



# 2007 Minerals Yearbook

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## BAHRAIN

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# THE MINERAL INDUSTRY OF BAHRAIN

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The island Kingdom of Bahrain is located in the Gulf of Bahrain between Qatar and Saudi Arabia. In 2006 (the latest year for which data were available), the production and processing of crude petroleum and natural gas accounted for 26% of the nominal gross domestic product (GDP). Manufacturing, which included the production of aluminum, accounted for 12% of the GDP; construction, about 5%; and quarrying, about 0.5%. Revenues from oil and gas accounted for 80% of Government revenue (Ministry of Finance, 2008a, c).

In 2007, Bahrain's total merchandise export earnings provisionally were valued at about \$13.6 billion,<sup>1</sup> of which exports of refined petroleum products were valued at about \$11 billion. Exports of base metals (primarily aluminum) were valued at about \$1.4 billion, and exports of cement, dimension stone, and precious metals and stones were valued at about \$17 million. Total imports were valued at about \$12 billion, of which oil-related imports accounted for about \$5.9 billion (Central Bank of Bahrain, 2008b, p. 31; Ministry of Finance, 2008b).

## Production

Crude oil production from Bahrain Field (also known as the Awali Field) continued its long-term decline. Slight declines in annual output volume also were noted for aluminum, ammonia, and methanol, whereas slight increases were posted for natural gas and refined petroleum products (table 1).

Bahrain received 54.7 million barrels of crude oil, which was one-half of the crude oil that was produced by Saudi Arabian Oil Co. from the offshore Abu Saafa Field (which straddled the Bahrain-Saudi Arabia border). Other minerals and mineral-based commodities produced in Bahrain included aggregate; cement, which was produced from imported clinker; fertilizers (ammonia and urea); methanol; sand; and sulfur. Imported iron ore was pelleted and exported to regional steel plants. Imported petroleum coke was calcined in Bahrain for use by the aluminum smelter of Aluminium Bahrain B.S.C. (Alba) (Central Bank of Bahrain, 2008a, p. 6).

## Structure of the Mineral Industry

In 2006, the sovereign wealth fund Bahrain Mumtalakat Holding Co. was formed to manage the Government's interest in nonpetroleum companies. Ownership interest in mineral sector companies that was transferred to Mumtalakat included Alba (77% interest) and Gulf Aluminium Rolling Mill Co. B.S.C. (Closed) (37.29% interest). In 2007, the Government announced a proposal to divest some of Mumtalakat's interest in Alba by 2010 (Rafique, 2007).

The Government's National Oil and Gas Authority held majority interest in Bahrain Petroleum Co. B.S.C. (Closed)

and Bahrain National Gas Co. B.S.C., and minority interest in several companies in the petrochemical sector. Private sector companies controlled the cement and pelleted iron ore companies.

## Commodity Review

### Metals

**Aluminum.**—The output from Alba's five potlines regularly exceeded the smelter's nominal production capacity. Alba continued to evaluate the proposed potline 6, which would increase the smelter's total capacity by an additional 320,000 to 350,000 metric tons per year (t/yr); however, the lack of a dedicated source of natural gas to provide power for the new line remained a major impediment to the project's development (Nair, 2007).

**Iron and Steel.**—In 2007, Gulf Industrial Investment Co. E.C. (GIIC) increased the volume of iron ore that it planned to buy from MMX Mineracao e Metalicos S.A. of Brazil to 13 million metric tons per year (Mt/yr) from 6.5 Mt/yr. At Hidd, United Stainless Steel Co. B.S.C. started production at its 90,000-t/yr-capacity cold-rolled stainless steel mill, and GIIC proposed to build a 1.5-Mt/yr-capacity direct-reduced iron plant, a 1.3-Mt/yr-capacity electric arc furnace facility, and a 60,000-t/yr-capacity beam rolling mill adjacent to its iron-pellet plant (Business Wire, 2007; Metal Bulletin, 2007; United Stainless Steel Co. B.S.C., 2007).

### Mineral Fuels

**Natural Gas and Petroleum.**—Domestic industrial demand for natural gas led Bahrain Petroleum to conduct an evaluation of domestic and foreign sources of supply. The possibility of importing natural gas from Iran and Qatar was discussed, although Qatar's 2006 moratorium on additional development of the gas reservoirs of the North Field and Qatar's preference for using its output domestically rather than exporting it limited Bahrain's potential for obtaining gas imports from Qatar. In 2007, Bahrain Petroleum requested proposals to redevelop the Bahrain Field in order to double current (2007) natural gas and crude oil output, and requested bids for the right to explore offshore acreage surrounding the country (Middle East Economic Digest, 2006, 2007, 2008).

In 2007, Bahrain Petroleum's refinery at Sitra commissioned the low-sulfur diesel-production module, which resulted in the production of diesel fuel with a sulfur content of 10 parts per million (ppm) compared with the previous diesel product that had an average sulfur content of 6,500 ppm. Adeem Investment Co. of Kuwait announced that it was considering Bahrain as the site for a 200,000- to 250,000-barrel-per-day-capacity crude oil refinery (Bahrain Petroleum Co., B.S.C. (Closed), 2007, p. 2; Gulf Daily News, 2007).

<sup>1</sup>Where necessary, values have been converted from Bahraini dinars (BhD) to U.S. dollars (US\$) at the rate of BhD0.376=US\$1.00.

## Outlook

Despite the Government's decades-old diversification into industrial sectors other than natural gas and oil, the hydrocarbon sector remains a significant segment of the country's economy and provides the majority of Government revenue. Domestic demand for natural gas was projected to increase faster than projected supply; the projected availability of natural gas is adversely affecting the projected availability of power for the industrial sector. Increased domestic natural gas and petroleum output or a secure supply of imported natural gas would allow proposed industrial expansion in Bahrain to proceed.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2003	2004	2005	2006 <sup>e</sup>	2007 <sup>e</sup>
Aluminum, smelter output, primary metal	531,991	531,626	750,710	872,388 <sup>3</sup>	865,048 <sup>3</sup>
Cement	129,256	153,483	191,400	190,000 <sup>r</sup>	190,000
Gas, natural:					
Gross million cubic meters	12,305	12,130	13,320	13,817 <sup>3</sup>	14,376 <sup>3</sup>
Dry do.	9,622	9,194	10,278	10,700	11,100
Methanol	370,008	398,406	375,609	406,600 <sup>r,3</sup>	371,000 <sup>3</sup>
Natural gas plant liquids:					
Propane thousand 42-gallon barrels	1,021	1,032	1,065	1,010 <sup>r,3</sup>	944 <sup>3</sup>
Butane do.	922	981	1,015	970 <sup>r,3</sup>	896 <sup>3</sup>
Naphtha do.	1,647	1,786	1,783	1,725 <sup>r,3</sup>	1,663 <sup>3</sup>
Nitrogen, N content of ammonia	311,900	311,300	329,745	370,393 <sup>r,3</sup>	343,185 <sup>3</sup>
Petroleum:					
Crude <sup>4</sup> thousand 42-gallon barrels	13,720	13,647	13,348	13,085 <sup>3</sup>	12,552 <sup>3</sup>
Refinery products:					
Liquefied petroleum gas do.	350 <sup>e</sup>	425	452	400	400
Gasoline do.	7,000 <sup>e</sup>	6,439	7,309	7,200	7,300
Jet fuel do.	16,000 <sup>e</sup>	17,268	19,956	19,800	20,000
Kerosene do.	5,000 <sup>e</sup>	2,436	1,101	1,000	1,000
Distillate fuel oil do.	20,000	18,210	19,278	19,000	20,000
Residual fuel oil <sup>e</sup> do.	29,000	28,900	29,000	28,500	29,000
Other <sup>e</sup> do.	15,000	19,000	20,600	20,300	20,200
Total do.	92,350	92,669	97,716	96,217 <sup>3</sup>	97,903 <sup>3</sup>
Sulfur	60,455	71,258	71,963	70,000	72,000

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

<sup>1</sup>Table includes data available through November 4, 2008.

<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. Aggregate, sand, and rock also are produced, but available information is inadequate to make estimates of output.

<sup>3</sup>Reported.

<sup>4</sup>Does not include production from the Abu Saafa Field.

TABLE 2  
BAHRAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
<b>Aluminum:</b>				
<b>Metal:</b>				
Primary and secondary	Aluminium Bahrain B.S.C. (Alba) (Bahrain Mumtalakat Holding Co., 77%; SABIC Industrial Investments, 20%; Breton Investments, 3%)	Smelter at Sitra	850,000 <sup>1</sup>	
Secondary	Bahrain Recycling Plant (private, 100%)	Dross and scrap remelt facilities at Askar	NA	
Rolled products	Gulf Aluminium Rolling Mill Co. B.S.C. (Closed) (Bahrain Mumtalakat Holding Co., 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	165,000	
Do.	Midal Cables Ltd. (Intersteel W.L.L., 50%, and Saudi Cable Co., 50%)	Rolling mill at Manama	120,000	
Cement	Arabian Gulf Cement Co. W.L.L. [Star Cement Co. (LLC), 100%]	Clinker grinding mill at Hidd	450,000	
Do.	Falcon Cement Co.	Hafeera	1,000,000 <sup>2</sup>	
<b>Iron and steel:</b>				
Iron ore, pellets	Gulf Industrial Investment Co. E.C. (GIIC) (Gulf Investment Corp., 50%; Qatar Iron and Steel Co., 25%; M.A. Al-Kharafi & Sons, 10%; National Industries Group, 10%; Kuwait Foundry Co., 5%)	Pellet plant at Hidd	4,000,000	
Steel, stainless, rolled	United Stainless Steel Co. B.S.C.	Hidd	90,000	
Methanol	Gulf Petrochemical Industries Co. B.S.C. (National Oil and Gas Authority, 33.3%; Petrochemical Industries Co., 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, Awali	13,900
<b>Liquids:</b>				
Butane	thousand 42-gallon barrels	Bahrain National Gas Co. B.S.C. (National Oil and Gas Authority, 75%; Arab Petroleum Investment Corp., 12.5%; Caltex Bahrain, 12.5%)	Natural gas plant at Awali	1,100
Naphtha	do.	do.	do.	1,020
Propane	do.	do.	do.	1,800
<b>Nitrogen:</b>				
Ammonia	Gulf Petrochemical Industries Co. B.S.C. (National Oil and Gas Authority, 33.3%; Petrochemical Industries Co., 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. (Alba) (Bahrain Mumtalakat Holding Co., 77%; SABIC Industrial Investments, 20%; Breton Investments, 3%)	do.	600,000	
Crude	thousand 42-gallon barrels	Saudi Arabia Oil Co.	Abu Saafa Field, offshore	110,000 <sup>3</sup>
Do.	do.	Bahrain Petroleum Co. B.S.C. (Closed) (National Oil and Gas Authority, 100%)	Bahrain Field, Awali	13,800
Refined products	do.	do.	Sitra	95,600 <sup>1</sup>
Sulfur	do.	do.	do.	72,000

Do., do. Ditto. NA Not available.

<sup>1</sup>Actual annual output regularly exceeds the facility's nominal production capacity.

<sup>2</sup>Under construction.

<sup>3</sup>Production from the field is pumped to Bahrain and subsequently refined and marketed by Bahrain Petroleum Co.

