

LNG – A reliable energy source for a lower carbon world

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Global primary energy consumption



Source: BP Statistical Review of World Energy 2018

Primary energy fuel share: renewables 3.6 %



BP Statistical Review of World Energy 2018

Past and future global energy consumption



BP Energy Outlook 2018

Energy consumption by region



China and India unsustainable coal consumption ?

- While China has 18% of the world population, it consumes
 - 51% of global coal supply
 - 7% of global gas supply
- India's population is approximately as large and coal/gas ratio is equally disproportionate
- => if India's GDP were to grow to «Chinese levels» with unchanged energy mix and energy intensity, this alone would drive up global coal consumption by 42%



China and India in % of world total, 2017

Regional gas balance outlook



Source: Rystad Energy

LNG market outlook



Source: BP Energy Outlook 2018

Asia 69% of global demand in 2030

Long-term demand forecast, million tonnes LNG



Source: IHS Markit

Asia demand by country (excl. JKT)



Source: IHS Markit

Supply – Steep growth will continue



Source: IHS Markit

LNG prices

Spot Landed Prices - \$/MMBtu ± 10 ¢



Liquefaction capital expenditure trends

- Few projects able to progress with prices above USD 1000/ton
- Sustained pressure on capital costs
- Brownfield projects have an advantage
- American shale gas projects momentum
- Large-scale onshore projects: can they benefit from investment impasse?
- Will new technologies succeed?



FLNG, purpose-built or vessel conversion



Shell's Prelude FLNG, the biggest floating production facility in the world

Displacement: 600,000t Length: 488 m Width: 74 m Depth: 44 m (keel to the main deck) Production capacity: 3.6 MMtpa LNG, 1.3 MMtpa condensate, 0.4 MMtpa LPG

Now in operation 475 km off Western Australia



Golar LNG's Hilli Episeyo, LNG carrier built 1975 converted to FLNG

Length: 294 m Width: 63 m Production capacity: 2.4 MMtpa LNG

Now in operations 14 km off Kribi, Cameroon

Regasification developments



	LNG volumes traded	No. of countries importing LNG*	No. of countries using FSRUs	No. of FSRUs in operation
ʻ07	172	17	2	2
'12	238	25	7	10
'18	317	39	16	24

Source: IHS Markit, Höegh LNG

* 0.2 mtpa or more



Höegh Gannet (Hyundai Heavy Industries 2018), the largest FSRU built with a regasification capacity of 1 Bcf per day and storage capacity of 170 000 cbm of LNG.

Trading houses entering the scene

Estimated traded volumes of LNG of the big four*



Source: Wood Mackenzie

Shipping – LNGC fleet and orderbook

- Rapid growth, orderbook = 23 % of existing fleet capacity
- Vessels increasingly efficient



Data source: IHS Markit Data last updated: 15/12/2018

LNG shipping – Charter rates

- Rates are volatile as shipowners strive to match demand from liquefaction capacities that often are delayed
- Greatly affected by seasonality and price spreads determining how far LNG volumes travel



CONCLUSIONS

- Gas demand will grow 1.4% pa from 2016 to 2040
- Large contribution driven by China's political support for gas in power
- Possible deceleration of demand growth 2025-2040 due to stronger push for renewables and energy efficiency
- Global peak demand for gas is not expected in the foreseeable future
- Gas is a key pillar of a gradually decarbonising energy system
- Expansion of LNG supply helps gas to expand especially in Asia



Thank you

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