

Financing LNG projects

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1. Introduction

As noted elsewhere in this publication, a successful liquefied natural gas (LNG) venture typically involves a series of interdependent projects in order to take gas extracted from the wellhead through processing, liquefaction, storage, transportation and regasification up to delivery of gas to the wholesale end customers. Traditionally, the various links in this chain were separately and independently developed, but this no longer holds true. An LNG project can therefore range from a narrowly defined 'within the fence' construction of, say, a regasification facility to the creation of a massive multi-jurisdictional business that covers all or the major part of the energy chain. Recent examples of this latter phenomenon include the Qatar Gas II project and Phase 2 of the Sakhalin II project in Russia.

It is not therefore possible in today's world to speak definitively of a single methodology for financing LNG projects as the underlying dynamics vary so widely and the scope for innovative funding structures increases. Financing techniques, and indeed financiers, have evolved rapidly to meet the greater opportunities and challenges which the industry now presents. While a number of financings remain structured along relatively straightforward and traditional lines (eg, single facility tolling structures or vessel financings on an asset-backed basis), the headline deals are now far more complicated and require a deep understanding of the issues arising throughout the energy chain. For bankers and their advisers, the day of the 'LNG specialist' is therefore with us and has been so for a number of years.

This chapter cannot cover the whole range of financing options for LNG-related projects. Each project will have its own commercial drivers which influence the financing structure deployed in any given situation. There are, however, some fundamentals from a legal and structural perspective that operate as a benchmark for credit appraisal by the lending community, and a number of the developments in the industry are driving further change. This chapter seeks to provide the reader with an overview of these aspects using the financing of a liquefaction plant as the reference baseline model.

2. Why obtain external funding for LNG projects?

It is worth pausing on what we mean by the financing of LNG projects. While the term 'project financing' is now too narrow to cover the range of funding options

available, we are effectively looking at a financing structure where third-party institutions provide debt to the owner of the project with limited or no recourse to its shareholders. The debt capacity available to the project and its ability to service debt will therefore be dictated by the project's success and the economics which it is able to generate. In a default scenario, lenders will have to look to the project's assets in order to recover any debt then owing to them.

There are many examples of LNG projects being funded by the participants themselves, whether through the use of available corporate resources or through raising funds on a corporate basis in the loan or capital markets. This is the way in which major oil companies have traditionally funded the large part of their upstream operations and, with hydrocarbon revenues seemingly at a sustainably high level for the foreseeable future, cash resources should logically be present to adopt this route. Equity funding of this type provides the project developers with control over the flow of funds and autonomy over the manner in which they develop and conduct their operations. Furthermore, the advantages of 'off-balance-sheet' structures have been somewhat curtailed by the introduction of recent legislation and accounting rules.

There are, however, a number of reasons why the raising of project-level debt is attractive to the sponsors of that project. These include the following:

- LNG projects are highly capital intensive and require very substantial upfront outlays of capital. This level of self-funding is beyond the reach of many participants, which would otherwise be forced to compromise equity value through sell-down or some form of carry interest arrangements of the type commonly seen in upstream developments. The cash resources available to larger companies, such as the oil majors, also face internal competition from the range of other projects which they are developing and which may have (in the case of upstream developments) potential for higher economic returns and carry a strategic imperative for extending the company's reserve base.
- The policy and economic goals of participating strategic partners may require the obtaining of external funding in the world markets. In addition to credit limitations on a party's ability to raise funds itself, a number of strategically important partners (eg, state-owned gas companies) wish to raise funding at the project level in order to maintain the sovereign balance sheet and foreign currency reserves, and to develop the international standing and credit capacity of the country in which the LNG project is to be established. In a country such as Qatar, this has proved a phenomenal success over the last decade or so, with a sophisticated and substantial debt programme being rolled out to almost all parts of the global debt markets.
- The availability of debt finance and the appetite of lenders remain strong for well-structured LNG projects. The inherent nature of these projects meets a number of threshold credit criteria for debt providers, including an impressive track record of supply and offtake security across the industry, a 'steady state' business model based on long-term offtake commitments, dollar revenues typically paid to offshore accounts in a 'zero risk' jurisdiction,

tested technology and the overall backdrop of increasing demand for natural gas derived from LNG in global markets. These factors normally combine to enable lenders to offer an attractive financing package that contains competitive terms and a flexibility to structure the funding in a way which meets the requirements of the particular project.

- One other factor that has always played a large part in obtaining finance for LNG projects is the active involvement of governments of countries involved in the trade. The importance to a host government of attracting the necessary investment for an export project the size of an LNG project will itself be a source of comfort for financiers and, at least in the early days of establishing the industry in that country, will often manifest itself in the express grant of governmental support to both the project and its financiers. Foreign governments are also prominent in supporting these projects, given the potential for winning very substantial export orders and, increasingly, for obtaining access to long-term supplies of natural gas. Export credit agencies and multilateral agencies have been major facilitators of LNG projects over the years and this is likely to remain an important factor going forward.

3. Sources of funding

The sources of funding available for LNG projects vary significantly depending on a range of credit criteria. These include:

- the identity of the sponsors,
- the country risk involved (together with the overall level of credit capacity available for that country within the lending community);
- the strength of the offtake commitments; and
- the status of the project itself.

In general terms, it is obvious, however, that the range of finance sources and financing products has increased very substantially over the last five years in order to meet the increasingly sophisticated demands of the industry.

The principal sources of credit facilities and their respective participations in the provision of debt capital can broadly be summarised as follows.

3.1 Commercial banks

Commercial banks are major contributors to the funding of LNG projects worldwide. They provide term loan funding for construction and expansions of LNG projects both on an uncovered basis and under the umbrella of protection provided by export credit and multilateral agencies. The extent and nature of the financing provided turn on the evaluation of the credit criteria mentioned above and can involve the full spectrum of risk assumption - that is, a requirement for fully covered facilities, a mixture of covered and uncovered facilities (a 'sweet and sour' mix) to wholly uncovered debt for established projects in countries with strong credit standing. Commercial banks will also play a critical role in arranging financing and driving it towards financial close.

3.2 Export credit agencies

Export credit agencies (ECAs) are governmental agencies that seek to facilitate the financing of a project in order to further the commercial interests of its nation in line with the policies of the government of that country. While the approach and detailed policy wording for each ECA differ, key terms are to some extent harmonised through the application of Organisation for Economic Cooperation and Development (OECD) guidelines.

(a) *Tied support*

All ECAs generally have products to support the export of equipment manufactured in their country (or in the case of European exporters, countries within the European Community). The level of the facility made available for this purpose is generally tied to the amount of 'eligible expenditure', being project expenditure on goods and services sourced from the relevant country, and each ECA has its own detailed procedures to verify compliance with this requirement. The facilities provided by the ECAs in these circumstances typically constitute guarantees or insurance policies to commercial banks that provide the actual funding. This guarantee protection can be 'comprehensive', which essentially passes all risk of non-payment to the ECA (subject to a residual uncovered portion of between 10% and 15% of the loan), or be limited to political risks only. These are further discussed below.

(b) *Overseas investment*

In addition to tied facilities driven by export orders, certain of the governmental agencies have additional policies which permit credit to be extended to projects which are considered to be in the national interest of the relevant country. The natural resources sector (and particularly access to oil and gas reserves) is probably the largest beneficiary of these policies, which are particularly deployed by North Asian countries with an ever-increasing requirement for stable energy supply sources. Under these policies, direct loans can be made by the ECA in addition to guaranteed protection of private sector funding, and there is no limitation on the sourcing of the expenditures agreed to be funded.

3.3 Multilateral agencies

Multilateral agencies (MLAs) are made up of members from a multiplicity of participating countries and have a constitutional goal of encouraging investment in developing countries in line with certain policy criteria. Institutions involved in the financing of LNG projects include the International Finance Corporation (IFC), the private investment arm of the World Bank, The European Bank of Reconstruction and Development and the Asian Development Bank. A key aspect to their participation is the presence of 'additionality', which broadly means they should add value to the financing in an area where the private commercial sector is unable to do so. MLAs can provide direct funding ('A loans') and a B loan structure under which the MLA is the lender of record but the funding is sourced from, and all exposure to default lies with, commercial banks (the 'B loan lenders'). This relationship is documented under a participation agreement entered into between the MLA and the B loan lenders.

3.4 Capital markets

LNG projects have in recent years been able to access investment from the global capital markets. This has been successfully implemented, for example, in the funding of the RasGas II and 3 expansion projects in Qatar and the Oman LNG project.

The significance of widening the investor base in this way cannot be overestimated, although the availability of these funds for purely greenfield projects with no track record remains something of an open question. The key to obtaining flexibility to raise funds from the capital markets is to secure a credit rating at or above investment grade from one of the internationally recognised rating agencies. These agencies will undertake an in-depth review of the project and allocate a credit rating based on an evaluation of the project's capacity to meet its existing and planned financial commitments – Standard & Poor's, for example, sets a scale from AAA (which means an extremely strong capacity to meet those commitments) to D (which indicates there has been a payment default on financial commitments). There are various interval grades on this scale, with BBB- being recognised as 'investment grade' and representing a key benchmark below which many institutions will not invest. Pricing and availability of funds from the capital markets therefore depend on the existence of a rating and that rating being investment grade or above.

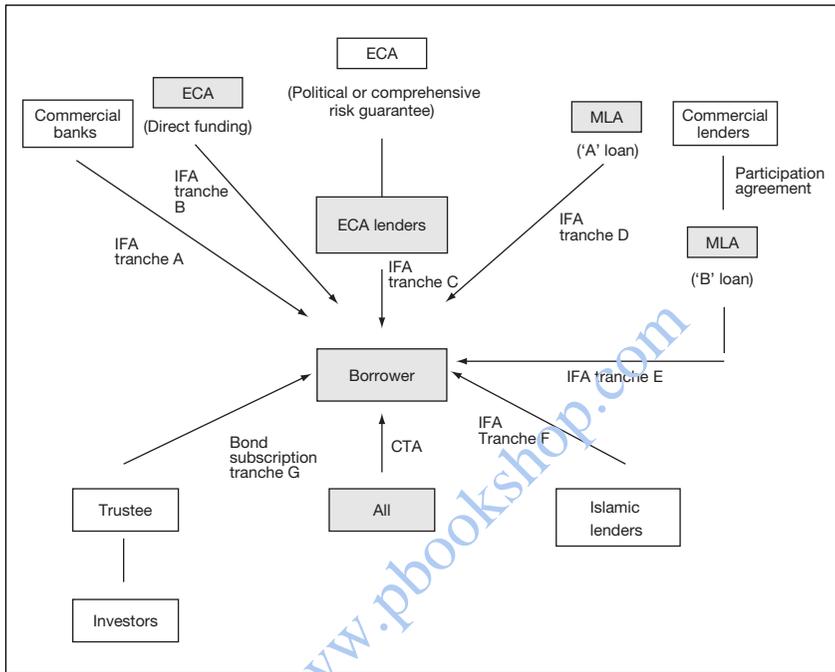
LNG projects have generally been well regarded by the rating agencies – both the Oman and RasGas projects were rated A- by Standard & Poor's (with Moody's and Fitch in the latter case being a notch above this). Evaluation criteria used by the rating agencies are similar to those employed by bank lenders (see above), but perhaps place a little more weight on the macro factors such as world demand and political will. The other significant feature of the rating of LNG projects is that (at least in the context of liquefaction plants) the sovereign rating of the host country does not necessarily operate as a ceiling and it has been possible to obtain a credit rating for a project which is higher than that assigned to the country in which the project is located. Key credit enhancements to which the rating agencies look in this regard include the elimination of foreign exchange risk through offshore dollar payments and control of these payments through offshore bank accounts.

3.5 Islamic finance

The participation of Islamic funding sources in energy and infrastructure financing is a natural development as the banking systems in the Middle East and elsewhere increase in strength. A large number of LNG projects are located in Islamic countries and the use of Islamic funding to support these projects is a welcome progression of regional participation. An Islamic financing (a financing structured in accordance with Shariah law) does not permit lenders to lend money or recover interest in the manner conventionally seen in the international commercial markets. Islamic financing structures are varied, but broadly involve the financier taking risk beyond the mere provision of capital. Often the risk is associated with the purchase of project assets, with the financier leasing them back to the borrower for a fixed period. The structuring of Islamic finance facilities, together with their integration with a wider debt package, now operates at a highly sophisticated level.

4. Combining the financing sources

All recent financings of large LNG projects have obtained funding from a combination of the sources referred to above. The lending structure may therefore look something along the following lines from a documentary perspective.



This mix of facilities can create different interests in terms of risk allocation between lenders and policy requirements in relation to financing terms available to the borrower. It also raises challenges for the structuring and efficient administration of the credit facilities in meeting the day-to-day requirements of the project. Harmonisation of principal financing terms and the establishment of working arrangements for the lender group are therefore important factors in developing the overall structure.

The following represent mechanisms designed to achieve this objective.

4.1 Common terms approach

The primary tool used for harmonising the terms of the financing is a common terms agreement (CTA) to which all finance parties are signatories and which contains financing terms which will be commonly applicable to each of them. The CTA should cover the great majority of the financing terms and essentially define both the commercial parameters of the financing and the 'boilerplate' provisions for all participating financiers.

The CTA will operate in tandem with individual facility agreements (IFAs) between the borrower and the individual lending group, pursuant to which actual loan disbursements will be made. The scope of these IFAs should, however, be limited to dealing with terms specific to that particular loan tranche (eg, margin, interest calculation, fees) and any additional requirements that are bespoke to that financing source (eg, procedures for evidencing the incurrence of 'eligible expenditure' for tied ECA facilities). The following table sets out an indicative list of how key terms are typically addressed in a common terms financing structure.

	CTA	IFAs
Conditions precedent	✓	✓ Limited number of additional conditions to meet ECA/MLA procedural conditions
Drawdown procedures	✓	
Interest calculation and payment	✓ if common base such as LIBOR	Bespoke interest mechanics sometimes offered by ECA/MLAs
Interest margin loan amortisation	✓	
Prepayments – voluntary and mandatory	✓	
Banking case and budget procedures	✓	
Security requirements	✓	
Taxes, increased costs and market disruption	✓	
Fees	✓ Common fees such as commitment fees	✓ Individual tranche fees and premiums
Agents	✓ Common agents such as intercreditor agent and security agent	✓ Individual facility agents

	CTA	IFAs
Transfers	✓	
Representations	✓	✓ Limited number of additional representations to meet ECA/MLA procedural condition
Covenants	✓	
Events of default	✓	

4.2 Intercreditor arrangements

The central objective of a common terms structure is that all of the financiers agree to act collectively through a common agent in making decisions and taking actions in relation to the financing. In general terms and subject to a limited number of exceptions, no individual lender or lender group is permitted to operate independently in modifying or enforcing its rights under the financing documents. This is generally considered to be beneficial both to the borrower and to the lender group as a whole, as it ensures consistency in approach, provides a single point administrative interface and avoids the financing being brought down by the ‘rogue’ actions of a minority.

A separate intercreditor agreement is normally entered into between all lenders to govern these relations and provide the framework within which directions will be given to the common agent. The borrower has a clear interest – albeit indirect – in seeing that these arrangements are workable from an administrative standpoint (eg, timely receipt of any requested waivers), but that it is not exposed to enforcement or other adverse action at the behest of a small minority of the lender group. It can be a point of contention between the borrower and its lenders as to whether this interest is sufficient to justify the borrower’s participation in the intercreditor arrangements, whether as a party to the intercreditor agreement itself or as the beneficiary of a collateral obligation from the lenders not to modify its terms without the borrower’s approval.

Components of an intercreditor agreement typically include the following.

(a) Voting entitlements

Lenders will generally have a voting entitlement proportional to their exposure in the outstanding debt or, prior to the expiry of the availability period for debt draw-downs, the sum of outstanding debt and outstanding commitments not yet drawn. This is expressed as a percentage and is used in determining whether the necessary voting thresholds have been met. This is, in principle, a straightforward arithmetic exercise but with the following refinements in the context of a multi-sourced financing of the type described in this chapter:

- Where governmental agencies or MLAs provide insurance or guarantee protection to commercial lenders, they will generally retain the right either to vote or to direct the voting entitlements of those commercial lenders covered by this protection on the basis that the agencies are carrying the ultimate exposure in a default scenario. This is clear where comprehensive cover is provided but can result in a split of voting control where a partial risk guarantee is given only in relation to political risks.
- Voting entitlements provided to the trustee of any capital markets tranche are often restricted to exceptional items only. This reflects the lower tolerance of bond investors for involvement in more routine project-related decisions.
- Hedging counterparties typically do not accrue voting entitlements unless and until a termination liability has been crystallised under the hedging arrangements.

(b) Decision-making procedures and thresholds

The intercreditor agreement will establish voting pass marks for decisions to be made on behalf of the lender group. In descending order, these generally fall into the following categories:

- Unanimous consent of all lenders - this normally covers a defined list of matters that go to the fundamentals of the credit approved by each of the individual lenders. A typical list will include proposals to amend payment obligations, tenor, margin or currency of the loan or the release of security ahead of full repayment.
- Super-majority decision - the level of this majority is often a function of the make-up of the lender group: it is driven by a requirement that one or more 'minority' groups must vote in favour of the decision. In complex projects, there can be more than one level depending on the lender composition and the nature of the underlying matter which is being decided. Decisions falling within this category tend to be those relating either to matters of very substantial commercial significance (eg, decision to release sponsor recourse at completion) or to matters which carry particular sensitivity (eg, certain environmental decisions).
- Majority lender decisions - this would be the benchmark level for the taking of decisions which have not been specifically allocated to other categories and would cover the great majority of routine decisions made in the course of administering the loan facilities. This level will again depend on the balance of power created by the voting entitlements of the respective lender groups, but a common starting point customarily used in syndicated loans is a two-thirds majority of all voting entitlements.

(c) Enforcement action

Given the significance for all stakeholders of a decision to accelerate loans and enforce security against the borrower, it is fairly common to carve out this aspect for specific treatment. While the borrower would clearly wish the level of lender consensus to be as high as possible, lenders themselves also need to strike the correct

balance that avoids the overall financing being cratered by the action of a minority group. Against this, a number of lending institutions have a policy requirement that at some point they need to have an independent right to take enforcement action if an event of default has occurred and has not been remedied.

A typical solution to this is to provide for a sliding scale of decreasing percentage voting pass marks required to commence enforcement action on behalf of the lenders. These percentages are a matter for consideration in the context of each project but may be fixed according to both the length of time for which the event of default has been outstanding and the nature of the default itself.

(d) *Decision-making procedures*

Given the number and nature of the institutions commonly involved in financing a major LNG project, it is in the interest of all participants to structure decision-making procedures to enable decisions to be made in a timely manner. This is typically a hot issue for borrowers and needs to be balanced with the inherent uncertainty of predicting the complexity of a particular issue and a corresponding time reasonably needed for the lenders to take a properly informed view.

(e) *Sharing of payments*

The intercreditor agreement will set down the rules governing the allocation among the lenders of monies received from the borrower. Where the lending groups all have senior creditor status, they will typically rank equally and receive a pro rata share of such funds if there is a shortfall against the amount needed to service all debts. If junior debt is involved, the intercreditor agreement will track the subordination provisions agreed between the parties and allocate funds according to the order of priority ranking between lenders.

A specific issue that can arise where an MLA is involved in the financing is the treatment of 'preferred creditor status'. This status is afforded to certain MLA institutions and effectively means that member countries agree to service their debt notwithstanding a general moratorium on payment of foreign indebtedness as a whole. The question therefore arises as to whether the MLA should share the benefit of this privileged status with the other lenders (in practice, they are generally not prepared to do so) and, if this status enables the MLA only to be kept whole during a moratorium, whether the remaining lender group should have a preferential claim on proceeds received after the moratorium to 'catch up' to a position of equal ranking.

(f) *Accession of new finance parties*

The intercreditor agreement will lay down the procedures for the accession of new finance parties permitted by the CTA. This will generally involve the execution of a deed of accession by the incoming financiers.

The accession of counterparties to swap or hedging agreements introduces a different risk profile into the lender mix, given that these counterparties are not term lenders but will potentially have a large claim against the borrower in the event of early termination of the underlying swap instrument. This is a highly topical issue,

as LNG producers are increasingly considering the use of sophisticated derivative products in the context of LNG sales and pricing arbitrage.

In order to accommodate this flexibility, the agreed parameters for permitted hedging arrangements are often pre-agreed in the finance documentation. This needs to balance market expectations of the hedge providers (which generally includes taking a senior secured position) with safeguarding the project and its lenders from unmanageable exposure to a large claim. This is generally achieved through a combination of establishing acceptable commercial parameters in an agreed risk management strategy document, reducing the grounds for counterparty termination in the standard International Swaps and Derivatives Association documentation and providing for the settlement of any termination payment at an appropriate level in the cash-flow waterfall. Typically, hedge providers would not acquire voting entitlements before the occurrence of a termination event under the relevant hedging agreement.

5. Basic building blocks of LNG financing terms

As mentioned earlier, a broad array of financing products are available to fund projects in the LNG sector and a number of these will carry different market and policy requirements. In addition, a large proportion of the finance documentation follows standard banking principles, with conventions being similar to those prescribed by organisations such as the Loan Market Association or the Asia Pacific Loan Market Association. In this chapter we do not seek to detail all of these terms, but the following is a subjective attempt to pull out some of the core concepts which customarily appear in LNG financings and are fundamental drivers of the structure.

5.1 The banking case model

The financial model which records and forecasts the economics of the project lies at the heart of the financing and is in large part the preserve of highly skilled analysts. However, as with all forecasts, the key to its veracity is the input assumptions which are made, and it is in this area where care must be taken to ensure that the coverage of these in the documented finance terms accords with the data assumptions being used in the operation of the model itself.

These assumptions will cover economic, technical, reserve and market considerations as modified by contractual arrangements in place for the project. The majority of these will be developed in a manner consistent with principles applied across the spectrum of different industry sectors – obvious examples of this are:

- the project's capital and operating costs being taken from budgets approved by the lender's technical consultant;
- operational performance of the facilities, again as approved by the technical consultant; and
- general economic assumptions such as interest rates and inflation either being pre-set or determined by reference to relevant published indices.

There is, of course, nothing unusual in this and one of the key considerations for agreement between the borrower and the lender group will be the extent to which

assumptions are fixed at the outset and the manner in which any discretionary variables are determined in the event of a dispute.

There are, however, a number of points of more particular relevance in the context of an LNG financing, as follows.

(a) Feed stock supply

Lenders will need to be satisfied that the project will have a sufficient and stable supply of feed stock gas in order to support the LNG sales volumes projected in the model and to meet its contractual commitments to offtakers. This will need to be achieved either through a firm supply contract or, in an integrated project, through demonstration of sufficient proven reserves of natural gas certified to the lenders by an independent reserves consultant.

LNG projects have not generally been made on a borrowing base structure (common for upstream oilfield financings), where the amount of debt under the credit facilities varies according to the prevailing level of reserves, which is periodically updated. While the historical approach in LNG projects has been to restrict debt capacity by reference to a reserve certificate provided ahead of financial close, this is not ideal where drilling operations which are expected to 'prove up' probable reserves are being conducted in parallel with the construction of the LNG facilities. If this is the case, sizing the debt capacity against this expected increase in proven reserves should therefore be considered in combination with the provision of a debt buy-down obligation (with appropriate credit support), to the extent that this does not materialise by the start-up of operations. This regime would be implemented by providing for a re-test of the reserve base and the issuance of a new reserves certificate by the independent consultant in the period between completion of the drilling operations and start-up of the LNG plant. The reserve assumptions in the financial model would then be adjusted to reflect these results.

(b) Offtake volumes

Unlike crude oil developments, financiers of LNG projects have been accustomed to offtake assumptions being supported by hard contractual commitments from offtakers which extend beyond the scheduled maturity of the debt and are based on a conventional take-or-pay structure. This provides a predictable revenue outlook, with the downside sensitivity of contractual default being softened by the excellent track record to date of the industry. This is accordingly a relatively straightforward process, but with value being placed by buyers on flexibility within the contract terms, there are still areas for discussion that can have a material effect on the level of debt capacity. These include whether, and the extent to which, headline take-or-pay volumes should be adjusted on a predictive basis to recognise any rights of the offtakers to exercise downward flexibility or upward flexibility. In considering this, the presence of 'make good' obligations in the underlying offtake contracts and the ability of the offtaker to sell spare capacity to other buyers and/or destinations will be taken into account. Similar considerations apply where an offtake contract is subject to renewal or termination during the life of the loan, although in these circumstances the potential effect on the project economics is clearly greater.

The much larger question of whether lenders will accept full ‘merchant risk’ on LNG offtake volumes is discussed at the end of this chapter.

(c) **LNG pricing**

LNG sales have traditionally been structured by reference to a fixed dollar amount (per million British thermal units) adjusted by reference to movements in the Japan Custom Cleared (JCC) benchmark price. This is discussed in some detail elsewhere in this publication, but for purposes of this chapter, it does mean that the sales revenues available to the project will in practice be closely tied to changes in the price of crude oil during the life of the loan. The manner in which projected oil prices are factored into the model therefore has a significant impact on debt capacity. Notwithstanding the high price of oil at the time of this publication, lenders will naturally take a conservative view on the forward curve given its significance in underpinning the level of revenues available for debt service. Accordingly, a key area for commercial agreement is whether the financial model should assume a fixed oil price (irrespective of actual price movements) or whether pricing is reviewed periodically by reference to available published data.

However, JCC pricing is no longer of universal application. Where projects are selling into markets with a mature gas trading regime (eg, the United States and the United Kingdom), a view needs to be taken on the forward curve for gas prices in that market as this will likely represent the basis of pricing passed back to the LNG supplier. The issue with which the lending community will have to grapple going forward is whether a particular market is sufficiently developed and liquid to enable reliable forecasts to be made on a gas price index.

The model will, of course, take into account any contractual stabilisation of commodity price risk. This would include specific hedging arrangements with swap counterparties or price management provisions (eg, ‘S curves’) embedded in the pricing of the offtake agreements.

5.2 Meaning and use of cash-flow ratios

The primary output of the financial model is the production of cash-flow ratios which are designed to test the project’s ability to service its debt. In LNG financings, the following two ratios have been commonly used and involve determining for a specific period the cash available for debt service (CAFDS), being net revenues after deduction of all taxes and other expenditures, and measuring this against the debt service requirement for that period:

- Loan life cover ratio - this measures the overall ability of the project to produce enough cash flow to repay its debt over the life of the loan. This is usually achieved by comparing the discounted net present value of projected CAFDS to loan maturity with the aggregate amount of principal outstanding (or available to be drawn) under the debt facilities.
- Debt service cover ratio – this looks at the ability of the project to service its debt out of CAFDS on one or more scheduled repayment dates. While lenders would wish to see in the base case model at financial close that CAFDS is sufficient to meet all scheduled principal and interest payments, the debt

service cover ratio is generally used during the term of the facility to operate as a short-term 'health check' on the project's economics in respect of both prior and future periods.

The required level of coverage provided by these ratios will be a matter of negotiation between lenders and borrower in each case and will vary according to their usage. Areas in which the cash-flow ratios play a pivotal role include:

- the sizing of the debt capacity in the initial banking base case model;
- the release of sponsor completion support (see below);
- the ability of the borrower to use insurance proceeds to reinstate the project following a major loss;
- payment of distributions or other subordinated debt by the borrower;
- the introduction of additional senior debt facilities;
- modifications to or replacements of offtake contracts; and
- the occurrence of an event of default for breach of financial covenants.

5.3 Completion support

To date, all major greenfield liquefaction projects have received some form of completion support under which the borrower's shareholders either guarantee the timely completion of the facilities or, more usually, agree to underwrite debt payments until completion has occurred. This therefore sets the expectations of the lending community, but does carry a corresponding benefit to the borrower in providing it with more headroom within which to manage its engineering, procurement and construction operations. Lenders will wish to be satisfied that a sensible contracting strategy is being implemented, but do not generally require the same level of detailed controls which can appear in other sectors (eg, power generation) where the assumption of completion risk within the project itself is more the norm.

A number of common issues arise in relation to the structuring of this type of completion support including the following.

(a) *Equity lock-up*

During the period of completion support, lenders are clearly concerned about the identity and creditworthiness of the shareholder counterparty providing that support. This will generally result in tighter restrictions on sell-down of equity by shareholders during this period and the imposition of credit tests in relation to any incoming shareholder if it is to take over its proportional share of commitments under the sponsor support arrangements.

(b) *Political risk carve-out*

Shareholders will often be prepared to underwrite the commercial risks of completion on the basis that this is where their business expertise lies. They may, however, seek to exclude liability in the event that completion is delayed or otherwise impeded by the occurrence of political risk. This is discussed further below.

(c) Release conditions

The conditions to release of the sponsor completion support are viewed as critical by all parties. The central condition will be a technical test demonstrating the operational performance of the facilities and the energy chain to the point of delivery over a period of time and, in relation to the facilities within the project, the borrower will wish to dovetail these requirements with those agreed with its contractors. In addition, lenders will typically wish to see all the other major components of the project in place before losing their recourse to the shareholders. Customary additional conditions to release include:

- the project's achievement of cash-flow ratios at a prescribed coverage level;
- all necessary governmental approvals;
- perfection of all required security;
- no continuing default; and
- other requirements specific to the financing, such as funding of any reserve accounts.

From the perspective of the sponsors' corporate exposure, this is a critical document. Certainty of obligation and confidence in the timing of release are therefore likely to be important value drivers in their evaluation of the overall financing structure.

5.4 Health, safety, environment and social consideration

The health, safety, environment and social area is today perhaps the single most important factor to lenders in evaluating their ability to participate in a major project financing. The project's compliance with the highest international standards is now a prerequisite to such participation by the large majority of financial institutions which are involved in this line of business.

While MLAs and ECAs have for many years observed strict environmental guidelines and policies, the significance of this area in terms of legal and reputational impact to the private sector has grown exponentially in recent years and it is no longer sufficient simply to comply with domestic legislation of the country in which the project is located. As evidence of this, over 40 of the world's leading financial institutions have adopted the Equator Principles which draw substantially from the guidelines issued by the IFC. The principles apply globally to all new project financings at a capital cost of \$10 million or more and across all industry sectors. Following the latest revision, which became effective on July 6 2006, the Equator Principles impose the following commitments:

- Each project is to be assessed at either category A or category B risk in relation to its environmental and social impact.
- IFC performance standards must be applied to all projects constructed outside 'high income' OECD countries. In addition to compliance standards in the implementation of operations, these standards also set objectives in relation to public consultation, re-settlement, impact on indigenous peoples, labour and human rights, as well as biodiversity. These place an increased emphasis on environmental and social management systems, but are not

particularly precise so there remains ample room for disagreement on their implementation.

- The borrower must prepare an action plan which draws on the findings and conclusions arising out of the environmental impact assessment and public consultation. Again, this plan must comply substantively with IFC performance standards.
- The borrower is obliged to covenant compliance with local laws, permits and the action plan, and to provide regular information to the lender group.
- The lenders must actively monitor the borrower's activities from a health, safety, environment and social perspective, and have committed to report publicly on the project's implementation of the Equator Principles.

The imperative to comply with these principles therefore has a profound effect on lender due diligence into the health, safety, environment and social aspect of an LNG project's development. It also drives to a large extent the documentary requirements in relation to such matters, and most recent project financings have included a sophisticated contractual regime in the financing agreements to address all of these issues.

This is, of course, not simply a matter for the financiers as major developers of energy projects treat health, safety, environment and social matters with the utmost priority.

5.5 Security

In a finance structure which does not have recourse to the ultimate owner of the project (at least post-completion), lenders will wish to have the right to enforce against the assets of the project itself should a default occur. The existence of a first-ranking security package in relation to these assets will be an important consideration in credit evaluation.

In an LNG financing, the target security list for lenders is no different from that for any other secured project financing. Conventionally, this package would include first-ranking charges over the following assets:

- the share capital of the borrower, together with any subordinated debt provided by shareholders to the borrower;
- land, buildings and physical assets of the project;
- hydrocarbons in transit or storage;
- assignment of borrower's rights in all material project contracts, including the offtake contract and any concession agreement with the host government; and
- security over all bank accounts, including an offshore proceeds account into which LNG receivables are paid directly by the offtakers and any reserve accounts (including, typically, a debt service reserve account).

In many jurisdictions where LNG projects are promoted, the political and legal constraints are such that one or more aspects of this security package are not achievable. The following represent some practical examples of embedded

constraints on providing the conventional range of security in the context of LNG financings:

- legal restrictions on foreign ownership or contractual restrictions on any change in control of the borrower which limits the effectiveness of a share pledge;
- grant of land rights for the LNG facilities which are incapable of mortgage (this is the case for underground pipelines in most parts of the world);
- separation of title between land and buildings which makes it impossible to grant security over a structure until it is complete;
- classification of offshore facilities for the purpose of title and mortgage – again, a common problem in many jurisdictions;
- mandatory requirements for a locally owned company to repatriate all or part of its overseas earnings, which can affect the validity of offshore reserve accounts and subject LNG sales revenues to foreign exchange risks; and
- registration fees and taxes payable as a percentage of loans secured or the property mortgaged, which can add very substantial cost to the project.

Lenders will generally require a borrower to provide as much of the conventional security package as it is practicable and commercially reasonable to do. A number of techniques have been developed in different jurisdictions to address some of the common deficiencies by alternative means. In practice, there is often a need to find a compromise that fits with the legal and political system within which the project is being promoted.

As between the lenders, security will generally be held by a common security agent or trustee, with enforcement being regulated by the intercreditor agreement and the proceeds allocated between the senior lenders on a pro rata basis. Where an Islamic financing tranche is included particular structuring is required to reflect the fact that the Islamic lenders have an enhanced position of asset ownership while the commercial debt is restricted to a security interest. Where trust structures are not recognised in relation to onshore security or other constraints existing on the accession of new lenders, parallel debt structures can also be used to overcome these deficiencies.

5.6 Treatment of political risks

It is stated at the beginning of this chapter that one of the advantages of involving both public and private lending institutions in the financing of a major project is that it provides a 'halo' effect to mitigate the inherent country risk. There is doubtless a range of views on the true value of this, but it is fair to say that it is no longer a factor in a number of the leading LNG producing nations which have established strong international reputations and can attract investment capital without any such fears. Some of the countries in the Middle East, for example, hold some of the highest sovereign credit ratings in the world.

Nevertheless, political risk does feature as an important consideration in a number of LNG projects and they have historically been fertile ground for the development of structures in which public sector bodies (notably ECAs and MLAs) take the major share of this exposure. This is commonly seen in two principal ways:

- An ECA or MLA provides partial risk guarantees to commercial lenders under which debt service of the commercial lenders will be funded by the relevant

ECA/MLA in the event that the borrower defaults due to the occurrence of a specified political risk.

- Where completion support is given by the sponsors as described above, the sponsor is excused liability if the reason for the completion delay or borrower's inability to service debt was attributable to a political risk event.

In a structure that combines both of the above, it is clearly important to harmonise the terms of the political risk protection in both cases in order to avoid commercial lenders being subject to a gap in coverage. It should also be noted that neither of these structures provides any relief to the borrower itself. In a default scenario where the loss is absorbed by a public sector agency, that agency will be entitled to exercise all rights which are available to it and its covered lenders to enforce against the borrower and the project assets. Given the nature of the event which has caused the problem and the likely level of equity invested in the project, it is expected that the borrower, its shareholders and lenders will in practice pursue a more consensual course in seeking to work out the default circumstances.

Most of the institutions that provide this type of political risk coverage have their own prescribed terms which can differ in some important respects. In a multi-sourced financing, it is clearly advantageous to all parties concerned that these terms are made consistent in order to delineate clearly the risk allocation between all stakeholders.

Most partial risk guarantees will generally include the following political risks:

- expropriation of assets of nationalisation of the borrower;
- wars, blockades and embargoes involving the host country;
- political violence covering civil war and politically motivated riots and other civil commotions;
- inability to convert or repatriate foreign currency; and
- revocation or non-renewal of consents.

There are a number of areas which represent important areas of coverage in an LNG project and which may need to be negotiated as extensions into the standard policy. These include terrorism, failure to grant consents and, perhaps most importantly, a failure by the host government to honour its obligations under any concession agreement in existence for the project (so-called 'breach of contract' cover).

As with regular insurance policies, a number of conditions must be complied with in order to make a successful claim under the relevant policy or guarantee. Again, these can vary from institution to institution, but common themes include the following:

- A high standard is applied to the causation of the borrower's default by reason of the relevant political risk event. Standard policy wording can require this to be the 'sole' or 'direct and primary' cause of the default.
- Waiting periods are generally applied which require the political risk event or its consequences to remain in place for a minimum period before a claim can be made.

- Materiality qualifications are imposed on the impact which the political risk has on the project's implementation or operations.
- The beneficiary of the guarantee or policy must not have contributed to the occurrence of the political risk event.

6. Financing treatment of LNG industry developments

This chapter has hopefully demonstrated that the financial sector is continually evolving its products to meet the demands of the industry. It is contended that the financing of LNG projects has been one of the most dynamic and innovative areas of business for major financial institutions in both the public and private sectors. Similarly, LNG developers have played a large part in devising more sophisticated products which are structured to accommodate both the changing patterns of the LNG industry and the particular requirements of the individual projects. The sheer scale of funds raised over the last five years stands testimony to the success of this effort.

There are perhaps two particular recent trends in the LNG industry that either have or may lead to a shift in the conventional thinking which has been applied to date. These two areas are both driven by the increase in LNG demand around the world, which has resulted in a large number of expansion projects and a substantial increase in the universe of participants in the LNG industry.

6.1 Project expansions

The economics of a liquefaction project can be exponentially increased by adding further liquefaction trains and storage capacity. The success of expansion projects has been spectacularly demonstrated over recent years in major producing countries such as Nigeria, Oman and Qatar. Accordingly, it has now become far more common to provide in the original financing terms for the borrower's flexibility to add further capacity and to raise further senior debt to fund this expansion.

In structuring this flexibility, the threshold question is whether the expansion will form part of the original project for financing purposes - that is, whether its assets will be secured in favour of the original lenders and its revenues counted in the financial model. This approach does have certain advantages from a lender's perspective, but the *quid pro quo* should be that external financing raised by the borrower to fund the expansion should be then treated as senior debt on a *pari passu* basis with the existing debt. In these circumstances, lenders will wish to see certain conditions imposed, such as:

- the demonstration of healthy cover ratios for the enlarged project;
- satisfactory environmental reports on the expansion;
- accession of the new lenders to the common terms arrangements;
- the provision of completion support by shareholders in respect of the expansion; and
- debt tenors for the new lenders being at least equal to that of the original financing.

The alternative approach for an expansion is to 'ring fence' it from the initial project and for any expansion financing to be separate from the original financing.

This provides greater flexibility and lessens the involvement of the existing financiers in vetting the expansion's development. In this scenario, the main complication will be to develop satisfactory arrangements for the use of common and interdependent assets which are needed by both the existing project and the expansion. This may also have consequential impacts on the security being provided over those assets which may require an intercreditor arrangement between the existing and new lender groups.

Accordingly, there are complications in pre-legislating for this type of flexibility and there is some argument that this is better worked out at the time of implementing the expansion, given that its likely incremental impact on project economics will be of benefit to all stakeholders. Given the business importance of this flexibility, however, it is an area where project developers increasingly have a preference to set down a framework with largely objective criteria upon which they can place bottom-line contractual reliance. The lending community has generally recognised the commercial importance of this and that it is not appropriate to impose a single project mindset on a company whose base case business proposition includes this type of expansion. Accordingly, this is an area where finance terms continue to develop.

6.2 The merchant plant

As noted earlier in this chapter, one of the principal attractions of LNG projects to financiers has been the predictable cash flows arising from long-term LNG sales contracts on a take-or-pay basis. However, the LNG market is clearly undergoing change, with an increasing incidence of shorter-term gas supply and LNG offtake contracts, greater diversity of LNG markets and a wider universe of third-party buyers, a ramp-up in construction of LNG terminals and access points to gas markets, and some movement away from traditional crude oil base pricing to domestic gas indices. Coupled with the overall jump in global demand for gas, the LNG trade has become a far more open global market in which the 'volume risk' on unutilised production capacity is lower than it has ever been.

Accordingly, the challenge to the lending community for LNG projects is the extent to which the LNG sales revenues (both volume and price) can be evaluated for financing purposes without the support of conventional offtake contracts in place. This question raises issues of different shades:

- Could an LNG plant be financed without any pre-sold capacity on the basis that its developers judge the best commercial approach is to delay the placement of contracts until a later date?
- If not, is there some mix of sold and unsold capacity at which lenders would be prepared to attribute value to unsold train capacity?
- Where sold capacity is being supplied into new LNG markets with terminals and other infrastructure under construction, how will such risks be valued by lenders for the purposes of financing?
- Can lenders take a 'portfolio' view on a mix of offtakers with varying credit and operational profiles?

At the time of publication, there is no clear answer to these questions and much depends on the particular circumstances of a project. For example, in markets such as the United States and the United Kingdom, the existence of a volume offtake commitment is less important than demonstrating access to that market through committed regas terminal capacity. Similarly, the extent and availability of shipping play a large part in defining the project's ability to service different global markets and even to arbitrage pricing between them.

Ultimately, the physical and commercial arrangements needed to take LNG from its production point to the consumer market are more specialised and in far more limited supply than those applicable to crude oil sales. Given this fact and the relative lack of liquidity in the short-term market, the assumption of merchant trading risk in its bare form still remains a highly challenging prospect for lenders. However, this is one of the seminal challenges presented by today's industry and it seems likely that, through a combination of financing techniques and contractual mitigations, this challenge will be answered sooner rather than later.

7. Conclusion

The financing of LNG projects is a business of global standing. It is evolving dynamically and financing terms are being driven by a combination of powerful forces from both within the industry and outside. With an International Energy Association forecast of some \$250 billion investment in the LNG business over the next 30 years, this evolution is likely to continue with increased vigour in the years to come.

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