

BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN

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Revenues associated with the production and processing of crude oil and natural gas form an integral segment of the economies of the countries of the Arabian Peninsula. Of the world's leading crude oil producers, the United Arab Emirates (UAE) ranked 11th; Kuwait, 14th; Oman, 21st; Qatar, 25th; and Yemen, 30th. Of the world's leading natural gas producers, the UAE ranked 14th; Qatar, 19th; and Oman, 30th (BP plc, 2003¹). Mineral-processing facilities have become standard features on the Peninsula given the availability of low-cost energy. The increased domestic and international use of natural gas as a fuel or petrochemical feedstock has focused the region on the monetization of its gas production. In 2002, however, crude oil production ceilings imposed on member states by the Organization of the Petroleum Exporting Countries (OPEC) again resulted in reduced crude oil and associated natural gas output. OPEC members covered by this chapter include Kuwait, Qatar, and the United Arab Emirates. Complementary background information on the energy and mineral fuels industries of the countries of this region can be found in the U.S. Energy Information Administration's Country Analysis Brief series, which is available via URL <http://www.eia.doe.gov/emeu/cabs/contents.html>.

Members of Arabian Gulf Cooperation Council, which included Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE, progressed on their proposed customs union in 2003 and a common currency by 2010. The 2001 terrorist attacks in the financial district of New York added impetus to the establishment of Arab financial centers, especially the Bahrain Financial Harbour project, the Dubai Metals and Commodities Centre, and the proposed International Financial Centre of Dubai (AME Info FZ LLC, 2003§; Middle East North Africa Financial Network, 2002§).

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¹References that include a section mark (§) are found in the Internet References Cited sections.

BAHRAIN

About 22 islands compose the Kingdom of Bahrain. The archipelago, which is located in the Gulf of Bahrain (a shallow arm of the Persian Gulf between Qatar and Saudi Arabia), had a total land area of about 665 square kilometers (km²), which supported a population of more than 672,000. The aluminum and petroleum industries dominated the country's mineral economy. The oil sector accounted for about 16.6% of the real gross domestic product (GDP), and petroleum revenues accounted for about 67% of Government income; the aluminum sector accounted for about 7% of GDP (Bahrain Monetary Authority, 2003, p. 9; Cooper, 2003). The GDP (constant price) increased by an estimated 4.1% in 2002 compared with that of 2001. In 2002, the GDP (based on purchasing-power-parity valuation) was estimated to be about \$13.9 billion² (International Monetary Fund, 2003§).

Trade

Of the country's total export earnings in 2002 of about \$5.8 billion, Bahraini exports of crude oil and refined petroleum products were valued at about \$3.95 billion (Bahrain Monetary Agency, 2003, p. 17). In 2002, other mineral exports included aluminum and aluminum-alloy unwrought metal and semimanufactures, such as bars, foil, plates, rods, and wire (valued at about \$766 million); agglomerated iron ores (\$168 million); urea (\$67 million); and methanol (\$57 million). In 2002, total national imports were valued at about \$4.97 billion. Imports included iron ore (about \$69 million) coal and coke (\$18 million), iron and steel (\$13 million), copper (\$3 million), cement clinker and gypsum (\$1.4 million), and aluminum scrap, bentonite, and manganese (\$900,000 each); alumina import data were not available. Imported crude granite, marble, and other stone for the country's stone-processing industry included about 1,500 metric tons (t) of granite, more than 500 t of marble, and 1,400 t of other stone (Kingdom of Bahrain, 2003§).

Commodity Review

Metals

Aluminum.—Aluminium Bahrain B.S.C. (ALBA) expected to begin the construction of a fifth aluminum potline in 2003

²Where necessary, values have been converted from Bahraini dinars to U.S. dollars at the rate of Bhd0.377=US\$1.00.

with completion scheduled for 2005. Originally designed as a 250,000-metric-ton-per-year (t/yr) expansion of its smelter at Sitra, the nominal capacity of the proposed \$1.7 billion 336-cell line 5 has been expanded to 307,000 t/yr. ALBA also was evaluating the addition of a sixth potline, which would raise the nominal capacity of the smelter to about 1 million metric tons per year (Mt/yr) from 520,000 t/yr in 2002 (Aluminium Bahrain B.S.C., 2003§).

Iron Ore.—An expansion of Gulf Industrial Investment Co.'s iron ore pellet plant at Al-Hidd, which would raise production capacity to 5 Mt/yr from 4 Mt/yr, was under consideration (Bahrain Tribune, 2002§). In 2002, pellet production was exported primarily to Qatar (18%), Saudi Arabia (17%), Iran (14%), India (13%), Indonesia (13%), and Libya (13%).

Mineral Fuels

Oil.—Crude oil production from the Ahwali Field (also known as the Bahrain Field) rebounded in 2002 to 13.8 million barrels (Mbbbl) from about 13.7 Mbbbl and was augmented by 72.7 Mbbbl from the offshore Abu Sa'afa in Saudi Arabia in which Bahrain Petroleum Co. B.S.C. (Closed) (Bapco) had interest. Bahrain exported the production from the Abu Sa'afa Field. Bapco's 250,000 barrel-per-day (bbl/d)-capacity refinery at Sitra processed crude oil from two sources—output from the Awali Field and additional crude oil that was imported from Saudi Arabia. Replacement of the 57-year old Dammam, Saudi Arabia-to-Sitra, Bahrain crude oil import pipeline was under study. The cost to relocate the pipeline was estimated to be \$100 million (Middle East Economic Digest, 2002a). In 2002, the pipeline carried 76.8 Mbbbl of Saudi Arabian crude to Bahrain compared with about 74.1 Mbbbl in 2001 (Bahrain Monetary Agency, 2003, p. 12). Also in 2002, a \$59 million instrumentation upgrade was underway at the Sitra refinery, and work on a proposed \$900 million low-sulfur-diesel-production project at the refinery continued (Middle East Economic Digest, 2002b).

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KUWAIT

Kuwait's economy revolved around the production and refining of crude oil. In 2002, the petroleum and natural gas sector contributed about 58% of the GDP and accounted for about 88% of Government revenue (Central Bank of Kuwait, 2003§). The GDP was estimated to have declined by about 0.9%. On the basis of purchasing-power-parity valuation, the GDP in 2002 was \$34.45 billion (International Monetary Fund, 2003§). Situated at the northwestern end of the Persian Gulf, the 17,820-km² area of Kuwait supported a population estimated to be more than 2,110,000, of which about 950,000 were Kuwaiti nationals.

The Government continued to advocate a legal change to allow foreign oil company investment in upstream oilfield development. In 2001, Parliament had passed law No. 8, which regulated direct foreign capital investment and opened up most sectors of the economy to foreign investment. Foreign investment in the oil exploration and production in Kuwait, however, remained proscribed by the Constitution. Foreign oil companies did operate in the Kuwaiti portion of the partitioned neutral zone (PNZ), which was also known as the divided zone (Agence France-Presse, 2003§).

Trade

In 2002, total exports were valued at \$15.4 billion,³ of which oil exports accounted for about \$14 billion and manufactured fertilizer exports accounted for \$51 million. Total imports in 2002 were estimated to be \$9 billion. The United States (imports from which were valued at \$986 million), Japan (\$962 million), Germany (\$839 million), Saudi Arabia (\$581 million), and Italy (\$503 million) were leading import trade partners. About 68% of the imports and 66% of the nonoil exports were transported by sea, which as the year ended, appeared to be subject to disruptions associated with the threatened military action against Iraq (Central Bank of Kuwait, 2003§).

Commodity Review

Metals

Iron and Steel.—Kuwait Metal Collecting and Shredding Co. K.S.C. (Closed) and Al-Oula Steel Manufacturing Co., WLL began construction of a \$14.8 million, 150,000-t/yr-capacity steel plant in the Shuaiba industrial zone. Furnace feed was expected to be local scrap (Metal Bulletin, 2002; Kuwait Ministry of Finance, undated§).

³Where necessary, values have been converted from Kuwaiti dinars to U.S. dollars at the rate of KD0.304=US\$1.00.

Industrial Minerals

Sulfur.—Kuwait National Petroleum authorized Larsen & Toubro Ltd. of India to expand the production capacity of the sulfur recovery unit at the Shuaiba petroleum refinery to 700 metric tons per day (t/d) from 270 t/d, and the unit at the Mina Abdullah refinery to 400 t/d from 270 t/d. Work was expected to be completed by 2005 (Middle East Economic Digest, 2002b).

Mineral Fuels

Natural Gas.—The Kuwaiti Government planned to substitute cleaner burning natural gas for the fuel oil that fired the country's powerplants. Domestic Kuwaiti natural gas production, however, was associated with crude oil production that was subject to OPEC production quotas and not power demand. In 2002, Kuwait's proposal to import natural gas supplies from Qatar was awaiting permission to lay a 21- to 40-million-cubic-meter-per-day-capacity pipeline across the seabed of Saudi Arabian territorial waters between Qatar and Kuwait (Reuters Ltd., 2003§).

Oil.—OPEC's reduction of Kuwait's oil production ceiling to 1.74 million barrels per day (Mbbbl/d) from 1.86 Mbbbl/d and a fire in January that damaged facilities at the 600,000-bbl/d Raudhatain Field resulted in lower national crude oil production in 2002. A \$200 million contract was subsequently awarded for the repair of the Raudhatain oilfield's surface facilities and a new natural gas gathering system (Petroleum Economist, 2002).

In December 2002, Arabian Oil Co. Ltd. of Japan (AOC) and the Government completed negotiations for the conversion of AOC's drilling concession in the Khafji oilfield in the offshore Kuwaiti portion of the PNZ to a multiple-feature program that included a renewable 5-year technical service agreement, a 20-year agreement that AOC would be allowed to purchase a minimum of 100,000 bbl/d of crude oil at market prices, and an agreement that AOC would provide a \$750 million loan to finance capital expenditures of the new state-owned company (Kuwait Gulf Oil Co.), which will assume responsibility for drilling and production (Elias, 2002§). AOC lost its concession in the Saudi Arabian section of the PNZ in 2000, and its existing exploration and production agreement on the Kuwaiti side of the PNZ will expire in January 2003.

The state-owned Kuwait Oil Co. requested bids on the Ahmadi oil storage project. The project, which included the construction of additional oil storage tanks with a capacity of 11.4 Mbbbl; five onshore 20-kilometer (km) crude oil pipelines; three offshore 20-km crude oil pipelines; associated booster stations, metering stations, and pumps; two new single-point mooring buoys; and an upgrade of two existing single-point mooring buoys, was expected to cost \$880 million (Middle East Economic Digest, 2002a).

Kuwait National Petroleum Co. proposed upgrades to the Mina Abdullah oil refinery, which included a \$139 million contract to upgrade the atmospheric residue desulfurization unit and a \$32 million renovation of the vacuum distillation unit (Middle East Economic Digest, 2002c; Fouad, 2002§).

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OMAN

Oman encompassed an area of 212,460 km² on the eastern end of the Saudi Arabian Peninsula. A significant proportion of the metals and industrial mineral exploration and mining activity in the countries of this chapter was concentrated in Oman, the UAE, and Yemen. Net oil and natural gas revenues accounted for about 73.2% and 2.4%, respectively, of total Omani Government revenue. In 2002, the average price received for Omani oil increased to \$24.29 per barrel from \$23.00 per barrel in 2001. In addition to its oil and gas output, Oman produced chromite, gold, gypsum, salt, sand and gravel, silver, and dimension stone. There also was smelting and refining of imported copper ore and the manufacturing of cement. In 2002, the Omani GDP (based on purchasing-power-parity valuation) was about \$31.3 billion⁴ for this nation of about 2.7 million people. The hydrocarbon sector accounted for about 42% of the GDP (Central Bank of Oman, 2003; International Monetary

Fund, 2003§). In line with the Government's economic diversification policy, new foreign investment and mining laws were under consideration.

Commodity Review

Metals

Copper.—National Mining Co. (a subsidiary of the MB Group of Oman) completed a prefeasibility study for the development of the massive sulfide deposits on block 1. The company reported drilled deposits of 2 Mt at a grade of 2% copper at Shinas and 1.5 Mt at a grade of 3.5% copper at Hatta (Mining Journal, 2003).

Iron and Steel.—Sharq Sohar Steel Mill LLC (Sohar Steel), which operated a 180,000-t/yr-capacity steel reinforcing bar mill at Sohar, proposed to install a meltshop to reduce its dependency on imported billet. Sohar Steel obtained some of its mill feed from Modern Steel Mills, which had operated a 90,000-t/yr steel-billet plant at Rusayl since 2001. Modern Steel Mills melted steel scrap with a 25-t electric arc furnace. Also at Rusayl, Hadid Majan LLC was building a 36,000-t/yr rolling mill to produce steel reinforcing bar (MESteel.com, 2003a§, b§).

Industrial Minerals

Nitrogen (Ammonia).—Oman-India Fertilizer Co.'s 3,500-t/d-capacity ammonia and 4,700-t/d-capacity granular urea plant was under construction at Sur. Initial production from the \$770 million plant was expected to start in 2005, and most of the output was under long-term contract to Indian companies (Industrialinfo.com, 2002§). Bahwan Trading Co. proposed to build a \$600 million 2,000-t/d ammonia and 3,500 t/d granular urea plant at Sohar. Sohar International Urea and Chemical Industries would operate the plant, which was expected to begin its commercial production in 2006 (Middle East North Africa Financial Network, 2002§). Oman Oil Co. and Engro Chemical Pakistan Ltd. proposed to move an additional ammonia and urea plant to Sohar.

Stone, Crushed.—In 2002, the Government announced that it would suspend acceptance of new applications for permits to operate quarries and stone-crushing plants to establish national standards for stone quarrying and processing operations.

Mineral Fuels

Natural Gas.—Petroleum Development Oman LLC (PDO) awarded a \$100 million contract for the Saih Nihayda gas plant. The plant was expected to be designed to process 20 million cubic meters per day of natural gas to remove condensate and water from the gas stream (Times of Oman, 2002§).

Oman Liquefied Natural Gas LLC (Oman LNG) proposed to build a third 3.3-Mt/yr liquefied natural gas (LNG) train at

Qalhat by 2006. With the construction of the third train, the facility would have a capacity of 10 Mt/yr (Kumar, 2002§).

Oil.—PDO's oil production accounted for more than 90% of Oman's crude oil output; the remainder was produced by international oil companies. Because of the continued decline of the volume of its crude oil production, PDO proposed 5-year \$1.5 billion-per-year enhanced oil recovery program. A miscible gas injection program was slated for the Harweel Field, and a steam injection program was proposed for the Mukhaizna and Qarn Alam Fields.

In 2002, Sohar Refinery Co. awarded a contract worth about \$875 million to build a 125,000-bbl/d refinery at Sohar. The project was expected to take 3 years. Oman Refinery Co. awarded a \$32 million contract to upgrade the Mina al-Fahal refinery. The 18-month project included the addition of 15,000-bbl/d hydrodesulfurization and sulfur recovery unit (Middle East Economic Digest, 2002a, b).

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⁴Where necessary, values have been converted from Omani rials to U.S. dollars at the average exchange rate of OR 0.386=US\$1.00 for 2002 and OR 0.381=US\$1.00 for 2001.

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QATAR

Much of the Qatari economy was based on the production of crude oil, natural gas, petrochemicals, and refined petroleum products. In 2002, the Qatari GDP (based on purchasing-power-parity valuation) was estimated to be \$22.6 billion for this nation of about 793,000 people (International Monetary Fund, 2003§).

In 2002, the Government proposed to privatize its equity interests in Qatar National Cement, which was 43% state owned, and in Qatar Steel Co. (Qasco), which was 100% state owned (Reuters, 2002b§). The Government also proposed to increase oil production to 1 million barrels per day, natural gas production to 12 billion cubic feet per day, and LNG to 30 Mt/yr by 2010. In 2002, the combined capacity of Qatar Liquefied LNG trains 1, 2, and 3 and Ras Laffan Liquefied Natural Gas Co. Ltd. LNG trains 1 and 2 was about 13 Mt/yr (Ministry of Foreign Affairs, 2002§).

Commodity Review

Metals

Aluminum.—Planning continued for a 500,000-t/yr aluminum smelter to be built for United Development Co. of Qatar and partners Ferrostaal AG of Germany and JGC Corp. of Japan. In 2002, the partnership signed a gas supply contract. Production at the proposed \$2 billion plant at Ras Laffan was scheduled to start in 2006 (Metal Bulletin, 2002).

Iron and Steel.—Midrex Technologies Inc. and Qasco increased the productivity of the direct reduction iron (DRI) plant at Mesaieed. The plant, with a nominal capacity of 730,000 t/yr, produced about 750,000 t of iron in 2002. Qasco also proposed to build a new 1.2 Mt/yr DRI plant at Mesaieed in addition to a 500,000 t/yr expansion of the steel plant's melt shop and a new 400,000-t/yr capacity steel rod mill (Qatar Steel Co., 2003§).

Mineral Fuels

Natural Gas.—The proposed natural gas export pipeline that was to funnel natural gas west to Kuwait from Qatar's North Field was delayed pending Saudi Arabian concurrence (Reuters, 2002a§). To the east, the Dolphin natural gas pipeline project, which was estimated to cost about \$3.5 billion, showed progress. In 2002, Dolphin Energy Ltd., which was the operating company, continued its reorganization; Occidental Petroleum Corp. acquired 24.5% interest, the Offshore Investment Co. of the UAE Offsets Group retained 51% equity interest, and Total Final Elf E&P Dolphin held 24.5%. The Dolphin pipeline was designed to carry about 90 million cubic meters per day of natural gas to Abu Dhabi, the UAE, with a proposed extension to the northern Emirates and Oman. Gas

transport was scheduled to begin in 2005. The Gulf-South Asia Gas natural gas pipeline project was under negotiation. This proposed 96.3-million-meter-per-day-capacity pipeline would be used to move Qatari gas from the UAE to Pakistan (Fesharaki, 2002; Middle East North Africa Financial Network, 2002§).

The construction of the 4.7-Mt/yr-capacity liquefaction LNG train 3 and the 4.7-Mt/yr LNG train 4 were underway for Ras Laffan Liquefied Natural Gas Co. II (RasGas II), which was a venture of Qatar Petroleum (QP) (70% equity interest) and ExxonMobil Corporation (30%). RasGas II expected train 3 would be commissioned in 2004 and train 4, in late 2005. Total cost of the two projects was about \$2.4 billion (Hindley, 2002; Middle East Economic Digest, 2002b).

QP (80%), ExxonMobil (10%), and TotalFina Elf (10%) proposed to build a \$400 million 140,000-bbl/d-capacity natural gas condensate plant. Construction was scheduled to begin in 2004 with commercial production expected in 2006 (Petroleum Economist, 2003).

A joint venture of QP (51% equity interest) and Sasol Synfuels International Ltd. of South Africa (49% equity interest) agreed to proceed with the gas-to-liquids (GTL) facility at Ras Laffan; it would use 9.3 million cubic meters per day of natural gas to produce 24,000 bbl/d of diesel fuel, 9,000 bbl/d of naphtha, and 1,000 bbl/d of liquefied petroleum gas. The \$900 million GTL project was expected to start up in 2005. Three other GTL projects were under consideration. QP and ExxonMobil proposed a 100,000-bbl/d GTL plant for Ras Laffan, which was under evaluation; QP and Shell International Gas completed a scoping study for a 140,000- to 150,000-bbl/d GTL plant; and Ivanhoe Energy Inc. proposed a 185,000-bbl/d GTL plant and had submitted the proposal to QP for review (Middle East Economic Digest, 2001, 2002a, b; Qatar Petroleum, 2001; Asia Chemical News, 2002; Ivanhoe Energy Inc., 2002).

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THE UNITED ARAB EMIRATES⁵

Oil and natural gas revenues formed a significant segment of the diversified economy of the UAE. In 2002, the UAE had an estimated GDP (based on purchasing-power-parity valuation) of \$67.2 billion (International Monetary Fund, 2003§). The output of the crude oil and natural gas industries accounted for 21.2% of GDP in 2002, down from 23.5% in 2001. There were slight increases in the contribution of the manufacturing sector (primarily LNG and refined petroleum products), which accounted for about 15% of GDP, and the quarrying sector, which accounted for about 0.3% of the GDP (Central Bank of the United Arab Emirates, 2003, p. 15). Of the Emirates, Abu Dhabi, which dominated the petroleum industry in the country, accounted for 57.8% of the national GDP, followed by Dubai, 26.5%; Sharjah, 9.4%; Ras Al-Khaimah, 2.5%; Ajman, 1.7%; Fujairah, 1.5%; and Umm Al-Qaywayn, 0.6% (Ministry of Planning, 2003§).

Population estimates for this nation ranged from 2.4 million to 3.8 million. The Government estimated that of the country's 2 million labor force in 2002, about 262,800 worked in the manufacturing sector; 27,200, in crude oil and natural gas; and 4,400, in quarrying (Central Bank of the United Arab Emirates, 2003, p. 18-22).

Trade

In 2002, OPEC production quotas restrained the volumes of crude oil and natural gas available for export from the UAE. Despite an increase in the price per barrel of crude oil in 2002 compared with that of 2001, the value of crude oil exports from the UAE was estimated to be \$17 billion⁶ in 2002, down from

⁵Comprises the following: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, Sharjah, and Umm al-Qaywayn.

⁶Where necessary, values have been converted from United Emirate dirhams (AED) to U.S. dollars at the rate of AED3.67=US\$1.00.

\$17.8 billion in 2001. In 2002, natural gas exports were valued at \$3.4 billion and refined petroleum products exports were valued at \$3.3 billion. Total exports and reexports were valued at \$49.6 billion. Crude oil exports accounted for 34.2% of the value of total exports and reexports in 2002 compared with 36.4% in 2001, reexports accounted for 29.4% in 2002 versus 28.6% in 2001 (the UAE was a significant transshipment point for the region), natural gas exports accounted for 6.8% in 2002 compared with 7.3% in 2001, and refined petroleum products exports accounted for 6.7% in 2002 versus 5.3% in 2001 (Central Bank of the United Arab Emirates, 2003, p. 34-36).

Commodity Review

Abu Dhabi accounted for about 85% of the country's hydrocarbons production. Other minerals and mineral commodities produced in the UAE included aluminum and steel produced in Dubai; ammonia manufactured in Abu Dhabi; cement manufactured in Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, and Sharjah; and chromite mined in Fujairah. Also, ceramic tiles, glass, and gypsum were produced in various Emirates. All mineral resources were controlled by the individual Emirates and loosely administered by the Federal Government.

Metals

Aluminum.—The initial phase of the "Kestral" project, which would expand the existing 536,000-t/yr Dubai Aluminium Co. (Dubal) plant capacity, was expected to be completed in 2003. The expansion to 710,000-t/yr was scheduled to be completed by 2006 (Dubai Aluminium Co. Ltd., 2002; Middle East North Africa Financial Network, 2002b§).

Sharif Metals Ltd. proposed a \$600,000 overhaul of its 3,000-t/yr-capacity secondary aluminum plant in Sharjah. Plant feed was imported and local scrap. The planned refurbishment would increase the plant's capacity to 7,000 t/yr (Metal Bulletin, 2002). Also on the secondary aluminum front, TTC1 Ltd. of the United Kingdom installed a tilting rotary furnace at Cast Aluminium Industries in Dubai. The 12,000-t/yr-capacity furnace would melt dross and used aluminum beverage cans (TTC1 Ltd., undated).

Copper.—Dubai Cable Co. Ltd. completed the expansion of its Jebel Ali copper cable factory. The expanded plant will require about 35,000 t/yr of copper when operations reach full plant capacity (Middle East Economic Digest, 2001; 2002c).

Gold.—The UAE was a notable international gold trading center, reportedly handling about 10% of the world's gold trade. Gold refining was carried out by Emirates Gold LLC's 50-t/yr refinery in Dubai and the Ary Group's 30-t/yr refinery in Sharjah (Gulf Industry, 2002§). As part of the Dubai Metals and Commodities Centre, the Al Ghurair Group initiated a \$14 million gold refinery project, which used the Council for Mineral Technology (Mintek) hydrometallurgical gold refining technology. Mintek expected that the construction of the 100-t/yr-capacity Al Ghurair Giga Gold refinery would be completed in 2003. In 2002, the Ary Group began construction of a gold

refining and jewelry production complex in the Dubai Metals and Commodities Centre. It also featured a 100-t/yr gold refinery (Mining Journal, 2002; Gulf News, 2002a§; Middle East North Africa Financial Network, 2002a§).

Iron and Steel.—General Industries Corp. proposed to build a \$180 million 90,000-t/yr-capacity cold-rolling mill at Mussafah in Abu Dhabi. The plant was expected to be commissioned in 2005 (Middle East Economic Digest, 2002a). Abu Dhabi Metal Pipes and Profiles Industries Complex awarded a contract to begin construction of a proposed pipe plant. The plant was designed to be able to produce aluminum, brass, copper, galvanized iron, and stainless steel pipes in diameters that range from 30 millimeters to 3 meters (Middle East Economic Digest, 2002b).

Mineral Fuels

Natural Gas and Oil.—A compressed natural gas (CNG) plant in Sharjah was expected to be completed by March 2003. All production was slated to be exported. In 2002, Abu Dhabi National Oil Co. commissioned a study to evaluate the feasibility of building a CNG vehicle refueling network in Abu Dhabi City, Al Ain, and Ruwais.

The Abu Dhabi Oil Refining Co. awarded a \$480 contract to modernize its Ruwais refinery. New unleaded gasoline, low-sulfur gas oil, naphtha hydrotreating, and sulfur recovery units were to be installed and operational by 2005. The Government proposed to initiate a ban on leaded gasoline in January 2003 (Gulf News, 2002b§).

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YEMEN

Through the “Strategic Vision 2025” program, the Government hoped to diversify the nation’s economic base in part by the promotion of increased natural gas production and use and by encouraging increased foreign and local investment in the development of the building material and mineral ores extraction sector. In 2002, the GDP (based on purchasing-power-parity valuation) was estimated to be \$18.5 billion for this nation of 18.7 million people (International Monetary Fund, 2003§). Oil and gas production accounted for an estimated 22.4% of GDP.

Trade

Crude oil exports (\$3.1 billion⁷) accounted for 87% of total exports, which were valued at nearly \$3.6 billion. Total imports were about \$2.8 billion (Central Bank of Yemen, 2003, p. 22, 48). The October 2002 attack on the French crude oil supertanker Limburg (also known as the Linbourg) off the port of Mina al-Dabah resulted in an almost 300% increase in the insurance premium charge on shipments of goods to and from Yemen. Traffic through the container port at Aden declined by 81% between September 2002 and December 2002 (Chandrasekaran, 2002; World Bank, 2002, p. 3; Arrabyee, 2003§).

Commodity Review

Metals

Aluminum.—Bahrain Aluminium Extrusion Co. (Balenco) proposed to build a 12,000-t/yr extrusion and finishing plant near Aden. Balenco planned to import primary aluminum from ALBA of Bahrain (Middle East Economic Digest, 2002a).

Copper and Nickel.—Cantex Mine Development Corp. completed ground geophysics and geological and geochemical

⁷Where necessary, values have been converted from Yemeni rials (YR) to U.S. dollars at the average rate of YR 175 =US\$1.00.

sampling programs on the Al Masnaa cobalt-copper-nickel-platinum project.

Zinc.—In 2002, additional drilling and evaluation of Al-Jabail zinc deposit by ZincOx Resources plc of the United Kingdom resulted in an increase in resources to 12.6 Mt of oxide ore with an average grade of 8.9% zinc, 1.2% lead, and 68 grams per metric ton silver. The company also completed an environmental baseline study and a preliminary feasibility study. A feasibility study was expected to be completed in 2003 (ZincOx Resources plc, 2003).

Industrial Minerals

Cement.—The attempted privatization of the state-owned General Corp. for Cement Production and Marketing, which operated cement plants at Amran, Bajil, and Taiz, was canceled. In 2002, the company contracted to add a 1-Mt/yr clinker line at Amran and to expand the existing 520,000-t/yr-capacity plant to 750,000 t/yr. Expansion of the Bajil plant was under consideration (Middle East Economic Digest, 2002b).

Mineral Fuels

Natural Gas.—The Government extended the deadline for the development of the Yemen LNG project to 2006. The project's partners have been attempting to secure long-term LNG sales contracts since 1997. In 2002, ownership of the venture shifted when ExxonMobil (formerly 14.5% interest) withdrew from the project.

Oil.—Four oil refinery projects were under consideration. The Government proposed to expand the Aden Refinery to 225,000 bbl from a nominal 120,000-bbl/d capacity. VECO Corp. was evaluating a \$70 million capacity expansion of the Marib Refinery of Yemen Refining and Marketing Co. to 20,000 bbl/d from 10,000 bbl/d. Hoodoil Ltd. contracted VECO to do a feasibility study for a new \$200 million 30,000-bbl/d-capacity refinery at Ras Issa. A new 50,000-bbl/d refinery near Mukalla was proposed by Hadramout Refineries Co. (Middle East Economic Digest, 2002c, d; VECO Corp., 2002).

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TABLE 1
BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN:
PRODUCTION OF MINERAL COMMODITIES ¹

(Metric tons unless otherwise specified)

Country and commodity	1998	1999	2000	2001	2002 ^c
BAHRAIN ²					
Aluminum, smelter output, primary metal	501,308	502,663	509,038	522,749 ^r	518,924
Cement	230,422	156,100	88,806	88,700	66,986
Gas, natural:					
Gross million cubic meters	11,120	11,470	11,500 ^c	12,018 ^r	12,154
Dry do.	8,500	8,789	8,966	9,285	9,429
Methanol	384,111	421,946	370,000	412,122	405,763
Natural gas plant liquids:					
Propane thousand 42-gallon barrels	1,192	1,144	1,055	1,058	1,099
Butane do.	1,024	1,005	955	968	961
Naphtha do.	1,661	1,683	1,626	1,598	1,610
Nitrogen, N content of ammonia	335,900	369,500	349,900	372,000	377,400
Petroleum:					
Crude thousand 42-gallon barrels	13,750	13,670	13,766	13,656	13,800
Refinery products:					
Liquefied petroleum gas do.	300 ^e	335	346	353	350
Gasoline do.	6,344	6,756	7,090	6,182	6,500
Jet fuel do.	9,125	9,520 ^c	9,450 ^c	15,497	16,000
Kerosene do.	8,030	9,000 ^c	9,000 ^c	2,777	3,000
Distillate fuel oil do.	31,591	30,000 ^c	21,278	17,188	18,000
Residual fuel oil do.	19,719	22,066	29,000	25,000 ^e	26,000
Other ^c do.	19,700	16,700	16,500	17,000	17,000
Total ^c do.	94,800	94,400	92,700	84,000	87,000
Sulfur	66,500 ^e	66,500 ^c	61,590	67,480	67,381
KUWAIT ⁴					
Cement	1,345,000	1,435,000	1,540,000 ^c	1,600,000 ^e	1,600,000
Lime, hydrated and quicklime ^c	40,000	40,000	40,000	40,000	40,000
Natural gas: ^{e,5}					
Gross million cubic meters	11,100	10,144 ³	11,000	10,900	9,900
Dry do.	9,500	8,688 ³	9,600	9,500	8,700
Natural gas liquids ^c thousand 42-gallon barrels	37,000	38,000	41,100	44,300	40,000
Nitrogen:					
N content of ammonia	452,300	396,800	409,500	400,000 ^r	414,000
N content of urea	361,300	330,900	287,600	290,000	320,000
Petroleum:					
Crude ⁵ thousand 42-gallon barrels	761,025	708,000	766,000	745,000	680,000
Refinery products: ^c					
Gasoline, motor do.	17,520 ³	17,000	10,000	10,000	10,000
Kerosene do.	51,470 ³	50,000	35,000	30,000	30,000
Distillate fuel oil do.	91,980 ³	92,000	75,000	70,000	70,000
Residual fuel oil do.	75,550 ³	72,000	60,000	60,000	60,000
Other do.	86,870 ³	80,000	70,000	70,000	70,000
Total do.	323,390 ³	311,000	250,000	240,000	240,000
Salt ^e	100,000	100,000	100,000	100,000	100,000
Sulfur: ^c					
Elemental, petroleum byproduct	650,000	639,000	512,000	524,000	634,000
Sulfuric acid	10,000	10,000	100,000	150,000	150,000
OMAN					
Cement, hydraulic	1,333,000	1,217,000	1,238,063	1,369,570	1,400,000
Chromite, gross weight	28,684	26,004	15,110	30,150 ^r	27,444
Copper, metal:					
Smelter	24,400	16,818	23,790	24,220	24,000
Refinery	22,700 ^e	17,171	24,281	24,000 ^e	24,000
Gas, natural:					
Gross million cubic meters	10,396	11,567	15,496	19,268 ^r	22,366
Dry do.	7,784	8,056	12,020	14,000 ^r	14,800

See footnotes at end of table.

TABLE 1--Continued
 BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN:
 PRODUCTION OF MINERAL COMMODITIES ¹

(Metric tons unless otherwise specified)

Country and commodity	1998	1999	2000	2001	2002 ^e
OMAN--Continued					
Gold kilograms	582 ^r	597 ^r	551 ^r	603 ^r	188
Gypsum	189,507	180,129	131,909	44,323 ^r	55,722
Natural gas liquids ^e thousand 42-gallon barrels	4,000	6,000	6,000	6,000	6,000
Petroleum:					
Crude do.	328,500	328,100	353,000 ^{r, e}	352,000 ^e	328,000
Refinery products:					
Liquefied petroleum gas do.	395	423	350 ^e	366 ^r	545
Gasoline do.	5,224	4,711	4,857	4,198 ^r	5,428
Jet fuel and kerosene do.	1,127	1,457	1,643	1,489 ^r	2,008
Distillate fuel oil do.	6,029	6,297	6,363	5,338 ^r	6,658
Residual fuel oil do.	14,950	14,900	14,797 ^r	11,980 ^r	14,942
Other do.	947	908	638 ^r	666 ^r	1,048
Total do.	28,672 ^r	28,696 ^r	28,648 ^r	24,037 ^r	30,629
Salt	NA	NA	11,700	13,983	14,410
Sand and gravel	9,800,000 ^e	15,681,951	22,448,254	25,967,815 ^r	21,736,414
Silver kilograms	4,692	3,366	4,894	3,153	38
Stone:					
Marble	115,748	188,545	147,686	157,249 ^r	135,930
Other	2,381,143	3,813,821	3,537,216	3,395,589 ^r	3,182,522
Sulfur ^e	30,000	30,000	30,000	30,000	30,000
QATAR ⁶					
Cement, hydraulic ^e	986,000	1,025,000 ⁴	1,050,000	1,050,000	1,100,000
Gas, natural:					
Gross million cubic meters	26,200 ^e	32,000 ^e	33,656	37,132	39,000
Dry do.	19,540	24,000 ^e	26,141	27,738	29,300
Iron and steel:					
Direct-reduced iron	706,000	670,000 ^e	620,962	733,549	750,000
Steel, crude	646,000	629,000 ^e	743,615	907,608	1,000,000
Semimanufactures:					
Billet	637,000	600,000 ^e	728,780	891,117	900,000
Bars	597,000	600,000 ^e	579,525	713,500	715,000
Natural gas liquids thousand 42-gallon barrels	50,000 ^e	49,000 ^e	24,126	26,726	27,000
Nitrogen:					
N content of ammonia	1,127,300	1,129,600	1,097,000	1,159,118	1,166,100
N content of urea	767,000	757,000	770,761	779,388	798,700
Petroleum:					
Crude thousand 42-gallon barrels	254,040	232,000 ^e	231,000	237,000	230,000
Refinery products: ^e					
Gasoline do.	5,100	5,400	4,521 ³	4,948 ³	5,000
Kerosene do.	3,300	3,900	2,997 ³	3,911 ³	3,900
Distillate fuel oil do.	5,100	4,900	4,490 ³	3,824 ³	3,800
Residual fuel oil do.	6,900	6,750	6,264 ³	4,492 ³	4,500
Other do.	2,200	1,600	736 ³	514 ³	500
Total do.	22,600	22,600	19,008 ³	17,689 ³	17,700
Stone, limestone ^e	900,000	900,000	900,000	900,000	900,000
Sulfur	146,000 ^e	155,000 ^e	190,868	220,824	221,000
UNITED ARAB EMIRATES ⁷					
Aluminum, primary	352,000	440,000	470,000	500,000	536,000
Cement, hydraulic	7,066,000	7,069,000	6,100,000 ^e	6,100,000 ^e	6,500,000
Chromite, gross weight ^e	76,886 ³	60,000	30,000	10,000	10,000
Gas, natural: ^e					
Gross million cubic meters	48,980 ³	50,200 ³	52,000	54,000	55,000
Dry do.	37,070 ³	38,500	39,800	41,300	42,000

See footnotes at end of table.

TABLE 1--Continued
 BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN:
 PRODUCTION OF MINERAL COMMODITIES ¹

(Metric tons unless otherwise specified)

Country and commodity	1998	1999	2000	2001	2002 ^e
UNITED ARAB EMIRATES--Continued					
Gypsum ^c	90,000	90,000	90,000	90,000	90,000
Lime ^c	50,000	50,000	50,000	50,000	50,000
Natural gas plant liquids ^c thousand 42-gallon barrels	80,000	80,000	80,000	80,000	80,000
Nitrogen:					
N content of ammonia	331,000	380,200	348,400	357,900 ^f	364,000
N content of urea	259,000 ^e	271,500	243,400	250,000 ^{f, e}	260,000
Petroleum: ^c					
Crude thousand 42-gallon barrels	880,000	756,000	815,000	790,000	750,000
Refinery products:					
Gasoline do.	13,100	12,800	13,000	13,000	13,000
Kerosene do.	21,200	21,000	21,000	21,000	21,000
Distillate fuels do.	24,500	24,400	25,000	25,000	25,000
Residual fuels do.	13,500	12,300	12,500	12,500	12,500
Other do.	19,700	10,700	11,000	11,000	11,000
Total do.	92,000	81,200	82,500	82,500	82,500
Steel ^c	70,000	70,000	70,000	70,000	70,000
Sulfur, byproduct of petroleum refining and natural gas processing	967,000	1,089,000	1,122,000	1,490,000 ^{f, e}	1,900,000
YEMEN					
Cement	1,201,404	1,453,787	1,400,000 ^e	1,400,000 ^e	1,400,000
Gypsum	102,000	103,000	100,000 ^e	100,000 ^e	100,000
Marble thousand square meters	86	88	86 ^e	86 ^e	90
Natural gas: ^c					
Gross ⁸ million cubic meters	15,000	16,000	18,000	18,000	19,000
Liquids thousand 42-gallon barrels	2,000	2,200	2,400	2,400	2,400
Petroleum: ^c					
Crude do.	138,600 ³	149,000	167,000	165,000	173,000
Refinery products:					
Gasoline do.	9,100 ³	9,100	9,100	9,100	9,100
Kerosene do.	3,700 ³	3,700	3,700	3,700	3,700
Distillate fuel oil do.	6,900 ³	6,900	6,900	6,900	6,900
Residual fuel oil ^e do.	10,600	10,600	10,600	10,600	10,600
Other ^c do.	3,700 ³	3,700	3,700	3,700	3,700
Total do.	34,000 ³	34,000	34,000	34,000	34,000
Salt	147,000	149,000 ⁴	150,000 ^e	150,000 ^e	150,000
Stone, dimension thousand cubic meters	2,497	2,547	2,500 ^e	2,600 ^e	2,600

^eEstimated; estimated data are rounded to no more than three significant digits and may not add to totals shown. ^fRevised. NA Not Available.

¹Table includes data available through November 14, 2003.

²In addition, iron ore was pelleted and exported for use by direct reduction plants. Pellets were produced from imported iron ore. Since 1998, granular urea has been produced from locally produced ammonia.

³Reported figure.

⁴In addition to commodities listed, caustic soda, chlorine, clays, clay products, and sand and gravel were produced in Kuwait, but available information is inadequate to make estimates of output.

⁵Includes Kuwait's share of production from the Partitioned Neutral Zone.

⁶In addition to commodities listed, clays, gypsum, sand and gravel for construction purposes, and methanol are produced in Qatar, but available information is inadequate to make estimates of output.

⁷In addition to the commodities listed, crude industrial minerals, such as common clays, diabase, gravel, limestone, marble, sand and shale, presumably are produced, but output is not reported, and information is inadequate to make estimates of output.

⁸Most produced associated natural gas was stripped of liquids and reinjected.