



2013 Minerals Yearbook

OMAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF OMAN

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The Sultanate of Oman was the leading crude oil producer in the Middle East that was not a member of the Organization of the Petroleum Exporting Countries (OPEC). Oman is one of the countries that make up the Cooperation Council for the Arab States of the Gulf, better known as the Gulf Cooperation Council (GCC). In 2013, the country was the seventh-ranked producer of crude oil and the fifth-ranked producer of natural gas in the Middle East and accounted for about 1.1% of the world's crude oil production and 0.9% of the world's production of natural gas. In addition to fuel minerals, Oman supplied the world with such mineral commodities as ammonia, chromium, copper, gypsum, manganese, primary and secondary aluminum products, and urea. The country also produced cement, crude steel, direct-reduced iron (DRI), limestone, kaolin, laterite (low-iron ore), marble, quartz, salt, sand and gravel, and silica, which were mainly consumed locally (table 1; BP p.l.c., 2014, p. 10, 22).

Although copper mining has been ongoing in the Al Batinah region of Oman for about 6,000 years, much of the country's mineral resources remain unexploited or underexploited. Oman's mountainous region, which is located in the northern part of the country, hosts the Semail ophiolites, which are intact and exposed ophiolites likely to contain deposits of such metals as chromium, cobalt, copper, gold, lead, magnesium, manganese, nickel, palladium, platinum, silver, vanadium, and zinc (Mawarid Mining Co. L.L.C., 2014).

Minerals in the National Economy

The nominal value of Oman's gross domestic product (GDP) increased to \$80.6 billion in 2013 from \$78.3 billion in 2012. The real economic growth rate was 5.1% in 2013 compared with 5.0% in 2012. The value of the crude oil sector activity accounted for 45.9% of the GDP; the industrial sector, 17.6% of the GDP; and the natural gas sector, 3.8% of the GDP. Oman's economic growth was driven by increases in the amount of crude oil and natural gas production as well as continued high crude oil prices, which averaged \$105.51 per barrel in 2012 and \$109.61 per barrel in 2011. The Omani economy continued to be highly dependent on hydrocarbon revenues. During the 5-year period from 2008 to 2012, the value of hydrocarbon exports averaged about 70% of total exports and hydrocarbon revenue accounted for more than 80% of Government revenue. In 2013, the share of the non-oil industrial sector, which included aluminum, nitrogen fertilizer, and steel manufacturing, in the overall GDP was 17%. Manufacturing made up 60.5% of the value of the non-oil industrial sector followed by construction (30.4%), electricity and water supply (7.1%), and mining (2%). The value of mining and quarrying increased by 6.6% in 2013 compared with that in 2012 (Central Bank of Oman, 2014, p. 20, 22; International Monetary Fund, 2014, p. 10).

Government Policies and Programs

The Government's economic policy was focused on industrial diversification to achieve sustainable economic growth and reduced dependence on crude oil exports. The Government's goals for economic diversification included that the contribution of the non-oil sectors (including the natural gas sector) to the country's economy increase to 91% the GDP and that non-oil exports increase to 13% of the GDP by 2020. The Government had been investing in the mineral industry by investing in primary and secondary aluminum production and developing Oman's metal and industrial mineral resources. In 2008, the Government established Takamul Investment Co. S.A.O.C. to fund manufacturing and processing facilities that could add more value to hydrocarbons, metals, and other mineral commodities produced in Oman. Takamul was owned by Oman Oil Co. S.A.O.C. (OOC) (93.07%), along with the Abu Dhabi Water and Electricity Authority (5.01%) and Al Maha Strategic Industries for Investments L.L.C. (1.92%), the latter two of which were headquartered in the United Arab Emirates (UAE). Takamul financed several metal, mineral, and petrochemical production projects in the country, including Gulf Specialty Steel Industries L.L.C. (GSSI), Oman Aluminium Processing Industries L.L.C. (OAPIL), Oman Aluminium Rolling Co. (OARC), and Sohar Sulphur Fertilizers L.L.C. (SSF). Takamul was considering financing the development of new aluminum and steel beneficiation projects as well as ferrochrome, magnesium, salt, and silicon production projects (Takamul Investment Co. S.A.O.C., 2014a, b).

During 2013, the Government stopped accepting new applications for mining licenses while it conducted a comprehensive review of the country's mineral industry. The purpose of the review was to ensure that best practices were applied in the development of the country's mineral resources and to inform Government decisionmakers on how best to update the rules and regulations that govern Oman's mineral sector. The Government intended to give priority to mining projects that include a value-added component for any mineral commodity produced in the country. The Ministry of Commerce and Mining, which is responsible for regulating quarrying and mining activities in Oman, closed several sites that were designated for the production of construction aggregate, chromite, and marble because the operators had allegedly violated the terms of their mining and (or) quarrying licenses, including quarrying and mining for industrial minerals that were not covered by their licenses. An advisory committee, which included representatives from nine Government agencies, was formed to investigate mining issues in the country. The committee decided that quarrying and mining licenses would be issued only to companies that are jointly owned by at least 35 citizens of Oman. The committee also decided that mining companies should reinvest 5% of their profits back into welfare

projects in the local communities (Khan, 2012; Gulf News, 2013; Central Bank of Oman, 2014, p. 47).

Mining law No. 27 of 2003 and its amendments grants the Government [represented by the Ministry of Commerce and Industry (MCI)] ownership of all minerals wherever they are found in Oman. The MCI administers mining activities in the country and is responsible for issuing mining licenses, resolving mining sector disputes, and protecting the environment. Mining permits are issued to Omani companies and individuals as well as to foreign companies registered according to the commercial companies law No. 4 of 1974. Prospecting permits are for up to 5 years, and mining permits are issued for up to 25 years; both mining and prospecting permits are renewable (Ministry of Commerce and Industry, 2014).

Structure of the Mineral Industry

The Ministry of Oil and Gas manages the country's hydrocarbon sector; however, the ultimate decision on the country's hydrocarbon policy and investment is decreed by the Sultan of Oman. Hydrocarbon sector policies are carried out by Petroleum Development Oman L.L.C. (PDO), which is owned by the Government (60%), Royal Dutch Shell plc of the Netherlands (34%), Total S.A. of France (4%), and Partex (Oman) Corp. of Panama (2%). PDO holds more than 90% of the country's oil reserves and produces more than 70% of the country's crude oil and almost all its natural gas. The Government owns 100% of OOC, 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. (U.S. Energy Information Administration, 2013; Oman Oil Co. S.A.O.C., 2014).

OOC owned a 40% share in Sohar Aluminium Co. L.L.C., which was the sole primary aluminum producer in Oman, a 30% share in Vale Oman Pelletizing Co. L.L.C. (VOPC), and a 25% share in Black Rock Metals Co. Oman India Fertiliser Co. S.A.O.G (OMIFCO), which was a joint venture of OOC (50%), Indian Farmers Fertiliser Cooperative Ltd. (25%), and Krishak Bharati Cooperative Ltd. (25%), produced nitrogen fertilizer. The other producer of nitrogen fertilizer in Oman was Sohar International Urea & Chemical Industries S.A.O.G. (SIUCI), which was a wholly owned subsidiary of Suhail Bahwan Group (Oman India Fertiliser Co. S.A.O.C., 2014; Sohar Aluminium Co. L.L.C., 2014; Suhail Bahwan Group, 2014).

Al Madinah Cement Co. L.L.C, Oman Cement Co. S.A.O.C., and Raysut Cement Co. S.A.O.C. (RCC) were the main producers of cement in Oman. Several small-, medium-, and large-size companies produced chromite in 2013, including Al Tamman Trading Establishment L.L.C., Gulf Mining and Materials Co., Hatton FZE, Northern Minerals Co. L.L.C., and Oman Chromite Co. S.A.O.G. Copper was produced by Mawarid Mining L.L.C., which was a wholly owned subsidiary of MB Holding Co. L.L.C. (table 2).

Mineral Trade

In 2013, Oman's total exports increased in value by about 11% compared with a 29% increase in 2012. The increase in

2013 was attributable mainly to an 8.7% increase in the volume of crude oil output compared with that of 2012. The volume of Omani crude oil exports increased to 304.2 million barrels (Mbbbl) in 2013 from 279.8 Mbbbl in 2012. Crude and refined oil and natural gas accounted for about 80% of Oman's goods exports (including reexports). The value of liquefied natural gas (LNG) exports increased by about 3.4% in 2013 compared with that of 2012. The value of refined petroleum products exports decreased by about 39% compared with a decrease of 20% in 2012. Oman exported 8.9 million metric tons (Mt) of LNG and 268,000 metric tons (t) (3.1 Mbbbl) of natural gas liquids (NGL). The value of non-oil exports increased by 5.9% compared with that of 2012; this increase was mainly owing to a 28% increase in the value of mineral products and about a 29% increase in the value of base-metal and base-metal-related articles compared with those of 2012. The value of chemical products (which include fertilizers) increased by about 128% compared with the value in 2012 (Central Bank of Oman, 2014, p. 43–46, 104, 107).

The value of U.S. exports of goods to Oman decreased by about 10% to \$1.57 billion in 2013 from \$1.75 billion in 2012. The main export categories were passenger cars (\$411 million), drilling and oilfield equipment (\$157 million), chemicals (\$121 million), aircraft (\$87 million), and excavation machinery (\$51 million). The value of U.S. imports from Oman decreased by about 24% to \$1.02 billion from \$1.36 billion in 2012. The significant decrease was attributed to the decrease in the value of crude oil imports, which amounted to only \$98 million in 2013 compared with \$364 million in 2012 and \$1.65 billion in 2011. U.S. fertilizer imports (mainly urea) from Oman decreased to \$239 million in 2013 from about \$485 million in 2012, and imports of jewelry increased to \$223 million in 2013 from \$173 million in 2012 (U.S. Census Bureau, 2014).

Production

Notable increases in Oman's mineral production in 2013 compared with that of 2012 included that of gypsum, by 45%; chromite and manganese, 31% each; clay, 14%; and marble, 8%. Notable decreases in mineral output in 2013 compared with that of 2012 included that of copper mine output, by 45%; quartz, 44%; copper metal content, 50%; laterite, 19%; kaolin, 18%; limestone, 15%; refinery products, 8%; and sulfur, 14% (table 1).

Commodity Review

Metals

Aluminum.—The Sohar aluminum smelter, which was owned and operated by Sohar Aluminium, produced 354,000 t in 2013, which was a decrease of 1.7% compared with output in 2012. The company produced ingots, sows, and hot metal. The Sohar smelter used alumina imported from Australia by Oman Shipping Co. S.A.O.C., which had a long-term contract to ship 690,000 metric tons per year (t/yr) of alumina to Oman. The smelter employed more than 1,000 workers directly and 2,500 indirectly. Work on Sohar Aluminium's \$3.0 billion phase 2 expansion project, which aimed to double the smelter's capacity

to 720,000 t/yr from the current capacity of 360,000 t/yr, was underway. The phase 2 expansion project also included doubling the capacity of the existing 1,000-megawatt (MW) powerplant. The project was expected to be completed by yearend 2016 (Joseph, 2013; Sohar Aluminium Co. L.L.C., 2014).

Sixty percent of aluminum production at the Sohar smelter was used by the domestic market, and the remaining 40% was exported to China, India, and Malaysia. Several beneficiation plants were established in Oman to add value to the primary aluminum produced at the Sohar smelter to produce intermediate and manufactured aluminum products. In August, OARC completed the construction of an aluminum rolling mill at the Sohar Industrial Estate at a cost of \$385 million. The mill, which was constructed by FATA EPC (a subsidiary of FATA S.p.A. of Italy), had the capacity to produce 140,000 t/yr of multipurpose rolled aluminum sheets. The mill was supplied with natural gas by OOC. At full production, the mill was expected to employ 275 people and to provide additional employment opportunities for several supporting businesses (Oman Aluminium Rolling Co., 2014; Sohar Aluminium Co. L.L.C., 2014).

OAPIL, which was a joint venture of Takamul and Oman Cables Industries, was located in the Sohar Industrial Estate near the Sohar aluminum smelter. OAPIL had been producing electrical conductivity rods using technology supplied by Southwire Co. of the United States (Takamul Investment Co. S.A.O.C., 2014a).

Antimony.—Strategic & Precious Metal Processing Co. (SPMP), which was a joint venture of Tristar Resources p.l.c. of the United Kingdom (40% interest), Oman Investment Fund (40% interest), and Castell Investments (20% interest), was building an antimony roasting plant at the Sohar Freezone. The pyrometallurgical plant, which was expected to be completed by 2016, would have the capacity to produce 20,000 t/yr of antimony metal and antimony trioxide and would cost \$60 million to build. SPMP would recover antimony from concentrates supplied by Tristar and produced in Canada and Turkey as well as from concentrates from third parties to produce antimony metal ingots and antimony trioxide powder (Tristar Resources p.l.c., 2014).

Chromium.—Oman held about 2% of the world's chromite resources in its 450 chromite deposits. In 2013, Oman had more than 55 active chromite mining operations. The high number of chromite mining operations in Oman was attributed to the low cost of operating the mines because the shallow deposits allow for open pit mining, the moderate weather allows for year-round mining, and the infrastructure, which includes good roads and electricity, has long been developed. Oman's chromite ore output increased to 788,000 t in 2013 from 602,000 t in 2012. Gulf Mining Material Co. owned and operated Oman's first chromite ore concentration plant; the plant was located in the Ad Dakhiliyah region in Samail Wilaya in northern Oman. The plant had the capacity to produce 50,000 t/yr of chromium concentrate grading 38% chromium oxide (Cr_2O_3) or higher. In 2013, the company increased the plant's capacity to 180,000 t/yr (table 1; Gulf Mining Material Co., 2014).

In 2013, Al Tamman Indsil Ferro Chrome L.L.C., which was a 50–50 joint venture of Muscat Overseas Group (the parent company of Al Tamman) and Indsil Group of India,

commissioned a 75,000-t/yr-capacity ferrochrome smelter in the Sohar Freezone. The smelter consisted of two 24-megavolt-ampere (MVA) furnaces that processed chromite ore to produce high-carbon ferrochrome. The company planned to double the smelter capacity to 150,000 t/yr by adding two more furnaces in 2014 (Al Tamman Indsil Ferro Chrome L.L.C., 2013; James, 2013).

Chromite ore feedstock was supplied by Al Tamman, which started chromite ore production from the Al Ram Mine in 2007. Chromite ore from the Al Ram open pit mine, which was located 140 kilometers (km) south of Muscat, had been shipped to China and India. The company estimated the mineral resources at the Al Ram Mine to be 1 Mt of chromite grading 38% Cr_2O_3 . Annual production at the Al Ram Mine averaged 200,000 t. Al Tamman was also a partner in the Wadi Rajmi chromite mine. The mine was managed by Al Tamman and was located 320 km north of Muscat on the Muscat-Shinas Highway. The average annual production of chromite ore from the Wadi Rajmi open pit mine was 96,000 t, and mine's chromite ore reserves were estimated to be 1 Mt of ore grading 30% Cr_2O_3 (Al Tamman Trading Establishment L.L.C., 2014).

Metkore Alloys & Industries Ltd. of India had started preparation work for building a 150,000-t/yr-capacity ferrochrome smelter at the Sohar Freezone. The \$100 million smelter, which was expected to commence production in 2014, would use chromite mined in Oman. The smelter's entire output would be exported to India (James, 2013).

Copper and Gold.—Copper mine output decreased significantly in 2013 compared with that of 2012. The decrease was attributed to the exhaustion of reserves at the Safwa Mine in 2012. Mawarid, which was the sole copper producer in Oman, operated the Ghuzayn open pit copper mine, which was expected to be mined until 2021. Mawarid held exploration and exploitation permits for Blocks 1 and 2, which are located in northwestern Sohar, and for the Ghuzayn Block. Mawarid completed a feasibility study for the Ghuzayn 2 and Ghuzayn 3 prospects where it had previously identified copper mineralization during the exploration phase. The combined measured and indicated mineral resources at the Ghuzayn 3 site were estimated to be about 8.4 Mt grading 1.95% copper. The Mandos deposit had an estimated combined measured and indicated resource of 8.2 Mt containing 1.48% copper. Mawarid owned and operated a 140-metric-ton-per-hour-throughput concentrator at Lasail, which is located 35 km west of Sohar. The concentrator increased the copper content to between 18% and 24% in the concentrate from between 2% and 3% in the mined copper ore. The OMC copper refinery, which was Government owned, refined mined copper as well as imported copper and sold copper concentrates (Mawarid Mining Co. L.L.C., 2014).

In 2013, Gentor Resources Inc. of Canada was negotiating with Savannah Resources p.l.c. of the United Kingdom to sell its Oman assets; an agreement was expected to be completed in 2014. Al Fairuz Mining L.L.C. and Gentor Resources were exploring for copper and gold at Block 5 in northern Oman and targeting volcanogenic massive sulfide mineralization types similar to the Troodos massif in Cyprus. Under the agreement signed by the two companies, Gentor Resources would acquire

a 65% interest in Al Fairuz Mining following the completion of a bankable feasibility study. Gentor Resources had a similar agreement in place with Al Zuhra L.L.C. for the copper and gold exploration in Block 6. Gentor would receive 70% of future earnings, and Al Zuhra, 30% (Gentor Resources Inc., 2012).

Alara Resources Ltd. of Australia had been exploring for copper and gold at the Daris and the Washinihi sites in recent years. Alara had created a joint venture, Daris Resources L.L.C., with Al Tamman to develop and explore for copper and gold in the Daris property (Block 7). The Daris property covers 587 square kilometers (km²) and is located in Suwaiyq Wilayat in the Batinah region of Oman. Alara had the right to increase its interest in the project to 70% from 50%. The estimated measured plus indicated resources at the Daris East prospect were 240,024 t of copper sulfides (grading 2.37% copper) and 183,365 t of copper oxides (grading 0.72% copper) at a cutoff grade of 0.5% copper. The inferred resources were estimated to be 30,566 t of copper sulfides (grading 2.25% copper) and 1,712 t of copper oxides (grading 0.61% copper). The measured resources were 129,155 t of copper sulfides (grading 2.48% copper) and 96,526 of copper oxides (grading 0.77% copper) (Alara Resources Ltd., 2014).

Alara also formed a joint venture with Al Hadeetha Investment L.L.C. to develop the mineral resources of the Washihi-Mullaq-Al Ajal copper and gold project, which is located about 80 km east to 160 km southeast of the Daris copper and gold project. The project includes three prospects (exploration licenses) that cover an area of about 80 km². As of yearend 2013, Alara's Joint Ore Reserves Committee (JORC)-compliant indicated resource estimate for the Washihi prospect was 7.16 Mt at grades of 0.87% copper and 0.17 gram per metric ton (g/t) gold and the inferred resource estimate was 7.77 Mt at grades of 0.67% copper and 0.2 g/t gold (Alara Resources Ltd., 2014).

Alara formed another joint venture with Al Tamman to explore for copper and gold in Block 8, which was adjacent to Block 7. The Awtad copper and gold project is located about 130 km southwest of Muscat and covers about 497 km². The project area lies in the Samail ophiolite belt in northern Oman that extends for more than 500 km. Alara conducted a scoping study targeting 0.5-million-metric-ton-per-year (Mt/yr) throughputs of copper and gold ore at the Awtad project and decided to withdraw from the project because of poor results compared with other projects in Oman (Alara Resources Ltd., 2012a, b; 2013).

Alara had completed a scoping study in 2012 on the viability of installing a copper processing plant at the Washihi site because Washihi was projected to have a longer life and larger resources than the Daris site. Alara evaluated development options for a combined Daris and Washihi copper and gold project and identified two options that include the potential for a heavy-media separation followed by a small- or large-scale conventional flotation circuit. The company was conducting an upgraded scoping study for both options; the study was expected to be completed in July 2014 (Alara Resources, Ltd., 2014).

Iron and Steel.—Jindal Steel and Power Ltd. of India was the sole producer of DRI and hot-briquetted iron at its Jindal Shaded iron and steel plant located in the Sohar Industrial Estate.

The plant's production capacity in 2013 was 1.5 Mt/yr. The company commissioned another 2-Mt/yr-capacity steel meltshop in Sohar in the fourth quarter of 2013. The plant would be integrated with a new bar and rod mill that would have the capacity to produce 1 Mt/yr of steel bar and rod products (Muscat Daily, 2013; Jindal Shaded Iron and Steel LLC, 2014).

Vale Oman Pelletizing Co. L.L.C. (VOPC), which was a subsidiary of Vale S.A. of Brazil, produced iron ore pellets at its two 4.5-Mt/yr-capacity units in Sohar from imported iron; the pellets were for use in DRI plants. The DRI pelletizing plants and the distribution center were located within the Sohar Industrial Estate. VOPC planned to double its pelletizing capacity in Oman to 18 Mt/yr from the current capacity of 9 Mt/yr. All iron ore for the pellet plants was shipped from Vale's iron ore mines in Brazil by way of four 400,000-t-capacity ore carriers that were built in China for Oman Shipping Co. The maritime terminal and distribution center, which was built by VOPC at Sohar Industrial Port, had a 40-Mt/yr throughput capacity (Vale S.A., 2014, p. 29).

In 2013, Gulf Specialty Steel Industries, which was a joint venture of Global Steel Industries Pte Ltd. of Singapore and Takamul, commissioned its steel wire plant in Sohar. The plant had the capacity to produce 60,000 t/yr of galvanized steel wire. Sun Metals L.L.C., which was a subsidiary of Sun Metal Group of the UAE, planned to build a \$400 million steel plant in the Sur Industrial Estate. The plant was expected to have the capacity to produce 2.5 Mt/yr of steel products, including 1.2 Mt/yr of rebar and 1.15 Mt/yr of midsize steel products. The plant, which was to be completed by 2017, would include two electric-arc furnaces, two ladle refining furnaces, a billet caster, and a billet-and-bloom caster (Gulf Specialty Steel Industries, 2014; Muscat Daily, 2014).

Manganese.—Al Tamman was the sole producer of manganese in Oman in 2013. Manganese production at the Al Qabil open pit mine, which is located 220 km south of Muscat, increased to 39,000 t in 2013 from 38,000 t in 2012. The company had the capacity to produce 60,000 t/yr of ore containing 25% manganese. Al Tamman completed scoping studies, geologic mapping, and a topographic survey for manganese ore concessions in Al Mintirib, Al Mudhaybi, Al Qabil, and the Ja'alan sites in the Al Sharqiya region of Oman. Al Tamman was in talks with the Indsil Group of India to build a 100,000-t/yr manganese smelter at the Sohar Freezone to beneficiate the manganese produced from the Al Mintirib concession (Al Tamman Trading Establishment L.L.C., 2014).

Rare Earths.—In December, Medallion Resources Ltd. of Canada completed 6-month extensions of the existing memoranda of understanding (MOUs) with Arab Mining Co. of Jordan and Takamul. The original MOUs, which had been signed in early 2013, committed Arab Mining, Medallion, and Takamul to explore the viability of financing, creating, and operating a monazite production project in Duqm Industrial City in southern Oman. Under Medallion's MOU with Takamul, the two companies would establish a joint venture of Medallion (60% interest) and Takamul (40% interest) to produce rare-earth elements. Each party would provide funding for the project proportional to its interest. Under the MOU between Medallion and Arab Mining, both parties would negotiate Arab Mining's

investment or participation in a joint venture, which would be majority owned and operated by Medallion and focused on rare-earth production and processing opportunities within the Arab League nations, including the proposed processing plant at Duqm Industrial City in Oman (Medallion Resources Ltd., 2013).

Industrial Minerals

Gypsum.—Oman's output of gypsum increased to about 2.8 Mt in 2013 from 1.9 Mt in 2012 and 1.2 Mt in 2011. Gypsum production in Oman had been increasing steadily during the past 4 years. Gypsum resources were estimated to be about 950 Mt concentrated in the southern region of Oman, including 165 Mt of minable gypsum in the Shuwaymiyah area. In December, a new joint venture, Zawawi Gypsum L.L.C., between Zawawi Minerals L.L.C., (45% interest), Boral Ltd. of Australia (27.5% interest), and USG Corp. of the United States (27.5% interest) was created to develop the gypsum deposits in the Dhofar Governorate in southern Oman and to install a new plasterboard plant in the Salalah Freezone. The plasterboard plant was expected to begin production in the first quarter of 2015. The targeted markets for the output of this facility were East Africa, the Middle East, and India. Zawawi Gypsum expected to export up to 2 Mt of gypsum to India in each of the next 3 years. The project was estimated to create 320 jobs both directly and indirectly (table 1; Times News Service, 2014).

Lime.—In 2013, Carmeuse Majan Group of Belgium was building a greenfield lime plant at Salalah Freezone in Dhofar Governorate. When completed, the plant would have a total capacity of 1 Mt/yr of lime from eight 125,000-t/yr-capacity kilns. The project would be built in phases until the total production capacity of 1 Mt/yr is realized. Construction of the first kiln began in 2013, and production was expected to commence in the second half of 2014 (Carmeuse Majan Group, 2014).

Nitrogen.—OMIFCO and SIUCI produced and exported nitrogen fertilizer. OMIFCO produced about 1.4 Mt/yr of ammonia and 2.1 Mt/yr of granulated urea at its plant in the Sur Industrial Estate. OMIFCO's entire output was exported to India under a long-term take-or-pay offtake agreement. SIUCI produced ammonia and urea at its plant, which is located at the Sohar Industrial Estate. The plant's initial production capacity was 1.6 Mt/yr of granular urea. The project, which comprised a 2,000-metric-ton-per-day (t/d)-capacity ammonia production plant and two granular urea plants with a combined capacity of 3,500 t/d, was built by Mitsubishi Heavy Industries Fertilizer Project Contracting and Construction Co. L.L.C. (a subsidiary of Mitsubishi Heavy Industries Ltd. of Japan). Both plants used natural gas as a feedstock supplied by OOC (Oman India Fertiliser Co. S.A.O.C., 2014; Suhail Bahwan Group, 2014).

Sulfur.—Suhail Chemical Industries (SCI), which was a subsidiary of Suhail Bahwan Group, produced sulfuric acid at its plant in the Sohar Industrial Estate. SCI had the capacity to produce 1.46 Mt/yr of sulfuric acid. The plant was the only fully dedicated plant for sulfuric acid production in the country. Sulfuric acid output was used to supply the local market for electrolyte battery acid, alkalinity correction in reverse osmosis plants, and other uses. Sulfur from the plant was also

exported to African and GCC countries, as well as Sri Lanka and Yemen. SSF, which was as a joint venture of Takamul (the majority shareholder) and CoreSulphur Inc. of the United States, manufactured sulfur bentonite fertilizer and other micronutrients in Oman. SSF had the capacity to produce 30,000 t/yr of sulfur bentonite fertilizer at its plant, which was located in the Sohar Industrial Estate. SSF had an agreement with ORPIC whereby ORPIC supplied 30,000 t/yr of sulfur to SSF (Suhail Bahwan Group, 2014; Takamul Investment Co. S.A.O.C, 2014).

Mineral Fuels

Natural Gas and Petroleum.—Petroleum production had been increasing steadily in the past 5 years in Oman. Much of the increase was attributed to the use of comprehensive enhanced oil recovery (EOR) methods for mature oilfields. EOR techniques, which included miscible gas injection, polymer fluids injection, and steam injection, were chosen on a field-by-field basis. In 2013, the main producers of crude oil and condensate in Oman were PDO, which had an average production of 655,600 barrels per day (bbl/d); Occidental Petroleum Corp. of the United States, which produced 213,200 bbl/d; and DNO International ASA of Norway, which produced 12,800 bbl/d. Other minor producers included BP Oman (a subsidiary of BP p.l.c. of the United Kingdom), CC Energy Development S.A.L., Daleel Petroleum Co. L.L.C., Petrogas E & P L.L.C., and PTT Exploration and Production Public Company Ltd. of Thailand (Ministry of Oil and Gas, 2014; Petroleum Development Oman, 2014, p. 15, 20).

In 2013, ORPIC had the capacity to produce 222,000 bbl/d of refined petroleum products from the country's two refineries, which were located in Sohar and Mina Al-Fahl. ORPIC planned to increase the refinery capacity at Sohar to 200,000 bbl/d from 116,000 bbl/d by 2016 at a cost of \$2 billion. The Government also planned to build a third refinery at Duqm in southern Oman. The new refinery would be located in the Special Economic Zone at Duqm and would have the capacity to produce 230,000 bbl/d and to store up to 200 million barrels of crude oil. The project would be a joint venture of the Government and international investors, and most of the output of the refinery products would be destined for export (U.S. Energy Information Administration, 2013).

Outlook

Oman's non-oil economy is expected to grow by 5.4% in 2014 and 2015. The growth rate is attributed to Government spending on non-oil-related projects to achieve the country's economic diversification goals. The mineral industry of Oman is expected to continue to grow in the next 5 years as local, regional, and international companies continue to invest in primary and secondary aluminum, cement, ferrochrome, gypsum, iron and steel, lime, nitrogen, and petrochemical projects in the country. Much of the expected growth is driven by the increased demand for industrial minerals for infrastructure projects in Oman as well as in the neighboring countries of Qatar, which will be hosting the FIFA World Cup™ in 2022, and the UAE, which will be holding the World Expo in Dubai in 2020.

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TABLE 1
OMAN: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2009	2010	2011	2012	2013
METALS					
Aluminum	351	367	373	360	354
Chromium:					
Ore, gross weight	798	865	617	602 ^r	788
Metal content (35% chromic oxide)	279	303	216	211 ^r	276
Copper:					
Mine output	82	87	111	104	57
Metal, Cu content	2	2	2	2	1
Smelter output, Cu content	12 ^{r,2}	9 ^r	12 ^r	12 ^r	12
Refined, Cu content ^c	15	15	16	16	16
Gold, metal or Au content	28	27	--	--	--
kilograms					
Iron and steel:					
Crude steel ^c	84	84	160	160	160
Direct-reduced iron	--	--	1,110	1,460	1,470
Laterite (iron oxides)	392	375	722	710 ^r	572
Iron ore, pellets ³	--	--	--	9,000	9,000
Manganese:					
Gross weight	--	--	41,300	37,500	49,000
metric tons					
Metal content (25% Mn)	--	--	10,235	9,375	12,250
do.					
Silver, metal or Ag content	15	10	--	--	--
kilograms					
INDUSTRIAL MINERALS					
Cement, hydraulic	4,000	4,500	5,000	4,569 ^r	4,472
Clay	148	156	170	195 ^r	222
Gypsum	254	653	1,254	1,915	2,785
Kaolin	9	47	143	140	115
Limestone	3,353	4,638	4,995	6,488 ^r	5,489
Marble	631	695	931	1,165 ^r	1,255
Methanol	2,000 ^r	2,000 ^r	2,000 ^r	2,100 ^r	2,150
Nitrogen: ^c					
N content of ammonia	1,000	1,100 ^r	1,100 ^r	1,100 ^r	1,100
N content of urea	830	1,000 ^r	1,000 ^r	1,000 ^r	1,000
Quartz	209	187	217	623 ^r	347
Salt	31	12	12	13	12
Sand and gravel	69,251	70,686	69,391	72,990 ^r	69,449
Silica sand	32	34	38	47	47
Sulfur:					
Elemental	50	50	36	59	51
Sulfuric acid	1,200	1,200	1,200	1,400	1,400
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross	31,022	33,259	34,721 ^r	35,942 ^r	37,149
million cubic meters					
Dry	25,140	27,086	28,595 ^r	29,606 ^r	30,294
do.					
Liquefied ⁴	8,740	9,000	8,890	8,620	9,200
thousand metric tons					
Natural gas liquids	296,563 ^r	315,579 ^r	322,988 ^r	335,216 ^r	343,830
thousand 42-gallon barrels					
Petroleum:					
Crude and condensate	296,600	315,575	325,215	335,070 ^r	343,830
do.					
Refinery products:					
Liquefied petroleum gas	5,232 ^r	4,501 ^r	3,448 ^r	3,276 ^r	2,496
do.					
Gasoline	18,396	16,242	23,250	23,324	21,737
do.					
Jet fuel and kerosene	5,840	4,599	4,891	5,544 ^r	4,393
do.					
Distillate fuel oil	13,396	11,132	15,804	15,476	14,108
do.					
Residual fuel oil	5,804	2,263	3,342 ^r	3,242 ^r	2,084
do.					
Other	26,372 ^r	21,063 ^r	26,375 ^r	25,258 ^r	24,842
do.					
Total	75,040	59,800	77,110	76,120	69,660
do.					

See footnotes at end of table.

TABLE 1
OMAN: PRODUCTION OF MINERAL COMMODITIES¹

⁶Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ⁷Revised. do. Ditto. -- Zero.

¹Table includes data available through February 9, 2015.

²Reported figure.

³Pellets were produced from imported iron ore for use by direct-reduction plants.

⁴Liquefied natural gas is produced by treating gross natural gas in treatment plants to remove water, carbon sulfide, hydrogen sulfide, and other components.

TABLE 2
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(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. [Oman Oil Co. S.A.O.C. (OOC), 40%; Abu Dhabi Energy Co. P.J.S.C., 40%; Rio Tinto Alcan, 20%]	Smelter at Sohar	360,000.	
Secondary	Oman Aluminium Rolling Co. (OARC) (Takamul Investment Co. S.A.O.C.)	Sohar Industrial Estate	140,000.	
Do.	Oman Aluminum Processing Industries L.L.C. (OAPIL) (Oman Cables Industries S.A.O.C., 51%, and Takamul Investment Co. S.A.O.C., 49%)	Muscat	60,000.	
Calcium carbonate	Northern Minerals Co. L.L.C.	Ruwi	70,000.	
Cement	Oman Cement Co. S.A.O.C. (Government, 51%; Pension funds, 33.65%; Individual investors, 9.85%; Public Authority of Social Insurance, 5.50%)	Kilns and mills at Rusayl	2,500,000.	
Do.	Raysut Cement Co. S.A.O.C. (RCC)	Kilns and mills at Salalah	4,700,000.	
Do.	Al Madinah Cement Co. L.L.C.	Kilns and mills at Wadi Saa	750,000.	
Chromite:				
Ore	Al Tamman Trading Establishment L.L.C.	Al Ram Mine and Wadi Rajmi Mine	250,000.	
Do.	Hatton FZE	Mines south of Muscat	200,000.	
Do.	Gulf Mining and Materials Co.	Wadi Mahram Estate	200,000.	
Do.	Oman Chromite Co. S.A.O.G. (Ministry of Commerce and Industry, 15%)	Mines near Sohar	200,000.	
Do.	Northern Minerals Co. L.L.C.	Somail	20,000.	
Do.	Sun National Minerals L.L.C. (Zawawi Minerals L.L.C., 80%)	Northern Oman	NA.	
Concentrated	Gulf Mining and Materials Co.	Ad Dakhiliyah	50,000.	
Ferrochrome	Al Tamman Indsil Ferro Chrome L.L.C.	Sohar Freezone	150,000.	
Clays	NA	NA	300,000.	
Copper:				
Ore, gross weight	Mawarid Mining L.L.C. (MB Holding Co. L.L.C., 100%)	Open pit mines at Ajib and Shinas	80,000.	
Concentrated ore	do.	Lasail, near Sohar	40,000.	
Refined metal	Oman Mining Co. L.L.C. (OMC) (Government, 100%)	Sohar Industrial Estate	20,000.	
Gold:				
Ore	kilograms	Mawarid Mining L.L.C. (MB Holding Co. L.L.C., 100%)	Open pit mines at Ajib and Shinas	100.
Refined	do.	Oman Mining Co. L.L.C. (OMC) (Government, 100%)	Sohar Industrial Estate	500.
Gypsum				
Do.	Cement Gypsum Products Co. S.A.O.G.	Buraimi and Thumrait	180,000.	
Do.	Gulf Mining and Material Co.	Thamrait	200,000.	
Do.	Global Mining Co., L.L.C.	Sohar	65,000.	
Do.	Al-Rawas Mining Co. L.L.C. (Al-Rawas Holding L.L.C., 100%)	Salalah	2,000,000.	
Do.	Zawawi Gypsum L.L.C. (Zawawi Minerals L.L.C., 45%; Boral Ltd., 27.5%; USG Corp., 27.5%)	Thamrait, Dhofar Governorate	3,000,000.	

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Iron and steel:				
Iron ore pellets	Vale Oman Pelletizing Co. L.L.C. (VOPC) [Vale S.A., 70%, and Oman Oil Co. S.A.O.C. (OOC), 30%]	Thamrait, Dhofar Governorate	9,000,000.	
Iron ore (laterite)	Gulf Mining and Materials Co.	Barka	300,000.	
Crude steel	Jindal Shadeed Iron and Steel L.L.C. (Jindal Steel and Power Ltd., 100%)	Sohar	2,000,000.	
Do.	Modern Steel Mills L.L.C. (Oman International Development and Industrial Co. S.A.O.G., Assarain Group of Companies, Dharamsey Group, and others)	Rusayl	160,000.	
Direct-reduced iron	Jindal Shadeed Iron and Steel L.L.C. (Jindal Steel and Power Ltd., 100%)	Sohar	1,500,000.	
Rolled-steel products (rebar)	Sharq Sohar Steel Rolling Mills L.L.C.	do.	250,000.	
Do.	Hadid Majan L.L.C.	Bait Al Falaj	100,000.	
Rolled-steel products (tubes)	Al Jazeera Tube Mills Co. S.A.O.G.	Sohar	300,000.	
Galvanized steel products (wires)	Gulf Specialty Steel Industries L.L.C. (GSSI) (Global Steel Industries Pte Ltd. and Takamul Investment Co. S.A.O.C.)	do.	60,000.	
Kaolin	NA	NA	150,000.	
Limestone	Oman Cement Co. S.A.O.G. (Ministry of Commerce and Industry, 30.4%)	Rusayl	2,400,000.	
Do.	Northern Minerals Co. L.L.C.	Wadi Al Jizzi, Al Batinah	900,000.	
Do.	Global Mining Co., L.L.C.	Sohar	NA.	
Manganese	Al Tamman Trading Establishment L.L.C.	Al Qabil	60,000.	
Marble	do.	Buraimi	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.	
Methanol	Salalah Methanol Co. LLC [Oman Oil Co. S.A.O.C. (OOC) 90%, and Takamul Investment Co., S.A.O.C., 10%]	Salalah Free Zone	1,050,000.	
Do.	Oman Methanol Co. LLC (Oman Methanol Holding Co. LLC and Methanol Holding International Ltd.)	Sohar Port	1,050,000.	
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	27,000.
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	3,300,000.	
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%]	Sur	923 ammonia, 1,652 urea.
Do.	do.	Sohar International Urea & Chemical Industries S.A.O.G. (SIUCI) (Suhail Bahwan Group, 100%)	Sohar	1,300 urea.

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:				
Crude	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%]	About 100 oilfields in the Bahja, Fahud, Harweel, Lekhwair, Marmul, Nimr, Qarn Alam, and Yibal clusters	655.
Do.	do.	Oxy Oman, Inc (Occidental Petroleum Corp., 65%, and Mitsui E&P Middle East B.V., 35%)	Blocks 9 and 27, includes the Safah and Al Sunienah fields	90,400.
Do.	do.	Daleel Petroleum Co. L.L.C. (Mazoon Petrogas S.A.O.C., 50%, and Mazoon Petrogas B.V.I., 50%)	Block 5, includes the Bushra, Daleel, Mezoon and Shadi fields	40,400.
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	122,800.
Do.	do.	Joint venture of DNO International ASA, 50%, and LG International Corp., 50%	Block 8, Bukha field	12,800.
Do.	do.	CC Energy Development S.A.L.	Saiwan and Farha fields	15,100.
Do.	do.	Petrogas E & P L.L.C., 50%; Tethys Oil, 30%; Mitsui E&P Middle East B.V., 20%	Rija, Ramlat, and Sahmah fields (Block 7)	1,100.
Do.	do.	PTT Exploration and Production Public Company Ltd.	Block 44	3,400.
Do.	do.	BP Oman [BP p.l.c., 60%, and Oman Oil Co. S.A.O.C. (OOC), 40%]	Khazzan and Makarem gasfields (Block 61)	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	116.
Do.	do.	do.	Refinery at Mina Al-Fahal	106.
Quartz		Gulf Stone Co. S.A.O.G.	Sohar	650,000.
Salt, crude, industrial		Modern Salt Co. L.L.C.	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.	Sohar and Yankul	50.
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%)	Sohar Industrial Estate	30.
Sulfuric acid	do.	Sohar Chemical Industries (SCI) (Suhail Bahwan Group)	do.	1,460.

Do., do. Ditto. NA Not available.