Financing LNG Projects

Regional Differences and Market Developments

6th July 2018

Structured Finance Department – EMEA

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Financing LNG Projects - Introduction

Key considerations to finance LNG Liquefaction Projects

- Huge overall funding requirement
  - [up to 10+] mtpa liquefaction facility for economy of scale
  - Typically including upstream facilities, pipelines and other ancillary facilities
- Long operational life ([30-40] yrs), but most of the investment made upfront
  - No revenue until the whole facilities are completed

➔ Long-term Limited-recourse financing is frequently used, one of the largest types of Project Finance transactions

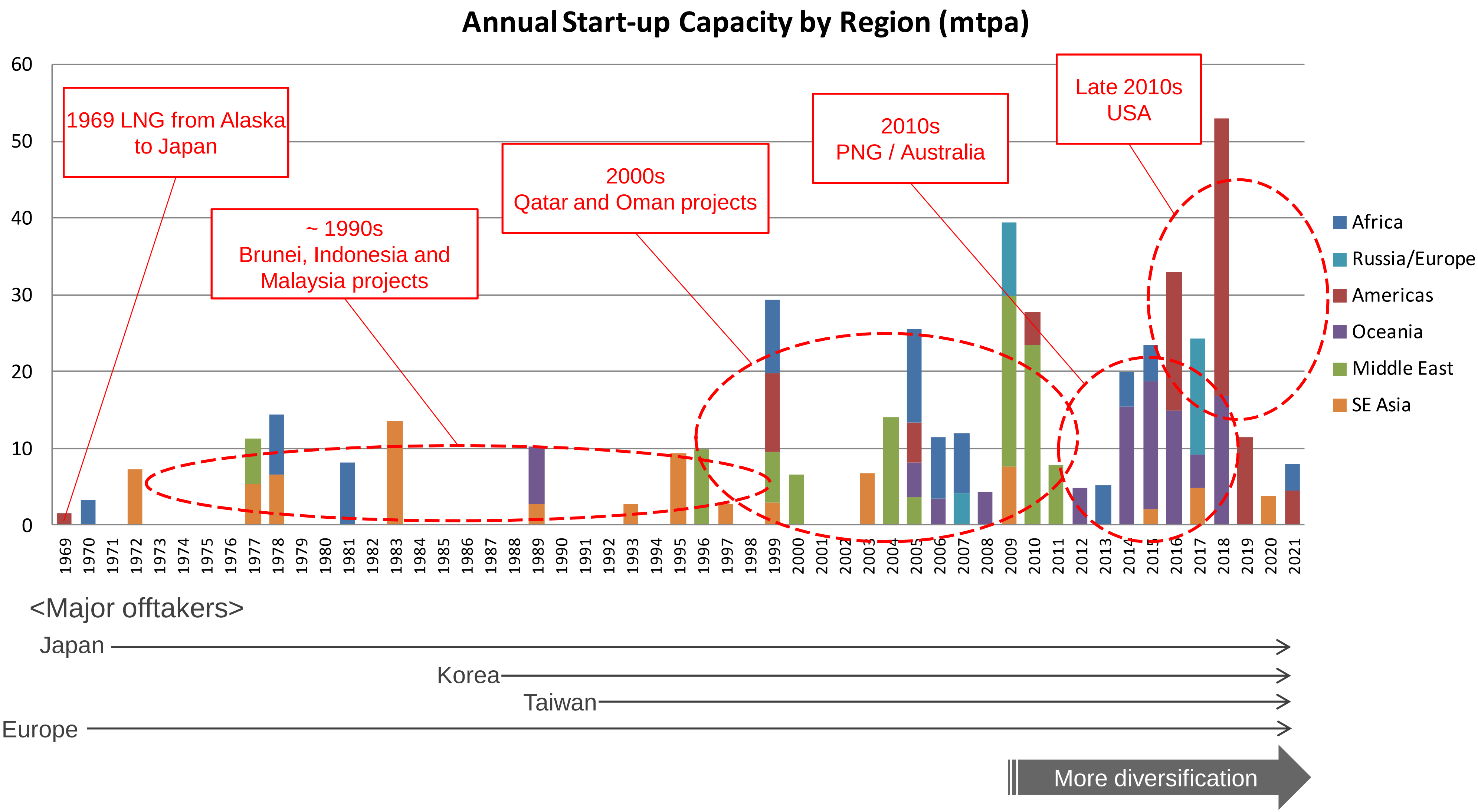
- (Examples) Ichthys LNG: USD20bn, PNG LNG: USD14bn

Today's Topics

1. How Project Finance was structured for the LNG Projects in the past
   - Any difference by region or change over time, and why?
2. How PF arrangement would evolve in the future, reflecting the developments of the underlying LNG business environment
3. (Appendix) Basel III / IV impact on Project Finance

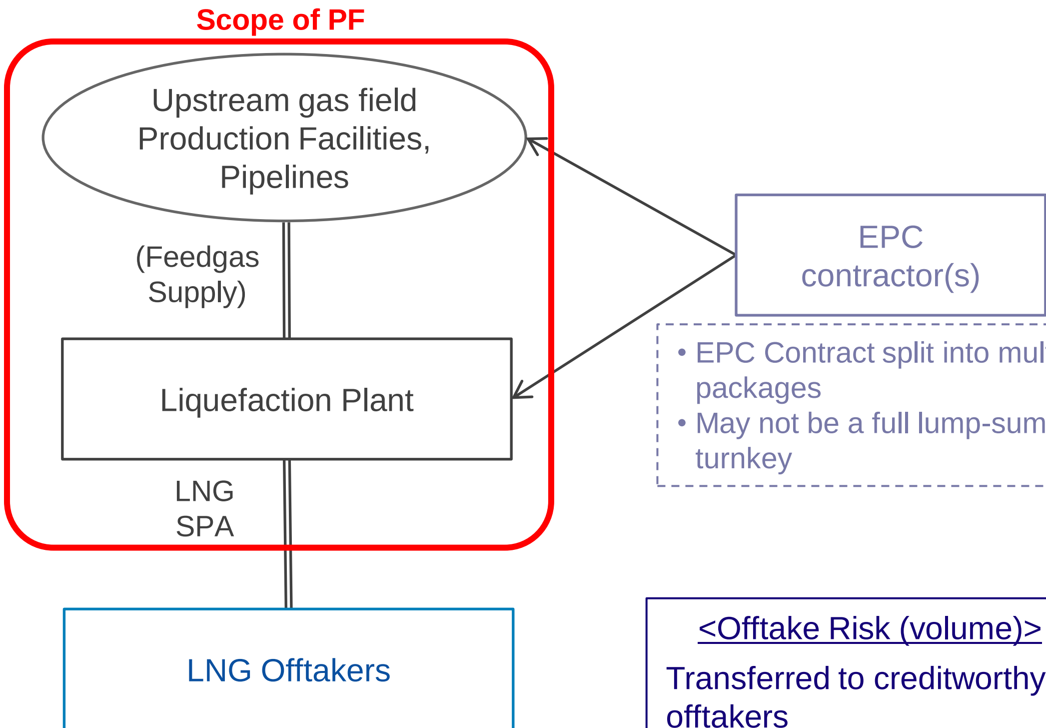
(Source) Compiled by Mizuho Bank from "Survey on LNG Trades" by Japan Fair Trade Commission, press releases and IR materials

Introduction: History of LNG Industry



(Source) Compiled by Mizuho Bank from "Gas Nenkan 2017" by TEX Report and press releases

Financing LNG Projects - Traditional Model (1) : Integrated Structure



- EPC Contract split into multiple packages
- May not be a full lump-sum turnkey

- Long-Term take-or-pay contracts with creditworthy offtakers (e.g. utilities of Japan, Korea and Taiwan doing regulated business)
- Oil-linked price formula (S-curve)

<Feedstock Supply Risk>

•Not relying on external suppliers

•Addressed by Reserve DD

<Construction Risk>

Covered by the Sponsors (completion support)

<Offtake Risk (volume)>

Transferred to creditworthy offtakers

<Offtake Risk (price)>

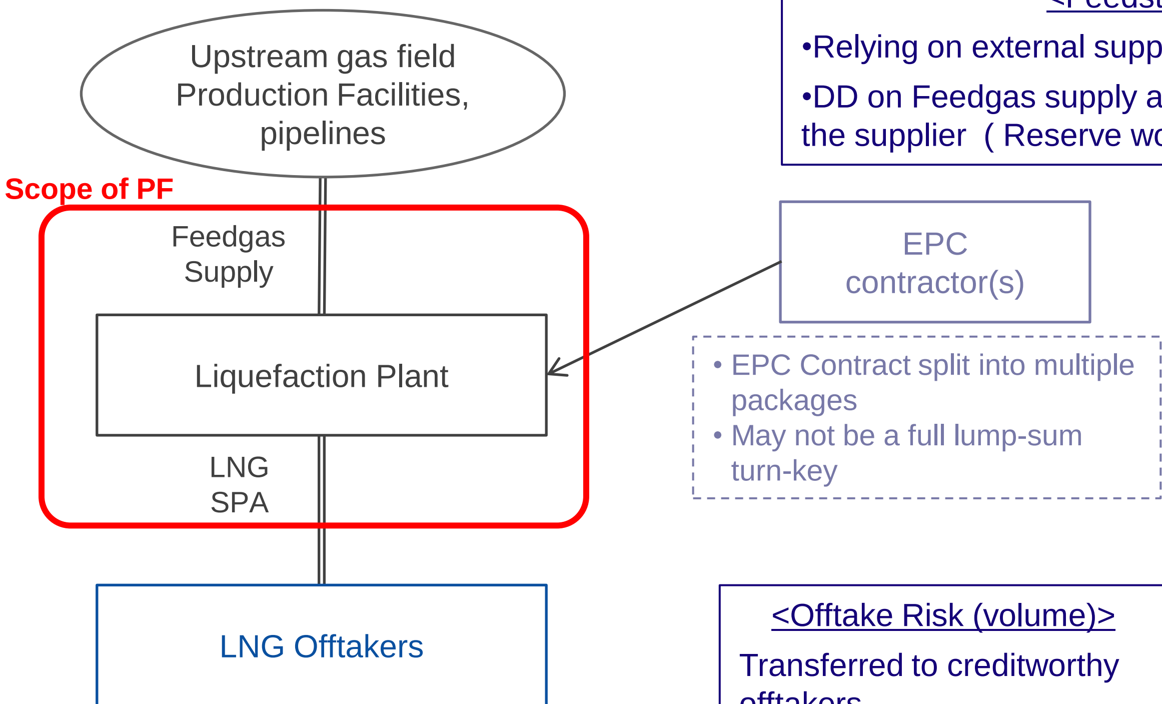
•Borrower is exposed to commodity (oil) price risk

•Sensitivity analysis, conservative price scenario

➔ Project (including Upstream and liquefaction) owned by an Incorporated JV or Unincorporated JV (e.g. Australia)

➔ In the case of Unincorporated JV, PF for only a part of the JV participants would be challenging

Financing LNG Projects - Traditional Model (2) : Liquefaction Only Structure



- Long-Term take-or-pay contracts with creditworthy offtakers (e.g. utilities of Japan, Korea and Taiwan doing regulated business)
- Oil-linked price formula (S-curve)

<Feedstock Supply Risk>

•Relying on external suppliers (e.g. NOCs)

•DD on Feedgas supply agreement and creditworthiness of the supplier (Reserve would also be investigated)

<Construction Risk>

Covered by the Sponsors (completion support)

<Offtake Risk (volume)>

Transferred to creditworthy offtakers

<Offtake Risk (price)>

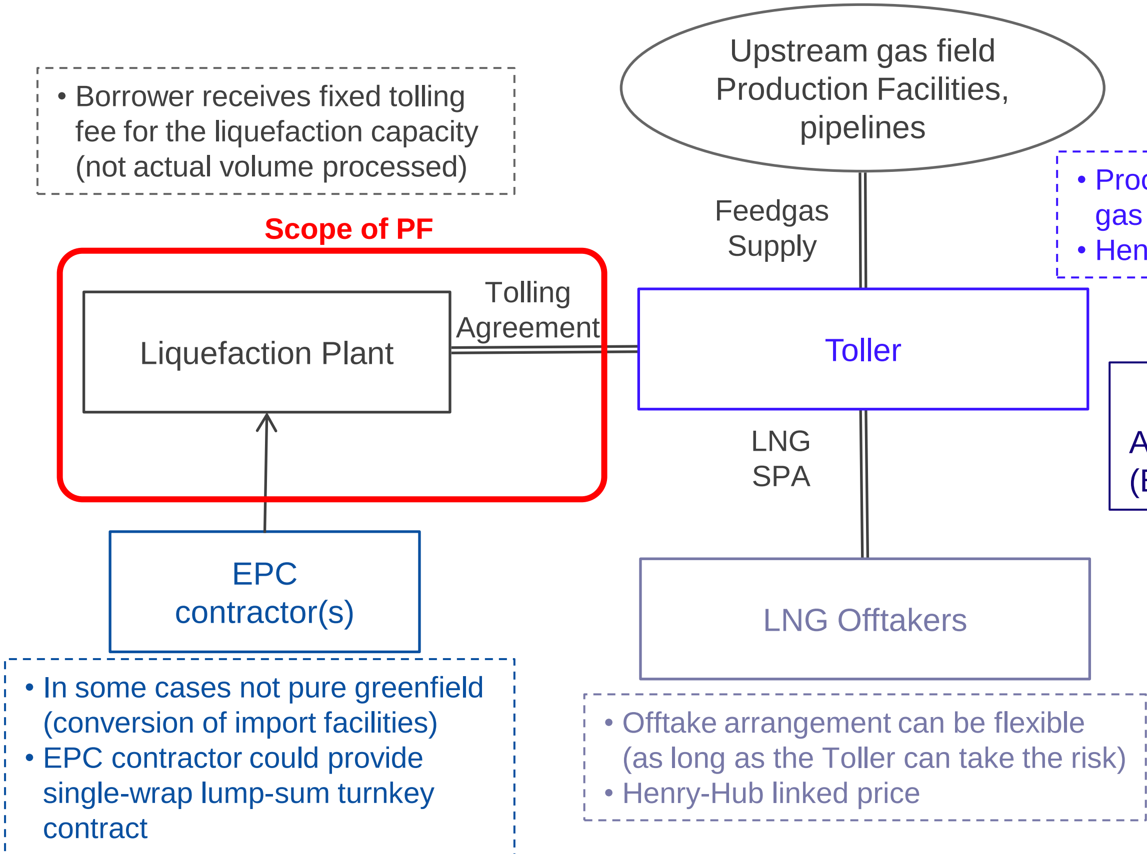
•Borrower exposed to commodity (oil) price risk

•Sensitivity analysis, conservative price scenario

Financing LNG Projects - Tolling Model : Example of Tolling Structure in USA

<u><Feedstock Supply Risk></u>

- Assumed by the Toller (Borrower receives fixed fee)
- US gas market is considered liquid (low risk)



<u><Offtake Risk (volume)></u>

Assumed by the Toller (Borrower receives fixed fee)

<u><Offtake Risk (price)></u>

•Assumed by the Toller (Borrower receives fixed fee)

- Simpler risk assessment, although creditworthiness of the Toller would be the key (PJ risks concentrated on the Toller)
- Often acquires Investment-Grade external ratings and Project Bond take-out is active

<u><Construction Risk></u>

Completion support may not be mandatory

(Source) Compiled by Mizuho Bank from IR presentations and press releases

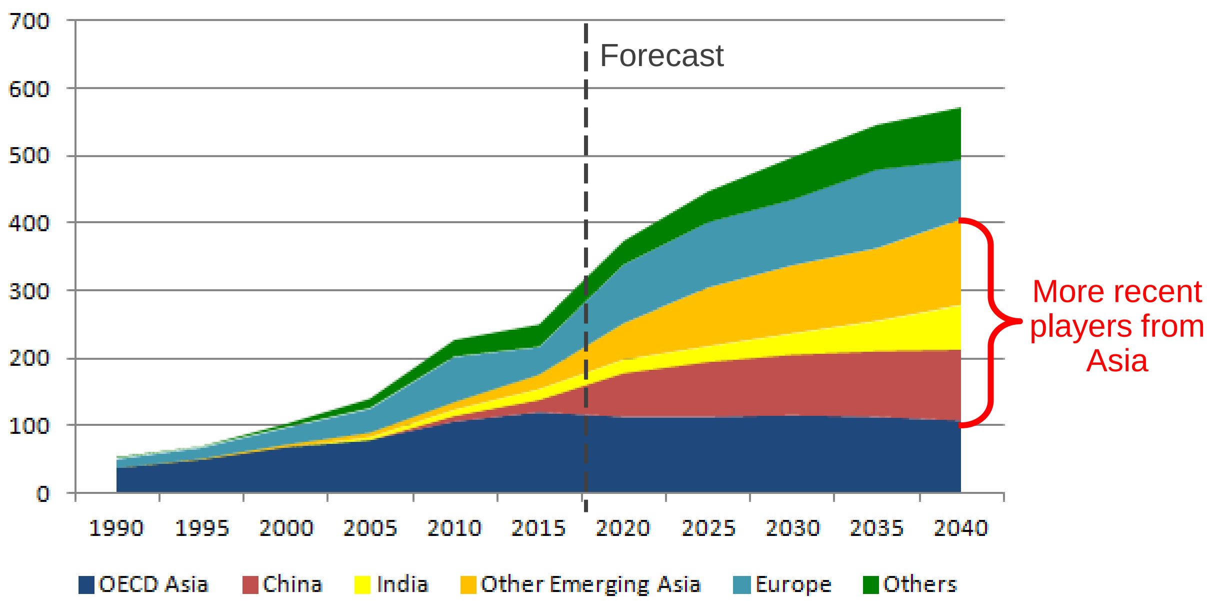
New Trends in LNG Business

Market development ongoing – affecting LNG sales side of the project structure

Demand increase mainly driven by Asian countries…..

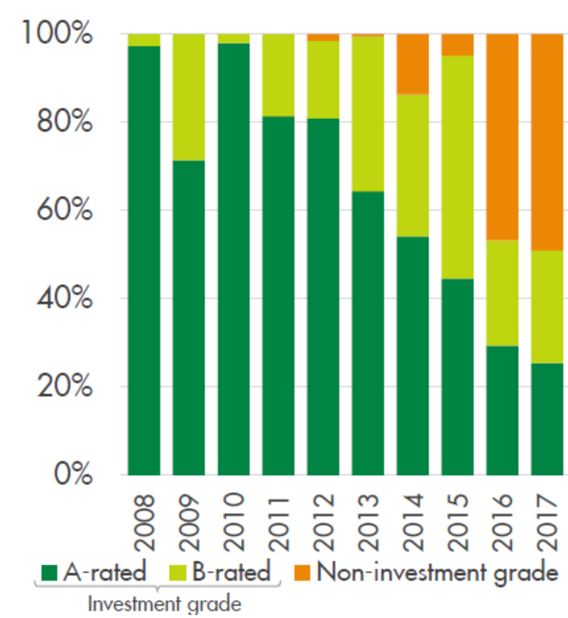
But offtaker credit profile may change

LNG imports (BP)



(Source) Compiled by Mizuho Bank from “BP Energy Outlook Edition 2018”

New long-term contract credit rating

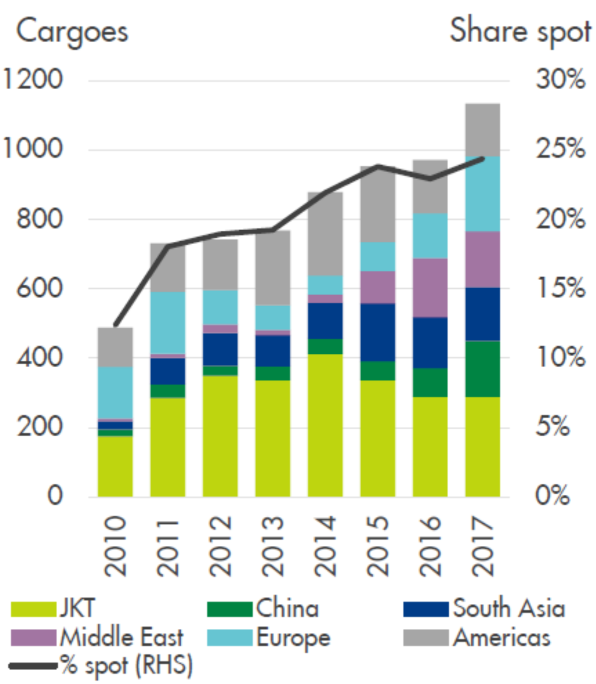


(Source) Shell LNG Outlook 2018

New Trends in LNG Business

More spot trades

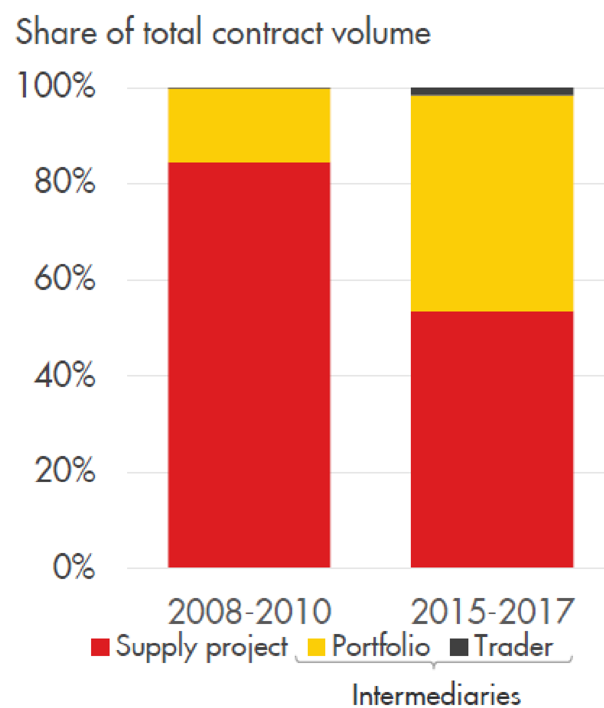
Spot LNG deliveries



(Source) Shell LNG Outlook 2018

And emergence of portfolio players

Term sales to importers by supplier type



(Source) Shell LNG Outlook 2018

➔ Spot trades would also facilitate integration of global LNG markets, minimising regional pricing gap

New Trends in LNG Business – Finding a New Equilibrium

- A new equilibrium would depend on which of the conflicting forces are stronger (between the parties, and within each party)
- Short-term response of financiers would be more likely to be reliance on portfolio players (who can provide long-term offtake commitment) and/or tollers with high creditworthiness, rather than directly taking LNG market risk
- As global LNG markets are more integrated, global ranking of production cost / break-even LNG price (per MMBtu) would become more important indicator of project resilience

- Revenue stability (creditworthy, long-term offtake) is the utmost importance – not so keen on upside potential
- Competition with other financiers

Financiers

LNG Producers (Sponsors)

LNG Buyers

LNG market liquidity?

Portfolio Players /Traders

- Higher, less volatile price
- Revenue stability is important, but considering the balance with upside potential
- Need for external financing – have to accommodate financiers' needs

- Lower, less volatile price
- More flexibility (but also need assurance of supply)

- Arbitrage profit opportunity (in exchange for absorbing mismatch between buyer and seller needs)
- Risk of demand/supply gap (volume and price)

Appendix: Basel III / IV

Key Points for Project Finance

Basel III / IV – Key Points for Project Finance

2008 Financial Crisis

2010 Basel III Rules Text

2017 Basel III Finalisation (so-called "Basel IV")

Needs to strengthen the regulation, supervision and risk management of banks

Enhanced capital requirements → Output Capital Floor

Leverage Ratio → Additional buffer for G-SIBs* etc.

Liquidity Coverage Ratio (LCR)

Net Stable Funding Ratio (NSFR)

- More Equity Capital Required
- Higher Funding Cost
- Larger banks ("G-SIBs*") will have even higher requirements

The impact would vary across banks, but generally PF is expected to be more costly for commercial banks to retain on their B/S

➔ Solution?

**G-SIBs (Global Systematically Important Banks)*

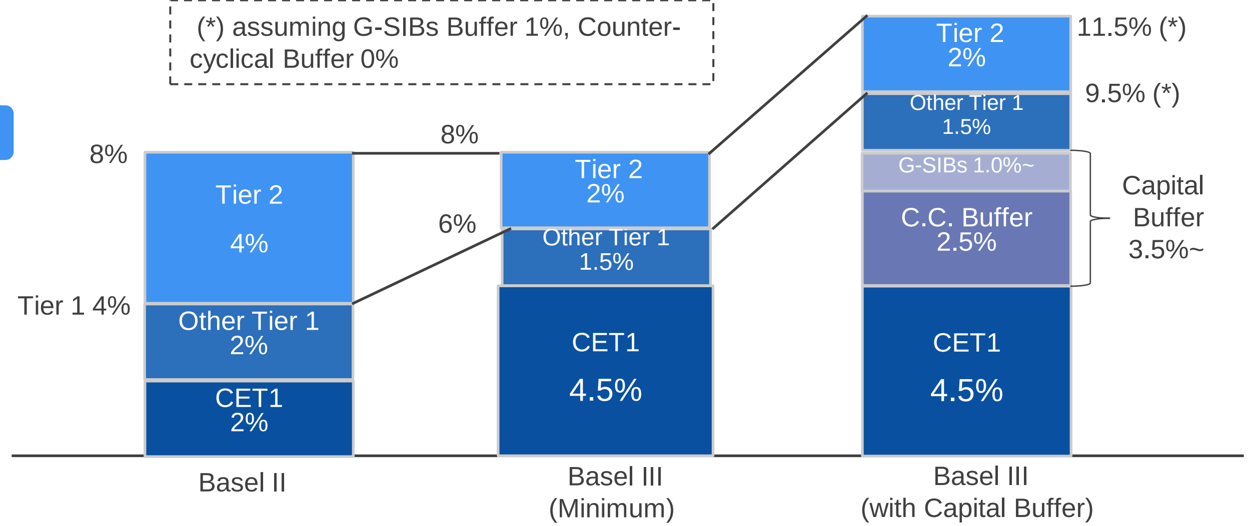
(Source) Compiled by Mizuho Bank from publications by BIS and Mizuho Research Institute

Basel III / IV – Key Points for Project Finance

Enhanced Capital Requirements

2019 Full Implementation

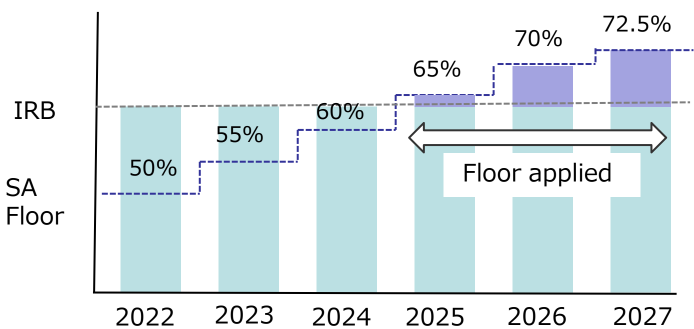
(*) assuming G-SIBs Buffer 1%, Counter-cyclical Buffer 0%



Output Capital Floor

2022 → 2027 Full implementation

<Example>



Internal Ratings-Based approach (IRB) Risk Weight for Project Finance
→ Based on each bank's risk assessment (= internal rating) of the project
→ Better internal rating, lower RW

Setting floor on RW (in terms of the overall loan portfolio, not individual loan transaction) ,starting at 50% → 72.5% of SA RW

Standard Approach (SA) Risk Weight for PF
(without issue-specific external rating)
- 130% Pre-operational phase
- 100% Operational phase
- 80% Operational phase (high-quality)

→ Applied regardless of internal rating

(Source) Compiled by Mizuho Bank from publications by BIS and Mizuho Research Institute

Basel III / IV – Key Points for Project Finance

Leverage Ratio

2018 → 2022 Full implementation

$$\frac{\text{Tier 1 Capital}}{\text{Exposure}} \geq 3\% + [0.5 – 1.75]\% \text{ (G-SIBs buffer)}$$

- Risk-weighting is not taken into account → larger impact on lower-risk assets (e.g. ECA-backed loans)

Liquidity Coverage Ratio (LCR)

2015 → 2019 Full implementation

$$\frac{\text{Stock of HQLA (high-quality liquid assets)}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

- Undrawn amount of committed credit facilities (e.g. working capital facility) to SPEs is likely to be 100% counted as "net cash outflows" – which has to be covered by cash or other liquid assets

Net Stable Funding Ratio (NSFR)

2018 implementation

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} \geq 100\%$$

- Broadly speaking, assets of one year's maturity or more (e.g. PF) has to be matched by funding of at least one year (e.g. capital and long-term liability)
- Min. requirement is one year, but banks may seek longer funding (although it does not have to match the tenor of PF loan), which makes the banks' funding cost higher

(Source) Compiled by Mizuho Bank from publications by BIS and Mizuho Research Institute

Basel III and its impact on Project Finance

- List of G-SIBs (Global Systematically Important Banks) (November 2017) – Many major PF players are included

Additional Capital Buffer	Leverage Ratio Buffer	G-SIBS
3.5%	1.75%	--
2.5%	1.25%	JP Morgan Chase
2.0%	1.0%	Bank of America, Citi Group, Deutsche Bank, HSBC
1.5%	0.75%	Bank of China, Barclays, BNP Paribas, China Construction Bank, Goldman Sachs, Industrial and Commercial Bank of China, Mitsubishi UFJ FG, Wells Fargo
1.0%	0.5%	Agricultural Bank of China, Bank of New York Mellon, Credit Suisse, Groupe Crédit Agricole, ING Bank, Mizuho FG, Morgan Stanley, Nordea, Royal Bank of Canada, Royal Bank of Scotland, Santander, Société Générale, Standard Chartered, State Street, Sumitomo Mitsui FG, UBS, Unicredit Group

(Source) Compiled by Mizuho Bank from publications by FSB and Mizuho Research Institute

Basel III / IV - its implications for Project Finance

Commercial Banks

Higher cost to maintain PF on B/S

Institutional Investors (e.g. Insurance, pension)

Increased appetite in PF

- "Originate-to-Distribute" model
- Project Bonds

- Already seen in some sectors / regions, growing trends
  - US: LNG projects
  - Europe: Infrastructure projects, wind farms (especially refinancing)
- Documentation / structuring considerations
  - Less transfer restrictions on banks (loan sell-down without borrower consent)
  - Refinancing clause (to make partial refinancing / bond take-out easier)
  - Covenants / voting mechanism for bond investors
- But still challenges ahead for wider application…
  - Construction risk (greenfield projects)
  - Emerging market country risk
  - Commodity price risk
  - Prepayment, fixed rate vs floating rate

➔ ECA Direct Loans remain (or more) attractive for large-scale natural resources projects

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