

24<sup>th</sup> World Gas Conference  
 ARGENTINA | 2009  
 5-9 October

The Global Energy Challenge:  
 Reviewing the Strategies  
 for Natural Gas

## Towards gas price alignment across regions?

Presentation to WGC 2009, Committee Session B2  
 6th October 2009  
 Ottar Skagen, PGC B SG 2

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## Where along the value chain should we look for evidence of gas price alignment?

The diagram illustrates the flow of gas from production to consumption. It starts with 'Wellhead price' and 'Citygate price' at the bottom left. 'Citygate price' leads to 'Hub price', which then branches into 'Large end user prices' and 'Small end user prices' (represented by a grid of dots). Above the hub, 'FOB price (LNG)' and 'DES price (LNG)' lead to 'Border price (pipeline gas)', which then feeds into the 'Hub price'.

**City gas and end user prices influenced by taxes and local circumstances**

**Tax shares of gas end user prices to households, 1Q09**

IEA: Energy Prices and Taxes, 2Q 2009

**Focus on import prices and – where appropriate – hub prices**

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## Regional gas prices have always been indirectly linked...

Oil, common costs

- Interfuel competition
- Oil company investment responses to oil-gas price changes

Gas-to-gas competition

Contractual indexation to oil product prices

Contractual indexation to crude oil prices

Mixed gas price formation mechanisms—oil link, direct regulation often involving subsidisation

... and – to an extent – aligned

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## Oil linked gas prices: Significantly correlated across regions...

### European and Japanese average contract border/beach prices

Correlation coefficient: 0,96

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### ... reflecting well integrated crude oil and product markets

#### Crude oil spot prices

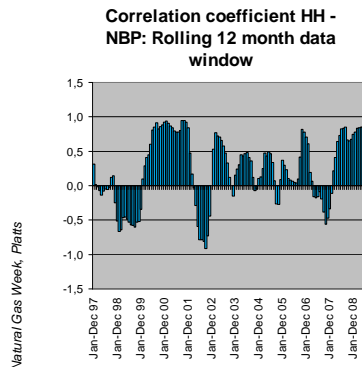
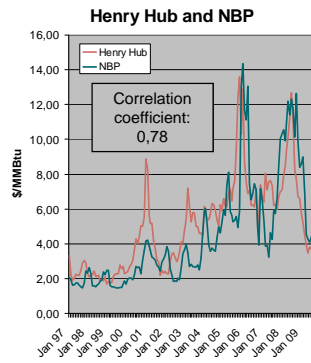
Different indices, slopes and constants in the price formulas explain the remaining differences



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## G-t-g based prices: Correlation increasing?



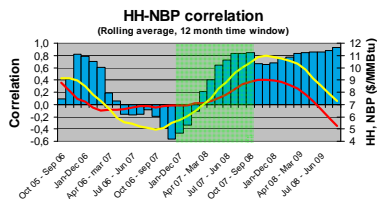
Or jury still out?



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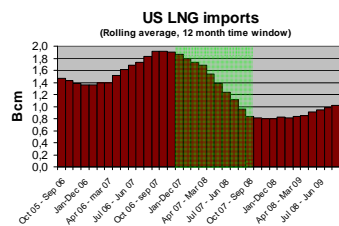
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## Is the recent HH-NBP correlation due to LNG?

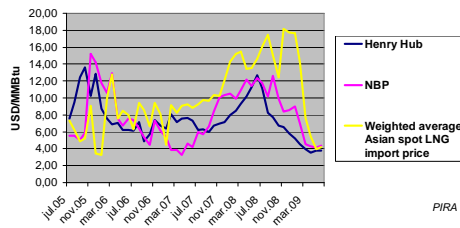


2007-08: Oil, flight to commodities, costs mattered more

But in 2009 spot prices seem to have gravitated to a floor set by the US price level and willingness to pay for LNG



Select spot gas prices, July '05 - June '09



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## Is LNG doing its job?

LNG is connecting hitherto unconnected market areas...



... but that does not automatically deliver price globalisation

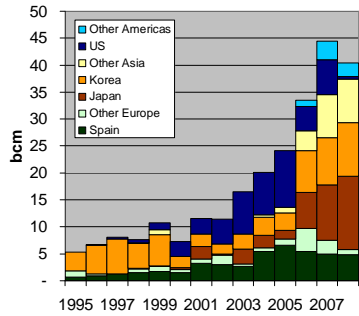
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## It is the flexible portion of LNG that may drive price alignment

- That is, the portion not tied into long term point-to-point contracts
- Flexible LNG flows to the buyers that offer the highest netbacks
- Flexible LNG consists of:
  - Uncommitted LNG
  - Contracted LNG where the buyer is not an end user but an aggregator/trader

**Spot LNG trade by importing region, 1995-2008**

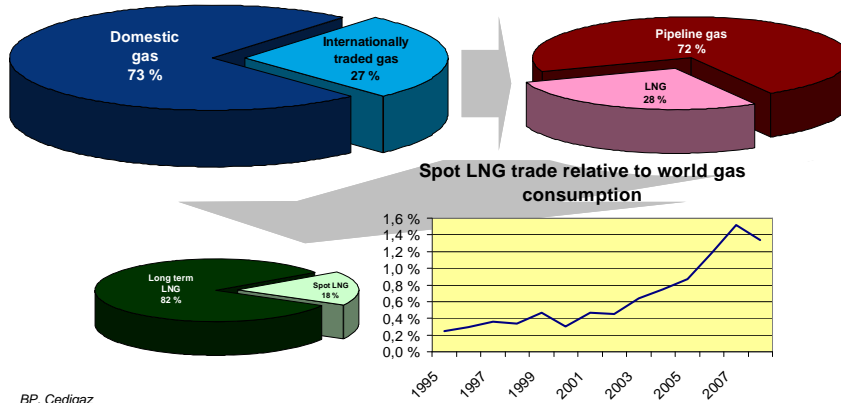


Spot includes deals up to 4 years

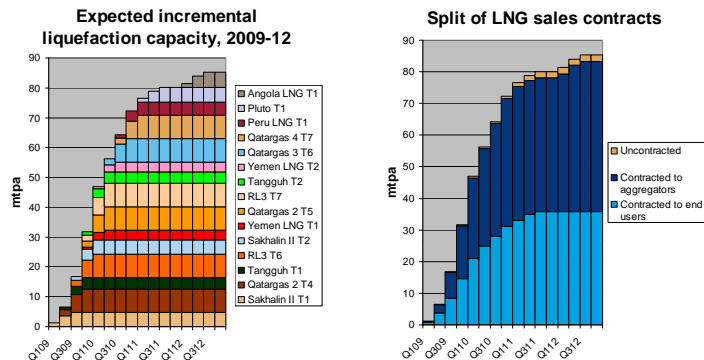
GIIGNL



## Spot/short term LNG still supplies a small share of total gas demand



## The supply of flexible LNG set to increase in the short term...



... but sustaining growth long term could be a challenge



## Summary – and issues for discussion

- Gas price paths have for decades been broadly similar across regions
- Interregional gas trade has to date played a minor part in driving correlation
- The US gas price level appears to have provided a floor to global gas spot gas prices in 2009
- Weak growth in gas demand and strong growth in flexible LNG supply the next few years could prolong this situation
- Longer term possibilities:

US markets	Tight	Different costs drive prices in different regions	Competition for flex LNG provides price link
	Loose	US price floors Asian, European spot prices	US price provides floor – but not effective
		Loose	Tight
		Asian, European markets	



Or what do you think?