

# European Gas Markets

Globalisation; Commoditisation; Demand Destruction

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GDF Suez – Brussels, 8 February 2012

# EPRG, University of Cambridge

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Economic & social science research in energy markets & policy –  
*electricity, gas and carbon.*

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# Main messages

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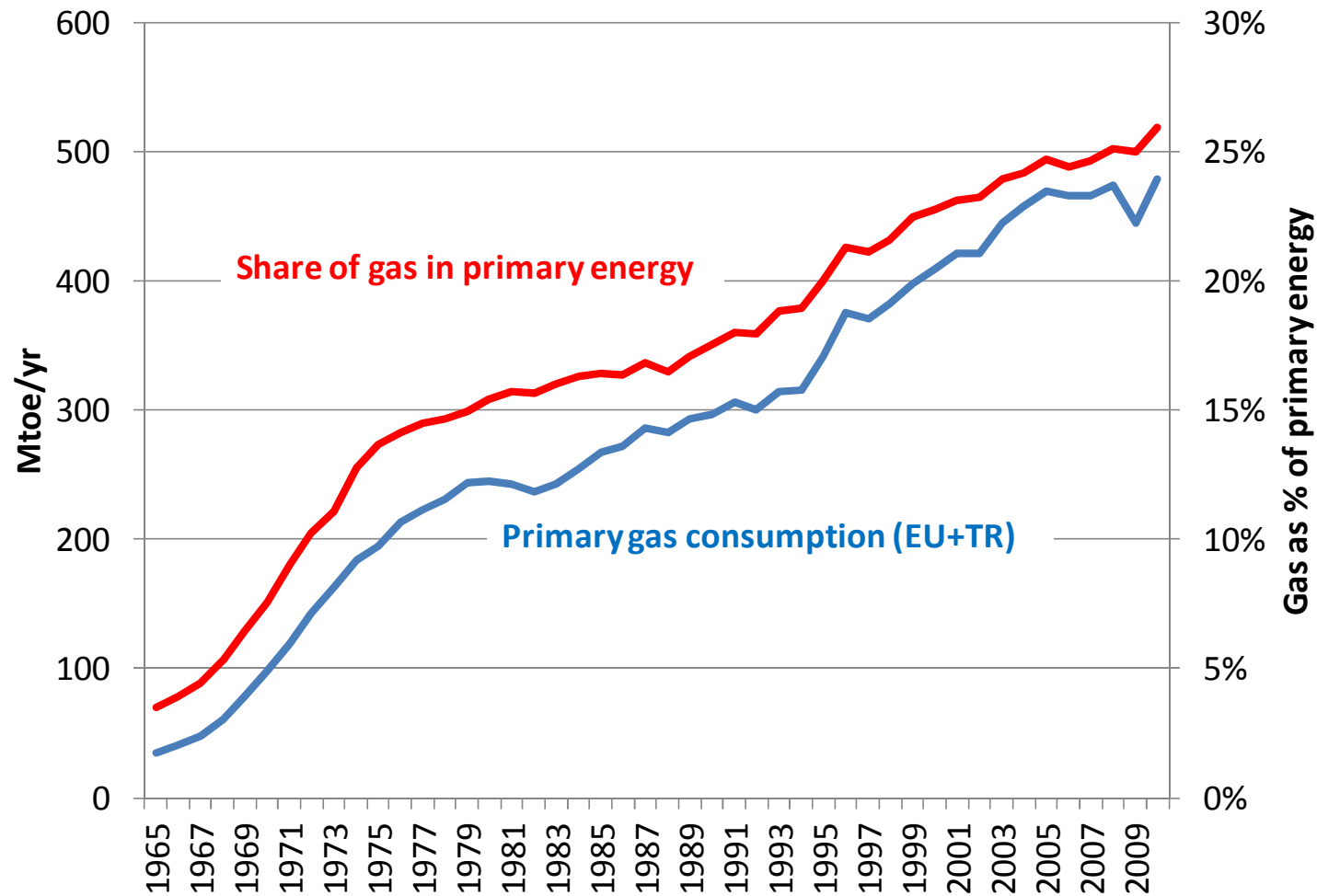
- The gasification of Europe (1965-2005) has been remarkable – but everything is changing
- LNG is making Europe part of a global gas “system”
- Market forces should create a Eurasian gas market – price convergence between NWE and Asian spot price
- Market forces should then re-integrate North America into the global market – *putting long-term pressure on the Euro-Asia price*
- Gas demand in Europe is declining at an accelerated pace, thanks to high prices & renewables policy

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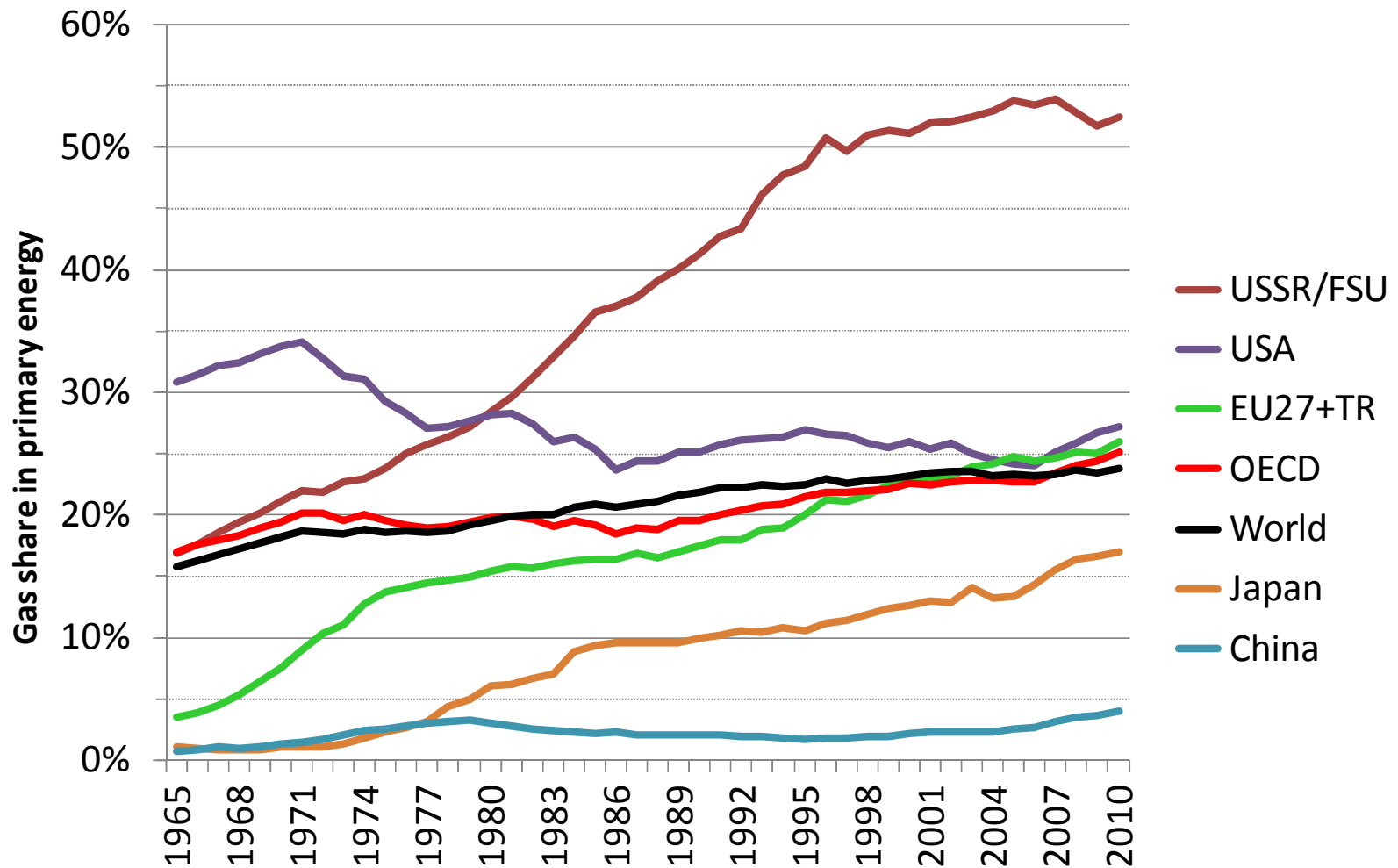
1. The 'gasification' of Europe in perspective
2. Globalisation and security of supply
3. Commoditisation of European gas
3. Demand destruction
4. A 'golden age' for gas?

# 1960s-2000s – The Gasification of Europe



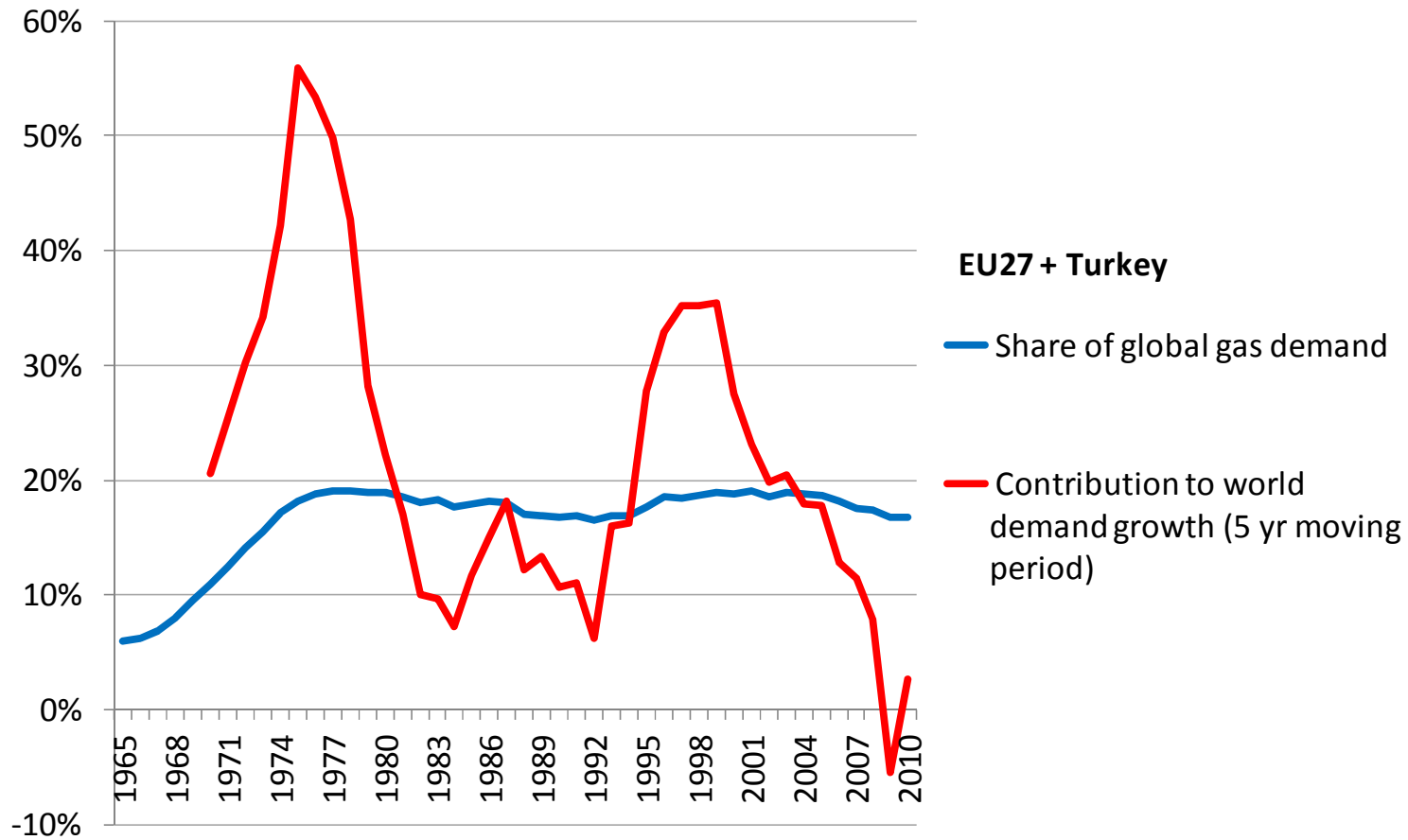
Source: BP Statistical Review (2011)

# Europe caught up with World, OECD, US



Source: BP Statistical Review (2011)

# Europe in global gas consumption



Source: BP Statistical Review (2011)

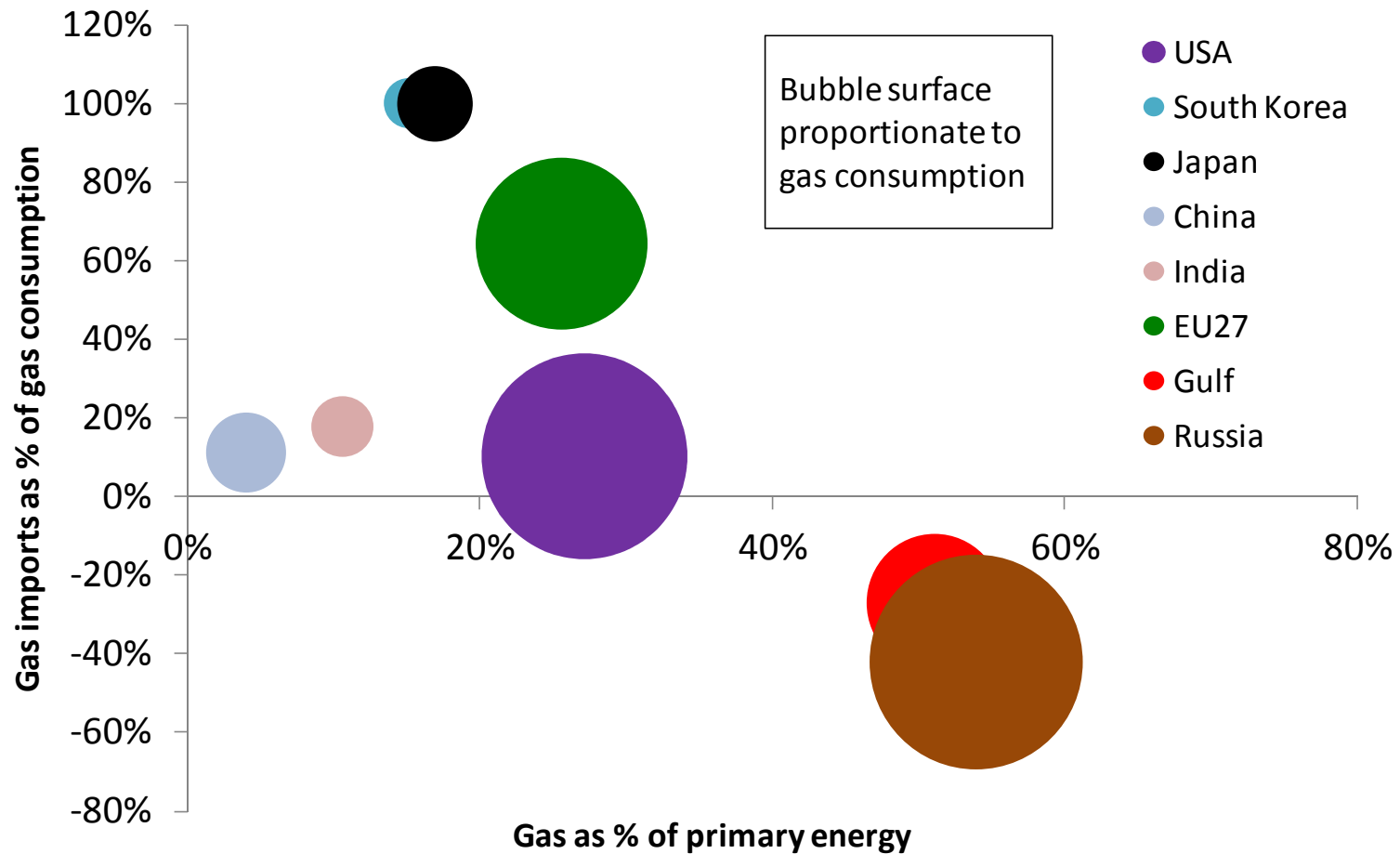
# Cumulative energy, 1970-2010

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<b>EU27 Gas Consumption</b>	<b>12.4 Gtoe</b>
EU27 Nuclear Consumption	5.8 Gtoe
EU27 oil consumption	28.3 Gtoe
EU27 hydro consumption	2.8 Gtoe
Saudi oil exports	14 Gtoe
US oil imports	16.2 Gtoe



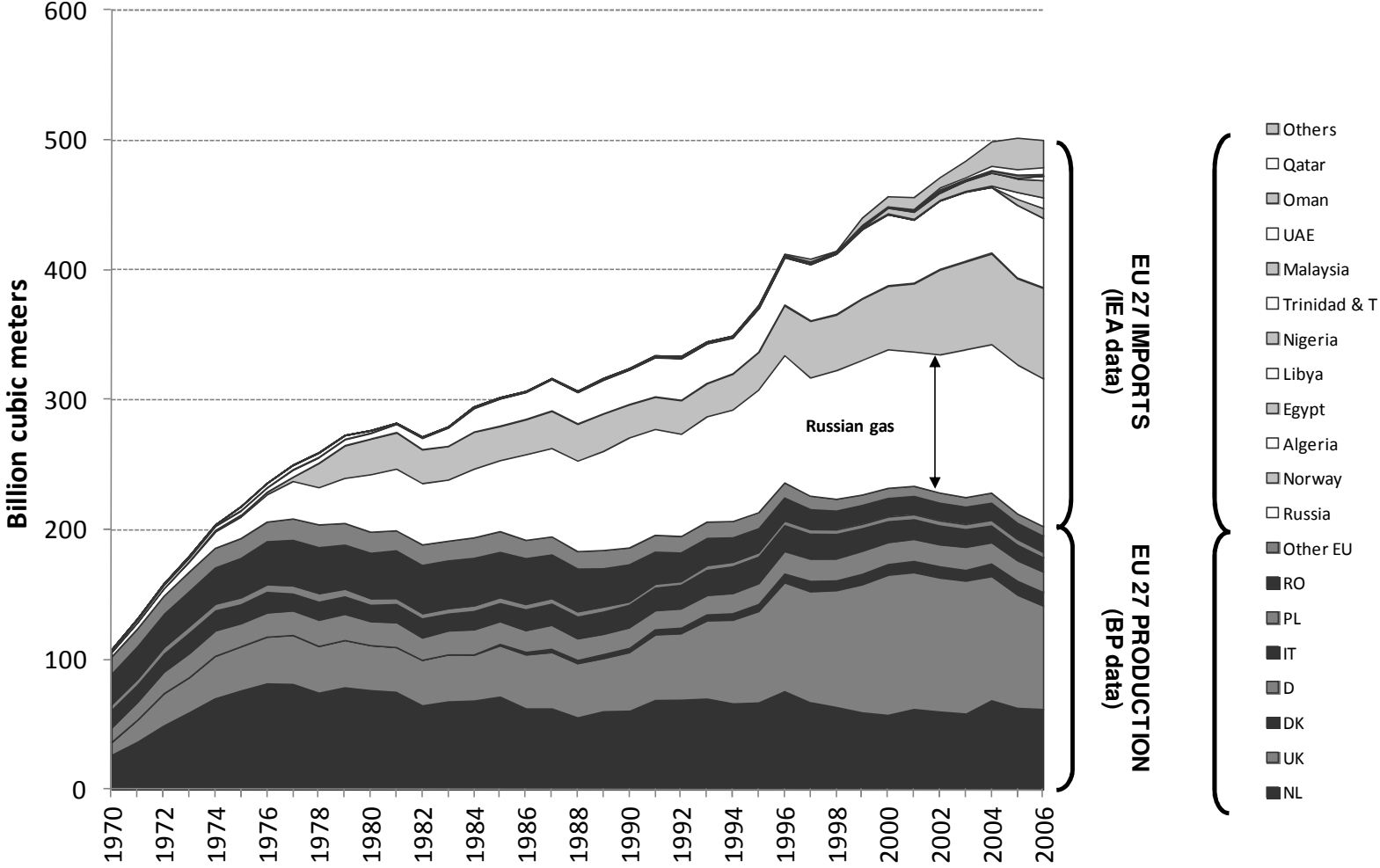
# Europe 'gasified' through imports



Figures for 2010

Source: BP Statistical Review (2011)

# Since 1975, 100% of growth covered by imports



Sources: International Energy Agency; BP Statistical Review of World Energy

# Europe imports half of world traded gas

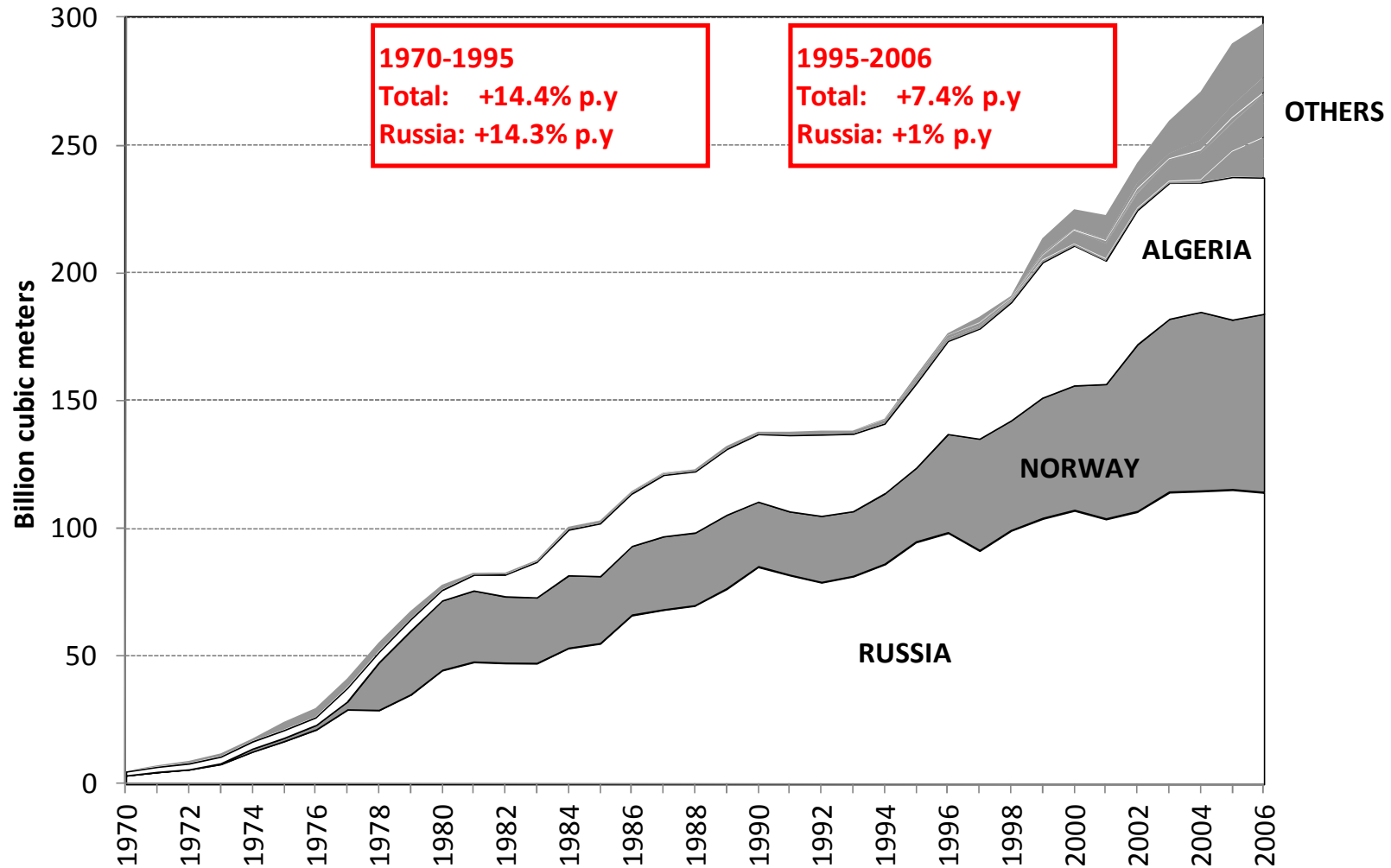
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	<b>EU27+TK Gas Imports</b>	<b>% of world trade</b>
<b>1970</b>	6.4 Mtoe	29%
<b>1980</b>	67 Mtoe	57%
<b>1990</b>	130 Mtoe	56%
<b>2000</b>	200 Mtoe	46%
<b>2010</b>	321 Mtoe	51%

Excl. intra-FSU & intra-EU trade.

Source: BP Statistical Review

# A regional gas supply system



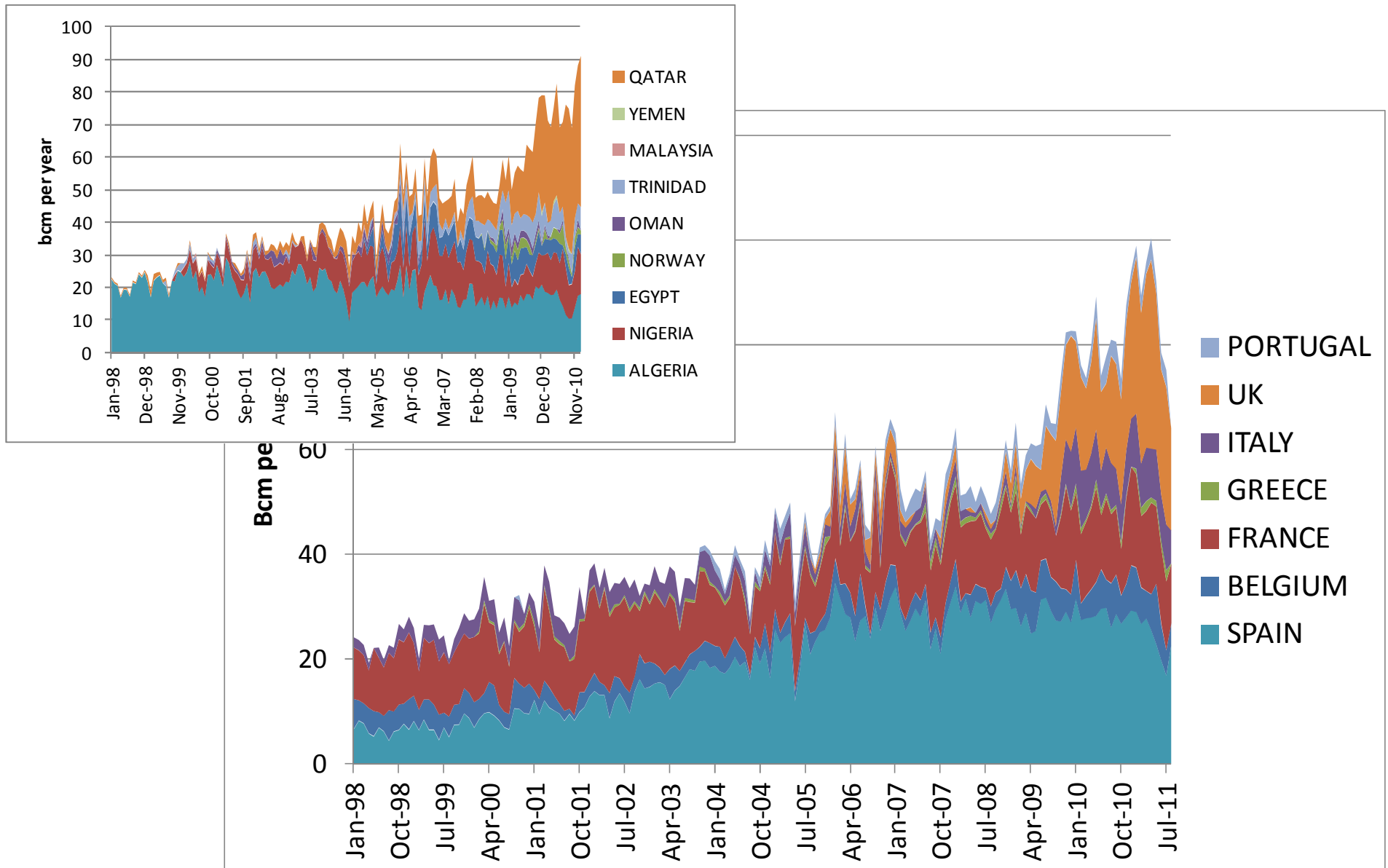
Data sources: International Energy Agency; BP Statistical Review of World Energy

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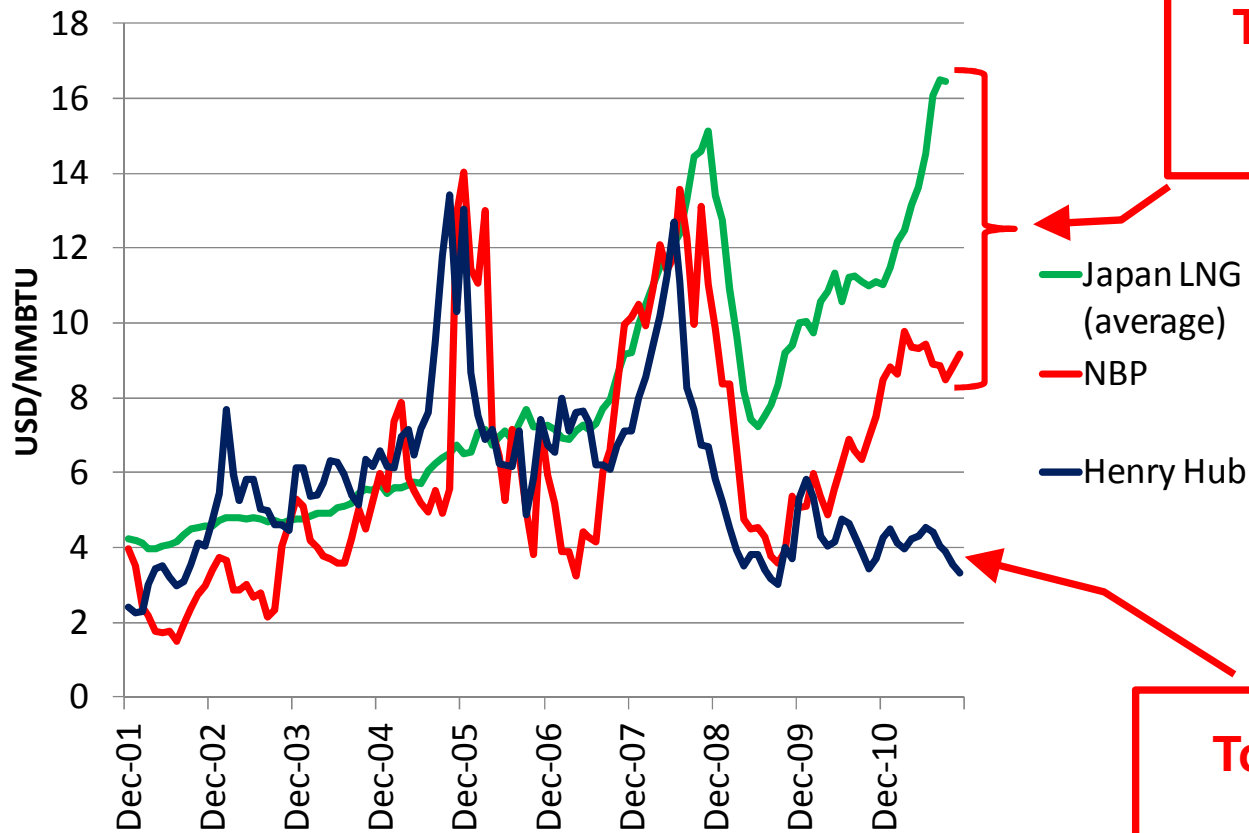
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# A wave of (Qatari) LNG hits Europe (via UK)



# De-globalisation?

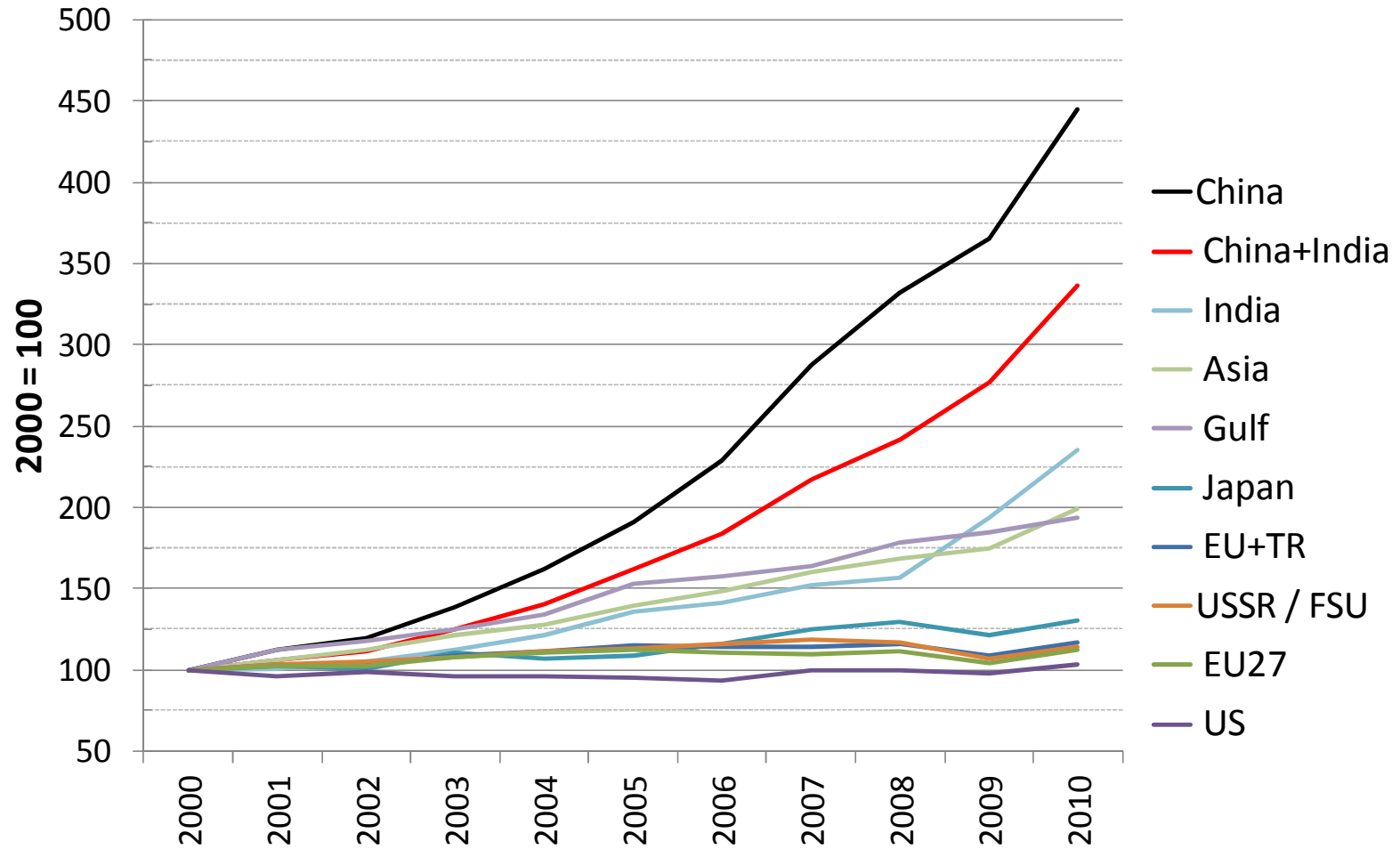


Source: Bloomberg

**Towards a Euro-Asia spot price convergence?**

**Towards North American exports – and re-globalisation?**

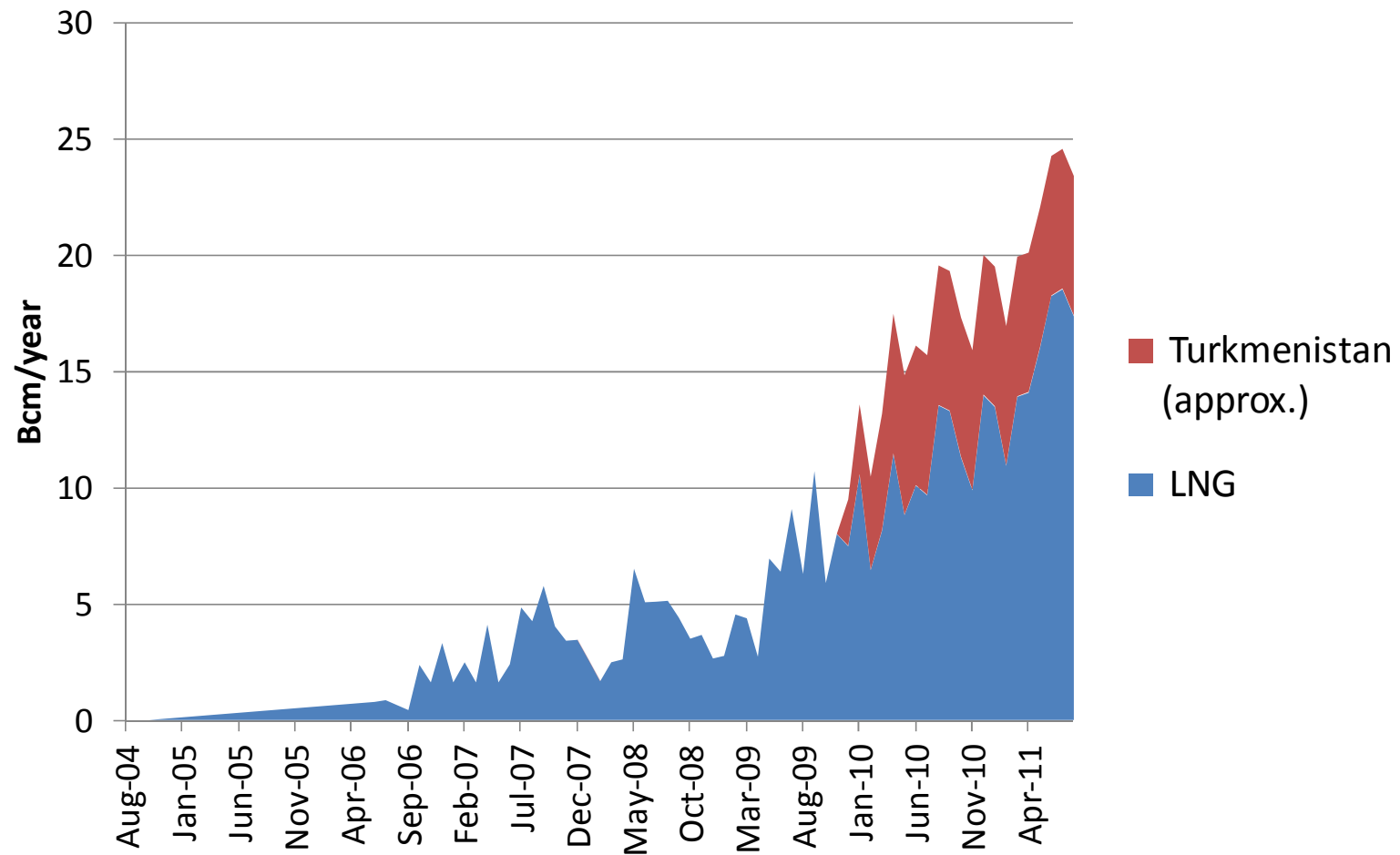
# Strong demand growth from Asia + Gulf



Source: BP Statistical Review (2011)



# Booming Chinese gas imports



# Asian imports rise fast

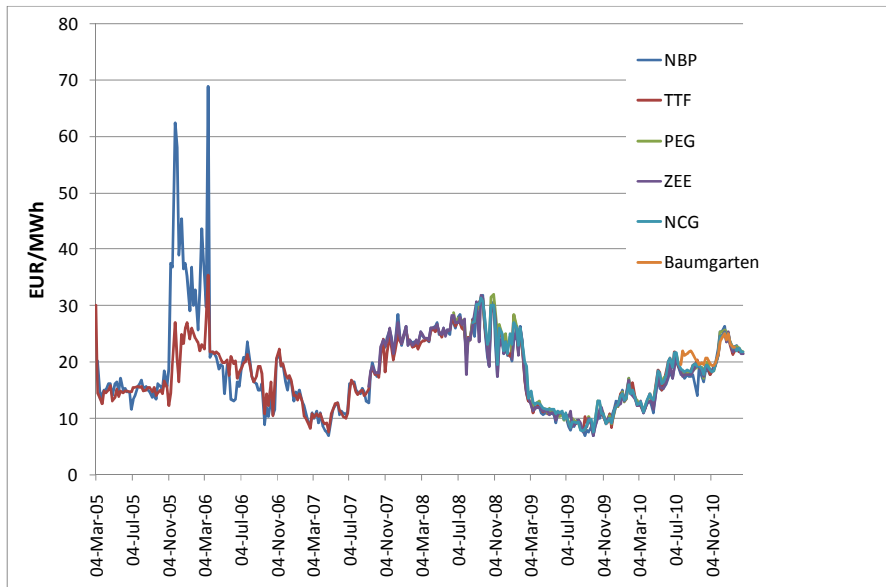
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	Asian gas imports (gross)	% of world trade
<b>1970</b>	4 Mtoe	17%
<b>1980</b>	25 Mtoe	21%
<b>1990</b>	52 Mtoe	22%
<b>2000</b>	99 Mtoe	23%
<b>2010</b>	183 Mtoe	29%

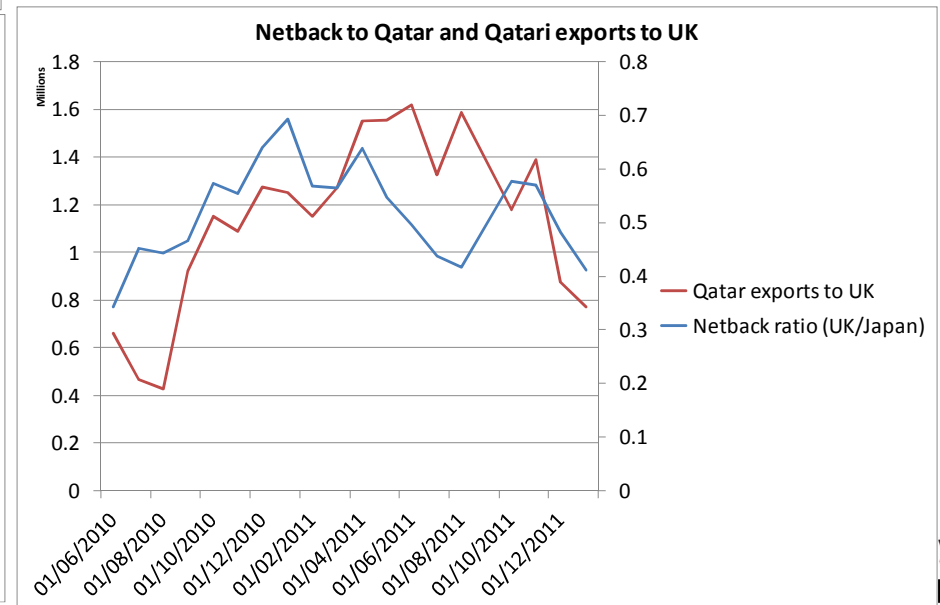
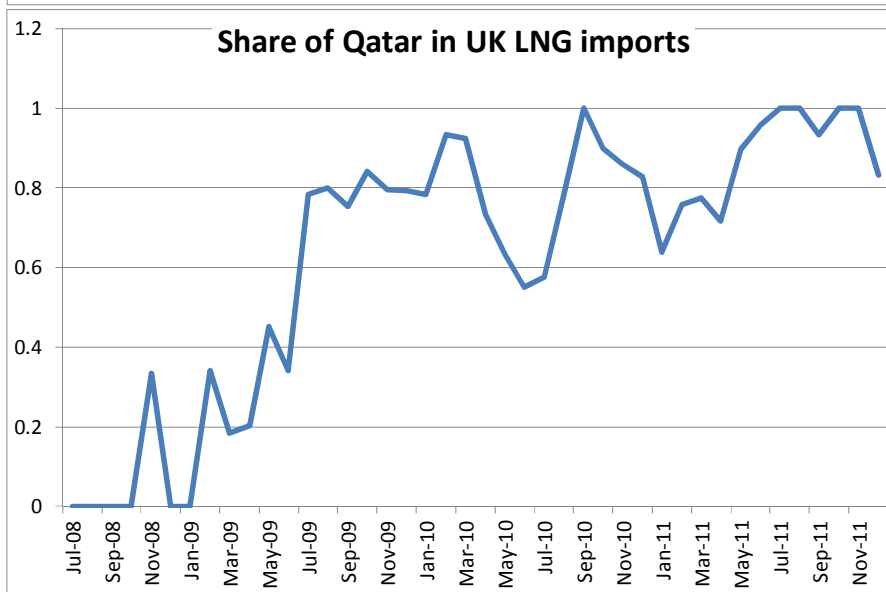
Excl. intra-FSU & intra-EU trade.

Source: BP Statistical Review

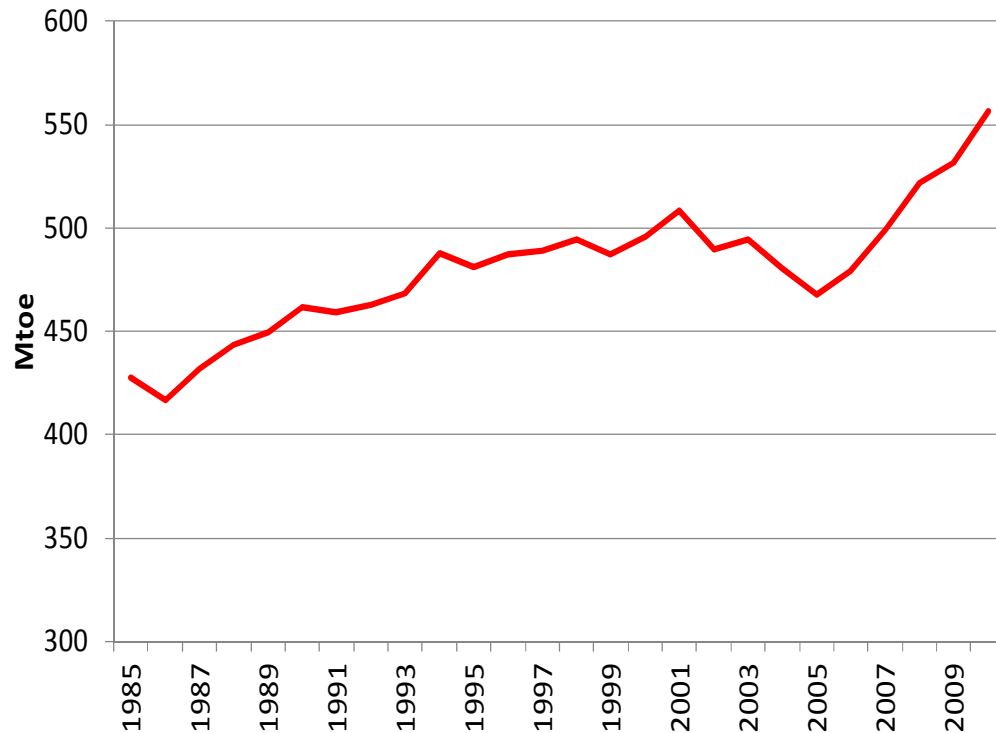
# Towards Euro-Asia price convergence?



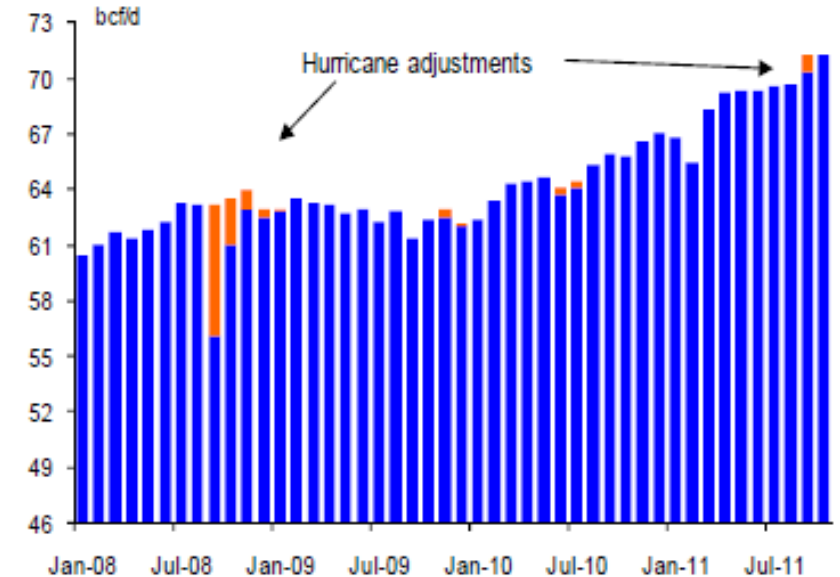
- Asian demand is soaring, wiping out the LNG glut
- Non contracted LNG (from Qatar) is dwindling
- UK should pay Asian spot prices for its cargoes
- **Convergence at Asian oil-indexed levels?**



# US gas supply: reversing the peak

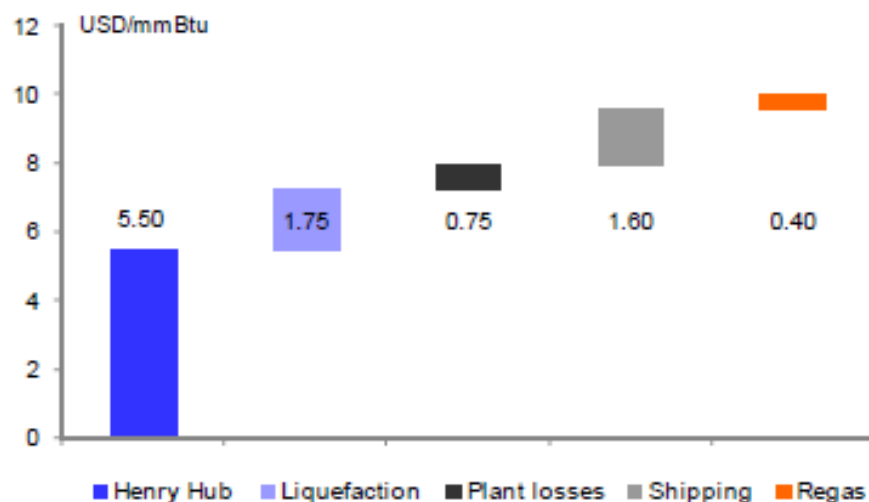


Source: BP Statistical Review (2011)



Source: US DOE/EIA, Deutsche Bank

# Towards massive American exports?



- 90bcm+ projects
- 22bcm contracted (Sabine)
- Kitimat FID imminent
- Long-term pressure on Euro-Asian price?

**Figure 2: US LNG export economics to Asia**

Pricing element	Cost (\$/mmbtu)
Henry Hub Jan-15	\$5.40
15% + \$2.25	\$3.06
<b>FOB Cost</b>	<b>\$8.46</b>
Vessel charter	\$0.83
Fuel	\$1.06
Boiloff	\$0.16
Panama Canal crossing	\$0.07
Regasification terminal tariff	\$0.35
<b>Delivered Cost</b>	<b>\$10.92</b>
Japan LNG Contract (Forward curve)	\$13.02
Japan LNG Contract (DB forecast)	\$14.75

Source: Bloomberg Finance LP, Deutsche Bank

**Figure 3: US LNG export economics to Europe**

Pricing element	Cost (\$/mmbtu)
Henry Hub Jan-15	\$5.40
15% + \$2.25	\$3.06
<b>FOB Cost</b>	<b>\$8.46</b>
Vessel charter	\$0.35
Fuel	\$0.44
Boiloff	\$0.07
Regasification terminal tariff	\$0.35
<b>Delivered Cost</b>	<b>\$9.67</b>
NBP Cal-14 (Forward curve)	\$11.03
NBP Cal-14 (DB forecast)	\$15.00

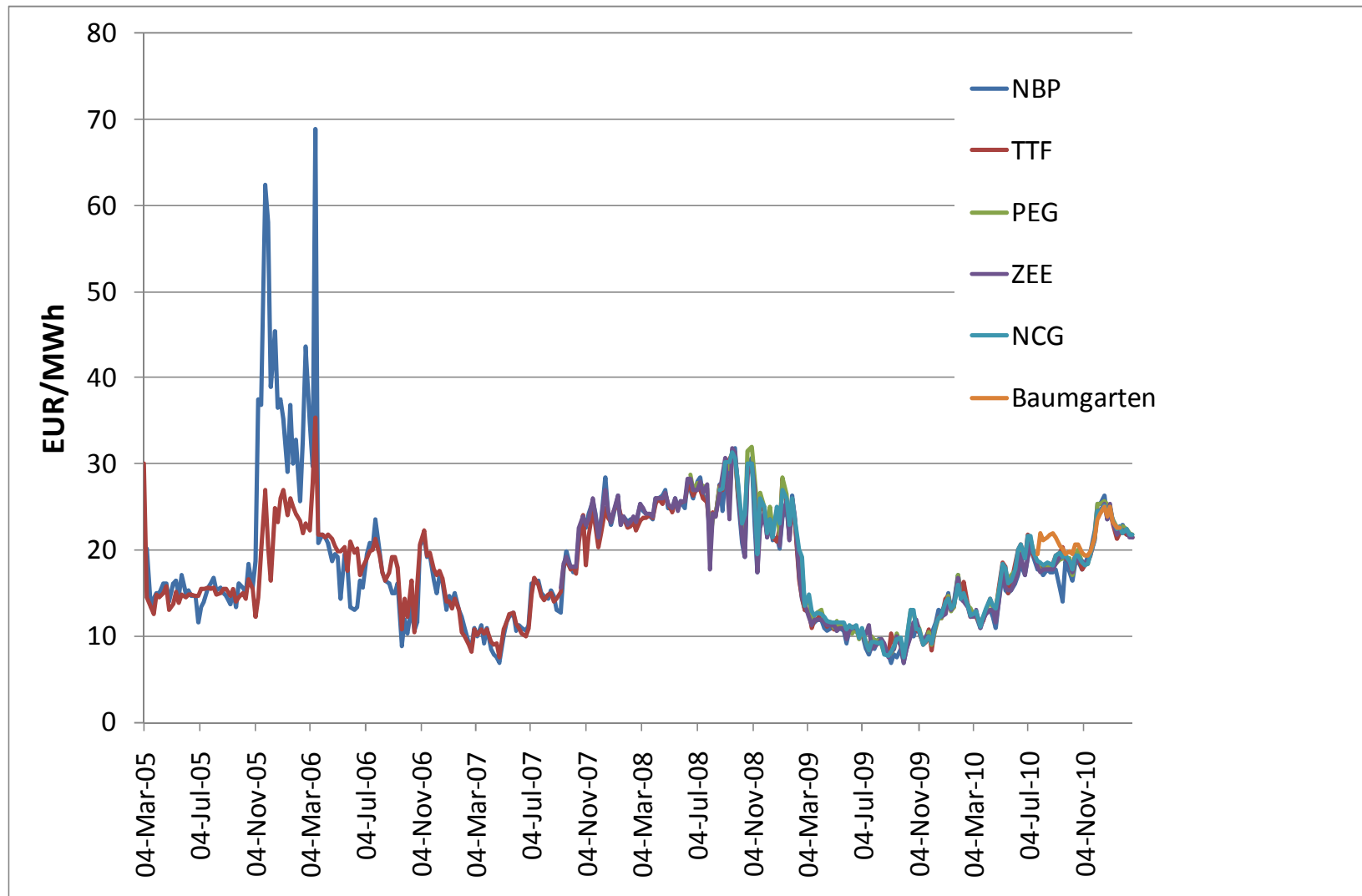
Source: Bloomberg Finance LP, Deutsche Bank

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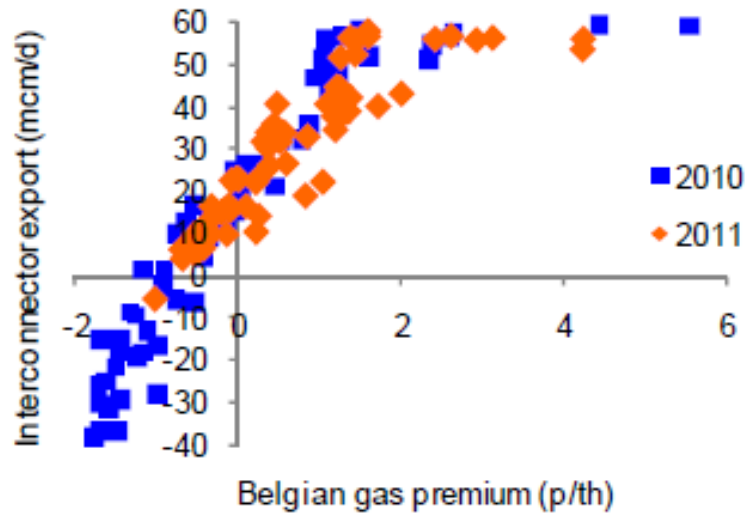
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# Single North-West European spot price

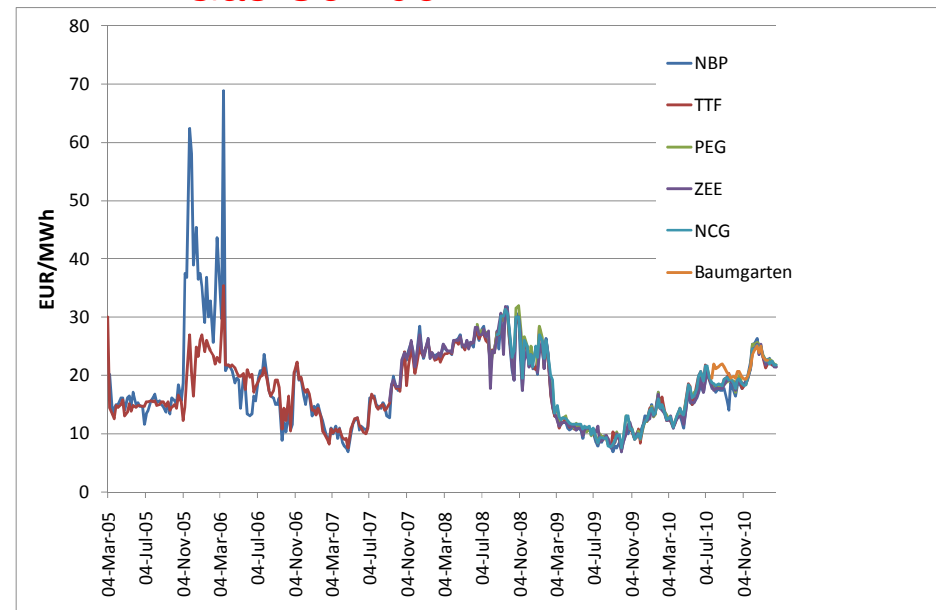
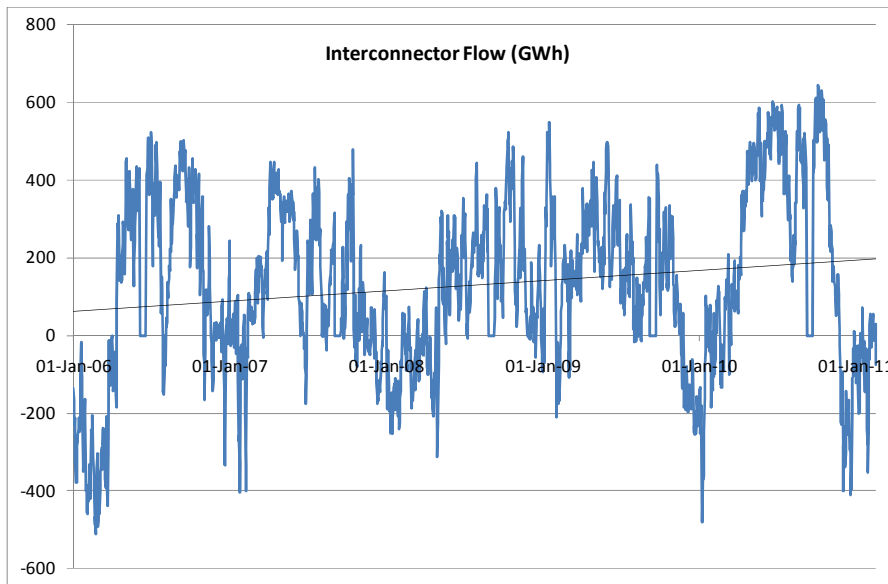


# North West Europe = one large market



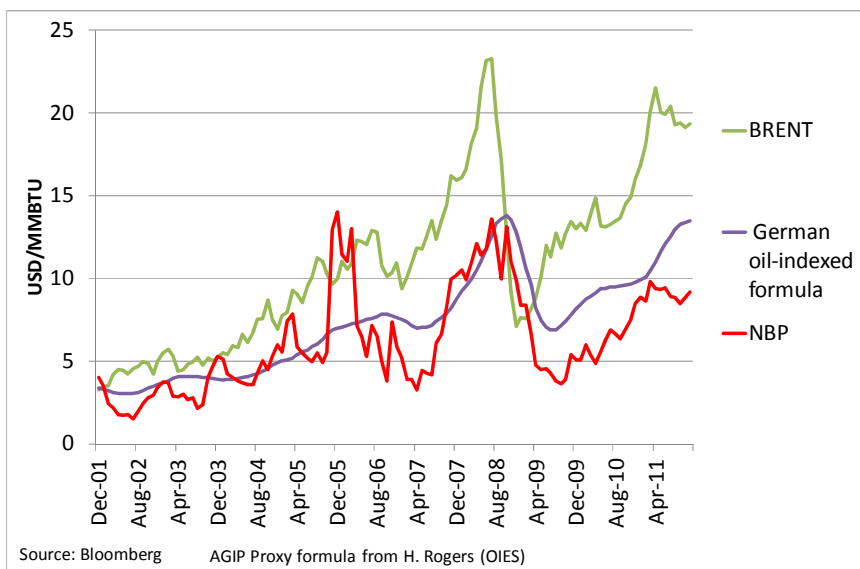
- Efficient arbitrages between NBP and ZEE
- More effective TPA in continental markets (NL; BE; FR; DE)
- Less “contractual congestion” (DG COMP action)
- **UK now Europe’s Western Gas Corridor**

Source: Interconnector UK, Deutsche Bank

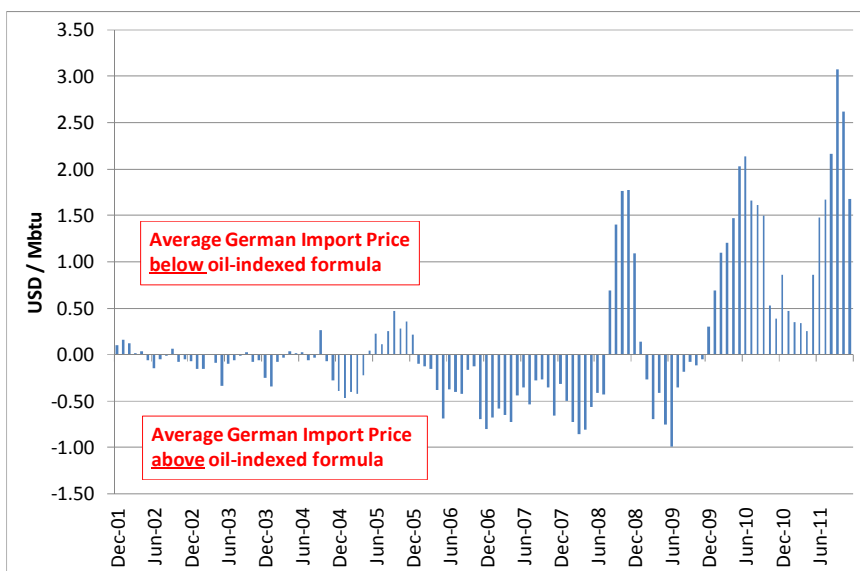




# Commoditisation vs. LT contracts



- Spot-priced gas available to consumers in NW Europe
- Oil-indexation gradually vanishing
- Investment in NWE (Gate; Dunkirk; storage) made with NWE market in mind – *including NBP*
- Overcapacity and premium to flexibility -- *'option to serve'*

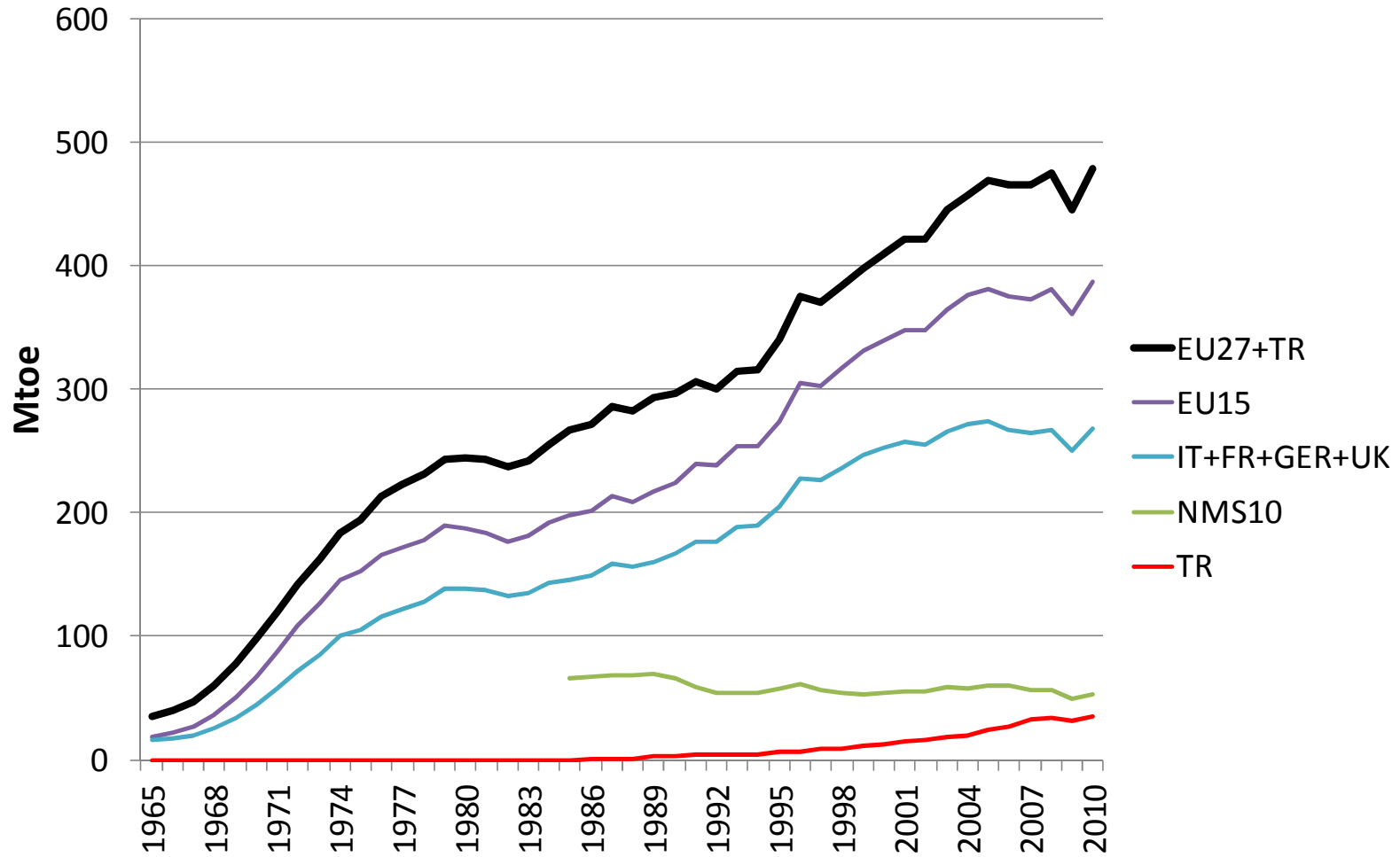


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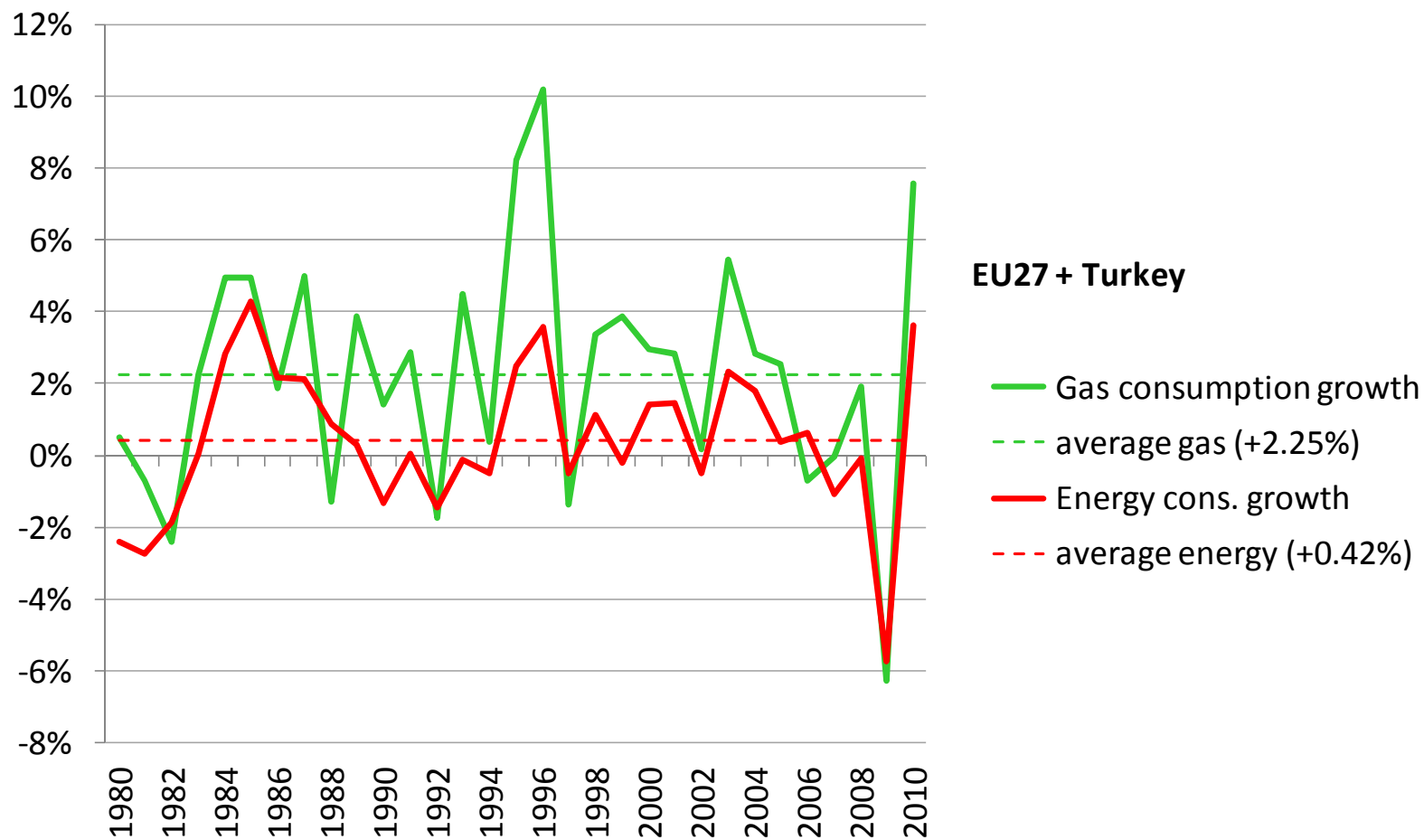
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# EU: gas demand peaked in 2005



Source: BP Statistical Review (2011)

# ...even with gas still displacing other fuels



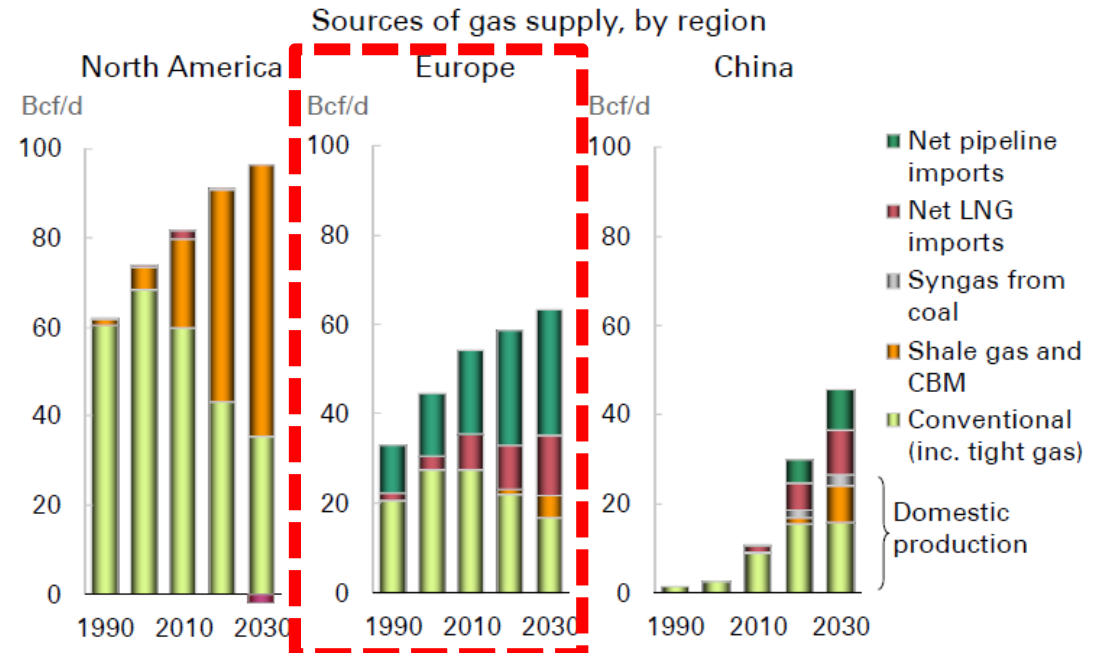
Source: BP Statistical Review (2011)

# IEA & BP (and others) – growth will resume

## 2010-2030

- Consumption up by 100bcm
  - Idem IEA 'Golden Age'
- Conv. prod. down by 100bcm
  - IEA 'Golden Age': -70bcm
- About 40bcm shale+CBM
- Imports up by 160bcm
  - IEA 'Golden Age': 140bcm
- Pipeline imports grow nearly as quickly as LNG imports
- Power is key to demand growth – mainly through fuel substitution

Unconventional gas will play a growing role...

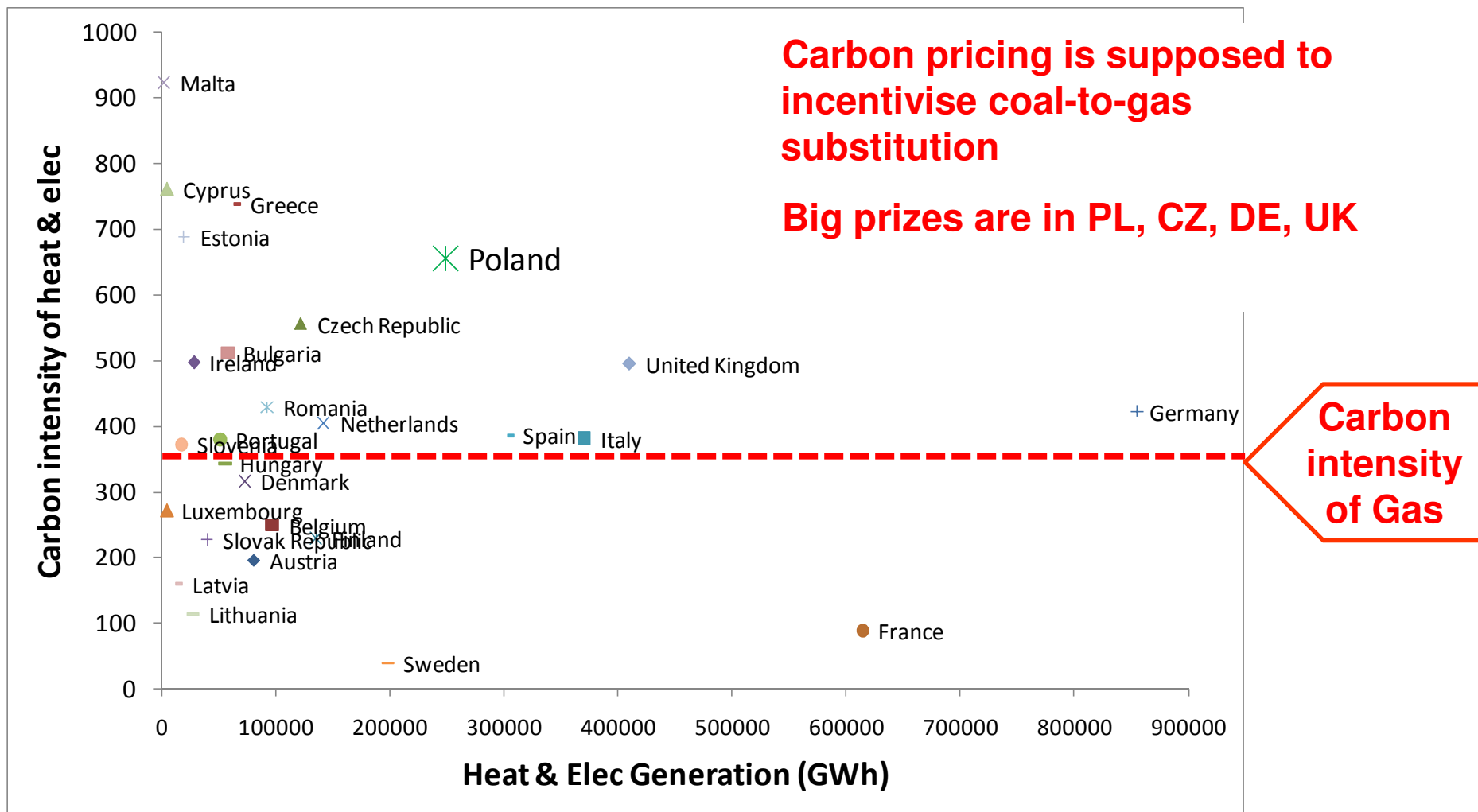


Energy Outlook 2030

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# The case for fuel substitution



IEA data

# But policy works against gas

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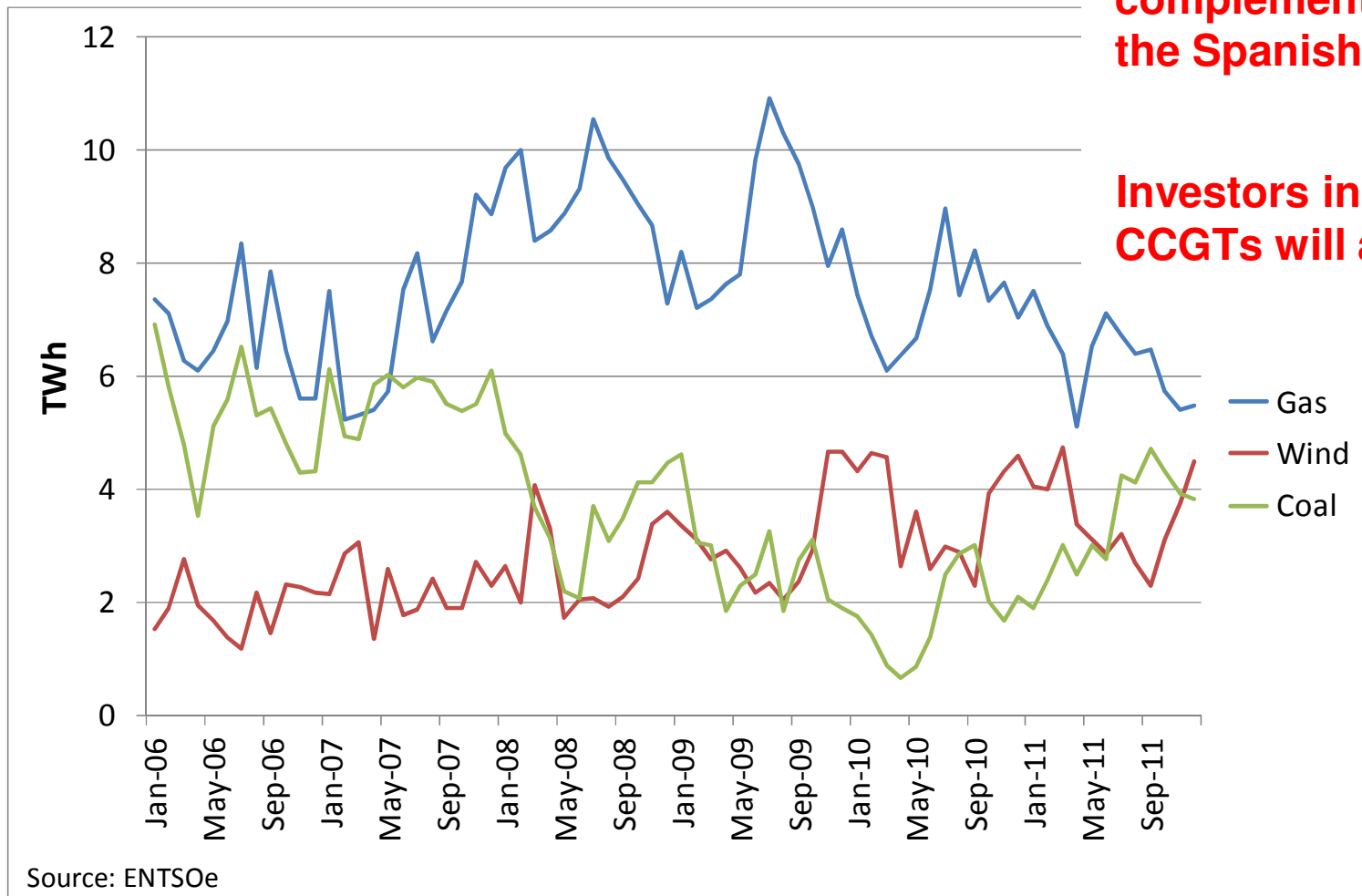
- Questioning the gas-for-CO2-reduction story
  - Inter-fuel competition is heavily “managed” in Europe
  - EU has effectively abandoned its climate policy in favour of a renewables policy – *not the same at all*
  - Coal is protected by low carbon price & subsidies
  - Gas may be the big loser -- Cf Spain

# Spain: wind and coal displace gas

**“It is nice how gas complements wind in the Spanish market”**

**-- EC official**

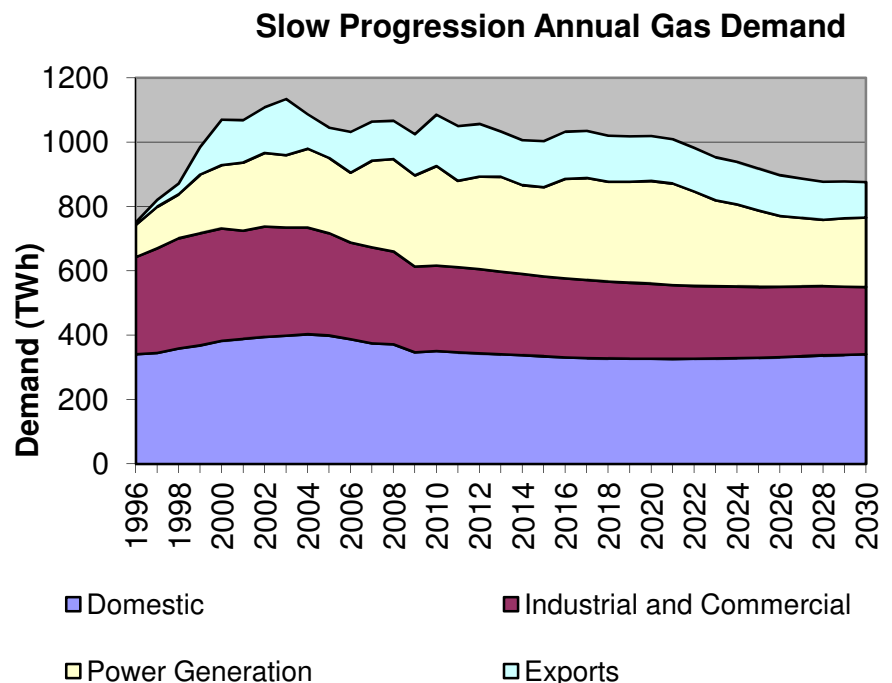
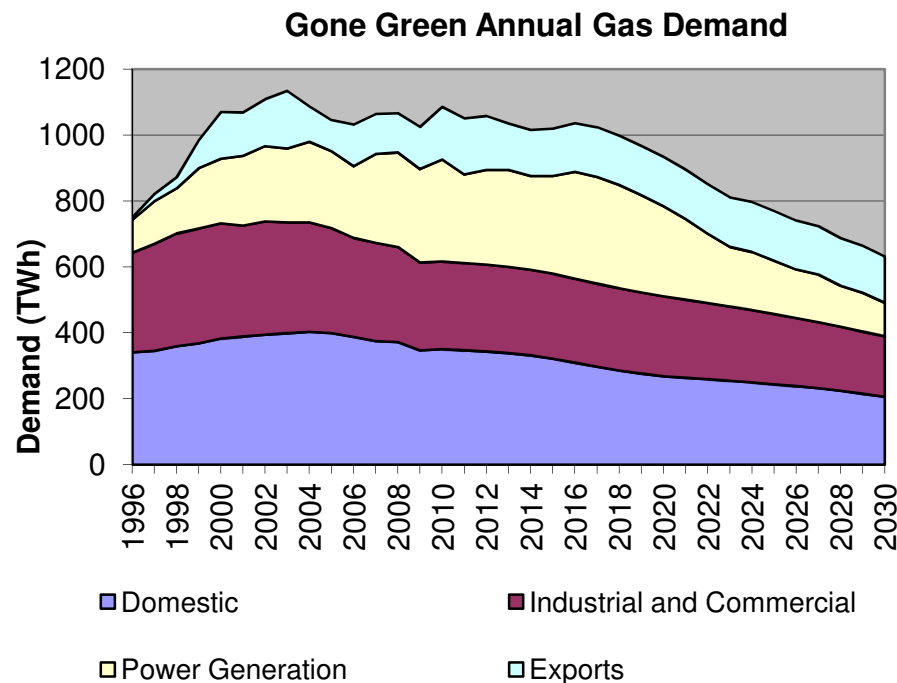
**Investors in stranded CCGTs will appreciate...**





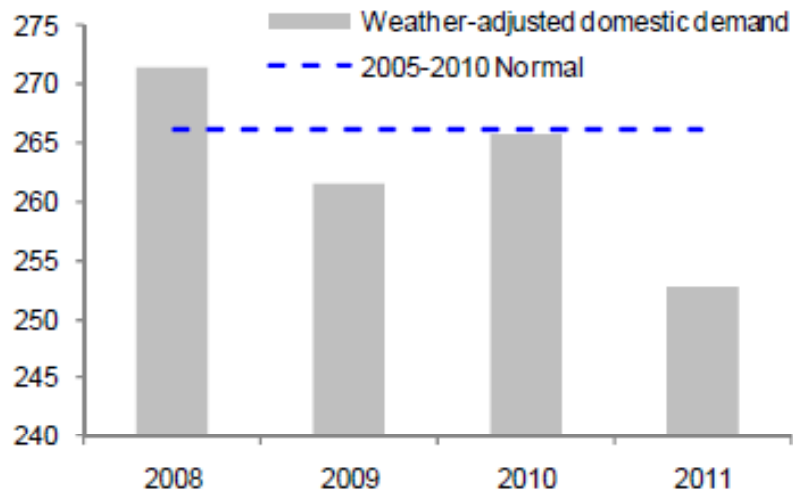
# Even in the UK

- Decline in residential (efficiency) & industrial
- Long-term subsidy contracts to renewables + nuclear
- Gas demand slowly declining, at best

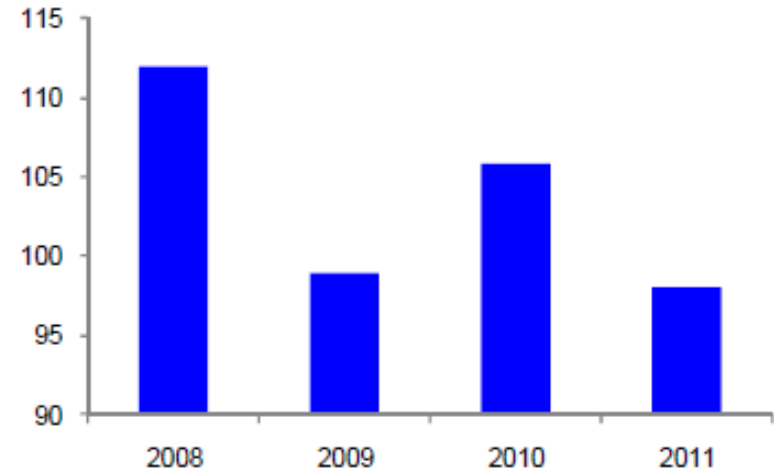


Source: National Grid, Ten Year Statement 2011

# Demand destruction – *beyond weather*



Source: BMWI, National Grid, Fluxys, Enagas, GTS, GRTGaz, Snam Rete Meteopower, Deutsche Bank



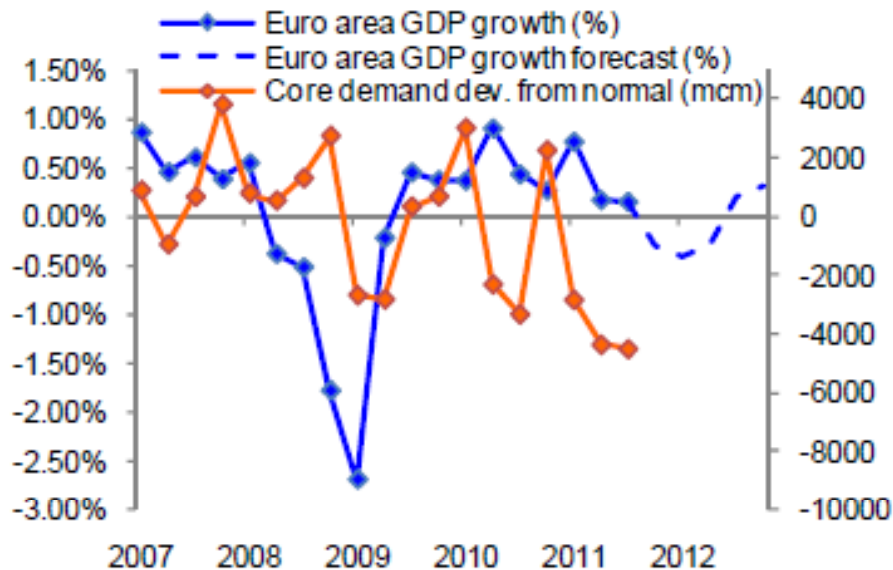
Source: National Grid, Enagas, GTS, GRTGaz, Snam Rete Meteopower, Eurostat, Deutsche Bank

7 largest mkts  
weather-adjusted  
gas demand

Industrial & power  
gen consumption

Source: Deutsche Bank, “Commodities Outlook 2012”, January 2012

# Demand destruction – *beyond GDP*



Source: BMWI, National Grid, Fluxys, Enagas, GTS, GRTGaz, Snam Rete Meteopower, Eurostat, Deutsche Bank

2010 European "core" demand	414.1
2011 European "core" demand (est.)	370.0
<b>Difference</b>	<b>-44.1</b>
Weather adjustment	-22.2
UK residential and commercial	-5.9
Germany aggregate demand	-5.8
UK power generation	-4.4
Spanish power generation	-1.6
Italian power generation	-1.5
Netherlands industrial	-0.5
Other	-2.2
<b>Total</b>	<b>-44.1</b>

Source: GRTGaz, National Grid, BMWI, Fluxys, Enagas, Snam Rete, Gas Transport Services

Gas demand v.  
GDP (7 largest  
EU markets)

2011 decline (7 largest  
countries)

Source: Deutsche Bank, "Commodities Outlook 2012", January 2012

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# For EU gas demand to grow...

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## At least some of the following would have to happen

- Some economic growth
- A return to a carbon (not renewables) policy -- *fuel mix determined by relative costs including carbon price*
- An efficient pan-European gas market, reducing the 'gas insecurity syndrome' in Central & Eastern Europe
- Fully commoditised Russian gas – *sold at hub price; disconnected from Russia's foreign policy; some level of competition upstream*
- A European unconventional supply boom

**New golden age of gas – *likely for the world; unlikely for Europe***

# Main messages

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- The gasification of Europe (1965-2005) has been remarkable – but everything is changing
- LNG is making Europe part of a global gas “system”
- Market forces should create a Eurasian gas market – price convergence between NWE and Asian spot price
- Market forces should then re-integrate North America into the global market – *putting long-term pressure on the Euro-Asia price*
- Gas demand in Europe is declining at an accelerated pace, thanks to high prices & renewables policy