Project Financing of the LNG Supply Chain

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Agenda

- Brief Overview of Project Finance and the LNG Supply Chain
- LNG Supply Chain Structuring Options
- Identification and Allocation of Risk in the LNG Supply Chain
- Common Issues in the Project Financing of the LNG Supply Chain
**Brief Overview of Project Finance**

**Definition of “Project Finance” –**

**Lending** to a single purpose company for the acquisition and/or construction of a revenue generating asset

**Repayment** of the loan is solely from the revenues generated by the operation of the asset

**Security** for the loan is comprised of all the assets of the single purpose company

**Recourse** to the sponsors is limited or non-existent

**Benefits of “Project Finance” –**

- Limited Equity Compared to Project Returns
- Risk Sharing & Diversification
- Off-Balance Sheet
- Access to Long-Term Financing
- Political Risk Mitigation
LNG Supply Chain

Gas Reserve Extraction (offshore / onshore) → Gas Separation and Treatment → Gas Liquefaction / LNG Storage → LNG Loading and Transportation

LNG Unloading & Receiving Terminal → LNG Storage → LNG Regasification → Inland Gas Transportation and Distribution → Gas Purchaser/End User
LNG Supply Chain Structuring Options

Field → Liquefaction → Shipping → Regas → Marketing

Ownership Group 1
Ownership Group 2
Ownership Group 3
Ownership Group 4
# LNG Supply Chain Structuring Options cont’d . . .

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<th>Upstream</th>
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<th>LNG Marketing</th>
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<td><strong>Integrated</strong></td>
<td>![Upstream Resource Holder]</td>
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<td><strong>Tolling</strong></td>
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<td><strong>Merchant</strong></td>
<td>![Upstream Resource Holder] → <strong>Gas SPA</strong> → ![Liquefaction Project Co]</td>
<td>![LNG SPA] → ![Marketing Agent]</td>
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LNG Supply Chain Structuring Options cont’d . . .

Midstream

- Responsibility for LNG Transport → Ex-Ship / FOB
- The LNG Transport Contract → Dedicated / Spot
- Vessel → Newbuild / Existing
- Tax Lease Structure
LNG Supply Chain Structuring Options cont’d . . .

Regasification & Downstream

LNG Supplier

LNG SPA

Regasification Terminal Co.

Take or Pay GSA

Power Plant

Tariff

Gas Grid

Spot Sale GSA

Gas Marketing Company

Take / Pay

LNG SPA

Regasification Terminal Co.

Terminal Use Agreement

Power Plant

Terminal Use Agreement

Gas Grid

Terminal Use Agreement

Gas Marketing Company

LNG SPA (Take/Pay or Spot)
Identification and Allocation of Risk in the LNG Supply Chain

- Project-on-Project Risk – “Interdependency”

- Construction Risk
  - Delays in construction
  - Cost-Overruns
  - Performance below guaranteed parameters
  - Materials and Labor Cost and Availability

- Operating Risk
  - Operator performance
  - Equipment failures
  - Increased operational costs
  - Labor Availability (e.g., seafarers)
Identification and Allocation of Risk in the LNG Supply Chain cont’d . . .

- Upstream Supply Risk
  - Insufficient Reserves
  - Failure of Supply

- Downstream Market Risk
  - Lack of Market Demand
  - Competing Fuels
  - Downstream Buyer Credit Risk
  - Natural Gas Pricing
  - Regulatory / Legal Regime
Identification and Allocation of Risk in the LNG Supply Chain cont’d . . .

• Credit & Payment Risk
  • Risk of Non-Payment
  • LNG or Gas Offtaker Creditworthiness
  • Charterer Creditworthiness

• Liquidity Risk
  • Cost-overruns
  • Invoice and cash-flow mismatches
  • Commissioning and ramp-up periods
Identification and Allocation of Risk in the LNG Supply Chain cont’d...

- **Force Majeure**
  - “Unforeseeable” risk
  - Acts of God
  - Inter-dependency of force majeure clauses throughout LNG Supply Chain
  - Force Majeure Clauses frequently not back-to-back

- **Political Risk**
  - Governmental support for project
  - Permitting and Authorizations
  - Role of State in Supply, Transportation and Offtake
Identification and Allocation of Risk in the LNG Supply Chain cont’d . . .

Legal Risk
- Breach of contract and non-performance
- Enforceability
- Contractual ambiguity or silence
- Dispute resolution
- Developed vs. Developing Regulatory Environment

General Economic Risk
- LNG and Gas Demand and Supply
- LNG Vessel Demand and Supply
Sources of Financing

- Commercial Lenders
- ECAs
- Multilateral Lenders
- ECA Lenders
- Liquefaction Co.
- Trustee
- Sponsors
- Bond Investors
- Bond Holders

- Commercial Tranche
- ECA Tranche
- Political or Comprehensive Guarantee
- Loan
- "A Loan"
- "B Loan"

- Equity & Debt
- Corporate Borrowing
- Capital Markets
- General Funds
- Other

- Bond Holders
- Participation Agreement
Upstream Development & Liquefaction cont’d . . .

Issues Particular to Financing Upstream Development & Liquefaction

- Offtaker Credit Risk and Downstream Credit Risk
- Nature of Resource Rights
- Construction Terms
Issues Particular to Financing Upstream Development & Liquefaction

- LNG Offtake Agreement
  - Offtaker Credit Quality
  - Term of LNG Offtake Agreement
  - LNG Quantity
  - Take-or-Pay Amount
  - Pricing (Maximum, Minimum and Volatility Dampening)
  - Price Revision Mechanisms
  - Upward / Downward Flexibility
  - Destination Flexibility
  - Other LNG Offtake Agreements as Revenue Support for Debt
Issues Particular to Financing Upstream Development & Liquefaction

- Feedstock Supply
  - Term of production sharing contract / license
  - Proven reserves
  - Costs of field development
  - Field development plan
  - Dedication to LNG Supply Chain
Issues Particular to Financing Upstream Development & Liquefaction

- Sponsor Support
- Scope of Collateral/Security
- Political Risk
- Health, Safety, Environmental & Social
- Expansion
LNG Transportation

Security Package
- Vessel mortgage
- Share pledge
- Direct Agreements
- Assignments of Project Contracts
- Assignment of Refund Guarantee
- Assignment of Insurance
- Account Charge

Loan Agreement

Project Coordination & Quiet Enjoyment

Sponsor Support

Interest Rate Swaps

Time Charter

Ship Building Contract

Tri-Partite Agreement

Ship Manager

SPV

Lenders

Swap Providers

Charterer

Ship Builder

Sponsor 1

Sponsor 2

Sponsor 3

Management Contract

Charter

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LNG Transportation cont’d . . .

Issues Particular to Financing LNG Shipping

• Interdependency of LNG vessels with upstream development and liquefaction as well as downstream regasification
• Charterer credit risk
• Charter Party Terms
• Sponsor Support
• Vessel redeployment
• Vessel refinancing
• Collateral security
LNG Transportation cont’d . . .

Project Coordination & Quiet Enjoyment Agreement among VesselCo., Charterer and Lenders

- Charterer consent to mortgage over vessel and assignment of Charter
- Charterer Standstill Period & Lenders Right to Cure Default
- Lender Substitution Rights
- Charterer Right of Quiet Enjoyment (Non-Interference)
- Charter Right of Early Termination of Charter if Vessel Finance Default
- Additional Charterer Covenants
Sample Merchant Model

LNG Supplier

Regasification Terminal Co.

Sponsors

Power Plant Lenders

Power Plant

Gas Grid

Gas Marketing Company

LNG Supplier Lenders

LNG Supplier Lenders

Regas Terminal Lenders

Take / pay LNG SPA

Take / pay GSA

Tariff

Spot Sale GSA

Spot Sale GSA

Spot Sale GSA

Spot Sale GSA
Sample Tolling Model

- LNG Supplier
- Regasification Terminal Co.
- Power Plant
- Gas Grid
- Gas Marketing Company

- Sponsors
- Terminal Use Agreement
- Take / Pay LNG SPA
- Spot Sale LNG SPA
- LNG Supplier Lenders
- Regas Terminal Lenders
- Power Plant Lenders

LNG Regasification cont’d . . .
Issues in Financing LNG Regasification Terminals

- Regas terminals dependent upon upstream supply
  - Subject to all upstream risks and delays
  - Tight supply market has resulted
- Point to point supply model changing; but tolling structure still more common than merchant
- Significant upstream support required from offtaker / sponsors
- Offtakers often invest in Regas Terminals
LNG Regasification cont’d . . .

- Issues in Financing LNG Regasification Terminals
  - Permitting / Siting – “NIMBY”
  - Terrorism
  - Typical construction / force majeure risks of other large projects
  - Strict cashflow management through waterfall
  - Direct Agreements between lenders and terminal users
LNG Regasification cont’d . . .

- Terminal Use Agreement
  - Basic document for regasification terminal tolling structure
  - Removes price and volume risk from terminal operation

- Terminal Use Agreement Issues
  - TUA counterparty risk
  - Force Majeure
  - Assignment or diversion of cargos
  - Liability
  - Multiple users
  - Lender / Offtaker rights on Terminal Operator default
Downstream

- Downstream pricing / economics
  - ultimately drive entire project financing structure

- Downstream market dynamics
  - can be very different from up/midstream LNG market

- Offtaker strength in target market is vital

- Downstream issues in LNG project finance – two examples
  - Sales to US / UK Grid
  - GSA with Independent Power Project (IPP)
Downstream issues in LNG Project Finance

US / UK grid sales

- Price volatility
- Transportation
- Delivery volumes
- Market concentration
Downstream issues in LNG Project Finance

GSA with IPP

- Payment Risk
  - Creditworthiness of counterparty
  - Payment Security
- Fuel Supply Risk
  - Delivery Security
  - Force Majeure
- Risk Allocation GSA / PPA interface key
Downstream cont’d . . .

- **GSA with IPP**
  - Security for Payment and Delivery

![Diagram showing the flow of payments between Power Offtaker, TRA, Gas Supplier, Sponsors, with streams for Tariff Payments, Fuel Payments, O&M Expenses, Debt Service, Reserves, etc.](image_url)
**Downstream cont’d . . .**

- **GSA with IPP**
  - Force Majeure

  - Power Offtaker excused from taking power under PPA
  - IPP excused from taking gas under GSA
  - IPP excused from delivering power under PPA
  - Gas supplier excused from delivering gas under GSA
GSA with IPP

- Force Majeure – difficult to extend upstream
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