大成 DENTONS

The development and financing of future FLNG projects

Introduction

Research and development moves rapidly in the oil and gas industry. However, few could have foreseen the pace at which floating LNG (or FLNG) vessels are now becoming "commoditised".

The technology that has enabled this development is the retro fitting by major vessel operators of existing LNG carriers with topsides using established liquefaction processes (typically from either Air Products or Black and Veatch). This 'commoditised' market is now gathering momentum, with one project operational and a number of others proceeding to FID.

Whilst many innovations within the sector inevitably become commoditised due to the competitive advantage they confer, the pace of development within a single technology cycle is rapid. When FPSOs debuted in the early 1980s, their complexity (for the time) meant they were the preserve of oil majors for nearly a decade, until greater understanding of the technology resulted in a reduction of initial capex requirements. At this point, these assets became available to many NOCs and large/mid-cap independents, who could afford to charter them from independent operators.

By contrast, the rapid innovation of these same vessel operators within the FLNG space (including the likes of Exmar and Golar) has meant that the first generation of highly bespoke FLNGs built by Shell, Petronas and Eni at significant expense (at a capex of as much as US$4,000 per metric ton per annum (mtpa)) and largely on balance sheet have almost been beaten to market by the second generation of commoditised FLNG, with capex in the region of US$500-700 per mtpa.

Whilst these newer vessels are typically not as "bespoke" with regard to their configuration for the particular characteristics of a given field, they have greater flexibility in deployment and greatly reduced lead times (a vessel can be delivered within 18-24 months, with certain operators now considering whether to build vessels on a speculative basis) allied to the aforementioned significant cost savings (as compared with bespoke vessels). And "nearshore" deployment (with feedgas supplied from facilities located onshore) can significantly reduce the need for more bespoke on-board processing and storage. All of this implies that commoditised FLNG is now within reach of independents, as evidenced by the recent development and deployment of the Golar Hilli Episeyo FLNG vessel on behalf of Perenco and SNH (the Cameroonian NOC). Whilst these developments give cause for optimism, significant challenges remain – whilst the current LNG supply glut is clearing due to Chinese market demand, the processing, operation and maintenance costs are not yet cost effective with dedicated onshore trains and effective annual capacity likely to remain lower than the nameplate capacity. For the short term, at least, FLNG for large field developments is likely to remain the preserve of sponsors with the ability to attract and deploy significant amounts of risk capital.

As well as its suitability for smaller, remote, offshore gas fields, commoditised FLNG can offer advantages over onshore projects in terms of land usage and environmental factors. There is a variety of possibilities for near-shore projects: feedgas may be sourced from a pooled supply in an onshore network, or from dedicated production onshore, or dedicated offshore production landed for initial processing.

This article explores the alternative financing and development options that now exist for commoditised FLNG projects, which are particularly interesting to majors, NOCs and independents given their ability to unlock "stranded" or marginal reserves, or even as a stopgap solution for larger fields until onshore liquefaction trains can be put in place.

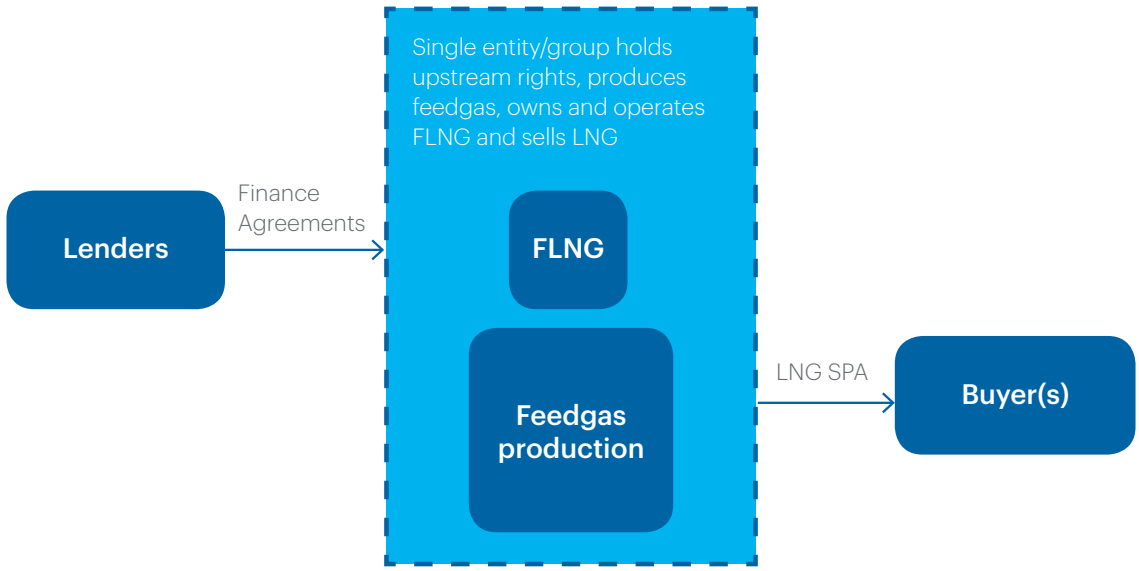
Development and funding models

The legal models for commoditised FLNG can be broadly categorised into "integrated" versus "midstream" models (though it is important to note that there are many variations of each based upon the requirements of the particular development, the applicable E&P regime and the sponsor's own objectives).

Integrated and operationally integrated models

Broadly, integrated models involve a single entity or group owning upstream and midstream assets, with a single finance package that covers both. The strength of this model is its simplicity. One ultimate entity/group holds all assets, and lenders benefit from a common pool of upstream and midstream security, avoiding complex intercreditor issues. Where (as is often the case) the upstream participants are an unincorporated joint venture (under a JOA), they may for convenience establish a separate SPV, owned by them, to hold the FLNG. This entity may also act as the immediate borrower (and potentially the LNG seller, although that will depend on factors such as preferences for equity LNG entitlements and joint selling concerns). The structure remains economically integrated and the principle of the common pool of security remains. The SPV may on-lend to its upstream shareholders (where the financing extends to upstream capex).

Integrated model



An integrated approach will engage issues around the boundary of the E&P regime (such as PSC, concession, licence or services contract). In the simplest integrated arrangement, midstream activities such as liquefaction will fall within the E&P regime; the FLNG costs (capex and opex) will be part of upstream cost recovery; the FLNG as an asset will be subject to the same treatment (for example on expiry of E&P rights, or as to decommissioning) as other upstream investments. The "delivery point" under the E&P regime will be the point of LNG sale (or potentially LNG loading); the delivery of feedgas from well to the FLNG is not a sale (or other transaction) under the E&P regime. An integrated approach may simplify the exercise of operational control of upstream assets (wells and SSPS) from the FLNG.

Alternatively, the FLNG may fall outside the boundary of the E&P regime, in which case it will require separate regulation, and its costs (on an opex basis) will be part of the LNG price netback to the "delivery point" under the E&P regime. The E&P regime may then require a separate FLNG entity but as noted above this can still be economically integrated.

From an economic perspective, the question of whether it is preferable (for investors and government respectively) to have the FLNG costs subject to direct cost recovery or deducted in a netback calculation will be complex, depending on the treatment of financing costs and the definition of any "R-factor" in the upstream fiscal/financial regime.

One variation of this particular model is to separate the financing of the upstream from the midstream. This approach has been adopted in Mozambique for Coral South. The FLNG is owned and financed by an SPV and, whilst there is commonality of ownership, lenders to the SPV do not have direct recourse to upstream security (i.e. rights under the upstream concession contract), but do enjoy rights over the vessel, the throughput agreement/toll and (most importantly) the downstream LNG sales proceeds accounts. This "operationally integrated" model does require common ownership, as the upstream interest holders will need to make available LNG sales proceeds as security, and provide some form of comfort to lenders that production from the field will be dedicated exclusively to the FLNG, but its major advantage is that it facilitates separate financing of subsequent and much larger phases of the upstream.

Notwithstanding their simplicity, integrated models are still reliant on the credit quality of the LNG buyers. One of the benefits of commoditised FLNG is that the lower capex requirements mean that a financing can be supported off the back of a single offtake agreement, particularly where the buyer is considered highly creditworthy (such as a major or trading house) and the SPA is sufficiently "robust" (preferably take-or-pay). This has been the approach adopted on Perenco's Cameroon transaction, where Gazprom takes the full capacity of the Hilli Episeyo; similarly, for Ophir's proposed Fortuna FLNG, it is understood that Gunvor had agreed to take the full contract capacity of the Gandria FLNG vessel on a 10-year term. No commoditised project at this moment has proposed securing non-recourse finance using a portfolio sales basis – that is not to say that it cannot be achieved, but it would require sophisticated credit analysis and mitigation techniques to prevent default off the back of any single LNG SPA, in addition to lenders' pre-existing concerns with regard to technology and operational track record.

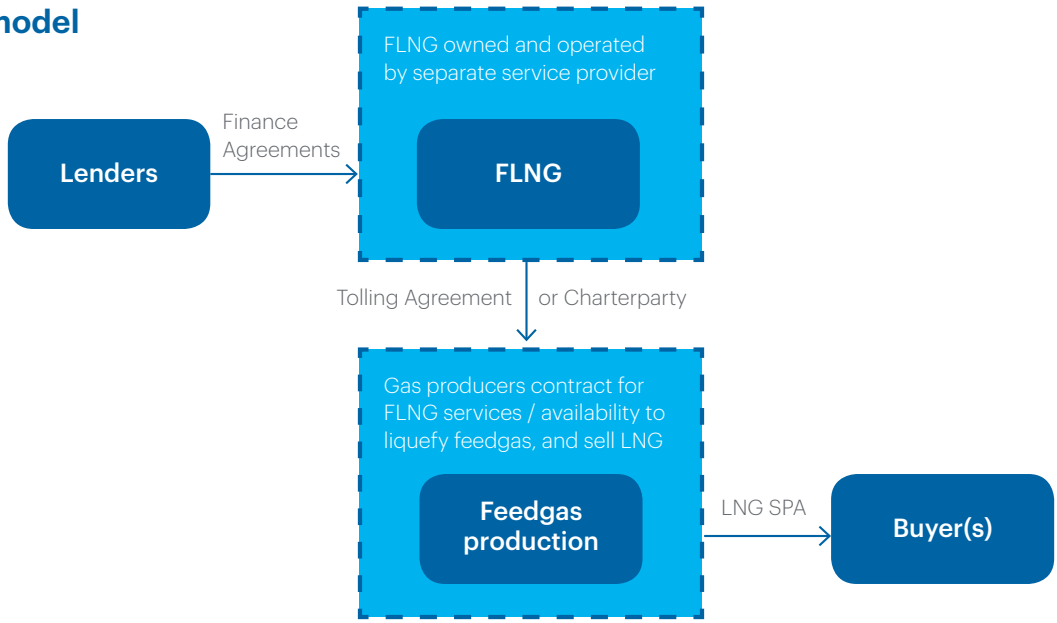
Whilst integrated models lend themselves to more traditional project finance techniques, only Eni's Coral South FLNG project has so far managed to successfully secure debt – approximately US$4.7 billion – from a consortium of 15 international banks and five ECAs. It is worth noting that, notwithstanding Eni and its partners CNPCI, Exxon Mobil and BP (as the offtaker) each having excellent credit ratings, the leverage achieved was 60 per cent (US$4.7 billion out of a total cost of c. US$8 billion). Financing was particularly reliant on a group of key "pathfinder" ECAs and institutions, leveraged through Korean technology and construction and Chinese involvement through CNPC's direct investment in the project. This form of state-supported lending (in the form of ECA or other state institutions) is particularly important to extractive industries at this moment. Given the technology risk and limited track record for FLNG, commercial lenders find it difficult to finance these projects on a true non-recourse basis (that is, without some form of financial support from the sponsors or owners, as was the case in Mozambique). Chinese and Korean finance can be classed as "state-supported" insofar as involvement is contingent on inputs (either technology selection or construction input) or outputs in the form of long-term export of offtake, either of which is required before significant sums can be lent.

Service models

The simplest "midstream" (or "services") model would involve separate ownership and financing of the FLNG unit, which is either tolled or (where owned by a service provider) chartered on a long-term basis. This latter model most closely resembles the traditional asset finance model used for FPSO and LNGC charter, although (as we shall discuss later) it may be some time before this model, in its simplest form, can be applied to FLNG given lender concerns over cost and complexity.

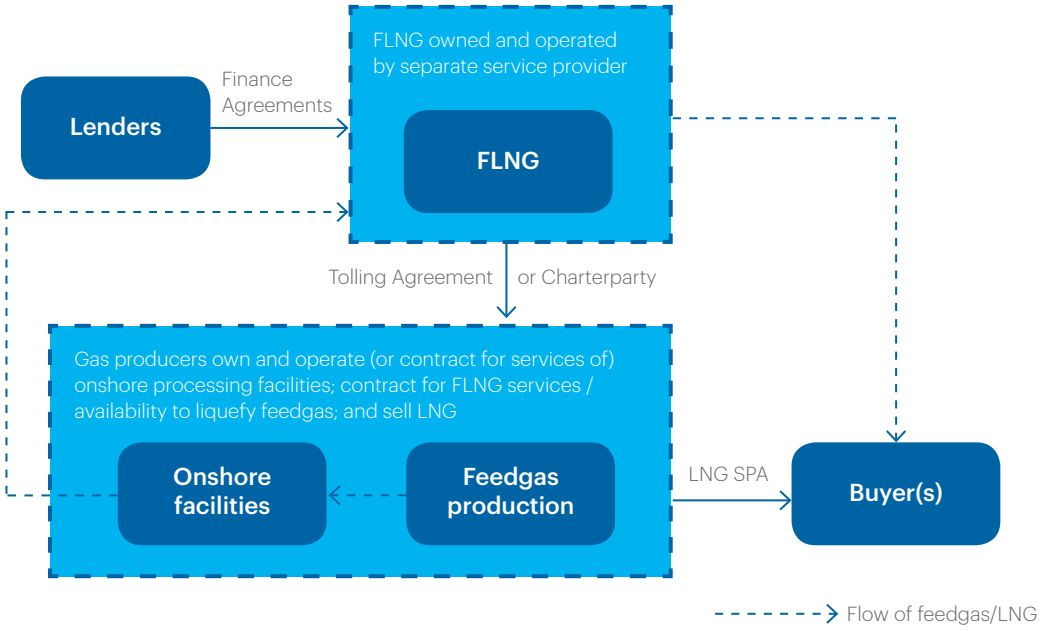
The most obvious case (illustrated in the first diagram below) would be for deployment by the gas producers, for example for small, remote or "stranded" assets. However, a near-shore FLNG project in the US could in principle be structured similarly to many onshore US LNG export projects, with buyers sourcing feedgas in the US natural gas market, and contracting with the FLNG owner for liquefaction and loading services.

Service model

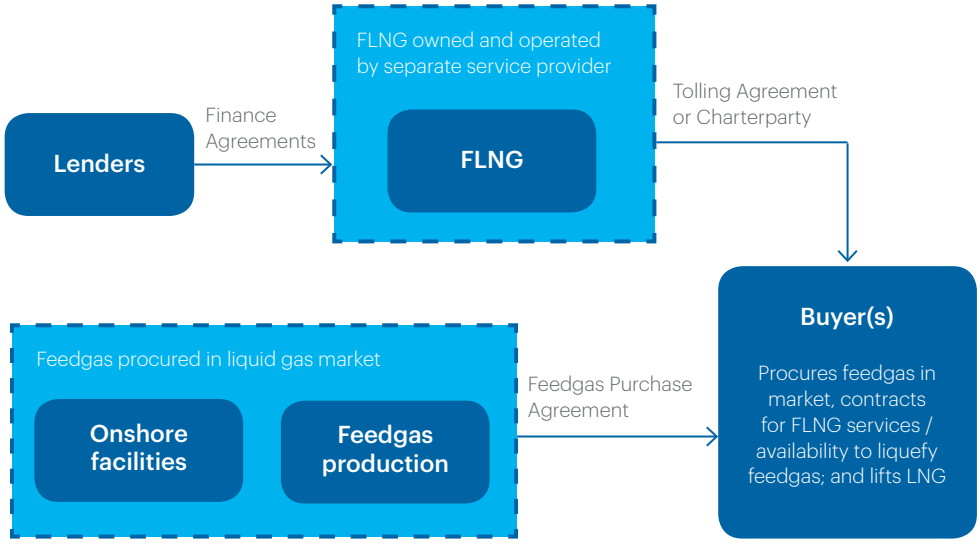


The gas producer (or buyer, in the alternative structure) would charter the FLNG from an independent owner/operator on a long-term basis (sufficient at least to facilitate finance), and make LNG sales on either an FOB or a DES basis (based upon its portfolio and LNGC charter availability). The beauty of this approach is that, subject to the characteristics of any given field/source of feedgas, a vessel could be redeployed at relatively short notice without interaction with the vessel lenders, who would provide typical "letters of quiet enjoyment" that would permit redeployment so long as timely charter payments continue to be made.

Near-shore service model



Near-shore service model-buyer version



The parallels of these "service models" with precedent FPSO and LNGC hire transactions lend themselves to asset finance (though not exclusively) but, again, cost and complexity is the limiting factor at this moment in time. The only example of a truly "independent" (i.e. agnostic to its intended deployment) asset financing to date is Golar LNG's converted Hilli Episeyo FLNG unit, which was sanctioned in 2015, started operations with Perenco in Cameroon this year, and exported its first cargo to China. The Hilli Episeyo was converted from an aging tanker for approximately US$1.2 billion. Chinese involvement was of paramount importance – Golar managed to secure 80 per cent of anticipated construction capex for hull conversion from China State Shipbuilding Corporation, which will ultimately transition into a sale and leaseback structure.

The last eight years have seen a number of new Chinese lessors enter the market, in part to replace the shortfall in market capacity attributable to the exit of more traditional lenders (and subsequently hedge funds) and in part to support domestic newbuild efforts (though not exclusively). Chinese financiers are particularly keen on the sale and leaseback structure due to their concerns over payment default, and consequently have largely focused on creditworthy lessees. Under these types of arrangements, the banks can more easily take control of the asset should the lessee default on its payment obligations. For lessees that meet the necessary credit criteria (or that can provide prerequisite credit support), Chinese institutions can offer relatively high levels of leverage (Golar secured 80 per cent), which more conventional owners have used to either refinance vessels or release equity for new projects. A major question is whether a greater number of these institutions are willing to accept technology risk on FLNG and, if so, whether this support is tied to conversion in domestic shipyards. Whilst this has not been a prerequisite for other vessel types (as these lessors are pure financial institutions and consider themselves distinct from export credit agencies), it is likely that Chinese shipyards will push to attempt to capture a share of this growing and particularly lucrative market.

In the case of the Golar Hilli Episeyo, significant leverage was proffered by China State Shipbuilding Corporation through a construction financing mechanism transitioning into a more conventional sale and leaseback structure. At approximately US$500/mtpa, the Hilli Episeyo compares very favourably against the PFLNG-Satu (>US$1,600/mtpa) and Prelude FLNG (>US$4,000/mtpa). Whilst the vessel's successful commissioning partly removes uncertainty about technology risk, it remains to be seen whether Golar can demonstrate a long-term and reliable operational track record, although Golar is in talks to develop similar projects in Senegal-Mauritania with BP.

Problems and challenges

At the time of writing (mid-2018), technology risk is the key issue that must be addressed for commoditised FLNG to really take off. At this point within the technology cycle, lenders are (for the most part) not prepared to accept construction/technology risk on FLNG vessels, even those benefiting from robust yard contracts. This means that, for the time being, the majority of projects will require some form of completion support, from either sponsors (if on a project finance basis) or asset owners/operators (if on an asset finance basis). Whilst the capex requirements of commoditised FLNG are much lower than those of bespoke vessels, the cost savings themselves are insufficient to attract non-recourse finance (irrespective of the potential economic return) until these projects have developed a track record in terms of both delivery and reliable operation. The industry is well aware of these issues and is pushing hard to address these challenges – at this moment, the Hilli-Episeyo FLNG has delivered multiple cargoes, and the vessel itself was reportedly delivered under budget (both impressive achievements for early-stage technology).

In the current market, high-quality LNG buyers will be no less demanding than lenders in terms of acceptance of technology risk. Offtake arrangements may present other challenges. In the case of the Coral South project, there is a single offtaker (BP), buying on an FOB basis. That provides a very simple arrangement from both a commercial and an operational perspective. A variety of factors may dictate the need for multiple offtakers (and possibly for DES sales) in other projects – the scale of the project, the purchasing capacity of individual buyers, diversification of buyer credit risk, and the goal of the project to target specific markets. Having multiple offtakers will add complications. The relatively limited storage capacity of an FLNG may present challenges in scheduling and managing multiple offtaker liftings. And, until there is greater experience of the start-up performance, and outturn capacity, of FLNG vessels, there will also be a need for some commercial flexibility to be built into the SPAs, which again will be more complex with multiple buyers.

Potential future trends

Whilst balance sheet finance is still the preserve of majors and large NOCs, following the downturn, operators and independents have struggled to maintain liquidity. A combination of construction financing and sale and leaseback structures becomes an attractive option in situations where project financing is not ideal (for example, debt capacity and ratio, commercial terms and overall risk appetites of commercial banks). Project financing will always be available to the largest and most creditworthy sponsors, but may be more difficult for independents to pursue. Irrespective of the type of financing, ECA coverage will remain critical in order to mitigate political risk. The success of the current FLNG projects should help lenders develop greater confidence in the FLNG sector – as technological risks are sufficiently mitigated, commercial risk shifts into focus, with external financing highly unlikely in situations without strong offtake. Financing from Chinese/Asian entities will continue to be extremely competitive in situations where the operator/developer's preference is potentially for higher leverage with relatively less restrictive financing terms. Once FLNG technologies and projects become more mainstream, and lenders develop greater comfort around commercial risks associated with the FLNG projects, FLNG financing could potentially move towards smaller syndicates of project financing.

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