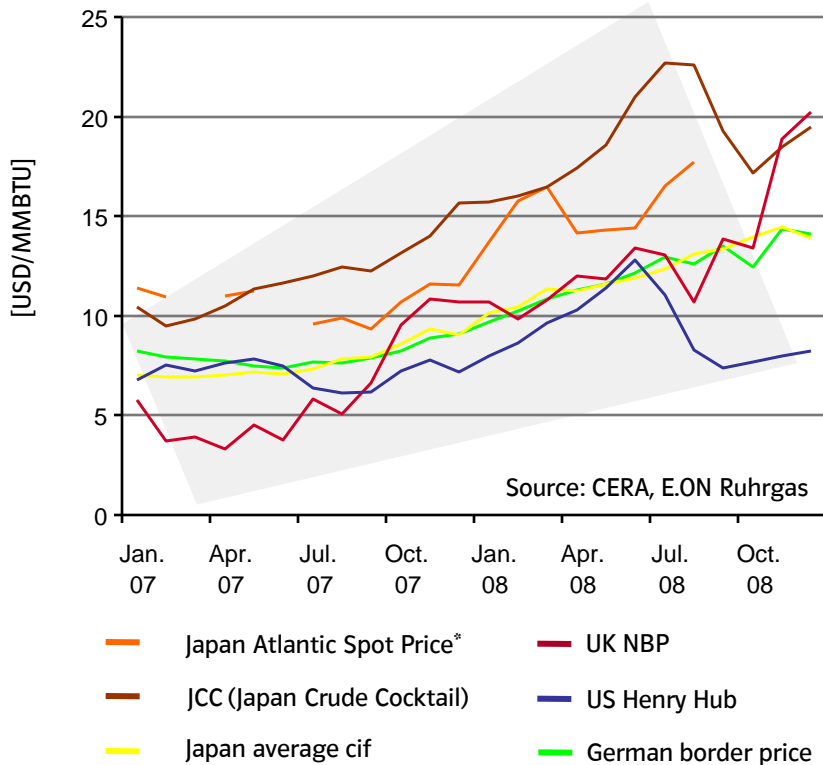# e·on | Ruhrgas

Natural gas going global – a realistic scenario or a chimera

Jochen Weise, E.ON Ruhrgas AG
Vienna, 24 November 2008

Today there are three large regional markets instead of one global market: North America, Europe, and Asia-Pacific

Gas prices and pricing concepts still differ between the regions

[USD/MMBTU]

25
20
15
10
5
0

Jan. 07 — Apr. 07 — Jul. 07 — Oct. 07 — Jan. 08 — Apr. 08 — Jul. 08 — Oct. 08

Source: CERA, E.ON Ruhrgas

— Japan Atlantic Spot Price*   — UK NBP
— JCC (Japan Crude Cocktail)   — US Henry Hub
— Japan average cif   — German border price

Interregional trade covers only 20% of world natural gas demand

Total world demand: ~3,000 bcm

LNG 200
Pipeline 240

2,500

inter-regional trade
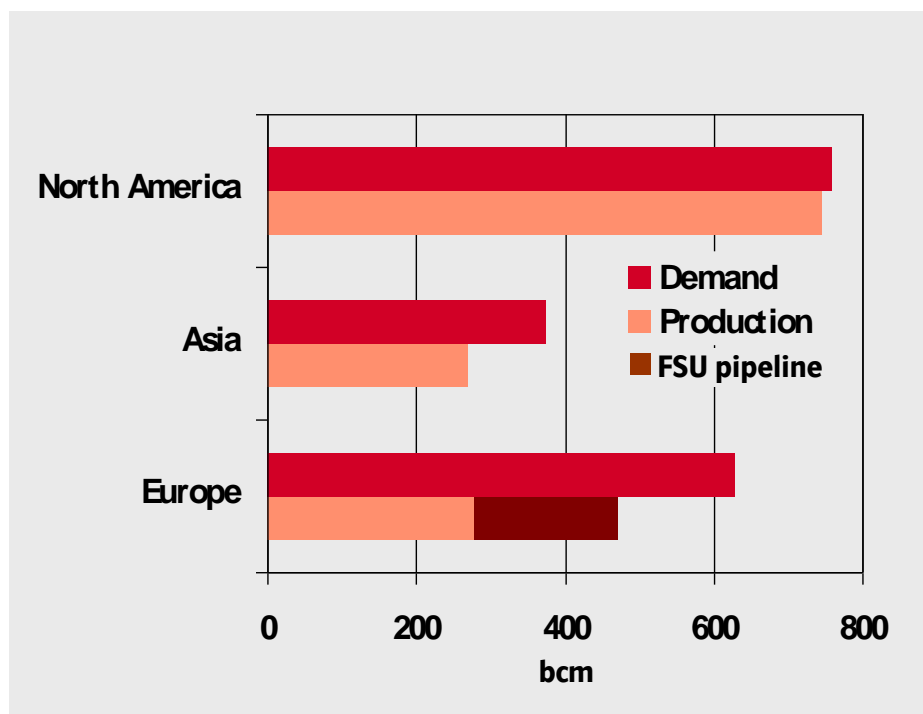
regional trade

Source: IEA 2008

2

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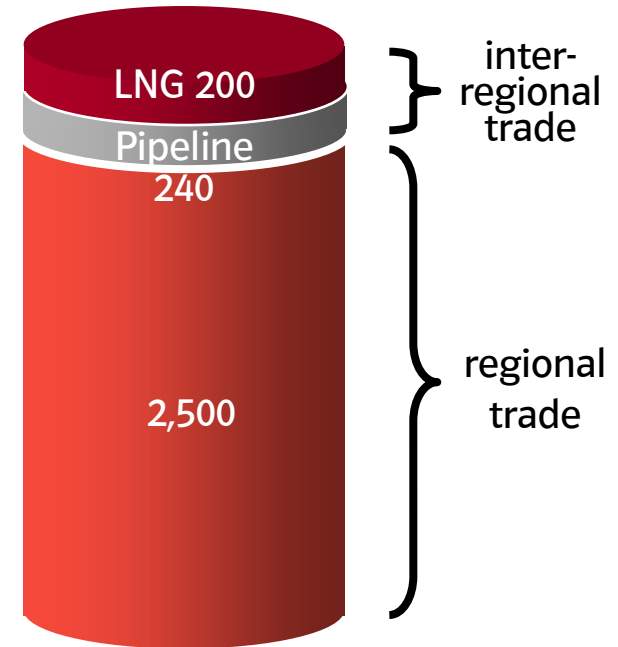
The prerequisites for a global gas market:
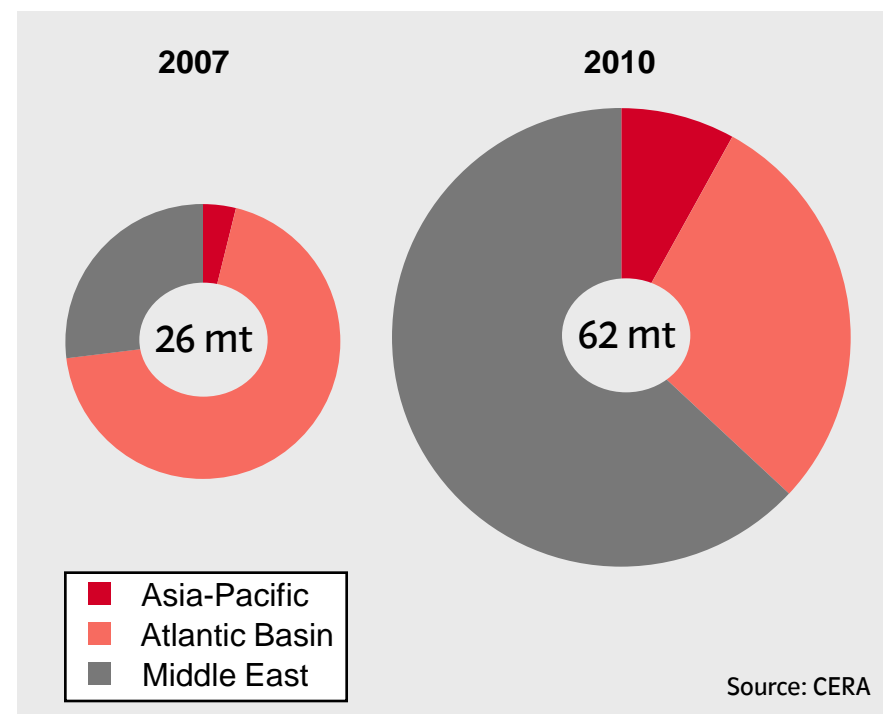## – It takes two to tango –

First, a growing import requirement in the main consuming regions and . . .

. . . second, a more flexible supply structure

Demand and intraregional supplies (2010)

- North America
- Asia
- Europe

Legend:
- Demand
- Production
- FSU pipeline

x-axis: 0, 200, 400, 600, 800 — bcm

Flexible LNG liquefaction capacities

2007 — 26 mt

2010 — 62 mt

Legend:
- Asia-Pacific
- Atlantic Basin
- Middle East

Source: CERA

3

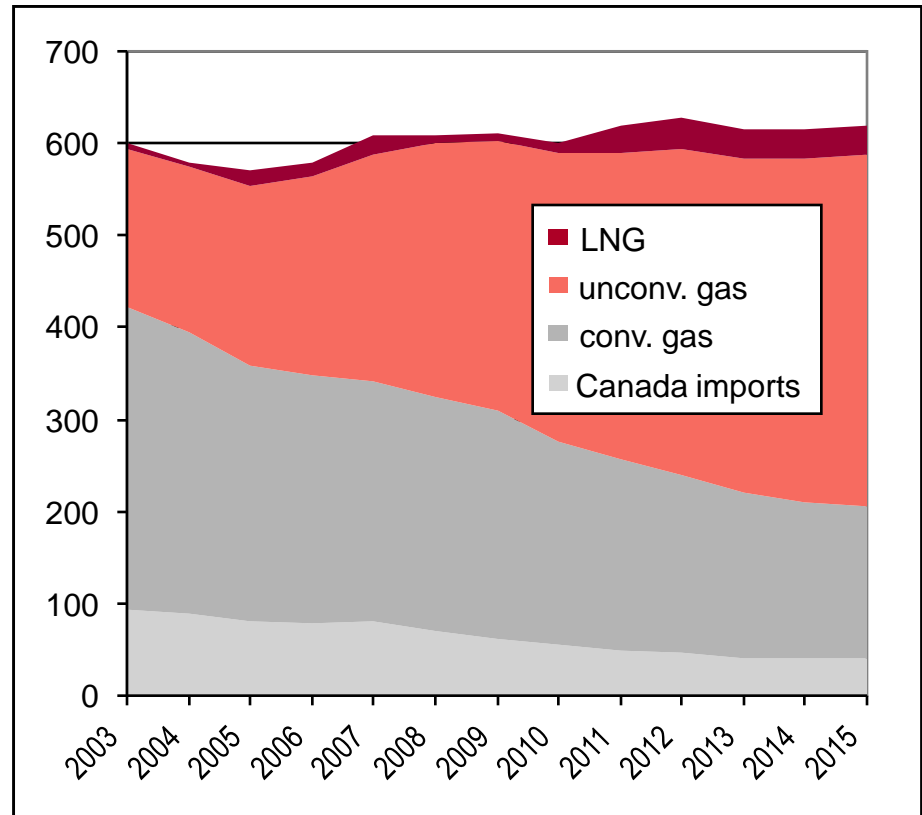# The increase in global liquefaction capacity by 35 per cent (approx. 60 mtpa) until 2010 in combination with ….

Global

Atlantic

Middle East

Pacific

Data: CERA

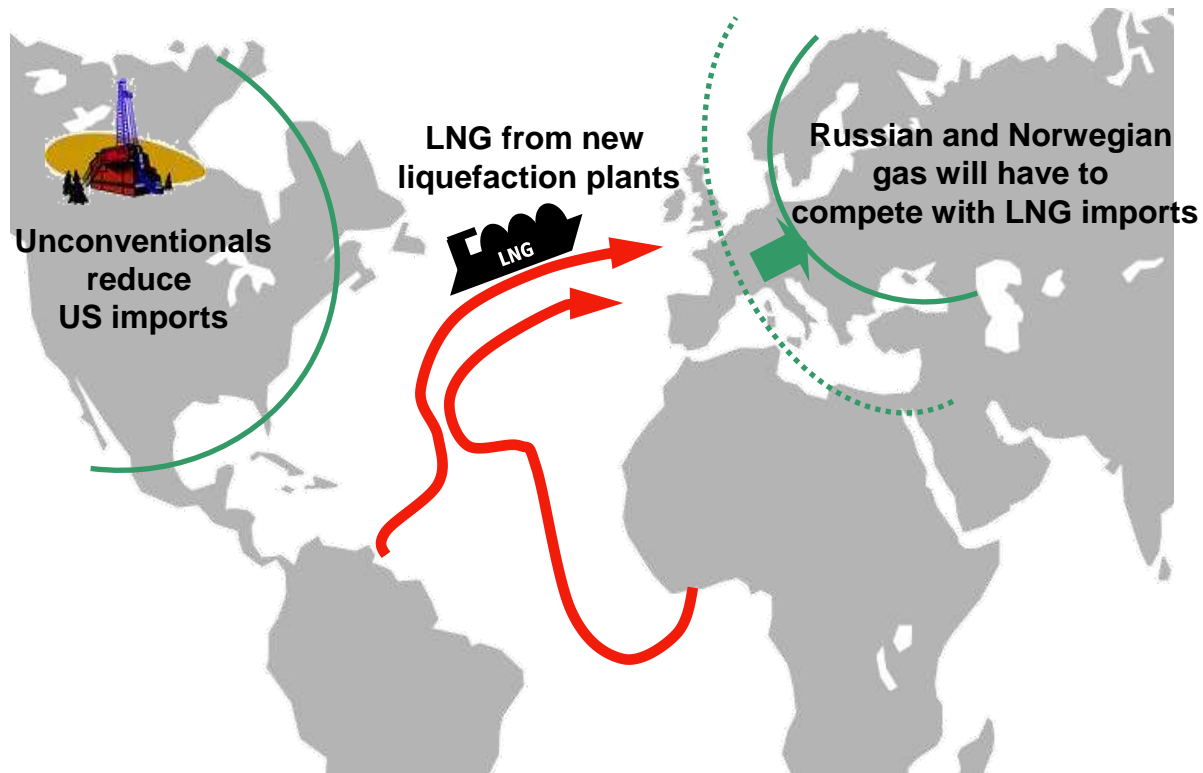# …the unconventional gas revolution causing a significant drop in projected US LNG imports will ….

Unforeseen development of unconventional gas in recent years representing more than half of US production

→ Significant revision of LNG import requirements over the next decade

→ Decoupling of price levels in the US from European and Asian price level

US supply portfolio [bcm]

Legend:
- LNG
- unconv. gas
- conv. gas
- Canada imports

… challenge traditional supply patterns in North West Europe

Unconventionals reduce US imports

LNG from new liquefaction plants

LNG

Russian and Norwegian gas will have to compete with LNG imports

North West European regasification capacity increasing from 32 to 75 bcm/a by 2010, 25 bcm/a of which in the UK

Interconnector capacity: 20 bcm/a of physical forward flow from the UK to the Continent

Oil-indexed long-term contract prices coming under pressure

The financial crisis and the significant drop in energy prices might postpone projects and, hence, gas globalisation

Price/volume effects

- Temporary oversupply, with consequent downward pressure on prices
- Gas prices will be affected by the marginal cost of production of non-conventional gas resources in the US currently estimated at $ 7/mmbtu
- Price trend more in line with fundamental drivers
- Price drop will influence the balance between export volumes and subsidized local sales in some producing countries

Strategic decisions

- Projects still at an early stage might be cancelled or postponed.
  - → Supply tensions in the medium to long term
- The revival of oil-indexed long-term contracts
  - → enables up-front financing and helps manage risks in infrastructure projects
- "Cash is king" – Companies with a strong cash flow might benefit from the turmoil:
  - → increase in M&A activities to be expected

Large utilities like E.ON are well suited to mitigating enhanced risks through collaboration along the whole energy value chain
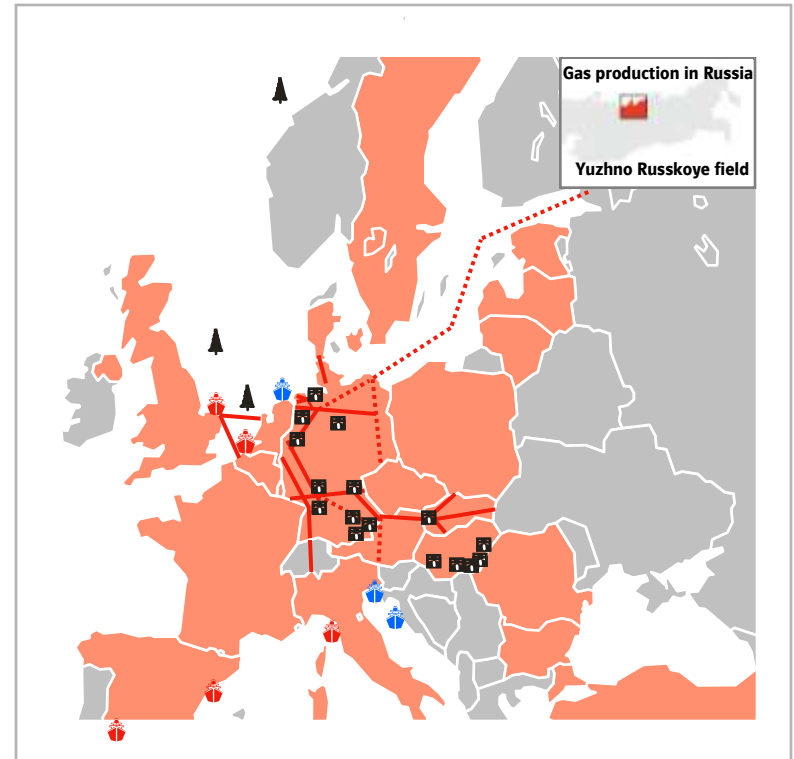
E.ON's supply strategy is based on three pillars: Long-term contracts for piped gas (LTCs), LNG, E&P

Large **e.on** demand throughout Europe

Significant optimisation potential derived from regas portfolio, LTCs, transport, and storage capacities and cross-commodity trading (E.ON Energy Trading)

Integrated E.ON value proposition (E&P, LNG, Gas Midstream, Power, Renewables) can contribute to solving domestic energy challenges in producing countries

Proven track record in collaborating along the whole energy value chain

Gas production in Russia

Yuzhno Russkoye field

- E.ON LNG terminal capacities
- E.ON LNG terminal projects
- E.ON gas field production/development
- Pipelines / Pipeline projects
- E.ON gas storage facilities

Summary – There has been significant progress towards a global gas market, however, the way forward is bumpy and may reduce speed

Global gas demand to increase further – need for additional imports will rise

The share of flexible LNG will grow significantly; enhanced intra-regional connectivity will also support flexible volume flows

The growth of unconventional gas in the US will substantially reduce US import needs

The current financial crisis puts a spoke in the wheel of globalisation

A global gas market may develop differently than previously expected as the link between European and Asian gas markets seems to be stronger than the traditional transatlantic connection

Natural gas going global –
a realistic scenario or a chimera?

Chimera*: [Greek mythology]*

a fire-breathing monster with the head of a lion, body of a goat, and tail of a serpent