



2014 Minerals Yearbook

SAUDI ARABIA

THE MINERAL INDUSTRY OF SAUDI ARABIA

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In 2014, 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). The country was the world's second-ranked producer of petroleum and other liquids (after the United States) and of crude oil, including condensate (after Russia). By yearend, Saudi Arabia was the world's second-ranked country after Venezuela in terms of the size of its proven crude oil reserves and held 267 billion barrels, which was 15.7% of the world's total. Saudi Arabia had 8.2 trillion cubic meters of proven natural gas reserves, or 4.4% of the world's total, which ranked the country sixth in the world in terms of the size of its proven natural gas reserves after Iran, Russia, Qatar, Turkmenistan, and the United States. The country was the world's 3d-ranked producer of direct-reduced iron (DRI) and the 12th-ranked consumer of total primary energy (U.S. Energy Information Administration, 2014; BP p.l.c., 2015, p. 6, 8, 20, 22; Midrex Technologies Inc., 2015, p. 3; StatisticsTimes.com, 2015).

In 2014, Saudi Arabia produced aluminum, bauxite, cement, clay, copper, crude oil and refined petroleum products, dolomite, feldspar, gold, granite, gypsum, iron and steel, kaolin, lead, limestone, magnesite, marble, natural gas, nitrogen, refined petroleum products, phosphate rock and phosphate-based fertilizers, pozzollanic material, pyrophyllite, sand and gravel, schist, silica sand, silver, sulfur, and zinc. A substantial share of the output of aluminum, crude oil and refined petroleum products, gold, nitrogen, and phosphate-based fertilizers was exported and the rest was used by the domestic market (table 1; Saudi Arabian Mining Co., 2015a, p. 112).

Minerals in the National Economy

Saudi Arabia's GDP increased in real terms by 3.5% in 2014 compared with an increase of 2.7% in 2013. In nominal terms, the GDP increased to \$746 billion¹ in 2014 from \$744 billion in 2013. The petroleum sector's contribution to the GDP was estimated to have decreased to 42% in 2014 from 47% in 2013. The contribution of the mineral sector (including petroleum) to the GDP decreased to 39.8% in 2014 from 44.5% in 2013; the contribution of the manufacturing sector was 10.9%, and that of the construction sector was 5.5% (International Monetary Fund, 2015, p. 39; Saudi Arabian Monetary Agency, 2015, p. 133–134).

Government Policies and Programs

Royal Decree No. 47 M (the Mining Investment Code) of October 4, 2004, regulates the mining and quarrying industry in Saudi Arabia. The Deputy Ministry of Petroleum and Mineral Resources (DMMR) within the Ministry of Petroleum and

Mineral Resources supervises the country's mining activities, promotes investments, provides services, and issues mining licenses and concessions in the country. The DMMR issues reconnaissance, exploration, and exploitation licenses. The decree allows the granting of mining rights to other corporations and individuals and the transferal of them to other persons with technical and financial competence and expertise. According to the Saudi Arabian General Investment Authority, the Mining Code was expected to open up the country's mineral reserves to development by the private sector, lower costs, and simplify procedures for attaining mining permits. Mining companies were expected to receive a 20% reduction in their tax liability as a result of the changes to the code. In 2014, the DMMR issued 2,094 mining licenses, including 1,473 for quarries of building materials; 468 for exploration; 81 for quarrying and exploiting of copper, gold, and zinc ores, and of such industrial minerals as clay, dolomite, iron, and schist; and 71 for small mines, as well as one prospecting license (Glennie and others, 2011; Central Department for Statistics and Information, 2015; Saudi Arabian General Investment Authority, 2015; U.S.-Saudi Arabian Business Council, 2015).

The Ministry of Petroleum and Mineral Resources (MPPMR) and the Supreme Council for Petroleum and Minerals managed the petroleum sector in the country through Saudi Arabian Oil Co. (Saudi Aramco) and its subsidiaries. Saudi Aramco invested in upstream and downstream petroleum and natural gas, petrochemicals, and water and renewables industries. The MPPMR's strategy was to develop hydrocarbon and mineral resources to maintain the sustainable development of the national economy of Saudi Arabia without negative effects on the world economy in general and economies of the developing countries in particular (Ministry of Petroleum and Mineral Resources, 2015).

Production

Notable increases in Saudi Arabia's mineral commodity production in 2014 compared with that of 2013 included aluminum, by 256%; mined magnesite, by 23%; pyrophyllite, by 17%; total refined petroleum products, by 16%; crude steel, by 15%; phosphate fertilizer, by 14%; sulfur, by 13%; gasoline, by 12%; and marble block, by 9%. The increase in aluminum output was attributed to a full year of production at the country's sole aluminum smelter (the Ras Al Khair smelter) in 2014. Metallurgical-grade bauxite was mined in the country for the first time at the Al Baitha Mine in 2014, although nonmetallurgical (low-grade) bauxite had been mined in recent years as an industrial mineral used in cement plants. Alumina production from Saudi bauxite at the Ras Al Khair alumina refinery began for the first time in the country in December; consequently, no production data were reported for the year (table 1; Saudi Arabian Mining Co., 2015a, p. 14, 26).

¹Where necessary, values have been converted to Saudi Arabian riyals (SAR) to U.S. dollars (US\$) at the rate of US\$1.00=SAR3.75.

Structure of the Mineral Industry

In 2014, the Government was the sole owner of Saudi Aramco and had majority interest in several companies that operated in the mineral sector. The Government played a significant role in supporting the private mineral sector through the Public Investment Fund and the Saudi Industrial Development Fund. The major mining companies that operated in Saudi Arabia included Al Masane Al Kobra Mining Co. (AMAK), Al Tuwairqi Group, Saudi Arabian Mining Co. (Ma'aden), Saudi Basic Industries Corp. (SABIC), and United Arabian Mining Co. (Manajem) as well as more than 17 cement companies (table 2; Saudi Industrial Development Fund, 2015).

Ma'aden, which was a listed company on the Saudi Stock Exchange following its privatization in 2008, produced through its subsidiaries alumina, aluminum, gold, kaolin, metallurgical- and low-grade bauxite, magnesite, phosphate rock, and phosphate-based fertilizers. Ma'aden's subsidiaries included three wholly owned companies—Industrial Infrastructure Co. (IIC), Industrial Minerals Co. (IMC), and Ma'aden Gold and Base Metals Co. (MGBM). Ma'aden Aluminium Co. (MAC), Ma'aden Bauxite and Alumina Co. (MBAC), and Ma'aden Rolling Co. (MRC) were joint ventures between Ma'aden (74.9%) and Alcoa Inc. of the United States (25.1%). Ma'aden Phosphate Co. (MPC) was a joint venture between Ma'aden (70%) and SABIC (30%). Ma'aden Wa'ad Al-Shamal Phosphate Co. (MWSPC) was a joint venture among Ma'aden (60%), Mosaic Co. of the United States (25%), and SABIC (15%). Ma'aden Barrick Copper Co. (MBCC) was a 50–50 joint venture of Ma'aden and Barrick Gold Corp. of Canada (table 2; Saudi Arabian Mining Co., 2015a, p. 13, 55, 116).

Mineral Trade

The value of Saudi Arabia's total exports decreased in 2014 to \$343 billion from \$376 billion in 2013, and the value of total imports increased to \$156 billion in 2014 from \$153 billion in 2013. The 8.7% decrease in export value in 2014 was greater than the decrease in 2013 (3.2%) and was attributed to the decrease in petroleum prices on world markets. The value of Saudi Arabia's crude oil and refined petroleum products exports decreased to \$285 billion in 2014 from \$322 billion in 2013 and about \$338 billion in 2012 (International Monetary Fund, 2015, p. 39, 42; Organization of the Petroleum Exporting Countries, 2015, p. 8).

Saudi Arabia's crude oil exports decreased to 7.2 million barrels per day (Mbbbl/d) in 2014 from 7.6 Mbbbl/d in 2013. The majority of crude oil exports went to the Asia and the Pacific region (61.8%), followed by North America (17.5%), Europe (13.3%), the Middle East (3.8%), Africa (2.7%), and Latin America (1%). Exports of refined products increased to 988,000 barrels per day (bbl/d) in 2014 from 794,000 bbl/d in 2013. More than one-half (55.5%) of Saudi Arabia's refined petroleum products were shipped to the Asia and the Pacific region, followed by the Middle East (18.8%), Africa and Europe (11.5% each), and Latin America and North America (1.3% each). In 2014, Ma'aden's mineral exports included about 2.4 million metric tons (Mt) of diammonium

phosphate (DAP) fertilizer, 660,000 metric tons (t) of ammonia, 516,000 t of aluminum, 32,000 t of unspecified industrial minerals, and 4,728 kilograms (kg) of gold. Almost all gold produced by MGBM was exported to Switzerland for refining by MKS S.A. of Switzerland (Saudi Arabian Mining Co., 2014, p. 79, 2015a, p. 112; Organization of the Petroleum Exporting Countries, 2015, p. 8, 49, 51, 52, 55).

Saudi Arabia's net imports of steel products were 6.5 Mt in 2014, which ranked the country as the world's sixth-leading net importer of steel. The country imported 6.6 Mt of semifinished and finished steel products, including 2.7 Mt of flat products, 1.5 Mt of long products, 1.2 Mt of ingots and semis, and 1.2 Mt of tubular products. Iron ore imports increased to 5.1 Mt in 2014 from about 3.6 Mt in 2013. Saudi Arabia's exports of semifinished and finished steel products decreased to 123,000 t in 2014 from 247,000 t in 2013. Other steel products exports included flat products (32,000 t), ingots and semis (29,000 t), long products (1,000 t), and tubular products (60,000 t) (World Steel Association, 2015, p. 54, 57, 62, 67, 70, 72, 75, 77).

Exports from the United States to Saudi Arabia decreased in value to \$18.7 billion in 2014 from about \$19.0 billion in 2013. The main minerals and mineral-related exports were drilling and oilfield equipment (\$701 million), finished metals shapes (\$212 million), excavation machinery (\$208 million), petroleum products (\$196 million), alumina and aluminum (\$122 million), iron and steel products (\$86 million), steelmaking materials (\$84 million), and fertilizers (\$11 million). Imports from Saudi Arabia to the United States decreased by 9% to \$47.0 billion in 2014 from \$51.8 billion in 2013, and by 15.5% from that of 2012, which was the peak year for imports from Saudi Arabia to the United States. The decrease was mainly attributed to the decrease in crude oil imports, which were about \$45 billion in 2014 compared with \$50 billion in 2013 and \$54 billion in 2012. Other U.S. imports from Saudi Arabia included petroleum products (\$778 million), fuel oil (\$329 million), fertilizers (\$255 million), aluminum (\$41 million), and precious metals (\$37 million) (U.S. Census Bureau, 2015a, b).

Commodity Review

Metals

Aluminum.—In 2014, MAC produced 665,000 t of aluminum, which accounted for 1.3% of total world production, at its smelter in Ras Al Khair, which is located about 90 km northwest of Jubail. The smelter had the capacity to produce 760,000 metric tons per year (t/yr) of aluminum. MRC completed construction of its 380,000-t/yr rolling mill in 2013, and the mill began commercial production in mid-2014. The mill received about 51% of the aluminum produced by the company's smelter. In June, Ma'aden realized its vision of completing the mine-to-metal production cycle by producing the first can sheet coil, on trial basis, starting with metallurgical-grade bauxite ore from the Al Baitha Mine, extracting the metal at the MBAC alumina refinery, smelting aluminum at the Ras Al Khair smelter, and rolling aluminum at the Ras Al Khair Industrial City Rolling Mill (Arab News, 2015; Saudi Arabian Mining Co., 2015a, p. 54, 56, 58; Bray, 2016).

Bauxite and Alumina.—In May, MBAC began producing metallurgical-grade bauxite from the Al Baitha Mine. In 2014, partial year production of bauxite amounted to 878,514 t; production was expected to increase by 5% annually through 2018. The Al Baitha bauxite mine was located in Qassim Province about 600 kilometers (km) northwest of the aluminum smelter at Ras Al Khair. At the end of 2014, the mine's total measured, indicated, and inferred bauxite resources, at a cutoff grade of 40% total available alumina (TAA), were 256 Mt grading 49.9% TAA; proven and probable reserves of bauxite at a cutoff rate of 40% TAA were 214 Mt grading 49.4% TAA. Bauxite ore was crushed and transported by rail from the mine to the alumina refinery in Ras Al Khair, then slurried with a solution of caustic soda to separate and remove the alumina (Al₂O₃). In December, the MBAC alumina refinery, which had the capacity to produce about 1.8 million metric tons per year (Mt/yr) of alumina, produced its first alumina from Saudi bauxite. The refinery was expected to supply alumina for the MAC aluminum smelter and MRC rolling mill in 2015 (Saudi Arabian Mining Co., 2015, p. 14, 26, 104–105).

Copper and Zinc.—AMAK, which was a joint venture of local investors (50%), Arabian American Development Co. of the United States (35%), and Arab Mining Co. of Jordan (15%), produced copper, gold, silver, and zinc at the Al Masane Mine, which is located in Najran Province in southwestern Saudi Arabia. In June, Arabian American Development Co. changed its name to Trecora Resources. In 2014, the mine output of copper in concentrate was 43,390 t compared with 41,332 t in 2013, and the output of zinc in concentrate was 41,804 t compared with 39,813 t. By the end of June, the Joint Ore Reserves Committee (JORC)-compliant reserves at the mine were estimated to be 8.3 Mt of ore. The mine had been operating for 2 years, and it was expected to be mined for another 11 years (table 1; Trecora Resources, 2016).

In 2014, MBCC began the development of the copper deposit at Jabal Sayid, which is located 350 km northeast of Jeddah. The Jabal Sayid deposit was estimated to have about 650,000 t of measured and indicated copper resources. The company planned to start production in 2015 and to ship its first concentrate in early 2016. Copper in concentrate production from the mine was expected to be 43,359 t/yr by 2017 and eventually to peak at 51,000 t/yr. In addition to copper and zinc, the Jabal Sayid project was expected to produce unspecified quantities of cobalt, lead, nickel, silver, and sulfur. The project's mining license permitted further mining exploration in the surrounding licensed area, with the aim of extending the mine's life, which was estimated to be about 15 years (Saudi Arabian Mining Co., 2014; 2015a, p. 13; Barrick Gold Corp., 2015).

The Khnaiguiyah Mining Co. LLC (KMC) was a joint venture of Alara Resources Ltd. of Australia (50%) and Manajem (50%) established to develop copper and zinc deposits at Khnaiguiyah, which is located 200 km west of Riyadh. KMC completed a definitive feasibility study (DFS) for the Khnaiguiyah copper-zinc deposit in 2013. The DFS established the financial and technical feasibility for mining 2 Mt/yr of copper and zinc ores for 13 years. Production was expected to begin in the fourth quarter of 2015 at rate of 5,800 t/yr of copper and 80,000 t/yr of zinc in concentrate. The JORC-compliant

proven and probable ore reserve estimates were 26.08 Mt grading 0.24% copper and 3.3% zinc. The JORC-compliant measured and indicated resource estimates in domain 1 (zinc) and domain 2 (copper-zinc) at cutoff rates of 0.17% copper and 1.5% zinc were 25.32 Mt of 0.17% copper and 4.03% zinc. The JORC-compliant measured and indicated reserve estimate for domain 3 (copper) was 8.53 Mt grading 0.64% copper (Alara Resources Ltd., 2016a, b, c).

Gold.—In 2014, MGBM operated five gold mines in Saudi Arabia and mined 3.86 Mt of gold ore compared with 3.28 Mt in 2013; it produced 4,789 kg of gold in 2014, which was a 15.2% increase compared with the 4,158 kg of gold produced in 2013. Most of the increase was attributed to the entry of the As Suq Mine into production in March. Production by MGBM included about 1,506 kg from the Al Amar Mine, 1,685 kg from the Bulgah Mine, 1,066 kg from the Mahd Adh-Dahab gold mine, 449 kg from the As Suq Mine, and 84 kg from the Sukhaybarat Mine. The Al Hajar gold mine in Asir Province, which produced about 25 kg of gold in 2013, was mined out and closed and MGBM was exploring for copper and zinc in the mine area. MGBM was on track to increase its gold production to 15,550 kg (reported at 500,000 troy ounces) by 2017. Production increases were expected at all the company's operating gold mines but most of the projected increase in gold production was expected to come from the Ad Duwayhi Mine, which is located in Makkah Province. The mine was expected to produce 2,177 kg in 2015, 4,354 kg in 2016, and 5,598 kg in 2017 (Saudi Arabian Mining Co., 2015a, p. 12, 69–72, 104–105; 2015b).

JORC-compliant estimates of gold resources in the Central Arabian gold region of Saudi Arabia were about 272 Mt grading between 0.82 and 8.14 grams per metric ton (g/t) gold. Ma'aden's Masarah gold project was part of the development in the Central Arabian gold region in 2014, which had a deposit containing about 22.3 Mt of resource at an average grade of 2.19 g/t at a cutoff grade of 0.8 g/t gold according to the prefeasibility study (Saudi Arabian Mining Co., 2015a, p. 104).

Iron and Steel.—In 2014, Saudi Arabia's crude steel and DRI production was carried out mainly by Al-Ittefaq Steel Products Co., Rajhi Steel Industries Co. Ltd., and Saudi Iron and Steel Co. (Hadeed). DRI output increased by about 6% to 6.5 Mt in 2014 from 6.1 Mt in 2013. Crude steel production increased by 15% to 6.3 Mt of from 5.5 Mt in 2013. Hadeed had the capacity to produce 4.3 Mt of DRI at its five plants, which were located in Jubail. Direct Reduction Iron Co. Ltd. (DRIC), which was a subsidiary of Al-Ittefaq Steel Products Co., operated two DRI plants (I and II) in Dammam; the plants had the capacity to produce 1.3 Mt of DRI combined. Rajhi Steel had the capacity to produce 300,000 t/yr of DRI (Al-Ittefaq Steel Products Co., 2015; Midrex Technologies Inc., 2015, p. 11; Saudi Basic Industries Corp., 2015).

Al-Ittefaq Steel Products Co. was the largest private steel producer in Saudi Arabia. The company comprised Al Faisal Steel Products Co., Arab Steel Co., DRIC, Metal Recycling Mill, National Steel Co., and Tauwarqi Energy, all of which were located in Dammam in eastern Saudi Arabia. Al-Ittefaq produced billet, DRI, steel reinforcing bar, and other semifinished and finished steel products. The company was

building a 2.5-Mt/yr iron pelletization plant at its complex in Dammam (Al-Ittefaq Steel Products Co., 2015).

Titanium.—In January, the National Industrialization Co. (Tasnee), the National Titanium Dioxide Co. (Cristal), and Toho Titanium Co. of Japan created a joint-venture company to construct a new plant at Yanbu Industrial City on the Red Sea coast in Western Saudi Arabia that would have the capacity to produce 15,600 t/yr of titanium sponge. The plant would be owned by Toho (35%) and Cristal and Tasnee (32.5% each) and was expected to start production in 2017. The plant would use titanium tetrachloride (TiCl_4) supplied by Cristal as feedstock. Cristal was one of the world's top producers of titanium dioxide and the leading producer of titanium chemicals; it also was the world's leading provider of ultrafine titanium dioxide (TiO_2) products and titanium chemicals. The company produced mineral sands, titanium metal, titanium powder, and titanium sponge at its eight manufacturing plants worldwide and was owned by Tasnee (79%) and Gulf Investment Corp. of Kuwait (20%) (Baxter, 2014, 2015; National Titanium Dioxide Co., 2015).

Industrial Minerals

Bauxite, Nonmetallurgical.—The output of nonmetallurgical (low-grade) bauxite produced by the IMC from the Az Zabirah Mine increased by about 4% to 980,000 t in 2014 from 933,000 t in 2013. Sales of nonmetallurgical (low grade) bauxite increased by about 10% in 2014 compared with that of 2013 owing to the increased demand by the domestic cement sector. The company's total mineral resources of bauxite at the Az Zabirah Mine were estimated to be 27.5 Mt, and its proven and probable reserves were 3.6 Mt.

Cement.—Saudi Arabia's cement output increased slightly to 57.2 Mt in 2014 from 56.2 Mt in 2013. In 2014, 17 companies operated 20 cement plants in Saudi Arabia. The Government provided subsidized natural gas and regulated trade activities in the country to ensure sufficient supply of cement on the domestic market. The Saudi Arabian cement production capacity was expected to increase to more than 81 Mt/yr by 2018 from the current capacity of 62 Mt in 2014. Most of the increase would come from expansion projects at Arabian Cement Co. Ltd., Eastern Province Cement Co., Qassim Cement Co., Southern Province Cement Co., Tabuk Cement Co., and Yamama Cement Co., Ltd. Arabian Cement was adding a new line, which would increase the company's cement production capacity to 350,000 t/yr in 2017. Southern Province Cement Co., which was a majority Government-owned plant, was expected to add two new 1.5-Mt/yr clinker production lines to the company's plant in Bishah and Tihama by yearend 2015. Umm Al-Qura Cement Co. was building a new cement plant in Hurat Hadon (2), near Radwan village in Taif, Makkah Province. The plant would have the capacity to produce 1.98 Mt/yr of clinker and 2.22 Mt/yr of cement by the first quarter of 2016 (table 2; Arqaam, 2015; International Cement Review, 2015, p. 295–298).

Clay and Shale.—The IMC produced 82,697 t of kaolin from the Az Zabirah Mine in 2014 compared with 64,298 t in 2013.

The company's total mineral resources of kaolin at the mine were 10.2 Mt, and its proven and probable reserves were 2.7 Mt.

Magnesium Compounds.—The IMC output of caustic calcined magnesite from its Al Ghazalah Mine was 36,169 t compared with 29,505 t in 2013. The IMC total mineral resources of magnesite at the Al Ghazalah Mine were estimated to be 2.95 Mt and the proven and probable reserves were 2.44 Mt. The company planned to develop the Zarghat magnesite deposit, which is located in north-central Saudi Arabia (Saudi Arabian Mining Co., 2015a, p. 77, 104–105; 2015b).

Nitrogen.—In 2014, Ma'aden produced ammonia at Ras Al Khair to be used in the manufacturing of DAP and for direct sales. The company produced 660,000 t of ammonia in 2014 compared with 561,000 t in 2013. Production of DAP increased by 22% to about 2.4 Mt in 2014 from 1.8 Mt in 2013. This increase was attributed to the ramping up of production to reach full capacity of 3 Mt/yr (Saudi Arabian Mining Co., 2014, p. 76; 2015a, p. 62, 112).

Saudi Arabian Fertilizer Co. (Safco) was a joint venture of SABIC (42.99%) and private investors (57.01%) created to produce, process, manufacture, and market ammonia and urea fertilizers. In 2014, Safco acquired the National Chemical Fertilizer Co. (Ibn Al Bitar), which produced nitrogen fertilizers at its plant in Jubail Industrial City. Safco continued the construction of its urea plant, which is located 100 km north of Dammam in eastern Saudi Arabia. The plant (Safco-5) would have the capacity to produce 1.2 Mt/yr of urea when completed in 2015. Initial production began in 2013 and continued throughout 2014. Safco-5 produced 4,846 t in 2014 compared with 4,574 t in 2013 (Saudi Arabian Fertilizer Co., 2015, p. 10–11).

Phosphate Rock.—In 2014, MPC continued to focus its operations on the Al Jalamid phosphate mine and phosphate processing plants at the Ras Al Khair Industrial City in the east. Also, MWSPC was developing the Wa'ad Al Shamal phosphate rock and phosphate-based materials project including the Al Khabra phosphate mine, located about 150 km east of Turaif in northern Saudi Arabia. The 11.6-Mt/yr-capacity Jalamid Mine produced phosphate rock, which was then transported to the Ras Al Khair complex for processing and fertilizer manufacturing. MWSPC continued work in 2014 on the \$7 billion Wa'ad Al-Shamal integrated phosphate project. When completed, the project was expected to include the Al Khabra phosphate mine and six phosphate processing plants. The Wa'ad Al Shamal project was expected to have the capacity to produce 1.5 Mt/yr of phosphate rock, 3 Mt/yr of phosphate fertilizers, and 440,000 t/yr of other downstream products. The construction of the project, which was carried out by Bechtel Corp. of the United States and other unidentified engineering, procurement, and construction companies, was expected to be completed in 2016 and to include plants for ammonia, DAP granulation, phosphoric acid, and sulfuric acid. In July, MWSPC secured a \$5 billion loan from 20 financial institutions, including the Government-owned Public Investment Fund. The loan was being used to fund the Wa'ad Al Shamal Mineral Industry City and the Ras Al Khair Industrial City (Saudi Arabian Mining Co., 2015a, p. 13, 62–63).

Mineral Fuels

Natural Gas.—In 2014, Saudi Arabia produced about 116.8 billion cubic meters of dry natural gas, which was a 3% increase compared with that of 2013. Natural gas production in the country came from both onshore and offshore fields. Offshore gasfields included Arabiyah, Hasbah, and Karan, and onshore natural gasfields were associated with major Saudi crude oilfields, including the Ghawar, the Safaniya, and the Zuluf fields (U.S. Energy Information Administration, 2014; BP p.l.c., 2015, p. 22).

In 2014, Saudi Aramco continued construction work at the Wasit gas-processing plant, which was expected to be fed from two offshore natural gasfields near the eastern coast of Saudi Arabia. The project was 91% complete at yearend 2014. The Wasit gas-processing plant would have the capacity to process about 25.8 million cubic meters per year of nonassociated natural gas from offshore fields and about 88 million barrels per year of natural gas liquids. The project was expected to begin production in 2015. Saudi Aramco continued building the Midyan gas plant in the Tabuk region in northwestern Saudi Arabia. The plant was expected to commence production in 2016 and would have the capacity to produce 2.1 million cubic meters per day of nonassociated natural gas and 4,500 bbl/d of condensate. Saudi Aramco planned to build the greenfield Fadhili gas plant, which is located 30 km west of Jubail in the eastern province of the country. The plant would process natural gas from offshore and onshore fields to produce 70.8 million cubic meters per day of natural gas by 2019 (Saudi Arabian Oil Co., 2015, p. 7).

In 2014, Saudi Aramco continued its exploration program for crude oil and natural gas throughout Saudi Arabia. The company reported eight new crude oil and natural gasfields—they were the Abu Ali, the Amjad, the Badi, the Faras, and the Faris gasfields; the Naqa and the Sadawi oilfields, and the Qadqad oil and gas field. These new fields brought the total discoveries to 129 fields (Saudi Arabian Oil Co., 2015, p. 23).

Petroleum.—Saudi Arabia's total petroleum and other liquids production averaged 11.6 Mbbbl/d in both 2013 and 2014, of which 9.5 Mbbbl/d was crude oil and about 2.1 Mbbbl/d was other liquids. Saudi Aramco's strategy in 2014 was focused on maintaining its capacity to produce 12 Mbbbl/d of petroleum and to increase its nonassociated natural-gas-processing capacity to 141.6 million cubic meters per day by 2019 (Saudi Arabian Oil Co., 2015, p. 8, 23, 82–83).

Production at the Manifa oilfield, which started in 2013, was ramping up in 2014 to reach 0.9-Mbbbl/d capacity by yearend 2014. The company was working on increasing crude oil production at the Shaybah oilfield by 250,000 bbl/d to reach its target of 1 Mbbbl/d of Arabian Extra Light crude oil by 2016. Saudi Aramco was also building a new NGL recovery plant, which was expected to begin production in 2015. The Shaybah oilfield is located about 40 km of the northern edge of the Rub' Al Khali in southeastern Saudi Arabia (Saudi Arabian Oil Co., 2015, p. 27–28).

In 2014, Saudi Aramco had nine domestic refineries with a combined capacity of 2.5 Mbbbl/d. Saudi Aramco produced refined petroleum products through its four wholly owned

subsidiaries in Jeddah, Ras Tanura, Riyadh, and Yanbu, in addition to other joint ventures with major international petroleum corporations. These joint ventures included Saudi Aramco Mobil Refining Co. Ltd. (SAMREF) between Saudi Aramco (50%) and Mobil Yanbu Refining Company Inc. (a subsidiary of Exxon Mobil of the United States) (50%). SAMREF conducted its operations, including producing clean fuels, in Yanbu Industrial City, which is located on the west coast. Saudi Aramco Total Refining and Petrochemical Co., which was a joint venture of Saudi Aramco (62.5%) and Total S.A. of France (37.5%), carried out its operations in Jubail Industrial City on the east coast. Saudi Aramco Shell Refining Co., which was a joint venture between Saudi Aramco (50%) and Shell Saudi Arabia Refining Ltd. (50%), was located in Jubail. Rabigh Refining and Petrochemical Co. (Petro Rabigh), which was a joint venture of Saudi Aramco and Sumitomo Chemical Co. of Japan (37.5% each) and private investors (25%), operated on the west coast. Yanbu Aramco Sinopec Refining Co. Ltd. (YASREF), which started production in Yanbu in 2014, was a joint venture of Saudi Aramco (62.5%) and China Petrochemical Corp. (SINOPEC) (37.5%).

Saudi Aramco continued construction work at the Jazan refinery and terminal at Jazan Economic City, which is located in the southwestern region of the country. The Jazan refinery had a design capacity of 400,000 bbl/d of Arabian Heavy and Medium crude oils, and a 4,000-megawatt-capacity powerplant by 2017 (table 2; U.S. Energy Information Administration, 2014; Rabigh Refining and Petrochemical Co., 2015, p. 38; Saudi Arabian Oil Co., 2015, p. 34–37; 2016; Yanbu Aramco Sinopec Refining Co. Ltd., 2015).

Outlook

Saudi Arabia's GDP growth is expected to remain at 3.5% in 2015 and to decrease to 2.2% in 2016 owing to the decline of crude oil prices on international markets. The Government is expected to continue its strategy of attracting foreign investors to invest in mineral industry projects; this strategy was developed to diversify the economy away from the hydrocarbon sector and to increase the creation of new job opportunities in the mining and quarrying sector. The mineral sector in Saudi Arabia is expected to grow in the short term as the country is becoming a significant producer of such metals as aluminum, copper, gold, and zinc as well as such industrial minerals as nitrogen and phosphate fertilizers. Over the long term, the Government is planning to increase the value of mining sector activity in the country to \$69 billion and to create more than 100,000 jobs by 2030 (International Monetary Fund, 2015, p. 39; Saudi Gazette, 2015).

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TABLE 1
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014
METALS					
Aluminum, primary	--	--	--	187	665
Bauxite, metallurgical-grade	--	--	--	--	879
Copper in concentrate	1,603	1,954 ^r	17,639 ^r	41,332 ^r	43,390
Copper content (25%)	400	489	4,410	10,333	10,850
Gold content of concentrate and bullion	4,477 ^r	4,612 ^r	5,215 ^r	4,655 ^r	4,790
Iron and steel:					
Direct-reduced iron	5,510 ^r	5,810 ^r	5,660 ^r	6,070	6,460
Ferroalloys	177	212	196	196	196
Iron sand, gross weight	550 ^r	578 ^r	897 ^r	644 ^r	676
Steel, crude	5,015 ^r	5,275 ^r	5,203 ^r	5,471	6,291
Lead content of concentrate	543	396 ^r	400 ^r	400 ^r	400
Silver content of concentrate and bullion	7,670	5,839 ^r	5,212 ^r	4,655 ^r	4,888
Zinc content of concentrate	4,897	4,934	21,213 ^r	39,813 ^r	41,804
INDUSTRIAL MINERALS					
Barite	30	32 ^r	32 ^r	30 ^r	32
Bauxite, nonmetallurgical	284	634 ^r	835 ^r	934 ^r	980
Cement, hydraulic	42,833 ^r	48,450 ^r	53,332 ^r	56,238 ^r	57,223
Clay	5,800	6,090 ^r	8,300 ^r	6,880 ^r	7,220
Feldspar	42 ^r	44 ^r	227 ^r	160 ^r	168
Gypsum	2,100	2,205 ^r	1,700 ^r	1,700 ^r	1,780
Kaolin	62 ^r	65 ^r	137 ^r	101 ^r	106
Limestone for cement	45,750 ^r	48,038 ^r	48,615	56,700 ^r	59,500
Magnesite	25 ^r	159 ^r	57 ^r	30 ^r	36
Nitrogen: ^c					
N content of ammonia	2,600	3,100	3,250 ^r	3,185 ^r	3,400
N content of urea	1,700	1,700	1,600 ^r	1,560 ^r	1,660
Phosphate rock, gross weight	--	--	--	3,262 ^r	3,425
P ₂ O ₅ content (32%)	--	--	--	1,044 ^r	1,096
Fertilizers, P ₂ O ₅ content	300	300	960	845	960
Pozzolan and scoria	915	961 ^r	941 ^r	460 ^r	480
Pyrophyllite	24	25	8	6	7
Salt	1,800	1,890 ^r	1,611 ^r	1,900 ^r	1,990
Sand and stone:					
Dolomite	583	612 ^r	153 ^r	181 ^r	190
Granite	1,100	1,155 ^r	834 ^r	1,100 ^r	1,155
Gravel	277,000	291,000 ^r	300,000 ^r	300,000 ^r	315,000
Limestone	256 ^r	269 ^r	484 ^r	1,200 ^r	1,260
Marble:					
Blocks	48	50 ^r	25	11 ^r	12
For industrial use	1,500	1,575	1,300	3,000	3,150
Sand	26,000	27,300 ^r	30,000 ^r	29,000 ^r	30,400
Schist	623 ^r	633 ^r	683 ^r	650 ^r	680
Silica sand	820	861 ^r	1,270 ^r	1,160 ^r	1,210
Sulfur, byproduct, hydrocarbon processing	3,200	4,579	4,092	3,900 ^r	4,400
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross	97,000	102,000	111,220	114,120	116,841
Dry	78,500 ^r	87,700 ^r	99,300	100,000 ^r	108,200
Ethane	13,800	14,500	15,090	14,080	14,000
Petroleum:					
Crude oil	2,980 ^r	3,398 ^r	3,564 ^r	3,518 ^r	3,545
Natural gas liquids:					
Propane	168	175	189	177	181
Butane	107	114	123	114	120
Condensate	94	93	82	87	84
Natural gasoline and other	76	78	89	78	87

See footnotes at end of table.

TABLE 1—Continued
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum—Continued:						
Refinery products:						
Liquefied petroleum gases	thousand 42-gallon barrels	12,230 ^r	11,970 ^r	11,250 ^r	13,860 ^r	16,170
Gasoline	do.	137,094 ^r	142,580 ^r	145,489 ^r	134,685 ^r	160,928
Kerosene	do.	58,110 ^r	60,736 ^r	59,460 ^r	77,320 ^r	77,307
Naphtha	do.	71,690 ^r	62,120 ^r	64,180 ^r	58,650 ^r	70,270
Distillate fuel oil	do.	231,228 ^r	229,402 ^r	234,120 ^r	219,766	274,845
Residual fuel oil	do.	162,571 ^r	152,168 ^r	168,380 ^r	166,200 ^r	175,680
Asphalt	do.	18,210 ^r	18,720 ^r	17,690 ^r	19,600 ^r	20,060
Coke	do.	--	--	--	--	8,570
Total	do.	691,133 ^r	677,696 ^r	700,569 ^r	690,081 ^r	803,830

^rEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through January 29, 2016.

²In addition to commodities listed, carbon black, lime, and methanol were produced, but available information is inadequate to make reliable estimates of output.

TABLE 2
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Ma'aden Aluminium Co. (MAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Ras Al Khair, 90 kilometers northwest of Jubail	760
Bauxite, metallurgical-grade		Ma'aden Bauxite and Alumina Co. (MBAC) [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Al Baitha, Quassim Province	2,000
Bauxite, nonmetallurgical		Industrial Minerals Co. (IMC) [Saudi Arabian Mining Co. (Ma'aden)]	Az Zabirah, Ha'il Province	1,100
Cement:				
Gray portland		Al Jouf Cement Co.	South of Turaif	1,750
Do.		Al Safwa Cement Co.	As Shati, Jeddah	2,000
Do.		Arabian Cement Co. Ltd.	Rabigh	4,800
Do.		Eastern Province Cement Co.	Al Khursaniyah	3,500
Do.		Hail Cement Co.	Hail, Al Madinah Province	1,650
Do.		Itlat Cement Co.	Jeddah	2,500
Do.		Madina Cement Co.	Madina, Al Madinah Province	1,650
Do.		Najran Cement Co.	160 kilometers northwest of Najran	5,200
Do.		Northern Region Cement Co.	190 kilometers west-northwest of Arar	2,880
Do.		Qassim Cement Co.	Jal al Watah, north of Buraydah	4,000
Do.		Riyadh Cement Co.	30 kilometers southwest of Riyadh	3,800
Do.		Saudi Cement Co.	Ain Dar and Al Hofuf plants, Dammam	8,600
Do.		Southern Province Cement Co. (Government, 52%)	2 plants at Suq Al Ahad, Jazan	2,400
Do.		do.	Bishah, 550 kilometers southeast Jiddah	2,000
Do.		do.	Tihama	1,800
Do.		Tabuk Cement Co.	Tabuk	1,600
Do.		Umm Al-Qura Cement Co.	Hurat Hadon, Taif, Makkah Province	2,220 ¹
Do.		Yamama Cement Co. Ltd.	Riyadh	6,300
Do.		Yanbu Cement Co.	Yanbu, Al Madinah Province	7,500
White		Al-Gharbiah Cement Factory	Jeddah	250
Do.		Saudi White Cement Co.	30 kilometers southwest of Riyadh	250
Copper in concentrate	metric tons	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province, and Mahd Adh-Dahab Mine, Al Madinah Province	1,000
Do.	do.	Al Masane Al Kobra Mining Co. (AMAK) (local investors, 50%; Trecora Resources, 35%; Arab Mining Co., 15%)	Al Masane Mine, Najran Province	10,000
Direct-reduced iron		Saudi Iron and Steel Co. (Hadeed) [Saudi Basic Industries Corp. (SABIC)]	Plants A, B, C, D, and E, Jubail, Ash Sharqiyah Province	4,310
Do.		Direct Reduction Iron Co. Ltd. (DRIC) (Al-Ittefaq Steel Products Co.)	Plants I and II, Dammam, Ash Sharqiyah Province	1,300
Gold	kilograms	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province; Al-Hajar Mine, ² Asir Province; As Suq, Makkah Province; Bulgah Mine, Al Madinah Province; Mahd Adh-Dahab Mine, Al Madinah Province; Sukhaybarat plant, Al Madinah Province	8,000
Kaolin		Ma'aden Industrial Minerals Co. (IMC) [Saudi Arabian Mining Co. (Ma'aden)]	Az Zabirah, Ha'il Province	120
Magnesium compounds:				
Magnesite ore		do.	Mine at Al Ghazalah, Al Madinah Province	79
Magnesia, caustic calcined		do.	Processing plant, Al-Madinah Al-Munawwara Industrial City	39
Natural gas, gross		Saudi Arabian Oil Co. (Saudi Aramco) (Government, 100%)	Gawar field	75,000
Do.		do.	Karan field	5,000
Do.		do.	Safaniya field	10,000
Do.		do.	Zuluf field	10,000
Nitrogen, N content of ammonia		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Ras Al Khair, 90 kilometers northwest of Jubail	900

See footnotes at end of table.

TABLE 2—Continued
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:				
Crude	million 42-gallon barrels	Saudi Arabian Oil Co. (Saudi Aramco) (Government, 100%)	Ash Sharqiyah, Najd region, and offshore; includes the Ghawar, Hawtah, Khurais, Safaniya, and Shaybah fields	4,500
Refined products	do.	Jeddah Oil Refinery Co. [Saudi Arabian Oil Co. (Saudi Aramco), 100%]	Jeddah	38
Do.	do.	Rabigh Refining and Petrochemical Co. (Petro Rabigh) [Saudi Arabian Oil Co. (Saudi Aramco), 37.5%; Sumitomo Chemical Co., 37.5%; private, 25%]	Rabigh	140
Do.	do.	Riyadh Oil Refinery Co. [Saudi Arabian Oil Co. (Saudi Aramco), 100%]	Riyadh	50
Do.	do.	Saudi Arabian Oil Co. (Saudi Aramco) (Government, 100%)	Ras Tanura	193
Do.	do.	do.	Yanbu, Al Madinah Province	82
Do.	do.	Saudi Aramco Mobil Refinery Co. Ltd. [Saudi Arabian Oil Co. (Saudi Aramco), 50%, and Mobil Yanbu Refining Co. Inc., 50%]	do.	140
Do.	do.	Saudi Aramco Shell Refining Co. [Saudi Arabian Oil Co., (Saudi Aramco), 50%, and Shell Saudi Arabia Refining Ltd., 50%]	Jubail, Ash Sharqiyah Province	110
Do.	do.	Saudi Aramco Total Refining and Petrochemical Co. [Saudi Arabian Oil Co. (Saudi Aramco), 62.5%, and Total S.A., 37.5%]	Jubail, Ash Sharqiyah Province	400
Phosphate rock		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Al Jalamid, Northern Borders region	11,600
Phosphate fertilizers		do.	Ras Al Khair, 90 kilometers north of Jubail	3,000
Steel, crude		National Steel Co. Ltd. (Al-Ittefaq Steel Products Co., 100%)	Dammam, Ash Sharqiyah Province	800
Do.		Saudi Iron and Steel Co. (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Jubail, Ash Sharqiyah Province	5,500
Do.		Rajhi Steel Industries Co. Ltd.	Jeddah	850
Titanium dioxide		The National Titanium Dioxide Co. Ltd. (Cristal) [National Industrialization Co. (Tasnee), 79%; Gulf Investment Corp. (GIC), 20%; Al Shair Group, 1%]	Yanbu, Al Madinah Province	100
Zinc, Zn content of ore	metric tons	Ma'aden Gold and Base Metals Co. (MGBM) [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province, and Mahd Adh-Dahab Mine, Al Madinah Province	2,000
Do.	do.	Al Masane Al Kobra Mining Co. (AMAK) (local investors, 50%; Trecora Resources, 35%; Arab Mining Co., 15%)	Al Masane Mine	4,500

Do., do. Ditto.

¹Under construction.

²Closed in 2013.