

FINANCE

## Carefully structured integrated LNG chains offer best template for project finance

The LNG industry's expansion has increased the challenges for sponsors to finance what are amongst the most capital intensive projects in the world. Terry Newendorp, Chairman and CEO, and Senake Gajameragedara, Associate, at Taylor-DeJongh, argue that fully integrated chains – like Qatargas II – are the best way to secure finance for projects. Interdependent financing of the links of the chain, whilst maintaining their economic viability, is the challenge sponsors must meet.

The challenge of financing massive LNG projects in a dynamic market environment requires not only independent evaluation of various sources of capital, but also careful commercial and financial structuring that takes into account each link of the value chain, from upstream gas production and liquefaction through to regasification and marketing. Competitive pressures and the search for economies of scale are driving up the size of

LNG projects and in turn the capital requirements of each link of the chain.

Qatar is leading the way with multiple 7.8 mtpa trains and "Q-Max" (over 250,000 cm) and "Q-Flex" (about 215,000 cm) ships. In the regasification segment, the focus is on very large terminals with throughput capacity in excess of 2.5 Bcf/d on the doorsteps of deep, liquid gas markets. In addition, new commercial arrangements are

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Equatorial Guinea LNG's tanks are now under construction for a 2007 start-up

FINANCE

**Case study 1: Equatorial Guinea LNG**

Marathon (75%) and GEPetrol (25%), the Equatorial Guinea state-owned oil and gas company, are jointly developing the 3.72 mtpa, \$1.8 billion Equatorial Guinea LNG (EG LNG) liquefaction project with exports earmarked to the US.

In early June, the partners welcomed Japanese trading houses Mitsui and Marubeni into the project. When the deal is finalised – by the third quarter of this year, the partners will be: Marathon (60%), GEPetrol (25%), Mitsui (8.5%) and Marubeni (6.5%).

The project, currently pending financing following the final investment decision (FID) announced by the sponsors in June 2004, is an example of a contractually integrated LNG value chain.

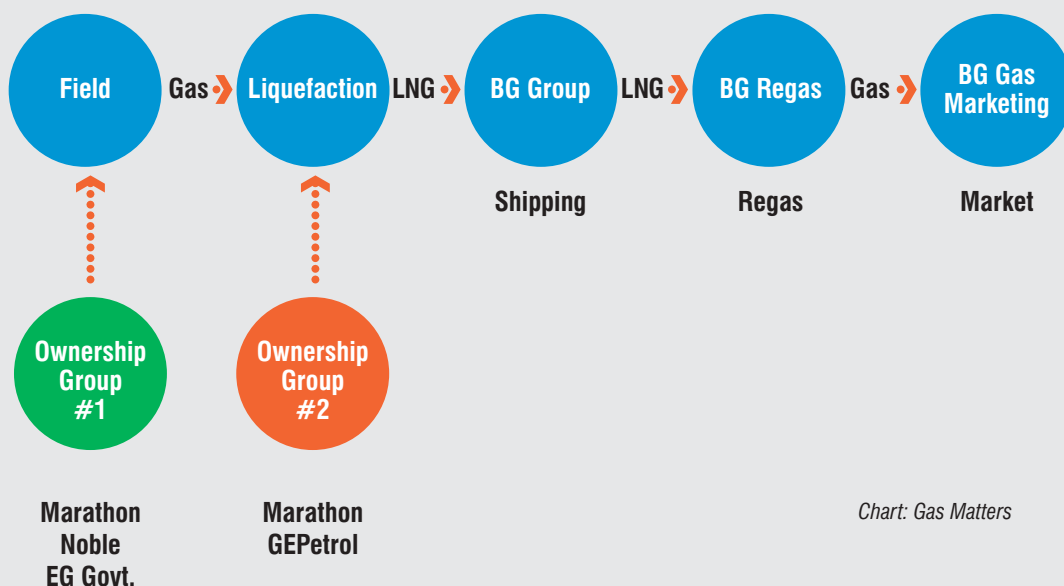
Marathon and GEPetrol have created a capital structure

of 60% debt, 40% equity, with substantial Export Credit Agency participation in the form of direct loans or guarantees. Debt will be limited recourse following the construction period, during which the senior lenders will benefit from a sponsor completion guarantee.

The upstream sponsors will provide gas under a Gas Supply Agreement to the liquefaction project, which will sell LNG to BG Gas Marketing (BGGM) on a Free on Board (FOB) basis under a long-term Sales and Purchase Agreement.

BG will assign shipping and regasification capacity from BG-owned entities and BGGM will market the gas in the US. FOB pricing will be determined using a netback formula indexed to the settlement price of NYMEX Henry Hub natural gas futures.

**Equatorial Guinea LNG's chain**



LNG projects are conceived as a single value chain that must have all their elements, from upstream reserves all the way through marketing, firmly in place

Upstream, midstream and downstream components are integrated through ownership, on a contractual basis, or via a hybrid structure involving both equity and contracts

transforming virtually all aspects of the increasingly global LNG business.

Traditionally, the LNG trade has been a point-to-point business with liquefaction projects financed on the basis of long term Sales and Purchase Agreements (SPAs) with a creditworthy offtaker, usually an electric or gas utility. Such contracts typically included: oil-indexed, Free on Board (FOB) pricing; a term of 20 years or more; and, in most cases, a 100% take-or-pay commitment.

This category of SPAs still underpins a large share of global LNG sales, particularly exports into Japan and South Korea. However, for new

offtakers – and for renewals of some of the original contracts expiring over the next few years – commercial structures are becoming more flexible. Market pricing, lower take-or-pay commitments, and more offtaker-friendly make-up provisions are all appearing. Furthermore, new SPAs tend to build in greater destination flexibility.

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## FINANCE

Competitive pressures and the search for economies of scale are driving up the size of LNG projects and in turn the capital requirements of each link of the chain

This dramatic shift of the commercial landscape is closely associated with the emergence of fully integrated LNG projects: upstream, liquefaction, shipping, regasification and marketing.

### Case study 2: Qatargas II

The 15.6 mtpa, \$9.3 billion Qatargas II (QGII) upstream and liquefaction project is the first example of integration of the LNG value chain under a single sponsor group with netback in full.

As the table below shows, Qatar Petroleum (QP) and

In addition to ExxonMobil credit support for the gas offtake, QP and ExxonMobil have guaranteed senior debt through financial completion. The QGII sponsors have also undertaken lifting and marketing commitments with respect to condensate and LPG products that are

### Qatargas II details

|   | Train 4 (7.8 mtpa)   | Train 5 (7.8 mtpa)  |
|---|--|---|
| <b>Status</b>                                 | <b>Under Construction</b>                                    | <b>Financing Closed</b>                                       |
| <b>Upstream &amp; Liquefaction</b>            | QP: 70%, Exxon: 30%  | QP: 65%, Exxon: 18.3%, Total: 16.7%                           |
| <b>Shipping</b>                               | 25-yr TCP with consortia (QGTC: 45%-50.1%)                   | QGTC up to 100% anticipated                                   |
| <b>Gas/LNG Offtake/Marketing</b>              | EMGME (Exxon: 100%): 25-yr GSPA, 100% of volume              | Total: 25-yr SPA, 5.2 mtpa (0.7 Bcf/d)                        |
| <b>Destination</b>                            | <b>United Kingdom</b>  | <b>United States, France, United Kingdom</b>                  |
| <b>Regasification</b>                         | 25-yr TCA with South Hook LNG Terminal (QP: 70%, Exxon: 30%) | Total LNG USA (Total: 100%): Rights to 1 Bcf/d at Sabine Pass |
| <b>Condensate &amp; LPG Lifting/Marketing</b> | QP, Exxon  | QP, Exxon, Total  |

QP: Qatar Petroleum Corp., Exxon: Exxon Mobil Corp., QGTC: Qatar Gas Transport Co., Total: Total S.A., EMGME: ExxonMobil Gas TCP: Time Charter Party, TCA: Terminal Capacity Agreement, GSPA: Gas Sales and Purchase Agreement, mtpa: million tonnes  
*All percentages are with respect to equity stakes unless otherwise noted*

ExxonMobil are partners in the joint upstream and liquefaction project (recently joined by Total on the second train) with QP and other Qatari state-owned entities taking a significant equity interest in the separately financed LNG tankers via stakes in the Qatar Gas Transport Company.

LNG from the first train is destined for regasification at the QP and ExxonMobil-owned – again, independently financed – South Hook LNG terminal in Wales, UK. A wholly-owned subsidiary of ExxonMobil is the offtaker and marketer for 100% of gas volumes from train one, which is currently under construction.

significant contributors to the project's economics.

In addition to breaking new ground as the first ever LNG project to be financed on the basis of market price risk – in this case UK National Balancing Point (NBP) – the sheer scale of QG II required a broad view on sourcing capital.

Ultimately, four senior debt tranches: a commercial bank facility comprised of 36 banks; Islamic financing; two export credit agency facilities – the US Export-Import Bank and its Italian counterpart, Servizi Assicurativi del Commercio Estero (SACE); and ExxonMobil “mirror” loans were required for the largest energy project financing to date (see table below).

### Qatargas II finance

#### UPSTREAM AND LIQUEFACTION

**Trains One & Two**  
 (Debt: 70%, Equity: 30%)

##### Commercial Bank Facility

\$3.6 billion, 15 years  
 Pricing: 50 bp (yrs 1-5)  
 rising to 125 bp (yrs 13-15)

##### Islamic Facility

\$530 million, 15 years  
 Structured to mimic Bank Facility

##### ECA-Guaranteed Facilities

\$805 million, 16.5 yrs  
 (SACE: \$400 million at 21bp,  
 US Ex-Im: \$405 million at 2 bp)

##### ExxonMobil Sponsor Loan

\$1.9 billion (as mirror facilities)

#### REGASIFICATION

**South Hook LNG Terminal**  
 (Debt: 85%, Equity: 15%)

##### Commercial Bank Facility

£420 million  
**ExxonMobil Sponsor Loan**  
 £180 million

## FINANCE

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Value chain integration creates unique challenges for financing each individual link

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QATAR PETROLEUM

### Ras Laffan's LNG loading piers will become much busier once Qatargas II starts production

structure involving both equity and contracts.

This dramatic shift of the commercial landscape is closely associated with the emergence of fully integrated LNG projects: upstream, liquefaction, shipping, regasification and marketing.

Increasingly, upstream sponsors – including national oil companies – are moving down the value chain and investing in shipping and terminals. Concurrently, offtakers are taking equity stakes in the upstream and liquefaction elements.

Value chain integration creates unique challenges for financing each individual link. Interdependent upstream, liquefaction, shipping and regasification projects require expert commercial and financial structuring that will not only safeguard each individual project's commercial viability and collateral, but also ensure that every value chain segment is able to fully tap the different pools of finance necessary to fund these capital intensive endeavours.

### Different risks

Upstream, liquefaction, shipping and regasification projects offer different market and political risk profiles. To preserve the bankability of each segment and minimise direct competition for debt funding among segments in an integrated value chain, commercial structuring must be

tailored to generate market risk profiles appropriate for different lender groups.

All lender groups will be well served to benchmark contractual pricing and terms and rigorously analyse the economics of the respective value chain segments. At the same time, solid integration – whether through ownership or contractually – can lower risk to lenders and provide more flexibility for borrowers.

In the case of Qatargas II (*see table on page 24*), the initial order of eight “Q-Flex” vessels was financed through asset-based lending that attracts certain specialised institutions. The South Hook regasification terminal (phase one) was financed by commercial banks in the UK on the basis of a tolling-type agreement that embedded an agreed upon rate of return.

### Reassurance

In both Qatargas II and Equatorial Guinea LNG (*see table on page 23*), market access optionality (shipping and regasification) and marketing capabilities available to sponsors or offtakers provide greater reassurance to lenders to the liquefaction project.

With certain exceptions (Australia, the UAE, Qatar, Trinidad, and Malaysia), liquefaction ventures tend to be located in emerging market environments that carry higher political risk and

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## FINANCE

usually require substantial export credit agency (ECA) participation for Political Risk Insurance (PRI) cover as well as direct lending capacity. As Qatargas II shows, even in low political risk countries, ECAs can play a significant role because of the need for increased debt capacity.

In contrast, creditworthy regasification projects in North America, Europe, Japan and other developed markets tend to attract sufficient conventional commercial bank debt.

However, terminal projects in emerging LNG importers such as India and Jamaica are likely to exert new demand for ECA or multilateral lending agency financing.

### Scale-up


Value chain integration and project scale-up also present significant financial structuring challenges. Delineation of security interests and contractual rights among the different lender groups for liquefaction, shipping and regasification segments can be complex and must be carefully addressed.

In large projects – such as Qatargas II – that take

advantage of increasingly sophisticated Islamic financing, security documents must provide both Sha'ria compliance and *pari passu* treatment of all senior debt. Lenders must also resolve intercreditor issues generated by sponsor participation as a senior lender as in the case of ExxonMobil in Qatargas II.

### Integration

Increasing commercial flexibility and value chain integration are closely associated key characteristics of a rapidly changing global LNG business. Export projects will be hampered in raising capital unless they are part of a fully integrated value chain: from upstream, liquefaction, shipping, regasification, and even to offtake and marketing.

Yet, financing is still separate at each link of the chain. The challenge for sponsors and lenders is to connect the links with interdependent financing and investment commitments and commercial relationships, while still preserving each link's economic viability, collateral, and the ability to tap separate pools of capital. 

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