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Qatar – Power House of LNG

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Abstract- *Liquefied natural gas (LNG) provides an economic means to transport natural gas over long distances, bringing production from remote gas reserves to market. A large expansion in global LNG trade is currently underway, and Qatar has established itself as one of the world's leading exporters of LNG with almost 80 million tonnes a year of capacity. This paper describes the functioning of the global LNG market and outlines the position of Qatar within the market.*

Keywords: *LNG, Natural Gas, LNG Market, Liquefaction, Qatar*

Introduction

Natural gas is the most important energy source for the future. Natural Gas supplies around one- fifth of the worlds energy needs, compared with one- third from oil and onequarter from coal. The natural gas will continue to play an important role in meeting demand for energy because of its abundance coupled with its environmental soundness and multiple applications across all sectors.

Liquefied natural gas (LNG) is expected to play an increasingly important role in the natural gas industry and global energy markets in the next several years. The combination of higher natural gas prices, lower LNG costs, rising gas import demand, and the desire of gas producers to monetize their gas reserves is setting the stage for increased global LNG trade.

Liquefied natural gas (LNG) is natural gas that is stored and transported in liquid form at atmospheric pressure at a temperature of –260 ºF. In international trade, LNG is transported in specially built tanks in double-hulled ships to a receiving terminal where it is stored in heavily insulated tanks. The LNG is then sent to re-gasifier which turn the liquid back into a gas that enters the pipeline system for distribution to customers as part of their natural gas supply.

The low density of natural gas makes it more costly to contain and transport than either oil or coal. Because of its special processing and handling requirements, the costs of moving natural gas are significantly higher than the costs of moving oil. And the relative costs of moving gas or oil by pipeline or by tanker differ substantially, as well. This influences regional inter-fuel competition and thus natural gas markets. Although pipeline costs increase linearly with distance, LNG—requiring liquefaction and re-gasification regardless of the distance traveled—has a high threshold cost but a much lower increase in costs with distance. Thus, shorter distances tend to favor pipelining, whereas longer distances favor LNG.

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Lng Market Analysis

Growth of world LNG trade is driven by increasing demand and declining domestic natural gas resources in gasconsuming countries, and by the desire of gas-producing countries to commercialize their resources.

Due to the low weight of international trade in total world production, there is not a globalized natural gas market but rather regional markets, which vary in terms of their organization, maturity and market structures. There have been three distinct and relatively independent markets for LNG, each with its own pricing structure. Price risk is inherent in each pricing structure, although the degree of risk differs among the markets. LNG prices are benchmarked to competing fuels.

The countries of North America constitute a very integrated and mature market for natural gas. The North American natural gas market is almost self-sufficient. In the United States, the competing fuel is pipeline natural gas, and the benchmark price is either a specified market in long-term contracts or the Henry Hub15 price for short-term sales. Importers and exporters involved in U.S. LNG transactions are exposed to a significant level of risk given the high degree of price volatility in U.S. natural gas markets. In Europe, LNG prices are related to competing fuel prices, such as low-sulfur residual fuel oil. However, LNG is now starting to be linked to natural gas spot and futures market prices.

In Asia, prices are linked to imported crude oil. The pricing formula typically includes a base price indexed to crude oil prices, a constant, and perhaps a mechanism for the review/adjustment of the formula. Asian prices are generally higher than prices elsewhere in the world. Market and price convergence will be possible not only if LNG trade grows sufficiently, but also if the short term/spot market sees marked growth as well. While it may seem logical that more LNG begin to be traded under short term conditions in the interest of economic efficiency, the noted financial capital risk of investors may compel them to maintain longer terms in an effort to reduce their risk exposure.

In 2011, global LNG trade grew by 20.7 Mtpa, a growth of 9.4% compared with 2010. The main contribution to the increase of LNG flows came from Qatar, as the country was responsible for 67% of additional LNG produced in 2011. LNG consumption in Asia continued to grow strongly (+14.8%), reaching a total of 153 metric tonnes, which is about 63.6% of the world's LNG trade.

Until 2014, the LNG market will grow by 2% due to limited number of liquefaction projects going into operation during this period. The impact of the nuclear crisis in Japan has boosted its LNG imports to 8.5 Mtpa during 2011. Also Japan has imported large volumes of spot LNG at very high prices to ensure reliability of supply. In 2012, Japan will increase its LNG spot requirements even more due to their total nuclear shutdown. China is emerging as a main growth center in terms of investment in re-gasification plants. Hence China will be importing large volume of LNG in future. In next two years, China will provide five new plants with a total capacity of 14 Mtpa. The LNG supply is expected to expand after 2016 due to variety of factors:

- Ongoing project in Australia which is set to add about 33 million tonnes per annum (Mtpa) of LNG to the current supply from 2016.
- Increasingly, LNG cargoes initially meant for the United States have also been diverted to Asia and Europe—in line with discovery of Shale Gas in the US that have turned it into a major exporter, instead of a net importer, of gas.

- In parallel, other regions in the world including China, Australia and Europe could tap on their unconventional gas reserves.
- Development of floating LNG production, where offshore gas fields could be accessed at a lower cost and a smaller environmental footprint. Some industry players like Shell have already invested in this development. The success of FLNG could bring even more LNG supply projects online, and open up more supplies and choices for LNGbuyers.

Qatar – Supplier of LNG

Qatar is very prosperous as it is richly endowed with natural resources, the oil and gas sector dominates the economy. Despite the global financial crisis, Qatar has prospered in the last several years - in 2010 Qatar had the world's highest growth rate. Qatari authorities throughout the crisis sought to protect the local banking sector with direct investments into domestic banks. Economic policy is focused on developing Qatar's non-associated natural gas reserves and increasing private and foreign investment in non-energy sectors, but oil and gas still account for more than 50% of GDP, roughly 85% of export earnings, and 70% of government revenues. Oil and gas likely have made Qatar the highest per-capita income country with the lowest unemployment. Proved oil reserves of 25 billion barrels should enable continued output at current levels for 57 years. Qatar's proved reserves of natural gas exceed 25 trillion cubic meters, about 14% of the world total and third largest in the world. Qatar is the world's largest exporter of LNG, supplying around one- quarter of global exports in 2010 (Fig. 1).

Qatar's economic policy has been focused on developing its vast oil and natural gas reserves with considerable success. Qatar's transformation began in 1991, when the Government of Qatar and Qatar Petroleum committed to construct the largest LNG port in the World for ~$1 billion dollars at Ras Laffan. Incidentally, this investment decision occurred prior to any firm Buyer commitments to purchase LNG. This port, originally designed for ~50 MT of LNG, will be doubled in capacity over the next few years to handle all of Qatar's Expansion Plans, including ~100MTA of LNG, as well as condensate, LPG's, and GTL products.

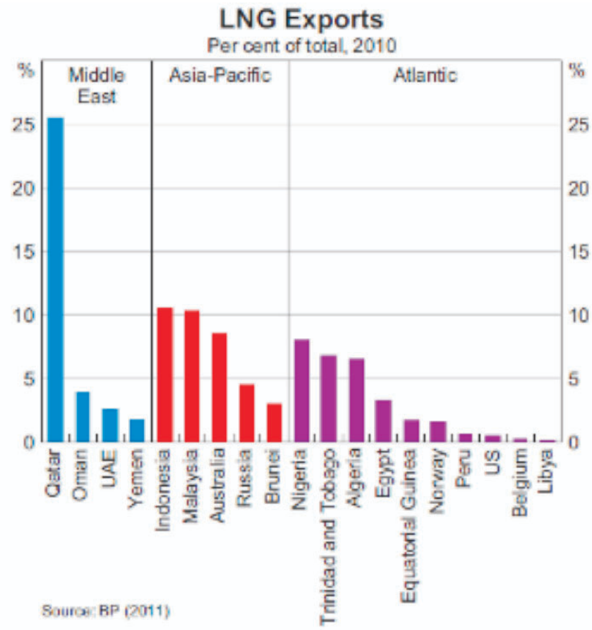

Figure 1: Qatar leading the LNG Exports.

Qatar has the advantage of having the resources concentrated in one field, Qatar's gas reserve is contained in the single largest discovered non-associated gas field, called the North Field, and is estimated to contain some 900 trillion cubic feet of reserves. For comparison, this is over 60 times larger than Exxon Mobil's Indonesian LNG operation at which was developed over 30 years from a reserve base of 14 trillion cubic feet.

Perhaps the most significant advantage that Qatar has, beyond its natural resources, is its geographic location. Strategically positioned almost mid-way between the Pacific Basin (PB) and Atlantic Basin (AB), Qatar has the ability to send cargoes to ports ranging from the US Gulf Coast to Korea. This globally advantageous positioning will allow Qatar to pit PB and AB consumers against one another and fetch globally superior pricing for their shipments. Of course, demand restraints vary between the basins, but the underlying needs are the same regardless of the way contracts are priced and what they are tied to. Competition will breed synergy and Qatar is in the ideal location to exploit the emerging market. An important factor enabling Qatar LNG to compete worldwide, particularly in the liquid UK and US markets is the advancement in large LNG ship technology. Qatar has actively developed large LNG Tankers in a range from 210 km3 (Q-Flex) to Tankers as large as 265 km3 (Q-Max). This will lead to significantly lower shipping costs, which will allow Qatar to expand their global reach and compete longterm.

Qatar is a Leader in Technology and a pioneer in the development of Large LNG Liquefaction rains. With each new expansion train, Qatar has set the record for the largest train ever built. The Qatar Gas train seven, was the last in its expansion plan to reach capacity of 77 mm TPA of liquefied natural gas (LNG) exports.

To help accomplish its vision, Qatar Petroleum has selected strong partners for developing the North Field Gas Resource. Qatar has strong relationships with Japan, Korea, the US and Europe, and is "Investor Friendly". Multi-National Oil Companies including Exxon Mobil and Total currently participate in LNG Joint Ventures, along with several Japanese Trading Companies. In addition, new relationships have been developed with players such as Conoco Phillips and Shell to capture US LNG and GTL Market opportunities.

Australia may emerge as a threat to Qatar in terms of production of LNG. If all projects currently under construction or at a proposal stage are developed, Australia may produce up to 98.8 Mtpa in 2016/17. Australian projects are facing major challenges that will determine their success or failure of each project as well as delaying entrance into operation. A very expensive manpower together with very stringent immigration laws have lead to cost increases of up to 30% in some cases.

Conclusion

As the global economy continues to grow and evolve, the role of energy will become ever more crucial and as its importance is magnified, its deliverability will be vital. As traditional sources of gas supply fail to meet rising demand, LNG will have an opportunity to experience momentous growth.

LNG presents an opportunity for the monetization of plentiful stranded natural gas resources. The ability to move gas from displaced markets to high demand regions has revolutionized natural gas markets. It will be growth in international LNG trade that continues to globalize gas markets and eventually establishes synergy. Globalization of gas markets will mean market synchronization which given enough time could lead to an eventual convergence. Qatar has cultivated a stable, supportive government which realizes the potential of its resources and acts not only in the best interest of its citizens, but acts fairly and amicably with consumer nations and has not been known to use their position as an energy rich country as a political weapon. In an age of supply uncertainty, an ally such as Qatar is invaluable to any energy dependent nation or economy.

References

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