Stirling LNG
A division of Stirling Infrastructure Partners Ltd

A Practical Guide to the LNG Market for Buying / Selling Long-Term LNG Off-takes

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ALIGNING OF INVESTORS, LNG SUPPLIERS AND OFF-TAKERS

The purpose of the document

This paper is intended to provide an overview of the global LNG market to help both LNG suppliers, off-takers, and project sponsors to understand the interactions between the supply-side/buy-side for LNG and the financing and development of new LNG infrastructure on the international markets.

This paper describes Stirling LNG's professional expertise in advising LNG market participants in making prudent decisions in managing risk. The approach is to support LNG market participants in achieving optimal returns on capital employed when making a long-term LNG purchase/sale agreement or making a project finance commitment.

About Stirling LNG

Stirling LNG acts as an advisor to major utility companies and traders, on whose behalf the firm buys high volumes of gas on medium and long-term off-takes. The firm acts as a financier for arranging the debt and equity to finance the development and build of new LNG infrastructure globally.

Stirling LNG's Markets Team applies a risk-based approach in advising on the buy-side of LNG off-take agreements. Where the volumes of LNG purchased are sufficiently high, Stirling LNG creates and advises on the development of strategic alliances whereby the supplier and off-taker can share risk and jointly own infrastructure to support high volume trades.

Stirling LNG also advises on risk mitigation depending on the counterparty and provides advice and analysis to clients on how to manage the volatility of gas prices through intelligent portfolio construction.

Our methodology

Stirling LNG's analysis of LNG supply and demand trends is determined by analysing both key global economic fundamentals and current country-by-country data sets. The firm has developed and utilises internal, proprietary financial models to assess and manage risk in the LNG market. Our analysts assess the global outlook for demand and supply in key LNG importing and exporting regions. This assessment is complemented by the constant

examination of the development of the global LNG supply chain. The construction of new liquefaction trains, regasification terminals and storage infrastructure is closely monitored by our LNG team. On the basis of such elements, we are able to form our in-house views and formulate forecasts of the development of the LNG industry. The careful examination of all these variables then helps the team to build financial models for the management of risk in the LNG market.

Utility companies

National utilities should not be overly dependent on any one source of energy. A well-managed utility company should seek to optimise profitability by having exposure to a mix of energy sources, in order to diversify risk. Utilities, depending on national and international policies, will increase or decrease their exposure to certain sources of energy. This will include their exposure to gas, coal, renewables, crude oil, and nuclear energy.

LNG market timescales

From a trading perspective, at Stirling LNG we accept the LNG market to be conventionally segmented as follows:

The "short-term market/contracts", including both the spot market and contracts for a period shorter than 2 years

The "medium-term market/contracts", covering a 2-5 years period

The "long-term market/contracts" covering periods of more than 5 years

Our specialism lies in the long-term market segment. The firm is primarily concerned with long-term supply contracts/off-takes.

The evolution of the global gas market

The global gas market is currently experiencing a period of growth with governments and national oil corporations internationally discovering new reserves of natural resources. Gas, as a resource, is seen by many governments as a possible means to improve prosperity and to access foreign income. For gas-producing countries, the benefits are often claimed to be greater energy self-sufficiency.

However, for gas suppliers, the market is a complex and highly competitive environment. New gas field discoveries globally will see increases in gas supply. With this in mind, LNG needs to be understood in terms of global energy demand requirements and the supply of both gas and LNG in pricing medium and long-term off-takes. These are determined through a broad range of indicators assessed on a country-by-country basis and in the context of government policies. The indicators have to be assessed by closely analysing the key factors of each country's energy policy, and the country's targets to reduce its carbon emissions, and its ability and commitment to do so.

Monitoring global gas supply

Stirling LNG is constantly monitoring the status of major and secondary gas reservoirs, and the development of new LNG infrastructure to support the supply of LNG. The firm also monitors regasification terminals' capacities internationally. Together with this data, we collate information on gas storage facilities and capacities.

Stirling LNG classifies gas projects into three categories:

- 'Operational assets' - ready and available to provide supplies, subject to normal regular maintenance schedules
- 'Assets under construction' - have reached FID and have a scheduled commercial operation date "COD"
- 'Proposed sites' – are identified locations suitable for E&P, subject to planning and environmental approvals, that have not yet reached FID

The firm assesses and categorises new sources of gas supply, in order to assess what level of supply is due to come onto the market. From this analysis, the firm forms an opinion on the availability of reliable volumes of gas that will be available in the market relative to the projections of global demand, which, in turn, will determine the price of LNG for medium and long-term off-takes.

Outlined below are some, but not all, of the factors that are taken into consideration in Stirling LNG's pricing models:

1. The status of current operation volumes of LNG from both exporting and importing terminals

2. The status of LNG export and import terminals that have reached financial close and are now under construction with a commercial operational date (COD)

3. Making assumptions based on historical data of factors which could unexpectedly impact spot gas prices, such as extreme weather events and supply-side infrastructure breakdowns

4. Global storage availability and current stock levels

5. International targets to reduce CO2 emissions

6. Government energy policies

7. Political and international risk

8. Local currency risk associated with gas projects

Naturally, no forecasting can be fully accurate, and Stirling LNG's analysts sit as a committee to collectively determine 'fair' assumptions used by the models. These assumptions are made on the basis of core economic and market fundamentals for the purposes of building the firm's financial models.

Short-term global LNG market outlook

The LNG short-term market, as with the medium and long-term, is directly impacted by the volume of supply and demand for LNG. Two key factors have impacted the current short-term LNG market. Firstly, there is and will be broadly a greater volume globally of LNG available on the market, relative to demand. Secondly, many countries that once had a national utility that supplied their entire nation no longer do so, and these markets have opened up to greater competition by private companies now competing for market share. This deregulation means that new entrants have emerged onto the global LNG market, seeking to buy gas to supply their local markets. Many of the new market participants are unable to secure long-term off-takes due to their credit rating and therefore are more able to participate and trade only on the short-term and spot market.

If market data shows that there is currently an oversupply of LNG in the market, and that additional supply due to come online outpaces or at least matches demand growth, then market sentiment will be against investing in long-term off-takes. The reason for this is that it is perceived that short-term gas prices will either remain steady or see a downward trajectory. Indeed, the general trend is that short-term contracts and spot trades are taking a larger proportion of all global LNG trade than they have done, historically – and the proportion of medium and long-term contracts has fallen. The key question is the following: will this remain a sustainable trend, or will it plateau or reverse, and, if so, when will this occur?

Medium to long-term global LNG market outlook to 2035

The long-term global outlook towards LNG is broadly positive with increasing global supply and increasing demand for off-takes. However, there are underlying factors that will impact the medium and long-term price for LNG. Based on Stirling LNG's analysis, there is a risk that the current LNG and gas hub prices will not remain at historical levels with a comparable level of price volatility.

Challenges in bringing new supplies of LNG onto the global markets

There are a significant number of projects proposed for development, or under construction between now and 2024. Although global LNG supply is anticipated to increase significantly, not all of the proposed projects will successfully reach financial close. Moreover, some of the projects will have both technical and regulatory challenges to overcome. Therefore, the general trend has been for off-takers to secure supply from reliable sources. These potential bottlenecks in new supplies, on a balance of probabilities and market signals, suggest that supply volumes will not reach anticipated volume capacities.

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The financing of new LNG infrastructure

Indeed, from a financing perspective, there are increased risks for both debt and equity providers in the development and building of new projects. From a financing perspective, investors will seek a series of key assurances, which this paper will not go into in detail. However, the main concerns for capital providers are how competitively can the project sponsors produce (and deliver) the LNG compared to the rest of the market? Does the project sponsor have in place the security of long-term off-takers? If so, what is the off-takers' credit quality? Empirical data shows that at the time of writing this report, the trend has moved towards less gas being bought on mediumterm and long-term off-takes, with an increasing volume of global gas being traded on the short-term and spot markets. This trend is unhelpful to project sponsors, who seek to build new LNG infrastructure such as export trains and terminals. From an investor's perspective who would finance the build and development of new LNG infrastructure, a high proportion of new projects are subject to a high level of merchant risk. Merchant risk is the risk that the commodity being sold is subject to daily market volatility based on the demand and supply for gas. Both lenders and equity providers will seek some of the volume of gas to be sold on a pre-defined and agreed pricing model to finance the development and build of a new proposed LNG facility.

Stirling LNG is in regular contact with oil majors, global LNG suppliers, and medium and long-term off-takers. Indeed, from the project financing side, the firm is in conversation with major capital providers, in order to understand their appetite for risk and on which terms they will allocate equity and/or debt into both existing and proposed projects.

Off-taker risk

The challenge for LNG suppliers is that many of the new off-takers, who are seeking to take a share in their respective local markets are not investment-grade off-takers - as historically, national utility off-takers are, and were. This risk needs to be assessed as off-takers that have a lower credit rating are less likely to be able to demonstrate to financiers their ability to commit to both medium and long-term off-takes. Indeed, this may impact on whether the LNG supplier wishes to contract with such parties on long- and mediumterm contracts and, if so, on the same financial terms as an off-taker of a high investment-grade rating.

Stirling LNG's analysis

Stirling LNG's analysis of market participants suggests that while investors are able to understand the risks of financing new LNG infrastructure, a key factor to be able to deliver new infrastructure is price certainty and, without sufficient volumes of long-term off-takes being secured by project sponsors, investors will be more selective in which projects to invest in. This will directly impact the availability of supply volumes and projects may become delayed. The delay of both proposed projects and projects under construction will result in less supply than anticipated and should, therefore, all other things equal, see an increase in the long-term pricing of LNG as demand for LNG continues to rise globally.

Analysis of both international government policies and economic fundamentals shows that demand for LNG will continually rise significantly from now to 2035. Factors that support this include:

- The signing of the Paris agreement / COP 21 to reduce greenhouse gases makes LNG a more efficient and reliable source of energy (LNG is not carbon neutral - it is merely less polluting than both crude oil and coal).
- Renewables are not as reliable as gas, and so gas will take up the required excess in demand across many markets.
- The increase in global population will require greater access to power and electricity across the world. A quick and easy solution for governments would be increased consumption of LNG and gas.
- An increase in the wealth and expected quality of life for citizens globally is anticipated. These wealthier, more expecting, citizens will demand more energy and provision of gas.

Stirling LNG forecasts that a more significant share of total LNG volumes will be traded under shorter-term contracts globally. Coupled with the greater volumes of LNG available on the market, this is expected to lead to more transparent pricing mechanisms at regional hubs.

Conclusion

Given the LNG market's fundamentals, Stirling LNG's analysis is that for both utility companies and gas traders, it would be prudent to hold a proportion of their total gas portfolio on long-term off-takes as this mitigates the risk of fluctuating short-term LNG prices and having a defined source of supply.

For off-takers, Stirling LNG is sufficiently close to the global supply market. The firm advises on the best way to buy gas and LNG at the lowest price and, depending on the off-takers, and the volume of gas/LNG sought, there may be strategic opportunities to own part of the supply chain. For smaller and new off-takers, Stirling LNG can assess new technologies, such as how FSRUs may add-value to local infrastructure. The firm also advises on market signalling and presenting sub-investment-grade off-takers as worthy counterparties.

For suppliers, Stirling LNG can introduce high-quality off-takers, as well as provide risk management against the risks posed by lower quality off-takers. Stirling LNG can source debt at a lower cost than is typically available to other market participants, as well as introduce equity into transactions – where required. The firm can offer this because of the relationships it has with export agencies and unique forms of credit.

About Stirling LNG

Stirling LNG is a division of Stirling Infrastructure Partners. Stirling LNG performs three key functions:

Buying and selling LNG on behalf of off-takers and LNG suppliers on short, medium and long-term contracts. The firm provides purchase and sales solutions to finance these contracts.

Arranging capital for gas infrastructure and advising on the acquisition and disposal of upstream, midstream, and downstream oil and gas assets.

Arranging capital for major oil & gas companies and project sponsors. The firm specialises in financing the development of new and existing gas power plants and gas infrastructure. This includes both floating and on-land assets.

Disclaimer

This document has been prepared for information purposes only and does not represent advice. Stirling LNG can provide advice on a case-by-case basis depending on a specific project and requirements of our client.

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