LNG Markets in Transition: The Great Reconfiguration

James Henderson
North America exports LNG, Russia becomes ‘system shock absorber’

Niche Markets
(New Asian, South America, Middle East etc.)

Asian Markets
(Japan, Korea, Taiwan, China, India)

Pipeline Contracts / direct hub sales

Additional Capacity (100 bcma in Russia)

Take or Pay / Minimum Supply Floor

US Producers

European LNG Buyers & Suppliers of Flexible LNG

'Normal' Storage Inventory Level

Domestic Production

US Liquefaction

North America

Europe

Pipeline Imports

Non US Supply

Global LNG Supply

Pipeline Imports

Domestic Production

Upstream Sellers

Additional Capacity

Take or Pay / Minimum Supply Floor

US Liquefaction

North America

Europe
Developments in the chain

- New companies are coming into the LNG business, throughout the whole value chain
- These companies bring new ideas and ways of doing business that have challenged the norms of the LNG sector
- Changing market structures are driving changes in LNG contracts
- US projects have adapted the LNG tolling structure and LNG business models
- FSRUs give fast access to market
- FLNG gives options for liquefaction

Sabine Pass tolling structure

- Pipeline cost
- Tolling Fee
- Liquefaction Plant (Tolling Co)
- Feedgas Supply
- Liquefaction plant capacity holders/LNG holders
- Feedgas (actual price)
- Feedgas (agreed formula)

Supply chain physical delivery
Sales/Service Agreements
Global LNG Supply – Existing & FID’d/Under Construction 2008 - 2020

Source: LeDesma OIES, Author’s Assumptions
Australian and US LNG Exports vs Qatar

Sources: Platts LNG Service, Author’s Assumptions
Other LNG supply developments

Key existing producers to note

- North Africa
- Qatar
- Other Middle East
- Indonesia/Malaysia
- PNG

Potential new producers

- Iran
- East Mediterranean
- Latin America

- Where can projects be made commercially viable?

<table>
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<tr>
<th></th>
<th>No. of Sites</th>
<th>Total Trains</th>
<th>Total Capacity (mt)</th>
<th>First Output (year)</th>
<th>2015 Sales (mt)</th>
<th>% change 2015/2014</th>
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Key drivers for Asian demand

- Potential for LNG demand growth – in aggregate significant.
- Needs a change in marketing strategy – credit risks higher in many cases.
- But current low prices help establish markets
- And FRSUs can float away if bills not paid.
Focus on Asian LNG demand

- Asia will remain the largest LNG importing region
- Individual factors can result in very different outlooks for Asian countries
The role of LNG in Europe

- Europe is acting as the swing market for LNG and as a result, the region is expected to help absorb the LNG surplus coming on to the market in the second half of the 2010s and early 2020s.

- But the region is facing major uncertainties:
  - The future role of natural gas in the whole energy system is in question, primarily as a result of greater governmental support for renewables.
  - The region will face a decline of its indigenous (conventional) production. Unconventional gas and biogas production will increase but it will have little impact on the major decline. In a low energy price environment, it is difficult to envisage more optimistic scenarios.

"Europe" = EU28 + Albania, Bosnia and Herzegovina, Macedonia, Norway, Serbia, Switzerland, and Turkey
Scenarios for natural gas demand, indigenous production (high and low) and pipeline imports in Europe, 2015–30

The chart shows the demand for natural gas, with projections for indigenous production and pipeline imports in Europe from 2015 to 2030. The scenarios include high and low production projections, as well as pipeline imports. The chart highlights the contributions of Russian gas, other pipeline gas BAU, production conventional (low), production (other), long-term contracts with Russia (ToP 70%), and long-term contracts with Russia (ACQ).
Other demand questions

South America
• Huge variability due to intermittency of local energy sources
• Likely growth in gas demand, but range is 40-100bcm and supply will need to be very flexible

Middle East and Africa
• Currently small markets but with growth potential
• Exporting regions that could become importers
• New emerging markets in southern Africa, but with credit risk

Gas use in transport
• Initial prospects stronger in marine than road transport
• Implementation of IMO regulations will be vital
• Falling oil and gas price differential is not helping economic argument
Europe and North America price gas mainly at hubs; (most of) Asia still prices LNG in relation to oil
Liquefaction Plant Cost Trends

- Costs escalated by factor of 3 between 2005 and 2014
- Driven by extremely high cost of Australian projects (labour)
- Escalation now back in line with oil and gas plants generally (10% pa) with plants currently under construction in the USA
The evolution of spot and short-term LNG trade

Spot and short-term LNG trade, 1999-2015

Source: forthcoming ‘LNG markets in transition: the great reconfiguration’ (OIES/KAPSARC).

- Spot and short-term LNG trade represented 28% of global LNG trade in 2015, down from 29% in 2014
Implications for long-term contracts

- **Existing LT contracts:**
  - Increased pressure on price and flexibility terms
  - This could be exacerbated by discontinuity between term and spot prices, financial distress of buyers

- **LT contracts supporting new LNG plants:**
  - Moving without the support of LT contracts seems a bridge too far at this stage
  - For that to happen, we would need
    - Spot LNG trade to become the norm
    - Reliable price benchmarks
    - Support/agreement from banks
    - And a substantial drop in LNG costs for project sponsors to take that risk
The buyers’ dilemma

- Future gas demand over the next 10-20 years is uncertain
  - Economic growth
  - Competitiveness of gas against coal
  - Development of renewables and
  - Evolution of nuclear policy

- Liberalisation processes in Asia means higher competition on the markets

- Difficulties to pass through LNG costs to end-users in periods of high(er) prices

- How to commit for 20 years?
When will markets rebalance?

LNG supply and capacity outlook

- Project sponsors will take FID depending on their views on the timing of market rebalancing, future prices and cost reduction.
So where does this leave us?

- Companies realizing that they have to adapt to the new market environment
- Companies have to change the way they operate
  - What do we mean by collaboration?
  - Cost is king; innovative and cost-competitive projects could proceed
  - Lots of potential in new markets ... as long as LNG is ‘affordable’ and competitive
  - Changes in pricing formation are coming, but there is resistance
  - Existing projects can accept more flexible contract structure, while new projects will require some form of LT commitments unless conditions are fundamentally different
  - Contract sanctity?
Why a reconfiguration?

• The supply/demand balance will look significantly different in 5 years from now and there is great uncertainty about the future supply

• There is increasing pressure from the buyer’s side for more flexibility and a change in price formation, from oil indexation to hub indexation, to address:
  – Uncertainties around future gas demand growth
  – Market liberalization in Asia
  – Maintaining gas competitiveness versus coal

• Long-term contracts under threat from flexible LNG supply
  – Share of spot trade to increase from 28% in 2015 to about 43% by 2020
Thank you for your attention
Extra Slides
Conclusions on pricing

- North America and Europe price gas at hubs
- Asian LNG prices are still largely JCC-based but this has diminishing market logic
- By early 2016, important status quo players (eg JERA) begin to openly speak about the need for transition to market prices – recalls start of the transition in Europe
- May 2016: METI LNG Strategy makes transition to hub pricing `official policy’
- Asian hubs may evolve over the next decade and this could be accelerated by:
  - Over-supply of LNG up to 2020 (and perhaps up to mid 2020s)
  - Increasing spread between JCC and spot prices (if oil prices increase beyond $50/bbl)
Which projects will move forward?

- The cost competitive projects
  - Brownfield expansion
    - Notably Qatar, the low cost LNG producer
    - Utilisation of existing under utilized LNG capacity in Egypt, Trinidad and Oman
  - Projects with strategic involvement from buyers
    - FLNG
    - Liquid-rich projects

- And those left behind
  - Uncompetitive fiscal framework, uncertain regulation, potentially rapidly growing domestic demand, politically unstable
Increased competition in Europe?

- **Russian pipeline gas**
- **Price war?**
- **U.S. LNG builds up**
- **Asian demand growth**
- **ME LNG is displaced to the Atlantic: Europe + LA**
- **Asia Pacific LNG capacity increase +72 mtpa over 2015-20**