



2008 Minerals Yearbook

OMAN

THE MINERAL INDUSTRY OF OMAN

By Mowafa Taib

Mineral production played an important role in Oman's economic development and growth in 2008. Oman was the seventh ranked crude oil producer in the Middle East and accounted for about 0.9% of total world crude oil production. In addition to hydrocarbons, Oman produced aluminum, chromite, clay, copper, gold, gypsum, iron ore, limestone, marble, quartz, salt, silver, and steel (BP p.l.c., 2009, p. 8).

Minerals in the National Economy

Oman's economy grew at rate of 44% at current prices in 2008 compared with 13% in 2007 and 19% in 2006. The hydrocarbon sector accounted for 51.3% of the gross domestic product (GDP) compared with an average contribution to the GDP of 46% in the previous 4 years. The nonpetroleum industrial sector, which for Oman included manufacturing and mining, accounted for 16% of the GDP. In 2008, Oman's total merchandise exports were valued at about \$37.6 billion¹ compared with \$24.6 billion in 2007, or an increase of about 53%. The increase was attributable mainly to higher crude oil prices in 2008, which for Oman averaged \$101.10 in 2008 compared with \$65.15 in 2007. Exports of crude oil in 2008 were valued at about \$21.8 billion; liquefied natural gas, about \$4.2 billion; refined petroleum products, about \$2.6 billion; mineral products, about \$1.6 billion; chemical industry products, about \$796 million; and base-metals and articles manufactured from base metals, about \$427 million. Significant increases in the value of commodity exports in 2008 compared with those of 2007 included chromite ores and concentrates (634%), refined petroleum products (116%), liquefied petroleum gases (54%), crude oil (52%), refined copper wire (44%), nonmetallic mineral products (39%), and base-metals (36%) (Central Bank of Oman, 2009, p. 16, 18, 94-96).

The value of Omani imports was \$22.8 billion in 2008, of which mineral fuels accounted for \$610 million and crude minerals, about \$391 million. In 2007, the value of total imports was \$15.9 billion, of which mineral fuels accounted for \$555 million and crude minerals, \$297 million. In 2008, the Government's net oil revenue increased to \$13.7 billion from \$9.5 billion in 2007, and Government's gas revenue increased to \$2.4 billion in 2008 from \$2.1 billion in 2007 (Central Bank of Oman, 2009, p. 47, 99; Ministry of National Economy, 2009, p. 179).

Production

In 2008, there were notable increases in Oman's mineral production compared with that of 2007, including output of sand and gravel, which increased by 297%; clay, by 139%; chromite, by 92%; marble, by 47%; cement, by 9%; and crude oil with

condensates, by 7%. There were also significant decreases in the production of silver, by 83%; gold, by 66%; quartz, by 17%; and refined copper, by 15%. Production levels for cement, gypsum, natural gas, salt, and sulfur were virtually unchanged (table 1).

Structure of the Mineral Industry

The Ministry of Commerce and Industry regulated the mining industry according to the Mining Law (Royal Decree No. 27/2003). In March 2008, the Mineral Development of Oman (MDO) was created to encourage investment in the country's mineral industry. MDO was a partnership between the Government's General Directorate of Minerals and private sector entities. The Ministry of Oil and Gas managed the hydrocarbon sector. Petroleum Development Oman L.L.C. (PDO), which was owned by the Government (60% interest), Royal Dutch Shell p.l.c. of the Netherlands (34%), Total S.A. of France (4%), and Partex (Oman) Corp. of Panama (2%), produced more than 80% of the country's crude oil and almost all the supply of natural gas. Royal Decree No. 99/2007 of September 23, 2007, created Oman Refineries and Petrochemicals Co. L.L.C. (ORPC) by merging Oman Refinery Co. L.L.C. and Sohar Refinery Co. L.L.C. as part of a sector restructuring plan. ORPC was owned by the Ministry of Finance (75%) and Oman Oil Co. S.A.O.C. (25%). The Government owned 100% of Oman Oil Co. and had a 51% interest in Oman Liquefied Natural Gas L.L.C. and a 46.84% interest in Qalhat Liquefied Natural Gas S.A.O.C. (Oman Refinery and Petrochemicals L.L.C., 2008).

Takamul Investment Co., which was majority owned by the Government, financed many mineral production projects in the country, including downstream aluminum projects at Metal Park in the Sohar Industrial Area. Takamul was owned by Oman Oil Co. (90% interest), Abu Dhabi Water and Electricity Authority (ADWEA) (5%), and another unnamed investor from the United Arab Emirates (5%).

Commodity Review

Metals

Aluminum.—The construction of the smelter by Sohar Aluminum, which was a joint venture of Oman Oil Co. (40%), ADWEA (40%), and Rio Tinto Alcan (20%), was completed in 2008 at a cost of \$2.4 billion. Production at the 350,000-metric-ton-per-year (t/yr)-capacity aluminum smelter began in June, and the first liquid metal delivery to downstream customers was made in August. The plant was expected to operate at full capacity beginning in February 2009. The Sohar Aluminium smelter comprised a single 360-pot AP35G aluminum smelter potline, which used longer-than-normal pots (1.2 kilometers long) at higher electric voltage, thus producing high yields of up to 2,700 kilograms of aluminum per pot per day (Sohar Aluminium, 2008a, b).

¹Where necessary, values have been converted from Omani rials (RO) to U.S. dollars (US\$) at the average rate of RO0.386=US\$1.00.

Several downstream industries were being developed as secondary aluminum industries at the Metal Park in the Sohar Industrial Area. Some of these projects were supported by Takamul. The new downstream aluminum projects were (1) an 80,000-t/yr-capacity rolling mill, which was a joint venture of ADWEA, Gulf Aluminium Rolling Mill Co., and Takamul; (2) a 48,000-t/yr-capacity aluminum rod and electrical conduction manufacturing plant, which was being built by Oman Aluminium Processing LLC; (3) a joint venture of Takamul (49%) and Oman Cable Industry (51%); (4) Future Takamul Metals L.L.C., which was a joint venture of Future Metals Private, Ltd. of India (70%) and Takamul (30%) to produce 30,000 t/yr of deoxidized aluminum rods for the steel industry; (5) a 30,000-t/yr-capacity aluminum billets and extrusions plant that was developed by European Takamul, which was a joint venture of European S.A. of India and Takamul; and (6) a joint venture of Sazburger Aluminium AG of Australia and Takamul that commenced production at a 30,000-t/yr-capacity plant for aluminum busbars using hot metal from the Sohar Aluminium smelter (Oman Daily Observer, 2009; Zawya, 2009a).

Chromium.—Oman's output of chromite in 2006 was almost double that of 2005; it increased by 450% in 2006, 148% in 2007, and 92% in 2008. Hatton FZE of the United Arab Emirates operated one of the leading chromite quarries in the Somail area, south of Muscat. The chromite ores were of various grades, and the Cr₂O₃ content of concentrate ranged from 30% to 42%. The production capacity was 480,000 t/yr. The other two producers were Gulf Mining and Materials Co. and Oman Chromite Co. S.A.O.G (GMM) (Gulf Mining and Materials Co., 2008; Hatton FZE, 2008).

By yearend 2008, the prices of chromium plummeted and chromium exports to China, which accounted for almost all of Oman's chromite production, were virtually halted because many Chinese steel furnaces that used Omani chrome ore to make ferrochrome were shut down as a result of reduced demand for steel. Subsequently, many of the small-scale chrome mining companies in Oman were in danger of going out of business or stopping their chromite mining operations (Zawya, 2009b).

Copper, Gold, and Silver.—In 2008, the National Mining Co. LLC (NMC) continued to produce copper, gold, and silver at the Hitta and the Shinas pits in the Al Batinah region. The company was exploring for copper, gold, and silver at its Ajib pit, which is located near the Shinas pit along the border with the United Arab Emirates. NMC, which was 100% owned by MB Holding L.L.C. of Australia, was the first private mining company in Oman. The company acquired and refurbished the Lasail copper concentrator from the Government-owned Oman Mining Co., which was closed in 1998, to recover chalcopyrite (copper iron sulfide) and chalcocite (copper sulfide). Production from the Hitta pit was mined out by yearend 2008. Copper production from the Shinas pit proceeded in 2008 and was expected to continue through 2009. NMC was exploring volcanic massive sulfide copper deposits at the Block 1, Block 2, and Ghuzayn concessions (National Mining Co. L.L.C., 2009).

Iron and Steel.—Shadeed Iron and Steel L.L.C., which was a subsidiary of Al-Ghaith Holding PJSC of the United Arab Emirates, moved forward with the construction of the three-phase

project to build the first integrated steel plant at Sohar Industrial Port in Oman. The first phase of the project, which started in 2006, included installation of a 1.5-million-metric-ton-per-year (Mt/yr)-capacity direct-reduced iron plant. The second phase included construction of a crude steel plant with the capacity to produce 1.1 Mt/yr of steel billets. The third phase was expected to incorporate a facility in which billets are turned into seamless steel tubes, sections, and bars (Shadeed Iron and Steel L.L.C., 2009).

In May, the Government and Companhia Vale do Rio Doce (CVRD) of Brazil signed an agreement to build two 4.5-Mt/yr-capacity iron ore pellet plants at Sohar Industrial Port. The production capacity could be increased to 18 Mt/yr in the future. Construction of the \$1.3 billion project started in December 2008 and production was expected to begin in December 2010. All iron ore for the pellet plant would come from CVRD's iron ore mines in Brazil and would be transported by 400,000-metric-ton (t)-capacity ore carriers. Four carriers, which were being built in China for Oman Shipping Co., would be used by CVRD exclusively for shipping iron ore under a 20-year lease agreement that was signed in 2008. CVRD also planned to establish an iron ore distribution center at Sohar Industrial Port that would be capable of processing 40 Mt/yr of iron ore (Arab Steel, 2008b, 2009; Vale News, 2009).

In December 2008, Gulf United Steel Holding Co. (Foulath) of Bahrain (60%) and JFE Steel Corp. of Japan (40%) formed a joint venture to build a new iron ore pelletizing plant in the Salalah Free Zone with the capacity to produce 7 Mt/yr of pellets. JFE agreed to take one-half of the production (3.5 Mt/yr) for a period of 20 years, and the remaining output would be exported (Arab Steel, 2008a).

Industrial Minerals

Cement.—Oman's cement consumption had been increasing in recent years because of the expansion in the country's infrastructure. Cement consumption in 2008 increased by 60% compared with that of 2005. In March 2008, the Government ended its ban on cement imports to increase the supply of cement in the local market. Although the domestic demand for cement in 2008, which was 4.1 million metric tons (Mt), could have been met by the country's two cement producers, Oman Cement Co. S.A.O.G. and Raysut Cement Co. S.A.O.G., there was a deficit in the supply of cement in Oman because 27% of the national production was exported (Markaz Research, 2008).

Oman Cement, which produced 2.0 Mt/yr of cement in 2008, awarded a \$162 million contract to China National Building Material Equipment Corp. to build a third cement production line. The new line, which was expected to double the company's clinker production capacity to 2.4 Mt/yr and to produce 4,000 metric tons per day (t/d), was expected to be completed in 2010. In 2008, Raysut Cement produced 2.1 Mt of cement (Global Cement, 2007, p. 59; Raysut Cement Co. S.A.O.G., 2009, p. 8).

Nitrogen.—Trial production of granular urea began at the Sohar International Urea and Chemical Industries S.A.O.C.'s plant at Sohar Industrial Port. The plant's initial production capacity was 1.2 Mt/yr of granular urea. The project, which comprised a 2,000-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., which was a subsidiary of Mitsubishi Heavy Industries Ltd. of Japan (Suhail Bahwan Group, 2009, p. 16).

Mineral Fuels

Coal.—The Government was evaluating a project to build a coal-fired powerplant at Duqm in the Wusta region to reduce its dependence on natural gas. Electric energy generated by the coal-fired powerplant would be used by Oman Power and Water Co. to supply power to residential and industrial customers. The independent water and powerplant would have 1,000 megawatts of capacity, and was expected to commence production in 2012. The plant would use coal imported from the international market and from local coal deposits. LG International of South Korea signed a memorandum of understanding with Oman Oil Co. and Southern Korea Power Co. to tender the project, which was projected to cost \$2 billion (Candappa, 2008; Middle East Economic Digest, 2008).

Natural Gas and Petroleum.—The Government's petroleum strategy was focused on maintaining production at its maturing oilfields at a sustainable level in the mid-term and the long term. Petroleum production in 2008 was 6.8% greater than in 2007. The increase in 2008, which was attributed to the application of enhanced crude oil recovery methods PDO, reversed the downturn in production that began in 2001. The Government implemented plans to increase crude oil output to 830,000 barrels per day (bbl/d) in 2009 from 757,000 bbl/d in 2008 and 710,000 bbl/d in 2007 but that was still less than the peak output of 956,000 bbl/d achieved in 2001. In 2008, PDO announced two oilfield discoveries at Malaan West and Taliah I in its Lekhwair Cluster, which is located in northwestern Oman (Alexander's Gas & Oil Connections, 2009; Petroleum Development Oman L.L.C., 2009; Petroleum Economist, 2009).

Production of natural gas was slightly less in 2008 than in 2007, which subsequently caused a 5.8% decrease in Oman's liquefied natural gas exports. In 2008, PDO commenced production from the Haban cluster fields and completed gas compression projects at the Barik, the Saih Nihayda, and the Yibal clusters (Petroleum Development Oman L.L.C., 2009).

Petroleum refining had steadily increased in the past 5 years at the country's two refineries at Mina Al-Fahal and Sohar. The Government's plan to build a third refinery at Al-Duqm was still being finalized. The new refinery, which was expected to be completed in 2012, would have a production capacity of between 250,000 and 300,000 bbl/d and would include a petrochemical complex (Petroleum Economist, 2008; Alexander Gas & Oil Connections, 2009).

In August 2007, the Government signed a contract with Engineers India Ltd. for the front end engineering work to build the country's first asphalt plant at the Sohar Refinery Complex. The \$80 million asphalt plant was expected to commence production in the first quarter of 2010 and would produce three grades of bitumen (Zawya, 2007).

Outlook

Oman, which is a relatively new player in the steel industry, is set to become a significant regional iron and steel producer as the Middle East demand for steel is expected to rise. The choice of Oman as the regional headquarters for CVRD will make Oman the company's hub for its growing operations in the Middle East. With the commencement of production at the Sohar Aluminium smelter, Oman has joined other aluminum producers in the Gulf and embarked on establishing additional downstream secondary aluminum production plants at the Metal Park in the Sohar Industrial Area. To speed up the slow pace at which Oman's vast and diversified mineral resources are currently being developed, Takamul is expected to establish Oman's Mineral City, which is intended to serve as the focal point for future mineral industry activity. By 2012, Oman is likely to have its first coal-fired powerplant at Duqm and the first bitumen refinery in the Gulf in the Sohar Port area.

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TABLE 1
OMAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008
METALS					
Aluminum	--	--	--	--	49,000
Chromium, gross weight	26,600 ^r	50,400 ^r	276,300 ^r	407,822 ^r	784,082
Copper, metal:					
Ore, metal content	--	--	-- ^r	1,000 ^r	1,000
Smelter output, metal content	16,000	25,000	20,710 ^r	14,000 ^r	12,000
Refined metal	15,090	24,543	20,710 ^r	13,940 ^r	11,906
Gold kilograms	211	384	201 ^r	125 ^r	43
Iron and steel:					
Crude steel ^e	84,000	84,000	84,000	84,000	84,000
Laterite	NA	1,740,416	271,200	295,012	301,117
Silver kilograms	89	122	236 ^r	51 ^r	9
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	2,621	2,686	3,611	3,880	4,000
Clay	NA	46,104	92,500	76,747	183,325
Gypsum	103,000	133,100	254,000 ^r	183,200 ^r	179,800
Limestone	NA	2,502,794	2,732,600	3,098,300	2,391,500
Marble	163,800	220,900	270,800	311,861	457,146
Quartz	NA	200,897	181,500	211,900	176,500
Salt	12,400	10,900	26,300 ^r	10,452 ^r	10,444
Sand and gravel:					
Sand thousand metric tons	NA	17,760	24,900	22,029	194,860
Gravel do.	23,000 ^e	24,000 ^e	51,715	39,438	49,434
Total do.	23,000 ^e	24,000 ^e	76,615 ^r	61,467 ^r	244,294
Sulfur ^e	30,000	30,000	40,000	50,000	50,000
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross million cubic meters	24,150	23,998	29,783	30,320	30,265
Dry do.	17,000 ^e	17,390	23,163 ^r	24,128 ^r	24,037
Natural gas liquids ^e thousand 42-gallon barrels	6,000	6,000	7,000	7,100	7,100
Nitrogen:					
N content of ammonia	--	620,000	1,000,000	1,000,000	1,000,000
N content of urea	--	320,000	830,000	830,000	830,000
Petroleum:					
Crude and condensate thousand 42-gallon barrels	285,385	282,616	269,242	259,293	276,971
Refinery products:					
Liquefied petroleum gas do.	473	580	630	915	915
Gasoline do.	5,215	5,436	5,078	3,908	6,514
Jet fuel and kerosene do.	1,407	1,770	2,339	2,160	3,037
Distillate fuel oil do.	6,442	7,089	6,750	2,849	8,132
Residual fuel oil do.	14,247	15,445	14,947	13,177	18,561
Other do.	1,162	1,253	1,283	344	28
Total do.	28,946	31,573	31,027	23,353	37,187

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. NA Not available.

-- Zero.

¹Table includes data available through March 31, 2010.

TABLE 2
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Sohar Aluminium Co. [Oman Oil Co., 40%; Abu Dhabi Water and Electricity Authority (ADWEA), 40%; Rio Tinto Alcan, 20%]	Smelter at Sohar	360,000
Cement		Oman Cement Co. S.A.O.G. (Ministry of Commerce and Industry, 30.4%)	Kilns and mills at Rusayl	2,500,000
Do.		Raysut Cement Co. S.A.O.G.	Kilns and mills at Salalah	2,700,000
Chromite		Hatton FZE	Mines south of Muscat	480,000
Do.		Gulf Mining and Materials Co.	Wadi Mahram area	200,000
Do.		Oman Chromite Co. S.A.O.G. (Ministry of Commerce and Industry, 15%)	Mines near Sohar	200,000
Clays		NA	NA	185
Copper:				
Ore		National Mining Co. L.L.C. (MB Holding Co. L.L.C.)	Open pit mines at Ajib, Hitta, and Shinas	40,000
Refined metal		Oman Mining Co. L.L.C.	Lasail, near Sohar	14,000
Gold:				
Ore		National Mining Co. L.L.C. (MB Holding Co. L.L.C.)	Open pit mines at Ajib and Shinas	NA
Metal	kilograms	National Mining Co. L.L.C.	Lasail, near Sohar	100
Gypsum		Companies that quarried gypsum included Cement Gypsum Products Co. S.A.O.G., Global Mining Co. L.L.C., and Gulf Mining and Materials Co.	Buraimi and Thumriat	180
Iron and steel:				
Iron ore (laterite)		Gulf Mining and Materials Co.	Barka	300,000
Crude steel		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	84,000
Rolled steel products (rebar)		Sharq Sohar Steel Rolling Mills L.L.C.	Sohar	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
Limestone		Oman Cement Co. S.A.O.G. (Ministry of Commerce and Industry, 30.4%)	Rusayl	2,400,000
Marble		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 primarily located in the Wilayat of Ibbri and Buraimi area	450,000
Natural gas	million cubic meters	Petroleum Development Oman L.L.C. [Government, 60%; Royal Dutch Shell p.l.c., 34%; Total S.A., 4%; Partex (Oman) Corp., 2%]	Gasfields and oilfields with associated natural gas in the Kauther/Yibal, the Saih Niyahda, and the Saih Rawl clusters	27,000
Natural gas, liquefied	do.	Oman Liquefied Natural Gas L.L.C. [Government, 51%; Royal 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.	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, 3%; Itochu Corp., 3%)	One train at Qalhat	3,300,000
Petroleum:				
Crude	barrels per day	Petroleum Development Oman L.L.C. (PDO) [Government, 60%; Royal Dutch Shell p.l.c., 34%; Total S.A., 4%; Partex (Oman) Corp., 2%]	About 100 oilfields in the Bahja, the Fahud, the Harweel, the Lekhwair, the Marmul, the Nimr, the Qarn Alam, and the Yibal clusters	900,000

See footnotes at end of table.

TABLE 2—Continued
OMAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity
Petroleum—Continued:					
Crude—Continued	barrels per day	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	55,000
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, the Daleel, the Mezon, and the Shadi fields	16,000
Do.	do.	Occidental Mukhaizna, L.L.C. [Occidental Petroleum Corp., 45%; Oman Oil Corp. S.A.O.C., 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	8,500
Do.	do.	Partnership of Indago Oman Ltd., 40% (operator); LG International Corp., 50%; Eagle Energy (Oman) Ltd., 10%		Block 8, Bukha field	1,100
Refined	million barrels	Oman Refineries and Petrochemicals Co. L.L.C. (ORPC) (Ministry of Finance, 75%, and Oman Oil Co. S.A.O.C., 25%)		Refinery at Sohar	41
Do.	do.	do.		Refinery at Mina Al-Fahal	37
Quartz		Gulf Stone Co. S.A.O.G.		Sohar	180
Salt, crude, industrial		Modern Salt Co. L.L.C.		Wilayat of Ibri	10
Silver	kilograms	Oman Mining Co. L.L.C.		Sohar and Yankul	50

Do., do. Ditto. NA Not available.

