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The American Shale Gas Revolution and its Impact on the Global LNG Market:

Forward Looking Strategies for Qatari Energy Sector Leadership

Qatar is one of the world's leaders in natural gas production. Qatar entered the LNG market relatively recently, but since then has assumed a dominating presence. According to BP, Qatar's proven natural gas reserves equal approximately 14 percent of total world reserves.¹ Its estimated 25.37 trillion cubic meters (TCM) plus 12–15 billion barrels of associated condensates are the third largest in the world, behind Russia and Iran. Qatar's gas reserves exceed the entire conventional reserves of the Americas, Western Europe and sub-Saharan Africa combined.

Additionally, Qatar's reserves-to-production ratio is estimated at 100 years. Most of the country's gas is located in the massive offshore North Field, which is the world's largest non-associated natural gas field. In 2006, Qatar became the world's largest exporter of liquefied natural gas production (LNG) when it edged out Indonesia.² Today, Qatar is represented in every sector of the natural gas trade: LNG, Gas-to-Liquids (GTL), pipeline gas, and Natural Gas Liquids (NGL).

Qatar's rapid march to the pinnacle of the energy sector has been compared to the Saudi oil boom of the early 1970s. However, there are several structural forces that could blunt Qatar's immense energy potential and degrade its ability to foster future economic growth. The defining issue in the twenty-first century energy market is the shale gas production boom and the impact it will have on existing energy trade. Without a doubt, shale gas will transform the global gas sector in ways practically unimaginable ten years ago. Yet, with proactive policies, Qatar will be able to assure its future economic growth and benefit from the new energy paradigm.

The American shale gas boom

The shale gas boom which began in the US does pose some unique challenges to Qatar and its neighbors. Qatar has long been the leading LNG supplier to some of the largest Asian economies. However, many Asian countries have begun to protest the price differential between Atlantic and Asian-Pacific LNG prices. While the US is not expected to export LNG from the lower 48 states until 2015 or 2016, this has not stopped approximately 120 billion dollars from flowing into North American LNG export projects. At the time of writing, about 31 facilities in the US have applied for federal approval to build LNG export facilities. By

¹ BP Statistical Review of World Energy, British Petroleum Available at < http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/2010_downloads/statistical_review_of_world_energy_full_report_2010.pdf

² Romero, Simon, Natural Gas Powering Qatar Economic Boom Growth Likened to the Saudi Oil Bonanza, Red Orbit (Dec. 24, 2005).

2020, the combined capacity of envisioned LNG export terminals could ship approximately 30 percent of US gas production. And, while not all projects may meet their full export capacity, it is still likely that a significant percentage of American shale gas production will be exported to the global market.

Despite the fanfare, American law still constrains some export projects. Currently, American companies are only be able to export LNG to countries which have free trade agreements (FTAs) with the US. As of yet, South Korea is the only LNG importing country with such an agreement. Because of this law, special governmental approval is required to export gas to all other non-FTA countries. Nonetheless, this is not considered to be an undue hindrance as the US Department of Energy has been especially proactive in granting special exemptions to non-FTA countries. Since 2011, it has granted seven such exemptions, with more expected.

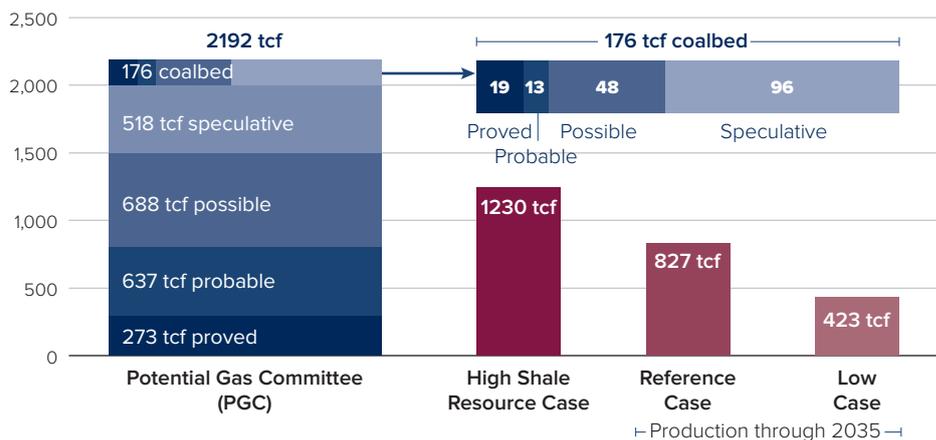
Nevertheless, the discussion over American LNG export potential obscures an internal, somewhat acrimonious, debate. This discussion questions whether the US should focus more on LNG exports to the global market or preserve gas production to maintain low domestic prices to benefit American industry. Thus far, it appears that the American government has favored LNG export. This is due in a large part to the potential geopolitical role of American gas in the global market. This is especially pertinent as the US has been heeding calls from Europe to help it ease its dependence on Russia gas exports after the political crisis that erupted in the wake of Russia’s annexation of Crimea. Once US LNG exports begin in earnest, domestic gas prices will likely rise for the energy-intensive and downstream gas industries. This price rise could mitigate the competitiveness of the American petrochemical industry vis-à-vis its international rivals.

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The Shale gas bonanza: how much is really there?

Critics contend that some shale gas reserve estimates conflate the designations of ‘resources’ and ‘reserves.’³ There is often further disregard for the differences between the subsets of what is ‘probable,’ ‘possible,’ and ‘speculative.’ (See Figure 1).

Figure 1: How much gas is the United States sitting on?



Sources: EIA, Potential Gas Committee, Slate

³ A resource is typically defined as total amount of a specific hydrocarbon that exists in a certain area. A stated resource is no indication whatsoever of how much of it can be economically extracted (e.g. it is possible that more energy is needed to extract a resource than what is contained in the resource.) A reserve is generally classified as “[a] deposit of oil, gas or coal that can be recovered profitably within existing economic conditions using existing technologies.” US Geological Survey, 1980, Principles of a Resource/Reserve classification for Minerals, Circular 831.

While experts tend to be able to distinguish between these categories, such nuances often get lost in the popular press which tends to use comparisons to Saudi Arabia or American energy independence. Groups such as the Potential Gas Committee, an organization of geoscientists and petroleum engineers, have promoted this line of reasoning. They argue that future gas supply in the US will likely last for a century.

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However, the often-positing hundred year supply assessment assumes 2010 demand levels -- 680 billion cubic meters (BCM) -- before the enormous increase in petrochemical, energy-intensive manufacturing and LNG export investment that took place in the following years. The EIA made reference to these issues in its 2011 Annual Energy Outlook where it noted that "there is a high degree of uncertainty around this projection, starting with the estimated size of the technically recoverable shale gas resource," and continued "the estimates embody many assumptions that might prove to be untrue in the long term."⁴ Some experts conclude that due to the unique shale gas reservoirs characteristics and the increase in demand rates, the US may only have a few decades of shale gas production left.⁵ However, both optimistic and conservative estimates are speculative in nature. This is because the multitude of methodologies employed by the industry to estimate reserves can give significantly varied results.

The impact of shale gas on global LNG prices

One potential result of the expected US LNG export boom would be its impact on Qatar's traditional LNG customers. The influence of American shale gas has already reverberated overseas. The reluctance of many Asian buyers to sign on to long-term contracts caused a significant slowdown in the LNG market in late 2013. The reason for the slowdown is that Asian LNG customers expect that they will be able to soon benefit from American LNG. (See Figure 2 for price differentials between various markets)

Figure 2: LNG landed prices (March 2013)



Sources: FERC, Market Oversight, Waterborne Energy Inc Houston

This expectation of low-priced American LNG flooding the market in the medium term is causing a sharp divergence in negotiations between buyers and sellers. Hesitancy to sign

⁴ Energy Information Administration, Annual Energy Outlook 2011: With Projections to 2035 (2011), p.37

⁵ Bill Powers, The Popping of the US Shale Gas Bubble, Forbes (Sept. 3, 2014)

long-term contracts has also had a knock-on effect on new LNG projects in Africa that are having difficulty locating investors. As a result, these African projects, despite significant finds, may not be constructed and are facing long delays. The resultant risk is that LNG production could be much lower than expected by the end of this decade.

Increased project costs across the oil and gas industry, which are outpacing inflation, are also creating additional obstacles. But, as stated earlier, the most important driver of delays is the unwillingness of Asian consumers to sign long-term contracts in the belief that LNG prices will soon decline. New LNG projects typically only proceed when developers have secured long-term contracts that are often oil-indexed. Therefore, when Asian buyers display a marked aversion, it creates bottlenecks throughout the entire industry.

As a result, the number of LNG projects coming online may not be as extensive as initially assumed, and the presumed drop in global LNG prices may not be as significant as Asian buyers anticipate. The project delays and potential cancellations, when understood in the context of a likely rise in US gas prices due to high decline rates and potential environmental regulations, mean that if global LNG demand doubles by 2020 as is expected, LNG pricing may not experience significant downward pressure.

The perception across the Asia-Pacific region is that LNG prices are too high and that there should be greater coordination between buyers to enhance their negotiating position with suppliers. Japan, which accounts for approximately forty percent of global LNG sales, has been one of the leading proponents of this movement. Due to its large LNG import bill, Japan has been running record budgetary deficits and is searching for ways to reduce its LNG expenditures.

Japan, India and South Korea are in the beginning stages of forming a multilateral group of LNG buyers in a bid to push for lower Asian-Pacific LNG prices. The proposed LNG buyers group is meant to rival the Gas Exporting Countries Forum (GECF) to bargain from a position of strength and place pressure on LNG exporting countries to reduce the use of oil indexation and the use of destination and take-or-pay clauses. As a harbinger of LNG buyer resistance beginning to form in the European market, in a surprising concession from Gazprom, ENI struck a landmark deal with the Russian gas supplier to create a change in the price indexation to align it with spot prices. In addition to Gazprom's unprecedented compromise, Europe's second largest gas supplier, Statoil, became the first major energy company to offer all of its clients gas supplies based entirely on spot prices. These two developments illustrate that the buyer push back against oil-indexation is beginning to bear fruit and it is only a matter of time for it to ripple across the entire gas market.

Furthermore, in the Asian market, Japan is also preparing for a March 2015 launch of the world's first LNG futures contract by establishing a spot LNG reference price and undertaking a joint venture with a Singapore-based company to launch an over-the-counter LNG derivatives market. Japan hopes that this will end the use of long-term oil-indexed LNG contracts. The Japanese Ministry of Economy, Trade and Industry (METI) aims to develop the spot LNG metric by averaging global spot prices to more accurately reflect global LNG supply and demand. Japan intends to utilize this Asian spot price in future negotiations with global LNG suppliers.

Japanese utilities have also begun investing in LNG projects and are buying shares in large gas development projects in North America and Australia. This is a growing phenomenon as Japan and other LNG importing countries are driving investment in US shale gas and LNG assets on the belief that such investments will give them a stronger negotiating position for future LNG import contracts.

Buyer push back against oil-indexation is beginning to bear fruit

While North American shale gas is clearly going to be a dominant force shaping the global gas market in the future, another vitally important issue is the spread of American shale gas production technology and the coming wave of shale gas production in other jurisdictions. Although shale gas production in other countries is quite minuscule at the moment – only China has any notable production capacity outside of North America at present -- shale gas technology is likely to proliferate by the end of this decade; countries that formerly may have opted for LNG imports will also focus on developing upon domestic shale production to meet their demand.

As there are no constraints on the proliferation of US shale gas production technology, there is little doubt production technologies will spread. Furthermore, extraction technologies utilized for shale gas production, such as hydraulic fracturing and horizontal drilling, can also be deployed to extract difficult gas resources such as tight gas. While it is too early to discuss this particular issue in depth, this is something that Qatari policymakers must remain cognizant of as it will impact Qatar's ability to export LNG to other markets in the long-term.

Strategies for Qatar in the new gas market

Increased LNG competition will be the determining feature of the future global gas market

In order for Qatar to thrive in the new gas environment, it must take proactive steps to reorient its strategic position. However, the reality is that increased LNG competition will be the determining feature of the future global gas market and Qatar will have to adapt itself to that reality. There are several high-level strategies that, if undertaken, could assist Qatar in preserving its position as one of the world's dominant energy players.

Comprehensive development of the downstream gas industry. While the global petrochemical industry seems poised for extensive competition by the end of this decade, Qatar's natural gas industry is extremely well placed to take advantage of diversification into the downstream gas industries. Because Qatar does not have the same natural gas deficits as many other natural gas producers, the Qatari petrochemical sector does not face the economic pressure of future natural gas input price increases. Therefore, Qatar will be able to leverage its enormous natural gas patrimony into its downstream gas industries.

This pricing advantage that Qatar has will place it in a robust position in competition with other global petrochemical producers. As stated above, as it is likely that domestic US natural gas prices will increase for American petrochemical producers in the midterm due to high depletion rates, potential environmental regulations and a policy preference for LNG exports. Increased petrochemical production on a price-competitive basis would be beneficial for Qatar to continue to benefit from its natural gas comparative advantage. Additionally, increased investment in petrochemical production and diversion of more natural gas inputs to this sector will help insulate the Qatari economy from the coming volatility in a future LNG market that will likely be dominated by spot pricing.

Collaboration with American shale gas and LNG producers. While the development of a strong American LNG capability could be a threat to Qatar's LNG industry, Qatar can also take advantage of the US shale gas production boom by strategically investing in American shale gas assets. Qatar would be able to economically benefit from American shale gas exports and link its own export capabilities with its American-based assets, therefore extending its position as a global LNG swing producer. As Australia, Canada and the US could ultimately produce more LNG than Qatar by the end of this decade, if Qatar desires to retain its market share, it must have access to more gas. North America shale assets provides an unparalleled ability for it to do so. As Qatar's investment in Golden Pass LNG terminal has illustrated, it will be able to have access to more gas without removing Qatar's moratorium on new upstream production in the North Field.

LNG contract flexibility. Qatar should take advantage of the LNG spot market. As Qatar produces its LNG with some of the world's lowest production costs, it is more than able to compete with its global rivals on pricing issues. And, as Qatar would be able to acquire significant market share with pricing flexibility, it would be able to outcompete many competitors that still depend on long-term contracts with relatively high oil-indexed prices.

As half of LNG demand emanates from Asia, with further demand increases expected in the future, the implementation of contract flexibility would placate many of Qatar's Asian consumers. Implementation of price reopeners, if the price of natural gas and oil diverges significantly, and increased flexibility in destination clauses and contractual time length, would allow Qatar to remain competitive in the Asian market. Moreover, as discussed above with the Gazprom and Statoil compromises, cracks are already beginning to appear in the oil-indexation contractual edifice that held sway for so many decades. Qatar will have to compete on market share as its competitors are already adjusting to the reality that oil indexation is beginning to fade away.

Therefore, as the expectation of US shale gas arriving on the market has made Asian buyers much more reluctant to fund global LNG development projects around the world, a new strategy based on securing market share by competitive contractual models would also inhibit the development of various high cost structure LNG projects globally that could potentially compete with Qatar's overwhelming LNG export dominance.

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