

The Golden Age of Gas in Europe

is probably behind us

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

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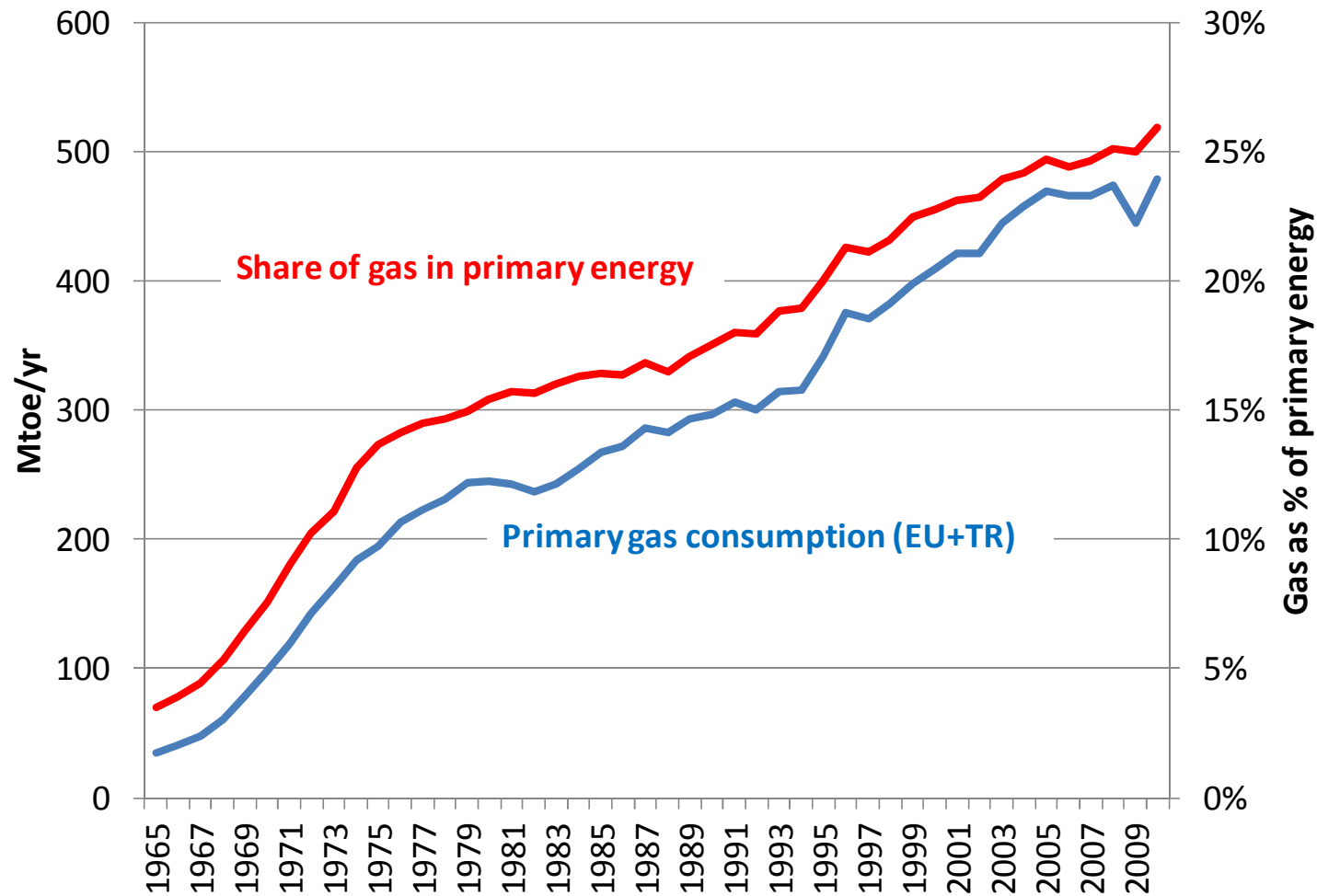
Key points

- 35 years post-1965 have been a golden age for European gas -- *But it came to an end around 2003-4*
- Leading projections see continued (if slowing) growth in European gas consumption, driven by the power sector
- They show continued import growth, LNG and pipeline, with a significant contribution from Russia
- This is questionable, on the demand and supply side alike

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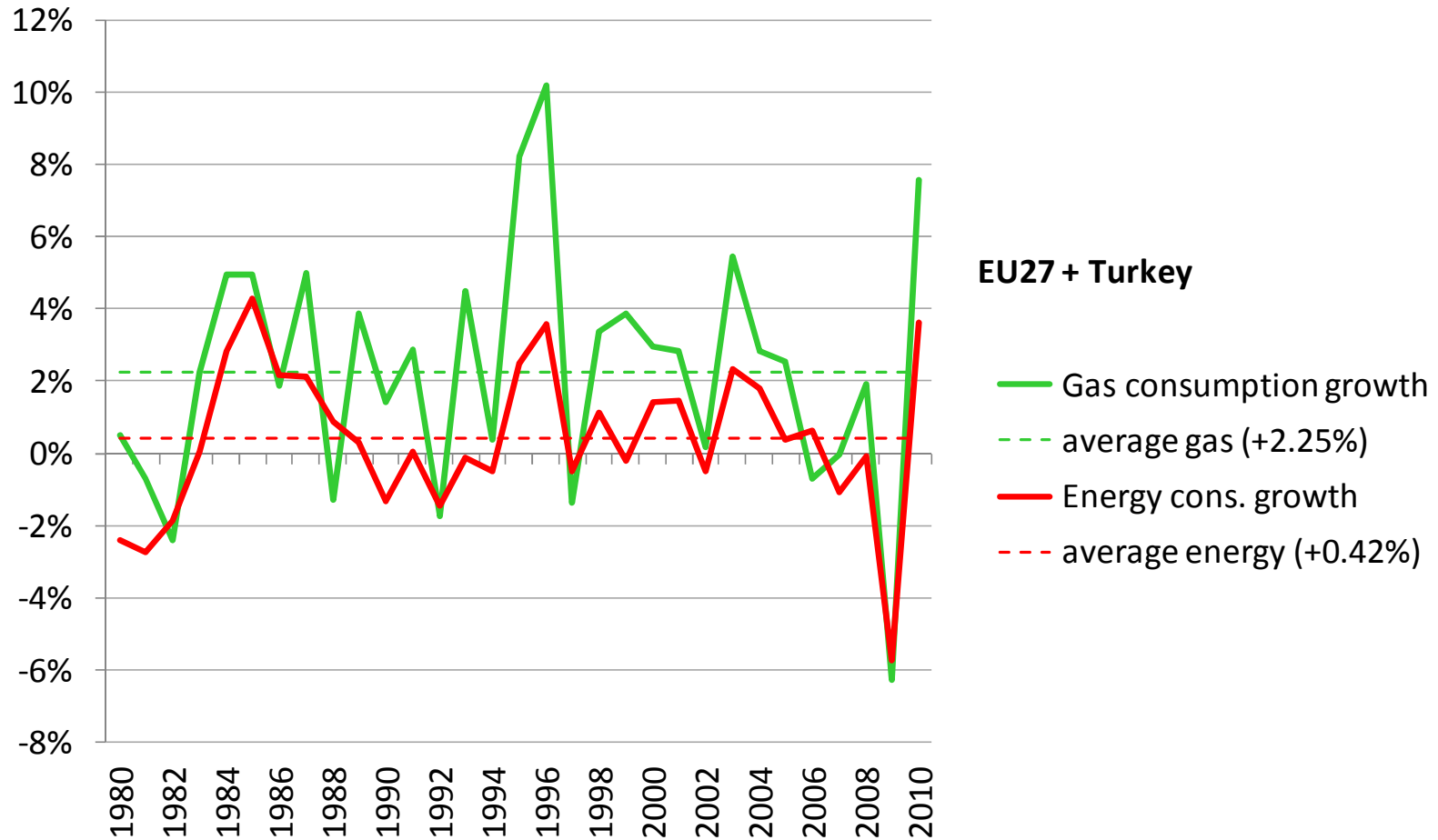
1. The golden age of gas behind us
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1960s-2000s – The Gasification of Europe



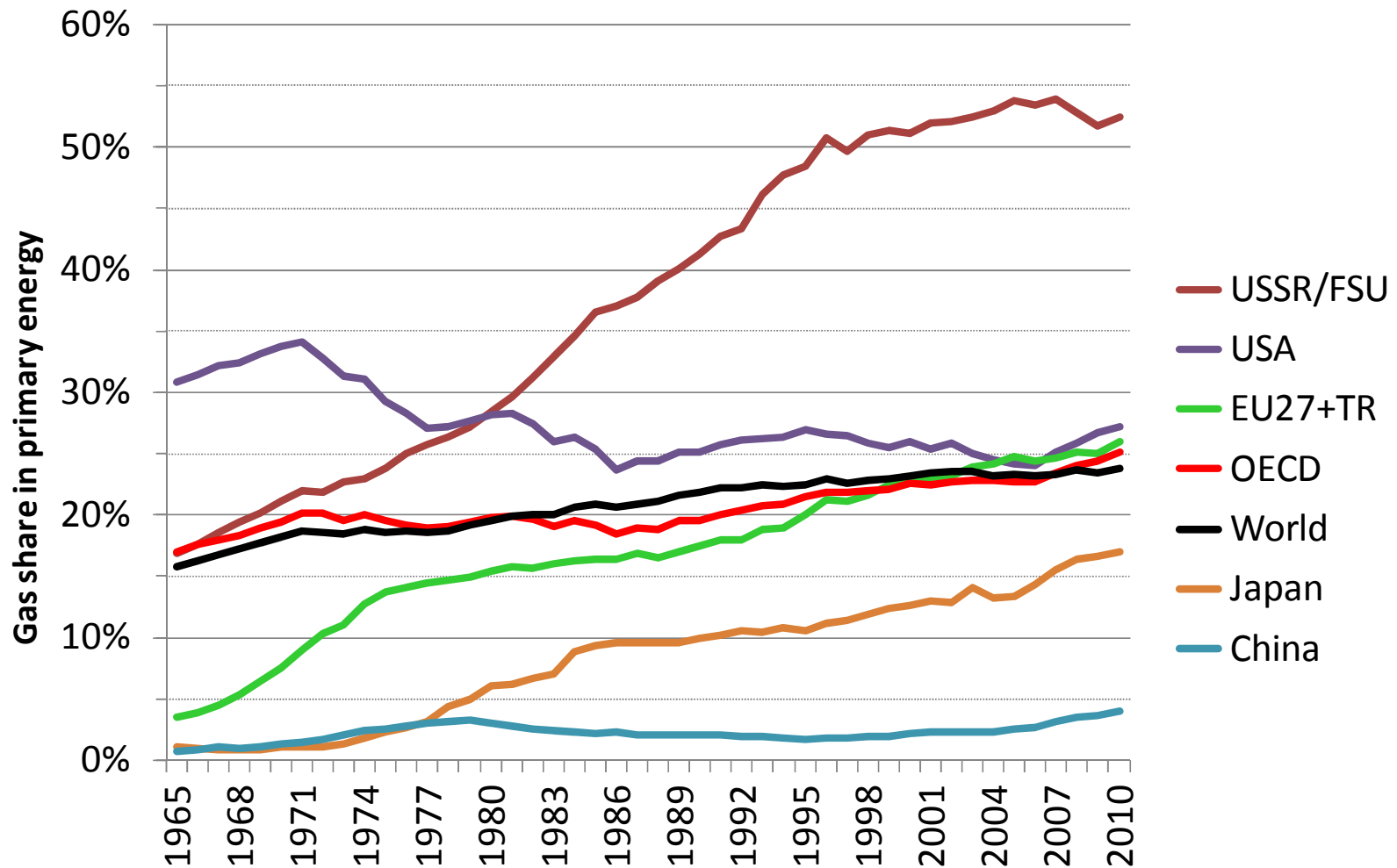
Source: BP Statistical Review (2011)

Gas v. Primary Energy



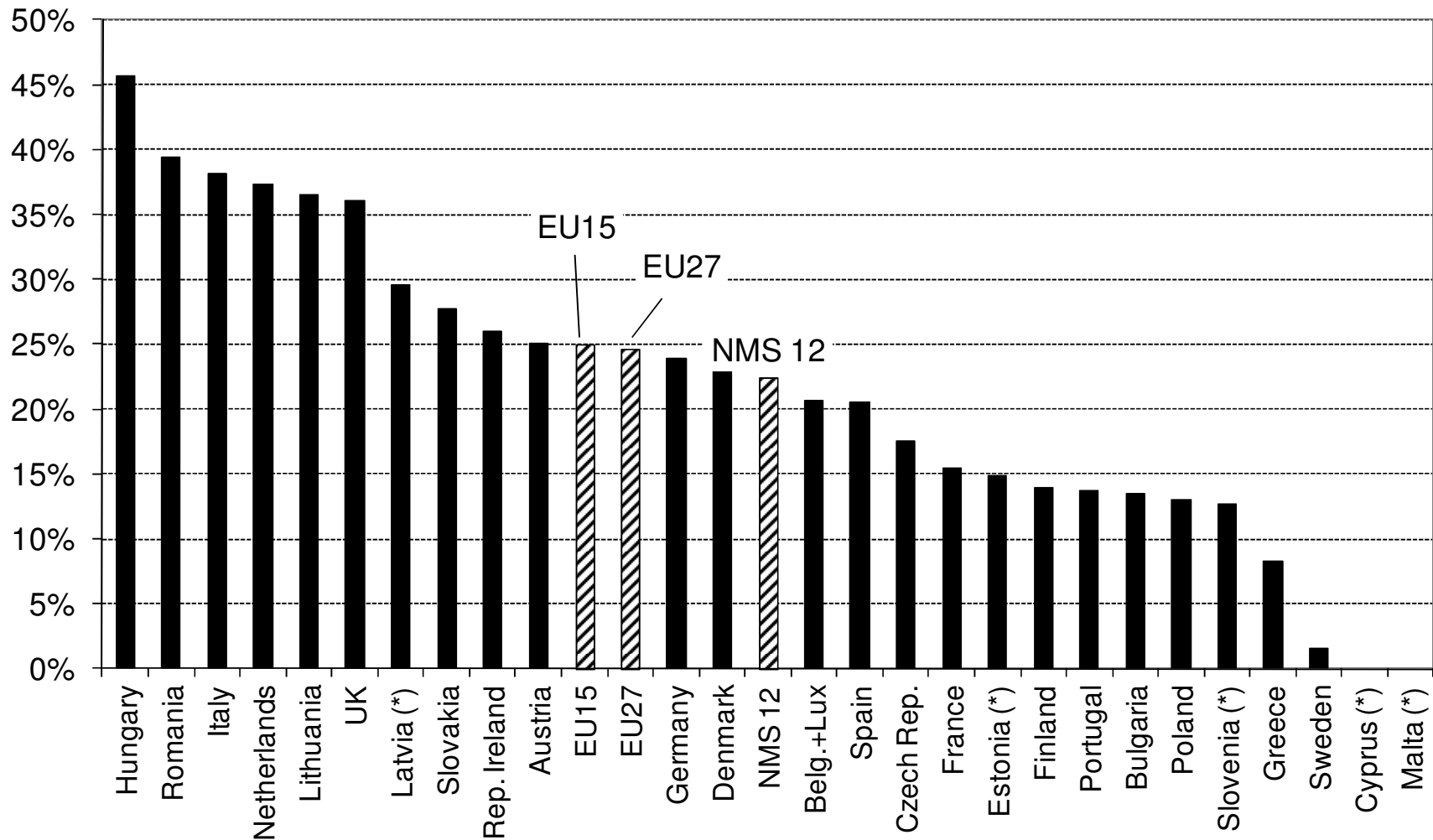
Source: BP Statistical Review (2011)

Europe catches up with World, OECD, US



Source: BP Statistical Review (2011)

Diversity in reliance on natural gas



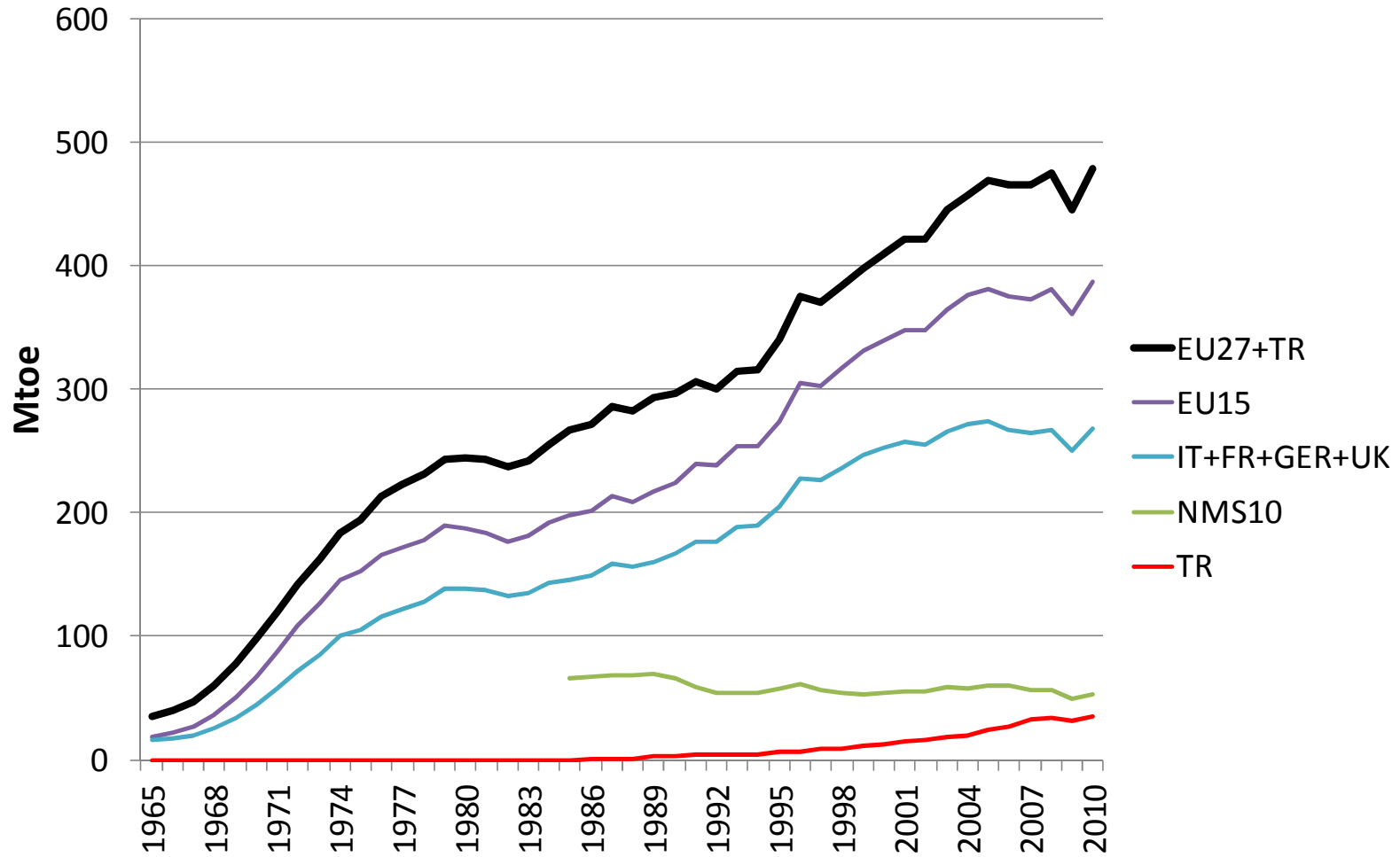
Cumulative energy, 1970-2010

EU27 Gas Consumption	12.4 Gtoe
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

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Has gas demand peaked in Europe?



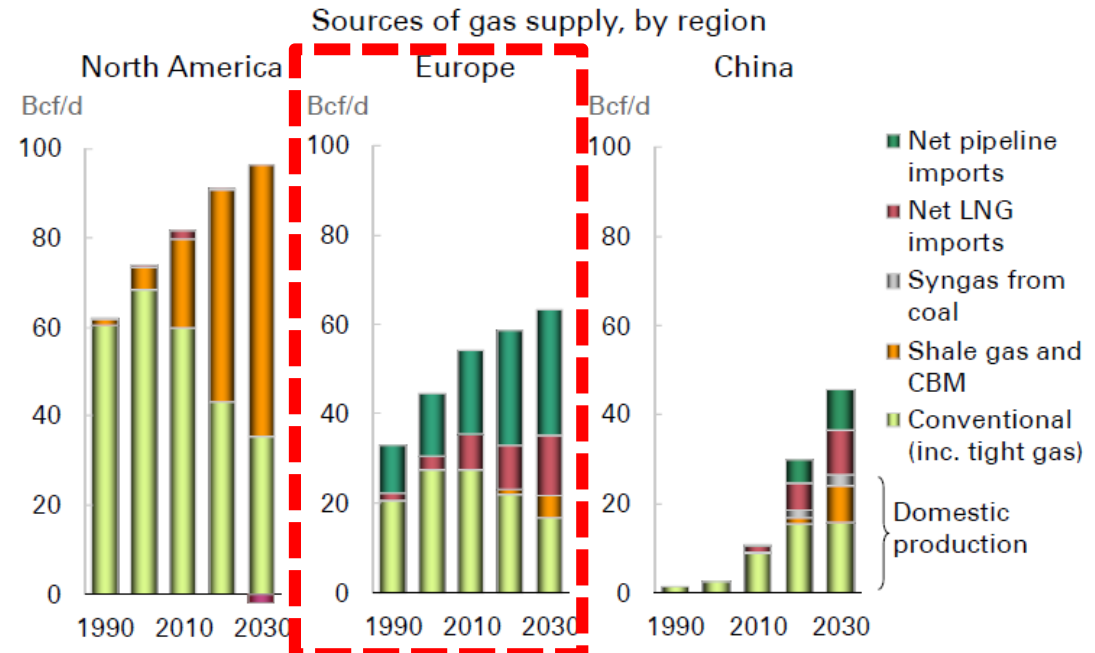
Source: BP Statistical Review (2011)

IEA & BP (and others) think no

2010-2030

- Consumption up by 100bcm
 - IEM 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

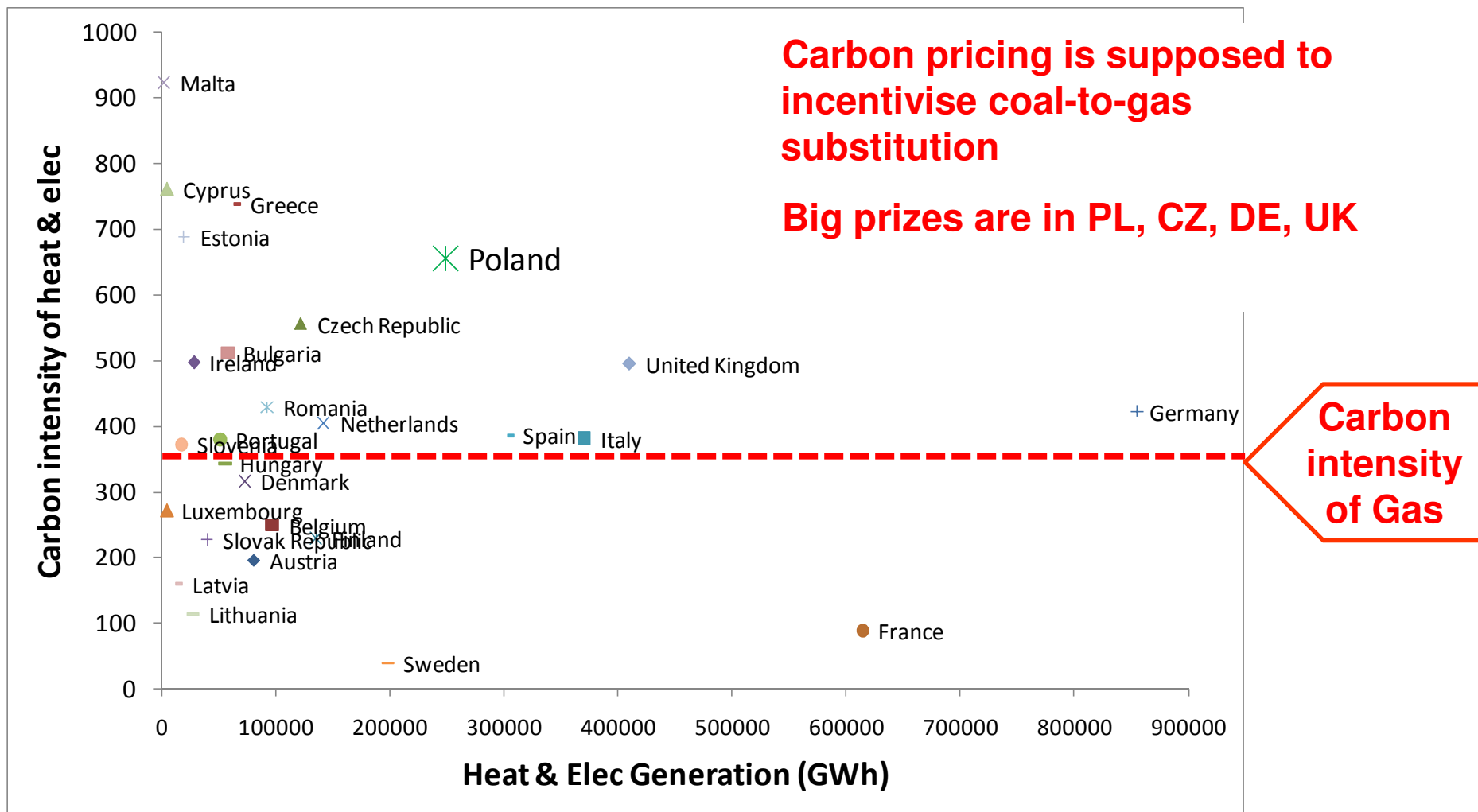
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Gas in power generation

- Current economics look bad
 - Stagnant GDP – falling power demand
 - Reserve margins high; spreads low
 - Gas price rally of 2010 brought coal back
 - New CCGTs do not break-even in CWE or UK market

The case for fuel substitution



IEA data

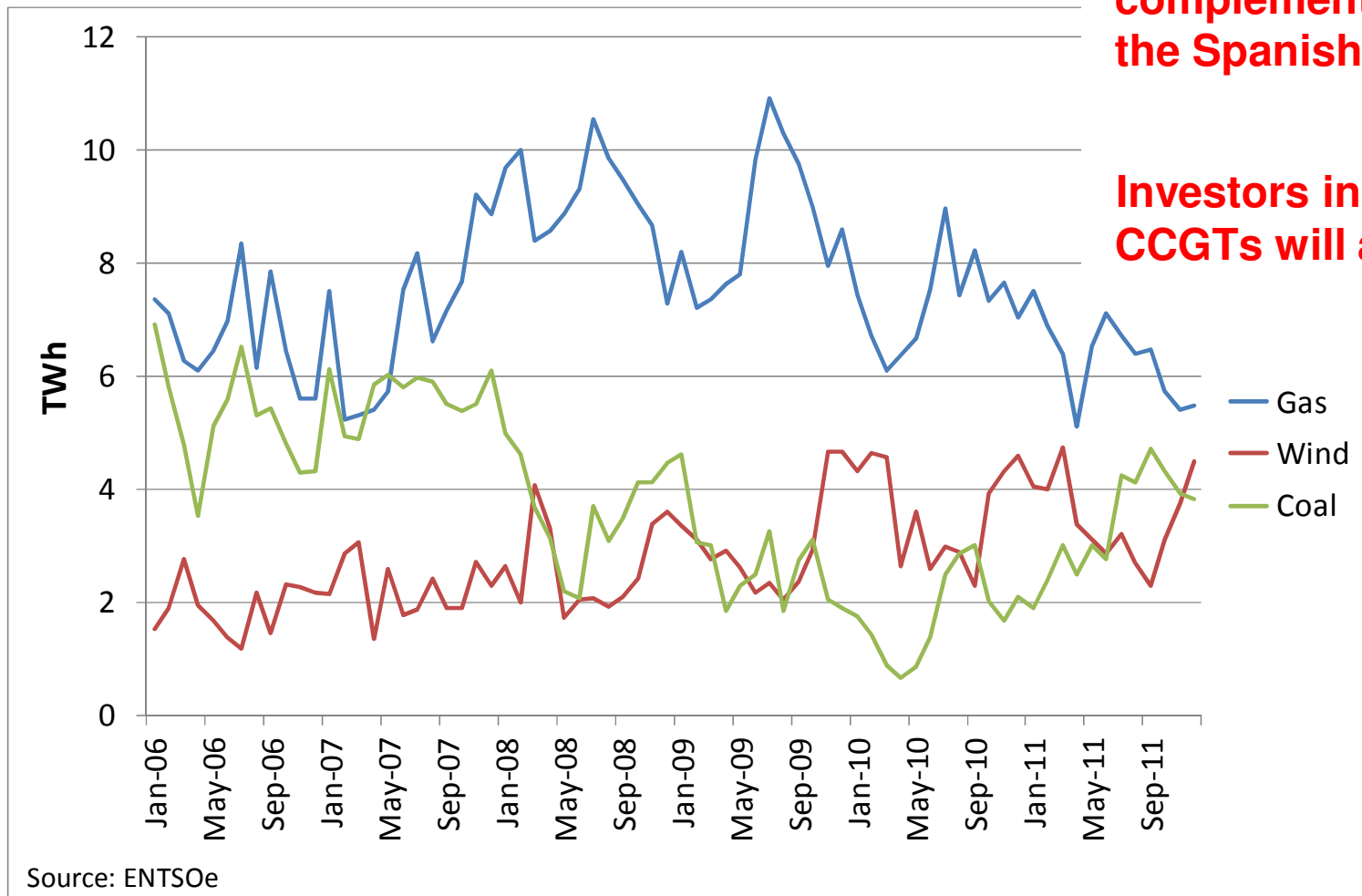
Growth in gas for power? (2/4)

- 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...



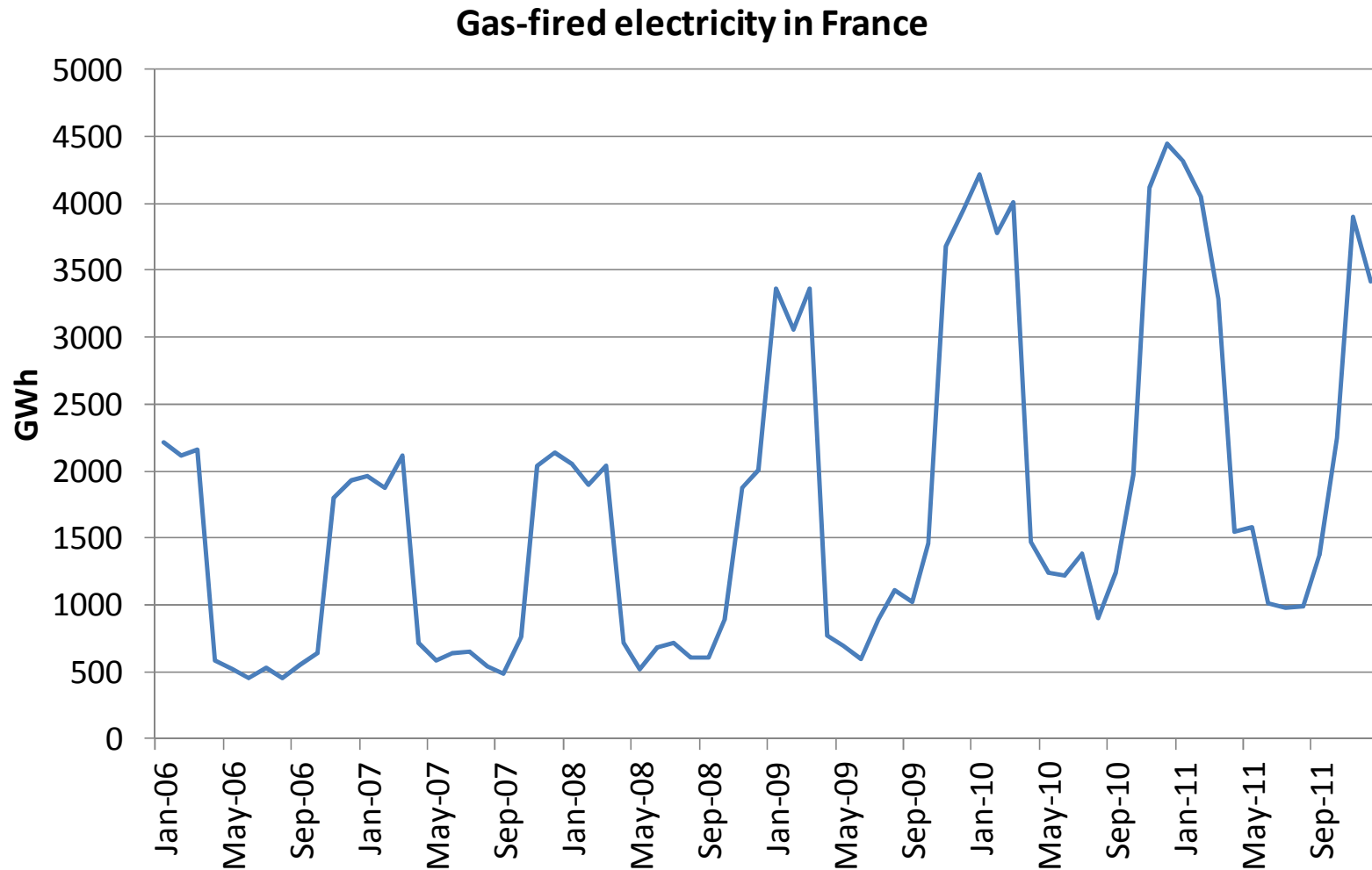
Growth in gas for power? (3/4)

- “Energy security” concern do not favour gas
 - Central Europe (PL + CZ) – politics of Russian dependence
 - a dash for gas very unlikely – they will wait for nukes
 - UK – Preventing a new dash for gas is a permanent theme of public discourse (including by ministers)
 - One driver of the Electricity Market Reform
 - LT feed-in-tariff contracts for all low-C, incl. nuclear

Growth in gas for power? (4/4)

- Policy-driven fuel substitution
 - UK -- compelling mid-term case for new CCGTs
 - 9GW coal to drop in 2015 (LCPD)
 - Carbon Price Floor will support gas v. coal
 - But longer-term the policy would drive gas out
 - Unreliable base-load (wind) will incentivise OCGTs
 - France – don't bet on a nuclear exit
 - The French (partial) exit from nuclear is as solid as the German nuclear life-extension – an oil / gas crisis will bring nuclear back ('Fukushima in reverse')
 - However, winter gas generation is growing in FR

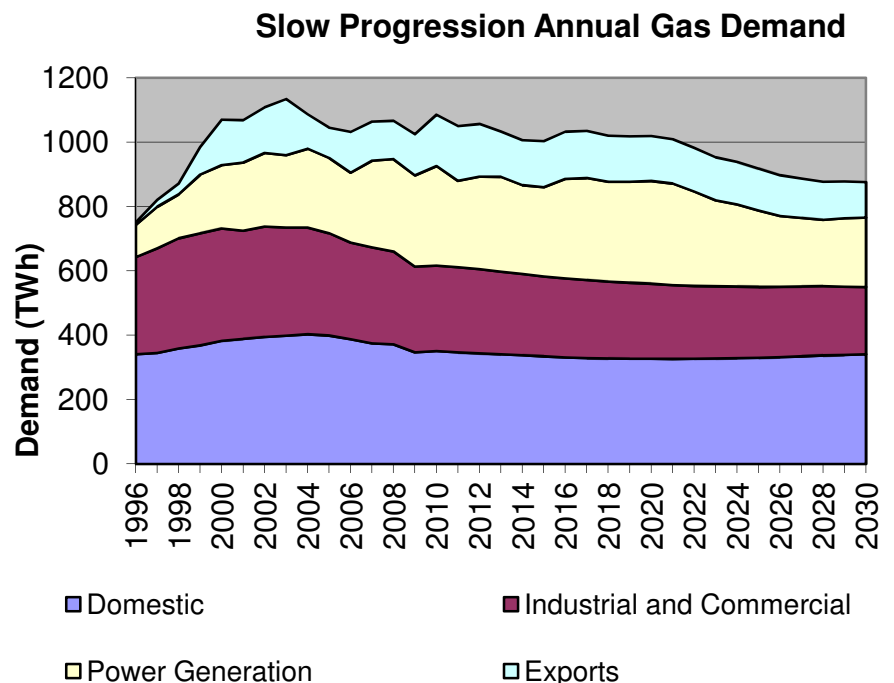
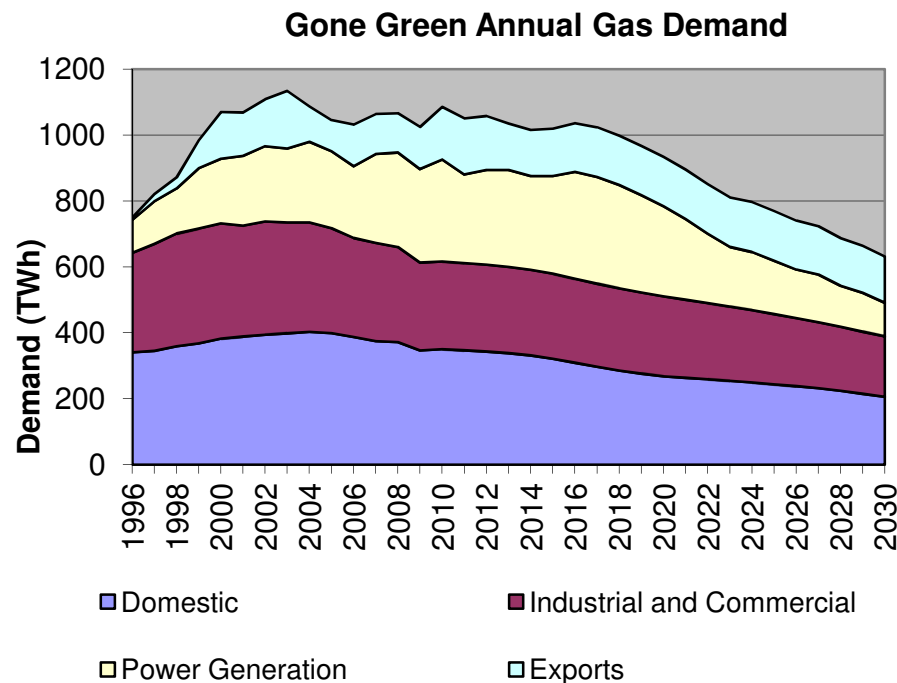
Gas generation in France



Source: ENTSOe

What does it all mean? – The case of UK

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

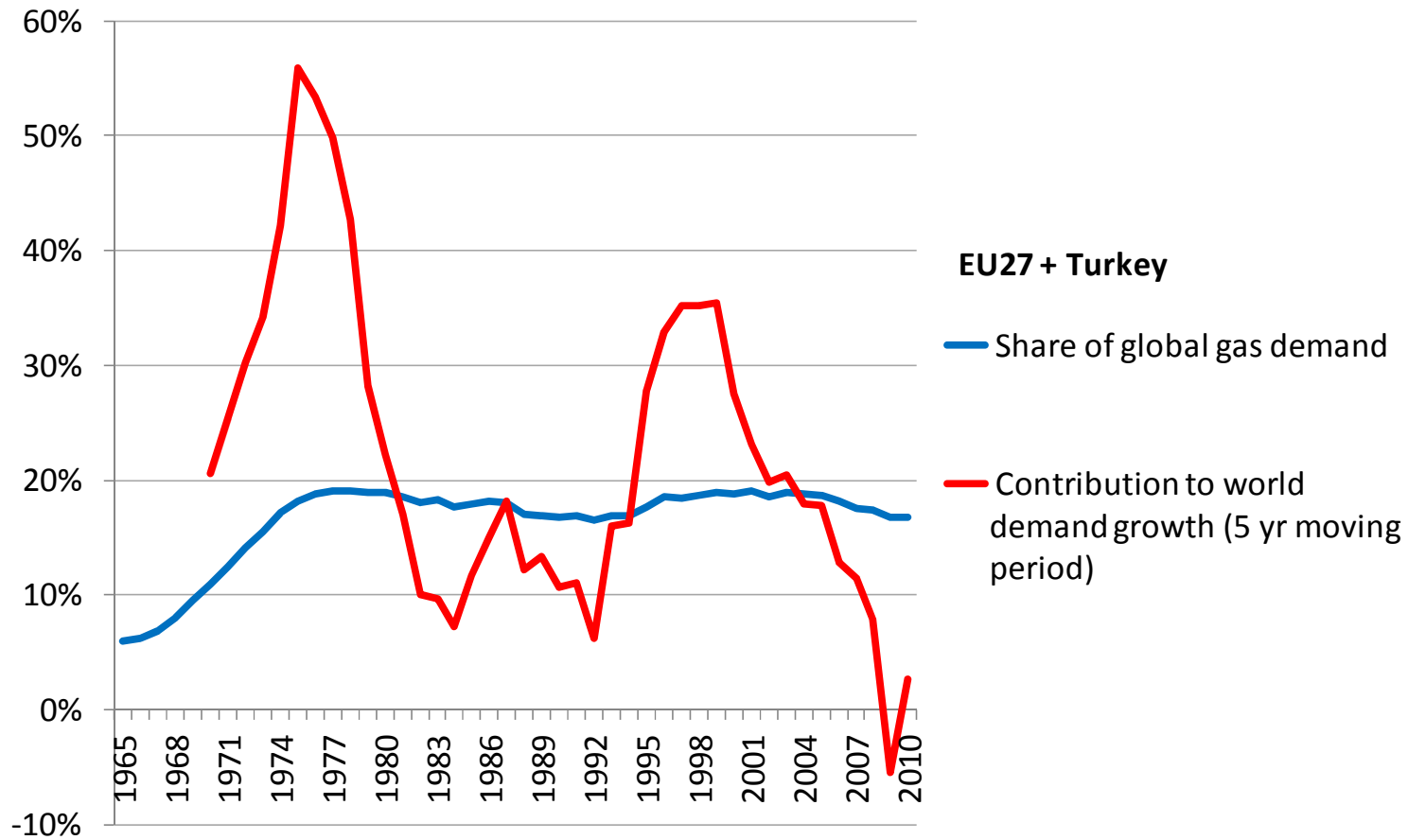


Source: National Grid, Ten Year Statement 2011

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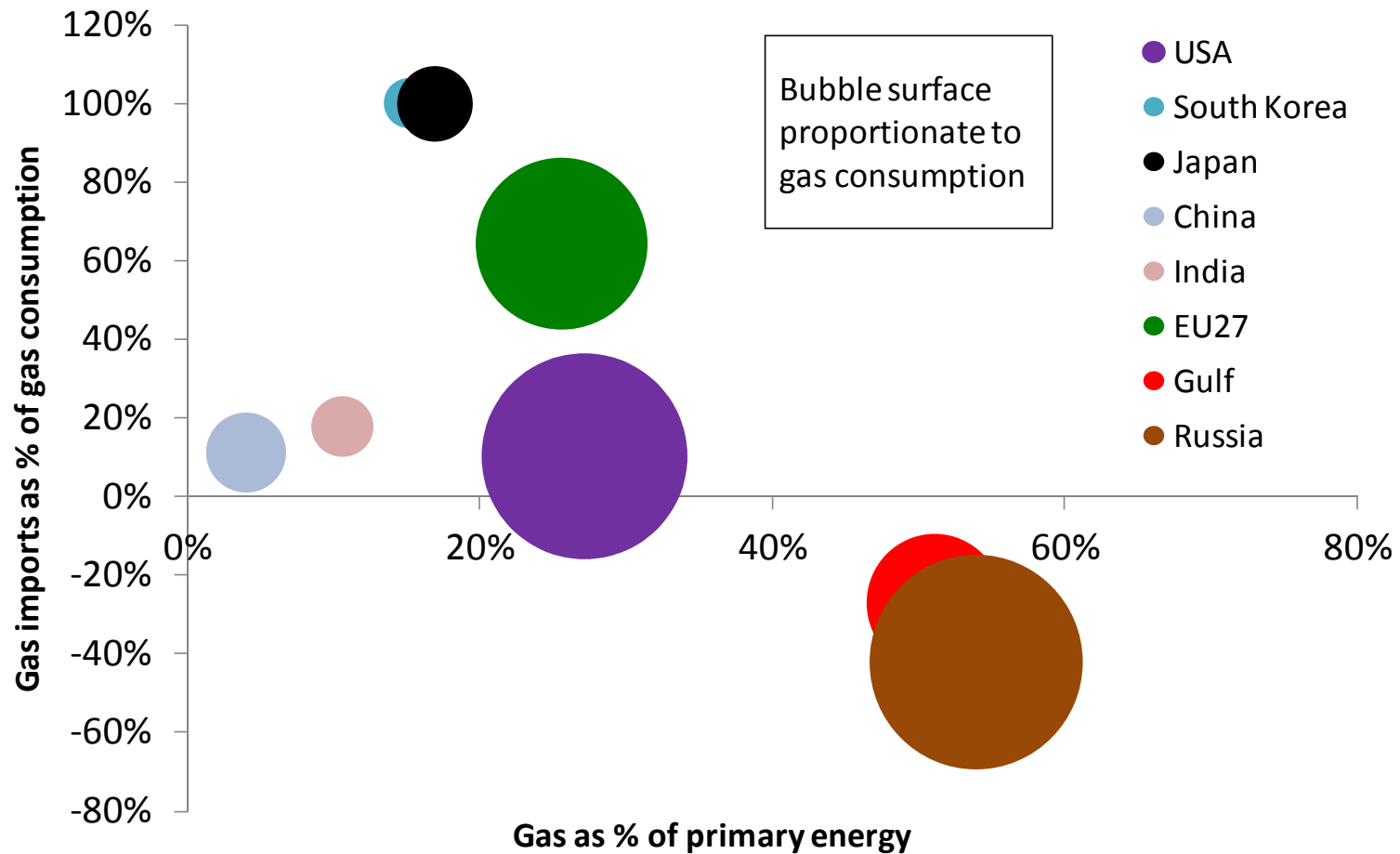
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Europe = 20% of global gas consumption



Source: BP Statistical Review (2011)

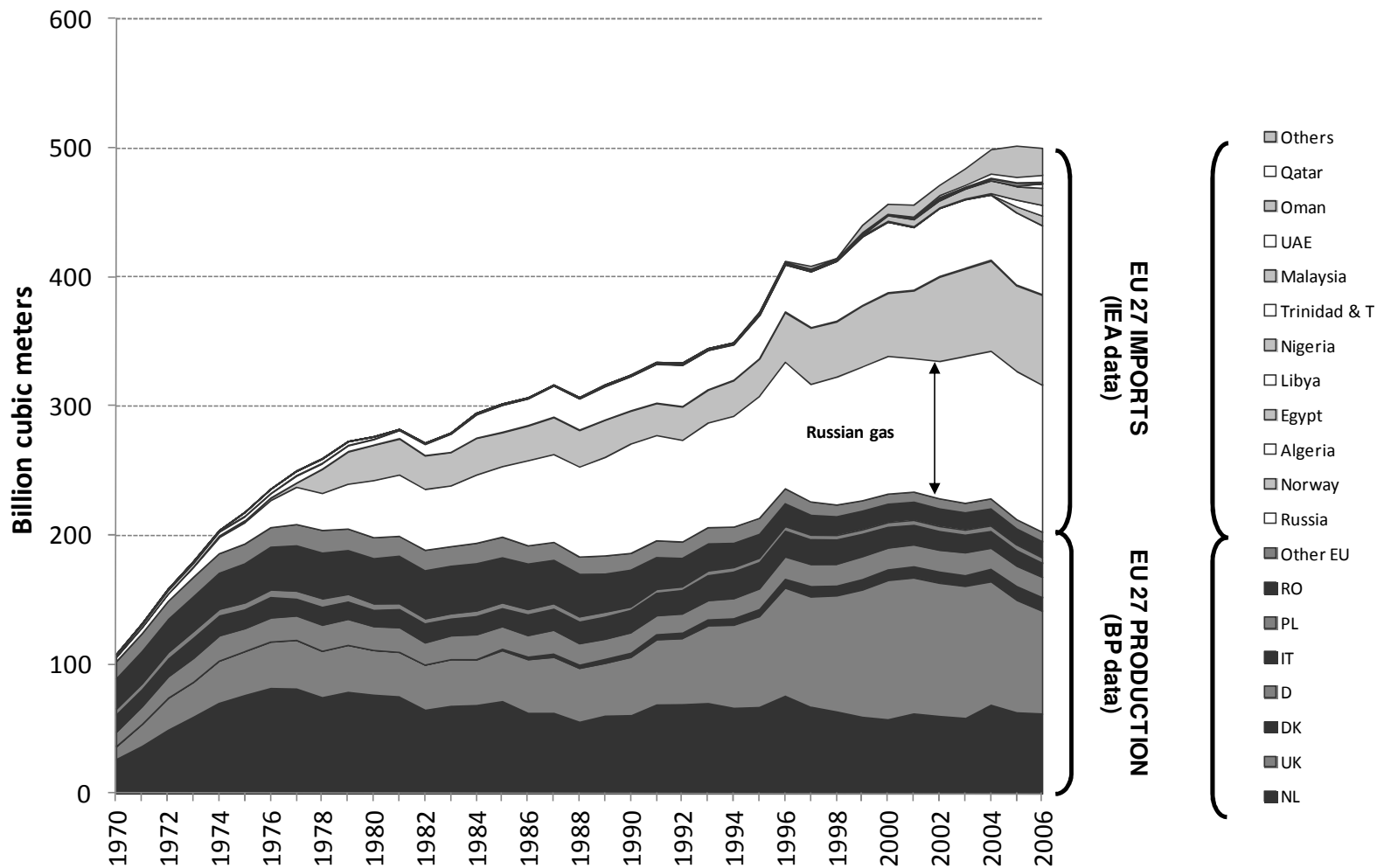
Europe 'gasified' through imports



Figures for 2010

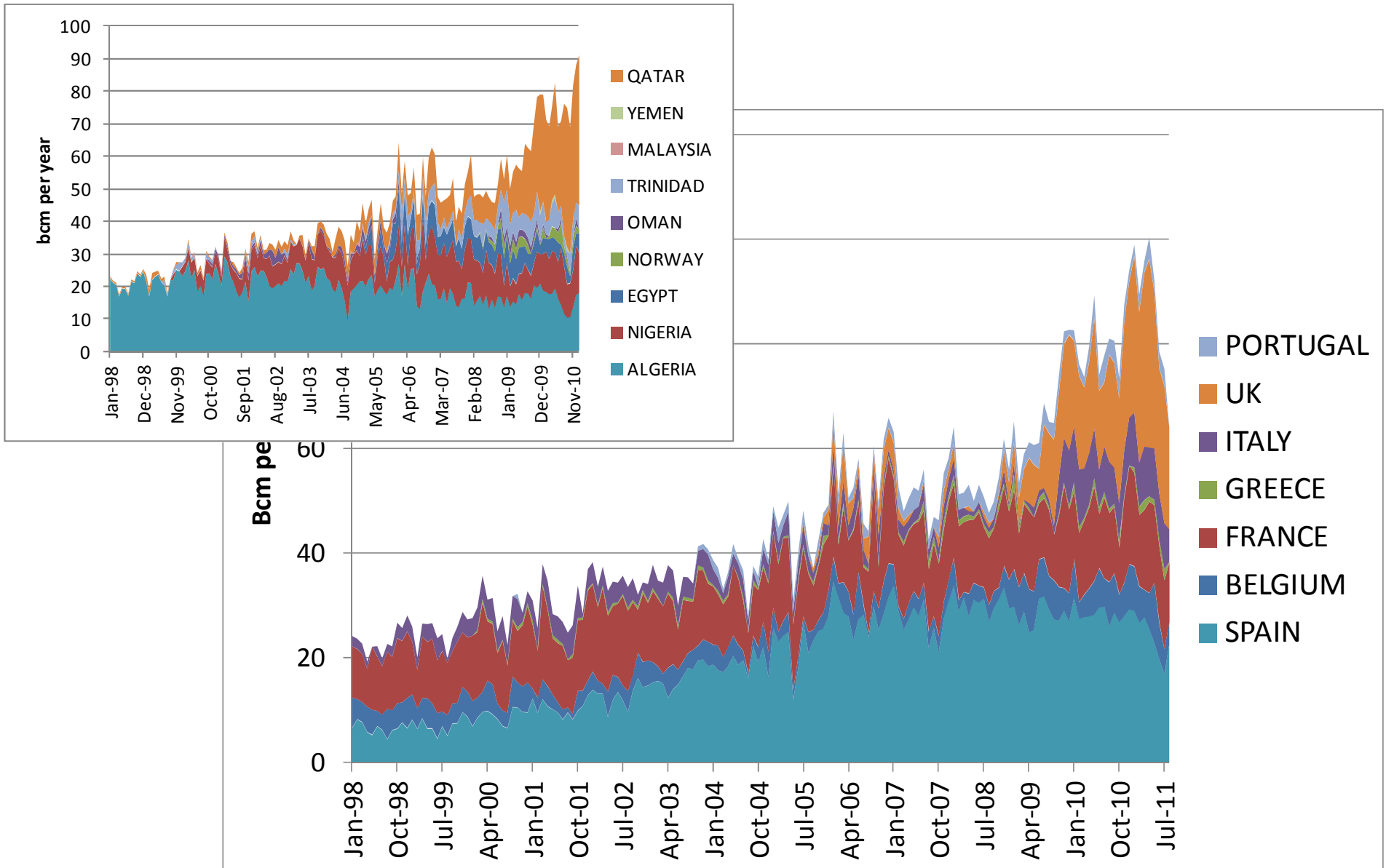
Source: BP Statistical Review (2011)

Since 1975, 100% of growth covered by imports



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

LNG accelerated diversification



Europe imports half of world traded gas

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

Excl. intra-FSU & intra-EU trade.

Source: BP Statistical Review

Growing imports from Russia?

- IEA, BP, etc., project significant expansion of pipeline imports, including growing Russian exports to Europe
- 1970s-1980s – explicit commercial contracts made under an ‘implicit political contract’ – *keep gas separate from foreign policy*
- This ‘enabling contract’ did not survive the cold war – *great paradox...*
- Mr Putin’s foreign (and gas) policy, in a context of EU enlargement, has divided Europe and created an ‘implicit security tax on gas’
- Commoditisation would help depoliticise, but Russia does not seem enthusiastic
- Can imports grow nonetheless?

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Conclusions: for gas demand to grow...

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*