Global LNG Market Outlook to 2030

27 April 2016
The LNG market has shown solid growth of ~6% p.a. for the last decade, leading to a tight market with high prices, however by mid-2014, the market rebalanced amid weaker demand.

- The LNG market has shown solid growth and increased interconnectivity for the last decade.
- From 2010-2014, the global LNG market has been a ‘sellers’ market with high demand at high prices throughout Asia.
- Lower demand and availability of new supply led to lower spot prices during 2014 – even before the fall in oil-linked contract prices.

Looking ahead, we expect the market to move from balanced to long – before potentially heading back to a balanced market in 2023.

- Significant new supply will come online in the medium term (adding ~170 mtpa by 2022); mostly coming out of the US Gulf Coast and Australia.
- Underlying demand for LNG will struggle to keep pace with new capacity in the medium term, with Europe acting as a balancing point for the market.
- Long market conditions will see Asian spot LNG prices trading closer to European equivalent LNG prices and further from an oil equivalent ceiling.

Strong LNG demand growth is expected in the long run – requiring significant new supply projects to come online.

- Overall global LNG demand growth is expected to be ~4.7% p.a. from 2015 to 2030, with China, India, and ASEAN providing the engine.
- For the market to be balanced by 2030, ~172 mtpa of additional new LNG capacity needs to be built.
- To meet that demand, a number of new LNG liquefaction projects have been proposed. The range of breakeven prices of these projects is wide and each project faces its own set of challenges.
We analyze three distinct time periods in the LNG market

### Historical market analysis
- The LNG market has shown solid growth and increased interconnectivity for the last decade.
- In the last four years the global LNG market has been a ‘sellers’ market with high demand at high prices throughout Asia.
- Lower demand and availability of new supply led to lower spot prices even before the fall in oil-linked contract prices.

### Short to medium term outlook
- Underlying demand for LNG will struggle to keep pace with new capacity in the medium term.
- Significant new supply will come online before 2022; mostly coming out of the US Gulf Coast and Australia.
- Asian spot LNG prices will fluctuate between a European price floor and an oil equivalent ceiling.

### Long-term outlook
- Continued global LNG demand growth expected at 4.7% p.a. to 2030, with China, India, and ASEAN being the growth engine.
- For the market to be balanced by 2030 ~172 mtpa of additional new LNG capacity needs to be built.
- Proposed capacity covers a wide range of breakeven prices and each project faces its own set of challenges.

SOURCE: Energy Insights
The LNG market has shown solid growth and increased interconnectivity for the last decade.

New LNG suppliers have come onto the market …

From 2001
- 5 main LNG export routes
- 2 main LNG markets (Europe, North Asia (Japan/Korea/ Taiwan))
- Each supplier mainly serves a single market

To 2014
- 10 main LNG export routes
- 15 new LNG importing markets (including China, India, the Middle East and Latin America)
- LNG suppliers serve multiple markets

HISTORICAL MARKET ANALYSIS: INCREASING INTERCONNECTIVITY
mtpa

... helping to support strong growth in demand
From 2010 to 2014 the global LNG market was a ‘sellers’ market with high demand at high prices throughout Asia.

Asian demand surged from 2010 to 2014...

- **Spot prices** were supported by Asian LNG demand increases of 7% p.a. fuelled by economic growth and the Fukushima disaster.
- **Contract prices** were supported by high oil prices.

1 Weighted average of spot and contracted price

Lower demand and availability of new supply led to lower spot prices and significant price convergence.

Factors that led to price weakness in 2014:

- Mild weather across Europe and Asia allowed storage inventories to stay at sometimes record highs depressing the demand for summer refilling cargos.
- Additionally the inclusion of roughly 20 unexpected and incremental cargoes from PNG LNG flooded into the market further weakening the spot situation.
- Prices began to converge between Europe and Asia in late 2014 as continuing weak demand in Asia and European re-exports brought the markets to parity, separated only by the cost of transportation.

SOURCE: Energy Insights, Platts
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SOURCE: Energy Insights
Global LNG Supply and Demand Balance: 2016-2022: long LNG then re-balancing

- 2016 to 2022 sees the market over-supplied for a period as demand cannot keep up with capacity additions.
- US liquefaction projects have surprised on the upside – coming ahead much faster than expected:
  - Asian customers locked in long term contracts early.
  - Construction has been quick and efficient.
- Low oil prices (i.e. reduced cash flows) and an over-supplied spot market (hence low prices) do not encourage long term contracting and project FIDs, increasing the risk of market tightness from 2023.

Underlying demand for LNG will struggle to keep pace with new capacity in the medium term.

New LNG consumers continue to ramp up significantly

New LNG consumers (potential post-2015 additions)

<table>
<thead>
<tr>
<th>Year</th>
<th>Bangladesh</th>
<th>Ghana</th>
<th>Philippines</th>
<th>Poland</th>
<th>South Africa</th>
<th>Uruguay</th>
<th>Bahrain</th>
<th>Hawaii</th>
<th>Morocco</th>
<th>Vietnam</th>
<th>Central America</th>
<th>Morocco</th>
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Market implications

- **Significant new consumers are entering the global LNG market** – many of the small consumers are utilizing Floating Storage and Regasification Units (FSRUs)

- **FSRUs can be cheaper and quicker to market** than conventional land based regasification terminals

- **New markets are challenging the LNG trading status quo**, by demanding non-standard contract terms such as volume and destination flexibility, seeking credit support or contracting under local laws

- Poland, Singapore, Thailand, Malaysia, Indonesia, and Puerto Rico are also all expanding their regasification capacity significantly

- **Low spot LNG prices would encourage further build out of floating regas**

SOURCE: Energy Insights, McKinsey Experts
However, significant new supply will come online before 2022; mostly coming out of the US Gulf Coast and Australia.

New liquefaction projects will add significant volumes to the market

1 Base case outlook assumes 50% capacity utilization in year one and 90% capacity utilization thereafter

SOURCE: Energy Insights’ Global Gas Model
Asian spot LNG prices will fluctuate between a European price floor, when the market is long LNG, and an oil equivalent ceiling, when short.

- Fuel switching economics make it uneconomical to pay for natural gas consistently above oil equivalent prices, thus providing a ceiling.
- Given Europe's liquid trading hubs, excess LNG can find a home in Europe if delivered LNG can be competitive with hub gas prices, thus Europe provides a floor for spot LNG prices.
- With the outlook for the LNG market turning from balanced to long prices are likely to trade closer to the European floor than the oil parity ceiling.
We analyze three distinct time periods in the LNG market

• The LNG market has shown solid growth and increased interconnectivity for the last decade
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• Continued global LNG demand growth expected at 4.7% p.a. to 2030, with China, India, and ASEAN being the growth engine
• For the market to be balanced by 2030, ~170 mtpa of additional new LNG capacity needs to be built
• Proposed capacity covers a wide range of breakeven prices and each project faces its own set of challenges

SOURCE: Energy Insights
Global LNG demand is expected to increase by 4.7% p.a. to 2030, with China, India, and ASEAN being the growth engine.

ASEAN, South Asia and China lead the regions with the highest growth rates in LNG demand.
LONG TERM OUTLOOK: NEW SUPPLY NEEDS

For the market to be balanced in 2030 we need ~172 mtpa of additional new LNG capacity built.

154 mtpa of new supply needed to meet demand by 2030. This equates to ~170 mtpa of liquefaction capacity addition assuming a 90% utilization rate at these facilities.

Note: On stream supply is based on bottoms-up analysis of gas available for exports after domestic demand is met. New liquefaction projects are expected to produce at 50% of capacity in year one and 90% of capacity in following years;
Proposed capacity covers a wide range of breakeven prices and each project faces its own set of challenges.
We see three potential scenarios outside of our reference case

**Demand**  

**High**  

*Description:* Asian demand grows 6% p.a. from 2016 (reference: 4.9%), leading to an earlier market re-balancing in the early 2020s  

*Implications:* LNG spot prices approach the price of competing fuels in Asia

**Low**  

*Description:* Oil prices remain weak compared to reference case, narrowing the gap between Henry Hub and oil equivalent: Limited further FIDs, causing demand to be constrained to supply from 2023  

*Implications:* Limited scope for FID means little growth in LNG supply, causing demand destruction

**Supply**  

**High**  

*Description:* More supply takes FID than in the reference case, leading to a more prolonged long market where Asian European and Henry Hub prices converge  

*Implications:* Asian, European and Henry Hub prices converge below oil parity

**Low**  

*Description:* Oil-price drop  

**Unconstrained LNG supply**  

**Reference case**

SOURCE: Energy Insights’ Global Gas Model