Will LNG Exports from North America / East Africa Drive Global Price Integration?

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Gas prices worldwide continue to diverge

Shale gas revolution has driven down Henry Hub prices

Source: Poten & Partners
Will LNG exports from North America / East Africa drive global price integration?

Shale gas driven Henry Hub

Gas-on-gas markets

Oil-linked markets

Oil Product

NBP

JCC/Brent

East Africa
Asian buyers more comfortable with decreasing HH price volatility...

Volatility of Henry Hub, NBP, WTI, and Brent Prices

Note: Volatility = Standard deviation of natural log.

Source: Poten & Partners
…but remember large historical variations

Calculation: Historical Asian LNG price minus hypothetical Henry Hub linked price

Shale gas revolution impact

HH/oil price surged but S-curve damping effect on Asian LNG contracts

Source: Poten & Partners
Increasing new supply sources but still limited share in the growing Asian LNG market

LNG Supplies into Asia – New Australian supplies remain the major contributor to Asian market

Source: Poten & Partners

North America (US+Canada)
East Africa
New Australia
Others

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Challenging cost structures for green field projects in Asia Pacific

Mounting construction resource requirement

![Construction Resources Index](chart)

- US Gulf/East
- Australia

Ever increasing EPC costs especially in Australia

![Specific EPC Cost](chart)

Source: Poten & Partners
Increased competition for the Asian market lowers long term contract price

Poten Asia Pacific Market Competition Index

Year of first production

Oil Parity

Poten projected Asian long-term contract slope

Year of finalization of LNG sale

Source: Poten & Partners
Can local Asian gas-on-gas market develop?

**Critical factors:**
- An interconnected gas transmission system
- Deregulated markets
- Transparent market with limited gov. intervention
- A short term and futures market

**Other important factors:**
- Growing domestic production
- Growing pipeline imports and exports
- Substantial storage capacity
- LNG trade
- High liquidity
It took 20 to 30 years for US/UK to develop gas-on-gas markets

**US**

- **1970s**
  - Natural Gas Policy Act - FERC

- **1980s**
  - US eliminates take-or-pay clauses

- **1990s**
  - Open Access.
  - NYMEX started Henry Hub trade

**UK**

- **1970s**
  - Natural Gas Act in 1986

- **1980s**
  - British Gas split into Centrica and BG plc in 1997, Lattice transmission in 2000. NBP started in 1996

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New pricing mechanisms emerging but no material de-linkage from oil indexation in Asia

- Even if all North America LNG were to be gas-hub linked, it represents no more than 10% of the total Asian demand in 2020

- Increased competition will drive down oil indexed prices

- New pricing mechanisms – anywhere between a traditional oil-linkage and a Henry Hub linkage – are emerging