



# 2008 Minerals Yearbook

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## QATAR

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# THE MINERAL INDUSTRY OF QATAR

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In 2008, the State of Qatar was a significant producer of ammonia, crude oil, helium, liquefied natural gas (LNG), and urea. Qatar was the world's leading exporter of LNG in 2008 and the second ranked producer of helium after the United States, accounting for 7.4% of the world's total supply of helium. Qatar was the eighth ranked producer of natural gas and accounted for 2.5% of the world's output. Qatar contributed 1% of the world's crude oil production and 1.3% of the world's ammonia production. The country's gas reserves at the end of 2008 were estimated to be 25 trillion cubic meters, which composed 14% of the world's reserves, and were smaller in volume only than those of, in order of reserve volume, Russia and Iran. As of yearend 2008, Qatar's crude oil reserves were 15.2 billion barrels, or 1.3% of the world's total reserves. Qatar produced crude steel, refined petroleum products, semimanufactured billets and bars, and urea fertilizer (Apodaca, 2009; BP p.l.c., 2009, p. 22, 24; Organization of Arab Petroleum Exporting Countries, 2009, p. 10, 13, 20; Pacheco, 2009).

## Minerals in the National Economy

Qatar's economy continued its robust growth in 2008 and achieved an annual growth rate of 40.9% at current prices compared with 25.5% in 2007. The economy maintained an average growth of 33.7% per year in the 5-year period of 2004–08. Hydrocarbons accounted for about 61% of the gross domestic product (GDP) at current prices. In 2008, the hydrocarbon sector increased in value by 51.6% and the nonhydrocarbon sector, which accounted for 39% of the GDP, increased by 26.9% compared with the value in 2007. The manufacturing sector, which included the production of cement, fertilizer, refined petroleum products, and steel, grew by 32.4% in 2008 and accounted for about 7% of the GDP (Qatar National Bank S.A.Q., 2009, p. 10).

In 2008, Qatar's exports of goods were valued at \$56.6 billion<sup>1</sup> compared with \$42.0 billion in 2007. Natural gas liquids exports accounted for 41% of total exports; crude oil exports, 39%; and other exports, which included ammonia, helium, methanol, steel, sulfur, and urea, 19%. The increase in the value of exports was attributable to the increased volume of crude oil and natural gas exports and to higher world crude oil prices, which, for Qatar, averaged \$95.20 per barrel in 2008 compared with \$70.00 per barrel in 2007. In 2008, Qatar's total natural gas exports were about 56.7 billion cubic meters compared with 45.6 billion cubic meters in 2007. LNG exports were about 33.8 billion cubic meters in 2008 compared with 30.4 billion cubic meters in 2007, which was an increase of about 11%. The major importers of Qatari LNG were the Republic of Korea, which received about 28%; Japan, 23%; and Spain, 9%. Urea fertilizer exports accounted for 3% of

total exports; iron and steel products, 1%; and other mineral commodities, such as ammonia and helium, 0.6% (Qatar Central Bank, 2009, p. 10; Qatar National Bank S.A.Q., 2009, p. 10, 34).

## Production

There were notable increases in the production of mineral commodities in 2008 compared with production levels in 2007. These increases included helium, 76%; cement, 46%; direct-reduced iron (DRI), 26%; crude steel and dry gas, 22% each; liquefied natural gas, 11%; methanol, 9%; sulfur, 4%; and crude oil, 2% (table 1).

## Structure of the Mineral Industry

State-owned Qatar Petroleum was the Government agency responsible for managing the country's gas, fertilizer, oil, and petrochemical industries and petroleum refineries through its subsidiaries and joint ventures. Qatar Petroleum produced LNG from the North Field as part of several production-sharing agreements with international oil companies (IOCs) to operate Qatargas and Rasgas projects. These projects were known as Qatar Liquefied Natural Gas Co. Ltd. 1; Qatar Liquefied Natural Gas Co. Ltd. 2; Qatar Liquefied Natural Gas Co. Ltd. 3; Qatar Liquefied Natural Gas Co. Ltd. 4; Ras Laffan Liquefied Natural Gas Co. Ltd.; Ras Laffan Liquefied Natural Gas Co. Ltd. II; and Ras Laffan Liquefied Natural Gas Co. Ltd. III. Qatar Petroleum held a majority interest in Industries Qatar Q.S.C., which in turn held a majority interest in Qatar Fertilizer Co. S.A.Q (Qafco), Qatar Fuel Additives Co. Ltd. Q.S.C (Qafac), Qatar Petrochemical Co. (Qapco), and Qatar Steel Co. Q.S.C. (table 2). Qatar Petroleum International was a subsidiary of Qatar Petroleum, which administered Qatar Petroleum's investments in LNG regasification terminals in Italy, the United Kingdom, and the United States (Qatar Petroleum, 2009, p. 11).

## Commodity Review

### Metals

**Aluminum.**—Qatar Aluminium Ltd. (Qatalum) moved forward with the construction of a \$5.6 billion 585,000-metric-ton-per-year (t/yr)-capacity smelter, which began in 2007 and continued throughout 2008. First commissioning was expected by yearend 2009, and full production was scheduled for 2010. Qatalum was a 50-50 joint venture of Qatar Petroleum and Norsk Hydro A.S.A of Norway. Qatar Petroleum agreed to provide the gas supply and plant site and Norsk Hydro would contribute its technology, metal marketing experience, and project management expertise. The plant, which would have its own 1,370-megawatt powerplant, had a capacity expansion option to 1.2 million metric tons per year (Mt/yr) included in its initial design (Norsk Hydro ASA, 2008).

<sup>1</sup>Where necessary, 2008 values have been converted from Qatari riyals (QR) to U.S. dollars (US\$) at the rate of QR3.640 = US\$1.00.

**Iron and Steel.**—Qatar Steel was the sole producer of steel in Qatar in 2008. In addition to its production and processing facility at Mesaieed, Qatar Steel operated a steel bar and coil processing plant in Dubai, United Arab Emirates. The company had substantial equity interest in Gulf Industrial Investment Co. and United Stainless Steel Co. (both of Bahrain), as well as Qatar Metals Coating Co. W.L.L. In 2008, Qatar Steel became the fourth ranked producer of steel in the Middle East as several of its expansion projects were completed and the new units were put into operation. Qatar Steel produced 1.6 million metric tons (Mt) of hot-briquetted iron (HBI) and DRI from its two-module plant, 1.4 Mt of steel billets, 1.2 Mt of reinforced steel bars, and 102,000 metric tons (t) of coils that were produced in the Qatar Steel facility in Dubai. The company's total sales in 2008 were about 1.9 Mt in volume, 87% of which was bars; 9%, DRI and HBI; and 4%, billets. The volume of exports included 81,121 t of DRI, 149,666 t of HBI, 54,000 t of crude iron oxide powder, and 40,000 t of processed iron ore powder.

Qatar Steel moved forward with its expansion plan to increase its crude steel production capacity to 4 Mt/yr in 5 years. In 2008, the company conducted feasibility studies for growth plans, canceled its 15% stake in the Guleb El-Auj mining project in Mauritania because of a disagreement with Sphere Investments Ltd. of Australia concerning ownership interest, and continued its search for potential joint-venture projects with major iron ore suppliers to guarantee continuous feed of iron ore from production mines around the world to processing plants in Qatar (Qatar Steel Co., Q.S.C., 2009, p. 10-15).

### **Industrial Minerals**

**Cement.**—The downturn of the global economy appeared to have little or no effect on Qatar's cement market as the building and construction sector grew by 24% in 2008. In 2008, the volume of cement production and sales in Qatar was more than 5 Mt, which was a 24% increase compared with that of 2007, which in turn was an increase of 23% compared with that of 2006. Qatar National Cement moved forward with its expansion plan to add a new 1.5-Mt/yr-capacity production line, which was expected to be completed in early 2009 (Gulf Times, 2009).

**Nitrogen.**—In April 2008, Qafco officially started its fifth phase (Qafco V) expansion project at the Mesaieed complex. The Qafco V project was expected to be completed in 2010, and it would increase ammonia output to 3.8 Mt/yr and urea output to 4.3 Mt/yr from 2.3 Mt/yr and 3.0 Mt/yr, respectively. Qafco had plans for a sixth phase expansion that would produce 3.1 Mt/yr of granular urea. The Qafco VI expansion was expected to be completed by 2015. In 2008, Qatar's ammonia exports of 451,000 t were received by India (46%), Jordan (29%), the United States (8%), China (7%), and others (4%). The destinations of Qatar's exports of urea, which amounted to 3.1 Mt in 2008, were the United States (17%), Thailand (15%), India (12%), South Africa (10%), and others (12%) (Qatar Fertilizer Co. S.A.Q., 2008, p. 10, 14; Qatar National Bank S.A.Q., 2009, p. 25).

### **Mineral Fuels and Related Materials**

**Helium.**—Most of Qatar's helium resources were located in the offshore North Field. Qatar accounted for about 20% of the world's helium resources in 2008. Qatargas increased helium output by continuing to improve of the helium recovery unit at Ras Laffan, which started production in 2005 (Pacheco, 2009).

**Natural Gas.**—In November 2008, Qatar was chosen to host the Forum of Gas Exporting Countries, which includes 12 of the world's largest gas-exporting countries (Rigzone.com, 2008). The discovery of the North Field in 1971, which continues to be the largest nonassociated gasfield in the world, was a major transformation point for Qatar. North Field has an area of about 6,000 square kilometers and holds gas reserves that are equivalent to 162 billion barrels (Gbbbl) of oil, or about 14% of the world's gas reserves, and could support gas production for 200 years at current rates of extraction. Qatar Petroleum, through its subsidiaries and joint-venture partners, had been undertaking several gas production, transportation, and distribution projects, including two principle LNG projects—Qatargas and Rasgas. The Qatargas and Rasgas ventures signed several sales and purchase agreements with companies in Belgium, India, Italy, Japan, the Republic of Korea, Spain, the United Kingdom, and the United States to export 85.5 billion cubic meters per year of LNG by the year 2012 using dedicated LNG tankers owned by Qatar Gas Transport Co. (Nakilat). Nakilat, which was established in 2005, had 28 LNG tankers and 3 liquefied petroleum gas (LPG) carriers by yearend 2008 (Qatar National Bank S.A.Q., 2009, p. 18-22; Organization of Arab Petroleum Exporting Countries, 2009, p. 77).

Dolphin Energy Ltd. started natural gas production and distribution through a 400-kilometer (km) undersea pipeline from the North Field to the receiving terminals of Taweelah in Abu Dhabi and Jebel Ali in Dubai, United Arab Emirates, in 2007. The company achieved the targeted production rate of 56.6 million cubic meters per day of natural gas in February 2008. Dolphin awarded a \$212 million engineering and production contract to Qatar Engineering and Construction Co. to double the volume of the low-sulfur condensate storage facility located in Ras Laffan (Dolphin Energy Ltd., 2008).

Gas-to-liquids (GTL) projects, which aim to make natural gas a portable global commodity, continued to receive the Government's support. In November 2008, Oryx GTL, which was a joint venture between Qatar Petroleum and Sasol Ltd. of South Africa, was established to convert natural gas to diesel, naphtha, and LPG. Oryx GTL announced that it would achieve the 34,000-barrel-per-day (bbl/d) production target within 1 year. The company began production in 2007 but suffered technical difficulties that caused an interruption of production at the beginning of 2008. The Pearl GTL project, which was the world's largest GTL plant in terms of output, was a joint-development project of Qatar Petroleum and Royal Dutch Shell plc to use the Shell Middle Distillate Synthesis technology. Construction work at Pearl GTL continued at a fast pace in 2008. The cost of the project, which employed more than 40,000 workers at Ras Laffan, exceeded \$15 billion, or more than 250% of the \$6 billion initial cost estimate of 2004. The production capacity for GTL, including low-sulfur diesel and kerosene,

base oil, naphtha, and paraffin, was expected to be 70,000-bbl/d in the first phase in 2010 (Petroleum Economist, 2008; Royal Dutch Shell plc, 2009).

The Barzan gas project, which was a joint venture of Qatar Petroleum (90% interest) and Exxon Mobil Corp. of the United States (10%), was launched in 2007 to produce about 40 million cubic meters per day of gas from the North Field for domestic use. Construction of the project in 2008 was delayed because of the soaring construction costs.

**Petroleum.**—The Government's policy regarding crude oil was to enhance the country's reserves and discover new reserves. Based on the production levels in the past 5 years, which averaged 801,000 bbl/d, Qatar expected that its crude oil reserves would last 89 years. Thus, Qatar Petroleum planned to increase oil production to 1,055,000 bbl/d by yearend 2010 (Qatar National Bank S.A.Q., 2009, p. 14).

In 2008, Qatar Petroleum produced 41% of Qatar's total oil production by operating the onshore Dukhan oilfield and the Bul Hanine and the Maydan Mahzam offshore fields; the remaining 59% was produced by the IOCs. Qatar Petroleum had signed several exploration, development, and production-sharing agreements with IOCs, including with Occidental Petroleum Corp. of the United States, to increase production from the Idd Al Shargi offshore field. Occidental also operated the Al Rayyan offshore field. Maersk Oil of Denmark and Qatar Petroleum worked jointly on developing the Block 5 offshore field, which is located northeast of the Al Shaheen field. The field produced 330,000 bbl/d and was the highest yielding oilfield in Qatar in 2008. Total Fina Elf Qatar S.A. operated the Al Khalij field (the Block 6 offshore field) under a development and production-sharing agreement with Qatar Petroleum. Qatar Petroleum Development Co Ltd. of Japan operated the Al Karkara offshore field. In 2008, Wintershall A.G. of Germany signed an exploration and production-sharing agreement with Qatar Petroleum to explore for oil in Block 14 and Block 4 North (the Khuff), and Occidental Petroleum was awarded Block 4 (Qatar National Bank S.A.Q., 2009, p. 15-16; Qatar Petroleum, 2009, p. 11).

Construction of the new Ras Laffan Condensate Refinery continued in 2008, and the project was expected to be completed during the third quarter of 2009. The 146,000-bbl/d-capacity refinery was expected to cost \$800 million. Laffan Refinery Co. Ltd. was responsible for the operation of the new refinery. The Laffan refinery was owned 51% by Qatar Petroleum; 10% each by Cosmo Oil Co. of Japan, ExxonMobil, Idemitsu Kosan Co. Ltd. of Japan and Total; and 4.5% each by Japanese companies Mitsui and Co. Ltd. and Marubeni Corp. In 2008, Qatar's refining capacity at the Mesaieed Industrial City was 200,000 bbl/d. Other projects, such as the Al Shaheen refinery and the Mesaieed aromatic plant, were postponed to take advantage of the reduction of construction prices caused by the global economic downturn (U.S. Energy Information Administration, 2009; Zawya, 2009).

## Outlook

The gas and crude oil resources of Qatar are estimated to support 200 years of planned gas production and 89 years of

crude oil production, and the country is striving to increase its exports of LNG to 85.5 billion cubic meters in 2012. LNG exports in 2009 are expected to increase to 48.9 billion cubic meters in 2009, up from 33.8 billion cubic meters in 2008. Output of the fertilizer and steel industries is likely to increase because of expansion projects currently under construction. The Government is planning to invest more than \$40 billion in the development of crude oil, GTL, natural gas, petrochemical, and refining projects and in the construction of industrial zones during the 5-year period of 2009–13. Although several mineral industry projects in Qatar had been cancelled or delayed because of skyrocketing costs for construction, engineering services, labor, and materials, all natural gas projects that had been under construction were either completed or were in the process of being completed, including the building of LNG tankers and LNG terminals in Italy, the United Kingdom, and the United States.

## References Cited

- Apodaca, L.E., 2009, Nitrogen (fixed)—Ammonia: U.S. Geological Survey Mineral Commodity Summaries 2009, p. 114-115.
- BP p.l.c., 2009, BP statistical review of world energy: London, United Kingdom, BP p.l.c., June, 45 p.
- Dolphin Energy Ltd., 2008, The story—Key elements in Dolphin's progress: Dolphin Energy Ltd. press release, April, 7 p.
- Gulf Times, 2009, Qatar cement output—Sales grow 24% in 2008: Gulf Times, January 28. (Accessed September 16, 2009, at [http://www.gulf-times.com/site/topics/article.asp?cu\\_no=2&item\\_no=269282&version=1&template\\_id=48&parent\\_id=28](http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=269282&version=1&template_id=48&parent_id=28).)
- Norsk Hydro ASA, 2008, Qatalum on target: Oslo, Norway, Norsk Hydro ASA press release, November 24. (Accessed October 16, 2009, at <http://www.hydro.com/templates/NewsArticle.aspx?id=21640&epslanguage=EN>.)
- Organization of Arab Petroleum Exporting Countries, 2009, Annual statistical report 2009: Safat, Kuwait, Organization of Arab Petroleum Exporting Countries, 93 p.
- Pacheco, Norbert, 2009, Helium: U.S. Geological Survey Mineral Commodity Summaries 2009, p. 74-75.
- Petroleum Economist, 2008: News in brief—Qatar: Petroleum Economist, v. 75, no. 11, November, p. 36.
- Qatar Central Bank, 2009: Quarterly statistical bulletin—March: Doha, Qatar, Qatar Central Bank, 76 p.
- Qatar Fertilizer Co. S.A.Q., 2008: Annual report 2008: Mesaieed Industrial City, Qatar, Qatar Fertilizer Co. S.A.Q., 40 p.
- Qatar National Bank S.A.Q., 2009, Qatar economic review—October: Doha, Qatar, Qatar National Bank S.A.Q., 56 p.
- Qatar Petroleum, 2009, Annual report 2008: Doha, Qatar, Qatar Petroleum, 56 p.
- Qatar Steel Co. Q.S.C., 2009, Annual performance report 2008: Mesaieed Industrial City, Qatar, Qatar Steel Co. Q.S.C., 71 p.
- Rigzone.com, 2008, Gas states agree—Charter forum of gas exporting countries: Rigzone.com, December 23. (Accessed December 26, 2008, at [http://www.rigzone.com/news/article.asp?a\\_id=71046](http://www.rigzone.com/news/article.asp?a_id=71046).)
- Royal Dutch Shell plc, 2009, Pearl GTL—Building the world's largest gas to liquids plant: Royal Dutch Shell plc news release, May 2. (Accessed October 26, 2009, at [http://www.shell.com/home/content/media/news\\_and\\_library/press\\_releases/2009/pearl\\_qatar\\_update\\_05022009.html](http://www.shell.com/home/content/media/news_and_library/press_releases/2009/pearl_qatar_update_05022009.html).)
- U.S. Energy Information Administration, 2009, Qatar: U.S. Energy Information Administration country analysis brief, December. (Accessed February 10, 2010, at <http://www.eia.doe.gov/emeu/cabs/Qatar/Oil.html>.)
- Zawya, 2009, Delay of Barzan project due to high cost—Attiyah: ABQ Zawya Ltd., April 7. (Accessed November 12, 2009, at <http://www.zawya.com/printstory.cfm?storyid=ZAWYA20090407031052&l=031000090407>.)

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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2004	2005	2006	2007	2008
<b>METALS</b>					
Iron and steel:					
Direct-reduced iron	830	815	877	1,296	1,638
Steel, crude	1,089	1,057	1,003 <sup>r</sup>	1,175	1,434
Semimanufactures:					
Billet, cast	1,050	1,020	1,013	1,147	1,405
Bars, rolled	782	791	730	958	1,150
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic <sup>c</sup>	1,400	1,400	1,568 <sup>3</sup>	2,400 <sup>r,3</sup>	3,500
Gypsum	NA	NA	NA	NA	135
Nitrogen:					
N content of ammonia	1,428	1,754	1,784	1,800	1,797
N content of urea	1,040	1,388	1,356	1,381	1,396
Stone, limestone <sup>c</sup>	1,000	1,000	1,100	1,100	1,100
Sulfur <sup>c</sup>	360 <sup>r</sup>	360 <sup>r</sup>	400 <sup>r</sup>	500 <sup>r</sup>	600
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Gas, natural:					
Gross	48,470 <sup>r</sup>	57,600 <sup>r</sup>	64,200 <sup>r</sup>	77,200 <sup>r</sup>	90,887
Dry	39,170 <sup>r</sup>	45,800 <sup>r</sup>	50,700 <sup>r</sup>	63,200 <sup>r</sup>	76,981
Helium	--	200	4,400	7,100 <sup>r</sup>	12,500
Methanol	840	900	903	884	960
Natural gas liquids	65,700 <sup>r</sup>	76,650 <sup>r</sup>	73,000 <sup>r</sup>	76,650 <sup>r</sup>	80,300
Petroleum:					
Crude	277,000 <sup>r</sup>	284,000 <sup>r</sup>	296,000 <sup>r</sup>	299,000	305,500
Refinery products:					
Liquified petroleum gas	1,387 <sup>r</sup>	26,024 <sup>r</sup>	40,077 <sup>r</sup>	43,508 <sup>r</sup>	47,888
Gasoline	14,673 <sup>r</sup>	14,235 <sup>r</sup>	14,856 <sup>r</sup>	17,702 <sup>r</sup>	17,228
Kerosene and jet fuel	7,592 <sup>r</sup>	7,774 <sup>r</sup>	9,198 <sup>r</sup>	10,877 <sup>r</sup>	9,417
Distillate fuel oil	7,300 <sup>r</sup>	7,410 <sup>r</sup>	7,957 <sup>r</sup>	9,088 <sup>r</sup>	10,877
Residual fuel oil	4,636 <sup>r</sup>	2,518 <sup>r</sup>	5,037 <sup>r</sup>	3,468 <sup>r</sup>	2,920
Other	7,044 <sup>r</sup>	7,995 <sup>r</sup>	7,445 <sup>r</sup>	9,271 <sup>r</sup>	8,103
Total	42,632 <sup>r</sup>	65,956 <sup>r</sup>	84,570 <sup>r</sup>	93,914 <sup>r</sup>	96,433

<sup>c</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. -- Zero.

<sup>1</sup>Table includes data available through October 31, 2009.

<sup>2</sup>In addition to the commodities listed, clays, dolomite, gypsum, lime, sand and gravel, and shale are produced, but available information is inadequate to make estimates of output.

<sup>3</sup>Reported figure.

TABLE 2  
QATAR: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum		Qatar Aluminium Ltd. (Qatalum) (Qatar Petroleum, 50%, and Hydro ASA, 50%)	Mesaieed	585 <sup>1</sup>
Cement:				
Portland		Qatar National Cement Co. (Government, 43%, and private Qatari investors, 57%)	Kilns and mills at Umm Bab	2,500
Do.		Al-Jabor Cement Industries Co.	Clinker grinding mill at Mesaieed	165
White		Qatari Saudi Company for Industrial Transformation	do.	165
Gypsum		Qatari Saudi Company for Gypsum (Qatar Industrial Manufacturing Co., 33.375%; Qatar National Cement Co., 33.250%; National Gypsum Co., 33.375%)	Salwa Industrial Area	135
Helium		Joint venture of Qatar Liquefied Gas Co. Ltd., Ras Laffan Liquefied Natural Gas Co. Ltd., and Ras Laffan Liquefied Natural Gas Co. Ltd. (II)	Ras Laffan	12,500
Iron and steel:				
Iron, direct reduced		Qatar Steel Co. Q.S.C. (Industries Qatar Q.S.C., 100%)	Mesaieed	2,400
Steel, crude		do.	Plant at Mesaieed	1,470
Steel, rolled		do.	Rolling mill at Mesaieed	1,440
Lime		Qatar National Cement Co. (Government, 43%, and private Qatari investors, 57%)	Kilns at Umm Bab	28
Methanol		Qatar Fuel Additives Co. Ltd. Q.S.C. (Qafac) (Industries Qatar Q.S.C., 50%; OPIC Netherlands Antilles N.V., 20%; Lee Chang Yung Chemical Industry Corp., 15%; International Octane Ltd., 15%)	Mesaieed	913
Natural gas:				
Extracted	billion cubic meters	Qatar Liquefied Gas Co. Ltd. (Qatar Petroleum, 65%; Total S.A., 20%; ExxonMobil Qatargas Inc., 10%; Mitsui & Co., Ltd., 2.5%; Marubeni Corp., 2.5%)	North Field, offshore	20
Do.	do.	Ras Laffan Liquefied Natural Gas Co. Ltd. (I) (Qatar Petroleum, 63%; ExxonMobil Rasgas, Inc., 25%; Korea Gas Corp., 5%; Itochu Corp., 4%; LNG Japan Corp., 3%)	do.	11
Do.	do.	Qatar Petroleum (Government, 100%)	do.	1
Liquefied		Qatar Liquefied Gas Co. Ltd. 1 (Qatar Petroleum, 65%; Total S.A., 10%; ExxonMobil Qatargas Inc., 10%; Mitsui & Co., Ltd., 7.5%; Marubeni Corp., 7.5%)	Three trains at Ras Laffan	10,200
Do.		Qatar Liquefied Gas Co. Ltd. 2 (Qatar Petroleum, 70%, and ExxonMobil Qatargas Inc., 30%)	Train 4 at Ras Laffan	7,500 <sup>1</sup>
Do.		Qatar Liquefied Gas Co. Ltd. 3 (Qatar Petroleum, 68.5%; ConocoPhillips, 30%; Mitsui and Co., 1.5%)	Train 5 at Ras Laffan	7,500 <sup>1</sup>
Do.		Qatar Liquefied Gas Co. Ltd. 4 (Qatar Petroleum, 70%, and Royal Dutch Shell plc, 30%)	Train 7 at Ras Laffan	7,800
Do.		Ras Laffan Liquefied Natural Gas Co. Ltd. (I) (Qatar Petroleum, 63%; ExxonMobil Rasgas, Inc., 25%; Korea Gas Corp., 5%; Itochu Corp., 4%; LNG Japan Corp., 3%)	Two trains at Ras Laffan	6,600
Do.		Ras Laffan Liquefied Natural Gas Co. Ltd. (II) (Qatar Petroleum, 70%, and ExxonMobil Rasgas, Inc., 30%)	Trains 3, 4, and 5 at Ras Laffan	14,300
Do.		Ras Laffan Liquefied Natural Gas Co. Ltd. 3 (Qatar Petroleum, 70%, and ExxonMobil Rasgas, Inc., 30%)	Trains 6 and 7 at Ras Laffan	15,600 <sup>1</sup>
Nitrogen:				
Ammonia		Qatar Fertilizer Co. S.A.Q. (Qafco) (Industries Qatar Q.S.C., 75%; Yara Nederland BV, 15%; Fertilizer Holdings AS, 10%)	QAFCO 1, Mesaieed	420
Do.		do.	QAFCO 2, Mesaieed	440
Do.		do.	QAFCO 3, Mesaieed	650
Do.		do.	QAFCO 4, Mesaieed	740

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nitrogen—Continued:				
Urea		Qatar Fertilizer Co. S.A.Q. (Qafco) (Industries Qatar Q.S.C., 75%; Yara Nederland BV, 15%; Fertilizer Holdings AS, 10%)	QAFCO 1, Mesaieed	470
Do.		do.	QAFCO 2, Mesaieed	530
Do.		do.	QAFCO 3, Mesaieed	890
Do.		do.	QAFCO 4, Mesaieed	1,300
Petroleum:				
Crude	42-gallon barrels	Maersk Oil Qatar A.S., operator <sup>2</sup>	Al Shaheen field, offshore	330,000
Do.	do.	Qatar Petroleum (Government, 100%)	Dukhan field, onshore	256,000
Do.	do.	Occidental Petroleum of Qatar Ltd., operator <sup>2</sup>	Idd Al Sharqi, North Dome and South Dome, offshore	11,3000
Do.	do.	Qatar Petroleum (Government, 100%)	Bul Hanine field, offshore	37,000
Do.	do.	Total S.A., operator <sup>2</sup>	Al Khaleej, offshore	37,500
Do.	do.	do.	Maydan Mahzam Field, offshore	36,000
Do.	do.	Bunduq Co., Ltd. operator <sup>2</sup> (BP Exploration, 33.3%; Total S.A., 33.3%; United Petroleum Development Co., 33.3%)	El Bunduq <sup>3</sup>	7,300
Do.	do.	Anadarko Petroleum Corp., 92.5%, operator <sup>2</sup>	Al Rayyan, offshore	8,600
Do.	do.	Qatar Petroleum Development Co. operator <sup>2</sup> (Cosmo Oil Co., Nissho Iwai Corp., United Petroleum Development Co.)	Al Karkara and A Structure	6,200
Refined	do.	Oryx GTL Ltd. (Qatar Petroleum, 51%, and Sasol Ltd., 49%)	Ras Laffan	12,400
Do.	do.	The Laffan Refinery Co. Ltd. (Qatar Petroleum, 51%; Cosmo Oil Co., 10%; Exxon Mobil Corp., 10%; Idemitsu Kosan Co. Ltd., 10%; Mitsui and Co., 4.5%; Marubeni Corp. 4.5%)	do.	146,000 <sup>1</sup>
Do.	do.	Qatar Petroleum (Government, 100%)	Mesaieed	200,000
Sulfur		Ras Laffan Liquefied Natural Gas Co. Ltd.	Ras Laffan	110
Do.		Qatar Petroleum (Government, 100%)	Mesaieed	95
Do.		Qatar Petrochemical Co. Ltd.	Umm Said	70
Do.		Qatar Liquefied Gas Co. Ltd.	Ras Laffan	66

Do., do. Ditto.

<sup>1</sup>Under construction.

<sup>2</sup>Operated under a development and production-sharing agreement with Qatar Petroleum.

<sup>3</sup>El Bunduq field is located on the border between Qatar and the United Arab Emirates. Royalties are shared by the Governments.