

17th INTERNATIONAL CONFERENCE & EXHIBITION ON LIQUEFIED NATURAL GAS (LNG 17)



Financing LNG Next Frontiers: the Floating LNG Breakthrough

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International Organizers



Host Association



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Summary

Fast-paced Developments

Markets	<ul style="list-style-type: none">▪ FLNG is unlikely to be a “Low Cost” technology to deliver and operate▪ Investors will have to believe in sustained long term gas demand and a minimum of price tension
Projects	<ul style="list-style-type: none">▪ Race is on and serious contenders are already competing to be the first FLNG project▪ First projects are likely to be equity financed but project financing should be able to follow on if the appropriate structure was to be delivered to the lending banks
Building the Case	<ul style="list-style-type: none">▪ Project Finance banks will have to build the case with their own internal approval committee before committing▪ Support of Independent Engineer on the technology will be key▪ Early engagement with Credit Committee will be necessary to build the case
Financing	<ul style="list-style-type: none">▪ Financing FLNG will require lenders to be comfortable with integration of proven technology and insurance strategy▪ Offloading Arms, turret, marine conditions and interface integration are likely to be the key focus of lenders▪ Traditional LNG players and lenders will lead the charge on Floating LNG

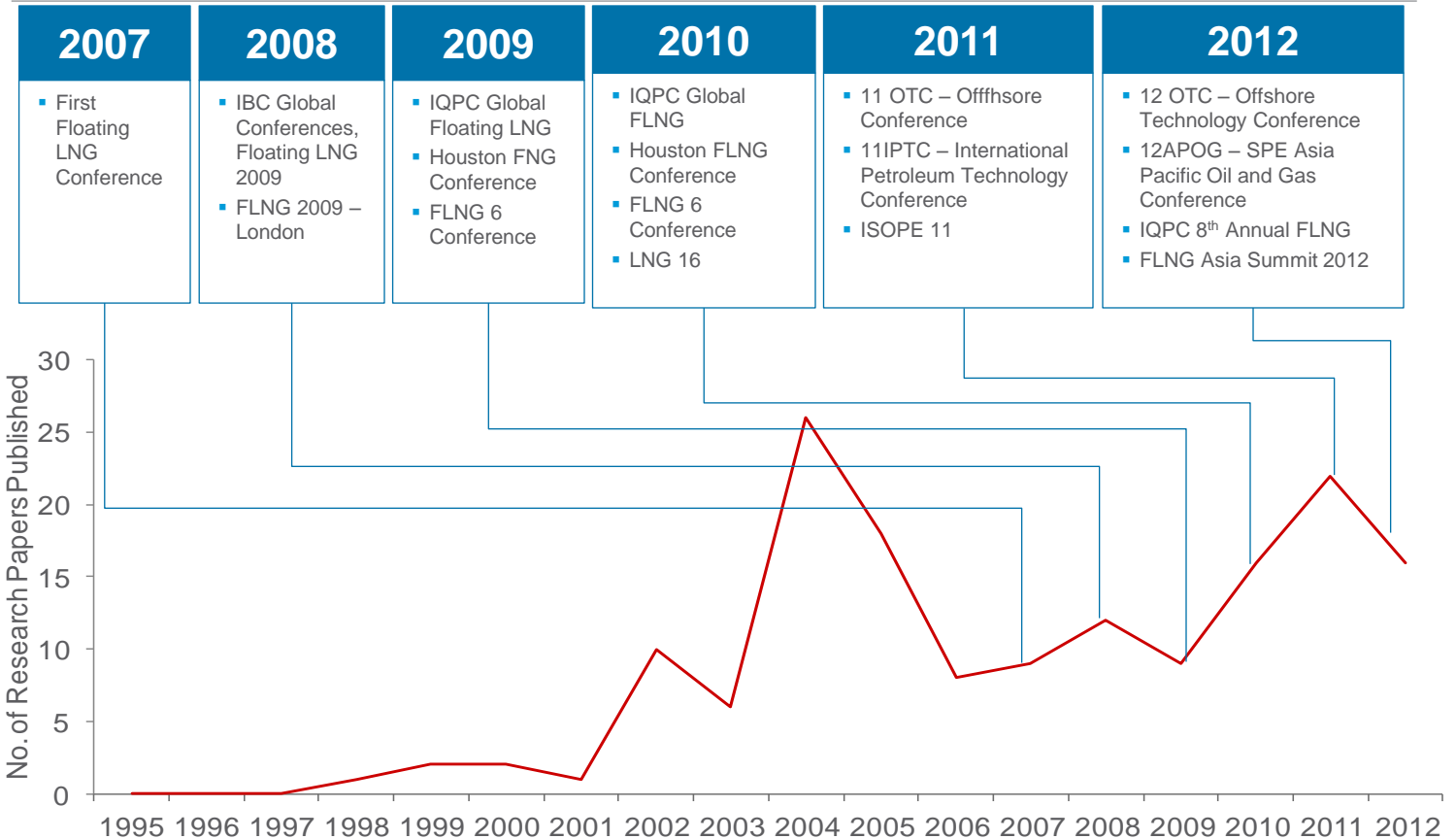
1. FLNG Updates

FLNG is on the Front Page

- Commodity focussed lenders will pay close attention to any technological breakthrough
- Proving a technology is generally a five year challenge and requires educating most key institutions
- Floating LNG has been on the market for a long time but the debt markets are waiting for the first facilities to be built
- The debt market will face difficulties to buy into projects led by small-mid cap sponsors with limited operational and R&D track records

SPE Papers and FLNG Conference Count

Number of Research Papers Published

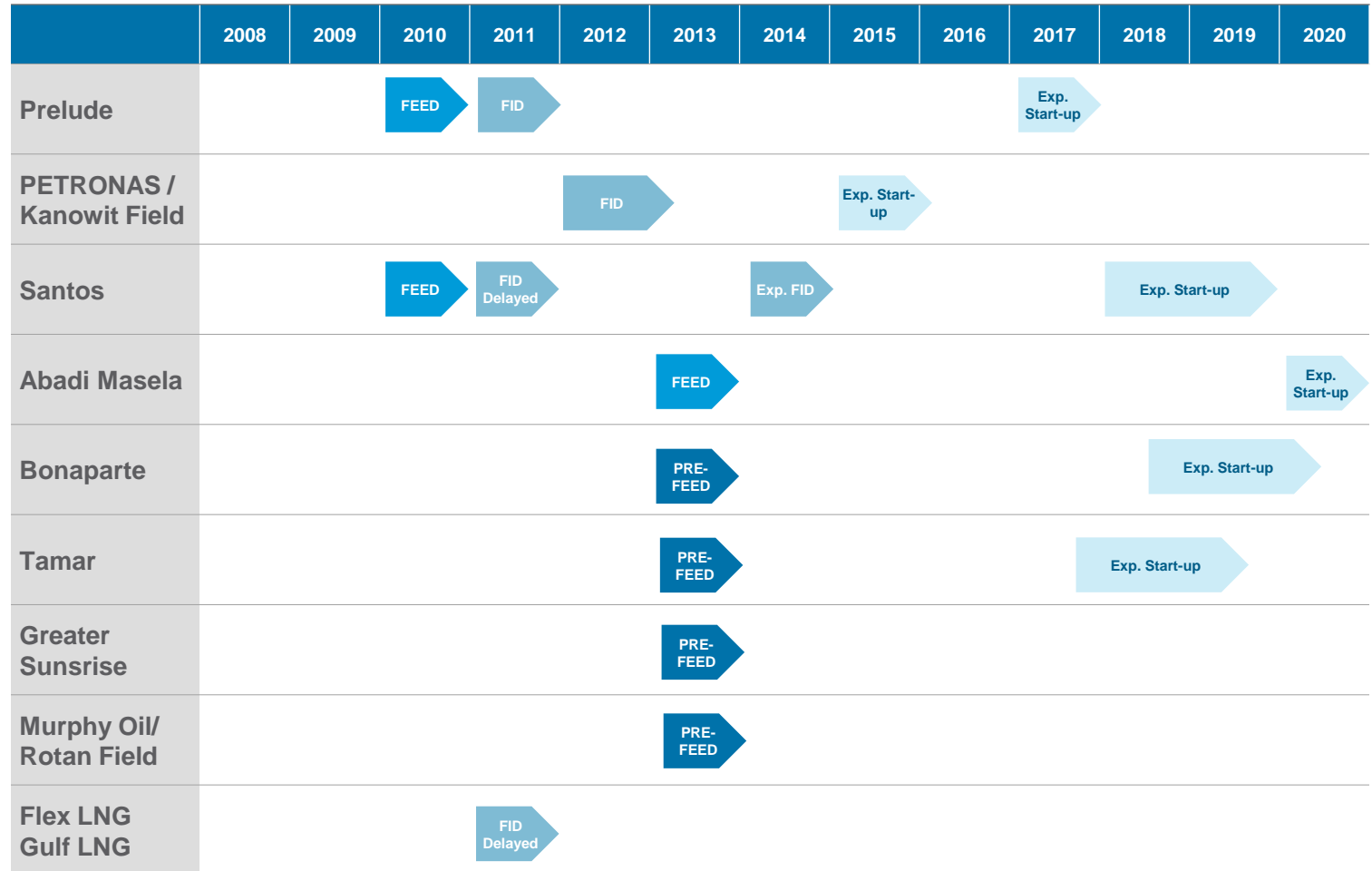


Source: SPE, SCB Analysis

The Race is On

Who is leading the charge

- Over the last two years projects have moved forward significantly
- Prelude and PETRONAS have given a strong signal to the market that FLNG was “cutting steel”
- More recent announcements from Tamar, Gasprom Marketing and Trading illustrate that it is not an IOC game only



Legend:



Source: SCB Analysis, Woodmackenzie

2. Financing a FLNG Project









Why FLNG

	Stranded Gas	Modularity /Speed of Execution	Bargaining Power
Background	<ul style="list-style-type: none"> Offshore fields with no access to shore Limited infrastructure or remote shoreline 	<ul style="list-style-type: none"> Achieving modular developments has been a step change in the Upstream business 	<ul style="list-style-type: none"> “Technology for Molecules” Trading Project Management Capabilities for access to license
Key Benefits	<ul style="list-style-type: none"> Gas discovery can be stranded due to distance to shore <ul style="list-style-type: none"> ✓ Deep-offshore, large faults, large distance to shore can make an onshore development un-economic Gas discovery can be stranded due to difficulty to build anything on the shore line <ul style="list-style-type: none"> ✓ Lack of workforce, lack of access can represent important challenge to LNG development ✓ “NIMBA” approach 	<ul style="list-style-type: none"> Modular developments allow key equipment to be built and tested in the yard, limiting delay and costs <ul style="list-style-type: none"> ✓ Downstream and upstream have managed to increase the modularity of technology to successfully save costs FPSO history is a key lesson learnt, and yards have demonstrated the ability to deliver more and more complex projects 	<ul style="list-style-type: none"> Onshore/offshore debate can be part of a fiscal discussion with the hosting state FLNG as a bargaining tool between a company owning the technology and a company owning the licence

For Companies mastering the technology FLNG offers 2 key strategic advantages: Ability to monetise stranded assets and speed of execution

Financing Break-Through Technologies

What is a “Non Proven” Technology?

	Technology	Examples	Financing
Oil & Gas	Oil Sand	Alberta 	▪ Mostly Corporate and Equity Financing
	GTL Large Scale	Oryx GTL 	▪ Project finance package of USD700m closed in January 2003 – Performance risk materialised
	Heated Pipe	Cairn 	▪ Project financing of USD750m
	Unconventional	APLNG 	▪ Plain vanilla?
	Seismic Pipe	Sakhalin 	▪ Project financing of USD6.7bn
Renewable	Offshore Wind	Lincs 	▪ Majority of commercial wind farms have been funded through project finance
	Solar	Shams ISPP 	▪ Size of project remains extremely limited (<50MW)
Other	Nuclear	TVO EPR 	▪ USD13.7 billion Hybrid financing

Questions the Independent Engineer Should Expect

Offloading Arms

Turret

Membrane / Sloshing

Gas / Field Specifications

Integration

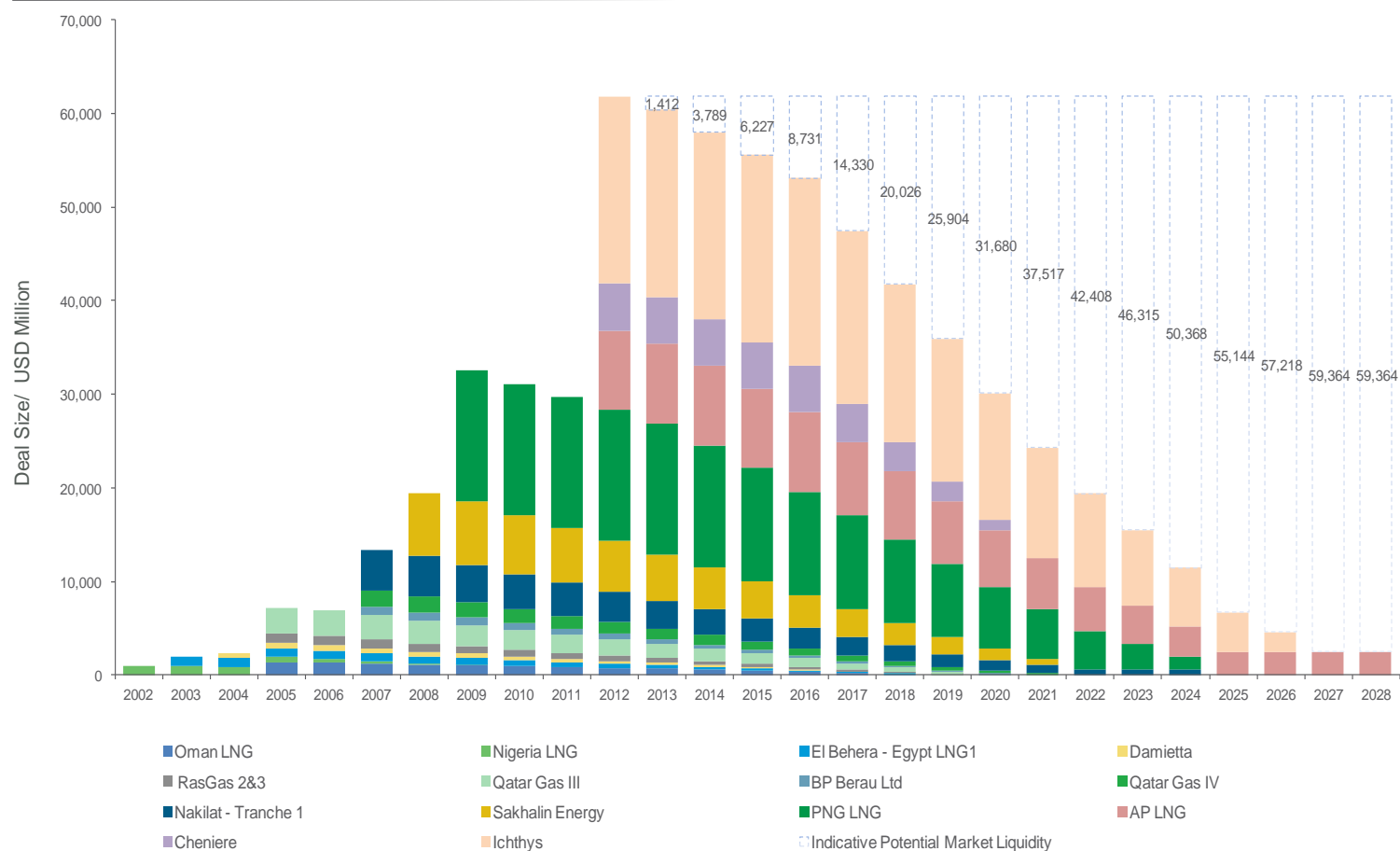
Among Breakthrough Technologies, Oil & Gas Projects are most likely to get access to Project Finance due to Lenders comfort on large efforts and capacity from Oil Majors

Overview of LNG Project Financed Deals

Assessing Market Appetite and Capacity

- Assuming mortgage style payment of each project, average of 2 years of grace period, and project specific debt drawdown
- Based on the closed LNG project financing deals, the maximum market liquidity is estimated to be US\$20 B, peaking around 2015
- A combination of DSU, insurance cover and sponsor credentials will, to a certain extent, mitigate the non-proven-technology risks, and make a FLNG project more comparable to a LNG one
- As there is no record of FLNG project finance, past LNG projects are used as benchmark for the market appetite for deal size, tenor and margin

Historical Market Commitment on LNG Projects
US\$ Million



Source: Dealogic as at March 2013, SCB Analysis

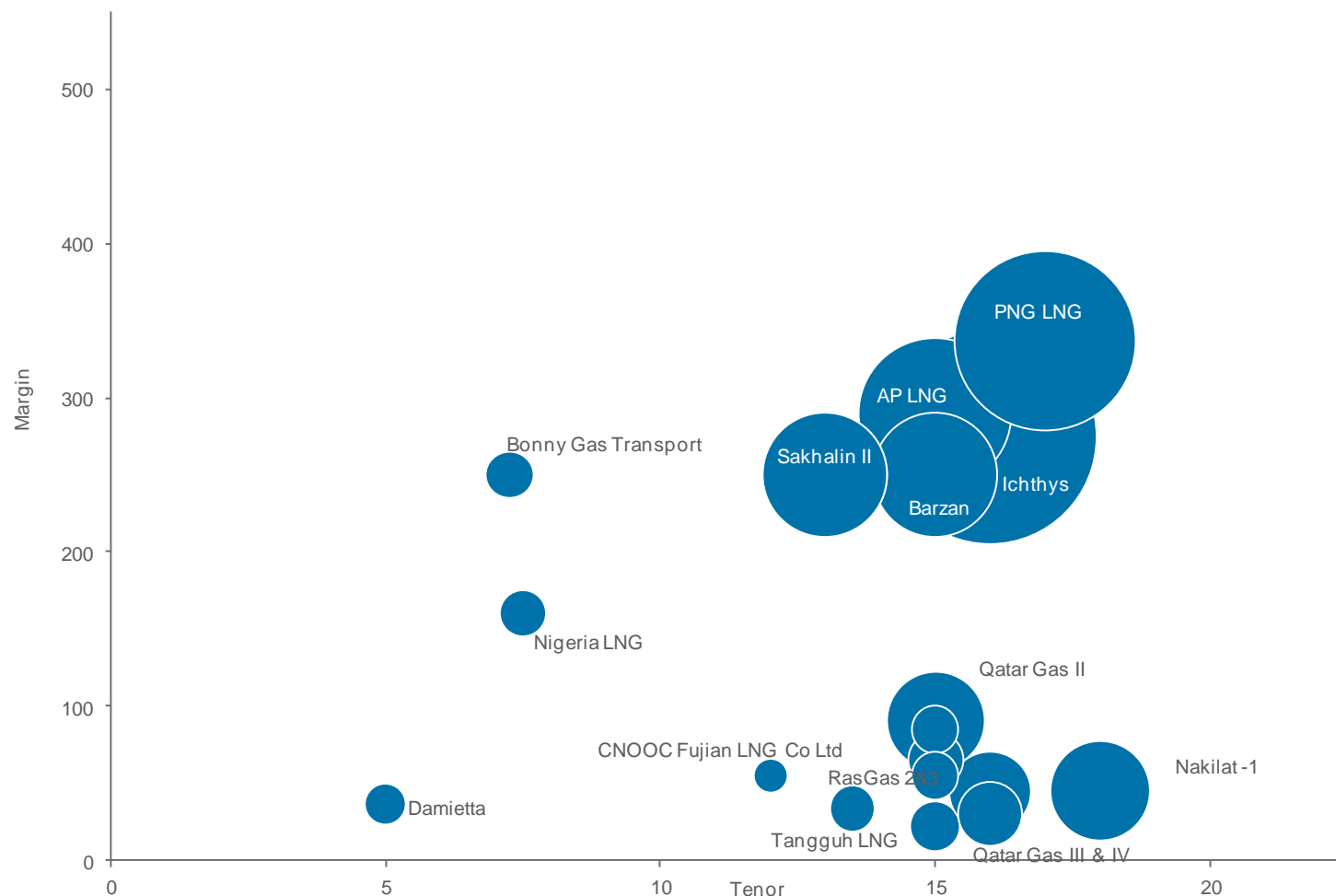
Overview of Project Finance Deals

Assessing Market Trends

- Last decade of project finance deals represents a good benchmark for potential FLNG financing
- Over the past 8 years, and prior to credit crunch, deal size and tenor has steadily increased

LNG Project Finance Transactions

Selected Transactions Closed over 2002-2012

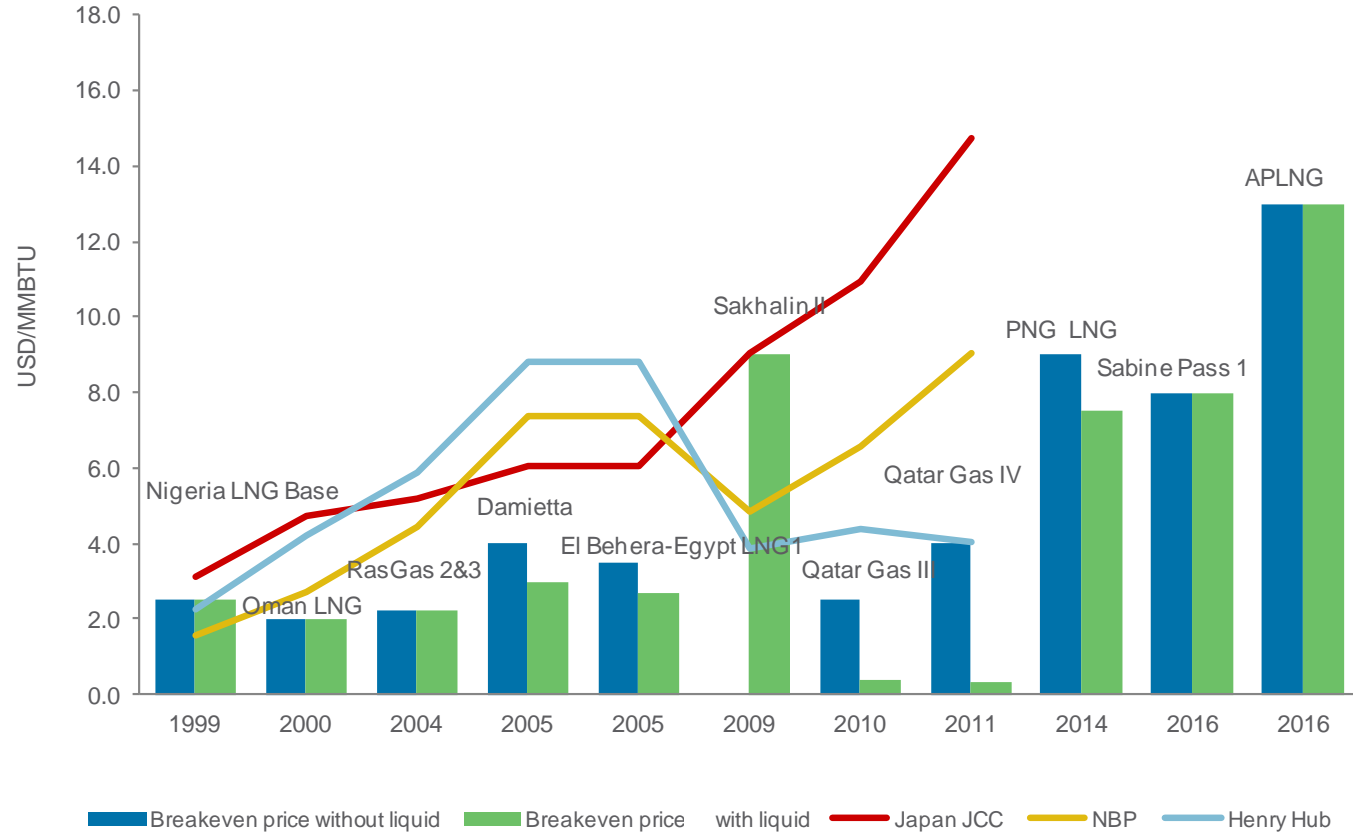


Source: Dealogic as at March 2013

Growing Breakeven seems to be absorbed by the Financing Market

- An increasing trend of LNG project cost has been observed
- From early 2000's MENA projects at a breakeven price of below USD 5/mmbtu to the recent Australian projects reached financial close, reaching around USD 14/mmbtu
- The financing market appetite also had an increasing trend which absorbs the increased project cost
- These increases in cost mainly reflects
 - regional increase in demand drive up the offtake price, especially in Asia
 - High oil environment also turns the high cost project economic

Increasing Trend of LNG Project Breakeven Cost
USD/MMBTU



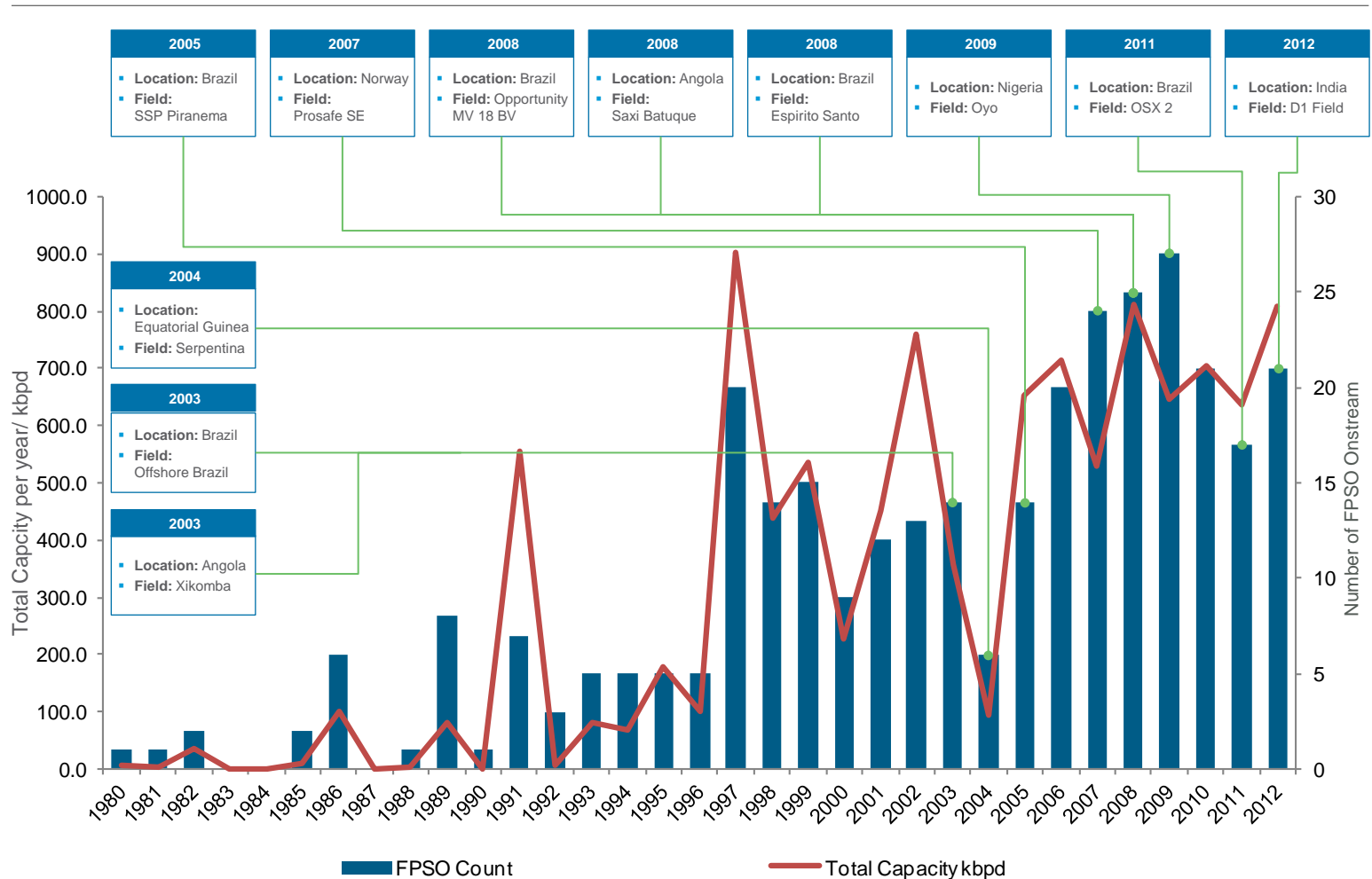
Source: Woodmac, SCB Analysis

Financing History of FPSO

A Benchmark for FLNG?

- Since the first FPSO was built, the technology has been “commoditised”
- Financing of FPSO has gradually moved from integrated financing to standalone financing
- Instead of taking the security on the reserves (BP Angola), banks are getting comfortable in financing an FPSO with recourse to lease contracts

Historical Trend of FPSO Development



Source: Woodmac

Conclusion

Prerequisites for Project Financing a FLNG

1

Projects

- Need for a Project looking for Financing ! (the project requires debt support)

2

Economics

- It needs to make economic sense in a “conservative” price environment

3

Credit Committee

- It needs to be credit-worthy

4

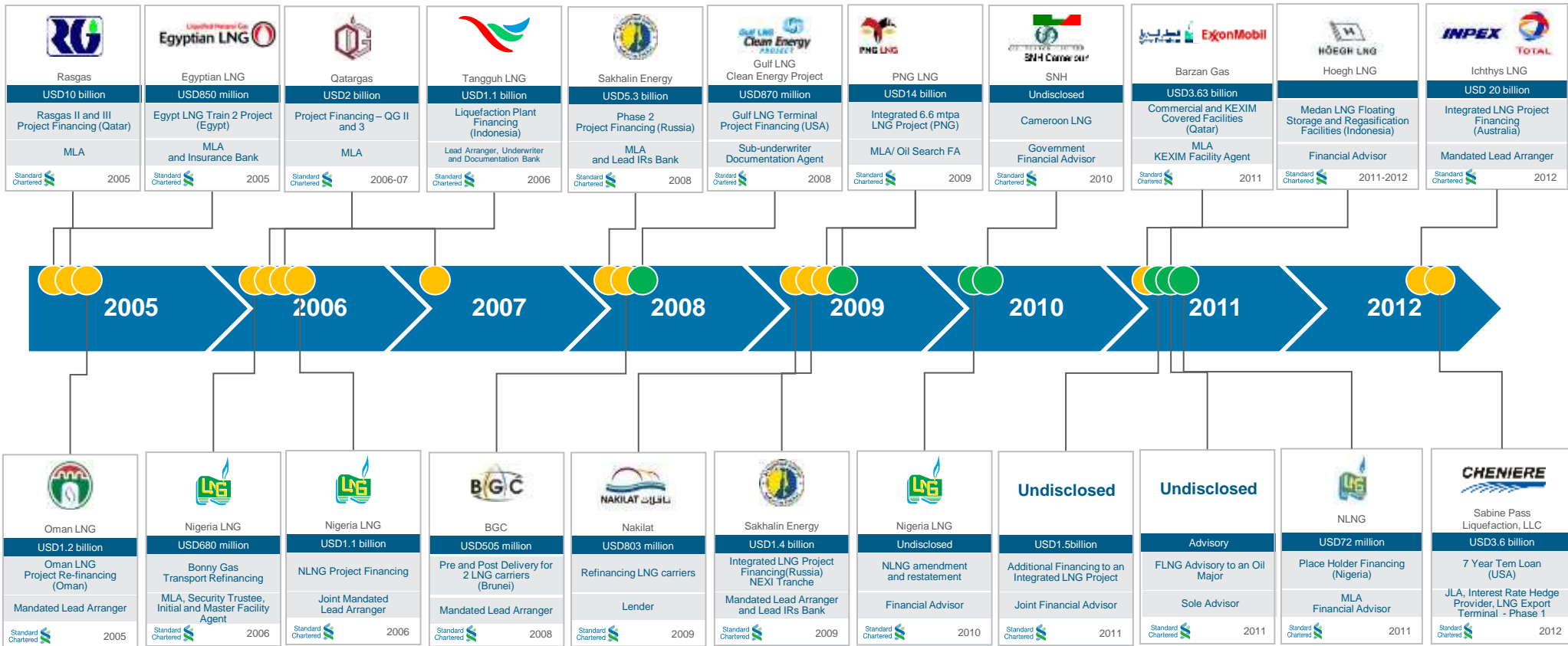
Last but not least

- It needs to float!
- It needs a good financial advisor!

3. Standard Chartered Bank LNG Project Financing

Long Standing Commitment to LNG

One of the leading institutions in advising and arranging across the LNG value chain



Lending Mandate Advisory Mandate

SCB has continuously been providing financing and advisory support to the LNG value chain within our footprint to a variety of borrowers and project Partners

Appendices

Large Scale FLNG projects

Prelude and Santos Basin are in focus

- Shell's 'Prelude FLNG' and Petrobras' Santos Basin LNG are two of the biggest LNG projects under development today
- While both projects were discovered / conceptualized during the same period, Shell has been able to move much faster with execution
 - Prelude FID has been completed and the EPCI contract awarded
- The Santos basin subsea on the other hand presents enormous technology challenges making progress slow
 - Project primarily intended for domestic consumption / gas-based projects
 - We believe that at current LNG prices, the project may not be economically feasible, especially for exports given Brazil's distance from key LNG importing markets
- FLNG could be an eligible solution to development gas field discoveries offshore Israel

Brazil – Santos Basin Pre-Salt FLNG

Technology challenges can make this economically unfeasible



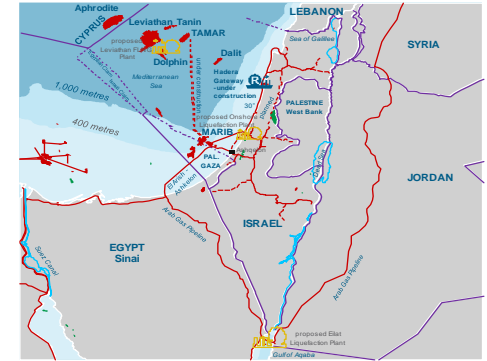
Australia- Prelude FLG

Shell making determined progress – First gas by 2016



Israel LNG

Eligible technical to monitor Tamar and Leviathan



	Santos Basin FLNG	Prelude FLNG	Tamar FLNG
Rationale	<ul style="list-style-type: none"> Large gas reserves from the Lula, Cernambi, Lara & Guara fields <ul style="list-style-type: none"> Total of 6.2 Tcf with the Lula contributing more than 60% of the supply Subsea terrain makes pipeline unfeasible <ul style="list-style-type: none"> Water depth of more than 2000m, Additionally there are thick (2000m) layers of salt 	<ul style="list-style-type: none"> Field size is small and too far offshore <ul style="list-style-type: none"> Reserves estimated at 4 Tcf 125 miles from shore The distance makes a pipeline for the size of the reserves unfeasible Total reserve size estimated at 3 Tcf 	<ul style="list-style-type: none"> Large reserve with limited scope of onshore LNG plant locations <ul style="list-style-type: none"> Leviathan – initial gas 16.7 bcf Tamar – initial gas 9.7 bcf The proposed location in Eilat is potentially sensitive from a geo-politics point of view. The proposed location in Ashdod could cause environmental concerns FLNG is the least environmentally sensitive but technically challenging and expensive method
Project Update	<ul style="list-style-type: none"> FEED was completed in 2011 for a 2.7 Mtpa Train (and 0.7 Mtpa LPG) by Saipem / SBM On current schedule, project expected to start by 2017 Technological challenges of drilling and extraction expected to make economic feasibility and project finance challenging 	<ul style="list-style-type: none"> FID completed <ul style="list-style-type: none"> EPCI awarded to Technip – Samsung consortium for 3.5 Mtpa Train Total CapEx estimated at \$10bn. Production by 2016 Offtake contracts signed with CPC and Osaka Gas. 	<ul style="list-style-type: none"> Structure of LNG project is yet to be finalised More than one FLNG vessel potentially needed if FLNG becomes the selected development Israeli government intends to fast-track the approval process for Leviathan field development Marketing and shipping strategies are yet to commence

:Source: SCB Analysis, Woodmackenzie

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