



Global gas markets and the future of natural gas

Robert A. Ritz

Energy Policy Research Group (EPRG)

Judge Business School, Cambridge University

NTNU Energy Transitions Conference

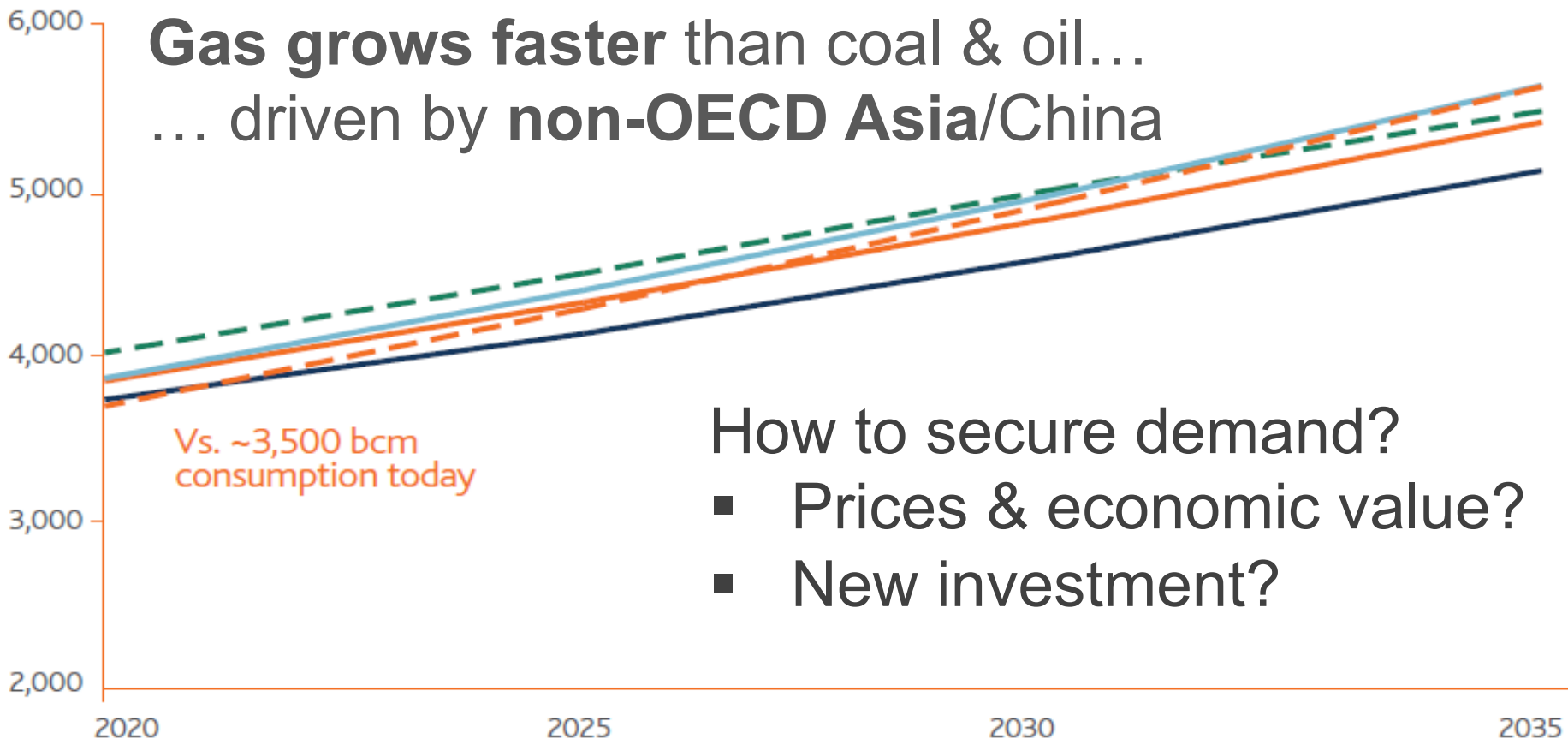
Trondheim, 27 February 2018

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)

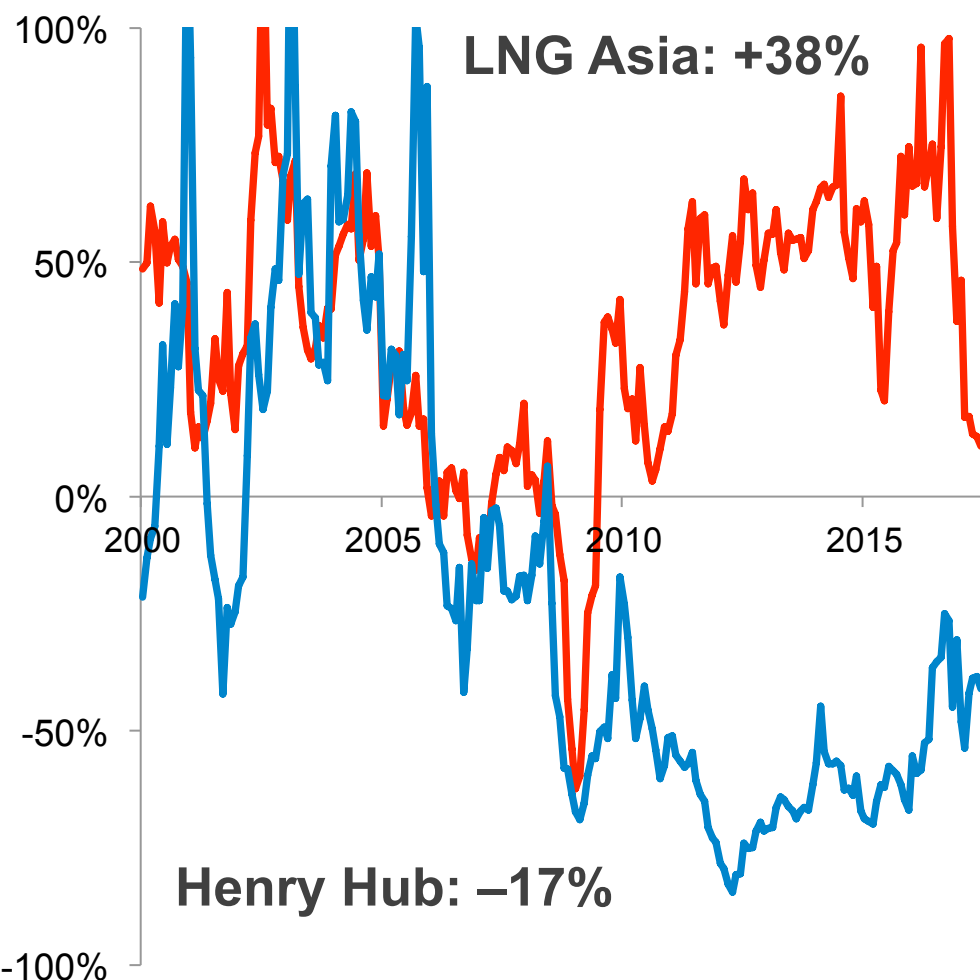


Projections and growth CAGRs

Source: SNAM 2017 Global Gas Report

— EIA Intl Energy Outlook 2016 (2.2%) — Shell LNG Outlook 2017 (2.0%) — BP Statistical Reivew 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

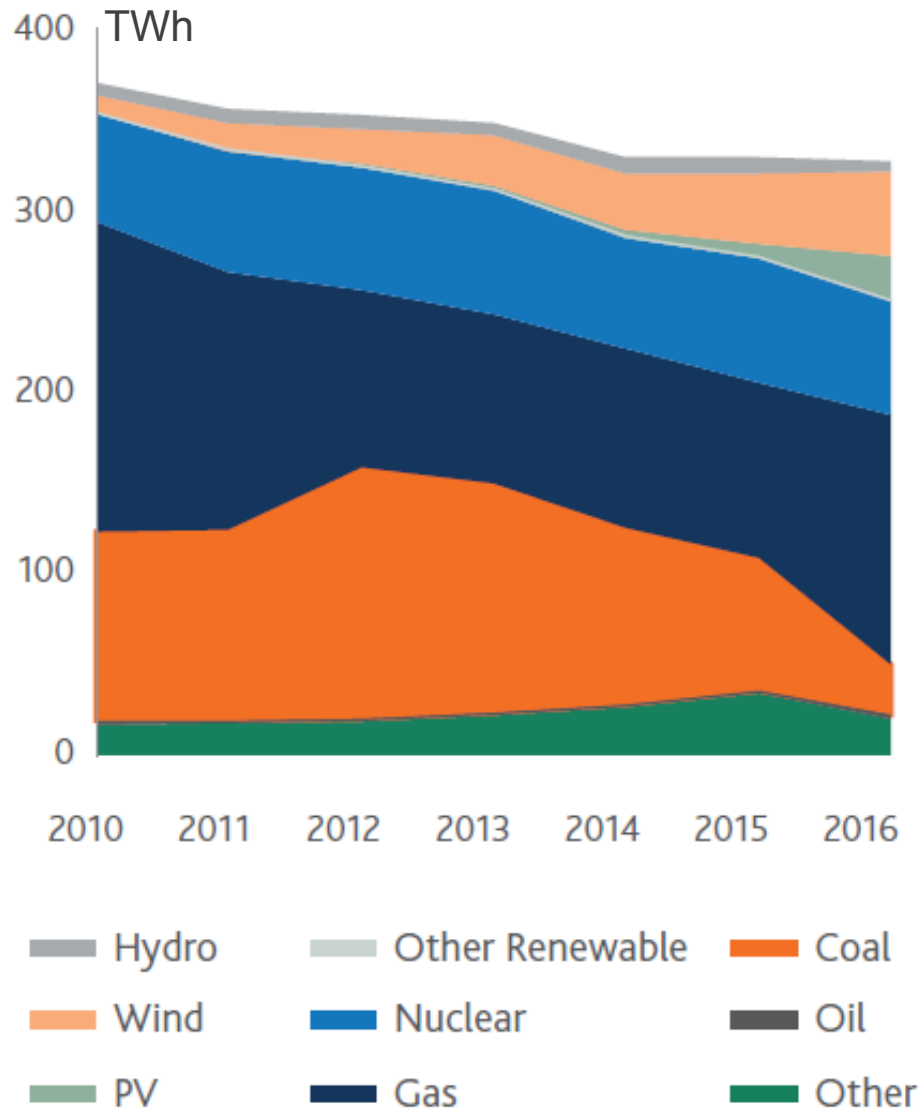
→ US LNG exports

→ 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



Coal phase-outs now a policy objective...

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

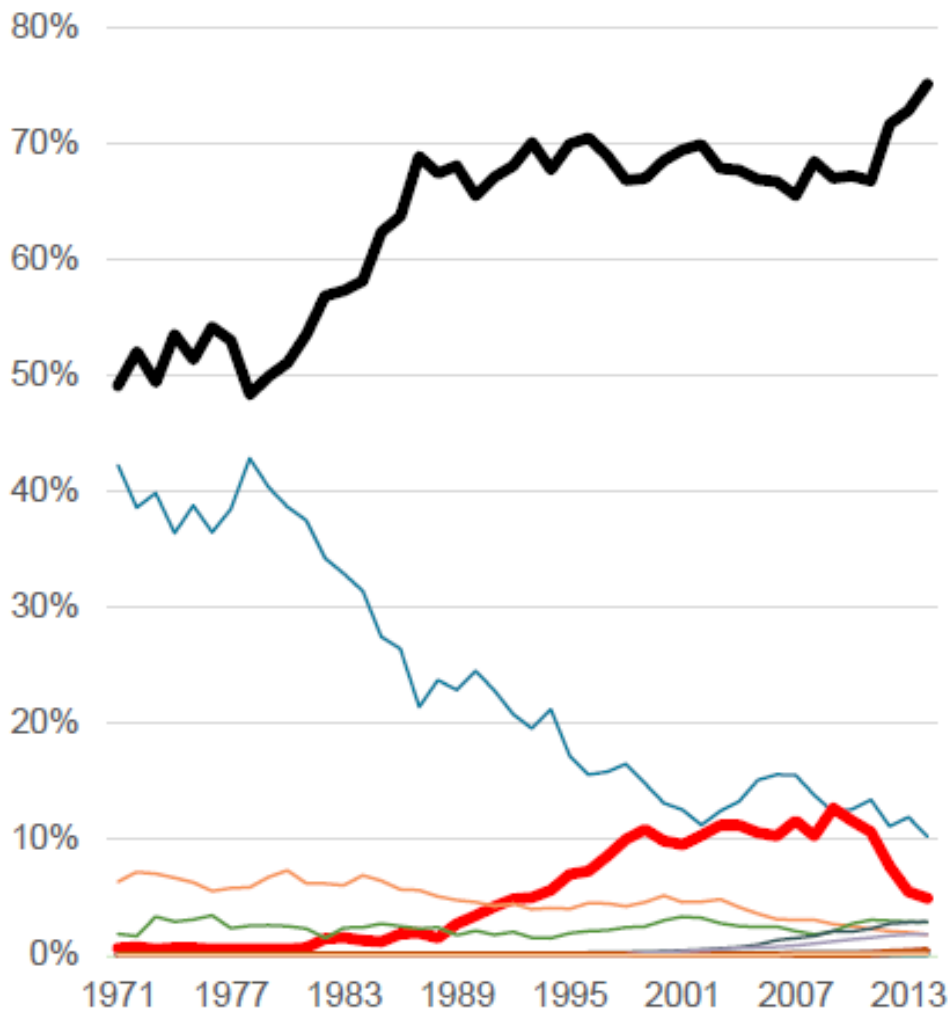
⇒ **Carbon price floor**

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

Source: SNAM 2017 Global Gas Report

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

Ritz, Robert (2018). A strategic perspective on competition between pipeline gas and LNG. Working Paper, January 2018
http://www.econ.cam.ac.uk/people-files/affil/rar36/pubs/RobertRitz_SPGC_Jan2018-final.pdf

Ritz, Robert (2014). Price discrimination and limits to arbitrage in global LNG markets. *Energy Economics* 45, 324-332
http://www.econ.cam.ac.uk/people-files/affil/rar36/pubs/RobertRitz_LNG_July2014.pdf

Newbery, David, Michael Pollitt & Robert Ritz (2017). Market design for a high-renewables European electricity system. EPRG Working Paper 1711
<https://www.eprg.group.cam.ac.uk/eprg-working-paper-1711/>

Newbery, David, David Reiner & Robert Ritz (2018). When is a carbon price floor desirable? In progress, EPRG Working Paper (to be circulated May 2018)
<https://www.eprg.group.cam.ac.uk/category/working-papers-2018/>