

COUNTRY ANALYSIS BRIEFS

Qatar

Last Updated: January 2011

Background

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

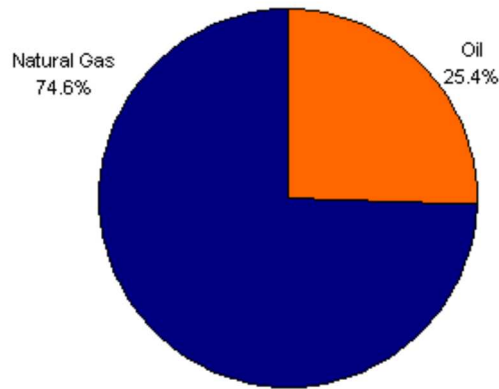
Qatar is also a member of OPEC and is a significant net exporter of oil.

Qatar is a member of the Organization of the Oil Exporting Countries (OPEC) and is a significant oil producer. The Qatari government has devoted more resources recently to the development of natural gas, particularly for export as liquefied natural gas (LNG). Though only producing LNG since 1997, Qatar is now the world's largest supplier of LNG. Qatar is also a member and host country for the Gas Exporting Countries Forum (GECF), an organization formed in 2001 to promote the interest of the world's major gas producers.



In 2010, preliminary estimates from Qatar National Bank indicate that the oil and gas sectors accounted for over half of Qatar's 2010 GDP. Qatar is wholly dependent on oil and natural gas for all of its primary energy consumption. Although the transportation sector continues to contribute significantly to growth in oil demand, all electricity capacity in Qatar is gas-fired. Qatar's total primary energy consumption in 2008 surpassed one quadrillion Btu for the first time, having almost doubled since 2001. This rapid growth was driven by the similarly rapid growth of its economy. In fact, Qatar's energy intensity (total consumption per dollar of GDP) increased by less than five percent over that same period.

Total Energy Consumption in Qatar, by Type (2008)



Source: EIA, *International Energy Statistics*

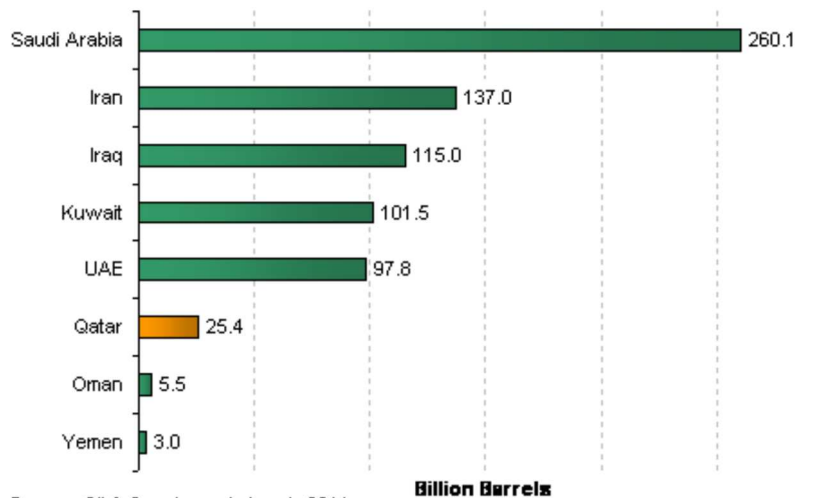
Oil

Qatar remains an important supplier for world oil markets, and is supplying an increasing level of condensate for export.

Overview

According to *Oil & Gas Journal*, as of January 1, 2011, Qatar has 25.4 billion barrels of proven oil reserves. Qatar was the sixteenth largest crude oil exporter in the world in 2009, and of the 12 Organization for Petroleum Exporting Countries (OPEC) members, ranked eleventh in crude oil exports. The onshore Dukhan field, located along the west coast of the peninsula, is the country's oldest producing oil field, though it has been surpassed in production volumes by the offshore Al-Shaheen field, which averaged about 300,000 bbl/d in 2009.

Selected Middle East Proven Oil Reserves, January 1, 2011



Source: Oil & Gas Journal, Jan. 1, 2011

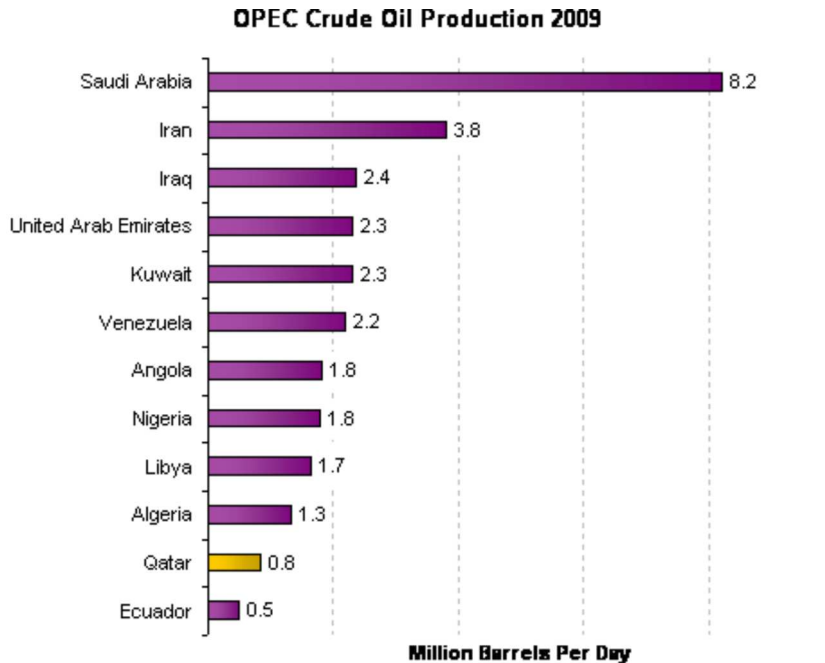
Sector Organization

State-owned [Qatar Petroleum](#) (QP) controls all aspects of Qatar's upstream and downstream oil sector. While QP owns and operates the onshore Dukhan field and the offshore Maydan Mahzam and Bul Hanine fields, the remaining offshore fields are operated by international oil companies via production sharing agreements (PSAs). In an effort to increase production and reserves, QP has offered more favorable terms for PSAs in recent years, in order to increase oil revenues and mitigate gas-related capital expenditures.

Production

Qatar is the second smallest crude oil producer in OPEC, with its production exceeding only that of Ecuador. In 2009, Qatar produced approximately 1.2 million barrels per day (bbl/d) of total liquids: 830,000 bbl/d of crude and 380,000 bbl/d of non-crude liquids. Preliminary estimates for production in 2010 indicate total production of liquids to be about 1.4 million bbl/d: 850,000 bbl/d of crude and 590 bbl/d of non-crude liquids. The country's crude oil production capacity was

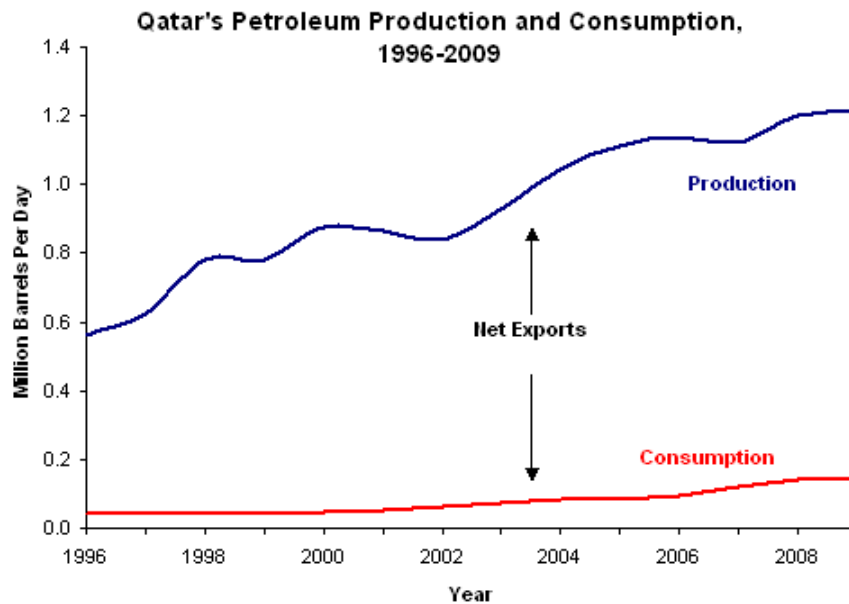
estimated to be just over one million bbl/d in 2010, falling just below its condensate and natural gas liquids (NGL) production capacity for the same year.



Source: EIA Short Term Energy Outlook, December 2010. Production values do not include lease condensate.

As an OPEC member, Qatar is allocated a specific crude production target by the Organization (currently 731,000 bbl/d), but condensate and NGLs are not included in the target. Condensate and NGLs have risen as a proportion of Qatar's total petroleum production over time. EIA estimates that condensate and NGL production almost doubled from 2007 to 2010, from 287,000 bbl/d to 567,000 bbl/d.

Though Qatar's petroleum production has grown steadily since 2002, Qatar's fields are maturing, and output at Dukhan – formerly the largest producing field – is in decline. To offset anticipated declines, enhanced oil recovery (EOR) techniques are being considered for several fields including Al-Shaheen, Dukhan, Bul Hanine, and Maydan Marjam. Danish company Maersk's offshore field Al-Shaheen is an important source for future production growth. Though it averaged just under 300,000 bbl/d of production in 2009, Maersk completed an expansion project in 2010 that increased its production capacity to 525,000 bbl/d.



Source: EIA *International Energy Statistics*

Consumption

In 2009, Qatar consumed approximately 147,000 bbl/d of petroleum. Although still relatively small compared to total production levels, consumption has more than tripled since 2000. FACTS Global Energy forecasts Qatar's oil product consumption to grow by at an average annual rate of about five percent between 2010 and 2015. Qatar's increased petroleum consumption rates are due to its rapidly growing economy, particularly the associated growth of transportation sector demand.

Pipelines

QP operates Qatar's oil pipeline network, which delivers supplies from oil fields to Qatar's export terminals and refineries. QP's offshore pipeline network 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 used mainly to export liquefied natural gas (see Natural Gas Section). The vast majority of Qatar's oil exports are sent to Asian economies. Japan is the single largest importer, though South Korea is also an important export market.

Refining

According to *Oil and Gas Journal*, as of January 1, 2011, Qatar has 338,700 bbl/d of refining capacity. There are currently two refineries in Qatar, located in the major port cities of Umm Said and Ras Laffan. The 138,700 bbl/d Ras Laffan condensate refinery began operations in late September 2009. Operated by Qatargas (a QP subsidiary; see Natural Gas section for more information), the Laffan refinery is controlled by a consortium of investors: QP (51 percent), ExxonMobil (10 percent), and Total (10 percent), and Japanese companies Idemitsu (10 percent), Cosmo (10 percent) Mitsui (4.5 percent) and Marubeni (4.5 percent). The refinery will have the capacity to produce about 60,000 bbl/d of naphtha, 50,000 bbl/d of jet fuel, 25,000 bbl/d of gasoil, and 10,000 bbl/d of LPG. Plans call for a doubling of Ras Laffan's refining capacity by 2015, primarily to refine a greater portion of the North Field's rapidly growing production of condensate. Although QP was considering an additional 250,000 bbl/d refinery to process the heavier Al-Shaheen crude, the project has been put on hold.

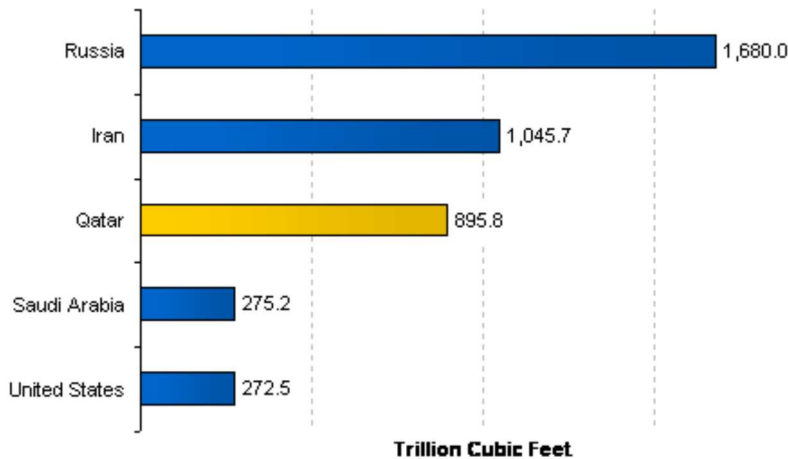
Natural Gas

Overview

According to *Oil & Gas Journal*, Qatar's proven natural gas reserves stood at approximately 896 trillion cubic feet (Tcf) as of January 1, 2011. Qatar holds almost 14 percent of total world natural gas reserves and is the third-largest in the world behind [Russia](#) and [Iran](#). The majority of Qatar's natural gas is located in the massive offshore North Field, which spans an area roughly equivalent to Qatar itself. Part of 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 450 Tcf of recoverable natural gas reserves.

Qatar has the largest non-associated natural gas field in the world and is the world's largest liquefied natural gas exporter.

World Natural Gas Reserves by Country, January 1, 2011



Source: Oil & Gas Journal, Jan. 1, 2011 and EIA *Natural Gas Navigator* (U.S. only), Dec. 31, 2009.

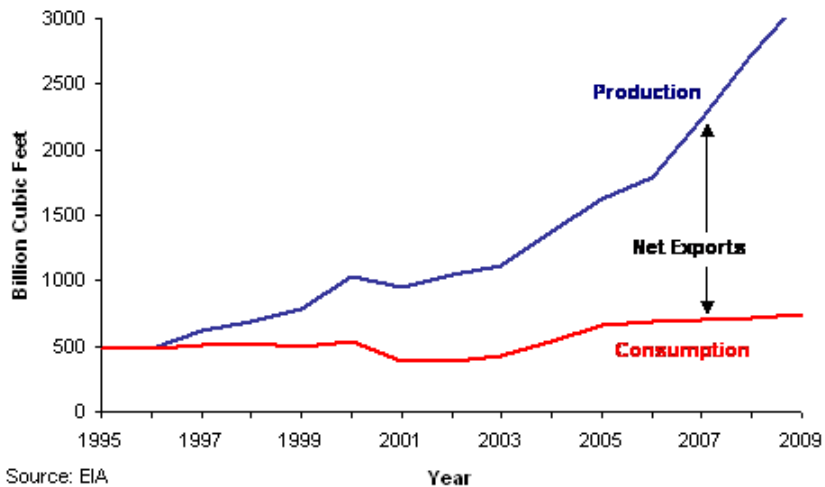
Sector Organization

To an even greater extent than in the oil sector, Qatar Petroleum (QP) plays a dominant role in Qatar's natural gas sector, leading upstream and downstream projects. Qatar's focus on natural gas development tends to be integrated large-scale projects linked to LNG exports or downstream industries that utilize natural gas as a feedstock. Therefore, foreign company involvement has favored international oil companies with the technology and expertise in integrated mega-projects, including ExxonMobil, Shell, and Total. However, QP has maintained a majority share in most of its gas projects - in particular, the dominant companies in Qatar's LNG sector: Qatargas Operating Company Limited (Qatargas) and Ras Laffan Company Limited (RasGas). 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.

Production and Consumption

Qatar continues to expand natural gas production. In 2009, Qatar produced 3,154 billion cubic feet (Bcf) of natural gas, three times the amount produced in 2000. Although the increase in natural gas production fuels the growing natural gas requirements of domestic industry and its gas-to-liquids (GTL) projects, the bulk of this increase is going towards LNG exports. Qatar's natural gas consumption in 2009 was approximately 745 Bcf.

Qatar's Natural Gas Production and Consumption, 1995-2009

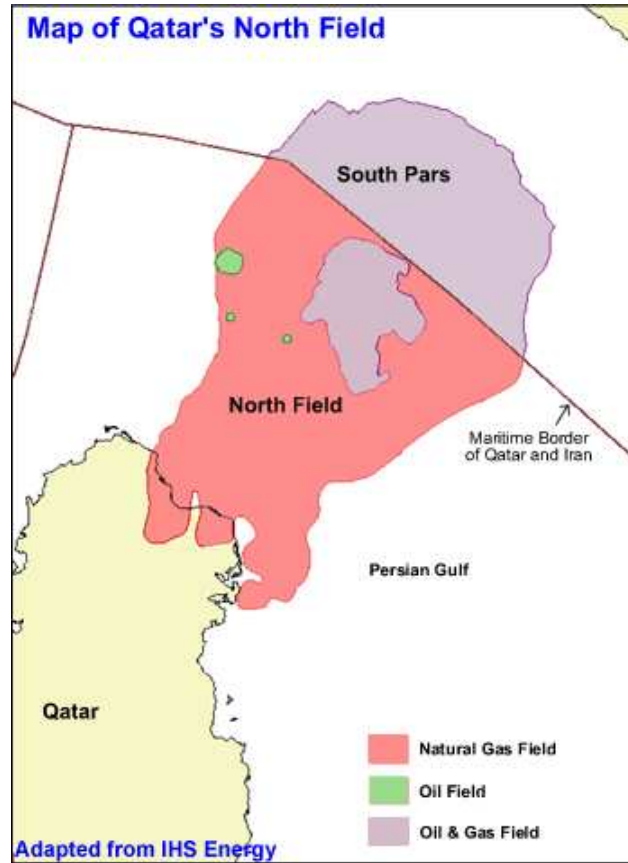


Source: EIA

North Field

The North Field is key to Qatar's natural gas development and production plans, as the site of nearly all of the country's natural gas reserves. In 2005, Qatari government officials placed a moratorium on additional natural gas development projects at the North Field to allow time to study

field development optimization. The moratorium did not affect exploration and production projects already approved or underway, allowing Qatar to continue its growth in natural gas production. Although the moratorium had been scheduled for review in 2014, the Energy Ministry indicated in late 2010 that it does not plan to lift the moratorium at this time. The Barzan gas project, which will produce about an additional 600 Bcf per year, was the last North field project to be approved prior to the moratorium. The project will be a 90-10 joint venture between QP and ExxonMobil, and is expected to come online between 2014 and 2015.



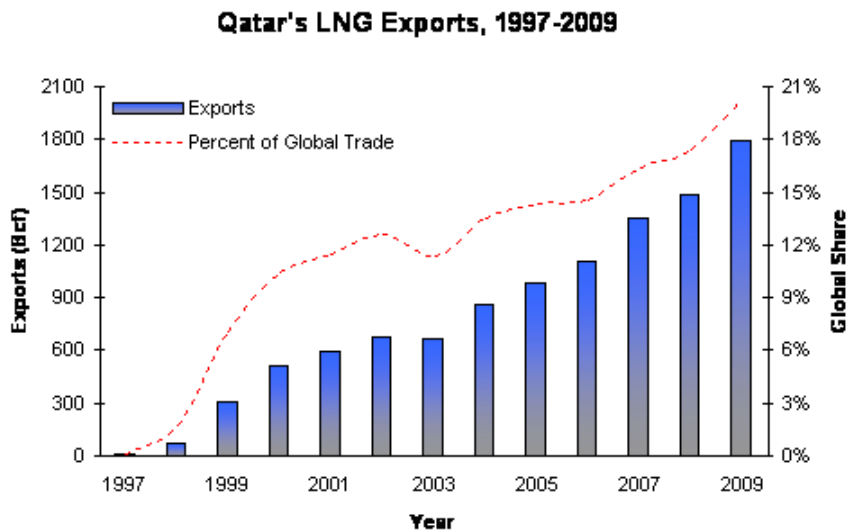
Exports

During 2009, Qatar exported over 2,400 Bcf of natural gas, of which about 70 percent was liquefied natural gas (LNG). Qatar currently exports about 2 Bcf/d of natural gas to the UAE and Oman through the Dolphin pipeline.

Liquefied Natural Gas

Qatar is the world's leading LNG exporter.

Qatar is the world's leading LNG exporter. In 2009, Qatar exported nearly 1,800 Bcf of LNG. Japan, South Korea, and India were the primary destinations for Qatar's LNG exports, accounting for about 57 percent in 2009. European markets including Belgium, the United Kingdom and Spain were also significant buyers of Qatari LNG, accounting for an additional 33 percent.



Source: 1997-2007 EIA; 2008-9 FACTS Global Energy

Although Qatar began exporting LNG only in 1997, heavy government emphasis on this sector – both in terms of making investments and attracting foreign investors – contributed to the rapid development of Qatar's LNG capacity. Qatar's LNG sector is dominated by Qatargas Operating Company Limited (Qatargas), which operates four major LNG ventures (Qatargas I-IV) and Ras Laffan Company Limited (RasGas), which operate three major LNG ventures (RasGas I-III). 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. Each venture has an individual ownership structure, though QP owns at least 65 percent of all the above ventures.

RasGas and Qatargas have 13 LNG trains currently online, with a total LNG liquefaction capacity of 3,400 Bcf/y (69.2 MMT/y). Five of these trains were added in 2009 and 2010. RasGas III, Train 7, with a liquefaction capacity of 380 Bcf/y (7.8 MMT) of LNG began operations in February of 2010. Qatargas III, Train 6, came online in November of 2010 with the same liquefaction capacity. The 7.8 MMT train is considered a mega-train, and is currently the largest operating size in the world.

In March of 2011, Qatar will complete its monumental cycle of LNG infrastructure expansion with the inauguration Qatargas IV, Train 7 (80 Bcf/y (7.8 MMT)), which will bring the total capacity to 3,750 Bcf/y (77MMT/y). Qatari government officials have noted that they do not anticipate building any more LNG facilities in the near-term future, and that any additional capacity increases will be the result of improvements in the existing facilities. Although the most recent train additions were originally intended with U.S. markets as the primary target, low U.S. gas prices due to the shale gas boom have caused Qatar to pursue contract options with countries – particularly China and India. In the first ten months of 2010, the United States had imported only 33 Bcf of LNG from Qatar.

Qatar's LNG Infrastructure, January 2011			
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)	Nov. 2006	Europe & Asia
Train 6	7.8 MMt (380 Bcf)	Jul. 2009	Asia, Europe & N. America
Train 7	7.8 MMt (380 Bcf)	Feb. 2010	Asia, Europe & N. America
QatarGas Facilities			
Trains 1-3	3 x 3.2 MMt (480 Bcf)	Dec. 1996	Japan & Spain
Train 4	7.8 MMt (380 Bcf)	Apr. 2009	UK, Europe & Asia
Train 5	7.8 MMt (380 Bcf)	Sep. 2009	UK, Europe & Asia
Train 6	7.8 MMt (380 Bcf)	Nov. 2010	Asia & N. America
Train 7	7.8 MMt (380 Bcf)	Mar. 2011	Asia & N. America

Source: RasGas, Qatargas, media reports

Dolphin Project

Qatar is the supplier for the Dolphin Project, which connects the natural gas networks of Qatar, the United Arab Emirates, and Oman with the first cross-border natural gas pipeline in the Gulf Arab region. The pipeline currently exports 2 Bcf/d from Qatar, though it has a design capacity of 3.2 Bcf/d. Dolphin Energy has been trying to secure additional Qatari gas to meet the rapidly growing demand for gas in the UAE, however, increased supplies from Qatar are uncertain.

Gas-to-Liquids

Gas-to-liquids (GTL) technology uses a refining process to turn natural gas into liquid fuels such as low-sulfur diesel and naphtha, among other products. Qatar is one of only three countries – South Africa, Malaysia, and Qatar – to have operational GTL facilities. Qatar's Oryx GTL plant (QP 51 percent, Sasol-Chevron GTL 49 percent) came online in 2007, but due to initial problems, was not fully operational until early 2009. At full capacity, the Oryx project uses about 330 MMcf/d of natural gas feedstock from the Al Khaleej field to produce 30,000 bbl/d of GTL.

The Pearl GTL project (QP 51 percent, Shell 49 percent) 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. Shell announced that the plant's initial phase would begin operations in the first quarter of 2011, and that the second phase would come online in the first half of 2012. In addition to being the largest GTL plant in the world, the Pearl project will also be the first integrated GTL operation, meaning it will have upstream natural gas production integrated with the onshore conversion plant.

Profile

Energy Overview

Proven Oil Reserves (January 1, 2011)	15.2 billion barrels
Oil Production (2009)	1,213 thousand barrels per day, of which 830 thousand barrels per day was crude oil.
Oil Consumption (2009)	129 thousand barrels per day
Crude Oil Distillation Capacity (2009)	339 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2011)	890 trillion cubic feet
Natural Gas Production (2009)	3,154 billion cubic feet
Natural Gas Consumption (2009)	745 billion cubic feet
Recoverable Coal Reserves (2009)	None
Coal Production (2009)	None
Coal Consumption (2009)	None

Electricity Installed Capacity (December 31, 2008)	3.2 gigawatts
Electricity Production (2009)	19.2 billion kilowatt hours
Electricity Consumption (2008)	18.8 billion kilowatt hours
Total Energy Consumption (2008)	1,002 trillion Btu*, of which Natural Gas (74.6%) & Oil (25.4%)
Total Per Capita Energy Consumption (2008)	1,215 million Btu

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 Oil/Gas 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-Sharqi North Dome, Bul Hanine, Maydan Mahzam, al-Shaheen, al-Rayyan, and al-Khaleej
Major Natural Gas Fields	North Field
Major Refineries (capacity, bbl/d)	Umm Said (200,000 bbl/d capacity), Ras Laffan (138,700 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.

**GDP figures from Global Insight estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

[EIA – Qatar Country Energy Profile](#)

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's Ministry of Foreign Affairs](#)

Oil & Natural Gas

[Dolphin Energy Ltd.](#)

[Maersk Oil & Gas in Qatar](#)

[Occidental Petroleum in Qatar](#)

[Oryx GTL](#)

[Pearl GTL](#)

[Qatargas](#)

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Electricity

[Qatar Electricity & Water Company \(QEWC\)](#)

[Qatar General Electricity & Water Corporation \(Kahramaa\)](#)

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