PROSPECTS FOR LNG TO CONTRIBUTE TO THE "20-20-20" TARGETS AS A TRANSITION FUEL

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John Holding
Independent Practitioner
(Energy Macroeconomics)

POLICIES AND TARGETS

EU

- Security of supply / Infrastructure development
- 20-20-20 targets (June 2009)
- Post-Copenhagen rethink
- New strategy document (May 2010)
- Cancun?

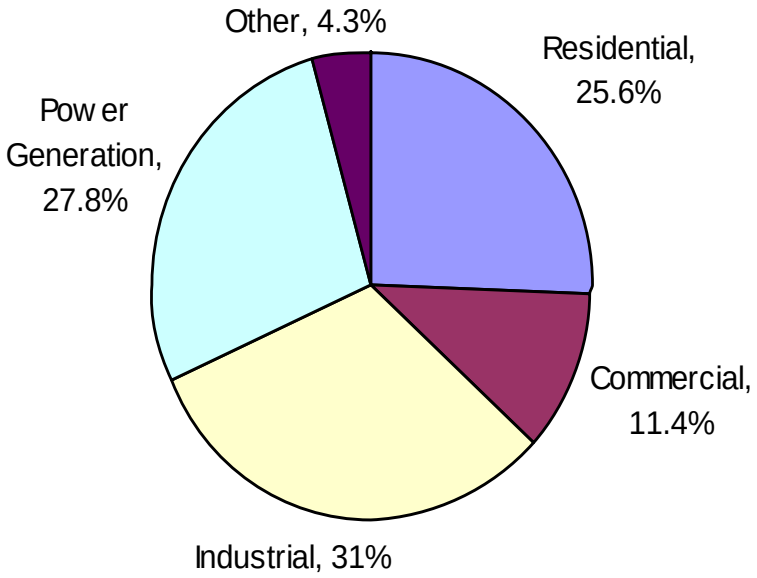
UK

- Coal mining and North Sea legacy
- Conservatives (1979-1997)
- Dash for Gas, Stricter Consents, NFFO, RO
- Climate Change Act (Nov. 2008)
- CCC 2nd Progress Report (June 2010)
- Coalition Government……..???

Conclusion: Energy ⇔ Climate Change policies not yet bedded down

GAS IN EUROPE……SOLIDLY ESTABLISHED

EU27 Gas use in 2008



Total 2008 EU gas demand: 536 BCM*

*** 2009 was down 6.4%**

UK demand (2008): 94 BCM

LNG supplied 53.5 BCM (= 10 %) to Europe in 2008.

LNG Sources:

Algeria, Nigeria, Trinidad, Qatar, Oman, UAE, Libya, Australia, Brunei

GLOBAL gas reserves (end 2009):
187 TCM
≡ 62 years at current rate of consumption (as it has been for the last 20+ years)

Info. Gas use in EU27 represents 24% of primary energy consumption

FOSSIL FUELS – GAS – LNG

• Natural resource exploitation • Large scale • Long timelines • Global pricing • Government involvement • Risks

LNG

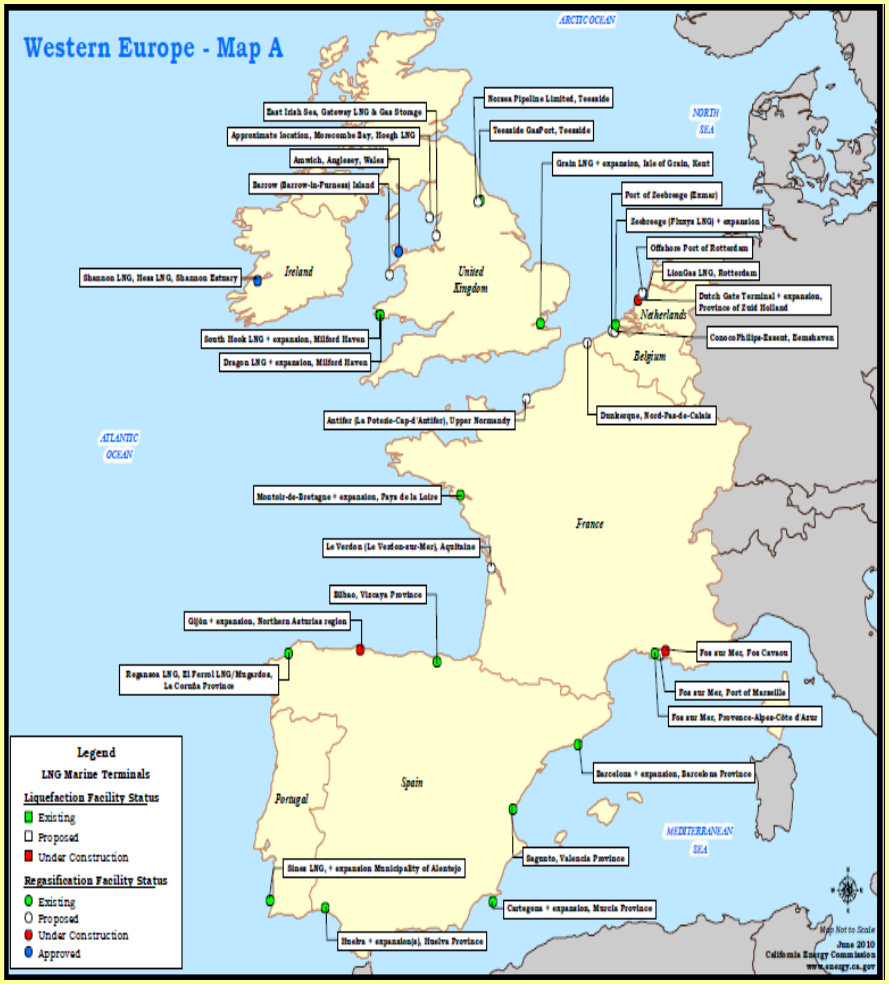
- 90-98% Methane
- Same spec. for pipeline or LNG
- Applies to “Stranded gas”
- Atmospheric pressure / -160º C. => 1/600th volume
- Special materials + insulation needed
- Value chain concept

UPSTREAM **LIQUEFACTION** **SHIPPING** **REGASIFICATION** **GAS MARKETING**

Observation: Total LNG value chain investment can be >$25 Billion

LNG STATUS

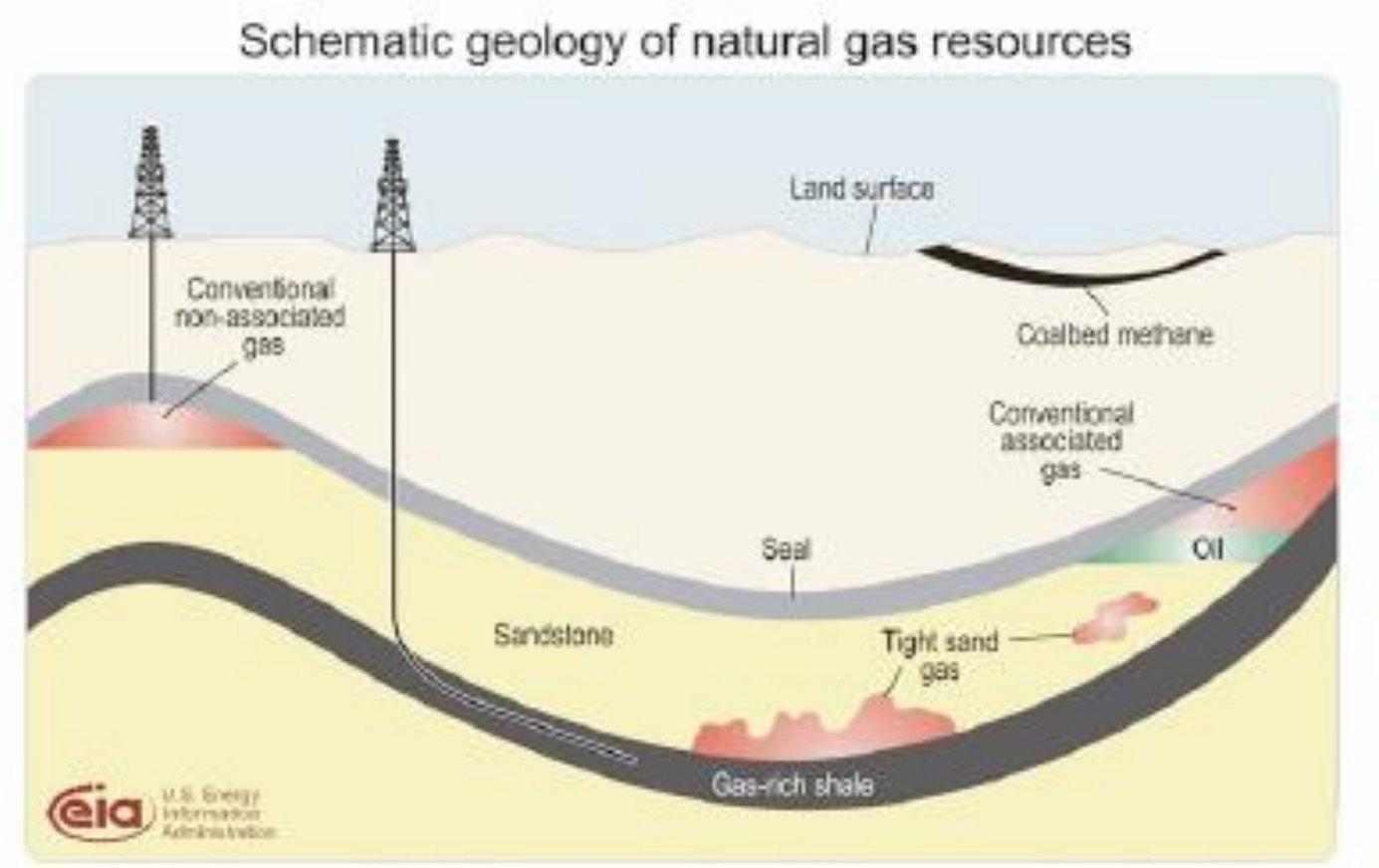
- Trade dates from 1960s from Algeria to UK and France
- UK ceased importing in 1990, restarting in 2005, now expanding – despite several gas import pipelines
- US *imported* in 1970s -1980s then again from 2000, peaking in 2007
- US *exported* LNG from Alaska to Japan since 1969 till at least 2011
- Current European importers: UK, France, Spain, Portugal, Italy, Greece, Turkey, others coming
- Spain: LNG supplies 74% of its gas demand. Gas used for 35% of power generation (vs. 15% from coal)
- LNG started from Qatar in 1997



<u>Conclusion</u>: LNG – proven, convenient, safe, fungible

UNCONVENTIONAL AND SHALE GAS

Horizontal Drilling and Hydraulic Fraccing have released the opportunity



<u>Shale gas in EU</u>: Lower overall potential, land access issues, rig availability, drilling costs, water handling (supply and disposal)…..viability to be proven

Wrap-up…….Prospects for LNG

- Gas networks continue to be expanded, integrated
- Security of gas supply to Europe continues to be an issue
- Gas glut *and* LNG glut = buyers market / may not clear for 5 years
- More LNG projects underway = a lot of sunk assets
- LNG imports increasingly important to meeting UK's gas demand
- Gas CCS holds promise (should be cheaper than coal CCS)
- Gas has < half coal's carbon coefficient
- CCGT power gen. is the economic choice for generators until gas price rises and/or carbon prices reach high levels (€60-€80/tonne)

Prospects: LNG is more than a transition fuel – it is here to stay well beyond 2020

- Material interests will prevail in the free market; capital assets will be utilised to maximum efficiency – unless prohibited or if they become uneconomic to operate.

END