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The Mineral Industry of Saudi Arabia

By Mowafa Taib

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

Saudi Arabia supplied the world with alumina, aluminum, ammonia, cement, copper, phosphate fertilizers, gold, iron and steel, crude petroleum, refined petroleum products, silver, sulfur, titanium sponge, urea, and zinc. Among world producers of the mineral commodities described below, Saudi Arabia was the 2d-ranked producer of natural gas liquids (NGL) after the United States, accounting for 13.7% of the world's total production; the 3d-ranked producer of crude petroleum after the United States and Russia, accounting for 12.3%; the 4th-ranked producer of diammonium phosphate (DAP), sulfur, and direct-reduced iron (DRI), accounting for 10.1%, 8.3%, and 5.0%, respectively; the 6th-ranked producer of nitrogen (fixed)-ammonia and alumina, accounting for 2.9% and 1.3%, respectively; the 7th-ranked producer of refined petroleum products, accounting for 3.1%; the 9th-ranked producer of natural gas, accounting for 2.9%; and the 10th-ranked producer of bauxite, accounting for 1.1%. Saudi Arabia also produced basalt, dolomite, feldspar, granite, iron and steel, gypsum, kaolin, secondary lead, limestone, magnesite, marble, petroleum coke, phosphate rock, pyrophyllite, salt, sand and gravel, industrial sand, and schist (table 1; BP p.l.c., 2021, p. 20, 21; Midrex Technologies Inc., 2021, p. 2; Apodaca, 2022a, b; Bray, 2022; Crangle, 2022; Jasinski, 2022).

In 2020, Saudi Arabia, which held the world's second-largest proven crude petroleum reserves after Venezuela, had reserves of 297.5 billion barrels, which accounted for 17.2% of the world's total. The country also held the world's eighth-largest proven natural gas reserves, estimated to be 6.0 trillion cubic meters and to account for 3.2% of the world's total (BP p.l.c., 2021, p. 16, 34).

Minerals in the National Economy

In 2020, Saudi Arabia, was the leading economy in the Middle East and North Africa region and the world's 19th-ranked economy in terms of the value of its nominal gross domestic product (GDP), which decreased to $700.1 billion[1] (SAR2.63 trillion) in 2020 from $793 billion (SAR2.97 trillion) in 2019. The country's GDP decreased in real terms by 4.1% in 2020 compared with an increase of 0.3% in 2019. The decrease was mainly attributed to the negative effects of the coronavirus disease 2019 (COVID-19) pandemic. Mining, quarrying, and related industrial activity, which included fuel and nonfuel mineral production, contributed 37.7% to the country's GDP in 2020 compared with 38.5% in 2019. The crude petroleum and natural gas sector's contribution to the GDP was about 37.0%, and that of the nonfuel mining sector was 0.4%. The output of the mining and quarrying sector decreased by 6% in 2020. The manufacturing sector, which included aluminum, electricity, and fertilizer production; natural gas processing; petroleum refining; and steel production, contributed 11.5% to the GDP in 2020 compared with 12.6% in 2019; that of the building and construction sector contributed 4.7% compared with 4.5% in 2019 (Saudi Central Bank, 2021, p. 26–27, 58–59).

Government Policies and Programs

In June 2020, the Government approved a new law—the Mining Investment Law—that was expected to speed up foreign investment in the mining sector of Saudi Arabia. The new mining law was expected to help achieve economic diversification away from hydrocarbon production by increasing the contribution of nonfuel industries to the country's GDP. The law, which came into effect on January 2, 2021, enables investors to finance their projects and supports exploration and geological survey activities. The Mining Investment Law allows for the granting of mining rights to other corporations and individuals and for transferring them to other persons with technical and financial competence and expertise (Meehan and Williams, 2020; Rashad, 2020).

The office of the Deputy Minister for Mineral Resources (DMR) within the Ministry of Industry and Mineral Resources (MIMR) supervises the country's mining activities, promotes investments, provides services, and issues mining licenses and concessions in the country. In 2020, the DMR issued several licenses for mineral exploration, material collection, and reconnaissance, and for several types of mining—construction material quarries, raw material quarries, and mining that includes small-scale mines. By the end of 2020, the number of valid (not expired or rescinded) DMR-approved mineral licenses totaled 2,062, and included 1,334 licenses for construction materials (sand and gravel, and stone), 556 licenses for mineral exploration, 70 licenses for raw materials mining (gold, copper, iron ore, phosphate rock, and zinc), and 69 licenses for small-scale mines (barite, clay, feldspar, gypsum, limestone, perlite, and salt). In 2020, the mining sector employed 250,000 people in Saudi Arabia (Roelf, 2019; Saudi Central Bank, 2021, p. 29, 51).

Production

Notable increases in mineral commodity production in Saudi Arabia in 2020 compared with production in 2019 included that of limestone, which increased by 300%; feldspar, 142%; granite, 90%; pumice, 60%; marble blocks, 36%; mined copper (concentrate, gross weight), 34%; diammonium phosphate, 31%; pyrophyllite, 27%; bauxite, 21%; cement, 20%; marble (crushed, for industrial use), 13%; and gypsum,

[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 2021, 2020, and 2019.

10%. Notable decreases in mineral commodity production in 2020 compared with production in 2019 included that of dolomite, which decreased by 74%; gravel, 51%; silicomanganese, 44%; condensate, 42%; limestone for cement, 37%; clay (unspecified), 33%; magnesite, 26%; petroleum coke, 23%; basalt and salt, 20% each; residual fuel oil, 19%; ferromanganese, 17%; mined zinc, 15%; gasoline, liquefied petroleum gas, and construction sand, 14% each; naphtha, 12%; total refined petroleum products, 11%; and DRI, 10%. Data on mineral production are provided in table 1.

Structure of the Mineral Industry

In 2020, 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 an important 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 2020 included Al Masane Al Kobra Mining Co. (AMAK), Al-Ittefaq Group, Saudi Arabian Mining Co. (Ma'aden), and Saudi Arabia Basic Industries Corp. (SABIC). Aramco acquired a 70% stake in SABIC in 2020, which wholly owned SABIC Metals (Hadeed) and was a majority owner (50.1%) of SABIC Agri-Nutrients Co. The country had 19 publicly traded cement companies. Ma'aden was a joint stock company owned by the Public Investment Fund (67.78%) and private investors (free floating shares accounted for the remaining 32.22%). Through its subsidiaries and joint ventures, Ma'aden produced alumina, aluminum, metallurgical and nonmetallurgical (low-grade) bauxite, copper, gold, kaolin, magnesite, phosphate fertilizers, phosphate rock, silver, and zinc (table 2).

Ma'aden subsidiaries included six wholly owned companies and six joint ventures. The wholly owned companies were Ma'aden Industrial Minerals Co. (MIMC), Ma'aden Infrastructure Co. (MIC), Ma'aden Gold and Base Metals Co. (MGBM), Ma'aden Marketing and Distribution Co. (MMDC), and Ma'aden Rolling Co. (MRC). The joint ventures were 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 AWA Saudi Ltd. (25.1%); AWA, which was owned by Alcoa (60%) and Alumina Ltd. of Australia (40%); 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 (table 2; Saudi Arabian Mining Co., 2021, p. 146–147, 1; SABIC Agri-Nutrients Co., 2021).

Mineral Trade

Total exports from Saudi Arabia decreased by 33.5% to $174 billion in 2020 from $262 billion in 2019. The share of petroleum exports, which included crude petroleum and refined petroleum products exports, decreased to 68.7% of the country's total exports in 2020 from 76.6% in 2019. The value of crude petroleum exports, which accounted for 57.7% of total exports, decreased by 40% to $119.2 billion in 2020 from $167.1 billion in 2019, and that of the refined petroleum products exports, which accounted for 10.9% of total exports, decreased by 43.5% to $19.0 billion in 2020 from $35.3 billion in 2019. The decrease in the value of exports was mainly attributed to the decrease in the volume of petroleum exports and to lower crude petroleum prices on world markets owing to the negative effects of the COVID-19 pandemic. The price of Arabian light crude averaged $41.91 per barrel in 2020 compared with $64.96 per barrel in 2019 (Saudi Central Bank, 2021, p. 50, 64).

In terms of volume, crude and refined petroleum products exports from Saudi Arabia decreased to 7.7 million barrels per day (Mbbl/d) in 2020 from 8.3 Mbbl/d in 2019. The country's crude petroleum exports averaged 6.7 Mbbl/d in 2020, which was about 0.3 Mbbl/d lower than the 7.0 Mbbl/d produced in 2019. Refined petroleum products exports decreased by 21.6% to 1.0 Mbbl/d in 2020 from 1.3 Mbbl/d in 2019. Most of the crude petroleum exports went to Asia (73.5%), followed by Western Europe (11.3%), North America (8.3%), the Middle East (3.1%), Africa (3.0%), South America (0.8%), and Oceania (0.1%). The refined petroleum products exports were shipped to Western Europe (31.5%), the Asia and the Pacific region (30.4%), Africa (21.5%), the Middle East (15.8%), and the Americas (1.0%) (Saudi Central Bank, 2021, p. 49–50).

In 2020, the value of Ma'aden's mineral exports, which included alumina, aluminum (primary and secondary), ammonia, ammonium phosphate, and precious metals, was $4.5 billion compared with $4.4 billion in 2019. Mineral exports went mainly to Europe (aluminum and gold) and India (phosphate fertilizers). Copper concentrates produced by MBCC were trucked from the Jabal Sayid Mine to Yanbu Port on the Red Sea and shipped to China, Europe, India, and the Philippines. Exports of semifinished and finished steel products decreased to 1.3 million metric tons (Mt) in 2020 from 2.5 Mt in 2019 (Saudi Arabian Mining Co., 2021, p. 151, 200–202; World Steel Association, 2021a, p. 53).

The value of imports to Saudi Arabia decreased by 9.9% to $138.0 billion in 2020 from $153.2 billion in 2019. Imports of metals and their products, which accounted for 9.6% of total imports in 2020, were valued at $13.2 billion. Saudi Arabia was the world's sixth-ranked net importer of steel in 2020. Imports of semifinished and finished steel products decreased to 7.0 Mt in 2020 from 7.9 Mt in 2019. Imports of DRI decreased to zero in 2020 from 1.5 Mt in 2019, and iron ore imports decreased to 4.3 Mt in 2020 from 5.1 Mt in 2019 (Saudi Central Bank, 2021, p. 67–68; World Steel Association, 2021a, p. 57, 99, 107; 2021b, p. 27).

Exports to the United States from Saudi Arabia decreased by 33% to $9.0 billion in 2020 from $13.4 billion in 2019. This was mainly attributed to the decrease in the value of crude petroleum exports, which was $7.1 billion in 2020 compared with $11.2 billion in 2019. Other mineral-related exports from Saudi Arabia to the United States included petroleum products ($451 million), bauxite and aluminum ($263 million), fertilizers ($228 million), fuel oil ($196 million), precious metals other

than gold ($66 million), organic chemicals ($57 million), gold ($17 million), and nickel ($2 million). Imports to Saudi Arabia from the United States decreased by 23% to $11.1 billion in 2020 from $14.5 billion in 2019. The main mineral and mineral-related import categories were fuel oil ($89 million), other petroleum products ($88 million), steelmaking materials ($87 million), iron and steel products ($73 million), fertilizers ($9 million), nuclear fuel materials ($6 million), nonmetallic minerals ($5 million), copper ($4 million), nonferrous metals ($4 million), aluminum and alumina and precious metals ($3 million each), and NGL ($1 million) (U.S. Census Bureau, 2022a–c).

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—The sole producer of bauxite and alumina in Saudi Arabia was MBAC. The company's output of metallurgical bauxite at the Al Ba'itha Mine decreased to 4.9 Mt in 2020 from about 5.0 Mt in 2019. The mine is in Al Qasim Region about 550 kilometers (km) west of Ras Al Khair on the Gulf coast, where the country's sole alumina refinery and aluminum smelter are located. At the end of 2020, the proven and probable reserves of metallurgical bauxite at the Al Ba'itha Mine were 183.4 Mt grading 48.2% total available alumina (TAA) and 9.3% silica dioxide (SiO_2) at a cutoff grade of 40% TAA (tables 1, 2; Saudi Arabian Mining Co., 2021, p. 82, 114–115).

Alumina production at MBAC's Ras Al Khair alumina refinery decreased slightly to 1.78 Mt in 2020 from 1.80 Mt in 2019. This refinery supplied alumina for MAC's aluminum smelter. In 2020, MBAC exported 300,000 metric tons (t) of alumina to neighboring countries (table 1; Saudi Arabian Mining Co., 2021 p. 82).

Production of primary aluminum in Saudi Arabia increased to 796,000 t in 2020 from 776,000 t in 2019. Aluminum production was carried out by MAC at its smelter in Ras Al Khair. MAC's casthouse production increased to more than 1.01 Mt of aluminum products, including billets, ingots, and slabs, in 2020 compared with 967,000 t in 2019. The company also produced 284,000 t of flat-rolled aluminum in 2020 compared with 279,000 t in 2019. MAC's aluminum rolling mill had the capacity to produce 460,000 metric tons per year (t/yr) of secondary aluminum products as well as 130,000 t/yr of can recycling capacity (tables 1, 2; Saudi Arabian Mining Co., 2021, p. 82).

Copper.—The leading copper producer in Saudi Arabia in 2020 was MBCC; it increased its copper output at the Jabal Sayid Mine to 68,291 t in 2020 from 60,910 t in 2019. The copper output in 2020 was a record for the company. The company processed 2.6 Mt grading 2.79% copper with a 93% recovery rate in 2020. The increase in copper output was attributed to higher ore grade and throughput that year. In addition to copper, MBCC produced unspecified quantities of cobalt, lead, nickel, silver, sulfur, and zinc at the Jabal Sayid Mine. In 2020, MBCC carried out an exploration program to extend the mine's life, which was estimated to be 16 years after production commenced in 2015. As of December 31, 2020, total proved and probable copper reserves at the Jabal Sayid Mine were estimated to be 24.6 Mt grading 2.3% copper and 0.2 gram per metric ton (g/t) gold for a total of 560,000 t of copper (tables 1, 2; Saudi Arabian Mining Co., 2020, p. 151; 2021, p. 88, 114; Barrick Gold Corp., 2021, p. 7, 98, 103).

AMAK was the second-ranked producer of copper in Saudi Arabia in 2020; it mined copper at the Masane Al Kobra Mine and produced 6,033 t of copper in 2019 compared with 6,016 t in 2018. By the end of 2019 (the latest year for which comprehensive information was available), the proven reserves at the Al Houra, the Moyeath, and the Saadah mining zones of the Masane Al Kobra Mine were 3.24 Mt grading 0.8% copper and the probable reserves were 4.44 Mt grading 0.9% copper. On September 28, 2020, Trecora Resources of the United States completed the sale of its stake in AMAK to other shareholders of AMAK joint stock company. After the transaction, AMAK's new owners were Arab Mining Co. of Jordan (20.46%), Asas Mining Services Co. (19.67%), and local investors (59.87%) (table 2; Trecora Resources, 2020; Al Masane Al Kobra Mining Co., 2022, p. 67).

Although the company focused on gold mining in Saudi Arabia, MGBM also produced copper concentrate as a byproduct of its gold operations at the Al Amar Mine. In 2019 (the latest year for which comprehensive information was available), the company produced 10,000 t of copper concentrate. The company's copper concentrates were exported to South America (table 2; Saudi Arabian Mining Co., 2021, p. 98).

Gold.—The mined gold output of Saudi Arabia had been steadily increasing between 2013 and 2019. However, it decreased by 6% to a revised 11,822 kilograms (kg) in 2020 from 12,593 kg in 2019 owing to the COVID-19 pandemic. The leading gold producer in the country was MGBM; it operated six mines in 2020. The company's gold production decreased to 10,955 kg in 2020 from 12,417 kg in 2019. Most of the production was from the Ad Duwayhi Mine in Makkah al Mukarramah Region, which produced 7,744 kg of gold in 2020 compared with 8,193 kg in 2019. Production in 2020 at other mines included the Bulghah Mine in Al Madinah al Munawwarah Region (1,759 kg), the Al Amar Mine in Ar Riyad Region (994 kg), the Mahd Adh-Dahab Mine in Al Madinah al Munawwarah Region (900 kg), the Sukhaybarat Mine in Al Madinah al Munawwarah Region (683 kg), and the As Suq Mine in Makkah al Mukarramah Region (635 kg). The total proved and probable reserves of MGBM at the end of 2020 were estimated to be 192.7 Mt grading 1.54 g/t gold for a total of 297,000 kg of gold (reported as 9.55 million ounces). The gold reserves were at 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 mining license; the Ar Rjum Waseemah mining license, the Mansourah mining license, and the Massarah mining license (tables 1, 2; Saudi Arabian Mining Co., 2021, p. 86–87, 114–115; 2022, p. 78–79).

In 2020, AMAK completed construction of the Guyan gold-ore-processing plant and began to process gold ore from the Guyan gold mine, which is located 15 km from the processing plant and 190 km east of the city of Khamis Mushait in southwestern Saudi Arabia. The Guyan Mine was expected to

produce more than 12,440 kg of gold during the next 6 years. The company continued drilling at the Guyan site to increase the life of the mine beyond 6 years. Total probable and proven reserves in the Guyan deposits were 1.7 Mt grading 2.4 g/t gold (table 2; Al Masane Al Kobra Mining Co., 2021a, b; 2022, p. 79, 84).

Iron and Steel.—Production of DRI in Saudi Arabia decreased by 10% to 5.2 Mt in 2020 from 5.8 Mt in 2019. Raw steel output decreased to 7.8 Mt in 2020 from 8.2 Mt in 2019. Raw steel production in 2017, as reported in table 1, reflects the output of only the country's main producer, Hadeed; production data for 2018 through 2021, however, are for national production. 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 decreased by 5% to 4.42 Mt in 2020 from 4.67 Mt in 2019 owing to a decrease in domestic demand. 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-Mt/yr-capacity iron pellet plant, a 2.5-Mt/yr DRI plant, a 3.0-Mt/yr scrap metal recycling mill, and a 2.8-Mt/yr rolling mill (tables 1, 2; Al-Ittefaq Steel Products Co. Ltd., 2021; Saudi Arabia Basic Industries Corp., 2021, p. 34; World Steel Association, 2021b, p. 9, 19).

Titanium.—Titanium sponge production in Saudi Arabia began in 2019. Industries Cluster and 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%), completed the construction of a 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. Production was originally expected to increase to 500 t in 2020 from 100 t in 2019 but it was negatively affected by the COVID-19 pandemic. The first titanium smelter plant in the country was built by AMIC in Jazan City. Production started in October 2019 following a long delay caused by the increased cost and unavailability of raw material. 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 Industrial City. AMIC was created by National Titanium Dioxide Co. Ltd. (Cristal) and National Industrialization Company-Tasnee to develop titanium production in Saudi Arabia in 2014 (Trimble Solutions Corp., 2018; Argus Media Group, 2019; National Industrialization Company-Tasnee, 2021).

Zinc.—AMAK was the leading producer of zinc in Saudi Arabia in 2020. AMAK's zinc output came from the Masane Al Kobra Mine, which is in Najran Region. At the end of 2020, AMAK's total probable and proven ore reserves at the Al Masane Al Kobra Mine were 7.9 Mt grading 3.5% zinc. At the Jabal Sayid copper mine, MBCC produced an unspecified amount of zinc as a byproduct of copper mining. Zinc was also produced by MGBM at the Al Amar gold mine. The company produced 18,000 t of zinc concentrate in 2019 and exported the entire amount to Europe (Saudi Arabian Mining Co., 2021, p. 151; Al Masane Al Kobra Mining Co., 2022, p. 79).

Industrial Minerals

Cement.—Cement production in Saudi Arabia increased by 20% to 53.4 Mt in 2020 from 44.3 Mt in 2019. This was attributed to increased domestic demand and increased exports. Saudi Arabia exported 6.6 Mt of cement in 2020 and imported 563,000 t. There were 19 companies that operated 22 portland and white cement plants with a combined capacity of 84.8 Mt/yr in Saudi Arabia in 2020. In 2019 (the latest year for which comprehensive information was available), Southern Province Cement Co., a majority Government-owned company (52%), was the leading producer of cement in the country in terms of tonnage. The company produced a total of 6.4 Mt at its three plants. In descending order of produced tonnage in 2019, the remaining cement producers in Saudi Arabia were Saudi Cement Co. (5.7 Mt), Yamama Cement Co. (3.9 Mt), Yanbu Cement Co. (3.6 Mt), Qassim Cement Co. (3.4 Mt), Al Madina Cement Co. (2.7 Mt), Riyadh Cement Co. (2.5 Mt), Eastern Cement Co. (2.4 Mt), and Arabian Cement Co. Ltd. (2.2 Mt) (tables 1, 2; General Authority of Statistics, 2020; International Cement Review, 2021, p. 282; Hatfield, 2023).

Clay (Kaolin), Low-Grade Bauxite, and Magnesite.—Kaolin production in Saudi Arabia had been gradually increasing between 2016 and 2019 but decreased by 5% in 2020 to 215,000 t from 227,000 t in 2019. 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 were estimated to be 2.3 Mt, and the remaining mine life was 17 years as of 2020. Low-grade bauxite production decreased by 5% to 282,000 t in 2020 from 297,000 t in 2019. Production of industrial bauxite came from MIMC's Az Zabirah Mine, which had 6.6 Mt of total proved and probable reserves of bauxite ore grading 53.6% aluminum oxide and 14.7% silica oxide. MIMC also produced magnesite at its Al Ghazalah Mine; its production was 98,000 t in 2020 compared with 99,000 t in 2019 and 140,000 t in 2018. The total proved and probable reserves of magnesite were 3.0 Mt grading 43.8% magnesium oxide and 2.2% silica oxide. The reserve life of the low-grade bauxite and magnesite in 2020 was 17 years and 37 years, respectively (tables 1, 2; Saudi Arabian Mining Co., 2021, p. 114–115).

Nitrogen (Ammonia).—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 their plants at the Ras Al Khair complex and used it in the manufacturing of DAP and MAP and for direct sales. In 2020, MPC and MWSPC produced a total of 2.34 Mt of ammonia compared with 2.26 Mt in 2019. They also produced 5.1 Mt of ammonium phosphate fertilizer in 2020 compared with 5.2 Mt in 2019 (Saudi Arabian Mining Co., 2021, p. 73).

In 2020, production of urea in Saudi Arabia increased to about 4.8 Mt from 4.5 Mt in 2019. Saudi Arabian Fertilizer Co. (Safco), which was the sole producer of urea in Saudi Arabia, acquired SABIC's share in the company and changed its name to SABIC Agri-Nutrients Co. in 2020. SABIC Agri-Nutrients, which was a joint venture of SABIC (50.1%) and public investors (49.9%), was to produce, process, manufacture, and market ammonia and urea fertilizers.

SABIC Agri-Nutrients owned the National Chemical Fertilizer Co. (Ibn Al Baytar), which produced nitrogen fertilizer at its plant in Jubail Industrial City, and the Safco-5 urea plant. The Safco-5 plant, which was located 100 km north of Dammam in Ash Sharqiyah Region in eastern Saudi Arabia, had the capacity to produce 3.4 Mt/yr of urea (tables 1, 2; SABIC Agri-Nutrients Co., 2021).

Phosphate Rock.—Phosphate rock production in Saudi Arabia was estimated to have decreased to 9.0 Mt in 2020 from 9.5 Mt in 2019. The Al Jalamid and the Al Khabra Mines produced phosphate rock for fertilizer processing by MCP and MWSPC. In 2020, the total estimates of proved and probable phosphate rock reserves at the Al Jalamid, the Al Khabra, and the Umm Wu'al deposits were 1.38 billion metric tons grading 16.8% phosphorus pentoxide (P_2O_5) for a total of 230.9 Mt of P_2O_5. The country produced 6.4 Mt of DAP in 2020 compared with 6.1 Mt in 2019. At its plant at Ras Al Khair in Jubail Industrial City, MPC had the capacity to produce 3 Mt/yr of DAP (tables 1, 2; Saudi Arabian Mining Co., 2021, p. 99, 114).

In 2020, MWSPC operated at its full capacity of 3 Mt/yr of DAP at the Wa'ad Al Shamal mining and processing complex, which was located about 45 km northeast of Turaif in Al Hudud ash Shamaliyah Region. The same year, MWSPC continued the construction of the third phase (also known as Project 3) of the Ma'aden expansion plan, which aimed to increase its capacity to produce phosphate fertilizers by adding 3 Mt/yr of capacity at the Wa'ad Al Shamal Industrial Minerals City in the northern region of Saudi Arabia, which would increase Ma'aden's production capacity to a total of 9 Mt/yr. The complex was expected to be completed in 2025 (Saudi Arabian Mining Co., 2021, p. 134).

In 2019, Ma'aden acquired an 85% stake in Meridian Consolidated Investments Ltd. of Mauritius, which was a fertilizer distribution company in eastern and southern Africa. In 2020, Meridian distributed 470,000 t of fertilizers produced by Ma'aden affiliates in Africa compared with 320,000 t in 2019 (Saudi Arabian Mining Co., 2021, p. 73, 146).

Mineral Fuels

Natural Gas and Petroleum.—Aramco's production of hydrocarbons decreased to 12.4 million barrels of oil equivalent per day (Mboe/d) in 2020 from 13.2 Mboe/d in 2019. Except for natural gas, production of hydrocarbons in Saudi Arabia in 2020 decreased compared with that in 2019, especially in the first half of the year, owing to the negative effects of the COVID-19 pandemic on world demand for mineral fuels and related materials. Crude petroleum production in Saudi Arabia decreased by 6% in 2020 to 3,372 Mbbl from 3,580 Mbbl in 2019. Aramco maintained maximum sustainable capacity of 12 Mbbl/d of crude petroleum and was conducting engineering works to increase its capacity to 13 Mbbl/d. Refined petroleum products output decreased by an average of 16% to 797 Mbbl from 927 Mbbl in 2019 (tables 1, 2; Saudi Central Bank, 2021, p. 28; Saudi Arabian Oil Co., 2021, p. 37, 56–57).

Production of natural gas (dry basis) was the exception because it slightly increased to 93.4 billion cubic meters in 2020 from 92.8 billion cubic meters in 2019. The reason for of the slight increase in natural gas production in 2020 despite the negative effects of the COVID-19 pandemic was attributed to the progress that Aramco made in completing several major projects in the country during the year. These projects included the Fadhili gas plant, which reached its designed gas-processing capacity of 71 million cubic meters per day in the second quarter of 2020; and the Ethane deep recovery facility at the Uthmaniyah gas plant, which was commissioned in early 2020 and had a total gas-processing capacity of 40 million cubic meters per day. Aramco reported that it reached its highest (to date) natural gas production per day of 300 million cubic meters on August 6, 2020 (tables 1, 2; Saudi Arabian Oil Co., 2021, p. 37, 56–57).

In 2019, the Government of Kuwait and the Government of Saudi Arabia agreed to end their dispute over the Kuwaiti Saudi Neutral Zone, which had halted petroleum production since 2015. In February 2020, Aramco resumed joint petroleum production operations at the Al-Khafji offshore field in the Neutral Zone through its subsidiary Gulf Operations Co. Ltd. The company started production at the field at a rate of 600,000 barrels per day (bbl/d) in August 2020, and production was expected to increase to 700,000 bbl/d by 2025 (Hagagy and Nehma, 2020; Saudi Arabian Oil Co., 2021, p. 12; Krishna, 2023).

The major onshore oilfields in Saudi Arabia included the Ghawar (which was the world's largest conventional oilfields and had the capacity to produce 5.8 Mbbl/d of crude petroleum), 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) Fields. The country's main offshore crude petroleum fields included the Safaniya (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) Fields. Most natural gas production in Saudi Arabia came from oilfields as a byproduct of the production of crude petroleum and condensate; however, the Arabiyah, the Hasbah, and the Karan Fields, which were the country's main offshore gasfields, produced only natural gas (table 2; Saudi Arabian Oil Co., 2021, p. 55; U.S. Energy Information Administration, 2021, p. 6, 14).

MINERAL INDUSTRY HIGHLIGHTS IN 2021

In 2021, Saudi Arabia was the world's second-ranked producer of NGL after the United States and accounted for 13.7% of the world's total production; the third-ranked producer of crude petroleum after the United States and Russia and accounted for 12.9% of the world's total; the fourth-ranked producer of DAP, sulfur, DRI, and refined petroleum products (refinery output),, and accounted for 10.1%, 8.6%, 5.0%, and 3.5% of the world's totals, respectively; the sixth-ranked producer of nitrogen (fixed)-ammonia and accounted for 2.9% of world's total; the seventh-ranked producer of alumina and accounted for 1.4% of world's total; the eighth-ranked producer of natural gas and accounted for 2.9% of total world's total; and the ninth-ranked producer of pumice (pozzolan) and bauxite and accounted for 3.7% and 1.2% of the world's total, respectively (table 1; BP p.l.c., 2022, p. 17, 18, 25, 29; Midrex Technologies Inc., 2022, p. 2; Apodaca, 2023a, b; Bray, 2023; Crangle, 2023; Jasinski, 2023).

Minerals in the National Economy

In 2021, Saudi Arabia was the leading economy in the Middle East and North Africa region and the world's 18th-ranked economy in terms of the value of its nominal GDP, which increased to $833.5 billion in 2021 from $703.4 billion in 2020. The country's GDP increased in real terms by 3.2% in 2021 compared with a decrease of 4.1% in 2020. The increase was mainly attributed to the recovery from the negative effects of the COVID-19 pandemic and to a 4.9% increase in the activities of the nonpetroleum sector. At 2010 constant prices, the petroleum sector's contribution to the GDP was about 40.6%; mining and quarrying activities, 37.1%; the manufacturing sector, 12.1%; and the building and construction sector, 4.5%. The contribution of mining and quarrying activity to the country's GDP increased to 27.4% in 2021 from 21.3% in 2020 (Saudi Central Bank, 2024, p. 28–29, 62–63; Statistics Times, 2022).

Government Policies and Programs

At the end of 2021, the number of valid DMR-approved mineral licenses totaled 2,100 and included 1,267 licenses for the extraction of construction materials (sand and gravel, and stone), 633 licenses for mineral exploration, 169 licenses for raw materials mining (gold, copper, iron ore, phosphate rock, and zinc), and 30 prospecting licenses. The mining sector employed 250,000 people in Saudi Arabia in 2021 (Rashad, 2020; Ministry of Industry and Mineral Resources, 2022).

Production

Notable increases in mineral commodity production in Saudi Arabia in 2021 compared with production in 2020 included that of silicomanganese, which increased by 86%; ferromanganese, 50%; naphtha, 42%; urea, 36%; residual fuel oil, 22%; asphalt and gasoline, 20% each; petroleum coke, 19%; DRI, 18%; distillate fuel oil and total refined petroleum products, 13% each; and raw steel and secondary lead, 12% each. Notable decreases in mineral commodity production in 2021 compared with production in 2020 included that of kerosene and condensate, which decreased by 13% and 10%, respectively (table 1).

Commodity Review

Metals

Gold.—Gold output in Saudi Arabia increased to 12,413 kg in 2021 from 11,812 kg in 2020. In 2021, MGBM's gold production decreased to 10,564 kg. Most of the production was from the Ad Duwayhi Mine, which produced 5,688 kg of gold in 2021 compared with 7,733 kg in 2020. Production at the Bulghah Mine was 1,767 kg; the Al Amar Mine, 902 kg; the Mahd Adh-Dahab Mine, 735 kg; the Sukhaybarat Mine, 752 kg; and the As Suq Mine, 718 kg. As a byproduct of its gold operations, MGBM also produced 685 kg of copper. The company's total proved and probable reserves at the end of 2021 were estimated to be 182.3 Mt grading 1.55 g/t gold for a total of 283,000 kg of gold (reported as 9.1 million troy ounces). In 2021, MGBM signed an $880 million contract for the operational mining services at the Mansourah-Massarah gold mine, which was expected to be the company's leading gold mine in terms of production. The mine was expected to use only wastewater in its operation and, by 2025, to meet 20% of its energy needs with renewable resources. Commercial production from the Mansourah-Massarah gold mine was expected to begin in late 2022 at a rate of 7,775 kilograms per year of gold for the estimated 12 years of the life of the mine. Proven and probable ore reserves at the Mansourah and Massarah deposits were estimated to be 27.7 Mt grading 5.06 g/t gold and 17.3 Mt grading 1.99 g/t gold, respectively (tables 1, 2; NS Energy, 2022; Saudi Arabian Mining Co., 2022, p. 7, 11, 79–80, 96–97).

AMAK commissioned its Guyan Process plant in January 2021. The plant's throughput capacity was 400,000 t/yr of ore. In 2021, the company continued to build its Moyeath Process Plant, which was expected to be completed by the end of 2023. When the plant is completed, AMAK's copper concentrate production would increase by 50%, and zinc concentrate production, by 80% (table 2; Al Masane Al Kobra Mining Co., 2021b; 2022, p. 88).

Industrial Minerals

Nitrogen (Ammonia) and Phosphate Rock.—In 2021, Ma'aden completed the construction of its third ammonia plant in Ras Al Khair, which increased the company's total phosphate fertilizer production capacity by 30%. The expansion of phosphate operations was expected to make Saudi Arabia the world's third-ranked producer of phosphate fertilizers after China and Morocco. Ma'aden accounted for 18% of phosphate fertilizers world trade in 2021 (Saudi Arabian Mining Co., 2022, p. 11, 14, 33).

Mineral Fuels

Natural Gas and Petroleum.—Saudi Arabia hydrocarbon production decreased to 12.3 Mboe/d in 2021 from 12.4 Mboe/d in 2020. The country's crude petroleum production averaged 9.2 Mbbl/d in 2021 and 2020. Aramco began implementing the Government's mandate of increasing its maximum sustainable capacity to 13 Mbbl/d from 12 Mbbl/d, and started the development of the Al Jafurah unconventional gasfield, which was expected to be the largest nonassociated gasfield in the country; the field is located southeast of the Ghawar Oilfield in Ash Sharqiyah 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 17,000 square kilometers. Aramco expected to produce 630,000 bbl/d of NGL from the Al Jafurah Gasfield by 2030. In 2021, Aramco started production at the greenfield Jazan refinery at 50% of its designed processing capacity of 400,000 bbl/d of crude petroleum. The refinery was expected to operate at full capacity in 2022. The Jazan refinery was located at Jazan Economic City in Jazan Region on the Red Sea coast in southeastern Saudi Arabia (table 1; Saudi Arabian Oil Co., 2022, p. 39, 51–52; 2023).

Outlook

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

References Cited

Al -Ittefaq Steel Products Co., 2021, Overview: Dammam, Saudi Arabia, Al Ittefaq Steel Products Co. (Accessed November 10, 2021, at http://www.ispc.com.sa/Overview.aspx.)

Al Masane Al Kobra Mining Co., 2021a, Our company in glance: Najran, Saudi Arabia, Al Masane Al Kobra Mining Co. (Accessed December 14, 2022, at https://www.amak.com.sa/about.html#projectdevlopmentjourney.)

Al Masane Al Kobra Mining Co., 2021b, Our mines & the mining process: Najran, Saudi Arabia, Al Masane Al Kobra Mining Co. (Accessed December 14, 2022, at https://amak.com.sa/?page_id=853.)

Al Masane Al Kobra Mining Co., 2022, Prospectus: Najran, Saudi Arabia, Al Masane Al Kobra Mining Co., December 14, [variously paged, 506 p.]. (Accessed May 3, 2023, at https://cma.org.sa/en/Market/Prospectuses/Documents/amak_en.pdf.)

Apodaca, L.E., 2022a, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2022, p. 118−119.

Apodaca, L.E., 2022b, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2022, p. 162−163.

Apodaca, L.E., 2023a, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 126−127.

Apodaca, L.E., 2023b, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 170−171.

Argus Media Group, 2019, Saudi-Japanese venture begins titanium sponge output: London, United Kingdom, Argus Media Group, October 8. (Accessed November 10, 2020, at https://www.argusmedia.com/news/1991192-saudijapanese-venture-begins-titanium-sponge-output.)

Barrick Gold Corp., 2021, Mining for a new world—Delivering the future—Annual report 2020: Toronto, Ontario, Canada, Barrick Gold Corp., 228 p. (Accessed November 19, 2021, at https://s25.q4cdn.com/322814910/files/doc_financial/annual_reports/2020/Barrick-Annual-Report-2020.pdf.)

BP p.l.c., 2021, Statistical review of world energy (70th ed.): London, United Kingdom, BP p.l.c., ed. 70, July, 69 p. (Accessed November 10, 2021, at https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pdf.)

BP p.l.c., 2022, BP statistical review of world energy (71st ed.): London, United Kingdom, BP p.l.c., ed. 71, July, 57 p. (Accessed December 8, 2022, at https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf.)

Bray, E.L., 2022, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2022, p. 32−33.

Bray, E.L., 2023, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 40−41.

Crangle, R.D., Jr., 2022, Pumice and pumicite: U.S. Geological Survey Mineral Commodity Summaries 2022, p. 130−131.

Crangle, R.D., Jr., 2023, Pumice and pumicite: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 138−139.

General Authority of Statistics, 2020, [Industry], chap. 11 of [Statistical yearbook 2019]: Riyadh, Saudi Arabia, Central Department for Statistics, and Information. (Accessed October 9, 2021, at https://www.stats.gov.sa/ar/258.) [In Arabic.]

Hagagy, Ahmed, and Nehma, Dahlia, 2020, Kuwait and Saudi Arabia start work to resume oil output from Khafji: Thomson Reuters, February 2. (Accessed November 14, 2021, at https://www.reuters.com/article/us-kuwait-saudi-oil/kuwait-and-saudi-arabia-start-work-to-resume-oil-output-from-khafji-sources-idUSKBN1ZW0BC.)

Hatfield, A.K., 2023, Cement: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 52−53.

Jasinski, S.M., 2022, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2022, p. 124−125.

Jasinski, S.M., 2023, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2023, p. 132−133.

International Cement Review, 2021, Saudi Arabia, in The global cement report (14th ed.): Dorking, United Kingdom, Tradeship Publications Ltd., p. 282-284.

Krishna, Rithika, 2023, Saudi-Kuwait Neutral Zone output 300,000 b/d—Sources: London, United Kingdom, Argus Media Group, February 23. (Accessed August 22, 2023, at https://www.argusmedia.com/en/news/2422726-saudikuwait-neutral-zone-output-300000-bd-sources.)

Meehan, Luke, and Williams, Rhiannon, 2020, New mining investment law in Saudi Arabia: Chicago, Illinois, Baker McKenzie, October. (Accessed August 24, 2023, at https://insightplus.bakermckenzie.com/bm/attachment_dw.action?attkey=FRbANEucS95NMLRN47z%2BeeOgEFCt8EGQJsWJiCH2WAWHb%2FPDBPVvghGYe%2B5L4Vxy&nav=FRbANEucS95NMLRN47z%2BeeOgEFCt8EGQbuwypnpZjc4%3D&attdocparam=pB7HEsg%2FZ312Bk8OIuOIH1c%2BY4beLEAeMtgo%2FWyVWyM%3D&fromContentView=1.)

Midrex Technologies Inc., 2021, 2020 world direct reduction statistics 2020: Charlotte, North Carolina, Midrex Technologies Inc., September, 15 p. (Accessed November 10, 2021, at https://www.midrex.com/wp-content/uploads/Midrex-STATSbookprint-2020.Final_.pdf.)

Midrex Technologies Inc., 2022, 2021 world DRI direct reduction statistics: Charlotte, North Carolina, Midrex Technologies Inc., September, 16 p. (Accessed December 14, 2022, at https://www.midrex.com/wp-content/uploads/MidrexSTATSBook2021.pdf.)

Ministry of Industry and Mineral Resources, 2022, [The Ministry of Industry and Mineral Resources—235 new mining licenses were issued last December]: Riyadh, Saudi Arabia, Ministry of Industry and Mineral Resources, February 1. (Accessed July 12, 2023, at https://mim.gov.sa/news/details/077e29b1-1be8-0ab5-7e1a-2ecabb7da330.) [In Arabic.]

National Industrialization Company-Tasnee, 2021, Advance metals: Jeddah, Saudi Arabia, National Industrialization Company-Tasnee. (Accessed April 19, 2021, at https://www.tasnee.com/en/products/advanced-metals.)

NS Energy, 2022, Mansourah-Massarah Gold Project: London, United Kingdom, NS Energy. (Accessed August 23, 2023, at https://www.nsenergybusiness.com/projects/mansourah-massarah-gold-project.)

Organization of the Petroleum Exporting Countries, 2021, OPEC annual statistics bulletin (55th ed.): Vienna, Austria, Organization of the Petroleum Exporting Countries, 90 p. (Accessed November 10, 2021, at https://www.opec.org/opec_web/en/publications/202.htm.)

Rashad, Marwa, 2020, Saudi Arabia aims to boost investment with new mining law: Thomson Reuters, June 9. (Accessed November 23, 2020, at https://www.reuters.com/article/us-saudi-mining-idUSKBN23G2H7.)

Roelf, Wendell, 2019, Saudi Arabia to spend $3.8bn to enhance mineral exploration: Thompson Reuters, [Toronto, Ontario, Canada], February 6. (Accessed April 2, 2024, at https://www.reuters.com/article/idUSKCN1PV1B0/.)

Saudi Arabia Basic Industries Corp., 2021, Thriving with resilience—Annual report 2020: Riyadh, Saudi Arabia, Saudi Arabia Basic Industries Corp., 139 p. (Accessed November 2, 2022, at https://www.sabic.com/en/Images/SABIC_Annual_Report_2020_ENG_tcm1010-26526.pdf,)

SABIC Agri-Nutrients Co., 2021, Board of directors report SABIC Agri-Nutrients Co.—Performance and activities of the company of the fiscal year 2020: Riyadh, Saudi Arabia, SABIC Agri-Nutrients Co., 65 p. (Accessed November 20, 2020, at https://www.sabic-agrinutrients.com/en/investor-relations/reports.)

Saudi Arabian Mining Co., 2020, Getting stronger in the downturn—Ma'aden annual report 2019: Riyadh, Saudi Arabia, Saudi Arabian Mining Co., 361 p. (Accessed November 10, 2021, at https://www.maaden.com.sa/download/2019-Annual-Report-En.pdf.)

Saudi Arabian Mining Co., 2021, Global ambitions with resilient sustainability—Ma'aden annual report 2020: Riyadh, Saudi Arabia, Saudi Arabian Mining Co., 333 p. (Accessed November 10, 2021, at https://www.maaden.com.sa/download/2020-Annual-Report-En.pdf.)

Saudi Arabian Mining Co., 2022, Growth built on values—Ma'aden annual report 2021: Riyadh, Saudi Arabia, Saudi Arabian Mining Co., 305 p. (Accessed May 4, 2023, at https://www.maaden.com.sa/download/Ma'aden%20Annual%20Report%202021.pdf.)

Saudi Central Bank, 2021, 57th annual report 1442 H (2021): Riyadh, Saudi Arabia, Saudi Central Bank, 175 p. (Accessed November 10, 2021, at https://www.sama.gov.sa/en-US/EconomicReports/AnnualReport/ANNUAL_Report_57th_2021.pdf.)

Saudi Central Bank, 2022, Yearly statistics 2021—Energy sector: Riyadh, Saudi Arabia, Saudi Central Bank. (Accessed July 12, 2023, at https://www.sama.gov.sa/en-US/EconomicReports/Pages/report.aspx?cid=126.)

Saudi Central Bank, 2024, 58th annual report 1443 H (2022): Riyadh, Saudi Arabia, Saudi Central Bank, 192 p. (Accessed April 22, 2024, at https://www.sama.gov.sa/en-US/EconomicReports/AnnualReport/Fifty_Eighth_Annual_Report-EN.pdf.)

Saudi Arabian Oil Co., 2021, Saudi Aramco annual report 2020: Dharan, Saudi Arabia, Saudi Arabian Oil Co., 251 p. (Accessed October 2, 2021, at https://www.aramco.com/-/media/publications/corporate-reports/saudi-aramco-ara-2020-english.pdf.)

Saudi Arabian Oil Co., 2022, Saudi Aramco annual report 2021: Dharan, Saudi Arabia, Saudi Arabian Oil Co., 251 p. (Accessed August 23, 2023, at https://www.aramco.com/-/media/publications/corporate-reports/saudi-aramco-ara-2021-english.pdf.)

Saudi Arabian Oil Co., 2023, Jafurah—The jewel of our unconventional gas program: Dharan, Saudi Arabia, Saudi Arabian Oil Co. (Accessed August 23, 2023, at https://www.aramco.com/en/magazine/elements/2022/jafurah-the-jewel-of-our-unconventional-gas-program.)

Statistics Times, 2022, Projected GDP ranking: Statistics Times, October 26. (Accessed July 6, 2023, at https://statisticstimes.com/economy/projected-world-gdp-ranking.php.)

Trecora Resources, 2020, Trecora Resources completes sale of AMAK shares: Sugar Land, Texas, Trecora Resources press release, September 29. (Accessed November 9, 2021, at https://www.trecora.com/news/company-news/detail/1626/trecora-resources-completes-sale-of-amak-shares.)

Trimble Solutions Corp., 2018, Titanium sponge plant—Yanbu, KSA: Dubai, United Arab Emirates, Trimble Solutions Corp. (Accessed November 16, 2018, at https://www.tekla.com/ae/bim-awards/titanium-sponge-plant-yanbu-ksa.)

U.S. Census Bureau, 2022a, U.S. exports by 5-digit end-use code 2012–present: Suitland, Maryland, U.S. Census Bureau. (Accessed August 13, 2021, at https://www.census.gov/foreign-trade/statistics/product/enduse/exports/enduse_exports.xlsx.)

U.S. Census Bureau, 2022b, U.S. imports by 5-digit end-use code 2012–present: Suitland, Maryland, U.S. Census Bureau. (Accessed August 13, 2021, at https://www.census.gov/foreign-trade/statistics/product/enduse/imports/enduse_imports.xlsx.)

U.S. Census Bureau, 2022c, Trade in goods with Saudi Arabia: Suitland, Maryland, U.S. Census Bureau. (Accessed December 1, 2022, at https://www.census.gov/foreign-trade/balance/c5170.html.)

U.S. Energy Information Administration, 2021, Country analysis executive summary—Saudi Arabia: Washington DC, U.S. Energy Information Administration, December 2, 11 p. (Accessed November 21, 2022, at https://www.eia.gov/beta/international/analysis_includes/countries_long/Saudi_Arabia/saudi_arabia.pdf.)

World Steel Association, 2021a, 2021 world steel in figures: Brussels, Belgium, World Steel Association, 30 p. (Accessed May 3, 2023, at https://worldsteel.org/wp-content/uploads/2021-World-Steel-in-Figures.pdf.)

World Steel Association, 2021b, Steel statistical yearbook 2020: Brussels, Belgium, World Steel Association, 123 p. (Accessed November 10, 2021, at https://www.worldsteel.org/en/dam/jcr:5001dac8-0083-46f3-aadd-35aa357acbcc/Steel%2520Statistical%2520Yearbook%25202020%2520%2528concise%2520version%2529.pdf).

TABLE 1

SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES[1]

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

Commodity[2]		2017	2018	2019	2020	2021
METALS						
Aluminum:						
Alumina		1,484	1,774	1,798 r	1,782	1,922
Bauxite		3,990 r	4,623 r	5,031 r	4,945	4,781
Metal:						
Primary		786	776 r	776 r	796	800 e
Secondary		153	220 r	279 r	284	300 e
Copper, mine, concentrates:						
Gross weight	metric tons	172,000	235,200	277,600	372,000 e	390,000
Cu content, 25% Cu	do	67,097 r	60,340 r	88,491 r	92,883	97,527
Ferroalloys:						
Ferromanganese	do.	10,000	15,000 r	12,000 r	10,000	15,000
Silicomanganese	do.	65,000	70,000 r	63,000 r	35,000	65,000
Gold, mine, Au content	kilograms	10,333	12,905	12,593	11,822	12,413
Iron and steel:						
Direct-reduced iron		5,700 r	6,000	5,800 r	5,200	6,128
Raw steel		4,831	8,187 r	8,191 r	7,775	8,735
Lead, smelter, secondary	metric tons	82,000	68,000	68,000	68,000	75,600
Silver, mine, concentrate, Ag content	kilograms	5,069	5,322 r	7,123 r	6,493	6,818
Zinc, mine, concentrate, Zn content	metric tons	21,800	24,000	30,000	25,400	26,700
INDUSTRIAL MINERALS						
Bauxite, low grade		1,016 r	438	297	282	296
Cement, hydraulic		47,128 r	41,937 r	44,341 r	53,418	53,699
Clay:						
Kaolin		206	216	227	213	224
Unspecified		9,702	10,187	10,696	7,147	7,504
Feldspar		197	206	216	523	549 e
Fertilizers, diammonium phosphate		5,670	5,444	6,098 r	8,000	8,400
Gypsum, mine		3,150	3,307	3,472	3,803	3,993
Magnesite[e]		120	140	110	81	84
Nitrogen, N content:						
Ammonia		4,000	4,300	4,000	4,300	4,300 e
Urea[e]		1,800	2,300	2,100	2,200	3,000
Phosphate rock:						
Gross weight		5,670	6,090	9,500 r, e	9,000 e	9,200 e
P_2O_5 content, 32% P_2O_5		1,800	1,949	3,040 r, e	2,900 e	2,900 e
Pumice and related mineral, pozzolan	metric tons	509,000	555,000	583,000 r	930,000	977,000
Salt		2,520	2,646	2,778	2,220	2,331
Sand and gravel, industrial, unspecified		1,365	1,433	1,505	1,380	1,449
Stone, sand, and gravel, construction:						
Sand and gravel:						
Common sand		23,000	24,000	25,000	21,400	22,470
Gravel		364,000	382,200	401,310	197,800	207,690
Iron sand		741	778 r	817	764	802
Stone:						
Crushed:						
Basalt	metric tons	32,000	33,000	35,000	28,000	29,000
Dolomite		2,237	2,348	2,465	639	671
Limestone, for cement		66,150	69,457	72,930	46,210	48,521
Marble, for industrial use		2,940	2,947	3,094	3,506	3,681
Schist, scoria		634	665	600	570	599

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]		2017	2018	2019	2020	2021
INDUSTRIAL MINERALS—Continued						
Stone, sand, and gravel, construction:—Continued						
Stone:—Continued						
Dimension:		13	13	14	35	36
Granite		1,105	1,160	1,218	2,320	2,436
Limestone, block		109	114	120	480	504
Marble, block		13	13	14	35	36
Sulfur, hydrocarbon processing, S content		6,500	6,500 e	6,500 e	6,500 e	7,000 e
Talc and related materials, pyrophyllite		44	46	48	61	64
MINERAL FUELS AND RELATED MATERIALS						
Natural gas:						
Gross	million cubic meters	115,000 r	117,000 r	118,000 r	119,000 r	120,485
Dry basis	do.	90,300	91,500 r	92,800 r	93,400	95,100
Ethane	do.	9,678	10,300	9,900	9,800	9,700
Petroleum:						
Crude	do.	3,635	3,765	3,580	3,372	3,330
Natural gas liquids:						
Butane	million 42-gallon barrels	127	120	116	111	106
Condensate	do.	79	79	123	71	64
Natural gasoline, including other	do.	91	102	81 r	74	73
Propane	do.	191	206	195	183	173
Refinery:						
Asphalt	do.	17	14	14 r	13	15
Coke	do.	84	84	27	20	24
Distillate fuel oil	do.	394	392	386	360	407
Gasoline	do.	204	199	194	166	199
Kerosene	do.	90	96	85	53	46
Liquefied petroleum gas	do.	16	17	15	13	14
Naphtha	do.	74	60	51	45	63
Residual fuel oil	do.	170	166	155	126	154
Total	do.	1,050	1,030	927	797	923

eEstimated. rRevised. do. Ditto.

[1]Table includes data available through September 12, 2022. 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, carbon black, caustic soda, lime, methane, sulfuric acid, titanium slag, and titanium sponge 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 2021

(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, Ash Sharqiyah Region	1,800
Aluminum:			
Primary	Ma'aden Aluminium Co. (MAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and AWA Saudi Ltd., 25.1%]	Smelter at Ras Al Khair, Jubail Industrial City, Ash Sharqiyah Region	1,010
Secondary	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, Ash Sharqiyah Region	460
Do.	do.	Recyling plant at Ras Al Khair, Jubail Industrial City, Ash Sharqiyah Region	130
Bauxite:			
Metallurgical	Ma'aden Bauxite and Alumina Co. (MBAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and joint venture of Alcoa Inc. and AWA Saudi Ltd., 25.1%]	Mine at Al Ba'itha, Al Qasim 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	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, Ash Sharqiyah Region	25
Do.	Arabian Alkali Co. (SODA)	Plant at Jubail Industrial City, Ash Sharqiyah Region	55
Do.	Saudi Factory for Chlorine and Alkalies (SACHLO)	Plant in Riyadh, Ar Riyad Region	NA
Cement:			
Gray portland	Al Jouf Cement Co.	Plant South of Turaif, Al Hudud ash Shamaliyah Region	1,750
Do.	Al Madina Cement Co.	Plant at Al Madinah, Al Madinah al Munawwarah Region	3,000
Do.	Al Safwa Cement Co. (El Khayat Group, 50%; General Pension Agency, 25%; General Organization for Social Insurance, 25%)	Plant in Makkah al Mukarramah Region	2,000
Do.	Arabian Cement Co. Ltd.	Plant at Rabigh, Makkah al Mukarramah Region	4,800
Do.	Eastern Cement Co.	Plant at Al Khursaniyah, Ash Sharqiyah Region	3,400
Do.	Hail Cement Co.	Plant at Turba, Ha'il Region	2,000
Do.	Najran Cement Co.	Plant at Aakfa, Najran Region	3,000
Do.	Northern Region Cement Co.	Plant at Turaif, Al Hudud ash Shamaliyah Region	1,700
Do.	Qassim Cement Co.	Plant at Jal al Watah, Buraydah, Al Qasim Region	4,000
Do.	Riyadh Cement Co.	Plant 3 in Ar Riyad Region	3,800
Do.	Saudi Cement Co.	Plant at Al Hofuf, 120 kilometers southwest of Dammam, Ash Sharqiyah Region	8,600
Do.	Southern Province Cement Co. (Government, 52%)	Plant at Suq Al Ahad, Jazan Region	7,500
Do.	do.	Plant at Bishah, southeast Jeddah, Makkah al Mukarramah Region	2,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement:—Continued				
Gray portland—Continued		Southern Province Cement Co. (Government, 52%)	Plant at Tihama, Makkah al Mukarramah Region	1,800
Do.		Tabuk Cement Co.	Plant in Tabuk Region	1,300
Do.		Umm Al Qura Cement Co.	Plant near Taif, Makkah al Mukarramah Region	2,000
Do.		United Cement Co.	Plant at Al Sadiya, Makkah al Mukarramah Region	2,000
Do.		Yamama Cement Co. Ltd.	Plant in Ar Riyad Region	6,300
Do.		Yanbu Cement Co.	Plant at Yanbu, Al Madinah al Munawwarah Region	6,400
White		Al-Gharbiah Cement Factory	Plant at Jeddah, Makkah al Mukarramah Region	250
Do.		Saudi White Cement Co.	Plant at Riyadh, Ar Riyad Region	200
Clay, kaolin		Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Az Zabirah Mine in Makkah al Mukarramah Region	350
Copper, concentrate, Cu content		Ma'aden Barrick Copper Co. (MBCC) [Barrick Gold Corp., 50%, and Saudi Arabia Mining Co. (Ma'aden), 50%]	JabaL Sayid Mine, Al Madinah al Munawwarah Region	280
Do.		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
Dolomite		Saudi Lime Industries Co.	Mine and plant in Ar Riyad Region	1,000
Do.		Saudi Dolomite Co. Ltd.	Mine and plant at Al Khobar, Ash Sharqiyah Region	1,500
Feldspar		United Mining Investment Co.	Mine at Rabigh, Makkah al Mukarramah Region	30
Ferroalloys		Gulf Ferro Alloys Co. (SABAYEK)	Plant at Jubail Industrial City, Ash Sharqiyah Region	140
Gold, mine, Au content	kilograms	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden), 100%]	Al Amar Mine, Ar Riyad Region; Ad Duwayhi Mine, As Suq Mine, Makkah al Mukarramah Region; Bulghah Mine, Mahd Adh-Dahab Mine, Sukhaybarat Mine, Al Madinahal Munawwarah Region	13,000
Do.	do.	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
Granite	cubic meters	Red Sea Mining Co. Ltd.	11 quarries in Najran Region and Ranyah in Makkah al Mukarramah Region	18,000
Do.	do.	Tanhat Mining Co. Ltd.	Quarries in Jamour (1), Najran (2), Ranyah in Makkah al Mukarramah Region (2), Rowaidah (3), and Samakh (1)	360,000
Gypsum		Al-Zahid Industrial and Mining Group	Quarry at Taymah, Tabuk Region	NA
Do.		Global Gypsum Co. Ltd.	Plants at Damman, Jeddah, Riyadh, Yanbu Industrial City	300
Do.		Mada Gypsum Co. (Al Rajhi Holding, 100%)	Plant at Yanbu Industrial City, Al Madinah al Munawwarah Region	400
Do.		National Gypsum Co.	Plants at Damman, Jeddah, Riyadh, Yanbu Industrial City	960

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel:				
Direct-reduced iron		Direct Reduction Iron Co. Ltd. (Al-Ittefaq Group, 100%)	Plants I and II, Dammam, Ash Sharqiyah Region	2,500
Do.		SABIC Metals (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Plants A, B, C, D, and E, Jubail, Ash Sharqiyah Region	5,500
Iron pellets		do.	Iron Pelletization Plant at Dammam, Ash Sharqiyah Region	2,500
Pig iron		Advanced Metal Industries Cluster Co. Ltd. (AMIC)	Smelter at Jazan Economic City, Jazan Region	250
Steel:				
Raw steel		National Steel Co. Ltd. (Al-Ittefaq Group, 100%)	Plant at Dammam, Ash Sharqiyah Region	1,300
Do.		Rajhi Steel Industies Co. Ltd.	Plant at Jeddah, Makkah al Mukarramah Region	850
Do.		SABIC Metals (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Plant at Jubail, Ash Sharqiyah 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, Ash Sharqiyah Region	4,500
Do.		Ajeej Steel Manufacturing Co.	Plant in Ar Riyad Region	360
Do.		National Steel Co. Ltd. (Al-Ittefaq Group , 100%)	Rolling mill at Dammam, Ash Sharqiyah Region	2,800
Lead, smelter, secondary		National Lead Smelting Co. (National Industrialization Company–Tasnee, 100%)	Plant in Ar Riyad Region	100
Lime:				
Hydrated		Astra Mining (Astra Industrial Group, 60%, and Tharawat Holding, 40%)	Plant at Al Kharj Industrial City Ar Riyad Region	66
Do.		Saudi Lime Industries Co.	Plant in Ar Riyad Region	100
Quick lime		Astra Mining (Astra Industrial Group, 60%, and Tharwat Holding, 40%)	Plant at Al Kharj Industrial City, Ar Riyad Region	99
Do.		Saudi Lime Industries Co.	Plant in Ar Riyad Region	400
Magnesite:				
Crude ore		Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden)]	Mine at Al Ghazalah, Al Madinah al Munawwarah Region	90
Cuatic calcined		do.	Processing plant at Al Madinah al Munawwarah Industrial City	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, Ash Sharqiyah Region	850
Natural gas, gross	million cubic meters	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Ghawar Field, onshore, Ash Sharqiyah Region	75,000
Do.	do.	do.	Arabiyah gasfield, offshore	12,408
Do.	do.	do.	Hasbah gasfield, offshore	34,122
Do.	do.	do.	Karan gasfield, offshore	18,612
Do.	do.	do.	Safaniya oilfield, offshore	10,000
Do.	do.	do.	Zuluf oilfield, offshore	10,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Natural gas, gross—Continued	million cubic meters	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Wasit gas processing plant at Jubail Industrial City, Ash Sharqiyah 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, Ash Sharqiyah 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, Ash Sharqiyah Region	1,200
Do.		Ma'aden Wa'ad Al- Shamal Phosphate Mining Co. (MWSPC) [Saudi Arabia Mining Co. (Ma'aden), Mosaic Co., 25%; Saudi Arabia Basic Industries Corp. (SABIC), 15%]	Plant at Ras Al Khair, Jubail Industrial City, Ash Sharqiyah 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 SABIC), 50.1%, and Public Investors, 49.9%]	Plant at Jubail Industrial City, Ash Sharqiyah Region	2,300
Urea		do.	Safco-5 plant at Dammam, Ash Sharqiyah Region	3,400
Pozzolan		Consortium of Volcanic Pozzalan Producers	Quarries and plant in Jeddah, Makkah al Mukarramah Region	NA
Do.		do.	Quarries and plant in Khamis Mushait, Asir Region	NA
Petroleum:				
Crude	million 42-gallon barrels	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Ghawar oilfield, onshore, Ash Sharqiyah Region	2,117
Do.	do.	do.	Qatif oilfield, onshore	182
Do.	do.	do.	Safaniya oilfield, offshore	438
Do.	do.	do.	Shaybah oilfield, onshore	365
Do.	do.	do.	Manifa oilfield, onshore	328
Do.	do.	do.	Zuluf oilfield, offshore	248
Do.	do.	do.	Khursaniyah oilfield, offshore	182
Do.	do.	do.	Abqaiq oilfield, onshore	146
Do.	do.	do.	Berri oilfield, onshore-offshore	146
Do.	do.	do.	Abu Sa’afah oilfield, offshore	110
Refined products	do.	Aramco Mobil Refinery Co. Ltd. [Saudi Arabian Oil Co. (Aramco), 50%, and Mobil Yanbu Refining Co. Inc., 50%]	do.	146
Do.	do.	Aramco Shell Refining Co. [Saudi Arabian Oil Co. (Aramco), 50%, and Shell Saudi Arabia Refining Ltd., 50%]	Refinery at Jubail, Ash Sharqiyah Region	113
Do.	do.	Aramco Total Refining and Petrochemical Co. [Saudi Arabian Oil Co. (Aramco), 62.5%, and Total S.A., 37.5%]	Refinery at Jubail, Ash Sharqiyah 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, Makkah al Mukarramah 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, Makkah al Mukarramah Region	146
Do.	do.	Riyadh Oil Refinery Co. [Saudi Arabian Oil Co. (Aramco), 100%]	Refinery in Ar Riyad Region	45

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum—Continued:				
Refined products—Continued	million 42-gallon barrels	Saudi Arabian Oil Co. (Aramco) (Government, 98.5%)	Refinery at Ras Tanura, Jubail, Ash Sharqiyah Region	201
Do.	do.	do.	Refinery at Yanbu, Al Madinah al Munawwarah Region	86
Do.	do.	Yanbu Aramco Sinopec Refining Co. Ltd. (YASREF) [Aramco, 62.5%, and China Petrochemical Corp. (SINOPEC), 37.5%]	Refinery at Yanbu, Al Madinah al Munawwarah 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, Al Hudud ash Shamaliyah 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 kilometers northeast Turaif, Al Hudud ash Shamaliyah 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, Ash Sharqiyah 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, Al Hudud ash Shamaliyah Region	3,000
Salt		Al-Zahid Industrial and Mining Group	Mines in Ash Sharqiyah Region	3,000
Silica (industrial) sand		Adwan Chemical Industries Co. Ltd.	Eldarees Quarry, Ad Doghm, Ar Riyad 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 Riyad Region; Ad Duwayhi Mine, As Suq Mine, Makkah al Mukarramah Region; Bulghah Mine, Mahd Adh-Dahab Mine, Sukhaybarat Mine, Al Madinah al Munawwarah Region	5,600
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, Al Madinah al Munawwarah 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, Ash Sharqiyah 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, Al Hudud ash Shamaliyah Region	5,500
Do.		National Company For Sulphur Products (NCSP)	Plant in Ar Riyad Region	170
Do.		SABIC Agri-Nutrients Co. [Saudi Arabia Basic (SABIC), 50.1%, and Public Investors, 49.9%]	Plant at Ras Al Khair, Jubail Industrial City, Ash Sharqiyah Region	130

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Titanium:				
Slag	metric tons	Advanced Metal Industries Cluster Co. Ltd. (AMIC)	Smelter at Jazan Economic City, 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, Al Madinah al Munawwarah Region	500
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, Ar Riyad Region, and Mahd Adh-Dahab Mine, Al Madinah al Munawwarah Region	20

Do., do. Ditto. NA Not available.