ESSENTIAL FACTORS FOR IMPROVED MARKET ACCESS: PRICING, REGULATION, PARTNERSHIPS AND TECHNOLOGY

Roger Bounds
Vice President Global LNG
Shell International Exploration & Production

S.P. Singh
Manager, New Markets
MENA & South Asia

ABSTRACT

This paper will examine how regulation or the lack thereof in some instances has inhibited greater penetration of LNG in developing markets. LNG is urgently required in growth markets to (a) ensure availability of energy to support economic growth, (b) meet tightening environmental standards, and (c) plug dwindling domestic supply, etc. The competitiveness in relation to diesel is also clear. However, regulation often makes it easier for buyers to continue importing expensive liquid fuel from a national company instead of importing LNG, which would likely be procured under a different procedure. Further, the manner in which tariffs are computed (e.g. in the power sectors) makes the switch difficult. This could be on two accounts. First, tariffs are grossed up across different fuel types. Different power generators’ economics will be hit differently depending on their fuel mix, hence not all parties may be incentivized to support a fuel switch. Second, regulators are not likely to vary tariff directly in relation to oil price making the residual price risk difficult for generators to bear in cases where fuel price is a pass through. Effective regulation is essential and tax may also have a big impact on LNG cost effectiveness – in some areas, LNG is taxed disadvantageously when compared to liquid fuels. Other elements of regulation that play a role relate to port tariffs. In failing to act quickly in ensuring a level playing field, some governments are losing significant sums in cost savings annually, throttling domestic output and negatively impacting the environment.

INTRODUCTION

In this industry we understand why the world has begun to talk about a “natural gas revolution”. Indeed, we see the proof of that statement here, at an LNG event that when initially planned was to have been held in an LNG importing nation. When the American Gas Association was awarded hosting of LNG 17 in 2007, expectations were that the United States would become a major importer of LNG. US LNG imports increased significantly from 1999, peaked in 2007 at about 16 million tonnes, and have decreased ever since, totaling about 7 million tonnes in 2011. As of mid-January 2013, 23 LNG export applications have been filed with the Department of Energy (DoE). With developments in Australia, East Africa and the Mediterranean, 2012 was a particularly big year for natural gas in general and LNG specifically. Here in the US, Cheniere’s Sabine Pass Liquefaction export application was the first to be approved by the DoE and the Federal Energy Regulatory Commission (FERC).

Despite the ongoing economic downturn, global gas demand remained strong and continued to rise. We expect to see global gas demand growing by over 60% from 2010 to 2030, or 2-3% per year, driven by demand growth in Asia, the Middle East and the Americas, primarily in the power and industrial sectors.

3 Shell analysis.
World-wide LNG demand is likely to continue to grow rapidly; in fact, demand for LNG is increasing at a faster pace than overall natural gas demand and is expected to double in this decade.⁴

Recognition of the role that gas has to play in the energy mix has continued to rise. The international Energy Agency (IEA) followed up their 2011 special report (The Golden Age of Gas) with another known as “Golden Rules for a Golden Age of Gas” in May 2012. This was immediately prior to the World Gas Conference in June 2012, where industry leaders met in Kuala Lumpur, Malaysia to hail the shale gas revolution and celebrate the achievements of the industry to date. And in Europe, the European Commission’s Energy Roadmap 2050 recognized that gas will be “critical for the transformation of the energy system”.⁵

AIMS

In this context of growing penetration of gas, as an industry we need to do more to be able to deliver. This paper will examine four factors that we consider essential to improve LNG market access: pricing, regulation, partnerships, and technology.

1. LNG as a fuel for the future

The growth in gas demand has led to many new opportunities for LNG, to bridge longer distances between supply and demand regions and to unlock stranded gas reserves.

The LNG market has doubled every 10 years in the last two decades from some 50 million tonnes per annum (mtpa) in 1990 to over 240 mtpa in 2011 – and we expect LNG to supply over 15% of global gas supply by 2030, compared to 10% today. We expect that growth to continue, to double again to about 400 mtpa by 2020 and to continue to grow beyond that.⁶

* Risked view of all LNG supply projects

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⁴ Ibid.
⁶ Shell analysis.

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Figure 1: LNG Supply and Demand Dynamics
In this audience we all recognize that gas (transported as LNG) has many benefits and enjoys four main advantages over other forms of energy:

1) Gas is a responsible choice as a replacement for either oil or coal. Switching from coal-fired power generation to gas will typically reduce emissions by about half with further improvement possible through carbon capture and sequestration, while moving to gas as a transport fuel can improve local air quality.

2) Gas is competitive with other energy sources. New gas plants are much cheaper to build than any other new-build competing source of electricity and gas-fired power stations can be built and operating in a much shorter timeframe than those of coal or nuclear plants. And in countries such as the US, where large reserves of previously inaccessible gas are being brought on stream, gas is now cheaper than any other energy source.

3) Gas is reliable. The IEA estimates that there are more than 250 years of gas supplies at current consumption levels7, and the sheer size and geographic extent of these resources help to create flexibility and improve supply security, as do the ongoing diversification of trading partners for both importers and exporters and the expansion of physical infrastructure.8

4) LNG is safe. The industry itself has an excellent safety record9, but in addition the use of LNG as a fuel is also safe.

The case for LNG is clear and LNG demand is projected to grow steadily. However, in order for the industry to deliver that growth, a number of key success factors must be in place.

KEY FACTORS FOR SUCCESS

2. Sustainable domestic pricing frameworks

Domestic fossil fuel subsidies impede adoption of LNG in some markets. They may be introduced for a variety of reasons, for instance to protect or encourage a domestic industry by easing economic conditions or to benefit a disadvantaged group by reducing energy costs, but they can prove to be a poor policy choice for the following reasons:

a. Subsidies often do not have the intended effect. In fact, when it comes to alleviating poverty it has been shown that subsidies disproportionately benefit the middle class and the rich. In 2010, $409 billion was spent on fossil fuel subsidies, and only 8% of that went to the poorest 20% of the population.10

b. Subsidies can result in a burden for the government that promotes them in so far as they strain state budgets and worsen trade balances and energy security.

c. Finally, subsidies distort prices and alter consumer behavior while providing a disincentive to project developers and investors. Fossil fuel subsidies can lock countries in to technologies and choices that may not be in their best interests. For example, LNG as a transport fuel has a cost advantage over diesel - yet when diesel is subsidized, LNG can no longer compete.

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Subsidies — defined by the World Trade Organisation (WTO)\textsuperscript{11} as financial contributions by governments or public bodies that are more favorable than those that could be obtained from the market — are difficult to measure owing to the broad definition, to governments that are unwilling to be forthcoming about their policies, and to differing calculation methodologies. Figure 2 shows global fossil fuel consumption subsidies according to the International Energy Agency.

Average subsidisation rate:

- 50.7% : 87.8%
- 23.2% : 50.7%
- 0.3% : 23.2%

The realization that subsidies are not having their intended effect led G-20 Countries to commit to “phase out and rationalize over the medium term inefficient fossil fuel subsidies … [that] encourage wasteful consumption” at a 2009 Summit.\textsuperscript{13}

In 2011 alone, the IEA estimated that $523 billion went into fossil-fuel subsidies, 30% higher than in 2010,\textsuperscript{14} and while some encouraging signs can be seen, it is clear that eliminating subsidies is not necessarily straightforward. For example, India’s 2012-2013 budget, released in March 2012, proposed to cap all subsidies (food, fertilizer and petroleum products) at 2% of GDP with a further decrease to

1.75%. However, in July 2012 it was reported that the government had already spent most of the $7.6 billion set aside for fuel subsidies in the 2012-13 fiscal year.

The industry has a major role to play in encouraging the development of sustainable domestic pricing frameworks. We need to do more to engage with policy makers, regulators and wider stakeholder groups in existing and new markets to discuss the unique role that gas can play in the transformation of the energy system towards a competitive, sustainable and reliable future.

2. Regulation

Apart from subsidies, government policies and action or inaction can have other long term impacts which hinder market forces and unintentionally prevent LNG imports.

a. Compulsory third party access to LNG facilities: governments in new markets may try to encourage competition in supply of LNG by requiring open access from the outset. Such a move has dampened the investment appetite of those that see the risk of sub-optimal returns from such unproven markets as unacceptable, particularly when traditional alternative markets such as Japan continue to demand more LNG.

b. Government owned gas monopolies: entities that came into existence on the basis of declining, subsidized domestic gas find it difficult to get out of the entrenched position of providing cheap gas and owning customers and pipeline infrastructure. If transportation and distribution monopolies can be disaggregated and non-discriminatory access introduced, we believe that to be a better option for increasing gas availability.

c. Tenders: requiring tender guidelines to be followed in securing a bespoke, complex value chain like LNG may not always yield the speed, transparency and cost efficiencies sought. A properly constructed tender that recognizes the non-commodity nature of long-term LNG supply and allows for a smooth tendering process requires experience and therefore other development options may be more successful. Some of the specific issues with tenders in LNG development are:

i. They are costly and complex processes that can be easily derailed, either by minor administrative errors that lead to bid disqualification or by bids that are too disparate to be easily judged and compared. Bid preparation itself is an expensive and time-consuming exercise for the bidders and when the process is derailed it is frustrating for all involved. At least three recent tenders remain unresolved more than a year from publicly opening, and in some cases many years from initial framing.

ii. Where tender processes end up derailed or take an unexpectedly long time to complete, host governments are forced to rely on expensive fuel alternatives in the meantime. This may lead to strained budgets or even curtailment of certain sectors, both of which cause further complications. In these cases, the savings that could be obtained by following an efficient and expeditious process could quite likely be higher than those presented by differing bids.

iii. Government tenders often emphasize lowest cost at the expense of other benefits that are either not well-understood or are difficult to compare to other bids.

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3. **Strong partnerships for investment**

The capital intensity and utilization risks of LNG projects can be significant, especially to those new markets with limited appetites for investment or risk. Developers with the ability to help via an appropriate allocation of risks and rewards can step into this area. Shell has for example taken a degree of merchant risk on terminal developments in the past and taken the lead in supporting markets to develop. However, these informed commercial decisions require a willing and supportive host government which will not only play a role in facilitating permitting and sustainable development but must also be aligned with the developer in securing LNG procurement and regulating market entry. This is particularly the case where downstream gas, power or electricity markets have price setting and regulatory structures.

A solution is to have empowered local decision makers in a “trusted professional” working relationship with a key development partner. That development partner should be chosen in a clear and transparent process on the basis of their track record of business principles and performance, experience in LNG development and willingness to share commercial risk in an equitable fashion. Together the host and development partner can make decisions on location, risk mitigation, local engagement, timetable and supply conditions – all of which are necessary for an informed and realistic LNG supply negotiation. Those elements that can be tendered such as EPC elements, prime cost elements and equipment can be put to market with transparent and agreed processes, including provision for local content, knowledge and skills development where appropriate.

In time and with operational experience and market growth, additional tranches of LNG and greater demand will need to be accommodated. At that time the buyer will find a wider range of realistic supply opportunities are available than appeared to them when initially considering the terminal and market.

Of course, it must be acknowledged that the solution proposed above requires an appetite for commercial risk, pre-investment and an expectation of return given the uncertainties involved.

In Shell we support clear and transparent decision making and are held to our business principles - you will see Shell participating in tenders worldwide for equipment, sites, products and of course LNG purchase and supply. However we are also one of the largest suppliers of LNG via bilateral negotiated contracts and in integrated developments such as these we still see most of the LNG supply bilaterally negotiated with the key development partner, using best practice in Sales and Purchase Agreements to ensure complementary supply provisions that meet the needs of the customer, the downstream market, and the safe and efficient operation of the terminal.

As an example, Shell assisted the Dubai Government in realizing an effective LNG import solution over the longer term. The development process ran between 2006 and 2008 during which time the tasks necessary to evolve an appropriate value chain model were undertaken. A clear understanding of Dubai’s energy strategy, customers, infrastructure availability at the port side (within the constraints of the port master plan) and off-taker requirements were prerequisites to enable this to happen. This understanding in turn helped the Dubai Government in taking decisions related to, amongst others, terminal equity, floating storage and regasification unit (FSRU) ownership, ship-shore interfaces, pipeline routing, operational philosophy, capacity allocation, contracting strategy, supply construct and downstream gas pricing. The permutations possible in arriving at the appropriate set of decisions on the above factors are many and we believe that the project benefited from a dialogue between the host government and an experienced LNG player like Shell from the outset, through development and commissioning.

A commercial solution of this nature increases the probability of success and ensures transparency and competitive solutions.
4. Increased investment in technology

As with many products, the unit cost of handling LNG comes down dramatically with larger volumes. This has given large scale, base load markets such as power an advantage while small scale markets face disproportionate costs as they start up and grow. Scalability and the ability to remain economic at lower volumes are therefore important when developing new markets. In recent years solutions have been found in both these areas which can resolve and speed the adoption of LNG.

For example, FSRU technology is now widely accepted as an industry standard and makes use of existing marine facilities with minimal onshore impact. Our colleagues such as Excelerate, Golar, Hoegh and others have done pioneering work in this area which has resulted in substantially shorter lead times for development and solutions that retain a degree of flexibility to cater to the uncertainties inherent in longer term developments. On account of lower capital cost, these solutions have the advantage of handling smaller volumes more economically and sustainably and can be scaled up as demand grows. There remains even more work to do in this area to continue to innovate and commercialize technical solutions.

At the same time small scale liquefaction – for instance, Shell’s Movable Modular Liquefaction System (MMLS) - is designed to monetize smaller pockets of stranded gas by overcoming logistics constraints and making it available as LNG for transportation to traditional liquid fuels markets. Technological advancements, particularly in the area of storage and transfer systems are allowing LNG to penetrate the road and coastal marine transportation sectors. As an example, Shell has recently taken a positive investment decision on the Canadian Green Corridor project, where an MMLS unit will be installed at Shell’s Jumping Pound gas plant near Calgary in Canada which will supply LNG to fuel stations on a busy truck route. Initiatives are also underway throughout industry to develop similar solutions for coastal marine vessels in North America, Asia and Europe, thereby allowing them to meet tightening emission norms.

The industry has also delivered improved LNG shipping performance, lowering costs through larger ships, improved efficiency, and optimized routes which has improved responsiveness and reach into new and existing markets.

Shell’s commitment to innovation has led to a robust research and development budget to significantly grow production, transport and downstream applications of LNG and has identified several potential opportunities in this space which it will progress.

CONCLUSIONS

We conclude on an optimistic note that as the gas industry matures and develops so too does the size of the LNG market. More markets, countries and consumers are being reached than ever before. However for the industry to continue to grow at this pace we need to work with partners and governments to improve domestic pricing frameworks and regulation, develop strong partnerships, and invest in technology.

While many of the suggestions here will not be easy to achieve and complexity will remain as LNG markets and domestic energy markets interact we are optimistic that together policy makers and the industry can meet these challenges.

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