

COUNTRY ANALYSIS BRIEFS

Qatar

Last Updated: May 2007

Background

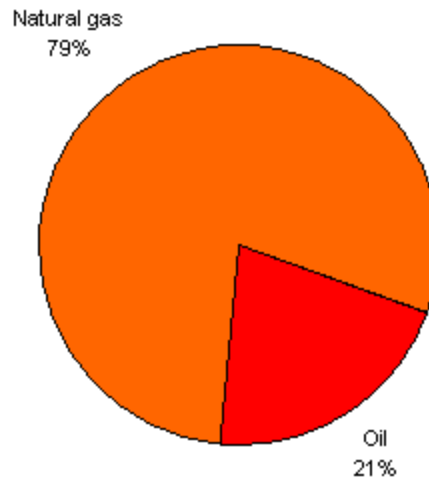
Qatar holds the world's third largest natural gas reserves and is the single largest supplier of liquefied natural gas.

Qatar is also a member of OPEC and exports considerable amounts of oil.

While Qatar is a member of the Organization of the Oil Exporting Countries (OPEC) and is a significant oil producer, the government has devoted more resources to the development of natural gas in recent years, particularly for export as liquefied natural gas (LNG). In 2006, Qatar reportedly surpassed Indonesia to become the largest exporter of LNG in the world. Together, revenues from the oil and natural gas sectors amount to 60 percent of the country's gross domestic product (GDP). Domestically, the vast majority of Qatar's total energy consumption comes from natural gas (79 percent), while the balance is supplied by oil.



Total Energy Consumption in Qatar, by Type (2004)



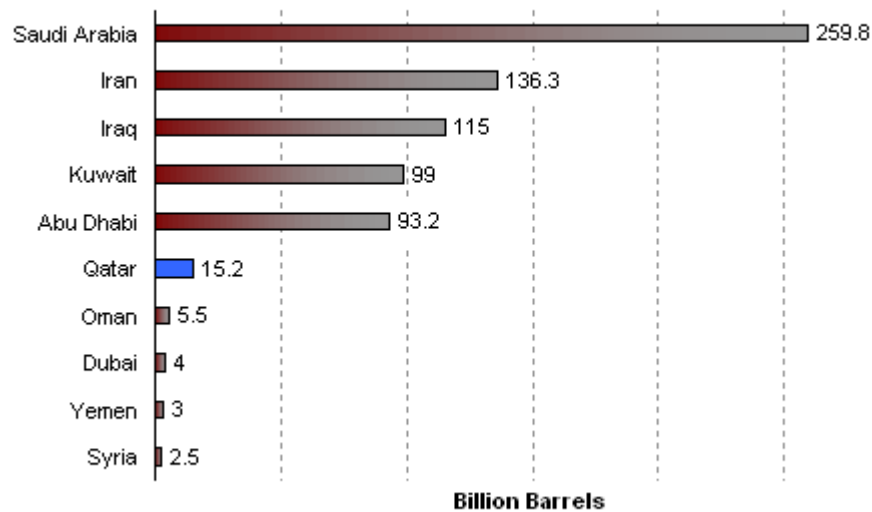
Source: EIA International Energy Annual 2004

Oil Overview

Qatar is the smallest oil producer in OPEC, though it remains an important supplier to world oil markets.

In 2006, EIA estimates that Qatar produced 1.1 million barrels per day (bbl/d) of total oil liquids, of which 815,000 bbl/d was crude oil. In 2006, Qatar's crude production and oil reserves were the lowest among OPEC member countries. In 2006, Qatar also produced an estimated 250,000 bbl/d of natural gas liquids (NGLs) and 35,000 bbl/d of condensate, each of which are exempt from the country's OPEC crude oil production quota. During 2006, Qatar consumed an estimated 99,000 bbl/d of oil, with most of the country's oil production going to exports.

Selected Middle East Proven Oil Reserves, Jan. 1, 2007



Source: Oil & Gas Journal, Jan. 1, 2007

According to *Oil & Gas Journal (OGJ)*, Qatar's proven oil reserves stood at 15.2 billion barrels as of January 2007. The onshore Dukhan field, located along the west coast of the peninsula, is the country's largest producing oil field. Qatar also has six offshore fields: Bul Hanine, Maydan Mahzam, Id al-Shargi North Dome, al-Shaheen, al-Rayyan, and al-Khalij. Despite the country's significant oil production and reserves, oil accounts for less than 15 percent of domestic energy consumption.

Sector Organization

State-owned Qatar Petroleum (QP) controls all aspects of Qatar's oil sector, including exploration, production, refining, transport, and storage. QP accounts for about half of the country's total crude oil output, and holds the rights to all petroleum resources in Qatari territories. However, QP often enlists foreign company involvement through production sharing contracts (PSCs), in which QP typically takes a majority equity share. The company has occasionally relaxed this requirement to attract greater foreign investment. QP also controls Qatar's downstream oil sector, operating the country's entire oil pipeline network and sole refinery through its wholly-owned subsidiary, National Oil Distribution Company (NODCO).

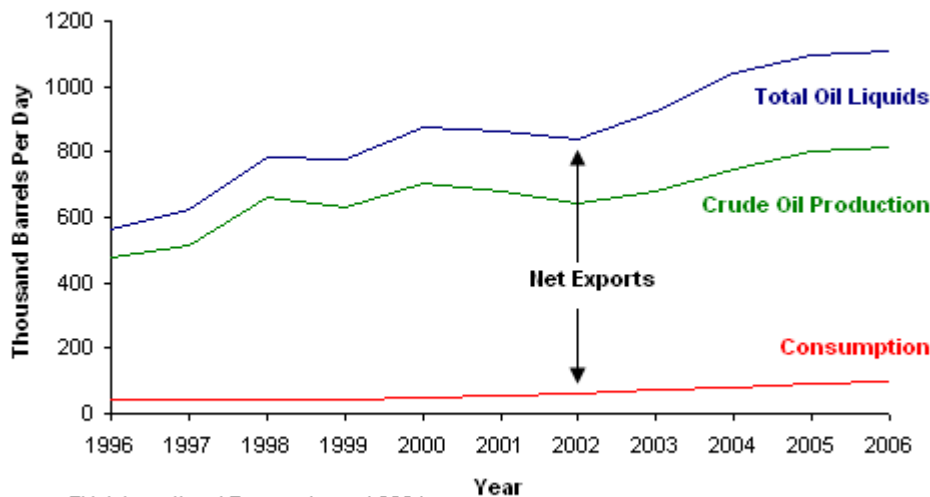
The chairman of Qatar Petroleum, Abdullah Bin Hamad Al-Attiyah, is also the head of the Ministry of Energy and Industry and, as of April 2007, the Deputy Prime Minister of Qatar. QP's operations are therefore directly linked with state planning agencies, regulatory authorities, and policymaking bodies.

Exploration and Production

QP has focused on enhanced oil recovery (EOR) projects to extend the life of its oil fields, particularly at the onshore Dukhan field, Qatar's largest oil field. QP expects to modestly boost production capacity at Dukhan from 335,000 bbl/d in 2006 to 350,000 bbl/d in 2008. QP is carrying out similar work at several of its smaller fields, including the offshore Bul Hanine and Maydam Mahzam.

Most new exploration and production (E&P) work is being carried out by international oil companies in offshore areas through Production Sharing Contracts (PSC), including ExxonMobil, Chevron, and Total. While there is substantial E&P work underway, there have not been any major oil discoveries in Qatar during the last decade. Almost all of anticipated new oil production capacity will come from Maersk Oil & Gas of Denmark, which operates the offshore Al Shaheen field. Maersk reached a field development plan agreement with QP in 2005, under which the company intends to more than double the production capacity at Al Shaheen from 240,000 bbl/d in 2006 to 525,000 bbl/d by late 2009. When completed, Qatar would have more than 1.1 million bbl/d in crude oil production capacity compared to an estimated 850,000 bbl/d in EIA's May 2007 [Short-Term Energy Outlook](#).

Qatar's Oil Production and Consumption, 1996-2006*



Source: EIA International Energy Annual 2004;
Short-Term Energy Outlook (May 2007)

*2006 is estimate

Condensate and Natural Gas Liquids

As Qatar further develops the country's large natural gas reserves, production of condensate and natural gas liquids (NGLs) will also increase. As these liquids do not fall under Qatar's OPEC quota obligations, this may be an important source of future oil production increases. EIA estimates that condensate and NGL production in 2006 together averaged 285,000 bbl/d. Some

industry sources expect that this figure could rise to 800,000 bbl/d by 2012.

Pipelines

QP operates Qatar's oil pipeline network, which is primarily focused on delivering supplies from oil fields to the country's lone refinery and export terminals. QP operates an expansive offshore pipeline network that brings crude oil from offshore oil fields to Halul Island, where oil can be processed for export. Onshore, most oil is sent to Umm Said for refining or export.

Exports

Qatar has three primary export terminals: Umm Said, Halul Island, and Ras Laffan. Ras Laffan is the newest of the three ports and is mainly used to export liquefied natural gas (see the Natural Gas Section for more information). Industry sources report that Qatar typically exports around 600,000 bbl/d of crude oil and about 20,000 bbl/d of refined petroleum products. Most of Qatar's oil exports are sent to Asian economies, with Japan as the single largest receiver (about 380,000 bbl/d of crude in 2006, according to IEA statistics).

Refining

According to *OGJ*, Qatar has 200,000 bbl/d of refining capacity at QP's Umm Said plant. QP is also building another refinery, which will have the capacity to run 146,000 bbl/d of condensate. This facility is expected to begin commercial operations in mid-2008. QP is considering a possible third refinery with a capacity of 200,000 bbl/d, although no final decisions have been made on such a project.

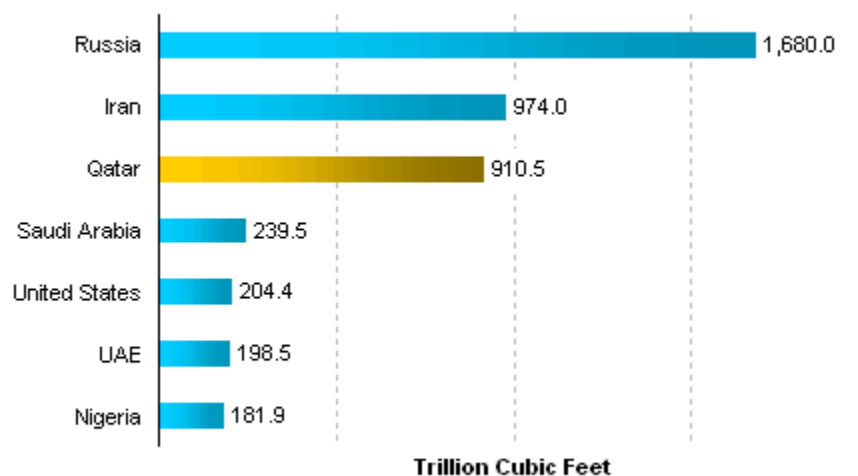
Natural Gas

Qatar's North Field holds more than 900 trillion cubic feet of natural gas reserves, the largest non-associated natural gas field in the world.

Overview

According to *OGJ*, Qatar's proven natural gas reserves stood at 910.5 trillion cubic feet (Tcf) as of January 2007, about 15 percent of total world reserves and the third-largest in the world behind Russia and Iran (see the [Russia](#) and [Iran Country Analysis Briefs](#) for more information). Most of Qatar's natural gas is located in the massive offshore North Field, which holds more than 900 Tcf of proven natural gas reserves and is the world's largest non-associated natural gas field. The North Field is a geological extension of Iran's South Pars field, which holds an additional 280 Tcf of recoverable natural gas reserves.

Top Proven Natural Gas Reserves, Jan. 1, 2007



Source: Oil & Gas Journal, Jan. 1, 2007

Qatar's natural gas production has grown significantly during the last decade. In 2005, preliminary data shows that Qatar produced 1,536 billion cubic feet (Bcf) of natural gas, or more than three times the 1995 output of 477 Bcf. Preliminary data puts Qatar's natural gas consumption at 579 Bcf in 2005.

Exports

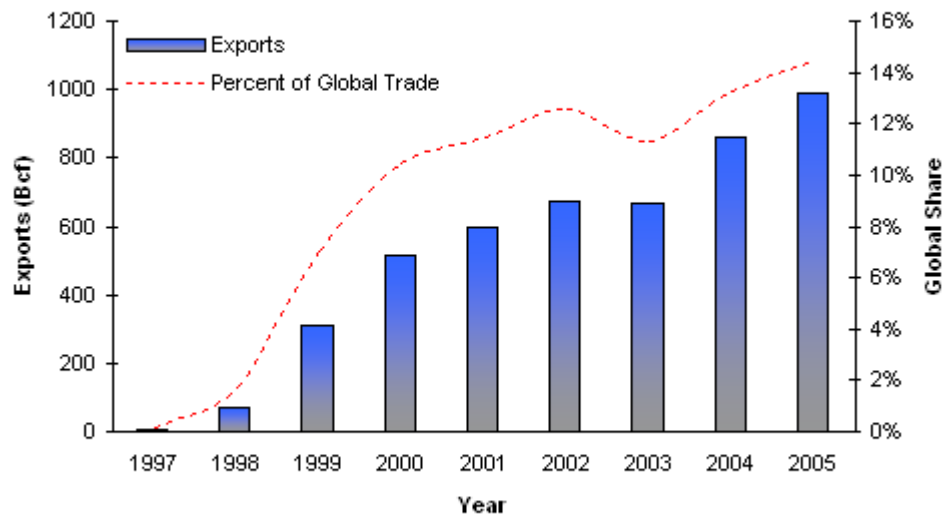
During 2005, the country exported 987 Bcf of natural gas, all of which was liquefied natural gas (LNG), making Qatar a leading world LNG supplier for the year. In the future, Qatar will also export natural gas via pipeline, as part of the Dolphin Project.

Liquefied Natural Gas

In 2006, Qatar surpassed Indonesia to become the largest natural gas exporter in the world.

In 1997, Qatar began exporting LNG when it sent small amounts (5.7 Bcf, or about 120,000 metric tons) of LNG to Spain. In 2005, Qatar exported 987 Bcf (20.1 million metric tons, or MMt) of LNG, or 14.5 percent of all globally traded LNG. Of this amount, 316 Bcf (6.5 MMt) went to Japan, 293 Bcf (6.0 MMt) to South Korea, 213 Bcf (4.4 MMt) to India, 161 Bcf (3.3 MMt) to Spain, and 3 Bcf (less than 0.1 MMt) to the United States.

Qatar's LNG Exports, 1997-2005



Source: EIA Natural Gas Monthly (Aug. 2006); IEA Natural Gas Information 2006

During 2006, industry reports suggest that Qatar surpassed Indonesia to become the world's largest LNG exporter, partly as a result of problems Indonesia faced in obtaining natural gas feedstock (see the [Indonesia Country Analysis Brief](#) for more information). In March 2007, Qatar solidified its leading role in world LNG markets when RasGas completed its fifth LNG production train, giving the country 30.7 MMt (1.5 Tcf) of annual liquefaction capacity, the most in the world. Based on existing plans, Qatar is expected to increase its LNG production capacity to 77 MMt/y (3.8 Tcf/y) by 2012 (see table below).

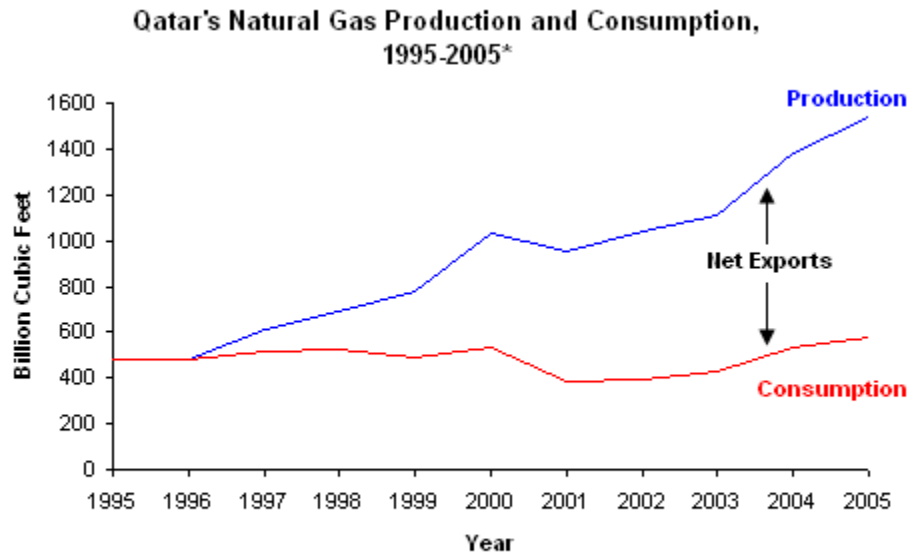
Qatar's LNG Infrastructure, May 2007			
Unit	Liquefaction Capacity	Start-up	Primary Market(s)
RasGas Facilities			
Trains 1 & 2	2 x 3.2 MMt (320 Bcf)	Aug. 1999	South Korea
Train 3	4.7 MMt (230 Bcf)	Feb. 2004	India
Train 4	4.7 MMt (230 Bcf)	Aug. 2005	Europe
Train 5	4.7 MMt (230 Bcf)	Mar. 2007	Europe & Asia
Train 6	7.8 MMt (380 Bcf)	2008	U.S.
Train 7	7.8 MMt (380 Bcf)	2009	U.S.
Qatargas Facilities			
Trains 1 - 3	3 x 3.2 MMt (468 Bcf)	Dec. 1996	Japan & Spain
Trains 4 & 5	2 x 7.8 MMt (760 Bcf)	2008	UK
Train 6	7.8 MMt (380 Bcf)	2009	US
Train 7	7.8 MMt (380 Bcf)	2010	US, Europe
Source: RasGas, Qatargas, media reports			

Dolphin Project

Qatar is part of the Dolphin Project, which aims to connect the natural gas networks of Oman, the United Arab Emirates (UAE), and Qatar with the first cross-border natural gas pipeline in the Gulf Arab region (see the [UAE](#) and [Oman Country Analysis Briefs](#) for more information). The project is being developed by Dolphin Energy, a consortium owned by Mubadala Development Company on behalf of the Abu Dhabi government (51 percent), Total (24.5 percent), and Occidental Petroleum (24.5 percent). A company spokesperson announced in early March 2007 that it had begun testing its natural gas receiving and distribution facilities in the UAE, and that it expected to begin full commercial operations in June 2007. The pipeline currently sends 400 MMcf/d of natural gas supplies from Qatar to the UAE and Oman, and Dolphin Energy expects this volume to reach 2 Bcf/d by the end of 2007. The company is also in discussions with the Qatari government to expand the sendout capacity of the pipeline to 3.2 Bcf/d, depending on the availability of additional natural gas supplies from the North Field.

Exploration and Production

Qatar plans to significantly expand natural gas production during the next five years. Qatari officials have stated that target production for 2012 is about 8.7 Tcf, or nearly six times greater than 2005 output levels. The expected increase in natural gas production will fuel the growing natural gas requirements of domestic industry, LNG export commitments, piped natural gas exports through the Dolphin pipeline, and several large-scale gas-to-liquids (GTL) projects.



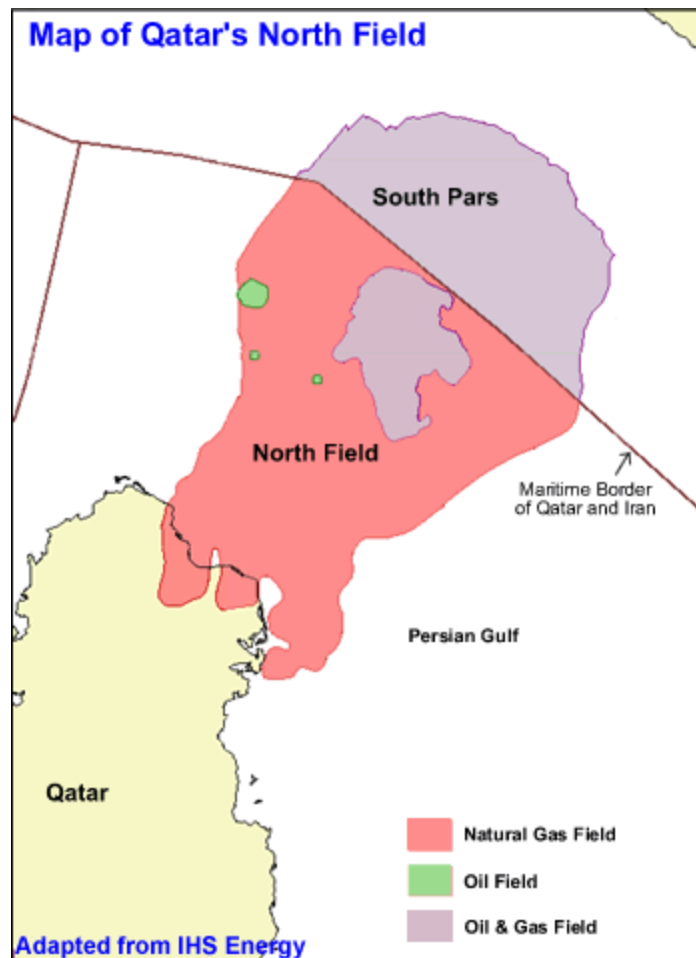
Source: EIA International Energy Annual 2004;
2005 data from CEDIGAZ

*2005 is provisional

North Field

The bulk of Qatar's expected future increases in natural gas production will come from projects related to the massive North Field. In 2005, Qatari government officials became worried that the North Field's natural gas reserves were being developed too quickly, which could reduce pressure in the field's reservoirs and possibly damage its long-term production potential. In early 2005, the government placed a moratorium on additional natural gas development projects at the North Field pending the results of a study of the field's reservoirs. This assessment is not expected to be completed until after 2009, which means that no new projects are likely to be signed before 2010. However, this freeze did not affect projects that were approved or underway before the moratorium, which are expected to add significantly to Qatar's natural gas supply in the next five years.

In November 2005, ExxonMobil started production at the Al Khaleej block in the North Field at a rate of 750 million cubic feet per day (MMcf/d). In July 2006, the company announced a \$3-billion plan to expand this output to 1.6 Bcf/d by 2009, which will be used to fuel power plants and industrial customers in Ras Laffan, the RasGas LNG project, and as feedstock at the Oryx Gas-to-Liquids (GTL) Project. ExxonMobil is the largest foreign investor in development projects at Qatar's North Field. Aside from Al Khaleej, the company is also involved in increasing natural gas supplies for the RasGas and Qatargas LNG projects, each of which will rely on significant increases in output from the North Field over the next several years (see the LNG Section below for additional details).



Gas-to-Liquids

In February 2007, ExxonMobil cancelled its planned 154,000-bbl/d Palm GTL project, which would have been the largest GTL facility in the world if completed.

Gas-to-liquids technology uses a refining process to turn natural gas into liquid fuels such as low-sulfur diesel and naphtha, among other products. GTL projects have received significant attention in Qatar over the last several years, and Qatar's government had originally set a target of developing 400,000 bbl/d of GTL capacity by 2012. However, project cancellations and delays since the North Field reserve assessment has substantially lowered this target. In February 2007, ExxonMobil announced that it had cancelled its planned Palm GTL project due to rising costs. The Palm project was originally slated to produce 154,000 bbl/d of liquids for export, although estimated costs spiraled from \$7 billion to \$15 billion according to industry estimates. The company will instead develop the Barzan Gas Project in the North Field, which is scheduled to supply 1.5 Bcf/d of natural gas to Qatar's domestic market beginning in 2012, when the Barzan field comes online.

By 2012, Qatar is likely to have 177,000 bbl/d of GTL capacity at two facilities: the Oryx GTL plant and the Pearl GTL project. Oryx GTL is a joint-venture of QP (51 percent) and Sasol-Chevron GTL (49 percent), and has the capacity to produce 34,000 bbl/d of liquid fuels. The plant was formally commissioned in June 2006, but technical problems prevented the consortium from loading the first export cargo until April 2007. The Oryx project uses about 330 MMcf/d of natural gas feedstock from the Al Khaleej field. Depending on the outcome of the North Field reservoir study, Oryx GTL may choose to expand production capacity of the plant in the future.

In February 2007, the same week that ExxonMobil decided to cancel its GTL plans, Shell held a groundbreaking ceremony for its Pearl GTL Project. The Pearl plant will be 51 percent-owned by QP, though Shell will act as the operator of the project with a 49 percent stake. The facility is expected to use 1.6 Bcf/d of natural gas feedstock to produce 140,000 bbl/d of GTL products as well as 120,000 bbl/d of associated condensate and LPG. The Pearl GTL project will be developed in phases, with 70,000 bbl/d of GTL product capacity expected by 2010 and a second phase expected in 2011. Like the Palm project, Shell's Pearl GTL initiative has experienced

significant cost escalation. Originally estimated at \$4 billion, industry sources believe the Pearl facility will now cost between \$12 and \$18 billion. The Pearl project will be the first integrated GTL operation in the world, meaning it will have upstream natural gas production integrated with the onshore conversion plant.

Sector Organization

As in the oil sector, QP plays a dominant role in Qatar’s natural gas sector. QP is a leading upstream producer of natural gas and also plays an important role in downstream projects. Most new natural gas developments in Qatar tend to be large-scale projects linked to LNG exports or the promotion of downstream industries that utilize natural gas as feedstock. Therefore, foreign company involvement has favored IOCs with the technology and experience in integrated mega-projects, including ExxonMobil, Shell, and Total.

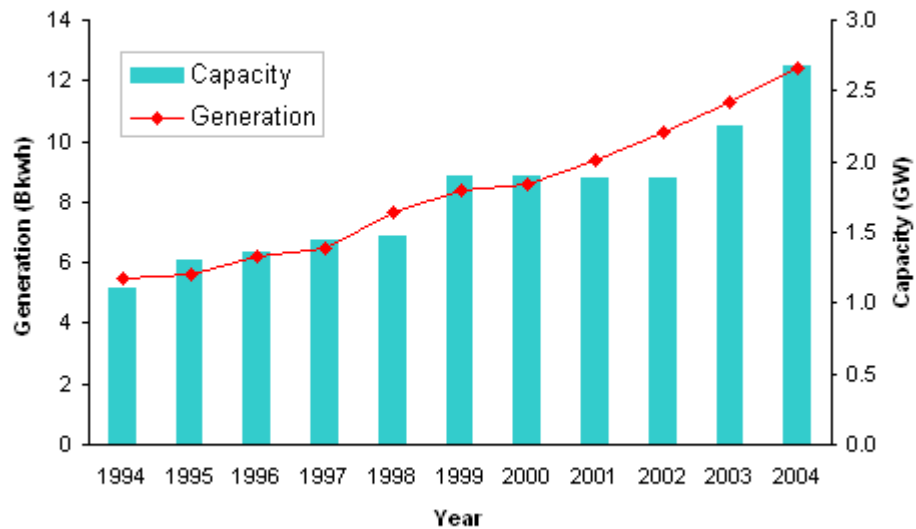
Qatar’s LNG sector is dominated by Qatar LNG Company (Qatargas) and Ras Laffan LNG Company (RasGas). RasGas is 70 percent-owned by QP and 30 percent-owned by ExxonMobil, while the Qatargas consortium includes QP, Total, ExxonMobil, Mitsui, Marubeni, ConocoPhillips, and Shell. In each case, the exact equity structure varies from project to project. The LNG companies handle all upstream to downstream natural gas transportation themselves, while the Qatar Gas Transport Company (known as “Nakilat”, which means carriers in Arabic) is responsible for shipping Qatari LNG.

Electricity

Qatar is restructuring its power sector and encouraging foreign investment to expand electricity generating capacity.

In 2004, Qatar had 2,670 megawatts (MW) of installed electric generating capacity and generated 12.4 billion kilowatthours (Bkwh) of total electricity, up 44 percent from electricity generation levels in 2000. All of Qatar’s power plants are natural gas-fired. Electricity demand in Qatar has grown rapidly in recent years, and the government expects demand to continue growing at double-digit rates.

Qatar’s Electricity Generation and Installed Capacity, 1994-2004



Source: EIA International Energy Annual 2004

Sector Organization

Electricity generation shortfalls led the Qatari government to encourage greater foreign investment through independent power projects (IPPs) and to begin restructuring of the country’s power sector. In May 2000, the Qatari government transferred assets owned by the Ministry of Electricity and Water (MEW) to the Qatar Electricity & Water Company (QEWC), a semi-public body which is 57 percent controlled by local investors and 43 percent controlled by the

government. QEWC is responsible for adding new electric generating capacity, and is working on several large-scale power projects with foreign companies such as AES and International Power. State-owned Qatar General Electricity & Water Corporation (known as 'Kahramaa') retains control of electricity transmission and distribution activities, and is the sole purchaser of electricity generated in Qatar. The government has considered plans to privatize transmission and distribution functions, but Qatari nationals currently receive free electricity and water supplies, which poses a significant barrier to complete privatization.

New Power Projects

The newest IPP is the Ras Laffan B power and water station project, which came online in late 2006. The plant has an initial capacity of 640 MW, which is expected to increase to 1,025 MW as part of a phase two expansion plan by 2008. Ras Laffan B increased Qatar's 2006 generation capacity to more than 3,500 MW, according to industry sources. The next power station expected to begin operations is the 567-MW Ras Abu Fontas B/2 unit, which is currently being built by QEWC. This power plant is expected online in 2007. In October 2006, Japanese company Marubeni was awarded a \$2.3-billion contract for the construction of the Mesaieed power plant, which will be the largest power station in Qatar at 2,000 MW. Marubeni will take a 40 percent stake in the project, while QEWC (40 percent) and QP (20 percent) are also part of the consortium. The Mesaieed station is expected to be completed in 2010.

Profile

Country Overview

Emir	Sheikh Hamad bin Khalifa al-Thani
Location	Middle East, peninsula bordering the Persian Gulf and Saudi Arabia
Population (July 2007E)	907,229

Economic Overview

Minister of Economy and Commerce	Yusif Husayn al-Kamal
Currency/Exchange Rate (May 11, 2007)	1 US Dollar = 3.64 Qatari Rial
Inflation Rate (2006E)	10.7%
Gross Domestic Product (2006E)	\$27.5 billion
Real GDP Growth Rate (2006E)	6.9%
Exports (2006E)	\$38.9 billion
Exports - Commodities	liquefied natural gas (LNG), petroleum products, fertilizers, steel
Exports - Partners (2005E)	Japan 36.9%, South Korea 19.4%, Singapore 8.2%
Imports (2006E)	\$12.9 billion
Imports - Commodities	machinery and transport equipment, food, chemicals
Imports - Partners (2005E)	France 11.4%, Japan 10.4%, US 10.3%, Germany 8.3%, Saudi Arabia 7.2%, UK 6.9%, Italy 6.5%, South Korea 5.5%, UAE 4.8%

Energy Overview

Minister of Energy and Industry	Sheikh Abdullah bin Hamad al-Attiyeh
Proven Oil Reserves (January 1, 2007E)	15.2 billion barrels
Oil Production (2006E)	1.1 million barrels per day, of which 74% was crude oil.
Oil Consumption (2006E)	99,000 barrels per day
Crude Oil Distillation Capacity (January 1, 2007E)	200,000 barrels per day
Proven Natural Gas Reserves (January 1, 2007E)	910.5 trillion cubic feet
Natural Gas Production (2004E)	1,383 billion cubic feet
Natural Gas Consumption (2004E)	477 billion cubic feet

Recoverable Coal Reserves (2004E)	None
Coal Production (2004E)	None
Coal Consumption (2004E)	None
Electricity Installed Capacity (2004E)	2.7 gigawatts
Electricity Production (2004E)	12.4 billion kilowatt hours
Total Energy Consumption (2004E)	0.7 quadrillion Btus*, of which Natural Gas (79%), Oil (21%), Coal (0%), Nuclear (0%), Hydroelectricity (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2004E)	840.4 million Btus
Energy Intensity (2004E)	34,510 Btu per \$2000-PPP**

Oil and Gas Industry

Organization	Qatar Petroleum - exploration, production, refining and distribution; Qatar Liquefied Gas Company (Qatargas) and Ras Laffan LNG Company (Rasgas) - production and marketing of liquefied natural gas (LNG)
Major Ports	Umm Said, Ras Laffan
Foreign Company Involvement	Anadarko Petroleum, BP, Chevron, ExxonMobil, Maersk Oil, Marubeni, Mitsui, Occidental Petroleum, Shell, Total
Major Oil Fields	Dukhan, Id al-Shargi North Dome, Bul Hanine, Maydan Mahzam, al-Shaheen, al-Rayyan, and al-Khalij
Major Natural Gas Fields	North Field
Major Refineries	Umm Said (200,000 bbl/d capacity)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
 **GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

U.S. Government

[CIA World Factbook - Qatar](#)
[U.S. State Department Consular Information Sheet - Qatar](#)
[U.S. State Department Background Notes on Qatar](#)
[U.S. Embassy in Doha, Qatar](#)

Foreign Government Agencies

[Embassy of Qatar in Washington, DC](#)
[Qatar e-Government Portal](#)
[Qatar Ministry of Economy and Commerce](#)
[Qatar's Ministry of Foreign Affairs](#)
[Qatar Planning Council](#)

Oil & Natural Gas

[Dolphin Energy Ltd.](#)
[ExxonMobil in Qatar](#)
[Maersk Oil & Gas in Qatar](#)
[Occidental Petroleum in Qatar](#)
[OPEC: Qatar Facts and Figures](#)
[Oryx GTL](#)
[Qatargas](#)
[Qatar Petroleum](#)
[RasGas](#)
[Ras Laffan Industrial City](#)
[Shell in Qatar](#)

Electricity

[AES in Qatar](#)
[Qatar Electricity & Water Company \(QEWC\)](#)
[Qatar General Electricity & Water Corporation \(Kahramaa\)](#)

Sources

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Global Insight Middle East Economic Outlook
Gulf News; Hart's Middle East Oil and Gas
International Market Insight Reports
Oil and Gas Journal
Petroleum Economist
Petroleum Intelligence Weekly
U.S. Energy Information Administration
World Gas Intelligence

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