to 8.8 million barrels per day (Mbbl/d) in 2022 from 7.6 Mbbl/d in 2021 and accounted for 12.9% of the world's total exports. The country's crude petroleum exports averaged 7.4 Mbbl/d in 2022 compared with 6.2 Mbbl/d in 2021. Refined petroleum products exports increased to about 1.5 Mbbl/d in 2022 from 1.3 Mbbl/d in 2021. In 2022, Saudi Arabia's crude petroleum exports went to Asia and the Pacific (26.9%), China (23.8%), other Asia (14.2%), Europe (9.5%), the Americas (8.5%), Africa (3.2%), India (2.6%), and the Middle East (2.1%) (Energy Institute, 2023, p. 27; Organization of the Petroleum Exporting Countries, 2022, p. 47–49, 53).

Saudi Arabia's exports to the United States increased by 70% to $23.3 billion in 2022 from $13.7 billion in 2021. The increase was mainly attributed to the increase in the value of crude petroleum exports, which totaled $16.2 billion in 2022 compared with $8.8 billion in 2021; fuel oil, which increased to $2.8 billion in 2022 from $1.4 billion in 2021; and other petroleum products, which increased to $2.0 billion from $1.3 billion in 2021. Other mineral-related exports from Saudi Arabia to the United States included fertilizers (valued at $776 million), aluminum ($206 million), precious metals other than gold ($40 million), iron and steel products ($18 million), gold ($17 million), and sulfur ($14.7 million) (U.S. Census Bureau, 2023a, b).

Saudi Arabia's imports from the United States increased to $11.4 billion in 2022 from $11.1 billion in 2021. The main minerals and mineral-related imports categories were other petroleum products (valued at $193 million), steelmaking materials ($87 million), iron and steel products ($38 million), fuel oil ($16 million), fertilizers ($11 million), nuclear fuel materials ($6 million), copper ($6 million), other nonferrous metals ($4 million), nonmetallic minerals ($3 million), alumina and aluminum ($1 million) (U.S. Census Bureau, 2023a, c).

Commodity Review

Metals

Bauxite and Alumina, and Aluminum.—MBAC was the sole producer of bauxite and alumina and primary aluminum in Saudi Arabia. The company's output of metallurgical bauxite at the Al Ba'itha Mine was estimated to be 4.8 million metric tons (Mt) in 2022 compared with the reported 4.78 Mt in 2021. At the end of 2022, the Al Ba'itha Mine's proved and probable reserves of metallurgical bauxite at a cutoff grade of 40% total available alumina (TAA) were 183.0 Mt grading 48.19% TAA and 9.24% SiO_2 (tables 1, 2; Saudi Arabian Mining Co., 2023, p. 65).

MBAC's alumina production at the Ras Al Khair alumina refinery was estimated to be 1.90 Mt in 2022 compared with 1.92 Mt in 2021. The MBAC refinery supplied alumina for the MAC aluminum smelter. In 2021, Ma'aden signed a memorandum of understanding with Glasspoint Solar Muscat LLC of the United States to develop the world's first solar steam plant, to decarbonize its alumina refinery, which was expected to save 600,000 metric tons per year (t/yr) of carbon dioxide emissions (table 1; Saudi Arabian Mining Co., 2023, p. 61).

Saudi Arabia's primary aluminum production decreased to 953,000 metric tons (t) in 2022 from 999,000 t (revised) in 2021. The decrease was mainly attributed to the aluminum market volatility in 2022. Aluminum production was carried out by MAC at its smelter in Ras Al Khair in Eastern Region (tables 1, 2; Saudi Arabian Mining Co., 2023, p. 119).

Copper.—Saudi Arabia's copper production amounted to 76,000 t in 2022 compared with 77,000 t (revised) in 2021. MBCC was the leading copper producer in the country in 2022. The company processed 2.73 Mt of ore grading 2.67% copper with a 93% recovery rate in 2022 for a total of 68,418 t of copper compared with 68,645 t in 2021. In addition to copper, MBCC produced unspecified quantities of cobalt, lead, nickel, silver, sulfur, and zinc at the Jabal Sayid Mine in Medina Region. As of December 31, 2022, total proved and probable copper reserves at the Jabal Sayid Mine were 26.90 Mt grading 2.27% copper, 0.31 grams per metric ton (g/t) gold, and 0.37% zinc (tables 1, 2; Barrick Gold Corp., 2023, p. 30; Saudi Arabian Mining Co., 2023, p. 62–63).

AMAK mined copper at the Masane Al Kobra Mine (ALM) in Najran Region and produced 21,190 t of copper in 2022 compared with 21,971 t in 2021 and 24,492 t in 2020. By the end of 2022, ALM's proved and probable reserves were 7.04 Mt grading 0.65% copper (table 2; Al Masane Al Kobra Mining Co., 2023, p. 4, 18–19, 24).

Gold.—Saudi Arabia's mined gold output decreased to 11,386 kilograms (kg) in 2022 from 12,413 kg in 2021. MGBM was the leading gold producer in the country; it operated six mines in 2022. The company's gold production decreased to 10,955 kg in 2022 from 12,417 kg in 2021. Most of the production was from the Ad Duwayhi Mine in Mecca Region, which produced 5,437 kg of gold in 2022. Production in 2022 at other mines included 2,313 kg at the Bulghur and Sukhaybarat Mines in Madinah Region; 920 kg at the Mahd Adh-Dahab Mine in Medina Region; 854 kg at the Al Amar Mine in Riyadh Region; 530 kg at the As Suq Mine in Mecca Region; and 373 kg at the Mansourah-Massarah Mine in Mecca Region. MGBM's total proved and probable reserves at the end of 2022 were estimated to be 344.7 Mt grading 1.57 g/t gold for a total of 540,000 kg of gold (reported as 17.35 million troy ounces). The gold reserves were in 11 sites in Saudi Arabia, which included the existing six gold mines and other deposits under development, such as the Ar Rjum (Umm Naam and Ghazal), the Ar Rjum (Waseemah), the Bir Tawilah, the Humayma, and the Jabal Ghadarah mining licenses (tables 1, 2; Saudi Arabian Mining Co., 2023, p. 54–57, 127).

In 2022, AMAK produced 188 kg of gold and 2,709 kg of silver from the ALM Mine compared with 224 kg of gold and 3,285 kg of silver in 2021. The company also produced 774 kg of gold from the Guyan gold mine in 2022 compared with 551 kg in 2021. AMAK commissioned its Guyan processing plant in 2021, which is located 190 kilometers (km) east of the city of Khamis Mushait in Asir Region. The plant's throughput capacity was 400,000 t/yr of ore. In 2022, the company continued to build its Moyeath processing plant, which was expected to be completed by the end of 2023. The completion of the plant was expected to increase AMAK's copper concentrate production by 50% and its zinc concentrate production by 80%. By the end of 2022, the total proved and probable reserves at the ALM Mine were 7.04 Mt grading 0.81 g/t gold and 29.73 g/t silver, and those at the Guyan Mine were 3.57 Mt grading 1.8 g/t gold (table 2; Al Masane Al Kobra Mining Co., 2023, p. 17–18, 24–25).

Iron and Steel.—Saudi Arabia's DRI output increased to 6.7 Mt in 2022 from 6.1 Mt in 2021. Raw steel output also increased to 9.9 Mt in 2022 from 8.7 Mt in 2021. SABIC Metals (Hadeed), which was a wholly owned subsidiary of SABIC, produced a wide range of iron and steel products. The company's production of raw steel increased by 13% to 5.2 Mt in 2022 from 4.6 Mt in 2021. Al-Ittefaq Steel Products Co. Ltd. produced billet, DRI, pelletized iron, raw steel, reinforced steel bar, wired rods, and other iron and steel products. The company owned and operated a 2.5-million-metric-ton-per-year (Mt/yr)-capacity iron pellet plant, a 2.5-Mt/yr-capacity DRI plant, a 3.0-Mt/yr-capacity scrap metal recycling mill, and a 2.8-Mt/yr-capacity rolling mill at Dammam in Eastern Region (tables 1, 2; Al-Ittefaq Steel Products Co., [undated]; SABIC, 2023, p. 15; World Steel Association, 2023, p. 9, 19).

Titanium.—In 2022, Saudi Arabia's production of titanium sponge increased to 9,700 t from 5,700 t in 2021 and 4,100 t in 2020. AMIC Toho Titanium Metal Co. Ltd. (ATTM), which was a joint venture of Advanced Metal Industries Cluster Co. Ltd. (AMIC) (65%) and Toho Titanium Co. of Japan (35%), operated the titanium sponge plant at Yanbu Industrial City on the Red Sea coast in Western Saudi Arabia. The plant had the capacity to produce 15,600 t/yr of titanium sponge. In 2022, AMIC operated Saudi Arabia's first titanium smelter, which was located at the Jazan Economic Zone in Jazan Region. The smelter had the capacity to produce 500,000 t/yr of titanium slag and 250,000 t/yr of pig iron. AMIC produced titanium slag for use by ATTM's titanium sponge plant at Yanbu (tables 1, 2; National Industrialization Company-Tasnee, 2023; Gambogi, 2024).

Zinc.—Saudi Arabia's production of zinc increased to an estimated 27,000 t in 2022 from 26,700 t in 2021. AMAK was Saudi Arabia's leading producer of zinc in 2022; it produced 41,151 t of zinc concentrate (21,191 t of zinc content) at the ALM Mine in 2022 compared with 42,398 t of zinc concentrate (21,971 t of zinc content) in 2021. At the end of 2022, AMAK's total proved and probable reserves at the ALM Mine were 7.51 Mt grading 4.5% Zn. MBCC and MGBM also produced unspecified amounts of zinc as a byproduct of the companies' copper- and gold-mining operations (table 1; Al Masane Al Kobra Mining Co., 2023, p. 18, 21; Saudi Arabia Mining Co., 2023, p. 37).

Industrial Minerals

Cement.—Saudi Arabia's cement production decreased to 52.4 Mt in 2022 from 53.7 Mt in 2021. The decrease was attributed to decreased domestic demand. Saudi Arabia cement exports, which were carried out under the control of the Government through export permits, increased to 8.94 Mt in 2022 from 8.18 Mt in 2021. In 2022, there were 22 portland and white cement plants, which had a combined capacity of 84.8 Mt/yr in Saudi Arabia. The stockpile of cement in Saudi Arabia remained at about 35 Mt in 2022 (tables 1, 2; Zawya, 2023).

Clay (Kaolin), Low-Grade Bauxite, and Magnesite.—Saudi Arabia's kaolin production was estimated to be 224,000 t in 2022, which wasunchanged from that in 2021. Kaolin production came mainly from MIMC's Az Zabirah Mine. The company's total proved and probable reserves of kaolin at the Az Zabirah mining license area were estimated to be 2.7 Mt, and the remaining mine life was 15 years as of 2022. Low-grade bauxite production was estimated to have increased to 300,000 t in 2022 from 296,000 t in 2021. MIMC's production of industrial bauxite came from the Az Zabirah Mine, which had 15.25 Mt of proved and probable reserves of bauxite ore grading 53.83% aluminum oxide and 15.78% SiO_2. MIMC also produced magnesite at its Al Ghazalah Mine; its production was estimated to be 340,000 t in 2022 compared with 350,000 t in 2021. The total proved and probable reserves of magnesite were 3.0 Mt grading 43.8% MgO and 2.2% SiO_2 (tables 1, 2; Saudi Arabian Mining Co., 2023, p. 60–61).

In 2022, MIMC was exploring for magnesite at Jabal Rokham, which is located about 330 km northeast of Jeddah and 60 km northeast of the Mahd ad Dahab Mine in Medina Region. The exploration permit covered a 112-square-kilometer (km^2) area and the mining permit covered 3.2 km^2. The inferred mineral resources at the Jabal Rokham project at the end of 2022 were 67.0 Mt of uncalcined magnesium oxide grading 42.1% MgO, 3.9% CaO, and 5.2% SiO_2 (Saudi Arabian Mining Co., 2023, p. 43).

Nitrogen.—Saudi Arabia produced and exported several types of nitrogen products, including ammonia, DAP, monoammonium phosphate (MAP), and urea. Ma'aden's affiliates MPC and MWSPC produced ammonia from plants at the Ras Al Khair complex and used it in the manufacturing of DAP and MAP and for direct sales. The country's ammonia (N content) production increased to an estimated 4.0 Mt in 2022 from 3.7 Mt in 2021, and production of urea (N content) increased to 2.3 Mt from 2.1 Mt in 2021 (tables 1, 2).

In 2022, SABIC Agri-Nutrients was the sole producer of urea in Saudi Arabia. The company was a joint venture of SABIC (50.1%) and public investors (49.9%) created to produce, process, manufacture, and market ammonia and urea and other nitrogen fertilizers. SABIC Agri-Nutrients owned the National Chemical Fertilizer Co. (Ibn Al Baytar), which produced nitrogen fertilizer, and Safco urea plants. The Al Baytar and Safco plants are at Jubail Industrial City in Eastern Region; the plants had a combined producton capacity of 5.4 Mt/yr of urea (tables 1, 2; SABIC, 2023).

Phosphate Rock.—Saudi Arabia's phosphate rock production was estimated to have decreased to 9.0 Mt in 2022 from 9.2 Mt in 2021. MCP produced phosphate rock at the Al Jalamid Mine, and MWSPC produced phosphate rock at the Al Khabra Mine. Both mines are in Northern Border Region. As of 2022, the total proved and probable phosphate rock reserves at the Al Jalamid mining permit were 262.7 Mt grading 19.15% diphosphorus pentoxide (P_2O_5) and those of the Al Khabra and the Umm Wu'al deposits were 1.03 billion metric tons grading 16.35% P_2O_5, for a total of 168.89 Mt of P_2O_5. The combined ammonium phosphate (DAP and MAP) production capacity of MCP and MWSPC had been more than 6.2 Mt/yr since 2020. In 2022, MWSPC was operating at full capacity (3 Mt/yr of DAP) at the Wa'ad Al Shamal mining and processing complex, which is located about 45 km northeast Turaif in Northern Border Region. MWSPC continued the construction of the third phase of the Ma'aden expansion plan at Wa'ad Al Shamal, which aimed to add 3 Mt/yr of DAP production capacity, which would increase Ma'aden's total production capacity to 9 Mt/yr. The complex was expected to be completed in 2025. The expansion of phosphate operations was expected to make Saudi Arabia the world's third-ranked producer of phosphate fertilizers after China and Morocco (tables 1, 2; Saudi Arabian Mining Co., 2023, p. 61, 112).

Mineral Fuels

Natural Gas and Petroleum.—In 2022, Saudi Arabia's overall hydrocarbon production increased to 13.6 million barrels of oil equivalent per day (Mboe/d) from 12.3 Mboe/d in 2021. The country's total petroleum liquids production, which included crude petroleum, condensate, and NGL, increased to 11.540 Mbbl/d in 2022 from 10.359 Mbbl/d in 2021. Total natural gas production, which included ethane and natural gas, increased to 301 million cubic meters per day from 287 million cubic meters per day in 2021. Saudi Arabia's proven reserves of natural gas increased by 11.8% to 9.5 trillion cubic meters in 2022 from 8.5 trillion cubic meters in 2021. In 2022, Aramco was implementing the Government's mandate of increasing its maximum sustainable capacity to 13 Mbbl/d from 12 Mbbl/d. Aramco started the development of the Al Jafurah unconventional gasfield, which was expected to be the largest nonassociated gasfield in the country. The gasfield is located southeast of the Ghawar Oilfield in Eastern Region. According to Aramco, the Al Jafurah Gasfield was the largest liquid-rich shale gasfield in the Middle East; it held an estimated 5.7 trillion cubic meters of natural gas and covered an area of 17,000 km^2. Aramco expected to produce 630,000 barrels per day (bbl/d) of NGL from the Al Jafurah Gasfield by 2030. In 2022, Aramco was ramping up production at its fifth wholly owned refinery in Saudi Arabia, the Jazan refinery, which had started production in 2021. The refinery had the designed capacity to process 400,000 bbl/d of crude petroleum in 2022 and was located at Jazan Economic Zone on the Red Sea coast of Jazan Region in southeastern Saudi Arabia (tables 1, 2; Gray, 2022; Organization of the Petroleum Exporting Countries, 2022, p. 76; Saudi Arabia Oil Co., 2022, p. 12, 14; 2023, p. 41–42; Lerh and Yap, 2023).

The major onshore oilfields in Saudi Arabia included the world's largest conventional oilfield, Ghawar (which had the capacity to produce 5.8 Mbbl/d of crude petroleum), as well as the Khurais (1.2 Mbbl/d), the Shaybah (1 Mbbl/d), the Khurasaniyah and the Qatif (500,000 bbl/d, each), and the Abqaiq (400,000 bbl/d) Oilfields. The country's main offshore oilfields included the Safaniya (which had the capacity to produce 1.2 Mbbl/d), the Manifa (900,000 bbl/d), the Zuluf (500,000 bbl/d), the Berri (400,000 bbl/d), the Abu Sa'afah (300,000 bbl/d), and the Marjan (270,000 bbl/d) Oilfields. Most of natural gas production in Saudi Arabia came from oilfields as a byproduct of crude petroleum and condensate; however, Arabiyah, Hasbah, and Karan were the country's main offshore gasfields, which only produced natural gas (table 2; Saudi Arabian Oil Co., 2021, p. 55; U.S. Energy information Administration, 2023, p. 6, 14).

Outlook

Production of metal commodities such as aluminum, copper, gold, iron and steel, titanium, and zinc, as well as industrial mineral commodities such as cement, gypsum, kaolin, magnesite, phosphate fertilizers, phosphate rock, pozzolan, and sand and gravel, is expected to increase during the next 5 years as the country's mining and mineral-processing companies ramp up production at existing facilities and start new ones. Saudi Arabia is likely to remain one of the world's leading producers of crude petroleum, natural gas, NGL, petrochemicals, and refined petroleum products as Aramco continues its capacity expansion projects. Saudi Arabia's share of world fertilizer exports is expected to increase as Ma'aden embarks on producing 9 Mt/yr of DAP following the completion of its third phosphate project at Wa'ad Al Shamal by 2025.

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TABLE 1

SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Thousand metric tons, gross weight, unless otherwise specified)

Commodity[2]		2018	2019	2020	2021	2022
METALS						
Aluminum:						
Alumina		1,774	1,798	1,782	1,922	1,900 e
Bauxite		4,731 r	5,031	4,946 r	4,781	4,800 e
Metals:						
Primary		776	776	796	999 r	953
Secondary		220	279	284	300 e	300 e
Copper, mine, concentrates:						
Gross weight	metric tons	235,200	277,600	308,000 r	308,000 r	304,000
Cu content, 25% Cu	do.	60,340	68,000 r	77,000 r	77,000 r	76,000
Ferroalloys:						
Ferromanganese	do.	15,000	12,000	9,000 r	9,000 r	9,000
Silicomanganese	do.	70,000	63,000	35,000	48,000 r	40,000
Gold, mine, Au content	kilograms	12,905	12,593	11,822	12,413	11,386
Iron and steel:						
Direct-reduced iron		6,000	5,800	5,200	6,128	6,714
Raw steel		8,187	8,191	7,775	8,735	9,860
Lead, smelter, secondary	metric tons	68,000	68,000	68,000	75,600	75,600
Silver, mine, concentrate, Ag content	kilograms	5,322	7,123	6,493	6,818	7,500 e
Titanium, sponge	metric tons	-	-	4,100	5,700	9,700
Zinc, mine, concentrate, Zn content	do.	24,000	30,000	25,400	26,700	27,000 e
INDUSTRIAL MINERALS						
Bauxite, low grade		438	297	282	296	300 e
Cement, hydraulic		41,937	44,341	53,418	53,699	52,400
Clay:						
Kaolin		216	227	213	224	224 e
Unspecified		10,187	10,696	7,147	7,504	8,000 e
Feldspar		206	216	523	549	550 e
Fertilizers, diammonium phosphate		5,444	6,098	6,200 r	6,200 r	6,200
Gypsum, mine		3,307	3,472	3,803	3,993	4,000 e
Magnesite[e]		140	110	81	350 r	340
Nitrogen, N content:						
Ammonia		4,300	4,000	4,300	3,700 r, e	4,000 e
Urea[e]		2,300	2,100	2,200	2,100 r	2,300
Phosphate rock:						
Gross weight		6,090	9,500 e	9,000 e	9,200 e	9,000 e
P_2O_5 content, 32% P_2O_5		1,949	3,040 e	2,900 e	2,900 e	2,900 e
Pumice and related materials, pozzolan		555	583	930	977	980 e
Salt		2,646	2,778	2,220	2,331	2,400 e
Sand and gravel, industrial, unspecified		1,433	1,505	1,380	1,449	1,500 e
Stone, sand, and gravel, construction:						
Sand and gravel:						
Common sand		24,000	25,000	21,400	22,470	25,000 e
Gravel		382,200	401,310	197,800	207,690	400,000 e
Iron sand		778	817	764	802	800 e
Stone:						
Crushed:						
Basalt		33	35	28	29	30 e
Dolomite		2,348	2,465	639	671	700 e
Limestone, for cement		69,457	72,930	46,210	48,521	50,000 e
Marble, for industrial use		2,947	3,094	3,506	3,681	3,700 e
Schist, scoria		665	600	570	599	600 e

See footnotes at end of table.

TABLE 1—Continued

SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Thousand metric tons, gross weight, unless otherwise specified)

Commodity[2]		2018	2019	2020	2021	2022
INDUSTRIAL MINERALS—Continued						
Sand and gravel:—Continued						
Stone:—Continued						
Dimension:						
Granite		1,160	1,218	2,320	2,436	2,500 e
Limestone, block		114	120	480	504	520 e
Marble, block		13	14	35	36	40 e
Sulfur, hydrocarbon processing, S content[e]		6,500	6,500	6,500	7,000	7,500
Talc and related materials, pyrophyllite		46	48	61	64	64 e
MINERAL FUELS AND RELATED MATERIALS						
Natural gas	milion cubic meters	112,300 r	111,200 r	103,500 r	104,806 r	109,800
Petroleum:						
Crude, total liquids	million 42-gallon barrels	4,245 r	4,096 r	3,808 r	3,781 r	4,212
Refinery products	do.	1,011	967	875	1,010	1,073

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

[1]Table includes data available through October 23, 2023. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

[2]In addition to the commodities listed, carbon black, caustic soda, lime, and methanol may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2022

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Ma’aden Bauxite and Alumina Co. (MBAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and AWA Saudi Ltd., 25.1%]	Refinery at Ras Al Khair, Jubail Industrial City, Eastern Region	1,800
Aluminum:			
Primary	Ma'aden Aluminium Co. (MAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Smelter at Ras Al Khair, Jubail Industrial City, Eastern Region	1,010
Secondary	Al Haramin Co.	Plant at Jeddah, Mecca Region	NA
Do.	Al Taiseer Group Talco Industrial Co.	Plant at Jeddah, Riyadh, Riyadh Region	60
Do.	Auminium Products Co. (Alpuco)	do.	22
	Aluminium Products Co. Ltd.	Plant at Dammam, Eastern Region	28
Do.	Ma’aden Rolling Co. (MRC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Rolling plant at Ras Al Khair, Jubail Industrial City, Eastern Region	120
Do.	do.	Recyling plant at Ras Al Khair, Jubail Industrial City, Eastern Region	130
Do.	Saudi Aluminium Extrusion & Powder Coating Co	Plant at Riyadh, Riyadh Region	NA
Do.	Saudi Aluminium Recycling Co. (Sarco)	Recyling plant at Jeddah, Mecca Region	18
Do.	Saudi Cable Co.	Plant at Jeddah, Mecca Region	NA
Bauxite:			
Metallurgical	Ma’aden Bauxite and Alumina Co. (MBAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Mine at Al Ba'itha, Qassim Region	4,600
Low-grade	Ma'dden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Az Zabirah Mine, Ha’il Region	1,100
Caustic soda	Arabian Alkali Co. (SODA)	Plant at Jubail Industrial City, Eastern Region	55
Do.	Sahara and Ma’aden Petrochemical Co. (SAMAPCO) [Sahara Petrochemical Co., 50%, and Saudi Arabian Mining Co. (Ma’aden), 50%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	25
Do.	Saudi Factory for Chlorine and Alkalies (SACHLO)	Plant in Riyadh Region	NA
Cement:			
Gray portland	Al Jouf Cement Co.	Plant South of Turaif, Northern Borders Region	1,750
Do.	Al Madina Cement Co.	Plant at Medina, Madinah Region	3,000
Do.	Al Safwa Cement Co. (El Khayat Group, 50%; General Pension Agency, 25%; General Organization for Social Insurance, 25%)	Plant in Mecca Region	2,000
Do.	Arabian Cement Co. Ltd.	Plant at Rabigh, Mecca Region	4,800
Do.	Eastern Cement Co.	Plant at Al Khursaniyah, Eastern Region	3,400
Do.	Hail Cement Co.	Plant at Turba, Hail Region	2,000
Do.	Najran Cement Co.	Plant at Aakfa, Najran Region	3,000
Do.	Northern Region Cement Co.	Plant at Turaif, Northern Boarders Region	1,700
Do.	Qassim Cement Co.	Plant at Jal al Watah, Buraydah, Qassim Region	4,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity
Cement:—Continued				
Gray portland—Continued		Riyadh Cement Co.	3 plants in Riyadh Region	3,800
Do.		Saudi Cement Co.	Plant at Al Hofuf, 120 kilometers southwest of Dammam, Eastern Region	8,600
Do.		Southern Region Cement Co. (Government, 52%)	Plant at Suq Al Ahad, Jazan Region	7,500
Do.		do.	Plant at Bishah, southeast Jeddah, Mecca Region	2,000
Do.		do.	Plant at Tihama, Southern Region	1,800
Do.		Tabuk Cement Co.	Plant in Tabuk Region	1,300
Do.		Umm Al Qura Cement Co.	Plant near Taif, Mecca Region	2,000
Do.		United Cement Co.	Plant at Al Sadiya, Mecca Region	2,000
Do.		Yamama Cement Co. Ltd.	Plant in Riyadh Region	6,300
Do.		Yanbu Cement Co.	Plant at Yanbu, Medina Region	6,400
White		Al-Gharbiah Cement Factory	Plant at Jeddah, Mecca Region	250
Do.		Saudi White Cement Co.	Plant at Riyadh, Riyadh Region	200
Clay, kaolin		Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Az Zabirah Mine in Mecca Region	350
Copper, concentrate, Cu content		Al Masane Al Kobra Mining Co. (AMAK) (Arab Mining Co., 20.46%; Asas Mining Services Co., 19.67%; local investors, 59.87%)	Al Masane Al Kobra Mine, Najran Region	50
Do.		Ma'aden Barrick Copper Co. (MBCC) [Barrick Gold Corp., 50%, and Saudi Arabia Mining Co. (Ma'aden), 50%]	JabaL Sayid Mine, Medina Region	280
Dolomite		Saudi Lime Industries Co.	Mine and plant in Riyadh Region	1,000
Do.		Saudi Dolomite Co. Ltd.	Mine and plant at Al Khobar, Eastern Region	1,500
Feldspar		United Mining Investment Co.	Mine at Rabigh, Mecca Region	300
Do.		Desert Mining Co. (Saudi Ceramics, 100%)	Mine in Riyadh Region	300
Ferroalloys		Gulf Ferro Alloys Co. (SABAYEK)	Plant at Jubail Industrial City, Eastern Region	140
Gold, mine, Au content	kilograms	Al Masane Al Kobra Mining Co. (AMAK) (Arab Mining Co., 20.46%; Asas Mining Services Co., 19.67%; local investors, 59.87%)	Guyan Mine and processing plant, Najran Region	1,000
Do.	do.	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Al Amar Mine, Ar Riyadh Region; Ad Duwayhi Mine, As Suq Mine, Mansourah-Massarah Mine, Mecca Region; Bulghah Mine, Mahd Adh-Dahab Mine, Sukhaybarat Mine, Madinah Region	13,000
Granite	cubic meters	Red Sea Mining Co. Ltd.	11 quarries in Najran Region and Ranyah in Mecca Region	18,000
Do.	do.	Tanhat Mining Co. Ltd.	Quarries in Ar-Rowaidah, Riyadh Region; Jamour, Najran Region; Ranyah, Mecca Region; Samakh, Asir Region	360,000
Gypsum		Al-Zahid Industrial and Mining Group	Quarry at Taymah, Tabouk Region	NA
Do.		Global Gypsum Co. Ltd.	Plants at Damman, Jeddah, Riyadh, Yanbu	300

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities**	Annual capacity
Gypsum—Continued	Mada Gypsum Co. (Al Rajhi Holding, 100%)	Plant at Yanbu Industrial City, Madinah Region	400
Do.	National Gypsum Co.	Plants at Damman, Estern Region; Jeddah, Mecca Region; Yanbu, Medinah Region	960
Iron and steel:			
Direct-reduced iron	Direct Reduction Iron Co. Ltd. (Al-Ittefaq Group, 100%)	Plants I and II at Dammam, Eastern Region	2,500
Do.	SABIC Metals (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Plants A, B, C, D, and E, Jubail, Eastern Region	5,500
Iron pellets	do.	Iron Pelletization Plant at Dammam, Eastern Region	2,500
Do.	Arab Steel Co. (Al-Ittefaq Group, 100%)	Plant at Dammam, Eastern Region	2,500
Pig iron	Advanced Metal Industries Cluster Co. Ltd. (AMIC)	Smelter at Jazan economic zone, Jazan Region	250
Steel:			
Raw steel	National Steel Co. Ltd. (Al-Ittefaq Group, 100%)	Plant at Dammam, Eastern Region	1,300
Do.	Rajhi Steel Industies Co. Ltd.	Plant at Jeddah, Mecca Region	850
Do.	SABIC Metals (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Plant at Jubail, Eastern Region	5,500
Do.	Solb Steel	Plant at Jazan economic zone, Jazan Region	1,200
Products	Arab Steel Co. (Al-Ittefaq Group, 100%)	Plant at Dammam, Eastern Region	4,500
Do.	Ajeej Steel Manufacturing Co.	Plant in Riyadh Region	360
Do.	National Steel Co. Ltd. (Al-Ittefaq Group, 100%)	Rolling mill at Dammam, Eastern Region	2,800
Recycled	Metal Recycling Co. (Al-Ittefaq Group , 100%)	Metal recycling mill at Dammam, Eastern Region	3,000
Lead, smelter, secondary	National Lead Smelting Co. (National Industrialization Company–Tasnee, 100%)	Plant in Riyadh Region	100
Lime:			
Hydrated	Astra Mining (Astra Industrial Group, 60%, and Tharawat Holding, 40%)	Plant at Al Kharj Industrial City, Al-Kharj Region	66
Do.	Saudi Lime Industries Co.	Plant in Riyadh Region	100
Quick lime	Astra Mining (Astra Industrial Group, 60%, and Tharwat Holding, 40%)	Plant at Al Kharj Industrial City, Al-Kharj Region	99
Do.	Saudi Lime Industries Co.	Plant in Riyadh Region	400
Magnesite:			
Crude ore	Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden, 100%)]	Mine at Al Ghazalah, Madinah Region	90
Caustic calcined	do.	Processing plant at Al-Medina Al-Munawwara Industrial City, Madinah Region	39
Dead burned	do.	do.	32
Methanol	National Methanol Co. (Ibn Sina) [Saudi Basic Industries Corp. (SABIC), 50%; Celanese Corp., 25%; Duke Energy, 25%]	do.	1,000
Do.	Saudi Methanol Co. (Ar-Razi) [Mitsubishi Gas Chemical Consortium, 50%, and Saudi Basic Industries Corp. (SABIC), 50%]	Plant at Jubail Industrial City, Eastern Region	850

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity
Natural gas, gross	million cubic meters	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Arabiyah gasfield, offshore	12,408
Do.	do.	do.	Gawar Field, onshore	75,000
Do.	do.	do.	Hasbah gasfield, offshore	34,122
Do.	do.	do.	Karan gasfield, offshore	18,612
Do.	do.	do.	Marjan gasfield, offshore	25,850
Do.	do.	do.	Safaniya oilfield, offshore	10,000
Do.	do.	do.	Wasit gas processing plant at Jubail Industrial City, Eastern Region	27,800
Nitrogen:				
Ammonia		Al Jubail Fertilizer Co. (Al-Bayroni) (SABIC Agri-Nutrients Co., 50%, and Taiwan Fertilizer Co. Ltd., 50%)	Plant at Jubail Industrial City, Eastern Region	1,200
Do.		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Arabia Basic Industries Corp. (SABIC), 30%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	1,200
Do.		Ma'aden Wa'ad Al-Shamal Phosphate Mining Co. (MWSPC) [Saudi Arabia Mining Co. (Ma'aden), 60%; Mosaic Co., 25%; Saudi Arabia Basic Industries Corp. (SABIC), 15%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	1,200
Do.		National Chemical Fertilizer Co. (Ibn Al-Baytar) [SABIC Agri-Nutrients Co.,100%]	do.	2,000
Do.		SABIC Agri-Nutrients Co. [Saudi Arabia Basic Industries Corp. (SABIC), 50.1%, and public Investors, 49.9%]	Plant at Jubail Industrial City, Eastern Region	2,300
Urea		do.	do.	2,000
Do.		do.	Safco 2, Safco 3, Safco 4, Safco 5 plants in Jubail Industrial City, Eastern Region	3,400
Petroleum:				
Crude	million 42-gallon barrels	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Abqaiq oilfield, onshore	146
Do.	do.	do.	Abu Sa'afah oilfield, offshore	110
Do.	do.	do.	Berri oilfield, onshore-offshore	146
Do.	do.	do.	Ghawar oilfield, onshore	2,117
Do.	do.	do.	Khurais oilfield, onshore	438
Do.	do.	do.	Khursaniyah oilfield, onshore	182
Do.	do.	do.	Manifa oilfield, onshore	328
Do.	do.	do.	Marjan oilfield, offshore	110
Do.	do.	do.	Qatif oilfield, onshore	182
Do.	do.	do.	Safaniya oilfield, offshore	438
Do.	do.	do.	Shaybah oilfield, onshore	365
Do.	do.	do.	Zuluf oilfield, offshore	248
Refinery products	do.	Aramco Mobil Refinery Co. Ltd. [Saudi Arabian Oil Co. (Aramco), 50%, and Mobil Yanbu Refining Co. Inc., 50%]	Refinery at Yanbu, Madinah Region	146
Do.	do.	Aramco Shell Refining Co. [Saudi Arabian Oil Co. (Aramco), 50%, and Shell Saudi Arabia Refining Ltd., 50%]	Refinery at Jubail, Eastern Region	113

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity
Petroleum:—Continued				
Refinery products —Continued	million 42-gallon barrels	Aramco Total Refining and Petrochemical Co. [Saudi Arabian Oil Co. (Aramco), 62.5%, and Total S.A., 37.5%]	Refinery at Jubail, Eastern Region	146
Do.	do.	Jazan Refinery [Saudi Arabian Oil Co. (Aramco), 100%]	Refinery at Jazan Economic City, Jazan Region	146
Do.	do.	Jeddah Oil Refinery Co. [Saudi Arabian Oil Co. (Aramco), 100%]	Refinery at Jeddah, Mecca Region	32
Do.	do.	Rabigh Refining & Petrochemical Co. (PetroRabigh) [Saudi Arabian Oil Co. (Aramco), 37.5%; Sumitomo Chemical Co., 37.5%; private investors, 25%]	Refinery at Rabigh, Mecca Region	146
Do.	do.	Riyadh Oil Refinery Co. [Saudi Arabian Oil Co. (Aramco), 100%]	Refinery in Riyadh Region	45
Do.	do.	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Refinery at Ras Tanura, Jubail, Eastern Region	201
Do.	do.	do.	Refinery at Yanbu, Medina Region	86
Do.	do.	Yanbu Aramco Sinopec Refining Co. Ltd. (YASREF) [Aramco, 62.5%, and China Petrochemical Corp. (SINOPEC), 37.5%]	Refinery at Yanbu, Medina Region	146
Phosphate:				
Ore		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Al Jalamid Mine, Northern Borders Region	12,000
Do.		Ma'aden Wa'ad Al-Shamal Phosphate Mining Co. (MWSPC) [Saudi Arabia Mining Co. (Ma'aden), 60%; Mosaic Co., 25%; Saudi Arabia Basic Industries Corp. (SABIC), 15%]	Al Khabra Mine, 45 km northeast Turaif, Northern Borders Region	12,000
Fertilizer		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	3,000
Do.		Ma'aden Wa'ad Al-Shamal Phosphate Mining Co. (MWSPC) [Saudi Arabia Mining Co. (Ma'aden), 60%; Mosaic Co., 25%; Saudi Arabia Basic Industries Corp. (SABIC), 15%]	Plant at Wa'ad Al Shamal, Turaif, Northern Boarders Region	3,000 .
Pozzolan		Consortium of Volcanic Pozzalan Producers	Quarries and plant in Jeddah, Mecca Region	NA
Do.		do.	Quarries and plant in Khamis Mushait, Asir Region	NA
Salt		Al-Zahid Industrial and Mining Group	Mines in Eastern Region	3,000
Silica (industrial) sand		Adwan Chemical Industries Co. Ltd.	Eldarees Quarry, Ad Doghm, Riyadh Region	NA
Do.		Al Raddadi Group	Quarry at Taymah, Tabuk Region	1,000
Do.		Al-Zahid Industrial and Mining Group	do.	100
Do.		Gulf Sand (Al-Marbaie Group)	do.	NA
Silver, mine, Ag content	kilograms	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Al Amar Mine, Ar Riyadh Region; Ad Duwayhi Mine, As Suq Mine, Mecca Region; Bulghah Mine, Mahd Adh-Dahab Mine, Sukhaybarat Mine, Madinah Region	5,600

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities**	Annual capacity
Sulfur		Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Refineries and gas processing plants at Jeddah, Jubail, Rabigh, Ras Tanura, Riyadh, and Yanbu	6,500
Sulfuric acid		Basic Chemicals National Co. (BCNC) (Basic Chemical Industries, 100%)	Plant at Yanbu Industrial City, Medina Region	365
Do.		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	4,900
Do.		Ma’aden Wa'ad Al-Shamal Phosphate Co. (MWSPC) [Saudi Arabia Mining Co. (Ma'aden), 60%; Mosaic Co., 25%; Saudi Basic Industries Co. (SABIC), 15%]	Plant at Wa’ad Al Shamal, Turaif, Northern Boarders Region	5,500
Do.		National Company for Sulphur Products (NCSP)	Plant in Riyadh Region	170
Do.		SABIC Agri-Nutrients Co. [Saudi Arabia Basic Industries Corp. (SABIC), 50.1%, and public investors, 49.9%]	Plant at Ras Al Khair, Jubail Industrial City, Eastern Region	130
Titanium:				
Slag	metric tons	Advanced Metal Industries Cluster Co. Ltd. (AMIC)	Smelter at Jazan economic zone, Jazan Region	15,600
Sponge	do.	Advanced Metal Industries Cluster and Toho Titanium Metal Co. Ltd. (ATTM) [Advanced Metal Industries Cluster Co. Ltd. (AMIC), 65%, and Toho Titanium Metal Co., 35%]	Plant at Yanbu Industrial City, Medina Region	10,000
Zinc, concentrate, Zn content		Al Masane Al Kobra Mining Co. (AMAK) [Arab Mining Co., 20.46%; Asas Mining Services Co., 19.67%; local investors, 59.87%]	Al Masane Al Kobra Mine, Najran Region	50
Do.		Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Al Amar Mine, Riyadh Region, and Mahd Adh-Dahab Mine, Medina Region	20

Do., do. Ditto. NA Not available.