



Global gas markets and the future of natural gas

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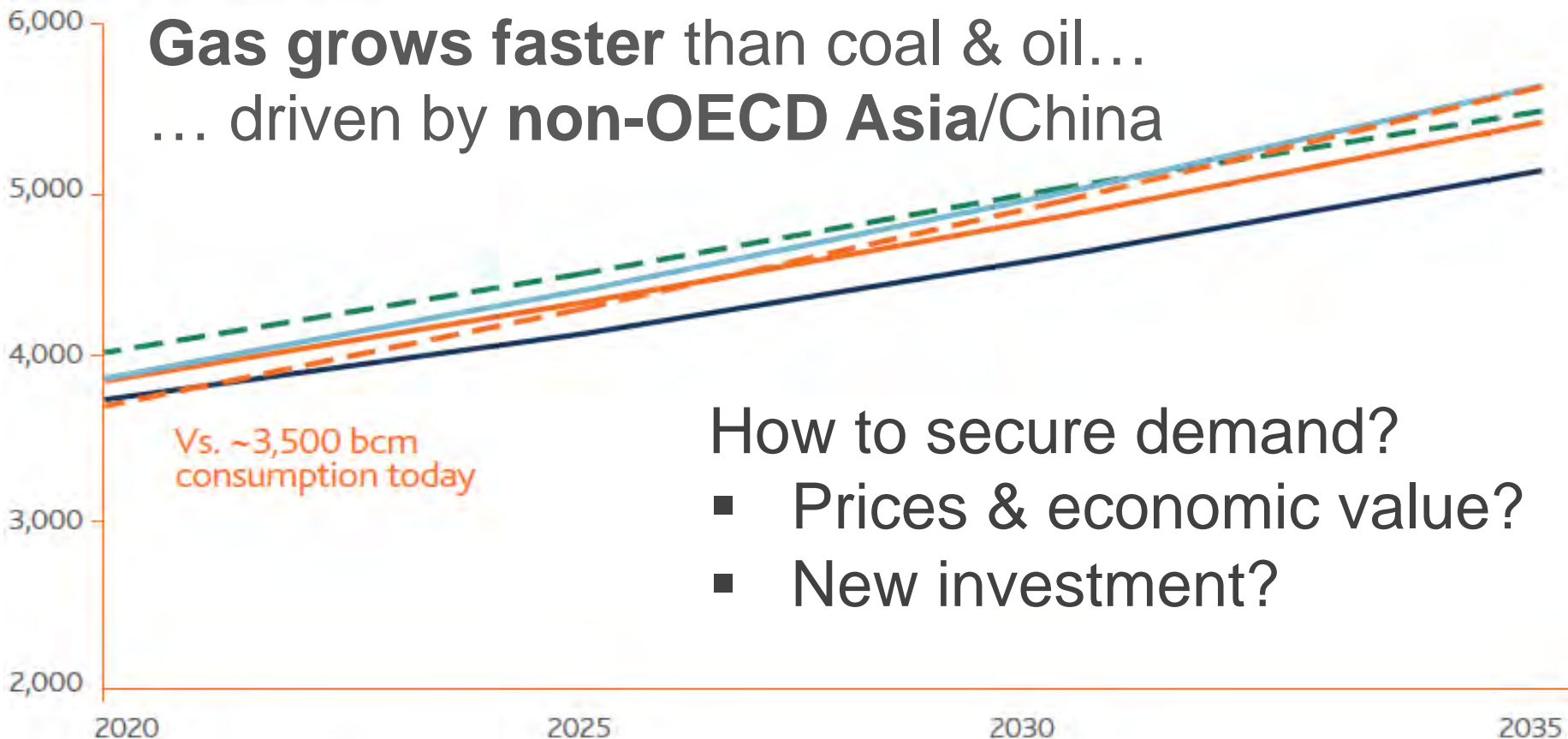
Trondheim, 27 February 2018

Plan for this talk

- ① **Demand and prices**
- ② **Political economy**
- ③ **Strategic positioning**

Forecasts too bullish given challenges facing gas?

World Gas Demand (bcm)

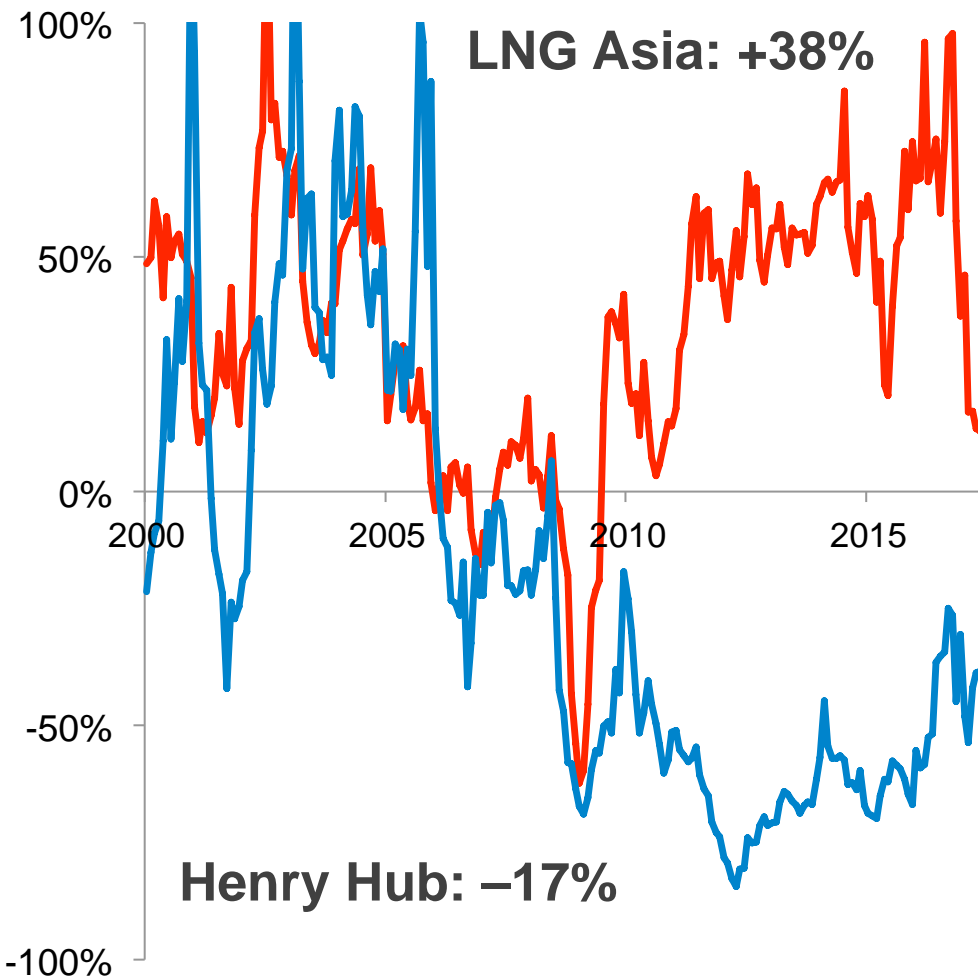


Projections and growth CAGRs

Source: SNAM 2017 Global Gas Report

— EIA Intl Energy Outlook 2016 (2.2%) — Shell LNG Outlook 2017 (2.0%) — BP Statistical Review 2016 (1.8%)
- - IEA Golden Age of Gas scenario - 2011 (1.8%)¹ — IEA - NPS 2016 (1.6%)²

Regional price divergence is the historical norm



Asia premium: 20+ years

- Imperfect competition + limits to arbitrage

Balance of power:

Shift to buyers post-2014

Low & stable HH price

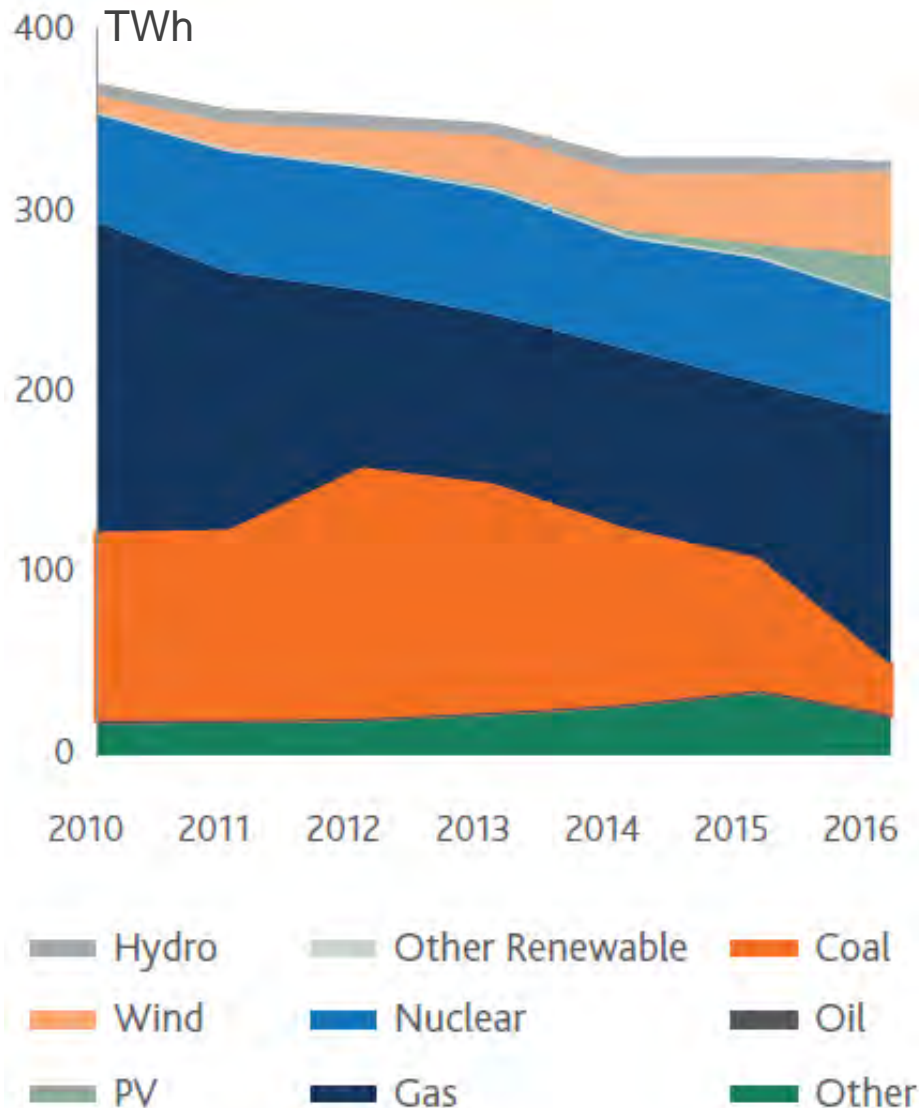
→ US LNG exports

→ Security of supply (LNG vs pipeline gas)

⇒ Global convergence to Henry Hub-based pricing?

Source: IMF database – % premium (or discount) relative to EU natural gas

UK: Carbon price floor supports coal-to-gas



Source: SNAM 2017 Global Gas Report

Coal phase-outs now a policy objective...

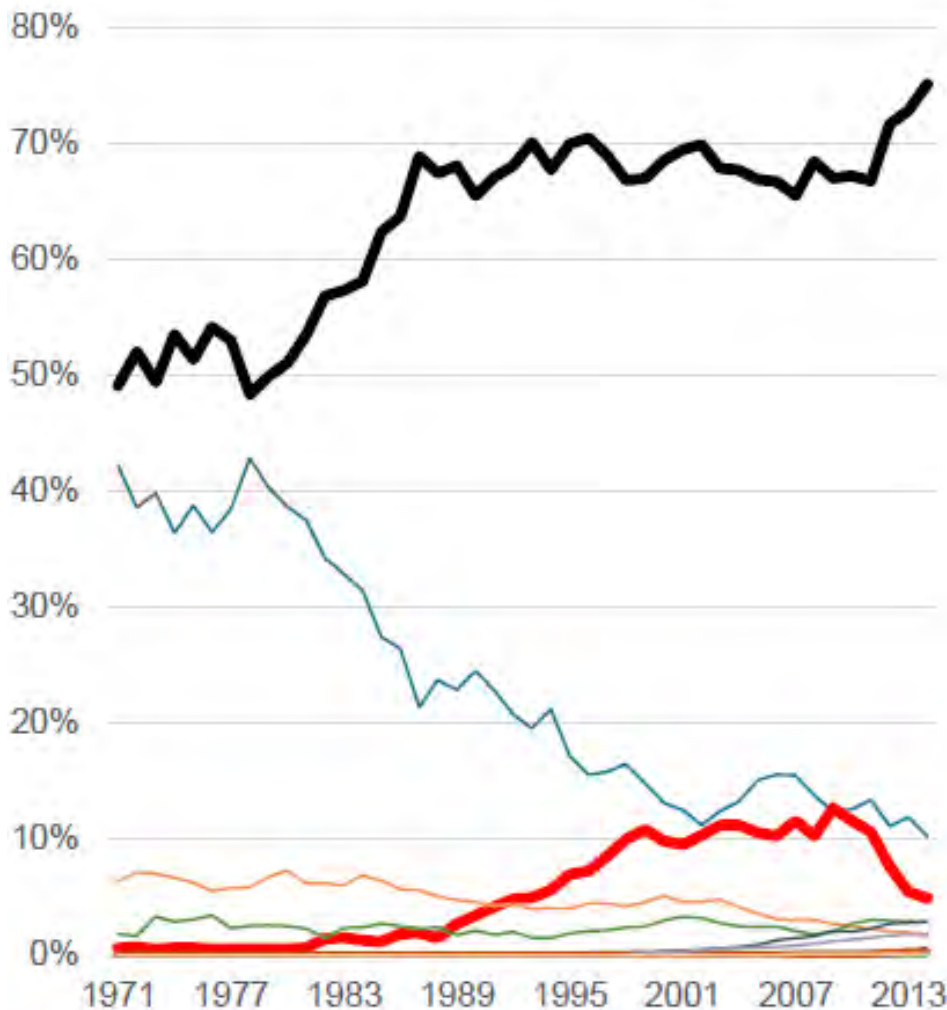
- Social cost of carbon & “target-consistent” price $\approx \$50+/\text{tCO}_2$
- Coal-to-gas switching price $\approx \$20\text{-}30/\text{tCO}_2$

⇒ **Carbon price floor**

+ **Good electricity market design** rewards flexibility services (e.g. by gas)

India: Gas/LNG squeezed out by coal & solar

Electricity Generation by Fuel



No clear role for gas/LNG

- Not cost-competitive against domestic coal
- Limited policy support
- Infrastructure constraints

Skipping gas? Coal to RE

- Ambitious 175 GW target for 2022 (esp. solar)
- Large cost reductions & low auction prices

Source: International Institute for Strategic Studies (IISS) & Vivid Economics

Gas industry *itself* is in the midst of a transition

Strategic repositioning around natural gas

- ① **Energy majors:** oil → gas/LNG & power/RE
- ② **Electricity companies:** coal/gas → RE
- ③ **Commodity traders:** oil → LNG
- ④ **Private equity:** → “legacy” coal/gas assets
- ⑤ **New players:** → LNG export, gas E&P

⇒ Trend to large integrated or niche specialist?

Maturing LNG market “should” become *less* integrated

Conclusions

- ① **Global price convergence** not any time soon
- ② Significant downside risk in gas **demand forecasts**
- ③ Local **political economy** for gas/LNG in non-OECD (Asia) very different from OECD (Europe)
- ④ **Strategic repositioning** reflects companies' different visions of the future

References

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