

Iran Oil Industry

Barzan Gas Project, North Field, Qatar

(Reference: Offshore-Technology, Rasgas, EIA & HHI)

BARZAN GAS PROJECT

THE BARZAN GAS PROJECT WILL PLAY A CRITICAL AND STRATEGIC ROLE IN SUSTAINING THE HIGH GROWTH RATE OF THE QATARI ECONOMY



Barzan Gas Project

The Barzan Gas Project, which will play a significant role in meeting Qatar's rising domestic gas demand, is nearing completion. This Qatar to Qatar project is a powerful step forward in fuelling Qatar's overall industrial and human development, in line with the Qatar National Vision 2030.

Demand for energy in Qatar is constantly growing, as a new airport is built, new seaport is under construction, major initiatives are being completed in the transport, health and education sectors, and new facilities are built for the FIFA World Cup in 2022.

Qatar Petroleum and ExxonMobil signed agreements confirming the project on 6th January 2011. RasGas is managing the construction of the plant and will also operate it upon completion.



Iran Oil Industry

The Barzan offshore platform is located 80 kilometers north-east of Ras Laffan Industrial City. While offshore facilities have been completed by Hyundai Heavy Industries of South Korea; onshore facilities are being constructed by JGC of Japan. Train 1 is almost complete and Train 2 is also nearing completion. Together they will supply around 2 billion standard cubic feet per day of sales gas. Much of this production will be directed to the power and water sector.

When Barzan Gas Trains 1 and 2 are in operation, the total offshore production from all RasGas-operated facilities will reach around 11 billion standard cubic feet per day (the equivalent of almost 2 million barrels of oil), making RasGas the largest gas producer in the world.

Key Data

Operator: RasGas

Location: North Field, Persian Gulf

Construction Started: 2011

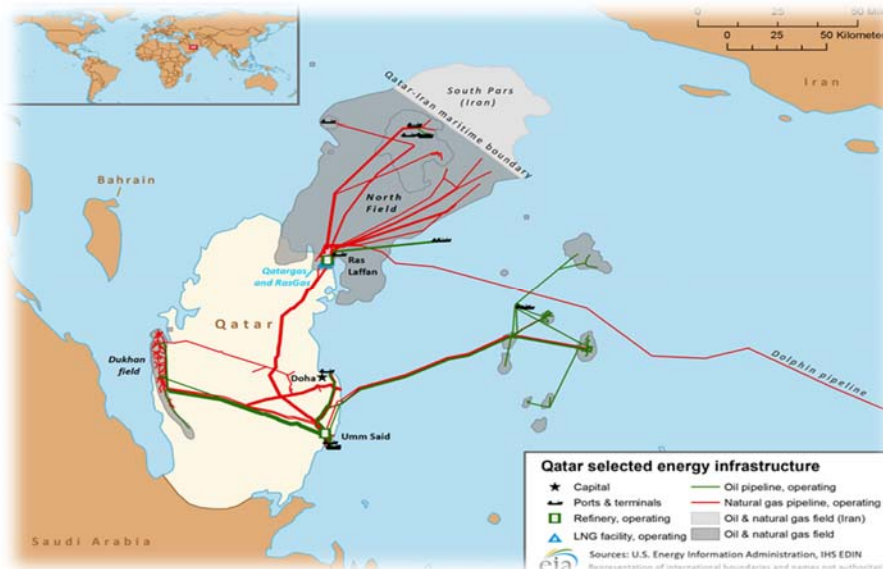
First Production: 2014

Investment: \$10.3bn

EPC Contractor: Hyundai Heavy Industries (HHI)

Peak Production Capacity: 1.4 billion standard cubic feet of sales gas per day (Bscfd)

Iran Oil Industry



Involving both offshore and onshore developments, Barzan Gas Project is a vital project expected to sustain and fuel the ongoing and future major infrastructural projects in Qatar. The \$10.3bn project is being implemented by RasGas, a joint venture (JV) of Qatar Gas and ExxonMobil.

Qatar Gas and ExxonMobil signed a memorandum of understanding to participate in the project in February 2007 and completed the environmental, socio-economic and health impact assessment (ESHIA) for the project in 2009. The joint venture agreement (JVA) and development and fiscal agreement (DFA) between them were signed in January 2011.

The project will extract gas from Qatar's North Field, **the world's biggest non-associated gas field**, which was discovered in 1971 and is estimated to hold recoverable reserves of 900 trillion cubic feet constituting roughly 10% of the world's known gas reserves.

"Qatar Gas and ExxonMobil signed a memorandum of understanding to participate in the project in February 2007."



Iran Oil Industry

The project's offshore development area is located approximately 80km off the coast of Ras Laffan Industrial City in the Persian Gulf. The onshore facilities are being constructed under two phases, which are expected to be completed by 2015.

Production from the Barzan Gas Project is estimated to be approximately 1.4 billion standard cubic feet of sales gas per day (Bscfd), which will increase RasGas' overall production capacity to 11Bscfd and make it one of the world's biggest single gas processors.



Barzan offshore gas field development details

The offshore element of the project involves the installation of three wellhead platforms (WHPs), a living quarters platform, 300km of subsea pipelines and 100km of subsea cables to convey gas to a new gas processing plant at Ras Laffan Industrial City and drilling of 30 wells.

The drilling of the 30 development wells was completed in August 2013. The well-drilling operations were performed to a depth of over 3,000m below the sea's surface, employing three jack-up drilling rigs and the pressurised mud cap drilling technique.



Iran Oil Industry

The installation of the topside modules for the four platforms was completed in November 2013. The topside modules of the three WHPs weigh 3,000t each whereas the topside module of the living platform weighs 450t.

A coral relocation activity was earlier completed in April 2012. It involved the installation of 500t of limestone boulders to an area where currents and temperature were favourable for coral survival, after which over 1,600 coral colonies along the project's pipeline route were transferred to the new area. They were attached to the boulders using a special cement mixture. The installation of the subsea pipelines followed suit and is still underway.

All the facilities are designed for a service life of 30 years.

Contractors involved with the Qatari gas project

The \$900m engineering, procurement and construction (EPC) contract for the offshore components of the project was awarded to Hyundai Heavy Industries (HHI) in January 2011. Kentz has been contracted to perform the pre-commissioning and commissioning works for the offshore scope of the project. The front-end engineering and design (FEED) services were rendered by J Ray McDermott (J Ray), who also provided engineering services for the detailed design of the wellhead jackets, temporary work decks and subsea templates.

Seaway Heavy Lifting was contracted to install the topside modules on the jackets of the platforms employing its Oleg Strashnov heavy lift crane vessel.

The precast concrete mattress for the pipelines was manufactured by ULO Systems. Two offshore structural steel piles weighing 700t, including upper and bottom pile guides weighing 100t, were fabricated by N-KOM.

More than 80km of ethylene propylene rubber (EPR) insulated submarine cables for the distribution of energy to the platforms including 28km of optical



Iran Oil Industry

telecommunications cable and network components are being supplied by Prysmian Group under a contract worth \$22m.

Corrosion protection and concrete weight coating works for the subsea **pipelines** are being carried out by Bredero Shaw, a subsidiary of ShawCor, under a contract worth \$45m. The coral relocation works for the project were performed by Continental Shelf Associates (CSA).

Financing for the Barzan Gas Project

Up to 70% of the financing for the project is being met through a syndicated loan from banks and export credit agencies while the remaining 30% is through equity. Financial closure for the project was achieved in December 2011. It includes a \$3.34bn commercial bank facility, a \$2.55bn export credit agency (ECA) financing and an \$850m Islamic facility, making it the biggest financing deal in that year.

The ECA financing was arranged by banks and guarantees from Japan, Korea and Italy. Allen & Overy acted as counsel to the ECAs, whereas Skadden, Arps, Meagher & Florm and Slate acted as the counsel for the commercial banks. The Royal Bank of Scotland was the financial advisor and White & Case was the legal advisor to the sponsors.