



2019 Minerals Yearbook

OMAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF OMAN

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In 2019, Oman's crude petroleum and natural gas sector continued to play a dominant role in the country's economy. Oman accounted for about 1.0% of global crude petroleum production and 0.9% of natural gas production in 2019 and was the largest crude petroleum producer in the Middle East that was not a member of the Organization of the Petroleum Exporting Countries (OPEC). Oman was a member of the Cooperation Council for the Arab States of the Gulf, originally known as the Gulf Cooperation Council (GCC) (table 1; U.S. Energy Information Administration, 2019a, p. 3; BP p.l.c., 2020b, p. 16, 34; Central Bank of Oman, 2020, p. 1).

Oman was the sixth-ranked producer of gypsum in the world, accounting for 6.1% of the world's gypsum production in 2019. Oman's production of industrial minerals also included ammonia, cement, clay (kaolin and others), gypsum, iron oxide pigments (laterite iron oxides), limestone, marble, quartz, salt, and sand and gravel, which were mainly for domestic consumption. Oman produced metals, such as aluminum, chromium, copper, gold, iron and steel (direct-reduced iron and raw steel), lead, manganese, and silver. The country also produced iron ore pellets for use by direct-reduced iron (DRI) plants and accounted for about 1.6% of the world's DRI production. The country is located on the southeastern tip of the Arabian Peninsula, a strategic location owing to its proximity to global energy shipping pathways at the Strait of Hormuz and the Gulf of Oman (table 1; Midrex Technologies Inc., 2020, p. 8; National Centre for Statistics and Information, 2020, p. 186; Crangle, 2021).

According to the Government, Oman has mineral resources in the ophiolite sequence zone (located in the northern mountainous part of the country) that include metals, such as chromium, cobalt, copper, gold, lead, magnesium, manganese, nickel, silver, and zinc; industrial minerals, such as clay (including kaolin), dolomite, gypsum, laterite, limestone, marble, quartzite, salt, and silica sand; and mineral fuels, such as coal. The Government issued 292 licenses by the end of 2018 (the most current year for which data were available) for mineral exploration operations (Al-Rajhi, 2016, p. 10; Al-Mahrouqi, 2018, p. 2; Central Bank of Oman, 2019, p. 35).

Minerals in the National Economy

In 2019, Oman's nominal gross domestic product (GDP) decreased by 4.3% to \$76.3 billion.¹ The hydrocarbon sector played a significant role in the country's economy, accounting for 75.6% of Government revenues, 68.4% of total exports, and 34.4% of the GDP, according to the Central Bank of Oman (2020, p. 1). The value added by Oman's hydrocarbon sector decreased by 8.4% to \$26.3 billion from \$28.7 billion (revised) in 2018 as Government revenue from crude petroleum

production decreased by 4.9% to \$15.9 billion. Oman's crude petroleum price decreased by 8.8% to an average of \$63.60 per barrel in 2019 compared with \$69.70 per barrel in 2018. Government revenue from natural gas production decreased by 10.5% to \$4.6 billion in 2018. Industrial activity other than petroleum-related activity accounted for 19.3% of the GDP, of which the value of manufacturing accounted for 10.5%; construction, 6.3%; electricity and water supply, 2.1%; and mining and quarrying, 0.4%. The gross output of the nonpetroleum industrial sector decreased by 1.5% (Central Bank of Oman, 2020, p. 1, 57, 59; National Centre for Statistics and Information, 2020, p. 176, 220).

In 2019, the value of total exports and imports decreased by 7% and 9%, respectively. The value of total exports decreased owing to a 13% decrease in the value of non-oil products and an 11% decrease in the value of refined products; the value of exports of crude petroleum decreased by 2%. Total merchandise exports were valued at \$38.7 billion, of which crude petroleum accounted for 51%, or \$19.7 billion; liquefied natural gas, 11%, or \$4.4 billion; and refined petroleum, 6%, or \$2.4 billion. The value of imports decreased to about \$24.3 billion, of which base metals and articles manufactured from base metals accounted for 15%, or about \$3.6 billion, and mineral products accounted for 6%, or about \$1.5 billion (National Centre for Statistics and Information, 2020, p. 220, 231–232).

Production

Notable increases in Oman's mineral production in 2019 compared with that of 2018 included production of clay (unspecified), which increased by 45%; salt, by 25%; ferrochromium, by 22%; natural gas liquids, by 18%; unspecified industrial sand and gravel, by 14%; and gypsum, by 10%. Notable decreases in production included that of copper (both smelted and refined), which decreased by 100%; kaolin, by 89%; chromite, by 31%; limestone (crushed), by 31%; manganese (gross weight), and sand and gravel (unspecified), by 26% each; quartz, by 14%; and marble, by 12%. Data on mineral production are in table 1.

Structure of the Mineral Industry

A new mining law, the Mineral Wealth Law, was issued under Royal Decree 19/2019 in February 2019 and adopted in March 2019; the new law canceled the 2003 Mining Law, which had been issued under Royal Decree 27/2003. The Mineral Wealth Law streamlines the process for obtaining a mining license; under the changes, qualifying bids for permits and concessions require approval from a far fewer number of entities, namely those related to defense, environment, health, and urban planning. The Government expected the new streamlined process to attract mining investment. The law also outlined the license periods for exploration to be 1 year, renewable but

¹Where necessary, values have been converted from Omani rials (OMR) to U.S. dollars (US\$) at the annual average exchange rate of OMR 0.3845=US\$1.00 for 2019.

not to exceed 3 years. Mining permits for operations taking place across an area of less than 5 square kilometers (km²) are extended from 1 year to 5 years, whereas concessions awarded to projects covering an area of more than 5 km² were extended from 20 years to 30 years. According to the Oxford Business Group (2019), the Government will negotiate individual royalty rates according to market conditions; however, a minimum royalty rate of 5%—down from a rate of 10% under the previous law—is set for the production of both “metallic minerals” and “nonmetallic minerals.” A minimum payment of 1% of the total annual production of raw materials is also included in the new law for the economic development of the local community (Curtis, Mallet-Prevost, Colt & Mosle LLP, 2019; Oxford Business Group, 2019).

Royal Decree No. 49 of 2014 established the Public Authority for Mining (PAM), under the authority of the Ministry of Commerce and Industry (MOCI), to monitor mineral industry activities, prepare plans and strategies relevant to the development of the mineral industry, and oversee the country’s mineral policies. The PAM is responsible for conducting geologic studies, executing economic viability-studies, issuing mining and quarrying permits, and promoting investment opportunities in the mineral sector. The PAM’s responsibilities were expanded under the new Mineral Wealth Law to include expropriation of property; approving exports of raw materials; inspection rights and right to access sites and obtain samples; and revocation of licenses under certain circumstances, such as failure by licensees to provide reports or if licensees are engaging in unauthorized activities. Penalties for companies that traded or subcontracted a permit or concession without permission from the PAM or operated outside their permitted area could face fines of up to \$390,000. The Ministry of Environment and Climate Affairs (MECA) was established in September 2007 by Royal Decree No. (90/2007) as one of the Government authorities responsible for formulating plans and programs for protection of the environment and conservation of its natural resources (Public Authority for Mining, The, 2015, p. 4–5, 26–27; Oman Observer, 2017; Curtis, Mallet-Prevost, Colt & Mosle LLP, 2019; Oxford Business Group, 2019; Al-Sarihi, 2020).

The hydrocarbon sector is subject to the Oil and Gas Law issued by Royal Decree 08/2011. The Ministry of Oil and Gas (MOG) manages the country’s hydrocarbon sector. Petroleum Development Oman L.L.C. (PDO), which was owned by the Government (60%), Royal Dutch Shell plc of the Netherlands (34%), Total S.A. of France (4%), and Partex (Oman) Corp. of Portugal (2%), held more than 90% of the country’s crude petroleum reserves and produced more than 70% of the country’s crude petroleum and almost all its natural gas. The Government owned 100% of Oman Oil Company S.A.O.C. (OOC) and Oman Oil Company Exploration and Production L.L.C. (OOCEP), 75% of Oman Oil Refineries and Petroleum Industries Co. (ORPIC), 51% of Oman Liquefied Natural Gas L.L.C., and 46.84% of Qalhat Liquefied Natural Gas S.A.O.C. In late 2019, the Government created OQ S.A.O.C. (a merger of nine companies: ORPIC, OOC, OOCEP, Oman Gas Co., Duqm Refinery Co., Salalah Methanol Co., Oman Trading International, Oxea of Germany, and Salalah Liquefied Petroleum Gas) and

noted that this action was intended to form a stronger, united, and more efficient consolidated entity. Table 2 is a list of major mineral industry facilities (table 2; U.S. Energy Information Administration, 2019a, p. 2–3, 5; 2019b; OQ S.A.O.C., 2020, p. 5, 13).

The primary focus of the Government of Oman’s ninth 5-year development plan (2016–2020) was diversification of the economy away from hydrocarbons; five priority sectors for this diversification included agriculture and fisheries, manufacturing, mining, transport and logistics, and tourism. The Government had set up special economic zones to encourage investment and stimulate economic activity in these sectors. During the year, the Government continued to develop the Duqm Special Economic Zone; Duqm is a port town located in central Oman about 600 kilometers (km) south of Muscat. The Duqm Special Economic Zone was designed as an integrated development project comprising a seaport, industrial area, new town, fishing harbor, tourist zone, logistics center, and education and training zone. Other special economic zones were set up in such cities as Khazaen, Salalah, and Sohar. Khazaen Economic City is a new logistics center being developed by the Government as a zone within the city of Barka, strategically located between Sohar Port and Muscat. The Salalah Freezone is an industrial and manufacturing complex, located next to the Port of Salalah in the south of Oman and close to international shipping lines. In July 2019, the Salalah Free Zone Co. signed an agreement for the construction of the 150,000-barrel-per-day Salalah refinery project, which would cost \$2.5 billion to build. The Salalah Free Zone Co. noted that a total of 69 agreements had been signed to develop the freezone, including the refinery project, at an investment cost of \$5.36 billion. The Sohar Port and Freezone is located in the north of Oman near the border with the United Arab Emirates. The port became operational in 2004 and the freezone was launched in 2010. The port is considered one of Oman’s most important points of entry, handling more than 1 million metric tons per year (Mt/yr) of cargo. These special economic zones offered 100% foreign ownership, tax exemption for up to 30 years, zero customs duties, no minimum share capital requirements, and no requirement for a local agent to trade within Oman (Central Bank of Oman, 2018, p. 29, 56; Oman Observer, 2019b; Oxford Business Group, 2020).

In 2019, the PAM and the Mineral Development of Oman S.A.O.C. (MDO) continued to develop a new railway project, the Mineral Line, which was announced in 2018; the new railway would link the Manji and Shuweimiah mining areas of Dhofar Governorate in southern Oman to the Duqm Port. These mining areas contain gypsum and limestone reserves. Oman Rail expected the Mineral Line to transport 30 Mt/yr of minerals, 3 Mt/yr of industrial goods, 15 Mt/yr of general goods, and 1 Mt/yr of oilfield equipment. The project, which was expected to be completed 4 years after a tender was awarded, was endorsed by the National Programme for Enhancing Economic Diversification (Tanfeedh) as one of the 120 initiatives that could boost the Sultanate of Oman’s economy (Central Bank of Oman, 2018, p. 29, 56; International Finance, 2019).

Commodity Review

Metals

Aluminum.—Sohar Aluminium Co. L.L.C. achieved a record high production of 391,000 metric tons (t) of primary aluminum in 2019, which was an increase of 2.9% compared with the 380,000 t produced in 2018. The company's smelter, located in the city of Sohar in northern Oman, had a capacity of 390,000 metric tons per year (t/yr). Sohar Aluminium, which was owned by Abu Dhabi National Energy Co. P.J.S.C. (40%), OOC (40%), and Rio Tinto Inc. of Canada (20%), produced ingots, sows, and hot metal. In 2019, the company employed 975 people, of which 76% were Omani nationals and the remaining 24% were foreign workers. Sohar Aluminium had a dedicated port facility that supports vessels with a capacity of up to 75,000 t for receiving raw materials and for exporting primary aluminum (table 2; Rio Tinto, 2020, p. 210, 270; Sohar Aluminium Co. L.L.C., 2020, p. 12, 15, 55, 87).

Antimony.—Strategic & Precious Metal Processing Co. (SPMP) commissioned in early 2019 a \$112 million metal processing facility located in the Sohar Port and Freezone that was expected to produce antimony metal, antimony trioxide, gypsum, and gold bars. SPMP was a joint venture of Oman Investment Fund (40%), Tristar Resources p.l.c. of the United Kingdom (40%), and DNR Industries Ltd. (20%). Tristar Resources reported that during 2019, the plant, which had a capacity to produce 20,000 metric tons per year (t/yr) of antimony and more than 1,555 kilograms per year of gold, produced antimony metal at a 99.11% grade, which was slightly below the commercial grade of 99.65%; limited amounts of gold had also been produced. The company also reported that the plant would not achieve full operating status until 2020 owing to delays related to needed modifications to a calcine furnace and the installation of a new gas handling system (table 2; Tristar Resources p.l.c., 2018, p. 3, 5–6; 2019, p. 1–2).

Chromium and Ferrochromium.—In 2019, Oman produced 608,000 t of chromite ore compared with 885,000 t (revised) in 2018. The country also produced 85,125 t of ferrochrome metal in 2019 compared with 70,000 (revised) t in 2018. Gulf Mining Group, which operated a 50,000-t/yr ferrochrome smelter located in the Sohar Freezone, planned to invest \$70 million to triple the capacity of its ferrochrome smelter with a target of 100,000 t/yr by late 2020 or early 2021 and 150,000 t/yr by 2023 (tables 1, 2; Prabhu, 2019).

Copper.—Savannah Resources plc of the United Kingdom was advised by the PAM in August that it would likely be issued mining permits to begin copper operations at Blocks 4 and 5 upon finalization of a license fee schedule under the new mining law; by the end of 2019, the PAM had not yet issued the permits. Savannah Resources also reported that outside groups had expressed interest in acquiring the blocks and that they would be undergoing a strategic review of the blocks in 2020. Blocks 4 and 5 cover 1,006 km² in the Semail ophiolite belt located in northern Oman (about 180 km northwest of Muscat). Savannah Resources held a 51% interest in the Omani company, Al Thuraya LLC, which was the owner of the Block 4 license. In addition, Savannah Resources held a 65% interest in Al Fairuz Mining, which was the owner of the Block 5 license.

At Block 4, the company focused drilling efforts on the Aarja, the Bayda, and the Lasail prospects. Block 5 included the Mahab 4 and the Maqail South deposits, which held a combined indicated and inferred mineral resource of 1.7 Mt at an average grade of 2.2% copper. At the Mahab 4 deposit, the company planned to develop an underground mine. At the Maqail South deposit, the company planned to develop an open pit mine (Savannah Resources plc, 2018, p. 3–4, 23, 47; 2020, p. 4, 18, 25).

AHRL LLC (AHRL), which was a joint venture among Alara Resources Ltd. of Australia (51%) and Omani conglomerates Al Hadeetha Investment Services LLC (AHIS) (30%) and Al Tasnim Infrastructure LLC (Al Tasnim) (19%), continued to develop an open pit mine at the Al Hadeetha copper-gold project; the mining license was issued by the PAM in 2018. The project was located about 150 km southwest of Muscat in North Al Sharqiyah Governorate and comprised one mining license and three exploration licenses, which covered a combined 105 km². At the end of 2019, the company reported estimated Joint Ore Reserves Committee (JORC) ore reserves of 9.7 Mt at an average grade of 0.88% copper and 0.22 gram per metric ton (g/t) gold. The company expected mining operations to start in 2021 and to continue for 10 years. AHRL also planned a 1-Mt/yr copper concentration plant, which was expected to start operations in 2022 (Alara Resources Ltd., 2020a, p. 3, 5, 20–21; 2020b).

Daris Resources LLC (DRL), which was a joint venture between Alara Resources (50%) and Al Tamman Trading Establishment LLC (ATTE) (50%), continued development of the Daris copper-gold project, which was located about 170 km west of Muscat. The project comprised one mineral excavation license (Block 7) of about 587 km² with applications for two mining licenses (Daris East and Daris 3A–5) covering 4.5 km²; these two mining license applications were still under review by the PAM at the end of 2019. A JORC-compliant mineral resource estimate of the Daris project in 2019 included 240,000 t of sulfide ore at an average grade of 2.37% copper and 0.43 g/t gold, and 180,000 t of oxide at an average grade of 0.72% copper and 0.08 g/t gold (Alara Resources Ltd., 2020a, p. 5, 20–21).

Iron and Steel.—In 2019, Oman produced 1.6 Mt of direct-reduced iron (DRI) compared with 1.5 Mt in 2018. Jindal Steel and Power Ltd. of India, which was the country's sole producer of DRI, operated a 1.8-Mt/yr plant in the Sohar Industrial Zone. The company also operated a 2.4-Mt/yr integrated steel melt plant located in Sohar. Both of these plants (the DRI plant and the steel plant) had been expanded by Jindal in 2018. Jindal also operated a 1.4-Mt/yr rebar mill (table 2; Jindal Steel and Power Ltd., 2019, p. 27; 2020, p. 9).

Industrial Minerals

Cement.—Oman's production of cement decreased by 1.9% to an estimated 5.2 Mt compared with an estimated 5.3 Mt (revised) in 2018. In May 2019, Raysut Cement Co. SAOG (RCC) paid \$60 million to acquire a 100% interest in Sohar Cement Factory L.L.C., which was a joint venture of Sohar Cement Co. (70%) and UAE-based Fujairah Cement Company. Sohar Cement Factory recently completed construction in 2018 of a cement plant in the Sohar Industrial Estate, which had an annual cement production capacity of 1.7 Mt/yr. With the addition of the Sohar cement plant, RCC's total annual cement

capacity in Oman increased to 4.7 Mt/yr. In September, RCC also announced plans to construct a 1-Mt/yr grinding plant in the port town of Duqm at a cost of \$30 million. Also in Duqm, Oman Cement Co. S.A.O.G. continued the construction of a 1.8-Mt/yr integrated cement plant, which was announced in December 2018 (table 1, 2; Global Cement, 2019; Mendoza, 2019).

Gypsum.—Oman produced 10.7 Mt of gypsum in 2019, which was a 5-year high and production record. The increase of 1.0 Mt (or 10.3%) compared with the 9.7 Mt (revised) produced in 2018 was owing to strong international demand. Oman was the leading exporter of gypsum in the world in 2019 with 9.0 Mt, which ranked it ahead of Thailand, 6.4 Mt; and Iran, 5.3 Mt. Oman's key export destinations in 2019 were the Association of Southeast Asian Nations (ASEAN) countries, Japan, India, and Bangladesh, and to countries in southern and eastern Africa. USG Boral Zawawi, which was a leading gypsum producer in Oman, noted that demand for Oman's exports of gypsum would likely remain strong for the next 15 years (through 2034) as Asian (notably Indian) cement and gypsum board manufacturing industries would continue to grow. USG Boral Zawawi also noted that Oman had competitive advantages to serve international markets owing to its superior port and logistics infrastructure and its strategic geographic location. The PAM noted that Oman was well positioned to supply the export demand because Oman's resources of gypsum exceed 1 billion metric tons. Large deposits of gypsum were mostly located in southern Oman (Times of Oman, 2017; Prabhu, 2020).

Nitrogen.—In 2019, Salalah Methanol Company LLC (SMC), a subsidiary of OOC and Takamul Investment Co., continued to develop a \$463 million ammonia plant that had a planned capacity of 365,000 t/yr. The plant was to be located adjacent to the company's Salalah methanol plant in the Salalah Freezone in southern Oman in the Governorate of Dhofar and would use byproduct purge gas as feedstock. SNC-Lavalin Group Inc. of Canada was awarded the engineering, procurement, and construction contract for the plant; the company began construction of the plant in 2018, and construction was expected to be completed by 2020. SMC also planned to build a pipeline to export liquid ammonia to the Port of Salalah (Prabhu, 2017; SNC-Lavalin Group Inc., 2017; Oman Observer, 2018).

Mineral Fuels

Natural Gas.—Oman produced 46.1 billion cubic meters of natural gas in 2019, which was a 5-year high and production record, or an increase of 825 million cubic meters (2%) compared with 45.2 billion cubic meters in 2018. In the 2020 edition of the BP Statistical Review of World Energy, Oman's natural gas reserves were estimated to be about 651 billion cubic meters (23.5 trillion cubic feet), or about 0.3% of the global total. Oman was a member of the Gas Exporting Countries Forum (GECF) and exported natural gas through its Oman LNG facilities near the port city of Sur in eastern Oman; Oman's primary liquefied natural gas (LNG) export destination was the Republic of Korea (U.S. Energy Information Administration, 2019a, p. 6; BP p.l.c., 2020b, p. 32; National Centre for Statistics and Information, 2020, p. 185).

Petronas of Malaysia completed its acquisition of a 10% stake in BP Oman from OOC in January 2019; the remaining shares were held by BP p.l.c. of the United Kingdom (60%) and OOC (30%). BP Oman started production from phase 1 of the Khazzan-Makarem natural gas field in 2017. Phase 1 was made up of 200 wells feeding into a two-train central processing facility, and it had production capacity at 10.3 billion cubic meters per year of natural gas. Production was expected to increase to about 15.5 billion cubic meters per year of natural gas when the second phase, named Ghazeer, was completed in 2021. Approximately 300 wells were expected to be drilled during the estimated lifetime of the Khazzan-Makarem field. The field and processing facility were located in Block 61, which was 350 km southwest of Muscat in the Al Dhahirah Governorate. BP Oman had its main office in Muscat and employed about 700 people, of whom 80% were Omani nationals (BP p.l.c., 2019b; 2020a, p. 25, 48; Pipeline Oil and Gas News, 2019).

BP and ENI S.p.A. of Italy signed a natural gas exploration and production-sharing agreement (EPSA) for Block 77 with the MOG in July 2019. BP and ENI would each hold a 50% interest in the EPSA; ENI would act as operator during the exploration phase. Block 77 covers a total area of more than 2,700 km² and is located 30 km east of Block 61 in central Oman. ENI also signed an EPSA for Block 47 with the MOG in January 2019. ENI operated in Oman through its subsidiary ENI Oman (BP p.l.c., 2019a; 2020a, p. 25, 305; ENI S.p.A., 2019a, b).

Shell and Total were expected to sign a production-sharing agreement with the MOG for the newly discovered Mabrouk North East natural gas field in northern Oman, but an agreement had not yet been completed by the end of the year. An initial agreement was signed in May 2018, and an interim agreement covering the funding and work program for 2019 was signed in February 2019. Mabrouk North East, which the Government estimated to have potential reserves of about 127 billion cubic meters (4.5 trillion cubic feet), was considered to be one of the largest hydrocarbons finds in the world in 2018 according to The Economist. Development of the Mabrouk North East would be tied to the creation of two integrated downstream natural gas projects. Shell, which would have a 75% share in the project, was expected to build a gas-to-liquids plant at the city of Duqm with OQ (via Oman Oil Co.), and Total, with the remaining 25% share, was expected to develop an LNG bunkering service at Sohar (The Economist, 2019).

Petroleum.—In 2019, Oman produced 354.4 million barrels (Mbbbl) of crude petroleum and condensate, which represented a 0.8% decrease compared with the 357.1 Mbbbl produced in 2018. The decrease in production was owing to an agreement between OPEC and non-OPEC countries to decrease output, which had been in place since January 2018. The annual average price of crude petroleum in Oman in 2019 was \$63.60, which was a decrease of 8.8% compared with about \$69.70 in 2018. At yearend, Oman's crude petroleum and condensate reserves were estimated to be 5.4 billion barrels or about 0.3% of the global total as reported in the BP Statistical Review of World Energy (2020 edition) (Financial Tribune, 2019; BP p.l.c., 2020b, p. 14; National Centre for Statistics and Information, 2020, p. 172).

During 2019, the MOG signed exploration and production-sharing agreements with energy companies to develop crude petroleum blocks in various parts of the country. One agreement was with Shell, which signed a deal to develop onshore Block 55 in the southeast of Oman. The deal was for 6 years, during which time Shell would be committed to conducting seismic surveys, seven drilling operations, and required studies at an estimated cost of \$65 million. The MOG also signed an agreement with Occidental Petroleum, which included an investment of \$59 million to develop onshore Block 72. Block 72 occupies an area of 3,530 km² in central Oman about 100 km west of Duqm. Occidental Petroleum was expected to fulfill commitments under the agreement, including conducting geological and geophysical studies, acquiring two-dimensional and three-dimensional seismic data, and drilling wells during exploration periods (Eltahir, 2019; Oman Observer, 2019a; Xinhua, 2019b).

In August, Daleel Petroleum Co. L.L.C. signed a 15-year contract extension with the MOG for operation and exploration rights for Block 5. Daleel Petroleum, which was jointly owned by Mazoon Petrogas S.A.O.C. (50%) and Mazoon Petrogas B.V.I. (50%) (a subsidiary of China National Petroleum Corp.), reported that the production capacity for Block 5 was 56,000 barrels per day (bbl/d) of crude petroleum and held expected recoverable reserves of about 200 Mbbbl. Block 5 covers 992 km² and is located in the northern Oman city of Ibri, which is located about 280 km west of Muscat (table 2; Oil Review Middle East, 2019b; Xinhua, 2019a).

Tethys Oil AB of Sweden acquired a 20% share in the license for Block 56 for \$9.5 million from Biyaq Oil Field Services LLC (Biyaq) of Oman in October 2019. Upon completion of the transaction, the license for Block 56 would be owned by Medco Arabia Ltd., 50% (a wholly owned subsidiary of PT Medco Energi Internasional Tbk of Indonesia); Oman based Intaj LLC, 25%; Tethys Oil, 20%; and Biyaq, 5%. The license is governed by an EPSA signed in November 2014; its initial 3-year exploration phase was extended until December 2020, and the partners had the option to enter into a second exploration phase that would end in December 2023. Block 56, which was still in an exploration stage in 2019, covers an area of 5,808 km² and is located on the southeastern coast of Oman near Sawqirah (250 km south of Duqm) (Oil and Gas Journal, 2019; Tethys Oil AB, 2020, p. 6, 11, 39–40).

The Rabab Harweel Integrated Project (RHIP), which was owned by the PDO, entered its startup phase in July 2019. Since 2014, Petrofac had provided the engineering, procurement, construction management, and commissioning support services for the \$1.25 billion project. The RHIP facility, located in the southern Omani desert, includes facilities that had the capacity to process 60,000 bbl/d of crude petroleum from PDO's Block 6 (primarily from the Harweel field) as well as about 170,000 cubic meters (6 million cubic feet) per day of natural gas; associated gathering and injection systems and export pipelines were also included in the project (Oil and Gas Drill, 2018; Oil Review Middle East, 2019a; U.S. Energy Information Administration, 2019a, p. 6).

Duqm Refinery and Petrochemical Industries Company L.L.C., which was a joint venture between OOC (50%)

and Kuwait Petroleum International (50%), continued the development of a 230,000 bbl/d refinery (primary products to include diesel, jet fuel, naphtha, pet coke, and sulfur) in the Duqm Economic Freezone in Duqm. By mid-2019, the refinery, which was being constructed at a cost of \$6 billion and financed by 29 financial institutions from 31 countries, was more than 25% complete. The refinery was expected to be completed by the end of 2021 or in early 2022 (Duqm Refinery and Petrochemical Industries Co. L.L.C., [undated]a, b; Thomson Reuters, 2019).

Outlook

The International Monetary Fund forecasted Oman's GDP to decrease sharply by 10% in 2020, followed by a slight decrease of 0.5% in 2021; the economy was expected to remain closely tied to the performance of the hydrocarbons sector. Natural gas exports will continue to benefit from the demand generated by economic growth in Asian countries. The development of multiple gas fields, such as the Khazzan-Makarem field and the Mabrouk North East natural gas field, is expected to increase natural gas production; these fields are needed for continued subsidized industrial development. Gypsum exports are also expected to increase as a result of growing international demand and declining competition from suppliers in developing countries, such as Thailand. Oman's Government indicated that it would continue its efforts to diversify the country's economy by providing incentives for industrial growth in value-added projects through expanding Free Economic and Trade Zones and developing energy, logistical, and transportation infrastructure. The Government's ability to implement the modernized mining law is likely to be central to attracting investment into the mining sector (International Monetary Fund, 2020, p. 58).

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TABLE 1
OMAN: PRODUCTION OF MINERAL COMMODITIES¹

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

Commodity ²	2015	2016	2017	2018	2019	
METALS						
Aluminum, metal, primary	377	386	253	380	391	
Chromium, mine, chromite:						
Gross weight	449 ^r	582 ^r	453 ^r	885 ^r	608	
35% Cr ₂ O ₃ , Cr content ^c	168 ^r	218 ^r	170 ^r	332 ^r	220	
Copper:						
Mine, concentrates:						
Gross weight	41	--	--	--	--	
Cu content	9	--	--	--	--	
Smelter, primary	26 ^r	11	5 ^r	6 ^r	--	
Refinery, primary	26 ^r	11	5 ^r	6 ^r	--	
Ferroalloys, ferrochromium	metric tons	63,750	90,063	79,563	70,000 ^r	85,125
Gold, mine, Au content ³	kilograms	102	67	3	--	--
Iron ore, pellets, from imports ⁴		9,000	10,700	11,000 ^e	11,000 ^e	11,500 ^e
Iron and steel:						
Direct-reduced iron	1,509	1,439	1,526	1,500	1,600	
Steel, raw steel ^e	2,000	2,000	2,000	2,000	2,000	
Lead, refinery, secondary	--	--	5,000	10,000	10,000	
Manganese, mine:						
Gross weight	metric tons	15,800	14,628	13,600	44,692 ^r	33,005
Mn content, 25% Mn ^c	do.	4,000	3,700	3,400	11,000 ^r	8,300
Silver, mine, Ag content ³	kilograms	2,645	3,621	120	--	--
INDUSTRIAL MINERALS						
Cement, hydraulic ^c	5,300	5,500	4,900 ^r	5,300 ^r	5,200	
Clay:						
Kaolin	170	188	219	110 ^r	12	
Unspecified	286	482	504 ^r	460	665	
Gypsum, mine	6,049	7,934	8,438 ^r	9,667 ^r	10,663	
Nitrogen, N content: ^c						
Ammonia	1,700	1,700	1,700	1,700	1,700	
Urea	1,600	1,600	1,600	1,600	1,500	
Salt	13	12	18	12	15	
Sand and gravel, industrial:						
Quartz	351	362	314	265 ^r	227	
Unspecified	9	17	34	21	24	
Stone, sand, and gravel, construction:						
Sand and gravel, unspecified	76,332	77,612	73,300	75,862 ^r	56,126	
Stone:						
Crushed, limestone	12,156	12,471	18,062	14,020 ^r	9,669	
Other, size and shape unspecified, marble	1,633	1,387	1,355 ^r	1,270 ^r	1,118	
Sulfur:						
Compounds, sulfuric acid ^c	1,400	1,500	2,500	2,500	2,500	
Byproduct, petroleum, S content	43	36	60	86	80	
MINERAL FUELS AND RELATED MATERIALS						
Liquefied natural gas	7,910	8,500	8,600	10,400	10,700	
Methanol ^c	2,100	2,000	2,000	2,000	2,000	
Natural gas:						
Gross	million cubic meters	39,438	40,471	40,528	45,297	46,122
Dry basis	do.	32,501	33,464	33,716	37,335 ^r	37,874

See footnotes at end of table.

TABLE 1—Continued
 OMAN: PRODUCTION OF MINERAL COMMODITIES¹

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

Commodity ²	2015	2016	2017	2018	2019	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	358,100	367,500	354,258	357,100	354,400
Natural gas liquids	do.	241,185	254,029	237,761	239,367	281,379
Refinery:						
Distillate fuel oil	do.	22,102	21,800	24,847	27,248	25,038
Gasoline	do.	26,107	25,743	25,502	27,072	28,143
Jet fuel, including kerosene	do.	5,170	5,202	7,175	13,327	14,018
Liquefied petroleum gas	do.	3,745	3,223	4,862	6,124	5,762
Residual fuel oil	do.	2,563	1,838	2,459	1,833	1,840
Other	do.	27,226	25,667	26,843	37,622	36,713
Total	do.	86,900	83,500	91,700	113,000	112,000

⁶Estimated. ¹Revised. do. Ditto. -- Zero.

¹Table includes data available through November 12, 2020. 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.

²In addition to the commodities listed, antimony, iron oxide pigments (laterite iron oxides), and refined gold may have been produced, but available information was inadequate to make reliable estimates of output.

³Reported sales.

⁴Pellets were produced from imported iron ore for use by direct-reduction plants.

TABLE 2
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum:			
Primary	Sohar Aluminium Co. L.L.C. [Abu Dhabi National Energy Co. P.J.S.C., 40%; Oman Oil Co. S.A.O.C. (OOC), 40%; Rio Tinto Inc., 20%]	Smelter at Sohar	390,000.
Secondary	Oman Aluminium Rolling Co. (OARC) (Takamul Investment Co. S.A.O.C.)	Rolling mill, Sohar Industrial Estate	140,000.
Do.	Oman Aluminum Processing Industries L.L.C. (Oman Cables Industries S.A.O.C., 51%, and Takamul Investment Co. S.A.O.C., 49%)	Plant at Sohar Port and Freezone	57,000.
Antimony	Strategic & Precious Metal Processing Co. (SPMP) (Oman Investment Fund, 40%; Tristar Resources p.l.c., 40%; DNR Industries Ltd., 20%)	Antimony metal and trioxide plant, at Sohar Port and Freezone	20,000.
Calcium carbonate	Northern Minerals Co. L.L.C.	Plant at Sohar Industrial Estate	100,000.
Cement	Al Madinah Cement Co. L.L.C.	Kilns and mills at Wadi Saa	1,120,000.
Do.	Oman Cement Co. S.A.O.G. (OCC) (Government, 51%; pension funds, 33.65%; individual investors, 9.85%; Public Authority of Social Insurance, 5.50%)	Kilns and mills at Rusayl	2,400,000.
Do.	Raysut Cement Co. S.A.O.G. (RCC)	Kilns and mills at Salalah	3,000,000.
Do.	Sohar Cement Factory L.L.C. [Raysut Cement Co. S.A.O.G. (RCC), 100%]	Cement plant at Sohar Industrial Estate	1,700,000.
Chromite:			
Ore	Al Tamman Trading Establishment L.L.C. (Muscat Overseas Group)	Al Ram and Wadi Rajmi Mines near Muscat	300,000.
Do.	Hatton FZE	Mines south of Muscat	480,000.
Do.	Gulf Mining Group (GMG)	Wadi Mahram Mine at Samail	600,000.
Do.	Northern Minerals Co. L.L.C.	Quarry at Samail	20,000.
Do.	Oman Chromite Co. S.A.O.G. (Al Qurum Establishment L.L.C.; Government, Oman Mining Co. L.L.C.; other private investors)	Mines near Sohar	200,000.
Concentrated	Gulf Mining Group (GMG)	Beneficiation plant at Samail	180,000.
Clay:			
Kaolin	NA	Mines in Al Wusta Governorate	250,000.
Unspecified	do.	do.	600,000.
Ferroalloys, ferrochromium	Al Tamman Indsil Ferro Chrome L.L.C. (Indsil Group, 50%, and Muscat Overseas Group, 50%)	Smelter at Sohar Freezone	75,000.
Do.	Gulf Mining Group (GMG)	do.	50,000.
Gold:			
Refined	kilograms Strategic & Precious Metal Processing Co. (SPMP) (Oman Investment Fund, 40%; Tristar Resources p.l.c., 40%; DNR Industries Ltd., 20%)	Refinery at Sohar Port and Freezone	1,555
Gypsum	Al-Rawas Mining Co. L.L.C. (Al-Rawas Holding L.L.C., 80%, and Oman Investment Fund, 20%)	Quarry at Salalah	2,300,000.
Do.	Cement Gypsum Products Co. S.A.O.G.	Quarries at Buraimi and Thumrait	180,000.
Do.	Global Mining Co., L.L.C. (GMC)	Quarry at Thumrait	3,000,000.
Do.	Gulf Mining and Material Co.	Quarry at Salalah	1,200,000.
Do.	Gypsum Mining Co. (Awam Minerals LLC, 100%)	Quarry at Thumrait	1,000,000.
Do.	Muscat Global Mining Co., L.L.C.	do.	3,000,000.
Do.	USG Zawawi Drywall L.L.C. SFZ (USG Boral Building Products Pty Ltd., 50%, and Zawawi Minerals L.L.C., 50%)	Quarry at Salalah Freezone, Dhofar Governorate	3,000,000.
Do.	Zawawi Gypsum L.L.C. (USG Boral Building Products Pty Ltd., 55%, and Zawawi Minerals L.L.C., 45%)	Quarry at Thumrait, Dhofar Governorate	3,000,000.

See footnotes at end of table.

TABLE 2—Continued
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(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		Jindal Shaded Iron and Steel L.L.C. (Jindal Steel and Power Ltd., 100%)	Plant at Sohar Industrial Zone	1,800,000.
Iron ore pellets		Vale Oman Pelletizing Co. L.L.C. [Vale S.A., 70%, and Oman Oil Co. S.A.O.C. (OOC), 30%]	do.	9,000,000.
Raw steel		Jindal Shaded Iron and Steel L.L.C. (Jindal Steel and Power Ltd., 100%)	do.	2,400,000.
Do.		Modern Steel Mills L.L.C.	Plant at Rusayl	160,000.
Roller (rebar)		Hadid Majan L.L.C.	Plant at Bait Al Falaj	180,000.
Do.		Jindal Shaded Iron and Steel L.L.C. (Jindal Steel and Power Ltd., 100%)	Plant at Sohar Industrial Zone	1,400,000.
Do.		Sharq Sohar Steel Rolling Mill L.L.C. (Sohar Steel L.L.C.)	do.	300,000.
Rolled (tubes)		Al Jazeera Steel Tube Mills Co. S.A.O.G.	Plant at Sohar	300,000.
Iron oxide pigment (laterite)		Arabia Global Resources	Quarry at Ibra	360,000.
Do.		Gulf Mining Group (GMG)	Quarry at Barka	300,000.
Manganese		Al Tamman Trading Establishment L.L.C.	Al Qabil Mine near Muscat	60,000.
Do.		Mina Engineering L.L.C. (Gulf Mining Group, 100%)	Quarry at Ibra	180,000.
Methanol		Oman Methanol Co. L.L.C. (Oman Methanol Holding Co. LLC and Methanol Holding International Ltd.)	Plant at Sohar Port	1,100,000.
Do.		Salalah Methanol Co. L.L.C. [Oman Oil Co. S.A.O.C. (OOC) 90%, and Takamul Investment Co., S.A.O.C., 10%]	Plant at Salalah Freezone	1,150,000.
Natural gas	million cubic meters	Petroleum Development Oman L.L.C. (PDO) [Government, 60%; Royal Dutch Shell plc, 34%; Total S.A., 4%; Partex (Oman) Corp., 2%]	Associated natural gas in the Kauther/Yibal, the Saih Niyahda, and the Saih Rawl clusters, onshore	27,000.
Do.	do.	BP Oman [BP p.l.c., 60%; Oman Oil Co. S.A.O.C. (OOC), 30%; Petronas, 10%]	Block 61, Khazzan and Makarem fields, onshore	10,335.
Do.	do.	Occidental Petroleum Corp.	Block 62, Fushaigah and Maradi Hurayma fields, onshore	1,705.
Do.	do.	Oman Oil Company Exploration and Production L.L.C. OOCEP [Oman Oil Co. S.A.O.C. (OOC), 100%]	Block 60, Abu Tabul field, onshore	723.
Natural gas, liquefied		Oman Liquefied Natural Gas L.L.C. [Government, 51%; Shell Gas B.V., 30%; Total S.A., 5.54%; Korea LNG, 5%; Mitsubishi Corp., 2.77%; Mitsui E&P Middle East B.V., 2.77%; Partex (Oman) Corp., 2%; Itochu Corp., 0.92%]	Two trains at Qalhat	6,600,000.
Do.		Qalhat Liquefied Natural Gas S.A.O.C. (Government, 46.84%; Oman Liquefied Natural Gas L.L.C., 36.8%; Union Fenosa S.A., 7.36%; Mitsubishi Corp., 3%; Oskas Gas Co. Ltd., 3%; Itochu Corp., 3%)	One train at Qalhat	3,700,000.
Nitrogen fertilizer	thousand metric tons	Oman India Fertiliser Co. S.A.O.G. (OMIFCO) [Oman Oil Co. S.A.O.C. (OOC), 50%; Indian Farmers Fertiliser Cooperative Ltd., 25%; Krishak Bharati Cooperative Ltd., 25%]	Plant at Sur	1,150 ammonia, 1,652 urea.
Do.	do.	Sohar International Urea & Chemical Industries S.A.O.G. (SIUCI) (Suhail Bahwan Group Holding L.L.C., 100%)	Plant at Sohar	730 ammonia, 1,300 urea.
Petroleum:				
Crude	42-gallon barrels per day	Petroleum Development Oman L.L.C. (PDO) [Government, 60%; Royal Dutch Shell plc, 34%; Total S.A., 4%; Partex (Oman) Corp., 2%]	Block 6, including about 100 oilfields in the Bahja, Fahud, Harweel, Lekhwair, Marmul, Nimr, Qarn Alam, and Yibal clusters, onshore	655,000.
Do.	do.	Occidental Mukhaizna, L.L.C. [Occidental Petroleum Corp., 45%; Oman Oil Co. S.A.O.C. (OOC), 20%; Shell Oman Trading Co. Ltd., 17%; Liwa Energy Ltd., 15%; Total Exploration and Production Oman, 2%; Partex (Oman) Corp., 1%]	Block 53, Mukhaizna field, onshore	122,800.

See footnotes at end of table.

TABLE 2—Continued
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:—Continued				
Crude— Continued	42-gallon barrels per day	Occidental Oman, Inc. (Occidental Petroleum Corp., 65%, and Mitsui E&P Middle East B.V., 35%)	Blocks 9, 27, and 62 includes the Safah and Al Sunienah fields, onshore	90,400.
Do.	do.	Daleel Petroleum Co. L.L.C. [Mazoon Petrogas B.V.I., 50%, (China National Petroleum Corp., 100%), and Mazoon Petrogas S.A.O.C., 50%]	Block 5, includes the Bushra, Daleel, Meزون and Shadi fields, onshore	56,000.
Do.	do.	CC Energy Development S.A.L., 50%; Tethys Oil, 30%; Mitsui E&P Middle East B.V., 20%	Blocks 3 and 4 Saiwan and Farha fields, onshore	45,000.
Do.	do.	Occidental Petroleum Corp.	Block 62, Fushaighah and Maradi	22,000.
Do.	do.	Mussandam Oil and Gas Co. [Oman Oil Co. S.A.O.C. (OOC), 100%]	Block 8, Bukha field, offshore	12,800.
Do.	do.	ARA Petroleum LLC (100%)	Block 44, Munhamir and Shams fields, onshore	3,400.
Do.	do.	Hydrocarbon Finder E&P (100%)	Block 7, Rija, Ramlat, and Sahmah fields, onshore	2,000.
Do.	do.	BP Oman [BP p.l.c., 60%; Oman Oil Co. S.A.O.C. (OOC), 30%; Petronas, 10%]	Block 61, Khazzan and Makarem fields, onshore	300.
Refined	do.	Oman Oil Refineries and Petroleum Industries Co. (ORPIC) (Ministry of Finance, 75%, and Oman Oil Co. S.A.O.C., 25%)	Refinery at Sohar	198,000.
Do.	do.	do.	Refinery at Mina Al-Fahal	106,000.
Quartz		Gulf Stone Co. S.A.O.G.	Plant at Sohar	45,000.
Salt, crude, industrial		Modern Salt Co. L.L.C.	Plant at Ibri Wilayat	12,000.
Sand and gravel		NA	NA	70,000,000.
Silica sand		Industrial Minerals Co. LLC (Northern Minerals Co. L.L.C., 100%)	NA	50,000.
Silver	kilograms	Oman Mining Co. L.L.C. (Government, 100%)	Mines at Sohar and Yankul	50.
Stone:				
Limestone		Oman Cement Co. S.A.O.C. (Government, 51%; pension funds, 33.65%; individual investors, 9.85%; Public Authority of Social Insurance, 5.50%)	Quarry at Rusayl	2,400,000.
Do.		Northern Minerals Co. L.L.C.	Quarries at Wadi Al Jizzi, Al Batinah	900,000.
Do.		Global Mining Co., L.L.C.	Quarry at Sohar	NA.
Do.		Oman Quarries Co., L.L.C. (Al Hooqani International Group)	Quarry at Samail	NA.
Marble		Al Tamman Trading Establishment L.L.C.	Quarry at Buraimi	1,700,000.
Do.		Companies that quarried marble included Al Ajmi Marble Co., Al Madinah Marble Co., Al Nasser Marble Co., Al Rushaidi Marble Co., Al Shanfri Marble Co., Al Zarabi Marble Co., Gulf Mining Materials Co., International Marble, and Omani Marble Co.	Quarries located primarily in Ibri Wilayat and the Buraimi Estate	450,000.
Sulfur:				
Elemental	thousand metric tons	Oman Oil Refineries and Petroleum Industries Co. (ORPIC) (Ministry of Finance, 75%, and Oman Oil Co. S.A.O.C., 25%)	Refinery at Sohar	50.
Fertilizer	do.	Sohar Sulphur Fertilizers L.L.C. (SSF) (Takamul Investment Co. S.A.O.C., 69%, and Aqua Ventures International, 31%)	Plant at Sohar Industrial Estate	60.
Sulfuric acid	do.	Sohar Chemical Industries (SCI) (Suhail Bahwan Group)	do.	1,460.

Do., do. Ditto. NA Not available.