



2013 Minerals Yearbook

SAUDI ARABIA

THE MINERAL INDUSTRY OF SAUDI ARABIA

By Waseem A. Abdulameer

In 2013, the Kingdom of Saudi Arabia was only a moderate producer of metallic mineral commodities, mineral ores, and clays, despite its plentiful mineral reserves. The country was a major world producer of petroleum and refined hydrocarbons. Saudi Arabia had the leading economy in the Middle East and North Africa region and one of the world's 20 leading economies (Saudi Arabian General Investment Authority, 2015). Although the Saudi economy was dominated by the petroleum industry in 2013, many mineral development projects continued to progress, including an integrated aluminum project, a copper and zinc project, and a phosphate rock development project. In the petroleum sector, a new offshore crude oil field, which was considered to be the world's fifth largest in terms of resources, was put into production in 2013. A major offshore natural gas project was delayed. Saudi Arabia was the world's second-ranked petroleum liquids producer in 2013 behind the United States, averaging daily production of 11.6 million barrels (Mbbbl). Saudi Arabia was the world's 12th-ranked total primary energy consumer in 2013 and consumed about 228 million metric tons (Mt) oil equivalent of petroleum and natural gas for energy generation (BP p.l.c., 2014, p. 40–41; U.S. Energy Information Administration, 2014). By yearend 2013, Saudi Arabia was the world's second-ranked crude oil producer behind Russia and held about 16% of the global crude oil reserves, which was about 266 billion barrels (Gbbbl). Saudi Arabia held the world's sixth largest natural gas reserves, which totaled about 8 trillion cubic meters, behind Russia, Iran, Qatar, Turkmenistan, and the United States. Saudi Arabia produced aluminum and phosphate rock for the first time in 2013. The country produced industrial minerals, such as cement, nitrogen and phosphate fertilizers, and sulfur, on a moderate scale (table 1; Arab Fertilizers Association, 2014, p. 15–21; BP p.l.c., 2014, p. 6, 8, 20, 22; HSBC Global Connections, 2014; Organization of the Petroleum Exporting Countries, 2014, p. 22–23; Saudi Arabian Oil Co., 2014, p. 19, 21).

Government Policies and Programs

In July 2013, The Government of Saudi Arabia decided to open its domestic stock exchange (Tadawul) to foreign investors by yearend 2014; the Tadawul was established through article 20 of the Capital Market Law on July 15, 2013. The Government also decided to offer tax incentives for corporations that recruit and train the Saudi labor force in some regions of the country, including the regions of Al-Baha, Al-Jouf, Hail, Jazan, and Najran, and along the northern borders. The two decisions were expected to lead to increased diversification of the economy and to create more job opportunities for Saudi nationals (Saudi-U.S. Relations Information Service, 2014; Saudi Arabian General Investment Authority, 2015).

Royal Decree No. 47 M (the mining investment code) of October 4, 2004, as revised, is the law that regulates the mining

and quarrying industry in Saudi Arabia. According to the law, the Agency of Petroleum and Mineral Resources supervises mining activities, promotes investments, provides services, and issues several types of mining licenses and concessions in the country, including three types of licenses categorized as nonexploitation licenses and four types of licenses categorized as exploitation licenses. Nonexploitation licenses include reconnaissance and material collection licenses and are valid for 2 years; exploitation licenses are valid for 3 years. Although the law requires that all corporations and persons obtain licensing permits for the reconnaissance, exploration, exploitation, and material collection, the Saudi Geological Survey and the King Abdulaziz City for Science and Technology are exempted from this regulation. The decree allows the granting of mining rights to other corporations and persons, whether they are Saudi citizens or not, and permits the rights to be transferred to other corporations or persons with technical and financial competence and expertise. The decree also permits the exemption of some minerals and materials, such as petroleum, natural gas, and organic marine substances, from its rulings. By yearend 2012 (the latest year for which comprehensive data were available), the total number of valid mining licenses in Saudi Arabia was 1,643. Those licenses were for exploration (266), small mines (75), prospecting (32), quarrying and exploitation of cement raw materials (32), and quarrying and exploitation of other ores and industrial minerals, such as clay, dolomite, iron, and schist (27) (Glennie and others, 2011; Saudi Arabian Monetary Agency, 2013, p. 151; U.S.-Saudi Arabian Business Council, 2015, p. 1).

Minerals in the National Economy

Saudi Arabia's economy continued to grow in 2013, supported by the revenues from the oil sector, which accounted for 47.4% of the gross domestic product (GDP). Saudi Arabia registered a GDP growth rate of 3.8% in 2013 in real terms compared with 5.9% in 2012 owing mainly to the decreased global crude oil prices and a slight reduction in the volume of petroleum exports. According to the Organization of the Petroleum Exporting Countries (OPEC), Saudi Arabia's price for Arabian heavy crude petroleum averaged \$103.89 per barrel in 2013 compared with \$108.32 per barrel in 2012, which was a 4% decrease. In 2013, Saudi mining and quarrying activity (which includes part of the oil sector) accounted for 44.8% of the GDP; manufacturing activity, 10.1%; construction activity, 4.8%; and refined petroleum activity, 2.4%. The hydrocarbon sector's share of the GDP decreased by 4.1% in 2013, whereas the share of the nonhydrocarbon sector registered a 5.4% increase compared with that of 2012 (Bank Audi S.A.L., 2014, p. 1–2, 4–7; Organization of the Petroleum Exporting Countries, 2014, p. 83).

Mineral Trade

Saudi Arabia's total foreign trade value was \$544 billion in 2013, which was a slight increase from that of 2012. The volume of exports decreased by 3.2% in 2013, but the volume of imports increased by 8.1% compared with that of 2012, respectively. Mineral products (primarily hydrocarbons) accounted for 85.7% of total exports, which was a 4.6% decrease from that of 2012. Non-oil exports accounted for 14.3% of the total in 2013, which was a 6% increase from that of 2012. Machinery and transport equipment accounted for 43.3% of total Saudi imports, and chemicals and base metal products accounted for 22.9% (Bank Audi S.A.L., 2014, p. 6–7).

In terms of volume, Saudi Arabia exported an average of 7.7 million barrels per day (Mbbl/d) of crude oil in 2013. Asia received the majority (53.8%) of total Saudi crude oil exports followed by the United States (17.1%) and the rest of the world (29.1%). The majority (about 78%) of Saudi Arabia's refined products was shipped to Asia (U.S. Energy Information Administration, 2014).

In 2013, Saudi Arabia ranked as one of the leading ammonia exporters in the Middle East and North Africa region. Saudi Arabian Mining Co. (Ma'aden) increased its diammonium phosphate (DAP) exports to India (the world's leading DAP importer) and accounted for about 12% of India's total market share in 2013 compared with 3% in 2012 (Arab Fertilizers Association, 2014, p. 15, 27).

Saudi Arabia was the 10th-ranked goods trading partner with the United States and accounted for \$71 billion in trade balance value in 2013. Saudi Arabia was the 19th-ranked U.S. export market and accounted for about \$19 billion of the total U.S. export value in 2013, which was a 5.7% increase from that of 2012. The major Saudi imports from the United States were, in order of value, vehicles, machinery, and aircraft. Saudi Arabia was the eighth-ranked supplier of goods to the United States and accounted for about \$52 billion of the total U.S. import value in 2013, which was a 6.9% decrease compared with its share in 2012. The major Saudi exports to the United States were mineral fuel (oil), organic chemicals, fertilizers, and iron and steel (Office of the United States Trade Representative, 2015; U.S. Census Bureau, 2015).

Production

In 2013, Saudi Arabia produced 187,000 metric tons (t) of aluminum ingot, which was the first year that the country produced this mineral commodity. Copper and zinc production increased significantly—by 66% and 87%, respectively—owing to the Al Masane copper-gold-silver-zinc project's first full year of production. Direct-reduced iron (DRI) production increased by 6%. Low-grade bauxite production increased by 37% compared with that of 2012. The Az Zabirah Mine produced 1 Mt of phosphate rock in 2013, which was the mine's first year of production of this mineral commodity. The country's ammonia production decreased by 13%, and urea, by 29%. Production of jet fuel and kerosene increased by about 56%, and production of gasoline and naphtha decreased by about 55% (table 1).

Structure of the Mineral Industry

In 2013, the Government maintained ownership interest in the majority of large companies that operated in the mineral sector and played a significant role in supporting the private mineral sector through the Public Investment Fund (PIF) and the Saudi Industrial Development Fund (SIDF). In 2013, the major domestic mining companies that operated in Saudi Arabia included Al Masane Al Kobra Mining Co. (AMAK), Ma'aden, United Arabian Mining Co. (Manajem), and Saudi Basic Industries Corp. (SABIC) (Saudi Industrial Development Fund, 2015).

Ma'aden produced gold through its wholly owned subsidiary Ma'aden Gold and Base Metals Co. (MGBM) and phosphate rock through Ma'aden Phosphate Co. (MPC), which was a joint venture of Ma'aden (70%) and SABIC (30%). Ma'aden Wa'ad Al-Shamal Phosphate Co. (MWSPC), which was a joint venture of Ma'aden (60%), Mosaic Co. of the United States (25%), and SABIC (15%), was expected to operate an integrated phosphate project in northern Saudi Arabia. Ma'aden produced aluminum and bauxite through Ma'aden Bauxite and Alumina Co., which was a joint venture of Ma'aden (74.9%) and Alcoa Inc. of the United States (25.1%). AMAK, which was a joint venture of local investors (53%), Arabian American Development Co. of the United States (37%), and Arab Mining Co. (ARMICO) of Jordan (10%), produced copper and zinc concentrate in addition to gold and silver. The Khnaiguiyah for Mining Co. LLC (KMC), which was working on a copper and zinc project that was expected to start production in 2016, was a joint venture between Manajem (50%) and Alara Resources Ltd. of Australia (50%) (Alcoa Inc., 2011; Alara Resources Ltd., 2013, p. 19–21; Arab Mining Co., 2014, p. 21; Saudi Arabian Mining Co., 2015a).

The Ministry of Petroleum and Mineral Resources and the Supreme Council for Petroleum and Minerals managed the petroleum sector in the country through Saudi Arabian Oil Co. (Saudi Aramco), which was the national oil company, and its subsidiaries. Together, Saudi Aramco and its subsidiaries invested in upstream and downstream petroleum and natural gas, petrochemicals, water, and renewable energy industries in 2013. Saudi Aramco Mobil Refining Co. Ltd. (SAMREF) was a joint venture between Saudi Aramco (50%) and Mobil Yanbu Refining Co. Inc. (a subsidiary of Exxon Mobil Corp. of the United States) (50%), which conducted its operations, including producing fuels, in Yanbu Industrial City, which is located on the west coast of the country. Saudi Aramco Total Refining and Petrochemical Co. (SATORP), which conducted its operations in Jubail Industrial City on the east coast of the country, was a joint venture between Saudi Aramco (62.5%) and Total S.A. of France (37.5%). Saudi Aramco Shell Refining Co. (SASREF), which also conducted its operations in Jubail, was a joint venture between Saudi Aramco and Shell Saudi Arabia Refining Ltd. (50% each). Rabigh Refining & Petrochemical Co. (PetroRabigh), which conducted its operations on the west coast of the country, was a joint venture among Saudi Aramco and Sumitomo Chemical Co. of Japan (37.5% each) and private investors (25%). Yanbu Aramco Sinopec Refining Co. Ltd. (YASREF), which was expected start its operations in Yanbu by yearend 2014, was a joint venture

between Saudi Aramco (62.5%) and China Petrochemical Corp. (SINOPEC) of China (37.5%). Vela International Marine Ltd., which was wholly owned by Saudi Aramco, operated 15 very large crude carriers that transported Saudi crude oil within the Middle East and to Europe and the United States (table 2; Rabigh Refining and Petrochemical Co., 2013, p. 12; Saudi Arabian Oil Co., 2014, p. 19, 21, 33, 63; U.S. Energy Information Administration, 2014; Yanbu Aramco Sinopec Refining Co. Ltd., 2015).

Commodity Review

Metals

Aluminum.—In 2013, Ma'aden Aluminium Co. began initial production from its aluminum smelter, which was located at Ras Al-Khair about 90 kilometers (km) northwest of Jubail. The smelter was expected to be operating at full capacity by 2014, when it was projected to produce 740,000 metric tons per year (t/yr) of primary aluminum. Construction of Ma'aden's \$10.8 billion fully integrated aluminum project continued to progress in 2013 and was expected to be completed in 2014. Although an unplanned shutdown in one of the smelter's potlines halted construction temporarily between mid-October and late December 2013, Ma'aden was able to restore production with minimal effect. Ma'aden Rolling Co. completed construction on its 380,000-t/yr rolling mill in 2013. The mill was expected to start commercial production in mid-2014 and to receive about 51% of the aluminum produced by Ma'aden's smelter for reshaping (Al Arabiya News, 2013; Alcoa Inc., 2013; Albilad Capital, 2014, p. 4; Saudi Arabian Mining Co., 2014, p. 21, 33, 80–81).

Bauxite and Alumina.—The output of low-grade bauxite by Ma'aden Industrial Minerals Co. (MIMC) from the Az Zabirah Mine increased significantly to 1,044,360 t in 2013 from 760,114 t in 2012. The volume of low-grade bauxite sales increased by about 12% in 2013 compared with that of 2012 owing to the increased consumption by the domestic cement companies (Albilad Capital, 2014, p. 6; Saudi Arabian Mining Co., 2014, p. 66–67).

The Ma'aden Bauxite and Alumina Co. Mine and ore-crushing facility was located in Al Ba'itha near Quiba in the northeastern part of the country about 600 km northwest of Ras Al-Khair. The mine was part of the new integrated aluminum project and was expected to start production with an initial capacity of about 4.0 Mt/yr of bauxite ore near yearend 2014. The ore would be transported by rail to the alumina refinery in Ras Al-Khair, which would have the capacity to produce about 1.8 Mt/yr of alumina. Ma'aden's alumina refinery, which was projected to be the first of its kind in the Middle East, would supply alumina for the company's aluminum smelter and rolling mill (Saudi Arabian Mining Co., 2014, p. 21, 80).

Copper and Zinc.—In 2013, AMAK continued copper, silver, and zinc operations in the southwestern quadrant of Saudi Arabia, and by yearend, the company shipped 39,760 t of copper and 42,254 t of zinc concentrates to customers in Asia, which exceeded previous company plans. AMAK's production was expected to be affected because of a scheduled 2-week

shutdown for maintenance operations that would take place around mid-2014. Nevertheless, the company was projected to produce 30,000 t of copper concentrate and 41,000 t of zinc concentrate in 2014 (Arab Mining Co., 2014, p. 21; PR Newswire, 2014).

By yearend 2013, the Jabal Sayid underground copper mine, which was located 350 km northeast of Jeddah, was estimated to have about 650,000 t of contained copper in measured and indicated resources. Ma'aden was planning to invest about \$210 million to acquire a 50% stake in the project, and Barrick Gold Corp. of Canada would own the other 50%. The agreement was expected to be made final by yearend 2014, and plans were in place for the project to ship its first low-cost copper concentrate by early 2016. Once the mine was operating at full capacity, it was expected to produce about 45,000 t/yr of copper concentrate for the first 5 years. The project's mining license permitted further mining exploration in the surrounding licensed area, which could extend the mine's life (presently estimated to be about 15 years). The project was expected to provide more than 400 direct jobs and other indirect jobs locally (Albilad Capital, 2014, p. 6; Barrick Gold Corp., 2014; Saudi Arabian Mining Co., 2015b).

Gold.—In 2013, MGBM produced a total of 3,789 kilograms (kg) of gold from five operational mines. Those included 1,283 kg from the Al Amar Mine, which was a 34% increase from that of 2012; 1,415 kg from the Bulgah Mine, which was a 37% increase from that of 2012; and 1,060 kg from the Mahd Adh-Dahab Mine, which was a 28% increase from that of 2012. In addition, the Al-Hajar Mine, which produced 25 kg of gold, was mined out and closed in 2013, whereas the Sukhaybarat Mine produced about 6 kg of gold, which was a slight increase from that of 2012. The value of MGBM's gold production accounted for 12% of Ma'aden's consolidated revenues in 2013. About 75% of the gold and base metals produced by MGBM was shipped to MKS S.A. of Switzerland.

Ma'aden's Massarah project was part of the development in the Central Arabian gold region in 2013. A prefeasibility study of the project indicated a deposit of about 60 Mt at an average grade of 2.5 grams per metric ton (g/t) gold. Nevertheless, Ma'aden continued to evaluate the project because of the prospective challenges that would result from mining and transporting the gold owing to the remote location and the limited availability of infrastructure. Notably, in 2013, MGBM completed construction work in its gold mine at As Suq, which was projected to start production around mid-2014. Ma'aden also awarded a \$267 million contract to Hanwha Engineering and Construction Company Ltd. of the Republic of Korea to design and build a 2-million-metric-ton-per-day gravity and carbon-in-leach gold processing plant for the Ad Duwayhi Mine at the Central Arabian gold region. Ma'aden was expected to increase its gold production to about 15,600 kg/yr by 2017 (Albilad Capital, 2014, p. 5; Saudi Arabian Mining Co., 2014, p. 17, 72–73, 105–106).

Iron and Steel.—In 2013, Saudi Arabia produced about 5.5 Mt of crude steel, which was about a 5% increase compared with that of 2012. Crude steel demand in Saudi Arabia was estimated to be twice the country's current production. Saudi Iron and Steel Co. (Hadeed), which was a wholly owned

subsidiary of SABIC, had an integrated iron and steel complex in Jubail with a capacity to produce 2.2 million metric tons per year (Mt/yr) of flat products and 3.3 Mt/yr of long products. In 2013, Hadeed produced a record 2.3 Mt of flat products, which exceeded the design capacity by 15%. Hadeed's plants A and B, C, D, and E in Jubail, which had DRI capacities of 0.8 Mt/yr, 0.65 Mt/yr, 1.1 Mt/yr, and 1.76 Mt/yr, respectively, accounted for a majority of the country's 6% production increase in 2013 (Midrex Technologies Inc., 2014, p. 10–11; Saudi Basic Industries Corp., 2014, p. 66, 69; 2015).

Ma'aden was exploring plans to start producing base metals in 2013. SABIC was in the study phase for two steel plants. The first plant would be located in Jubail and have the capacity to produce 1.5 Mt/yr of steel products. The second plant would be located in Rabigh and have the capacity to produce 1 Mt/yr of steel products.

The Wadi Sawawin iron ore project, which was a joint venture of National Mining Co. of Saudi Arabia and STX Heavy Industries (a subsidiary of the STX Group of the Republic of Korea) was canceled in 2013 (HSBC Global Connections, 2014; Saudi Arabian Mining Co., 2014, p. 21; World Steel Association, 2014, p. 2)

Industrial Minerals

Cement.—The Saudi cement sector, which had a capacity of about 62 Mt/yr in 2013, was one of the established industrial sectors in the country. Saudi Arabia produced about 57 Mt of cement in 2013, which was a slight increase compared with that of 2012. The cement produced in the central and western parts of the country accounted for about 29% and 25% of the country's total, respectively. About 16 private companies operated in the Saudi cement sector. The Government provided subsidized natural gas, which was necessary to operate the local cement factories, through Saudi Aramco and regulated all trading activities. In 2013, coordination continued between the cement companies, the Government, and Saudi Aramco to settle disputes regarding natural gas allocations. The Saudi cement sector continued its growth in 2013 and was expected to increase its capacity to about 66 Mt/yr by 2015 (Aljazira Capital, 2013, p. 1–5; HSBC Global Connections, 2014; Karmani, 2014, p. 31; Kuwait Finance House, 2014).

Clay and Shale and Magnesite.—MIMC produced 64,298 t of kaolin from the Az Zabirah Mine in 2013 compared with 52,502 t in 2012. The volume of kaolin sales increased significantly by about 52% in 2013 compared with that of 2012 owing to the increase in demand from the MPC's plant in Ras Al-Khair. MIMC also processed 75,000 t of magnesite ore from its mine at Al Ghazalah and produced 29,500 t of caustic calcined magnesia at its processing plant in Al Madinah Al-Munawwara Industrial City (Albilad Capital, 2014, p. 6; Saudi Arabian Mining Co., 2014, p. 66–67).

Nitrogen.—Ma'aden subsidiary MPC produced 0.96 Mt of ammonia in 2013, which was a 12% decrease compared with the 1.09 Mt produced in 2012. The company produced less ammonia in 2013 mainly owing to the use of more ammonia internally to produce DAP but also because of an unexpected shutdown of the company's production plant in April. Ammonia

use by Ma'aden for DAP production increased by about 20% to 1.82 Mt in 2013 from 1.53 Mt in 2012. This increase resulted after 1 year of full-scale production from the Ras Al-Khair plant, which was expected to produce about 3 Mt/yr of nitrogen once it reached full capacity. Saudi Arabian Fertilizer Co. (Safco), which was a \$500 million domestic joint venture between SABIC (43%) and private investors (57%), was expected to start commercial urea production by 2015. Once completed, Safco-5 (the company's urea plant, which is located 100 km north of Dammam on the east coast of the country) was expected to produce 1.2 Mt/yr of nitrogen (Arab Fertilizers Association, 2014, p. 15–16, 19, 22; Saudi Arabian Mining Co., 2014, p. 76–77; Thapliyal, 2014).

Phosphate Rock.—MPC, which was a \$5.6 billion investment, continued to operate two projects in 2013. The first project was at the Ras Al-Khair complex that produced fertilizers. The second project was at the Al Jalamid site, which is located about 150 km east of Turaif in the northern part of the country and included a phosphate mine and an integrated plant that produced 2.8 Mt of phosphate rock. The phosphate rock was then transported to the Ras Al-Khair complex for processing. MWSPC, which was a \$7 billion investment project, continued work on the Wa'ad Al-Shamal integrated phosphate project, which is located about 20 km from Turaif. When completed, the project would include the Al Khobra phosphate mine and six phosphate processing plants. Once in operation, the project was expected to have the capacity to produce 1.5 Mt/yr of phosphate rock, 3 Mt/yr of phosphate-based fertilizers, and 440,000 t/yr of other downstream products. The project, which was expected to double Ma'aden's fertilizer production capacity, was projected to be inaugurated by late 2016 (Albilad Capital, 2014, p. 3; Arab Fertilizers Association, 2014, p. 17, 23, 37, 41; HSBC Global Connections, 2014; Saudi Arabian Mining Co., 2014, p. 19).

Mineral Fuels

Natural Gas.—In 2013, Saudi Arabia produced about 114,000 million cubic meters of dry natural gas, which came from natural gas fields associated with major Saudi crude oil fields, such as the Ghawar field, which accounted for about 60%, and the Safaniya and the Zuluf fields, which accounted for 10% each of the country's total natural gas production. The Karan field, which was the first offshore nonassociated gasfield in Saudi Arabia, continued to operate in 2013 and produced 4.2 million cubic meters per day of natural gas.

Saudi Aramco's Wasit gas project, which was expected to become the leading natural gas project in Saudi Arabia, was delayed because of budgetary issues in 2013 and was projected to be completed by 2016 rather than 2014. The Wasit gas project was expected to comprise two offshore natural gas fields near the east coast of Saudi Arabia. The first offshore field, which would have a capacity to produce about 28.5 million cubic meters per day, is located at the Arabiyah site, and the second field, which would have the capacity to produce about 31 million cubic meters per day, is located at the Habash site.

Saudi Aramco continued its exploration operations in natural gas in 2013 throughout Saudi Arabia, with the aim of increasing the country's production. Saudi Aramco reported that

it had completed the drilling of 50 natural gas exploration and development wells. The company also reported the discovery of two new natural gasfields at the Turayqa area in the Rub' Al-Khali Desert in the southeastern part of the country and the Mihwaz area in the central part of the country (Saudi Arabian Oil Co., 2014, p. 18–19; U.S. Energy Information Administration, 2014).

Petroleum.—In 2013, Saudi Arabia, which had the world's largest crude-oil-production capacity, produced a daily average of 9.6 Mbbbl of crude oil and about 2.0 Mbbbl of noncrude liquids. About 0.3 Mbbbl/d of the country's crude-oil-production capacity came from its share of the Neutral Zone, which was a 5,776-square-kilometer area shared by Kuwait and Saudi Arabia. In 2013, Saudi Aramco produced different grades of crude oil from onshore and offshore fields; most of this oil was considered sour because it contained high levels of sulfur. The majority of the Saudi sour crude oil came from the offshore fields, whereas the sweet crude oil came from the onshore fields. The country had nine streams of crude oil in 2013. Saudi Aramco operated the world's leading petroleum-processing facility, which was a 7.0-Mbbbl/d-capacity facility located in Abqaiq, Ash Shargiyah Province.

The Manifa oilfield was put into production in April 2013 and achieved production of 0.5 Mbbbl/d in July 2013. Once it is operating at full capacity, the Manifa oilfield was expected to produce 0.9 Mbbbl/d of crude oil, 2.55 million cubic meters per day of natural gas, and 65,000 barrels per day (bbl/d) of condensate. YASREF was expected to have the capacity to process about 400,000 bbl/d of crude oil from the Manifa plant by late 2014.

Saudi Aramco continued to explore for petroleum throughout Saudi Arabia in 2013 with the goal of sustaining its production levels of crude oil. The company reported that it had completed the drilling of 29 oil exploration and development wells, bringing the total number of discovered fields to 121 by yearend 2013. The company also reported the discovery of three new oilfields at Al-Haryd in the Red Sea, at Duhul, and at Salsal, respectively.

In 2013, Saudi Aramco had eight domestic refineries with a combined capacity of 2.5 Mbbbl/d. Saudi Aramco produced refined petroleum products through its wholly owned subsidiaries in Jeddah, Ras Tanura, Riyadh, and Yanbu, in addition to other established domestic joint ventures with major world petroleum companies. Saudi Aramco was working on the development of the Jazan refinery, which is located in the southwestern part of the country, and was projected to have the capacity to process 400,000 bbl/d of crude oil by yearend 2016 (Saudi Arabian Oil Co., 2014, p. 18–21, 32–33; U.S. Energy Information Administration, 2014).

Outlook

Saudi Arabia's GDP growth is expected to stay at about 4% for the next 2 years (International Monetary Fund, 2014, p. 7). The Government is projected to continue funding infrastructure projects in the country as a part of its ninth development plan (2010 to 2014) by allocating about one-half of a \$385 billion investment fund for the housing and real estate sectors, and the

rest for the energy, transportation, and utilities sectors (Ministry of Economy and Planning, 2010). The Government is expected to continue its strategy of collaborating with foreign investors and introducing new projects to the mineral industry; this strategy was developed to diversify the economy away from the hydrocarbon sector and encourage the creation of new job opportunities for the Saudi labor force in different industries, such as nonfuel mining and quarrying. The implementation of this strategy, however, is projected to take place gradually, and the results to be seen in the long run. Meanwhile, the hydrocarbon sector, supported by upstream and downstream expansions, such as the Manifa crude oil project, the Karan natural gas project, and the Al Wasit project, is expected to hold its role as the core of the Saudi economy and provide the necessary funding for the nonhydrocarbon development projects.

In light of Saudi Arabia's completion of the integrated aluminum project in 2014, it is expected that the country may become established as a major bauxite and alumina producer and play a role in the regional aluminum industry in the short run. Saudi Arabia's fertilizer industry is projected to grow significantly within the next 3 years; additional phosphate and nitrogen products were expected to come from the Ras Al-Khair and Wa'ad Al-Shamal projects. Although the demand for cement is expected to increase in Saudi Arabia, the cement industry in the country is projected to continue its moderate growth in the next 2 years primarily because of the limited fuel allocations by the Government and the related disputes with Saudi Aramco. Saudi Arabia's copper, gold, and zinc mining industries are expected to grow notably when the new development projects are inaugurated within the next 3 years (Bank Audi S.A.L., 2014, p. 4–5, 15; Kuwait Finance House, 2014; U.S. Energy Information Administration, 2014; Saudi Arabian General Investment Authority, 2015).

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TABLE 1
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2009	2010	2011 ^e	2012 ^e	2013 ^e	
METALS						
Aluminum, primary	--	--	--	--	187	
Bauxite, low grade, for cement	246	284	206 ³	760	1,044 ³	
Copper content of concentrate	metric tons	1,719	1,603	1,620 ³	6,000	9,950 ³
Gold content of concentrate and bullion	kilograms	4,857	4,476	4,674 ³	4,347 ³	3,789 ³
Iron and steel:						
Direct-reduced iron	5,000	5,500	5,800	5,700	6,070	
Ferrous alloys ^e	metric tons	178,000	177,000	212,000	196,000	196,000
Low-grade iron ore, for cement ^e	600	700	750	760	750	
Steel, crude ^e	4,700	5,000	5,300	5,200	5,471 ³	
Lead content of concentrate	metric tons	347	543	550	550	550
Silver content of concentrate and bullion	kilograms	8,527	7,670	7,900	7,900	7,900
Zinc content of concentrate	metric tons	4,952	4,897	4,934 ³	15,000	28,000
INDUSTRIAL MINERALS						
Barite ^e	metric tons	30,000	30,000	30,000	30,000	32,000
Cement, hydraulic	46,000 ^r	47,500 ^r	50,700 ^{r,3}	56,200 ^r	57,000	
Clays:						
Kaolin	metric tons	4,166	6,200	5,000	58,000	64,000 ³
Other, for brick and tile	4,700	5,800	6,000	6,000	6,000	
Feldspar	metric tons	55,000	42,300	160,000	168,000	100,000
Fertilizer, phosphatic, P ₂ O ₅ content ^e	300	300	300	960	845 ³	
Gypsum, crude	2,000	2,100	2,239 ³	2,351 ³	2,500	
Magnesite	metric tons	--	24,993 ^e	159,284 ³	39,000	29,500 ³
Nitrogen: ^e						
N content of ammonia	2,400	2,600	3,100	3,700	3,209 ³	
N content of urea	1,600	1,700	1,700	2,200	1,559 ³	
Phosphate rock:						
Gross weight	--	--	--	--	2,810 ³	
P ₂ O ₅ content	--	--	--	--	1,000 ^e	
Salt	1,640	1,800	1,864 ³	1,957 ³	2,000	
Sand and stone:						
Aggregate	259,000	277,000	2,727,000 ³	2,863,500 ³	3,000,000	
Dolomite	669	583	616 ³	647	700	
Granite	1,100	1,100	993 ³	1,043 ³	1,000	
Limestone:						
Blocks	522	704	770	809	800	
For cement	46,900	45,749	46,300	48,615 ³	48,000	
Marble ^e	metric tons	85,000	48,000	24,000	25,000	25,000
Pozzolana and scoria	802	915	1,010 ³	1,061 ³	1,000	
Sand and gravel	19,000	26,000	25,000	26,670 ³	25,000	
Schist	--	573	738 ³	775	780	
Silica sand (glass sand)	709	820	1,303 ³	1,368 ³	1,300	
Sulfur, byproduct, hydrocarbon processing	3,214	3,200	4,579 ³	4,092 ³	3,250 ³	
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	88,432	97,000	102,000	111,220 ^{r,3}	114,120 ³
Dry (methane)	do.	65,000	72,000	76,000	99,300 ^{r,3}	103,000 ³
Ethane	do.	11,500	13,800	14,500	15,090 ^{r,3}	14,080 ³
Petroleum:						
Crude oil	million 42-gallon barrels	2,888	2,887	3,310 ³	3,479 ³	3,517 ³
Natural gas liquids:						
Propane	do.	152	168	175	189	177 ³
Butane	do.	101	107	114	123	114 ³
Condensate	do.	83	94	93 ³	82	87 ³
Natural gasoline and other	do.	74	76	78 ³	89	78 ³

See footnotes at end of table.

TABLE 1—Continued
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2009	2010	2011 ^e	2012 ^e	2013 ^e	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum—Continued:						
Refinery products:						
Liquefied petroleum gases	thousand 42-gallon barrels	13,677	12,846 ⁴	12,000	11,300	11,103 ³
Gasoline and naphtha	do.	180,076	167,807 ⁴	196,000	200,000	90,456 ³
Jet fuel and kerosene	do.	56,674	45,957 ⁴	58,000	60,000	93,860 ³
Distillate fuel oil	do.	210,778	196,453 ⁴	222,000	225,000	219,766 ³
Residual fuel oil	do.	158,944	122,705 ⁴	144,000	160,000	166,184 ³
Unspecified ⁵	do.	17,034	18,212 ⁴	18,700	17,700	19,604 ³
Total	do.	637,183	563,980	651,000	674,000	600,973 ³

^eEstimated; 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 20, 2015.

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

³Reported figure.

⁴Does not include refined output of Rabigh Refining & Petrochemical Co.

⁵Includes asphalt.

TABLE 2
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(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. [Saudi Arabian Mining Co. (Ma'aden), 74.9%, and Alcoa Inc., 25.1%]	Ras Al-Khair, about 90 kilometers northwest of Jubail	740.
Bauxite, low-grade for cement		Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden)]	Central zone, Az Zabirah area	1,050.
Cement:				
Gray portland		Al Jouf Cement Co.	South of Turaif	1,750.
Do.		Arabian Cement Co. Ltd.	Rabigh	4,800.
Do.		Eastern Province Cement Co.	Al Khursaniyah	3,400.
Do.		Najran Cement Co.	About 160 kilometers northwest of Najran	3,000.
Do.		Northern Region Cement Co.	About 190 kilometers west-northwest of Arar	1,700.
Do.		Qassim Cement Co.	Jal al Watah, 18 kilometers north of Buraydah	4,000.
Do.		Riyadh Cement Co.	About 30 kilometers southwest of Riyadh	3,800.
Do.		Saudi Cement Co.	Al Hofuf, about 120 kilometers southwest of Dammam	8,600.
Do.		Southern Province Cement Co. (Government, 52%)	Suq Al Ahad, 10 kilometers northeast of Jazan	2,600.
Do.		do.	Bishah, 550 kilometers southeast of Jeddah	2,000.
Do.		do.	Tihama	1,800.
Do.		Tabuk Cement Co.	Tabuk	1,300.
Do.		Yamama Cement Co. Ltd.	Riyadh	6,300.
Do.		Yanbu Cement Co.	Yanbu Industrial City, on the west coast	4,000.
White		Al-Gharbiah Cement Factory	Jeddah	250.
Do.		Saudi White Cement Co.	About 30 kilometers southwest of Riyadh	200.
Copper, Cu content of ore		Ma'aden Gold and Base Metals Co. [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province, and Mahd Adh-Dahab Mine, Al Madinah Province	1.
Do.		Al Masane Al Kobra Mining Co. (AMAK) [Local investors, about 53%; Arabian American Development Co., about 37%; Arab Mining Co. (ARIMCO), 10%]	Al Masane Mine	9.
Gold	kilograms	Ma'aden Gold and Base Metals Co. [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province; Al-Hajar Mine, Asir Province; Bulgah Mine, Al Madinah Province; Mahd Adh-Dahab Mine, Al Madinah Province; and Sukhaybarat plant, Al Madinah Province	8,000.
Kaolin	metric tons	Ma'aden Industrial Minerals Co. (MIMC) [Saudi Arabian Mining Co. (Ma'aden)]	Central zone, Az Zabirah	64,000.
Magnesium:				
Magnesite ore		do.	Mine at Al Ghazalah	NA.
Magnesia, caustic calcined		do.	Processing plant, Al-Madinah Al-Munawwara Industrial City, southwest of Medina	39.
Natural gas, gross	million cubic meters	Saudi Arabian Oil Co. (Saudi Aramco) (Government, 100%)	Ghawar field	75,000.
Do.	do.	do.	Karan field	5,000.
Do.	do.	do.	Safaniya field	10,000.
Do.	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, about 90 kilometers northwest of Jubail	900.
Petroleum:				
Crude	million 42-gallon barrels	Saudi Arabian Oil Co. (Saudi Aramco) (Government, 100%)	Ash Shargiyah, Najd region, and offshore; includes the Ghawar, Hawtah, Khurais, Safaniya, and Shaybah fields	4,500.
Refinery products	do.	Jeddah Oil Refinery Co. [Saudi Arabian Oil Co. (Saudi Aramco), 100%]	Jeddah	38.

See footnotes at end of table.

TABLE 2—Continued
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum—Continued:				
Refinery products— Continued	million 42-gallon barrels	Rabigh Refining & Petrochemical Co. (PetroRabigh) [Saudi Arabian Oil Co. (Saudi Aramco), 37.5%; Sumitomo Chemical Co., 37.5%; private, 25%]	Rabigh, on the west coast	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 Industrial City, on the west coast	82.
Do.	do.	Saudi Aramco Mobil Refinery Co. Ltd. (SAMREF) [Saudi Arabian Oil Co. (Saudi Aramco), 50%, and Mobil Yanbu Refining Co. Inc., 50%]	do.	140.
Do.	do.	Saudi Aramco Shell Refining Co. (SASREF) [Saudi Arabian Oil Co. (Saudi Aramco), 50%, and Shell Saudi Arabia Refining Ltd., 50%]	Jubail Industrial City, on the east coast	110.
Do.		Saudi Aramco Total Refining and Petrochemical Co. (SATORP) [Saudi Arabian Oil Co. (Saudi Aramco), 62.5%, and Total S.A., 37.5%]	do.	400.
Phosphate rock		Ma'aden Phosphate Co. (MPC) [Saudi Arabian Mining Co. (Ma'aden), 70%, and Saudi Basic Industries Corp. (SABIC), 30%]	Al Jalamid, 50 kilometers east of Turaif	11,600 ore, 5,000 concentrate.
Steel, crude		National Steel Co. Ltd. (Al Tuwairqi Group, 100%)	Dammam	800.
Do.		Saudi Iron and Steel Co. (Hadeed) [Saudi Basic Industries Corp. (SABIC), 100%]	Jubail Industrial City, on the east coast	5,200.
Titanium dioxide		The National Titanium Dioxide Co. Ltd. (Cristal) (Gulf Investment Corp. of Kuwait; National Industrialization Co. of Saudi Arabia; Shairco Trading Industry and Contracting of Saudi Arabia)	Yanbu Industrial City, on the west coast	100.
Zinc, Zn content of ore		Ma'aden Gold and Base Metals Co. [Saudi Arabian Mining Co. (Ma'aden)]	Al Amar Mine, Ar Riyadh Province, and Mahd Adh-Dahab Mine, Al Madinah Province	2.
Do.		Al Masane Al Kobra Mining Co. (AMAK) (Local investors, about 53%; Arabian American Development Co., about 37%; Arab Mining Co., 10%)	Al Masane Mine	25.

Do., do. Ditto. NA Not available.