The Challenges in Building an Alaskan LNG Chain

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Dr. Robert Fenton

- **27 years experience with Shell**
- **12 years in Gas and Power**
- **Commercial Management, Business Development, Strategy Formulation**
  - UK North Sea,
  - Turkmenistan to Turkey and Europe gas pipeline
  - USA – LNG import projects
  - Mexico LNG import
  - Shell LNG Strategy
- **4 years with Gas Strategies**
  - Principally LNG
  - Market evaluation and gas development strategies
  - Business models and strategies

LNG as an alternative to a pipeline

- **Not just a choice between LNG and a pipeline but between:**

- **LNG to the illiquid, long-term contracted and in China's case developing, gas markets of Asia**

And

- **Pipeline to the deep, liquid, short term contracted market of USA**

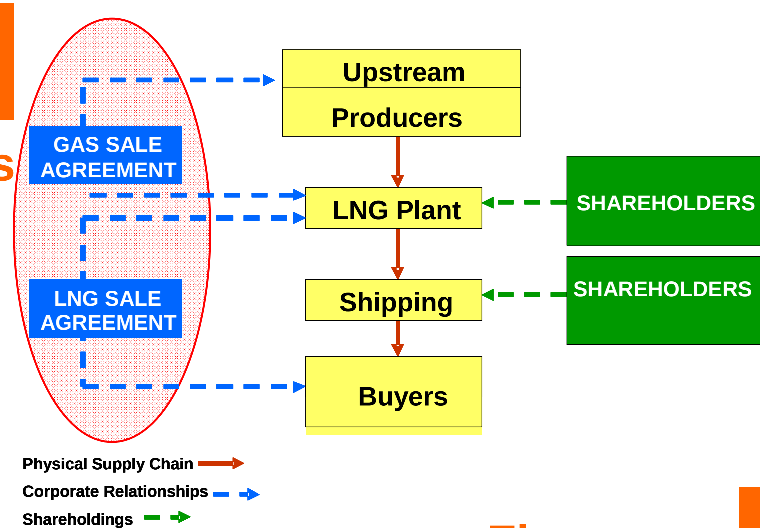
Putting an LNG chain together is complex, it varies by market and is challenging in Asia

- **Gas is not oil**
  - Oil is a truly global commodity in which demand can be assumed - price varies
  - Projects easy to launch on this basis
  - Gas is more costly to transport and more rigidly fixed to regional markets – often with a single buyer
  - Assuring demand means securing a long term buyer
  - And then building the whole delivery chain to the specific buyer
- **The US gas market is different from others**
  - US gas market is very similar to the global oil market – offtake is assured, price varies
  - Transparent gas price index
  - New gas development relatively straightforward
- **LNG is challenging- especially into Asia Pacific markets**
  - Costs are higher
  - All elements of the chain need to be connected with legal agreements to ensure the LNG once produced will be sold over the life of the project (ca. 20 years)
  - Asian markets not liquid – greater volume risk
  - Price for long term contract depends on market conditions at time of negotiation
  - The scale of projects usually means several companies will be involved (plus governments).
  - Getting and retaining alignment where there are competing projects and negotiating all agreements can be difficult.

Commercial contracts critical for viability of LNG chain to ensure financing and construction

1

Contracts



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Construct

Finance

2

- **All elements of chain need to be connected with legal agreements to ensure the LNG produced will be sold over the life of the project (ca. 20 years) to support investment risk**
  - Before finance can be raised
  - Before construction starts
- **Makes LNG development complex**
  - Liable to delays and occasionally failure

Producers view of risk and reward

- **Pipeline (to USA) simpler by comparison:**
  - Single commitment to pipeline capacity
    - LNG requires: pipeline, liquefaction, ships, re-gasification
  - LNG requires higher level of reserves assurance
  - Assured market offtake
  - Transparent pricing
  - Single gas quality and blending
  - Producers can act independently and integrate with the rest of their North American gas sale

Are today's prices a basis for commitment to LNG for the long term?

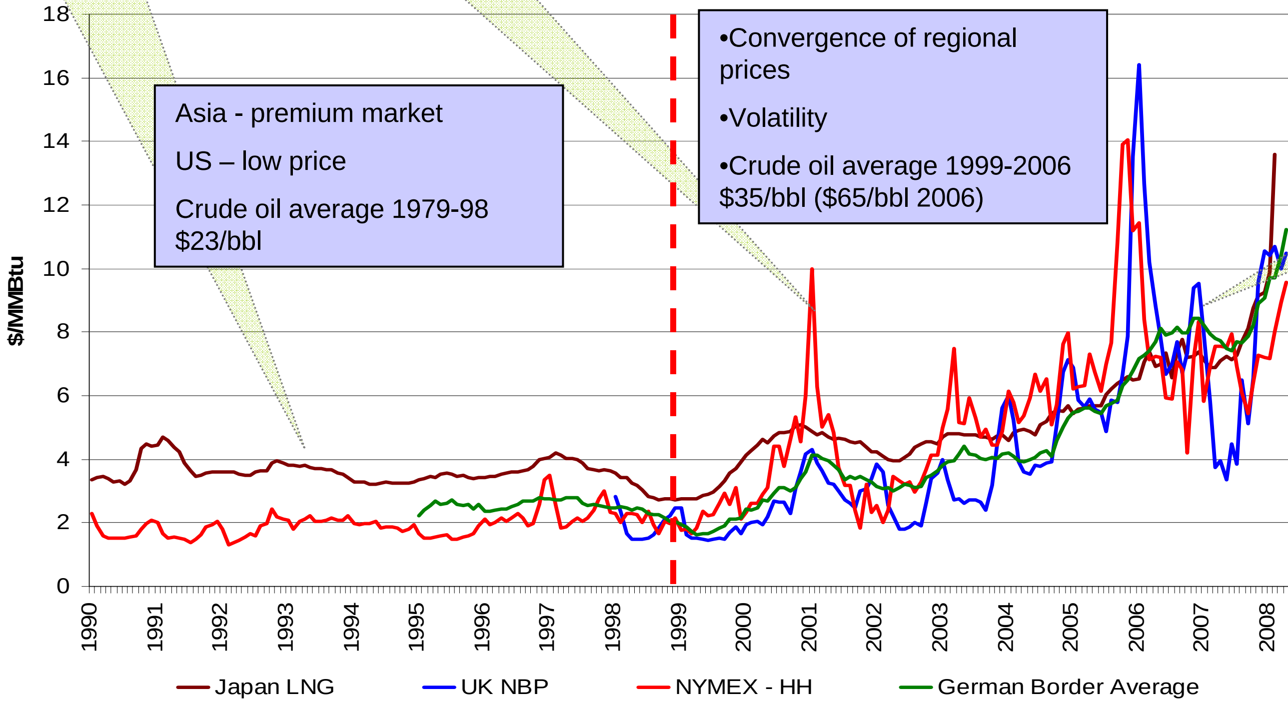
- **Oil today around $135/bbl**
- **New long term LNG contracts into Asia priced at close to oil parity**
- **Implies a significant premium of $9/MMBtu over USA prices**
- **This premium will more than compensate for the higher cost of an LNG scheme**

- **This divergence of Pac Rim LNG and USA gas prices is unlikely to sustain in the long term**
  - Fundamental price projections
  - Pac Rim LNG price drivers

Asian contract prices normally sit above HH; but in some periods they do not.

Asia markets provide higher prices
•Asia dependent on LNG
•Prepared to pay some security premium to lock in volumes

Relativity to HH very volatile



Price convergence
•LNG can be moved out of US (not as easy as oil)
•Surge of Asia LNG prices

Source: Gas Strategies Consulting

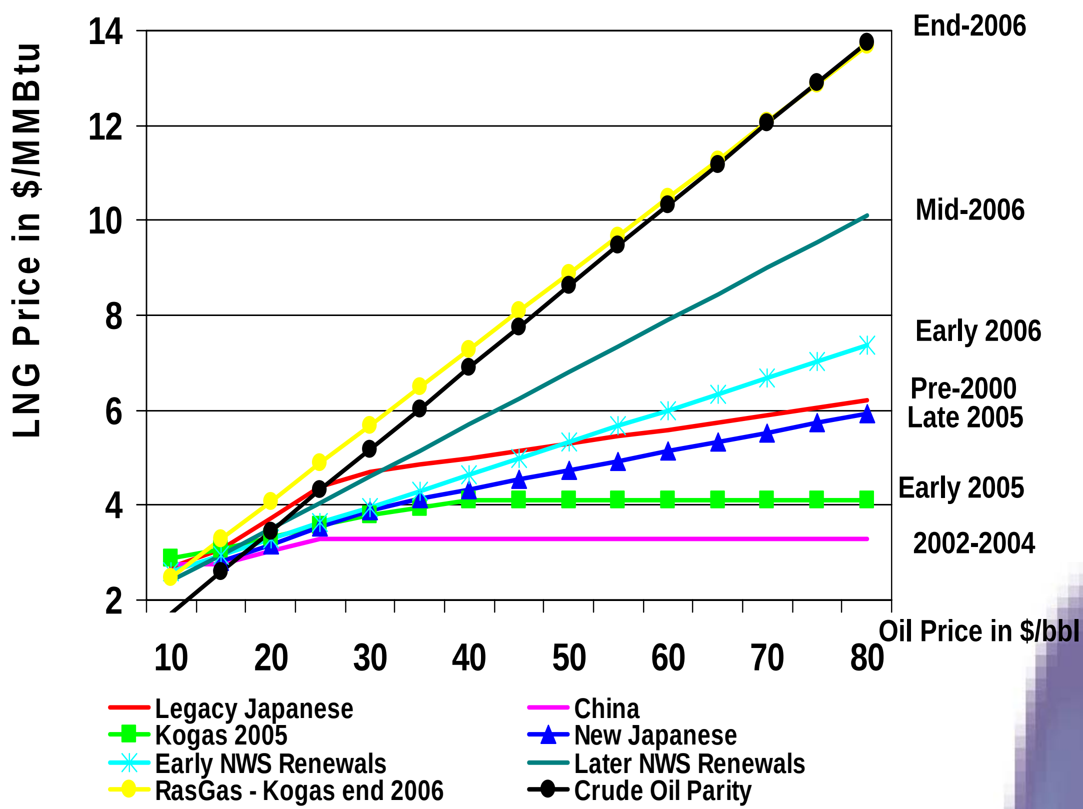
Rapid market changes lead to scatter of prices and renegotiation

2001 - 2004

- Over 10 suppliers and potential producers were offering supply
- Buyers achieved lower prices and a reduction in the oil price linkage
- Price ceilings at around $25/Bbl oil prices in some contracts
- Result was much lower LNG price at high oil prices in new contracts

2005+

- Return to "sellers' market" has strengthened position of producers
- Qatar has pushed the LNG price to crude oil parity at $100/Bbl oil in its most recent deals
- Wide scatter of price opened up by the sudden rise in oil price
- Virtually all legacy contracts renegotiating



Asian premium is limited by growing flexible supply

- **2007 US supply 16 mtpa**
- **50 mtpa of new supply for US, UK under construction**
- **Can potentially be diverted to Asia**
  - US, UK Markets liquid – at Seller's choice
  - Diverting Asia LNG to US requires Buyer's concurrence
- **Some Asian premium will remain driven by security concerns**

mtpa	Operating	Under Construction	Total
Pacific Basin	74.6	27.4	102.0
Middle East	47.4	53.5	100.9
Atlantic Basin	70.5	12.1	82.6
TOTAL	**192.5**	**93.0**	**285.5**

Source: Gas Strategies Consulting

Key Messages

- **LNG project carries significantly greater cost and risk of delay or failure than the pipeline project**
  - Sales negotiations complex
  - Quantity and quality constraints
  - Producer alignment hard to retain
- **Current level of Asian price premium unlikely to sustain**
- **Producers have substantial competing LNG interest in the Pacific region.**
- **Producers' perception of this risk likely to drive preference for the pipeline**