

# *Changes in the LNG industry*

## Strategic responses by producers, end-users and traders



May 2019

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## Changes in the LNG market

# LNG growth has driven fundamental market changes and strategy re-direction for market participants across the value chain

## The Changing LNG World

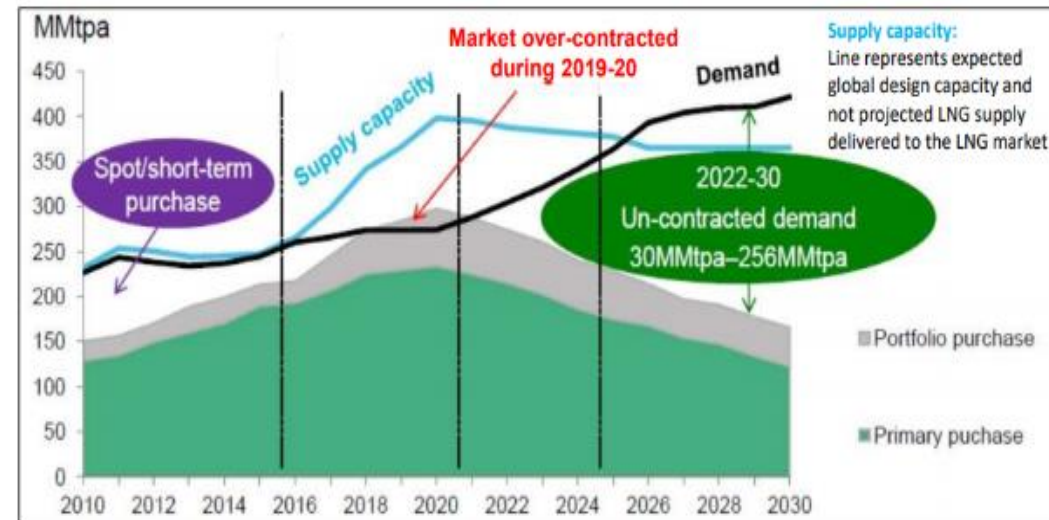
### Traditional LNG World

- Limited supply sources
- LNG as a premium energy supply source
- Simple value chains
- Vertically integrated project development
- Inflexible contracts
- Destination restrictions
- Oil indexation
- Long-term contracts

### New LNG world

- Australia/US supply
- New markets
- Increasing LNG use
- Complex value chains
- Diversified projects
- Increased spot and short-term trading
- Destination flexibility
- Smaller contract volumes
- Hub pricing

## LNG Supply and Demand Fundamentals to 2030



Source: Bloomberg New Energy Finance, LNG CWC Japan LNG Presentation 2018

## Market participants face “new” issues:

- Funding obstacles
- Non-performance risk
- Market, credit and operational risk

# High demand and high prices during 2011-2014 led to increased liquefaction capacity being brought onstream, resulting in global oversupply

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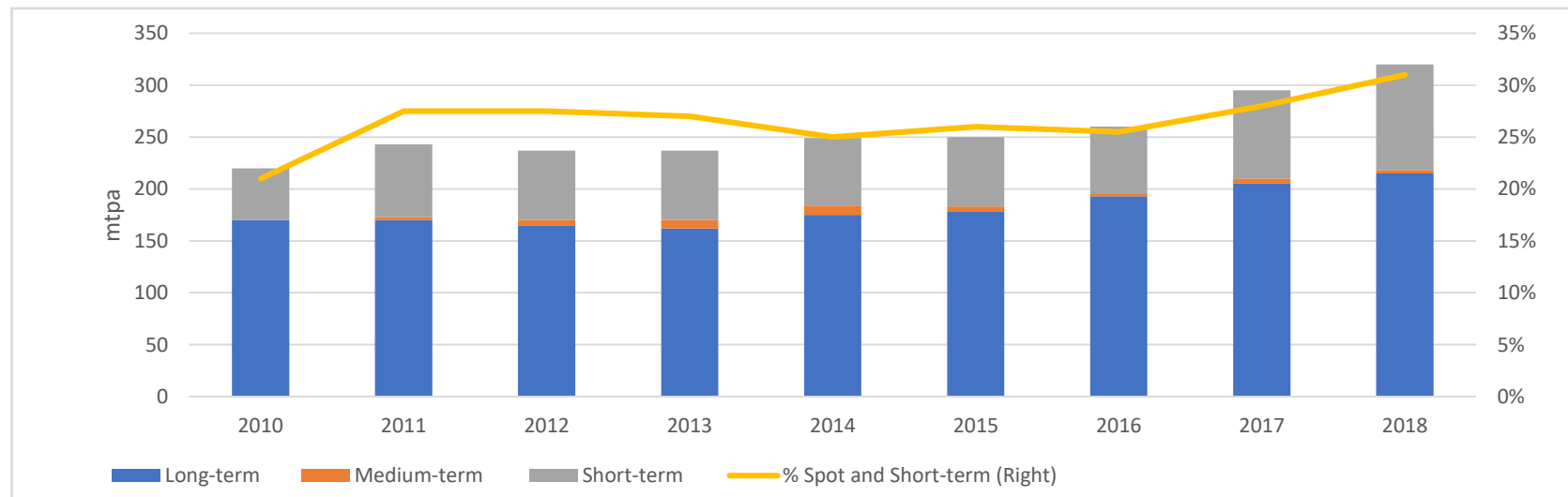
- High demand led to liquefaction capacity being brought forward for development.
- The resulting over-supply has given buyers considerable leverage.
- Several buyers successful in renegotiating their existing oil-indexed long-term LNG contracts.
- The arrival of US LNG has acted as further ammunition for buyers.
- Increased Asian demand resulted in increased short-term deals.
- Spot trade (delivery within <3 months) also increased, but largely “spot by default”.

**With HH-priced US LNG in the mix, buyers’ strategic supply and risk profile has changed.**

# Length of contracts becoming much shorter as buyers seek to inject flexibility into their supply portfolios

- **Renewables** – Buyers driving volume flexibility into portfolios to account for rising renewables
- **Renegotiating powers** – Buyers' market has allowed buyers to renegotiate lengths of their contracts
- **However, long term contracts will still dominate the market** – Expect 40/40/20. Long/3 to 5yr/spot

Contract Duration of Recently Signed LNG SPAs

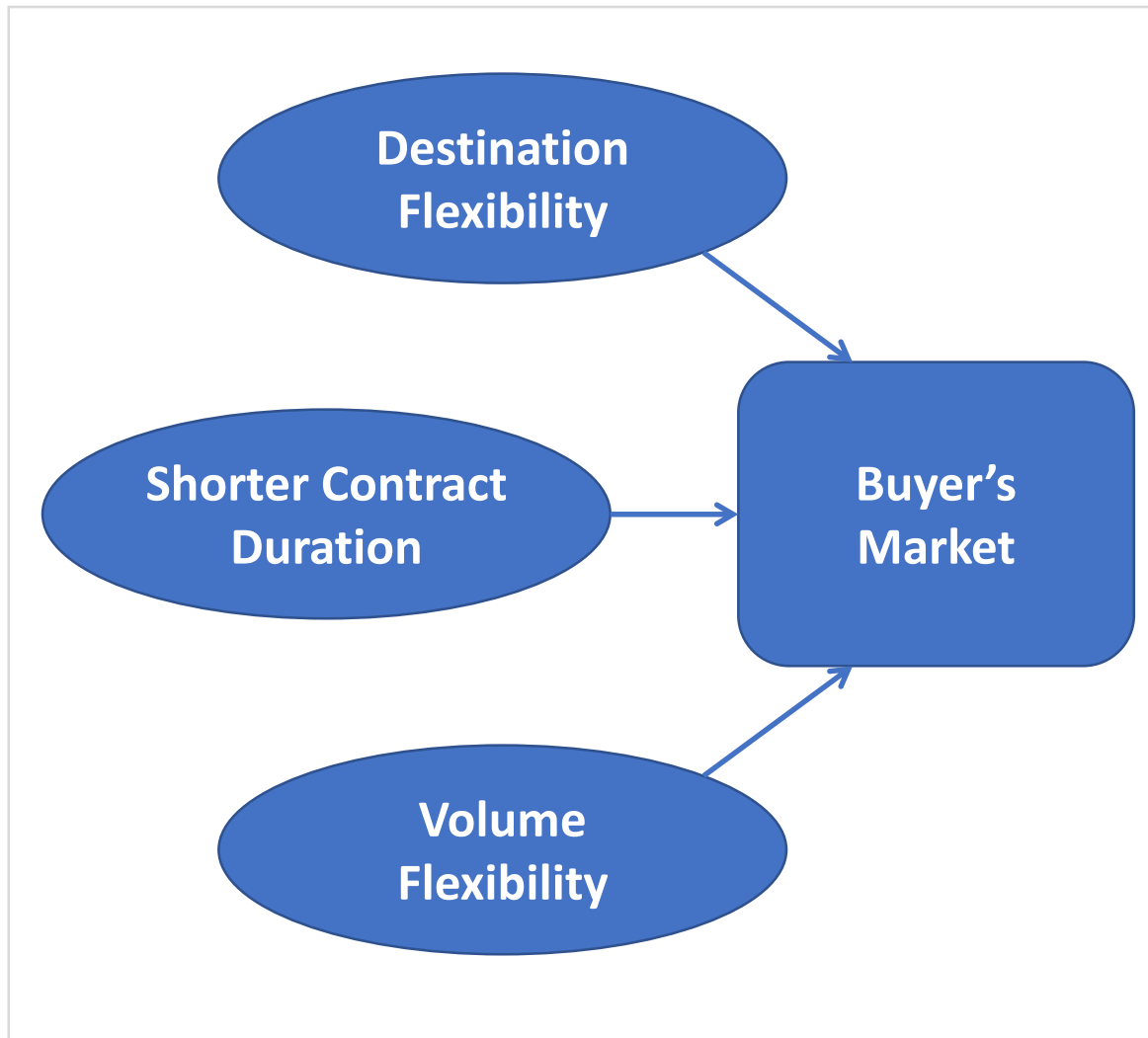


Source: IGU, world LNG report 2019

## Producers face new difficulties finding capital for new projects:

- **Future supply is threatened**
- **Uncommitted LNG will play a significant role**

# The LNG market is, for now, a buyers market. But LNG is a cyclical industry.



- Declining long-term contracts
- Declining contract volumes
- Renegotiation of long-term contracts
- Increase in pricing structures
- Shift away from Take-or-Pay
- New market participants

However, in absolute terms, long-term contracts continue to dominate the market (~70%)

**So, a buyer's market. But...**

- **How to buy?**
- **Strategic supply mix needs to be defined**
- **Risk profile increasing in complexity**

**LNG market likely to remain heavily over supplied through to 2021, but oversupplied thereafter**

# Despite changes, today's global LNG market remains dominated by outdated trading practices

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Lack of price transparency



Delayed access to market price data



Lack of reliable LNG price indices



Limited ability to manage price risk



Inefficient spot and short term market



~70% of world LNG trade remains linked to competing fuels index

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## LNG market pricing



# LNG pricing vs. coal and oil

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- LNG pricing link to oil is weakening.
- LNG pricing more strongly linked to gas fundamentals – link to gas strengthening.
- Coal to gas substitution will increase: Coal sets a floor to LNG prices.
- Coal-to-gas substitution thus works to rebalance an oversupplied LNG market.
- Coal-to-gas substitution will become more common in Europe, particularly with retiring coal plants.
- In Asia, power producers will switch from LNG to oil: Oil sets a ceiling to LNG prices.
- What will Permian basin oil producers do with the “waste” gas they find?

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## **Rise of the LNG spot market**

# LNG growth has spurred an increase in spot trade

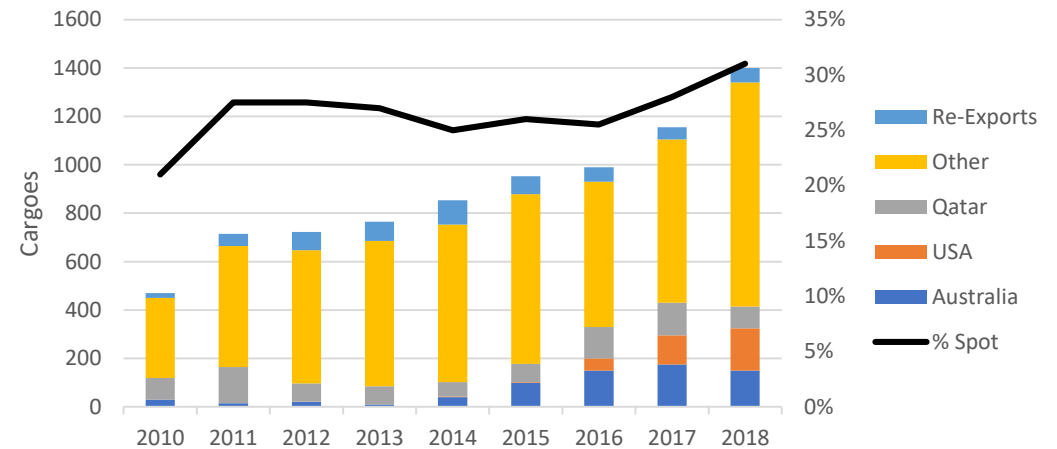
## Increase in market liquidity

- In 2000, 6 spot exporters and 8 spot importers in 2000.
- In 2018, 30 markets exported spot volumes to 35 end markets.

## Increasing spot market deliveries

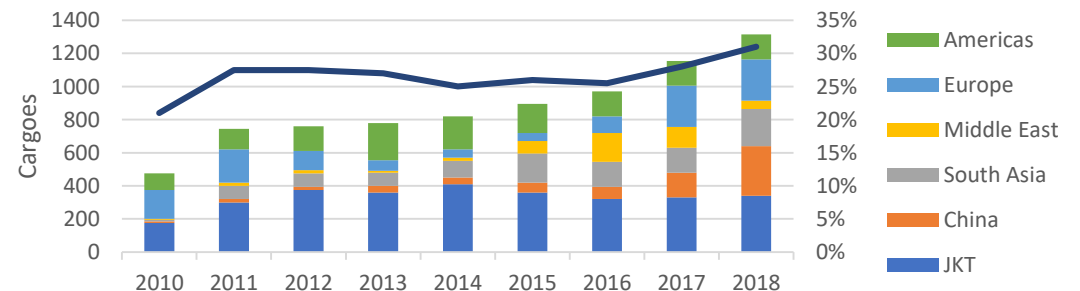
- Spurred by availability of uncommitted LNG.
- Flexible US LNG.
- Slow, but growing transparent trading structure.

Spot LNG Exports



Source: Shell LNG Outlook, 2019

Spot LNG Imports



Source: Shell LNG Outlook, 2019

**Spot prices drive LNG flow and optimisation decisions for portfolio players**

# Increased supply, uncommitted LNG volumes and trader activity have acted as catalysts to spot market growth

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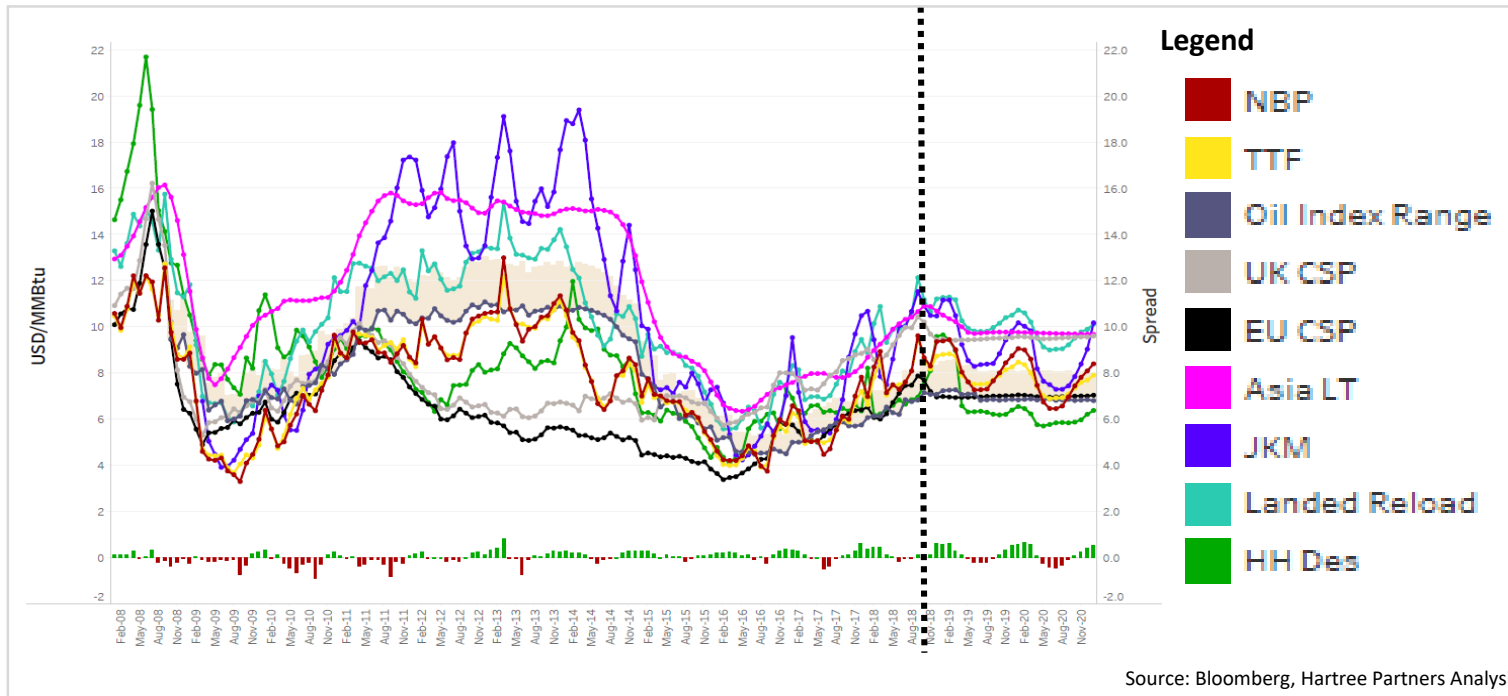
Liquid LNG market brings in numerous changes;

- Flexibility of LNG cargoes between markets
- Price transparency
- Efficient market mechanism (narrower bid/ask spreads)
- Capital risk of cargoes softening
- Volume and price flexibility
- Smoother market dislocations and price signals

**True liquidity will only be realised once a liquid LNG hub is established. Challenge lies in its location.**

# Convergence of prominent gas hub prices is reducing volatility and arbitrage

Historical and future prices of Gas indices (2008 – 2020)



Price convergence  
eroding volatility and  
supply flexibility  
value.

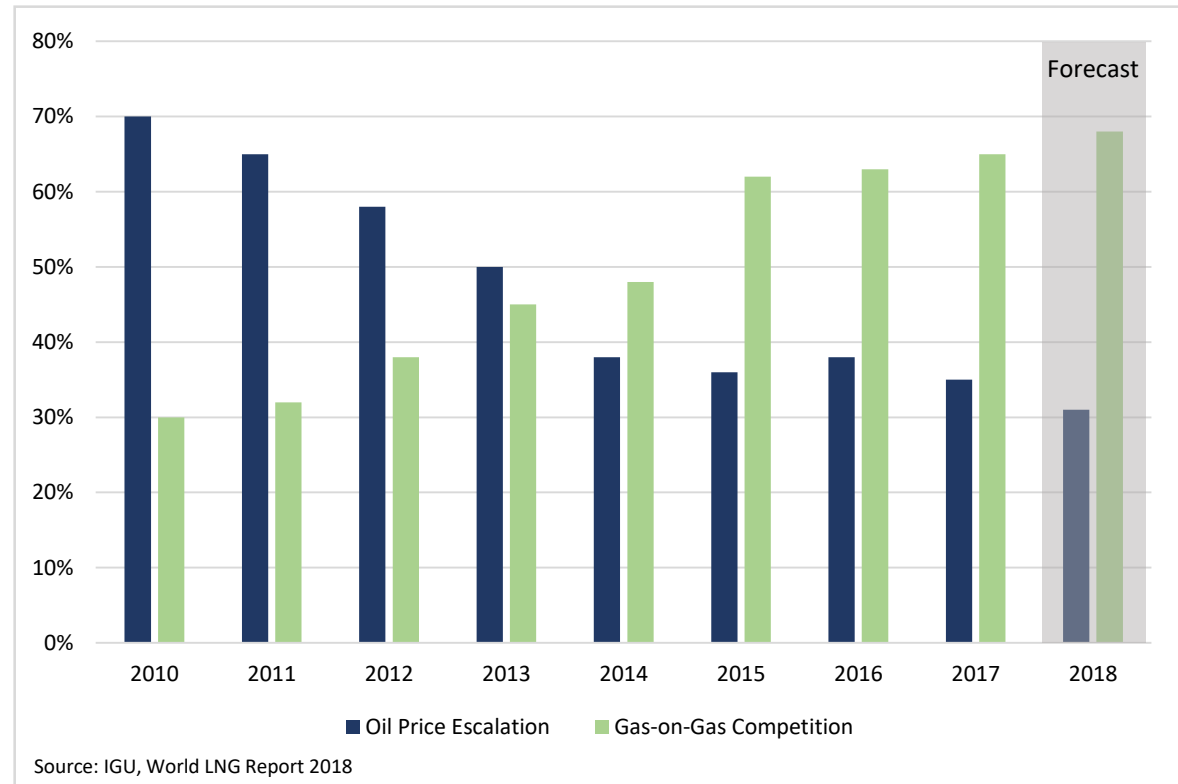
Gas-on-gas pricing  
growing.

- Increasing connection to global gas market through LNG imports, driving price convergence
- Coefficient of gas price variation reduced from 85% in 2005 to 63% in 2018
- Greater implementation of market related pricing instead of regulated prices
- Creation of an Asian LNG Hub will further the globalisation of gas

# Increased gas hub pricing and a divergence from traditional oil indexed pricing require new pricing formulae to be constructed

- Contract pricing terms are being set off gas hub price benchmarks.
- Softer price slopes due to move away from oil indexation.
- LNG hub and hub pricing will change export and import pricing formulas.
- Price structure diversification:
  - Alternative pricing indices (Japan LNG Cocktail (JLC), JKM)
  - Fixed/Phased/Tranche/Step-up pricing

LNG Import Price Formation



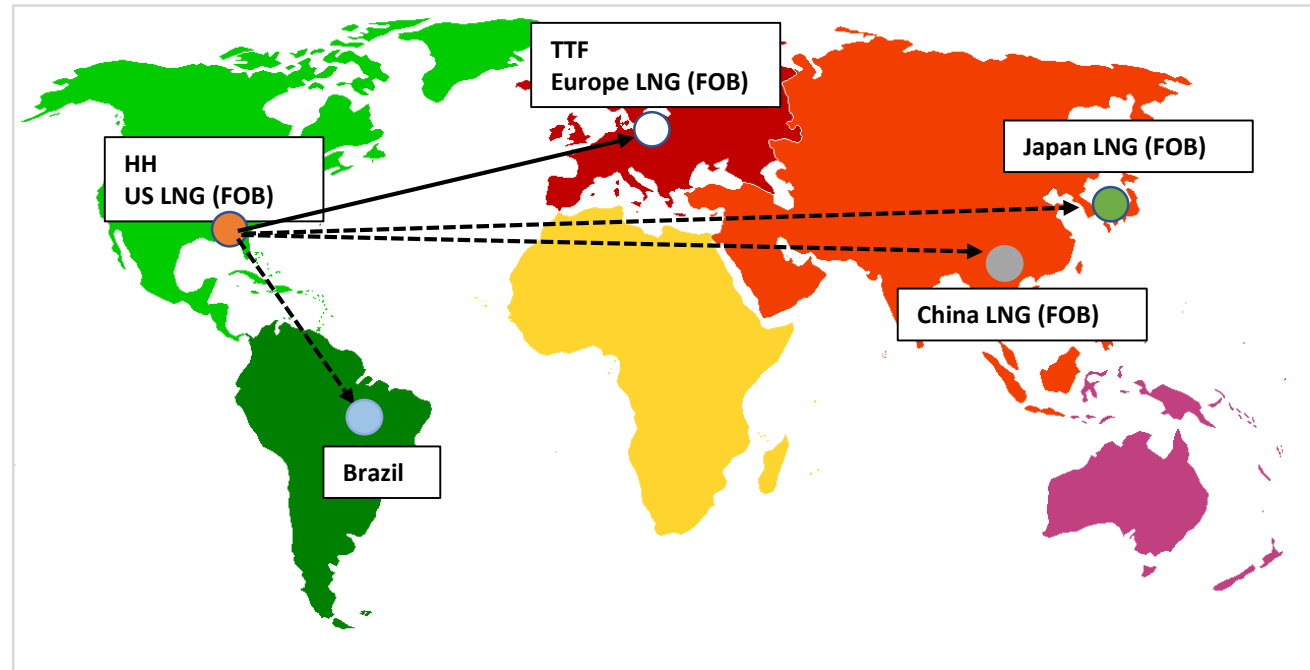
**The changing pricing landscape and portfolio structures are forcing changes in contract price structures, and give rise to a new set of exposures**

# It is paramount that risk managers are aware of pricing risk fundamentals

Buyers will more frequently look to optimise their LNG supply through a portfolio of supply contracts:

- LNG forward curves must be constructed.
- Managing price risk through back-to-back pricing will not always be possible.
- Spot and forward liquidity issues.

Example of US export contract hedging and optimisation



**Risk vectors in LNG trade have changed quickly and risk managers cannot rely on previous tools and techniques**

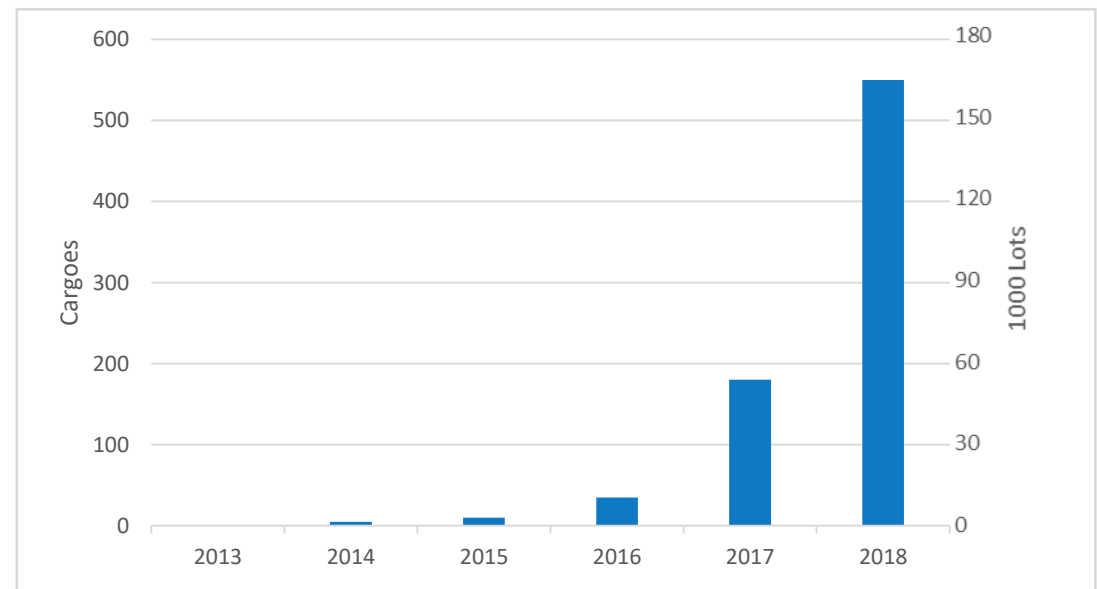
# The choice of risk management tools is limited to a handful of derivative products, but is growing

At least six derivative contracts for LNG

- JKM
- SGX LNG (Sling)
- Gulf Coast Futures
- Dubai-Kuwait-India
- CME Groups LNG futures contract
- LNG DES Japan (RIM)
- EEX is expected to launch an LNG futures contract settled against Platts JKM

The growth of JKM (most used and active LNG derivative) signifies the growing use of derivatives and a market supporting this type of contract.

ICE JKM LNG (Platts) Futures



Source: Shell LNG Outlook, 2019

**Numerous potential derivative markets but JKM remains the most liquid and likely to take hold**



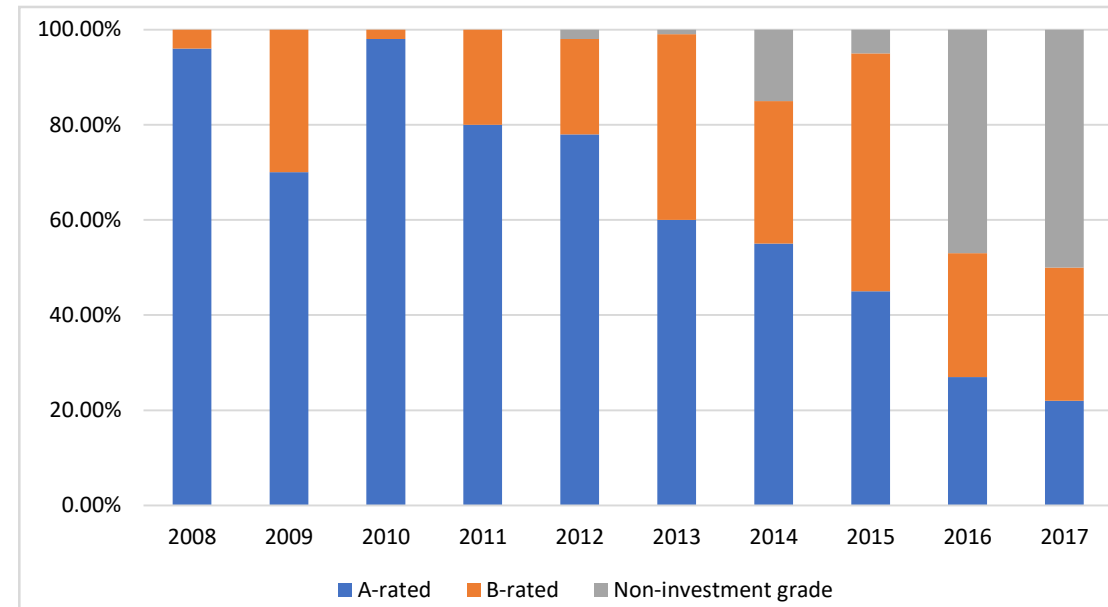
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## **Market participants and contracting**

# LNG oversupply and new FSRU projects have allowed new buyers to enter the market rapidly, generating new credit risk

- Market size is increasing and many new buyers are non-investment grade.
  - Deregulation (e.g., Japan gas market) also adds to market size and increasing demand.
- High credit quality counterparties likely less available to the next wave of LNG plants.
- New terms are being added to the contracts, typified by shorter contracts, more pronounced market exposure, and/or lower rated off-takers (i.e. Pakistan and Bangladesh).
- Of 36 existing LNG import markets, 16 have FSRU capacity, versus 3 in 2009.

Credit Rating Mix of LNG Buyers



Source: Timera Energy, 2018

**Lower credit quality buyers have an effect not only on sellers, but also on producers who have difficulty securing financing**

# Replacement of Master Sales Agreement with Standard T&Cs

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MSAs are a hurdle to liquidity and efficiency in the short-term trade and stand in the way of greater commoditisation of LNG

Standard terms and conditions will promote:

- **Market access and liquidity** – reduced need to pre-agree terms and conditions.
- **Reduced risk, greater tradability** – reduces term divergence between purchase and resale transactions.
- **LNG hubs/LNG price index** – encourages greater number of participants and churn.
- **Online trading** – STC will allow for more rapid transaction execution.
- **Derivatives** – can support the development of derivative contracts.

# Developments in contracting and pricing complexity has introduced new risks to be measured and managed

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- Contract optionality and valuation
- LNG liquefaction tolling
- Spot cargo trading and voyage optimization
- Optimisation of LNG storage
- Portfolio exposure and hedging
- Non performance
- Portfolio optimisation for operational flexibility
- Pricing types and forward curve construction

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- Complex physical and contractual flexibility makes analysing LNG portfolio value a challenging task (destination flex, pricing complexity).
  - Portfolio valuation capability forms a key foundation of the management of value and risk from LNG assets and contracts.
  - Due to the complexity of the LNG industry market participants are using both VaR and EaR (earnings at risk) to measure risk in their portfolios.

# Caught between the past and the future

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On the one hand

- Globalisation of LNG is transforming the industry into the Oil Industry – which we know how to manage.

On the other hand

- The tools and structures to manage a globalised LNG industry are not yet as mature as they are for Oil.

# Summary

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- LNG markets are maturing: greater liquidity, more flexible contracts.
- LNG pricing is moving away from its historic oil linkage and connecting more clearly to gas fundamentals.
- LNG prices find a floor through coal-to-gas substitution and a ceiling through oil substitution.
- LNG spot activity is increasing and JKM is becoming the key LNG spot price marker.
- The LNG market is cyclical. Oversupply likely through to 2020/21, then the potential to tighten due to lower additions of liquefaction capacity.

*Thank you!*

For questions, please contact:

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