Current outlook for Global LNG to 2020 and European LNG prospects

For CIEP
September 2014
The Global LNG business is very well connected
Projecting its future, requires some simplifying assumptions
A snapshot of the Global LNG Industry today

Global business 238 Mtpa and growing – mostly due to Asian demand growth

Europe LNG imports declining mainly due to its role as a balancing region

Supply under construction
(90% already committed to Long Term customers)

Supply under development
New Firm LNG demand by 2020 (Asia 65/Eu 15/Ams 17)

Americas: 26 (10%)
Europe: 35 (15%)
Asia and ME (All Mtpa): 177 (75%)

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A snapshot of what the Global LNG Industry may look like in 2020-2025

Global business ~420Mtpa, still growing mostly due to ongoing Asian demand growth
Europe sees some Firm LNG demand growth – actual imports depend on NBP prices

Global LNG Sales 2020
- Firm LNG Sales
  - Asia / Eu Ams
- Other LNG supply moving on price signals

Projected LNG demand growth 2020-2025

Projected size of Global Market 2025

<table>
<thead>
<tr>
<th>420Mtpa</th>
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<td>365 Mtpa</td>
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<td>280/ 60/ 25</td>
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<td>55Mtpa</td>
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<td>80Mtpa</td>
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<td>500Mtpa</td>
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For European LNG prospects, the big issues to watch are:-

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<th>LNG Demand growth</th>
<th>1. China’s growth</th>
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<td>2. Global sales axis tilting further towards Asia by 2020</td>
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<td>3. Buyers (generally) will be progressively more challenging to service</td>
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<td>LNG supply growth</td>
<td>4. LNG supply under construction is mostly late and over budget</td>
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<td>5. Next wave of growth mostly in Atlantic Basin to supply Asian markets</td>
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<td>LNG Pricing</td>
<td>6. LNG DES pricing unlikely to fall significantly in any region</td>
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<td>7. Narrowing regional price differentials by 2020</td>
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<td>Prospects for Europe</td>
<td>8. “Rational” global S/D balance - currently good for Europe</td>
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<td>9. European LNG markets:- price takers or price setters?</td>
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China – The new LNG “KINGMAKER”

Needs to buy large new volumes of long term LNG, but cost competitively!

China has the biggest LNG demand growth by 2020

Big opportunity, big responsibility for the Chinese Government

What China does will impact the rest of the Global LNG business
Top ten markets account for 80% sales ~ 295Mt

- 6/10 are Asian Markets
- 3/10 are mature European markets
- 1/10 is in the Americas

“The Tail” accounts for 20% of sales ~70Mt

- 25 markets overall, including several new importers
- South American markets maintain their LNG buying interest

FIRM LNG demand is shown in the bars and is defined as demand we estimate a country MUST buy in order to balance its overall gas demand. A country may actually buy more LNG than their FIRM demand — generally short term and usually backing out pipeline gas, or other fuels.
3 LNG buyers will be more challenging to service

Generally buyers for new volumes from 2014 will become more challenging.

Mature Markets characteristics

- High price
- High Take or Pay
- High Credit worthiness
- High volumes
- Easy operational flex
- Low risk of non completion
- Speed to transact

New and emerging markets characteristics

- High price
- High Take or Pay
- High Credit worthiness
- High volumes
- Easy operational flex
- Low risk of non completion
- Speed to transact

Mature Buyers in Asia have helped the industry grow using a balanced risk reward investment model.

But have committed most of their new demand to US and Canadian projects.

Markets displacing oil may pay higher prices.
Markets with State Owned co may be credit worthy.

Innovative commercial contracts will be needed to supply these new buyers.
4 Expected start up dates 6-12 months late and most >30% over budget

- PNG T1/2
- Indonesia Donggi-Senoro
- Curtis T1
- Gorgon T1
- Curtis T2
- Gorgon T2
- Gladstone T1
- Ichthys T1
- Wheatstone T1
- Ichthys T2
- Wheatstone T2
- Gorgon T3
- Ichthys T2
- Prelude
- Malaysia FLNG 2
- US Sabine Pass T3
- US Sabine Pass T4
- US Cameron T1
- APLNG T1
- Malaysia FLNG
- Colombia FLNG
- Malaysia Bintulu T9
- APLNG T2
- US Sabine Pass T1
- US Sabine Pass T2
- Yamal T1

- The left-hand end of the bar denotes expected start-date
- 128 Mtpa is under construction
- 61.8 Mtpa of that is in Australia

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677Mtpa of LNG supply NOT YET FID’ed. Less than 10% on stream by 2020

Several projects won't go ahead – but expect the US to feature strongly by 2020

Unrisked: 677Mtpa of projects under development
Risked: 61 Mtpa (not yet sanctioned) but expected on-stream by 2020
Regional LNG pricing unlikely to fall significantly.
Pricing differentials narrowing from today … to 2017……& 2020

Assumptions

LNG Demand
- Strong buying interest from Asia, slow return of nuclear to Japan
- “Business As Usual” in Europe and S. America
- New growing pockets of demand through FSRU start ups

LNG Supply
- Production in service uninterrupted
- Australia new production all on-stream by end 2017
- US new production start up from Q12016

Oil price
$100/bbl
No Shocks
Global LNG supply demand balance to 2020

“Rational “ Base case. Strong market today- balanced by 2020. Marginal supply cleared into NBP price related markets …. Europe, but also India/ S. America
Europe’s LNG imports depend on both Asia and NBP prices

2011 Fukushima disaster
- All Japanese nuclear currently off line
- Japan buying 12Mtpa more LNG short term

2008-9 Global Financial Crisis
- Global LNG demand slumps
- Producers produce and divert volumes into clearing markets (inc Eu)
- LT demand in Eu hit hard – particularly Spain

2011-14
- LNG imports diverted from Eu to Asia
- Cargoes reloaded from Eu terminals to optimise portfolios

2013-2020 External factors affecting Eu LNG imports
- Premium demand levels in Asia, China’s actual LNG roll out
- Price differentials Asia: Eu; S. Am
- Qatar’s LNG strategy
- US LNG

2015-2020 Internal factors affecting Eu imports
- Premium market niches in Eu able to price match Asia
- New markets – bunkers/break bulk
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