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The Mineral Industry of the United Arab Emirates

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Note: In this chapter, information for 2017 is followed by information for 2018.

In 2017, the United Arab Emirates (UAE)[1] was a regional industrial center and a global trade and financial hub. As the world's fifth-ranked producer of aluminum in 2017, the UAE accounted for 4.4% of the world's aluminum smelter output. In addition, the UAE was the world's seventh-ranked producer of crude petroleum and condensate, accounting for 4.2% of the world's production; and the world's ninth-ranked producer of sulfur, accounting for 4.1% of the world's production. The country's proven crude petroleum reserves, which accounted for 5.8% of the world's total crude petroleum reserves, were estimated to be 97.8 billion barrels. Natural gas reserves, which accounted for about 3.1% of the world's proven natural gas reserves, were estimated to be 5.9 trillion cubic meters. The UAE was a major regional producer of industrial minerals, metals, and downstream metal products, including cement, iron and steel, direct-reduced iron (DRI), nitrogen fertilizers, and sulfur. Other fuel and industrial minerals produced included gypsum, lime, and refined petroleum (BP p.l.c., 2018, p. 12, 14, 26; Apodaca, 2019; Bray, 2019).

In 2017, the gross domestic product (GDP) of the UAE increased by 0.8% in real terms compared with an average of 4.4% per year from 2013 to 2016; the decrease in economic growth was attributed to low crude petroleum prices, decreased crude petroleum production, and fiscal austerity measures. Foreign direct investment (FDI) inflows reached about $10.4 billion in 2017, which was an increase of 8.3% from $9.6 billion in 2016. The growth in FDI was attributed to the runup to Expo 2020, an international exhibition to be hosted by Dubai; the planned event was driving significant construction and infrastructure activity. Expo 2020 was expected to attract a significant number of visitors to the UAE and to highlight the country's potential growth in the energy and nonenergy sectors. The UAE was a member of the Organization of the Petroleum Exporting Countries and the Cooperation Council for the Arab States of the Gulf (originally known as the Gulf Cooperation Council, or GCC) (International Monetary Fund, 2017, p. 2, 22; 2019, p. 40; United Arab Emirates Ministry of Economy, 2017, p. 22–23, 35; 2018a; 2018b, p. 14).

Minerals in the National Economy

The value of the mining and energy sector in 2017 increased to $85 billion[2] from $69 billion in 2016, or by about 23%. The mining and energy sector remained the largest contributor to the country's GDP, accounting for 22.3% of the total compared with 19.3% in 2016 and 39.1% in 2012. Other leading sectors of the economy were wholesale and retail trade, which accounted for 12.3% of the GDP; financial and insurance activities, 9.6%; manufacturing, 8.8%; and construction, 8.7% (Bayanate.ae, 2018).

In 2017, Government revenue from hydrocarbon activity was projected by the International Monetary Fund (IMF) to have increased by 18% to $44.6 billion from $37.7 billion in 2016; the Government's total revenues were projected to be about $103 billion. In 2017, revenue from hydrocarbons accounted for about 43% of total Government revenue compared with about 38% in 2015 and 68% in 2014 (International Monetary Fund, 2017, p. 29).

In 2017, the value of the UAE's exports increased by 6% to about $314 billion from $295 billion in 2016. The increase was attributed to a 44% increase in the total value of crude petroleum exports, which increased to $65.6 billion from $45.6 billion in 2016. The average price of the UAE's export of Murban crude (the country's export blend) increased to $54.82 per barrel in 2017 from $44.83 per barrel in 2016. The value of the country's exports of mineral products increased by 13.8% to about $2.2 billion. The export value of base metals and articles of base metals increased by 23% to $10.4 billion. Major exports of metals included 3.02 million metric tons (Mt) of aluminum and articles thereof, 2.54 Mt of crude steel, 1.16 Mt of iron and steel articles, and about 288,000 metric tons (t) of copper and copper articles (Organization of the Petroleum Exporting Countries, 2018, p. 19–20, 90; United Arab Emirates Federal Competitiveness and Statistics Authority, 2018, tables 15, 17).

The value of the country's imports of goods increased by 36% in 2017 to about $258 billion. Imports of gemstones, pearls, precious metals and their products, which accounted for about 21% of the country's imports, increased in value by 3.3% to about $55 billion. The value of mineral products imports increased by 160% to $10.7 billion owing to an increase of 76.9% of imported goods to 40.0 Mt (United Arab Emirates Federal Competitiveness and Statistics Authority, 2018, tables 9, 14).

Although the UAE did not produce mined diamond or gold in 2017, the country was a major global trade center of both gold and rough and polished diamond. In 2017, the volume of the UAE's gold imports decreased by about 2%, but the volume of gold exports increased by about 89% compared with those of 2016. The country imported 952.9 t of unwrought or semimanufactured gold in 2017, including gold in powder form or plated with platinum, and exported 971.2 t, of which about 140 t (estimated) were reexports. In 2016, the country imported 971.0 t of unwrought or semimanufactured gold, including gold in powder form or plated with platinum, and exported 513.4 t,

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[1]The United Arab Emirates is a federation of seven Emirates: Abu Dhabi, Ajman, Dubai (Dubayy), Fujairah (Al Fujayrah), Ras Al Khaimah, Sharjah (Ash Shariqah), and Umm al-Quwain (Umm Al Qaywayn).

[2]Where necessary, values have been converted from United Arab Emirates dirham (AED) to U.S. dollars (US$) at an annual average exchange rate of AED3.673=US$1.00 for 2017 and AED3.673=US$1.00 for 2016.

of which 95.6 t (estimated) was re-exports. The country's imports of rough diamond increased by 18.8% to 83.139 million carats in 2017 from 69.956 million carats in 2016; exports of rough diamond increased by about 29% to 88.379 million carats in 2017 from 68.680 million carats in 2016. The UAE's diamond trading partners included diamond-producing countries in Africa; diamond-processing centers in China and India; and diamond-consuming markets in China, Europe, and the United States (Kimberley Process Certification Scheme, 2017, 2018; United Arab Emirates Federal Competitiveness and Statistics Authority, 2017, tables 27–30; 2018, tables 27–30; Dubai Multi Commodities Centre, 2018).

The UAE did not have a specific, comprehensive Federal law covering the mining industry. Article 23 of the UAE Federal Constitution granted each Emirate ownership of, as well as the ability to manage and mine, its mineral resources. The Abu Dhabi Emirate, which is the largest of the UAE's seven Emirates in terms of land area, controlled 94% of the UAE's national petroleum reserves. The Dubai Emirate controlled 4% of the country's petroleum reserves, and the other five Emirates combined controlled the remaining 2%. The Abu Dhabi Emirate also controlled 94% of the UAE's natural gas reserves; the Dubai Emirate controlled 1.5% of the country's natural gas reserves, and the other five Emirates combined controlled the remaining 4.5%. Each Emirate regulated the extraction of petroleum and natural gas and set the governing policies for the mining of petroleum and natural gas. In Abu Dhabi, the Supreme Petroleum Council regulated petroleum and gas extraction. In the Dubai Emirate and the Sharjah Emirate, the Dubai Supreme Council of Energy and the Sharjah Petroleum Council, respectively, were responsible for regulating and developing the petroleum and natural gas industries (DLA Piper, 2012, p. 85–86; Phakey and Renouf, 2014, p. 5, 9; Legal Advice, 2017).

Production

In 2017, significant increases in production included chromite, which increased by 224%. Significant decreases in production included natural gas (marketable), which decreased by 13%. Data on mineral production are in table 1.

Structure of the Mineral Industry

The Abu Dhabi Emirate controlled and managed its petroleum and natural gas resources through the wholly state-owned Abu Dhabi National Oil Co. (ADNOC). ADNOC operations were run through subsidiaries that carried out most of the exploration, production, transportation, and marketing operations for crude petroleum, liquefied natural gas (LNG), liquefied petroleum gas, petrochemicals, and other petroleum industries in the UAE. The Abu Dhabi Company for Onshore Oil Operations (ADCO), which was a consortium of ADNOC (60%), BP p.l.c. of the United Kingdom (10%), Total S.A. of France (10%), China National Petroleum Corp. (8%), Inpex Corp. of Japan (5%); CEFC China Energy Co. (4%), and GS Energy Co. of the Republic of Korea (3%), operated eight major onshore fields (Abu Al Bukhoosh, Arzanah, Asab, Bab, Bu Hasa, Jarn Yaphour, Sahil, and Shah). The Abu Dhabi Marine Operating Co. (ADMA–OPCO), which was a consortium of ADNOC (60%), BP (14.67%), Total (13.33%), and Japan Oil Development Co. Ltd. (JODCO) (12%), operated three offshore fields (Nasr, Umm Shaif, and Lower Zakum). The Zakum Development Co. (ZADCO), which was a consortium of ADNOC (60%), Exxon Mobil Corp. of the United States (28%), and JODCO (12%), operated three offshore fields (Satah, Umm Al-Dalkh, and Upper Zakum). Table 2 is a list of major mineral facilities (U.S. Energy Information Administration, 2017, p. 2–4).

Abu Dhabi Gas Industries Ltd. Co. (GASCO) operated three plants (Asab, Bu Hasa, and Habshan–Bab) for natural-gas-processing and natural gas liquids (NGL) extraction as well as the NGL fractionation plant at Ruwais. The company also operated a pipeline distribution network to route natural gas to domestic industrial companies, including Emirates Aluminium Co. Ltd. (EMAL) and local power stations. Abu Dhabi Gas Liquefaction Co. Ltd. (ADGAS) operated an LNG plant and processed natural gas on Das Island. Abu Dhabi Oil Refining Co. (TAKREER) operated the Ruwais and Umm Al Nar refineries. Chemical and petrochemical manufacturing companies included Abu Dhabi Polymers Co. Ltd. (BOROUGE) and Ruwais Fertilizer Industries (FERTIL). Support services were provided for exploration and production through the National Drilling Co. (NDC), which conducted onshore and offshore drilling; Abu Dhabi Petroleum Ports Operating Co. (IRSHAD), which undertook marine operations of the Abu Dhabi petroleum ports; and the Mussafah Offshore Supply Base (ESNAAD), which provided facilities, services, and supplies (table 2; U.S. Energy Information Administration, 2017, p. 2–4).

Emirates Global Aluminium (EGA) was a 50–50 joint venture between Mubadala Development Co. of Abu Dhabi and the Investment Corp. of Dubai, which were both wholly owned by the Government. The company conducted operations through subsidiaries Dubai Aluminium Co. (DUBAL), which operated a 1.0-million-metric-ton-per-year (Mt/yr) aluminum smelter at Jebel Ali, and EMAL, which operated a 1.32-Mt/yr aluminum smelter at Al Taweelah in Abu Dhabi. Other EGA subsidiaries included Guinea Alumina Corp., which continued development of a bauxite mine in the Republic of Guinea, and Al Taweelah Alumina, which was continuing development of an alumina refinery at Al Taweelah, adjacent to the smelter. The development of the bauxite mine in the Republic of Guinea and the alumina refinery at Al Taweelah would vertically integrate the company's supply chain. Emirates Steel Industries P.J.S.C. (ESI), which was a subsidiary of Abu Dhabi-based and Government-owned SENAAT General Holding Corp. (SENAAT), was the leading steel producer in the UAE. ESI conducted operations at the integrated steel plant in Abu Dhabi (table 2; SENAAT General Holding Corp., 2016a, b; Emirates Global Aluminium, 2018b).

Commodity Review

Metals

Aluminum.—In 2017, EGA produced 2.6 Mt of aluminum, which was a 5-year high and an increase of 4% above the amount produced in 2016. By yearend 2017, EGA employed 7,210 people in the UAE. During the year, EGA continued to develop the Al Taweelah alumina project, which was a 2-Mt/yr alumina refinery in the Khalifa Industrial Zone (KIZAD) in Abu Dhabi and located adjacent to EGA's 1.32-Mt/yr aluminum smelter. The alumina refinery was expected to be commissioned by the end of 2018 or early 2019 (tables 1, 2; Emirates Global Aluminium, 2018a; 2018b; 2018c, p. 14–15, 26, 71).

Taweelah Aluminium Extrusion Company LLC (TALEX), which was a 50–50 joint venture between Gulf Extrusions Co. LLC of Dubai and SENAAT, also produced aluminum products in 2017. The company started operations in 2016 in KIZAD to produce aluminum products [50,000 metric tons per year (t/yr) of aluminum profiles and 45,000 t/yr of aluminum billets] for regional and international markets (Lightmetalage.com, 2016; SENAAT General Holding Corp., 2016b).

Ducab Aluminium Co., which was a joint venture between Dubai Cable Co. Ltd. of Dubai (60%) and SENAAT (40%), continued with the construction of a $60 million aluminum mill. The mill, located in KIZAD, was expected to have a production capacity of 50,000 t/yr of aluminum rods and overhead conductors. The new mill was expected to begin operations in 2018 (SENAAT General Holding Corp., 2016a; Aluminium Insider, 2018).

Iron and Steel.—In 2017, raw steel production increased by about 5% from 2016, to a five-year high of 3.3 Mt; high domestic demand for steel continued to be driven by the construction sector and development of infrastructure projects. ESI was the leading steel producer in the UAE with a raw steel capacity of 3.5 Mt/yr. ESI continued the planning and development for the third phase of an expansion project at Mussafah in KIZAD. The third phase of the project was expected to include a new DRI plant with a capacity of 2.5 Mt/yr, a melt shop with a capacity of 2.3 Mt/yr, and a continuous rolling mill with a capacity of 2.1 Mt/yr. The project had been expected to be commissioned in 2017 but was delayed until 2018. ESI had the only integrated steel plant in the UAE (Organisation for Economic Co-operation and Development, 2015, p. 31; Emirates Steel, 2018).

In 2017, Conares Metal Supply Ltd. (Conares), continued a construction project to expand the capacity of its steel manufacturing facility at the Jebel Ali Free Zone by 2018. The company planned to invest about $27 million to expand the pipe, tube, and rebar factory's capacity to more than 1 Mt/yr from 750,000 t/yr. About 85% of the steel produced by Conares was consumed domestically (D'Mello, 2016; Khaleej Times, 2018).

Industrial Minerals

Cement.—In early 2017, Arkan Building Materials Co. PJSC (Arkan) permanently closed its Emirates cement plant at Al-Ain owing to increasing gas and electricity costs. The plant, which had a capacity of 1.2 Mt/yr, was one of the oldest cement plants in the UAE (having been in operation since the 1970s). Arkan was 51% owned by SENAAT; the remaining 49% of the shares were held publicly and traded on the Abu Dhabi Securities Market. Arkan noted that decreased production resulting from the plant closure would be offset by increased production at its newer Al-Ain cement plant, which was inaugurated in 2014 and had a capacity of 4.5 Mt/yr. The decision to close the older plant was expected to save the company about $12 million per year. In 2017, Arkan was among the leading cement producers in the UAE with total cement production estimated to be 21 Mt (table 2; Arkan Building Materials Co. PJSC, 2017; Global Cement, 2017).

Mineral Fuels and Other Sources of Energy

Natural Gas.—Both the production and exports of natural gas in the UAE decreased in 2017; production decreased to 54.1 billion cubic meters (a decrease of about 13%), and exports decreased by 8.3%, to 12.1 billion cubic meters from 13.2 billion cubic meters in 2016. The country's imports of natural gas decreased by about 5% in 2017 to 26.0 billion cubic meters from 27.5 billion cubic meters in 2016. The UAE's domestic primary energy consumption decreased by 1% to 108.7 Mt of oil equivalent in 2017 compared with 109.6 Mt of oil equivalent in 2016; natural gas accounted for 57% of the UAE's primary energy consumption, and oil and coal accounted for 41% and about 2%, respectively (table 1; BP p.l.c., 2018, p. 9; Organization of the Petroleum Exporting Countries, 2018, p. 115, 117–118).

In November, ADNOC announced that it planned to invest more than $109 billion during the next 5 years to boost natural gas production and downstream energy activities. In order to increase its output of natural gas, the company reported that it would expand its production of sour gas and develop Abu Dhabi's unconventional gas resources. ADNOC, which planned to also explore and appraise tight reservoirs, announced that it was on track to expand petroleum production capacity to 3.5 million barrels per day by the end of 2018. The company planned to also privatize its service units, venture into petroleum trading, and expand partnerships with strategic investors (Shamseddine and Blair, 2017).

In November, KBR Inc. of the United States was awarded a contract to provide engineering support services for ADNOC's Al Hosn gas facility. KBR was expected to provide personnel, equipment, and resources to carry out engineering and technical support for the facility. In 2016, ADNOC announced plans to expand the $10 billion Al Hosn gas facility. The facility, in which ADNOC held a 60% share and Occidental Petroleum Corp. of the United States held a 40% share, began operations in 2015 and was located southwest of Abu Dhabi City. The expansion was expected to begin operating within the next 5 years (Oil and Gas Journal, 2016a; KBR Inc., 2017).

Petroleum.—The consolidation of ADMA–OPCO and ZADCO, ADNOC's two main offshore crude petroleum operating companies, was announced in 2016. ADNOC highlighted the expected financial benefits that would be gained from the merger, including improved efficiency, streamlined operations, and integrated advanced technologies. In addition, company management noted that the merger would allow the company to be well positioned to take advantage of strategic opportunities for future growth. ADNOC's international partners (BP, JODCO, and Total), which held the existing concession rights, were not expected to be significantly affected by the consolidation; however, those concessions were under review as they were due to expire in 2018. ADMA–OPCO had a total operating capacity of about 650,000 barrels per day (bbl/d) of crude petroleum from the Lower Zakum, Nasr, Umm Lulu, and Umm Shaif offshore fields. ZADCO had a total operating capacity of about 750,000 bbl/d of crude petroleum from the Satah, Umm Al-Dalkh, and Upper Zakum offshore fields (Abu Dhabi National Oil Co., 2016; Oil and Gas Journal, 2016b).

In February, ADCO awarded an 8% interest in Abu Dhabi's onshore petroleum concession to China National Petroleum Corp. and a 4% interest to CEFC China Energy; the two awarded concessions completed a process that began in 2014 when the previous agreements for the onshore petroleum concessions had expired. Under the new arrangement, ADCO held a 60% interest in the concession, and the remaining interests were held by BP (10% awarded in January 2015), Total (10% awarded in December 2016), Inpex (5% awarded in April 2015), and GS Energy (3% awarded in May 2015). The ADCO concession area included 15 major onshore oilfields of Abu Dhabi, which together represented more than one-half of the UAE's production. ADCO expected that the completion of the allocations would be followed by renewed interest on another potential energy project, namely the $3 billion Bab Integrated Facilities expansion project, which had been canceled in late 2015 (Economist, The, 2017; Oil and Gas Year, The, 2017).

MINERAL INDUSTRY HIGHLIGHTS IN 2018

In 2018, the UAE's GDP was estimated to have increased by nearly 3% owing to increased crude petroleum production and prices. FDI inflows remained elevated at about $10.4 billion in 2018. Sectors receiving FDI in the UAE ranged from energy to technology, but most were concentrated in the construction, finance, insurance, manufacturing, and real estate sectors during the past several years. The main sources of FDI inflows were France, India, Saudi Arabia, the United Kingdom, and the United States. In May 2018, the UAE Council of Ministers adopted a law to allow foreign investors 100% ownership of selected (yet to be identified) businesses in the UAE. Law No. 19 of 2018 (the "FDI Law"), which became official by Presidential decree in September 2018, was expected to result in increased FDI inflows of 15% to 20% and to stimulate the economy (Banco Santander S.A., 2019; International Monetary Fund, 2019, p. 7, 31, 40).

The UAE's production of aluminum increased to 2.64 Mt in 2018, which was a production record for the country and a 5-year high. Despite achieving this record, the increase was only 1.5% compared with that of 2.60 Mt in 2017; this percentage was much lower than the average annual increase of nearly 4% since 2014. The decrease in aluminum production growth was likely owing to a surge in the raw material price, as noted by the EGA (Aluminium Insider, 2019).

In 2018, significant increases in production included that of chromite, which increased by 229% and petroleum (refined, other), which increased by 14%. Significant decreases in production included that of residual fuel oil (refined petroleum), which decreased by 35% and natural gas (marketable), which decreased by 12% (table 1).

Raw steel production in the UAE declined in 2018 by 2% to 3.2 Mt but remained near a 5-year high of 3.3 Mt achieved in 2017. ESI reported that, despite a significant decrease in global steel demand in the second half of 2018, the company was able to maintain production levels near those of 2017. ESI noted that 80% of its steel production was consumed domestically and the remainder was exported to more than 40 countries. In addition, in 2018 Conares reported that it had completed a construction project at the Jebel Ali Free Zone to expand steel production capacity to 1 Mt/yr. The company noted that steel demand had increased owing to projects related to EXPO 2020. Domestic and regional steel demand could be even higher if construction work on the GCC Railway project were to resume. The GCC Railway, which was expected to link railway networks throughout the region by 2018, had been delayed in 2016. Representatives of the GCC met in 2018 and reported renewed interest in restarting construction work on the project with plans to complete the first phase linking Oman with Qatar, Saudi Arabia, and the UAE in 2021 with Kuwait and Bahrain joining the network by 2023 (Barrow, 2018; Khaleej Times, 2018; Zawya, 2019).

Natural gas production decreased by 12% in 2018 to 47.6 billion cubic feet owing largely to a reduction in international demand. The UAE ranked fourth in natural gas production in the Middle East, behind Iran, Qatar, and Saudi Arabia. The UAE's crude petroleum production increased slightly to 1,439 million barrels, or by about 3.9 million barrels per day (Mbbl/d). ADNOC planned to increase crude petroleum production to 4 Mbbl/d by 2020 and 5 Mbbl/d by 2030. In 2018, the UAE ranked fourth in crude petroleum production in the Middle East, behind Iran, Iraq, and Saudi Arabia (Thomson Reuters, 2018; Organization of the Petroleum Exporting Countries, 2019, p. 31, 115, 117).

Emirates Nuclear Energy Corp. and its joint venture partner Korea Electric Power Corp. announced in March 2018 that construction of unit 1 of the UAE Barakah nuclear energy plant was completed. By the end of 2018, the nuclear powerplant still required approval from the UAE Federal Authority for Nuclear Regulation (FANR) for its operating license. When fully operational, the powerplant was expected to have four units with a combined capacity of 5,600 megawatts (MW), or 1,400 MW for each unit (Bhatia, 2018; Phys.org, 2018).

Outlook

The UAE's economy is expected to grow at rates of between 3% and 4% in 2019, and the same rates were projected for 2020, according to the IMF. The country's capacity to produce aluminum, cement, and iron and steel is expected to increase during the next few years owing to increased demand resulting from Government investment in EXPO 2020 and other construction and infrastructure projects with the UAE's trading partners, namely the member countries of the GCC. However, the country faces the ongoing challenge related to uncertain global crude petroleum markets. Decreased prices could significantly affect Government revenues, which would increase the fiscal deficit and challenge the capability of the Government to invest in infrastructure development (United Arab Emirates Ministry of Economy, 2017, p. 23, 39; International Monetary Fund, 2019, p. 5, 40).

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TABLE 1

UNITED ARAB EMIRATES: PRODUCTION OF MINERAL COMMODITIES[1]

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

Commodity[2]		2014	2015	2016	2017	2018
METALS						
Aluminum, primary, metal		2,341	2,464	2,500	2,600	2,640
Chromium, mine, chromite	metric tons	19,822	3,869	17,863	57,800	190,146
Iron and steel:						
Direct-reduced iron		2,409 r	3,190	3,479 r	3,608	3,780
Raw steel		2,390	3,006	3,149	3,309	3,247
Products:						
Concrete-reinforcing bars		1,833	1,988	2,068	2,179	2,200 e
Hot rolled, long		2,765	2,959	3,126	3,246	3,300 e
INDUSTRIAL MINERALS						
Cement, hydraulic		20,500 r	20,500 r	22,000 e, r	23,000 e	25,000 e
Gypsum[e]		700	700	700	700	700
Lime[e]		430	460	470	480	470
Nitrogen, N content:						
Ammonia		995	995 e	995 e	995 e	995 e
Urea		1,015	1,095	1,000 e	1,000 e	1,000 e
Sulfur, byproduct, natural gas and petroleum, S content[e]		3,300	3,300	3,300	3,300	3,300
MINERAL FUELS AND RELATED MATERIALS						
Natural gas, marketable	million cubic meters	54,245	60,181	61,862 r	54,086	47,624
Petroleum:						
Crude, including condensate	thousand 42-gallon barrels	1,315,000 r	1,423,000 r	1,478,000 r	1,427,000	1,439,000
Natural gas liquids	do.	257,000	302,000	312,000	305,000 e	300,000 e
Refinery:						
Distillate fuel oil	do.	47,815 r	72,635 r	80,520 r	81,760	77,015
Gasoline	do.	33,945 r	41,975 r	48,312 r	50,005	45,260
Kerosene, including jet fuel	do.	70,080 r	105,485 r	124,806 r	126,655	120,450
Residual fuel oil	do.	10,220 r	10,585 r	12,078 r	12,410	8,030
Other	do.	80,665 r	112,055 r	132,858 r	135,415	154,160
Total	do.	243,000 r	343,000 r	399,000 r	406,000	405,000

[e]Estimated. [r]Revised. do. Ditto.

[1]Table includes data available through September 4, 2019. 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.

[2]In addition to the commodities listed, common clay, crushed stone, diabase, gravel, limestone, liquefied natural gas, marble, refined copper, refined gold, sand, salt, and shale may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
UNITED ARAB EMIRATES: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Emirates Global Aluminium (EGA) [Investment Corp. of Dubai (Government of Dubai, 100%), 50%, and Mubadala Development Co. of Abu Dhabi, 50%]	Smelter at Jebel Ali in Dubai	1,000
Do.		do.	Smelter at Al Taweelah, Khalifa Industrial Zone (KIZAD), Abu Dhabi	1,320
Aluminum products		Taweelah Aluminum Extrusion Company LLC (TALEX) (Gulf Extrusions Co. LLC, 50%, and SENAAT General Holding Corp., 50%)	Plant at Al Taweelah, Khalifa Industrial Zone (KIZAD), Abu Dhabi	100
Copper, metal		Fujairah Gold FZC (Vedanta Ltd., 100%)	Copper rod plant at Furairah Free Zone	99
Cement:				
Portland		Aditya Birla Star Cement (Aditya Birla, 80%, and private investors, 20%)	Grinding plant at Abu Dhabi	1,200
Do.		do.	Grinding plant at Ajman	900
Do.		do.	Ras Al Khaimah	2,400
Do.		Arabian Gulf Cement Company LLC	Ajman	1,100
Do.		Arkan Building Materials Co. PJSC (Arcan) (SENAAT General Holding Corp., 51%, and private investors 49%)	Al-Ain cement plant	4,500
Do.		Binani Cement Factory LLC	Grinding plant at Jabal Ali	2,000
Do.		Bin Hamel Nael Cement Co.	Grinding plant at Al-Ain	500
Do.		Cemex Falcon LLC	Grinding plant at Dubai	1,600
Do.		Emirates Cement Factory (SENAAT General Holding Corp.)	Abu Dhabi	2,300
Do.		Fujairah Cement Industries P.S.C.	Dibba, Fujairah	2,300
Do.		Gulf Cement Co. (National Investment Co., 35.75%; Ras Al Khaimah Government, 7.67%; individual investors, 56.58%)	Khor Khuwair, Ras Al Khaimah	2,700
Do.		Hamriyah Cement Co. FZC (Bin Kamil Investment Group)	Grinding plant at Sharjah	1,000
Do.		Jebel Ali Cement Co. (Sharaf Industries, 100%)	Jebel Ali, Dubai	840
Do.		KCC Co. LLC	Grinding plant at Sharjah	500
Do.		Lafarge Emirates Cement L.L.C. (LafargeHolcim S.A., 50%, and private investors, 50%)	Fujairah	3,200
Do.		Nael Cement Co.	Grinding plant Al-Ain	700
Do.		National Cement Co. P.S.C. (LafargeHolcim S.A.)	Dubai	1,500
Do.		National Cement Co. [Emirates International Investment Co. (EIIC), 56%, and LafargeHolcim S.A., 44%]	Grinding plant in Abu Dhabi	2,000
Do.		Pioneer Cement Industries LLC (Raysut)	Ras Al Khaimah	1,700
Do.		Ras Al Khaimah Cement Co. P.S.C.	Khor Khuwair, Ras Al Khaimah	1,000
Do.		Sharjah Cement and Industrial Development Co. (private investors, 70%, and Government of Sharjah, 30%)	Sharjah	2,000
Do.		Teba Cement Co.	Grinding plant at Abu Dhabi	1,200
Do.		Umm al-Qaywayn Cement Industries Co. P.S.C.	Umm al-Quwain	1,600
Do.		Union Cement Co. P.S.C. (Shree Cement Ltd., 97.6%)	Khor Khuwair, Ras Al Khaimah	4,800
White		Ras Al Khaimah Company for White Cement and Construction Materials	Ras Al Khaimah	610
Gold, refined	metric tons	Al Etihad Gold Refinery DMCC	Dubai	200
Do.	do.	Dijillah Gold Refinery FZC	Sharjah	NA
Do.	do.	Emirates Gold (private, 100%)	Dubai	200
Do.	do.	Fujairah Gold FZC (Vedanta Ltd., 100%)	Fujairah Free Zone 2	20
Do.	do.	Gulf Gold Refinery Services (TLI Global FZE, 100%)	Dubai	NA
Do.	do.	Kaloti Precious Metals	Sharjah	450
Do.	do.	International Precious Metal Refiners LLC	do.	100

See footnotes at end of table.

TABLE 2—Continued
UNITED ARAB EMIRATES: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel:				
Iron, direct-reduced		Emirates Steel Industries P.J.S.C. (ESI) (SENAAT General Holding Corp., 100%)	Abu Dhabi	3,500
Do.		Al Nasser Industrial Enterprises LLC	do.	250
Steel:				
Billet		Emirates Steel Industries P.J.S.C. (ESI) (SENAAT General Holding Corp., 100%)	do.	3,500
Do.		Al Nasser Industrial Enterprises LLC	do.	220
Rebar		Alam Steel	Dubai	500
Do.		Al Ghurair Iron and Steel Co.	Abu Dhabi	350
Do.		Al Nasser Industrial Enterprises LLC	do.	90
Do.		Conares Metal Supply Ltd.	Dubai	1,000
Do.		Emirates Steel Industries P.J.S.C. (ESI) (SENAAT General Holding Corp., 100%)	Abu Dhabi	1,900
Do.		Essar Steel Middle East PZE	Dubai	1,000
Do.		Hamriyah Steel FZC (Metalloinvest, 80%, and Sheikh Sultan Bin Khalifa Al Nahyan, 20%)	do.	1,000
Do.		Star Steel International LLC	Jebel Ali and Hamriyah Free Zone	360
Do.		Union Iron & Steel Company LLC	Abu Dhabi	500
Wire rod		Emirates Steel Industries P.J.S.C. (ESI) (SENAAT General Holding Corp., 100%)	do.	600
Lime		Emirates Lime factory (Al Jazeera Industrial Group)	do.	350
Do.		Ras Al Khaimah Lime Co. (Ras Al Khaimah Co. for White Cement and Construction Materials PSC)	Ras Al Khaimah	365
Natural gas:				
Liquefied natural gas (LNG)		Abu Dhabi Gas Liquefaction Co. Ltd. (ADGAS) [Abu Dhabi National Oil Co. (ADNOC), 70%; Mitsu Co. Ltd., 15%; BP p.l.c., 10%; Total S.A., 5%]	Das Island	8,000
Natural gas, marketable	million cubic meters	Abu Dhabi Gas Development Co. Ltd. (Al Hosn Gas) [Abu Dhabi National Oil Co. (ADNOC), 60%, and Occidental Petroleum Corp., 40%]	Shah sour gas field, 180 kilometers southwest of Abu-Dhabi	5,100
Nitrogen:				
Ammonia		Ruwais Fertilizer Industries (FERTIL) [Abu Dhabi National Oil Co. (ADNOC), 66.67%, and Total S.A., 33.33%]	Ruwais, Abu Dhabi	1,200
Urea		do.	do.	2,100
Petroleum:				
Crude	thousand 42-gallon barrels per day	Abu Dhabi Company for Onshore Oil Operations (ADCO) [Abu Dhabi National Oil Co. (ADNOC), 60%; BP p.l.c., 10%; Total S.A., 10%; China National Petroleum Corp., 8%; Inpex Corp., 5%; CEFC China Energy, 4%; GS Energy, 3%]	Onshore Abu Dhabi oilfields, including the Abu Al Bukhoosh, the Arzanah, the Asab, the Bab, the Bu Hasa, the Jarn Yaphour, the Sahil, and the Shah fields	1,800
Do.	do.	Abu Dhabi Marine Operating Co. (ADMA-OPCO) [Abu Dhabi National Oil Co. (ADNOC), 60%; BP p.l.c., 14.67%; Total S.A., 13.33%; Japan Oil Development Corp., 12%]	Offshore Abu Dhabi oilfields, including the Lower Zakum, the Nasr, the Umm Lulu, and the Umm Sharif fields	650
Do.	do.	BP p.l.c. and Crescent Petroleum Company Inc.	Sharjah oilfields, including the Kahaif, the Saja, the Moveyid, and the Mubarek fields	50

See footnotes at end of table.

TABLE 2—Continued
UNITED ARAB EMIRATES: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:—Continued				
Crude—Continued	thousand 42-gallon barrels per day	Dubai Petroleum Establishment (Government of Dubai, 100%)	Dubai oilfields, including the Margham, the Falah, the Fateh, the Rashid, and the S.W. Fateh fields	100
Do.	do.	Zakum Development Co. (ZADCO) [Abu Dhabi National Oil Co. (ADNOC), 60%; ExxonMobil Abu Dhabi Offshore Petroleum Company Ltd., 28%; Japan Oil Development Co. (JODCO) 12%]	Offshore Abu Dhabi oilfields, including the Satah, the Umm Al-Dalkh, and the Upper Zakum fields	750
Natural gas liquids (NGL)		Abu Dhabi Gas Development Co. Ltd. (Al Hosn Gas) [Abu Dhabi National Oil Co. (ADNOC), 60%, and Occidental Petroleum Corp., 40%]	Shah sour gas field, 180 kilometers southwest of Abu-Dhabi	1,606
Do.		Abu Dhabi Gas Industries Ltd. Co. (GASCO) [Abu Dhabi National Oil Co. (ADNOC), 68%; Royal Dutch Shell Group, 15%; Total S.A., 15%; Partex Oil and Gas Group, 2%]	Plants at Asab, Bu Hasa, and Habshan–Bab	10,220
Refinery products	thousand 42-gallon barrels per day	Abu Dhabi Oil Refining Co. (TAKREER) [Abu Dhabi National Oil Co. (ADNOC), 100%]	Ruwais refinery, Ruwais, Abu Dhabi	817
Do.	do.	do.	Umm Al Nar refinery, Abu Dhabi	85
Do.	do.	ENOC Processing Company LCC (EPCL) [Investment Corp. of Dubai (Government of Dubai, 100%) 100%]	Jebel Ali refinery, Jebel Ali, Dubai	140
Do.	do.	Metro Oil Corp.	Fujairah	82
Salt		Alghaith Industries (Al Ghaith Holding PJSC)	Mussafah, Abu Dhabi	110
Sand		Fujairah Natural Resources Corp. (FNRC)	Fujairah	20,000
Silica, glass		Emirates Float Glass LLC (Dubai Investment PJSC, 100%)	Industrial City 1 and 2, Abu Dhabi	440
Do.		Guardian Zoujaj International Float Glass Co. LLC (Guardian RAK)	Ras Al Khaimah	255
Silver, refined	metric tons	Emirates Gold (private, 100%)	Dubai	100
Do.	do.	Fujairah Gold FZC (Vedanta Ltd., 100%)	Fujairah Free Zone 2	105
Do.	do.	International Precious Metal Refiners LLC	Sharjah	1,000
Do.	do.	Kaloti Precious Metals	do.	450
Stone, limstone		Stevin Rock LLC (Government of Ras Al Khaimah, 100%)	Khor Khuwair Quarry, Saqr Port	80,000
Do.		Ras Al Khaimah Rock Co. LLC (RAK) (Government of Ras Al Khaimah, 100%)	Ghalilah, Ras Al Khaimah	22,000
Sulfur		Abu Dhabi Gas Development Co. Ltd. (Al Hosn Gas) [Abu Dhabi National Oil Co. (ADNOC), 60%, and Occidental Petroleum Corp., 40%]	Shah plant	3,275
Do.		Abu Dhabi Gas Industries Ltd. Co. (GASCO) [Abu Dhabi National Oil Co. (ADNOC), 68%; Royal Dutch Shell Group, 15%; Total S.A., 15%; Partex Oil and Gas Group, 2%]	Plants at Asab, Bu Hasa, and Habshan–Bab	2,370
Do.		Abu Dhabi National Oil Co. (ADNOC)	Abu Dhabi	2,000

Do., do. Ditto.