

# THE MINERAL INDUSTRY OF BAHRAIN

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The island Kingdom of Bahrain had a total land area of about 665 square kilometers and supported a population of more than 707,000 on five main islands located in the Gulf of Bahrain between Qatar and Saudi Arabia. In 2004, the gross domestic product (GDP) based on purchasing power parity was estimated to be about \$14.6 billion,<sup>1</sup> and the GDP per capita based on purchasing power parity was estimated to be \$18,817. Revenue associated with the production of crude oil accounted for a significant segment of the economy. The aluminum sector also figured prominently in the country's mineral economy (Bahrain Monetary Agency, 2005a, p. 3; International Monetary Fund, 2005<sup>2</sup>).

## Trade

Of the country's total export earnings in 2004 of about \$7.5 billion, Bahraini exports of crude oil and refined petroleum products were valued at about \$5.5 billion compared with about \$4.7 billion in 2003. In 2004, total national imports were valued at about \$6.5 billion. In 2004, the Government signed a free trade agreement with the United States (Bahrain Monetary Agency, 2005b, p. 32).

## Commodity Review

### Metals

**Aluminum.**—In 2004, construction continued on Aluminium Bahrain B.S.C.'s (ALBA) fifth aluminum potline. Line 5, which had a design capacity of 307,000 metric tons per year (t/yr), was scheduled to be commissioned in early 2005. Construction of the proposed line 6, which had a design capacity of more than 300,000 t/yr and would use most of the remaining land at the ALBA site at Sitra, was under consideration. In 2004, the go-ahead decision on line 6 was deferred when Alcoa Inc. withdrew from an agreement to acquire 26% equity interest in ALBA (Middle East Economic Digest, 2005a).

**Ferroalloys.**—Bahrain Ferro Alloy Co. B.S.C. proposed to produce ferrochrome, ferromanganese, and silicomanganese at Hidd. The planned \$57 million three-furnace ferroalloy facility would have a 90,000-t/yr capacity. The first 40,000-t/yr furnace was expected to be operational in March 2005 (Baby, 2004<sup>§</sup>).

**Iron and Steel.**—In 2004, United Stainless Co. was formed in Bahrain by Gulf Investment Corp. of Kuwait (30% interest), Qatar Steel Co. (25%), the National Industries Group of Kuwait (15%), United General Industrial Co. of Bahrain (15%), the Al-Rashid Group of Saudi Arabia (5%), Kuwait Foundry Co.

(5%), and the Mohamed Abdulmohsin Kharafi Group of Kuwait (5%). Danieli & Co. SpA of Italy was awarded a \$174 million contract by United Stainless to build a 90,000-t/yr capacity cold-rolled stainless steel mill that was scheduled to begin commercial operations in 2007 (Middle East Economic Digest, 2005b).

### Mineral Fuels and Related Products

Kuwait Finance House Bahrain proposed to build a petrochemical, power, and water complex at Sitra. Proposed production would include about 500,000 t/yr of sodium hydroxide. The company discussed gas supply arrangements with the Government because the facility would require about 7 million cubic meters per year of natural gas, which would have to be imported from Iran or Qatar (Asian Chemical News, 2004).

**Refined Petroleum Products and Sulfur.**—In 2004, the Bahrain Petroleum Co. B.S.C. (Closed) (Bapco) proceeded with its \$120 million refinery gas desulfurization (RGD) project, which would reduce hydrogen sulfide in the refinery's wastewater discharge and sulfur dioxide emissions from the refinery's stacks. The RGD included plans to install a 225-metric-ton-per-day-capacity sulfur recovery unit. Bapco also awarded contracts for the installation of a \$658 million low sulfur diesel (LSD) production module, which would enable Bapco to meet upgraded international diesel fuel standards. The LSD program would reduce the sulfur content of Bapco's diesel production to two streams of 10 parts per million (ppm) and 50 ppm, respectively, compared with existing (2004) diesel output, which contained about 7,000 ppm sulfur (Bahrain Tribune, 2004<sup>§</sup>).

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<sup>1</sup>Where necessary, values have been converted from Bahraini dinars (BhD) to U.S. dollars (US\$) at the rate of BhD0.377=US\$1.00.

<sup>2</sup>References that include a section mark (§) are found in the Internet References Cited section.

TABLE 1  
BAHRAIN: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2000	2001	2002	2003	2004
Aluminum, smelter output, primary metal	509,038	522,749	518,924	531,991	531,626
Cement	88,806	88,700	66,986	129,256 <sup>r</sup>	153,483
Gas, natural:					
Gross million cubic meters	11,500 <sup>e</sup>	12,018	12,154	12,305	12,130
Dry do.	8,966	9,285	9,429	9,622 <sup>r</sup>	9,194
Methanol	370,000	412,122	405,763	370,008 <sup>r</sup>	398,406
Natural gas plant liquids:					
Propane thousand 42-gallon barrels	1,055	1,058	1,099	1,021 <sup>r</sup>	1,032
Butane do.	955	968	961	922 <sup>r</sup>	981
Naphtha do.	1,626	1,598	1,610	1,647 <sup>r</sup>	1,786
Nitrogen, N content of ammonia	349,900	372,000	377,400	311,900	311,300
Petroleum:					
Crude <sup>3</sup> thousand 42-gallon barrels	13,766	13,656	13,800	13,720	13,647
Refinery products:					
Liquefied petroleum gas do.	346	353	350 <sup>e</sup>	350 <sup>e</sup>	350 <sup>e</sup>
Gasoline do.	7,090	6,182	6,500 <sup>e</sup>	7,000 <sup>e</sup>	7,000 <sup>e</sup>
Jet fuel <sup>e</sup> do.	9,450	15,497 <sup>4</sup>	16,000	16,000	16,000
Kerosene <sup>e</sup> do.	9,000	2,777 <sup>4</sup>	3,000	5,000	5,000
Distillate fuel oil do.	21,278	17,188	18,000 <sup>e</sup>	20,000 <sup>e</sup>	20,000 <sup>e</sup>
Residual fuel oil <sup>e</sup> do.	29,000 <sup>4</sup>	25,000	26,000	29,000	29,000
Other <sup>e</sup> do.	17,600	20,800 <sup>r</sup>	21,300 <sup>r</sup>	15,000	15,300
Total do.	93,737 <sup>4</sup>	87,765 <sup>4</sup>	91,122 <sup>4</sup>	92,350 <sup>4</sup>	92,669 <sup>4</sup>
Sulfur	61,590	67,480	67,381	60,455 <sup>r</sup>	71,258

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits and may not add to reported totals shown. <sup>r</sup>Revised.

<sup>1</sup>Table includes data available through August 19, 2005.

<sup>2</sup>In addition, iron ore was pelleted and exported for use by direct-reduction plants. Pellets were produced from imported iron ore. Granular urea has been produced from locally produced ammonia since 1998.

<sup>3</sup>Does not include production from the Abu Saafa Field.

<sup>4</sup>Reported figure.

TABLE 2  
BAHRAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Aluminum:</b>			
Metal	Aluminium Bahrain B.S.C. (Government of Bahrain, 77%; SABIC Industrial Investments, 20%; Breton Investments, 3%)	Smelter at Sitra	523,000 <sup>1</sup>
Rolled products	Gulf Aluminium Rolling Mill Co. B.S.C. (Closed) (Government of Bahrain, 38%; Saudi Basic Industries Corp., 30%; Industrial Bank of Kuwait, 17%; Gulf Investment Corp., 6%; Government of Iraq, 5%; Government of Oman, 2%; Government of Qatar, 2%)	Rolling mill at Sitra	145,000
Cement	Star Cement Co. W.L.L. (Emirates Trading Agency—Associated Constructions and Investments Co. L.L.C. of the United Arab Emirates, 100%)	Clinker grinding mill at Hidd	500,000
Iron ore, pellets	Gulf Industrial Investment Co. E.C. (Companhia Vale do Rio Doce of Brazil, 50%, and Gulf Industrial Investment Co. of Kuwait, 50%)	Pellet plant at Hidd	4,000,000
Methanol	Gulf Petrochemical Industries Co. B.S.C. (Government of Bahrain, 33.3%; Petrochemical Industries Co. of Kuwait, 33.3%; Saudi Basic Industries Corp., 33.3%)	Sitra	438,000
<b>Natural gas:</b>			
Extracted million cubic meters	Bahrain Petroleum Co., B.S.C. (Closed) (Government)	Bahrain Field, Ahwali	13,000
<b>Liquids:</b>			
Butane	Bahrain National Gas Co. B.S.C. [Bahrain Petroleum Co., B.S.C. (Closed), 75%; Arab Petroleum Investment Corp., 12.5%; Caltex Bahrain, 12.5%]	Natural gas plant at Ahwali	100,000
Naptha	do.	do.	180,000
Propane	do.	do.	120,000
<b>Nitrogen:</b>			
Ammonia	Gulf Petrochemical Industries Co. B.S.C. (Government of Bahrain, 33.3%; Petrochemical Industries Co. of Kuwait, 33.3%; Saudi Basic Industries Corp., 33.3%)	Sitra	438,000
Urea	do.	do.	621,000
<b>Petroleum:</b>			
Coke, calcined	Aluminium Bahrain B.S.C. (Government of Bahrain, 77%; SABIC Industrial Investments, 20%; Breton Investments, 3%)	do.	450,000
Crude thousand barrels	Bahrain Petroleum Co., B.S.C. (Closed) (Government)	Abu Saafa Field, offshore	110,000
Do. do.	do. do.	Bahrain Field, Ahwali	13,800
Refined products	do. do.	Sitra	95,600
Sulfur	do.	do.	72,000

<sup>1</sup>Completion of 307,000-metric-ton-per-year-capacity line 5 was expected in mid-2005.