

# ENTER THE INDEPENDENTS

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Prepared for



## Abstract

On the liquefaction side, the LNG industry has been dominated by international oil & gas majors both as project sponsors and as operators. Their experience, large balance sheets, access to markets and ability to underpin construction and offtake have been critical to successfully financing these large undertakings. As the industry matured and lenders became more comfortable with LNG market risks, the contracts underpinning liquefaction projects became increasingly flexible. Recent projects sponsored by supermajors have incorporated netback pricing, destination flexibility, spot market sales, and other arbitrage opportunities, even as the market faces credit constraints and construction challenges.

At the same time, new and significantly smaller entrants are emerging to take advantage of the global liquefaction crunch. These new players seek to develop LNG plants that are located in new provinces, such as Papua New Guinea or Peru, or are based on unconventional gas sources, as in Australia. Apart from the political and technical risks related to these developments, the sponsors lack the track record and financial strength of the supermajors, and face tremendous challenges in mobilizing financing.

This paper addresses the obstacles facing smaller LNG developers and compares financing options and strategies available to small developers and supermajors. A central argument of the analysis is that while major LNG developers are introducing more flexibility into their LNG contracts, projects sponsored by small players will be forced to adhere to more traditional project structures. The paper incorporates a case study of the recently financed Peru LNG to illustrate the types of challenges faced by new or small LNG developers.

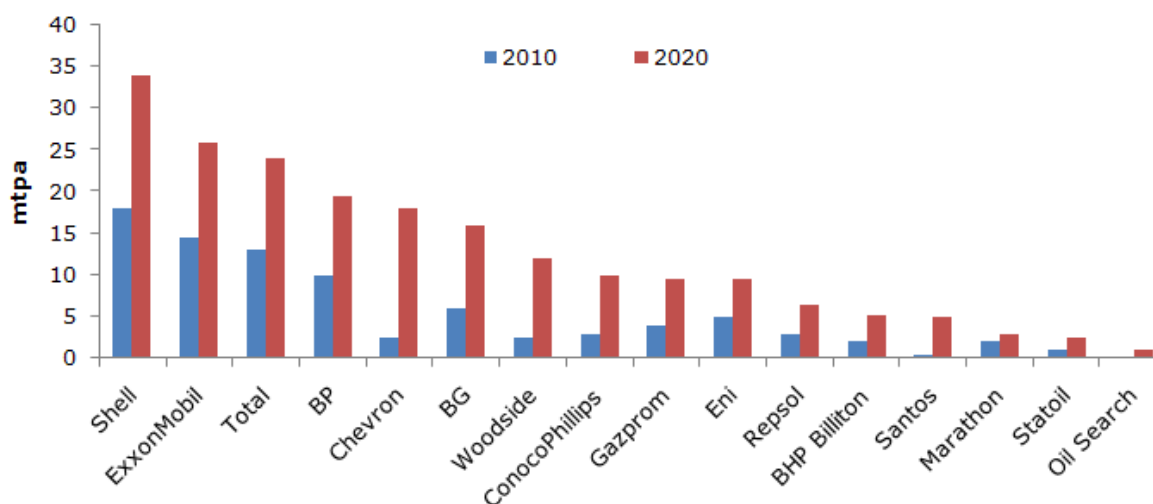
## Introduction

Historically, LNG liquefaction has been dominated by major integrated oil and gas companies, along with their national oil company (NOC) partners, both as project sponsors and operators. Leveraging exceptional engineering, project management experience, and large balance sheets, the supermajors<sup>1</sup> are able to mobilize capital more readily than smaller independent oil companies. As they have developed their LNG shipping, regasification, and marketing networks, supermajors have also been able to introduce greater flexibility into LNG project structures, particularly with regards to LNG sales and purchase agreements (SPAs).

A driving factor in the predominance of supermajors is the capital-intensive nature of liquefaction projects: the two most recent LNG projects to begin deliveries, Qatargas 2 and Sakhalin II, cost US\$8.5 billion and US\$20 billion, respectively. In comparison, one of the larger independents in Australian liquefaction, Santos Ltd., has a total market capitalization of US\$9.7 billion.

Despite the advantages that supermajors possess in pursuing world-scale liquefaction, as the technology and structure of these projects becomes more commonplace, independent players are emerging and are expected to play an increasingly important role in LNG markets by 2020. As Exhibit 1 illustrates, substantial growth in liquefaction capacity is expected by non-majors such as Woodside, Santos, and Oil Search. Independents are pursuing a number of projects using innovative technologies or unconventional reserves, in addition to projects located in countries that have not yet entered the global LNG market. The higher risks associated with these niche plays, together with the absence of a supermajor sponsor, is likely to result in a return to more traditional LNG financing structures and long-term offtake arrangements.

Exhibit 1: Liquefaction Volumes by Company



Source: Macquarie Research, TDJ Estimates

## Supermajor Advantage

Of the LNG liquefaction plants currently operating or under construction, nearly 75% have supermajor sponsors, with another 15% being purely NOC-sponsored projects. Apart from the capital cost of liquefaction projects, a number of other barriers to entry have historically prevented the rise of independents in this stage of the LNG chain. These obstacles include the need for sponsor support, a lack of operational history, and access to reserves. While some of these challenges can be overcome through

technological advances, smaller sponsors will inevitably face constraints that prevent them from taking full advantage of the flexibility being developed in the market.

Firstly, conventional liquefaction projects require large, dedicated natural gas reserves; reserve requirements for a 5 mtpa liquefaction train are approximately 5 tcf. Many smaller companies do not have access to reserves of this magnitude, and lack the resources to develop both the upstream and midstream components of the LNG value chain. Even where LNG projects are not fully integrated, sponsors must demonstrate sufficient access to reserves in order to obtain debt financing. With the rise of new liquefaction technologies, smaller reserves are becoming a viable basis for LNG projects, opening the sector to independents.

In addition, as of 2006, all major greenfield liquefaction projects benefited from either sponsor completion guarantees or an agreement to underwrite debt payments until project completion. In order for such guarantees to be effective, sponsors must have sufficient creditworthiness and adequate balance sheets to convince lenders that they would be able to meet their obligations in the event that the guarantees are called on. Although some of the larger independent sponsors possess the financing capabilities to underwrite such an arrangement, most such guarantees are likely to carry less weight than a similar undertaking by a major integrated oil & gas company.

LNG projects are also frequently located in challenging environments, and new technologies are likely to add further technical challenges, such as complex systems for dealing with waves, wind, and currents in offshore liquefaction. The technical problems and cost overruns that have plagued facilities operated even by experienced sponsors, such as Shell in Sakhalin II, are likely to increase lender wariness regarding inexperienced independent operators. Strong warranties and guarantees, along with experience operating similarly complex projects, will likely be required to access significant debt financing.

Finally, integrated supermajors have the advantage of global marketing and regasification networks which allow them to act not only as sponsors of the liquefaction portion of the LNG chain, but also as upstream suppliers and downstream marketers or offtakers. This multi-role capability can substantially reduce supply and offtake risk, and has also prompted an increase in flexibility of new LNG projects, particularly with regards to SPAs.

### **Shifting Paradigms**

Early LNG financings, such as Qatargas in 1996, were underpinned by long-term (20-25 year) take-or-pay SPAs with third parties – usually Asian or European utilities – for the entirety of a plant's output. Supplies were directed to specific dedicated regasification terminals, effectively eliminating volume risk to the sellers. Sellers, in turn, would assume price risk, which would be mitigated by price caps and floors, ensuring predictable cash flows. Combined with other risk mitigation measures, this structure enabled highly-leveraged project financings of what was, at the time, a relatively unproven technology.

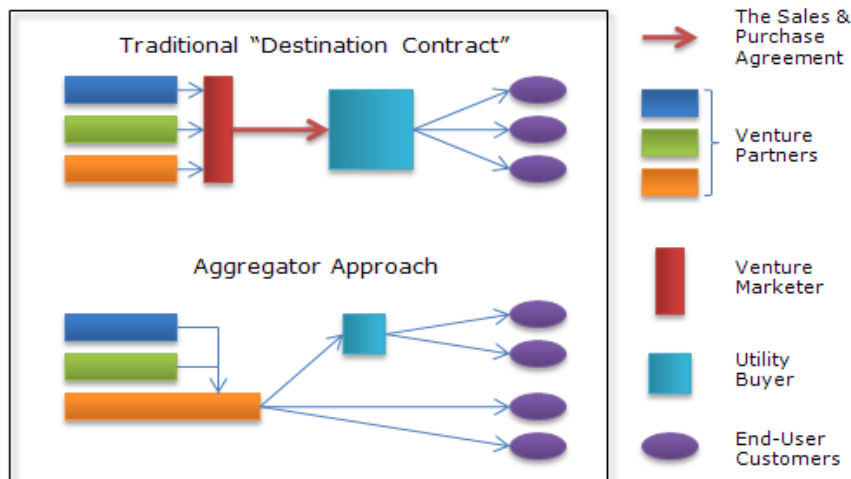
The growth of global regasification capacity and the opportunities offered by the price differential between the world's major LNG consuming regions (U.S., Europe, and Northeast Asia) have prompted adjustments to the traditional contracting model. Since 2003, buyers and sellers have sought greater contract flexibility to increase their upside potential from the burgeoning spot market, which by mid-2008 accounted for 13% of the LNG market.

One of the models that has emerged is the aggregator, or portfolio, approach. In the aggregator model, one of the sponsors of a project (or a partner in a venture) signs a contract with the venture to become its sales vehicle, selling the gas to both large customers through separate long-term contracts, as well as directly to end users. Aggregators maintain a large shipping fleet and regasification facilities around the world, and are able to deploy cargoes to the most profitable markets. In the case of BG Group, which is one of the world's leaders in this area, the company expects to increase its share of flexible LNG volumes from about 20% to 35% between 2009 and 2013.

In order to enable this aggregator approach, the LNG SPA must grant the buyer contractual rights to divert cargoes from the nominal destination, and also must provide a mechanism for sharing profits resulting from diversion of cargoes to higher priced markets.

Projects that have employed the aggregator approach have been centered in the Atlantic Basin (Trinidad and Tobago, Egypt), but have also included the North West Shelf venture in Australia, where North West Shelf Australia LNG is responsible for the marketing of all four of the venture's existing LNG trains. The differences between self-contracting and traditional long-term contracts are highlighted in Exhibit 2.

Exhibit 2. Traditional Contract vs. Aggregator Approach



Source: Jim Jensen

As an alternative to the aggregator approach, a number of projects have also implemented a hybrid structure, whereby the majority of a plant's capacity is contracted out under the traditional model, but a portion of output is set aside for spot market sales. In the case of Pluto LNG, Woodside Petroleum is reportedly planning to reserve one-third of the plant's output for flexible marketing, while the remainder will be sold under long-term SPAs.

Finally, SPAs have granted buyers greater flexibility in their long-term offtake agreements, either abolishing destination clauses outright or providing limited diversion rights. In the case of Tangguh LNG, for example, Sempra Energy may divert up to half of the cargoes contracted for the Costa Azul regasification terminal. The use of diversion rights has increased dramatically, more than doubling from 4.8 bcm in 2006 to 12.5 bcm in 2007 as offtakers shifted cargoes from the Atlantic to the Pacific Basin.

While improving the upside potential of LNG projects, these structures also expose projects to significant downside risk, particularly as most of these innovations have been accompanied by a departure from the S-curve pricing model, which employed price caps and floors. With Japanese natural gas demand forecast to decline 10% in 2009, and

similar demand reduction expected in South Korea and Taiwan, the Asian spot market is quickly losing its attractiveness. The United States, despite its low price environment, is likely to see a significant rise in LNG imports, largely due to its large storage capacity. In this environment, projects and companies that have maintained high exposure to long-term oil-linked offtake contracts will be better shielded from the downturn than some of the more flexible players – although some risk of contract renegotiations remains.

### **Rise of the Independents**

In spite of the high cost of entry, new companies are seeking to enter the LNG market, employing niche strategies to compete with the supermajors. At the same time, some of the incumbent players who have so far only taken small equity positions in liquefaction projects are seeking to take on operator responsibilities. Examples of independent-sponsored projects that are currently proposed are Progress LNG, Gladstone LNG, and Liquid Niugini Gas each of which demonstrates a different approach towards entering the liquefaction market.

#### *Floating Liquefaction*

A number of companies, from relatively small players like Flex LNG and Hoëgh LNG to supermajors like Shell, are looking into the development of floating liquefaction to monetize smaller gas reserves ranging in size from 2.8 to 140 bcm. For these projects, financing will likely prove challenging due to a range of technological risks and the lack of a financing precedent.

The world's first floating liquefaction project is expected to be Progress LNG, sponsored by FLEX LNG, Mitsubishi Corporation and Peak Petroleum Industries Ltd, a privately-owned Nigerian company. The project, which won approval from the Nigerian Department of Petroleum Resources in November 2008, would consist of a 1.5 mtpa, plus condensate, LNG producer vessel installed 50km offshore Nigeria. Although the high degree of technological risk associated with the project is likely to prove challenging from a financing perspective, there are a number of offsetting benefits to the project.

Firstly, floating LNG has the advantage of being a movable asset, reducing political risk and enhancing the value of the asset and consequently the security to the lenders. Further, floating liquefaction is expected to have substantially lower capital costs than conventional LNG projects, and would therefore be able to compete effectively with established projects. The sponsors estimate that the Progress LNG vessel would cost US\$594 per tonne/year, compared to costs in excess of US\$1,000 per tonne/year for conventional onshore facilities.

However, as a result of the combined effects of the current financing market environment, the short-term LNG supply glut, and the lack of proven sponsors, the project is unlikely to be able to achieve the same degree of leverage as conventional LNG projects. In addition, the project is already encountering development hurdles; the project's initial target deadline for end-2008 was not achieved, and the project's timeline is under review.

#### *CBM-to-LNG*

Both independents and majors have shown great interest in developing LNG projects based on unconventional gas resources, particularly coalbed methane (CBM, also called coal seam gas, or CSG), as illustrated in Exhibit 3. By means of aggregating hundreds of unconventional gas wells, these resources have the potential to support world-scale liquefaction facilities. To date, none of the proposed projects has reached final investment decision, and uncertainty remains about the timing of startup.

### Exhibit 3: Proposed Australian CBM-to-LNG Projects

Project	Sponsors	Liquefaction Capacity (mtpa)	Estimated Cost (US\$)	Estimated Startup
Fisherman's Landing LNG	LNG Ltd. Golar LNG Arrow Energy	1.5 – 3.0	\$500 million	2012
Southern Cross LNG	LNG Impel	0.7 – 3.9	Unknown	2013
TBN LNG	ConocoPhillips Origin Energy	3.5 – 14.0	>\$10 billion	2014
GLNG	Santos Petronas	3.0 – 10.0	\$6 billion	2014
Sun LNG*	Sojitz Sunshine Gas	0.5 -1.0	\$500 million	2012
Queensland Curtis LNG	BG Group Queensland Gas Company	3.0 – 12.0	\$8 billion	2014

\*Following QGC's acquisition of Sunshine Gas, the Sun LNG project has become highly uncertain.

*Source: Wood Mackenzie, Zeus Virtual Energy Library*

Although CBM wells are significantly less productive than conventional wells and require a markedly longer ramp-up period, the upstream capital expenditure for CBM-to-LNG projects compares favourably with that of conventional gas to LNG projects. Recently signed heads of agreement (HOA) for CBM-to-LNG offtake have also greatly increased confidence in the resource, as buyer scepticism about the reliability and quality of gas from CBM-based projects was seen as a key constraint to the development of CBM-to-LNG projects.

One of the most advanced CBM-to-LNG projects is the Fisherman's Landing project sponsored by LNG Ltd. (40%), Golar LNG (40%), and Arrow Energy (20%), which received local government approval for its environmental impact statement in April 2009. Two of the project's sponsors, though comparatively small independents, are highly skilled within their field: Golar LNG is one of the world's largest independent LNG shippers with experience with floating regasification, while Arrow Energy is one of Queensland's largest CBM players and benefits from a global LNG alliance with Shell, which would lend the sponsor its significant technical expertise without requiring an ownership stake in the project.

Apart from bringing technical expertise, Golar and Arrow also provide a degree of integration in the LNG value chain: Arrow is the project's sole natural gas supplier while Golar is its sole offtaker under a traditional take-or-pay contract. The use of a well-known contractor, SK Engineering & Construction, which has exposure to the LNG industry through SK Corporation's equity participant in Peru LNG, also enhances the credibility of the project as it seeks 50% debt funding.

#### *Frontier Developments*

A strategy employed by several independent oil & gas companies is to expand into regions or countries in which supermajors have not already established a strong foothold. Although major oil & gas companies have been operating in the oil sector of countries such as Papua New Guinea and Peru, the natural gas sector is relatively unexplored and a rapid deployment strategy could allow smaller companies to gain a strong market position. This strategy allowed Hunt Oil to successfully position itself as a leading sponsor in both upstream and midstream natural gas in Peru, where the Peru LNG project recently reached financial close, as discussed in the following section.

In the case of Papua New Guinea, several LNG projects are planned, most notably the PNG LNG project, sponsored by ExxonMobil and Oil Search, and the independently-sponsored Liquid Niugini Gas project. While the 8.1 mtpa Liquid Niugini Gas project has only recently emerged from arbitration with a former shareholder, Merrill Lynch, the project has received a significant boost with the signing of a HoA for commercial cooperation with China National Offshore Oil Corporation (CNOOC) and the receipt of initial government approval in March 2009. The project, whose strategy was based on a risky, fast-track development process may now be able to regain some of its momentum, although government statements suggest that the PNG LNG project will remain the national priority.

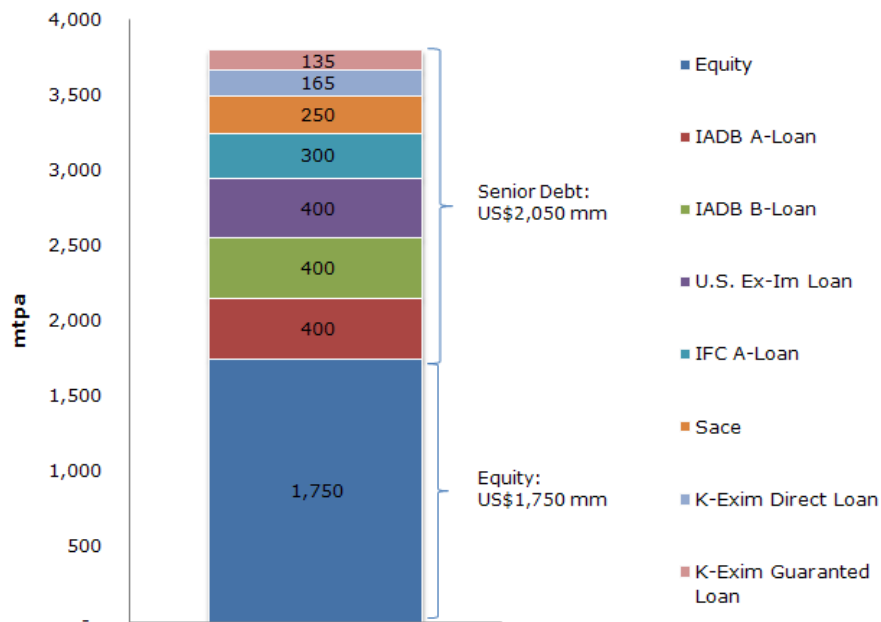
### **Case Study: Peru LNG**

The 4.4 mtpa Peru LNG project, which reached financial close in June 2008, was one of the first projects sponsored and operated by an independent oil & gas company to reach financial close. Although several of the project's sponsors, which include Hunt Oil Company (50%), Repsol YPF (20%), SK Energy (20%), and Marubeni Corporation (10%), have previous experience in LNG, none of these companies has been the operator of a large-scale liquefaction plant. The financing structure employed by this project, with its heavy reliance on export credit agency (ECA) and multilateral participation, reflects both the benefits to Peru as a new entrant into LNG liquefaction as well as the difficulty in obtaining commercial financing as an independent sponsor during the credit crisis.

The project is underwritten by a long-term offtake contract with Repsol for the entirety of the plant's output. This contract, in turn, is supported by a 15-year contract signed by Repsol to supply the Manzanillo regasification terminal in Mexico, reducing market risk. Any remaining supplies of LNG are expected to be marketed in Asia. The combination of an investment-grade offtaker and dedicated regasification capacity greatly improves the project's risk profile.

Financing for Peru LNG was completed on a limited-recourse project financing basis. While the debt-to-equity ratio of 54:46 is well below the 70:30 ratio found in the most recent Qatargas deals, the level of support from the individual lending agencies is, in many respects, record-breaking. In particular, the US\$800 million in Inter-American Development Bank (IADB) A- and B-Loans represents the largest such commitment in the organization's history, while IFC's US\$300 million A-loan is the largest A-loan it has provided in the region. All of the A-loans have repayment tenors of 14 years, while the B-loans have 12-year repayment tenors. A detailed breakdown of debt tranches is provided in Exhibit 4.

**Exhibit 4: Peru LNG Financing Structure**



*Source: Infrastructure Journal*

In spite of the project's success in reaching financial close in the midst of the growing credit crisis, the lack of any uncovered commercial bank debt does suggest some reluctance on the part of lenders to support a major liquefaction project with an unproven operator.

### Financing Strategies for Independent Sponsors

As LNG liquefaction has become an accepted technology risk, barriers to entry have lowered and numerous independent oil & gas companies have sought to enter the market using a variety of different strategies. A common feature of these proposed projects is the higher risk associated with inexperienced operators with limited balance sheets. In order to finance capital-intensive liquefaction projects, independent sponsors must consider a range of risk mitigation and financing strategies aimed at easing lender concerns and maximizing third-party financing.

Three steps are particularly vital to a successful financing:

1. Projects should be structured in such a way as to enable project finance from the very beginning. The size and the cash flow pattern of LNG projects are usually burdensome to many independent LNG producers, and being able to structure a project in a way suitable for project finance from the beginning can save time and expense in the future.
2. Partner selection is critical to establishing credibility and financial viability. Lacking expertise along the whole LNG value chain, an independent sponsor's key task is to secure the necessary third-party expertise in technical, financial and commercial aspects of the project.
3. Projects should aim to maximize availability of ECA financing. This can be achieved through either an effectively structured procurement program or through a strategic partnership with a company domiciled in the ECA home country. The latter also can bring additional expertise the operator lacks.

## *The Benefits of Project Finance*

Liquefaction projects have historically relied heavily on project financing due to their high up-front capital expenditures. The benefits of project finance, a limited recourse financing technique enabling high leverage on the basis of a project's expected cash flows, are particularly pronounced for smaller project sponsors, who might not otherwise have the creditworthiness or financial resources to fund a multi-billion dollar liquefaction train.

In order to maximize access to project finance debt, projects should be able to demonstrate stable cash flows through long-term take-or-pay offtake agreements for most, if not all, of a project's output. In spite of the growing flexibility of LNG markets, lenders are unlikely to be comfortable assuming both sponsor and volume risk, particularly if the project also involves a niche strategy.

### *Proven Technology, Unproven Sponsor: Finding the Right Partners*

One method of mitigating lender concerns over sponsor capabilities is the introduction of strong strategic partners in the form of shareholders, offtakers, suppliers, EPC contractors or even as members of a strategic alliance, as in the case of the Fisherman's Landing project, where Arrow Energy is able to draw upon Shell's significant technical expertise. By bringing creditworthy, well-respected counterparties into a project, sponsors can greatly enhance their projects' credibility and diminish lender concerns about project risks.

Apart from providing credibility, strong equity partners can also provide a range of other benefits. In the case of Liquid Niugini Gas, for example, the potential involvement of CNOOC could greatly enhance the project's ability to reach final investment decision, as the company brings not only credibility, but also capital and access to the potentially huge Chinese natural gas market. While farm-downs do reduce equity returns to the original sponsor, they also are an important way to raise funds and lower the initial sponsor's equity share of capital expenditure. For projects with a high degree of technology risk that are expecting to rely heavily on equity for their financing (as is likely to be the case for floating liquefaction), the reduced burden on the sponsor may be worth the sacrifice of some of the equity returns.

Another important benefit in bringing in various forms of strategic partners is the potential increased access to finance they might provide through their home-country ECAs. In the case of Progress LNG, for example, the participation of Mitsubishi Corporation may enable access to JBIC loans – in some cases exceeding US\$1 billion – and/or NEXI guarantees, while the participation of SK Corporation in Peru LNG enabled K-Exim participation totaling US\$300 million.

### *ECAs & Multilaterals*

The Peru LNG project financing demonstrates the potential importance of ECAs and multilaterals in providing funding to LNG projects sponsored by independent oil and gas companies: of the US\$2 billion raised in senior debt, all of it was raised either directly from ECAs and multilaterals or through B-loans and ECA-covered tranches. While ECAs critically evaluate a project's technical and financial viability, they may be willing to accept some greater degree of sponsor risk than commercial lenders if there is sufficient benefit to their home country, either in the form of offtake contracts, equipment exports, or equity participation.

As the credit crunch continues to unfold, ECAs are likely to become an increasingly important source of liquidity. Already by May 2009, U.S. Ex-Im has provided over US\$1 billion in structured and project finance to the energy sector – almost 60% of what it lent

in all of 2008. ECAs, which are already not entirely dependent on market conditions for their funding, are in many cases receiving additional resources from their governments to support their activities during the credit crisis. Sponsors that intend to seek ECA or multilateral funding should therefore carefully consider sourcing options and ECA lending requirements – including environmental and social impacts – when planning their projects.

## **Conclusion**

As LNG markets have developed, project structures have become increasingly flexible and barriers to entry have lowered. New technologies and geographies have opened up opportunities for smaller, independent oil and gas companies to develop cost-competitive liquefaction projects. While most of these projects are still in the early stages of development, and many of them have suffered significant setbacks, the case of Peru LNG demonstrates that large projects sponsored by independent operators can be financed when utilizing appropriate risk mitigants. While supermajors can afford to adopt innovative approaches towards marketing of LNG, particularly when replacing expired contracts on older LNG projects, independents, already introducing higher operating – and frequently political or technology – risk, are less likely to be able to utilize such structures.

Instead, independent sponsors should strive to mitigate project risks to the greatest extent possible, by bringing in reputable EPC contractors, creditworthy offtakers with access to sufficient regasification capacity, capable suppliers with sufficient reserves to support the entire liquefaction train, and strong equity partners with a clear role in the project structure.

## **Endnotes**

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<sup>1</sup> In this instance, “Supermajor” refers to ExxonMobil, Shell, Total, Chevron, BP, ConocoPhillips, Marathon, and excludes BG, Repsol YPF, and Eni, which also rank among Platts Top 20 integrated oil & gas companies.