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Import dependence and supply security

The UK gas security policy debate

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EPRG, University of Cambridge

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

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Key points

- UK transitioning from self-sufficiency to large importer
- Gas insecurity is a key theme of political discourse
- Global and EU market dynamics positive for UK…
- …but UK now have to pay international price for gas
- The only risk seems to be exposure to price spikes
- This risk can be addressed – but should it?
- Plenty of bad reasons to implement bad policies

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1. The transition to import dependence
2. The political discourse
3. The ongoing policy process (Ofgem SCR)
4. The 2010 Pöyry study and DECC Policy Statement
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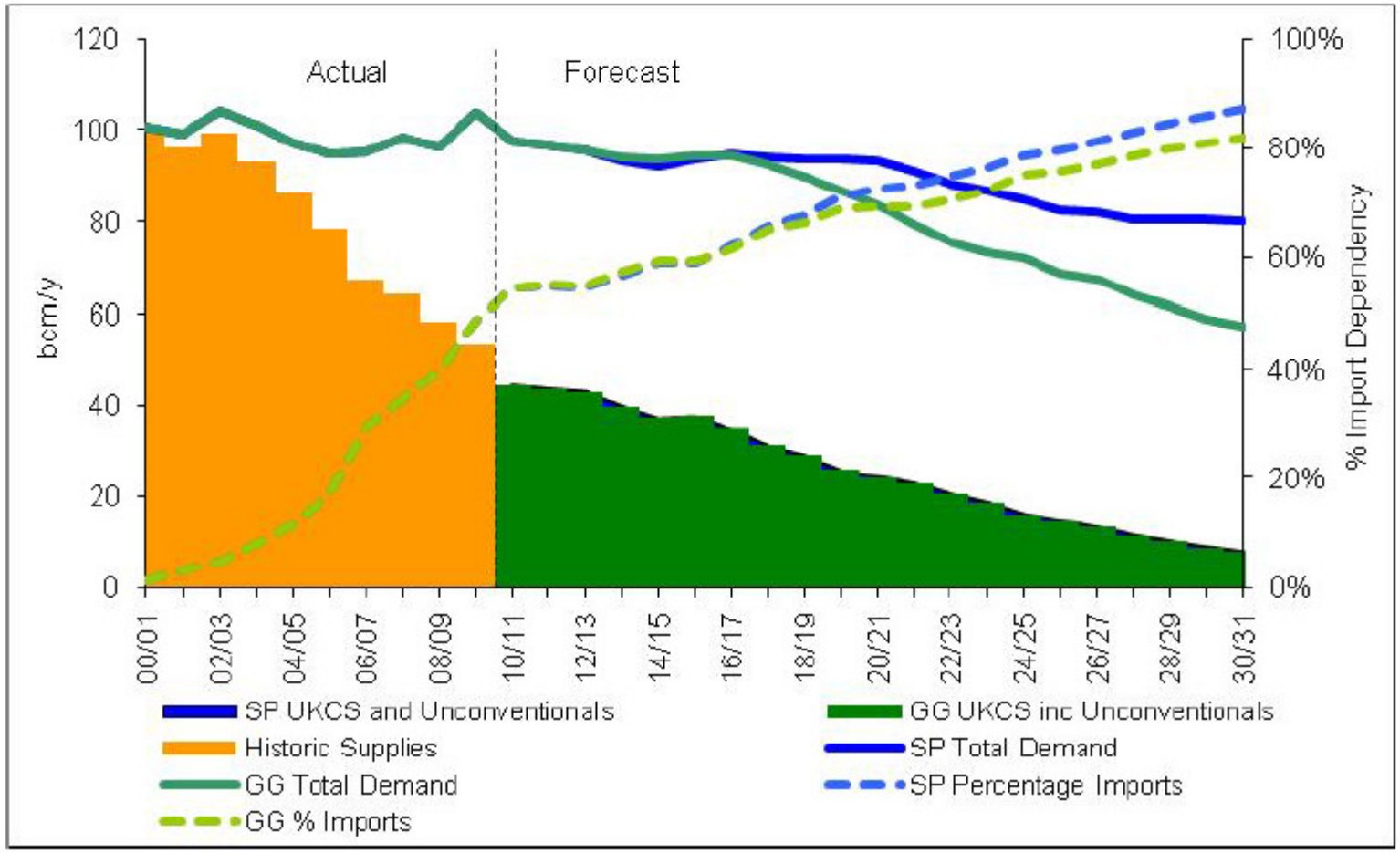
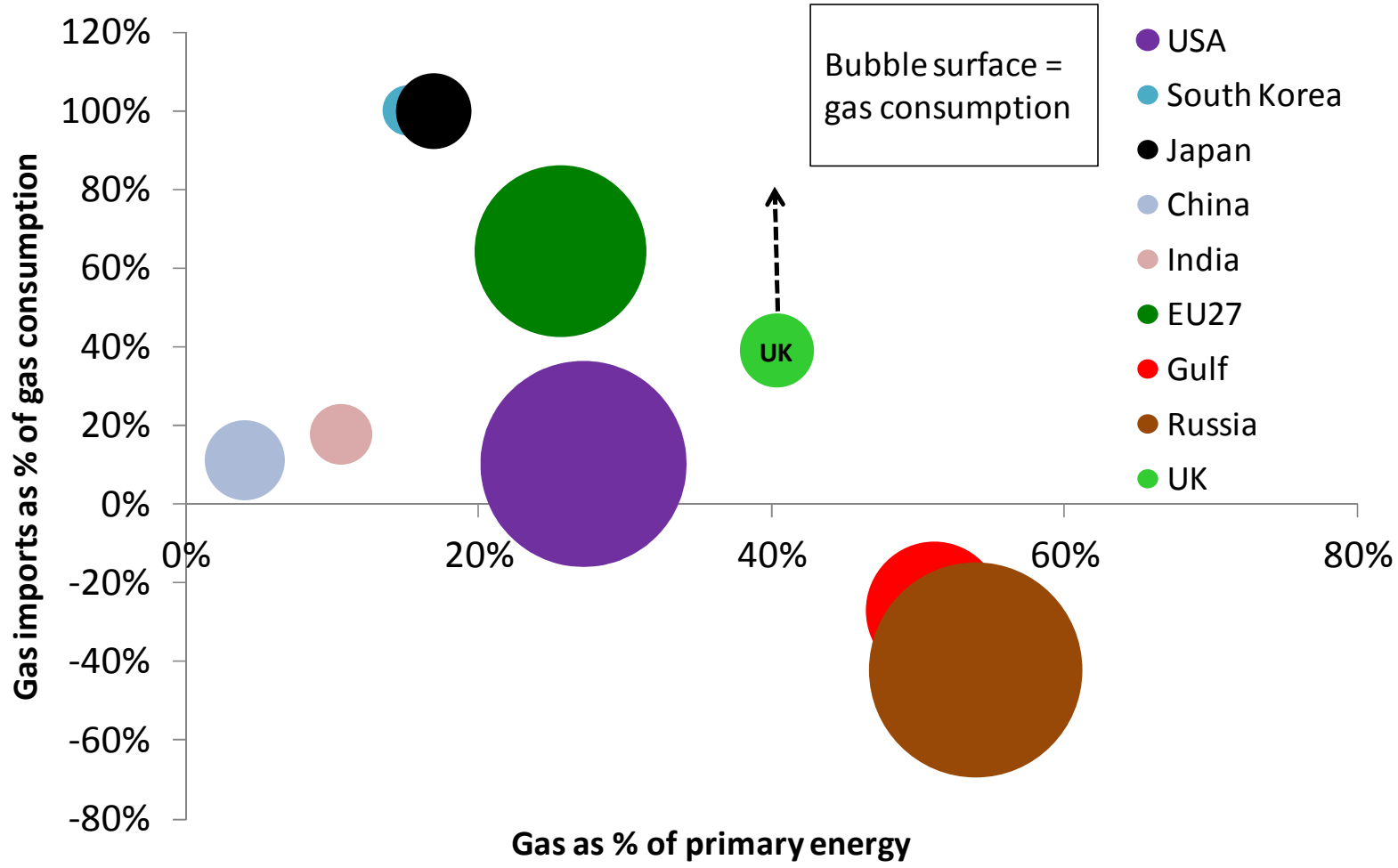
A gas island no more



Source: National Grid

The fast-moving small dot



Figures for 2010

Source: BP Statistical Review (2011)

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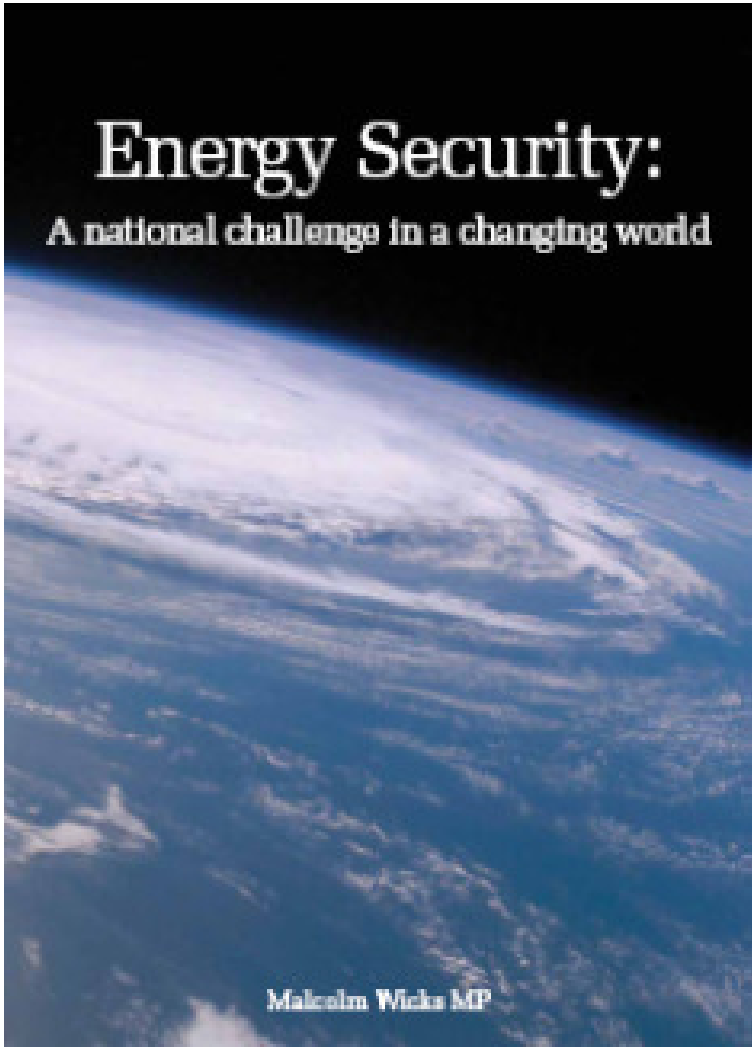
The Wicks Report (2009)



- Prevent a new "dash for gas" that would "lock-in dependence"
- Encourage "long-term, fixed-volume contracts"
- Support UK suppliers in securing LT contracts
- Introduce continental-like "supplier obligations" – *"industry must not be allowed to block new SoS arrangements"*
- Invest in strategic storage – *and prevent gas stored in the UK to be shipped to the continent*

Conservative Manifesto, April 2010

p. 91

nation when it comes to renewable energy. Our national security is threatened by a looming energy crunch in which a third of our electricity generating capacity will close, and most of our gas will need to be imported by 2020.

p. 92

to set a clear direction for energy policy. To safeguard our energy security, we will reform the energy regulator Ofgem so that:

- it focuses on executing energy policy;
- it is tasked with monitoring the spare capacity in the energy market and making provisions for additional capacity where required; and,

p. 93

Labour's just-in-time approach to energy supply has left us badly exposed to events outside our control. We will work to diversify the sources of the gas we need, secure long-term contracts and increase storage capacity to guarantee supplies throughout the year.

Coalition Agreement, May 2010

The Coalition: Our Programme for Government, May 2010, p. 16

- We will reform energy markets to deliver security of supply and investment in low carbon energy, and ensure fair competition including a review of the role of Ofgem.
- We will instruct Ofgem to establish a security guarantee of energy supplies.

National Security Strategy, October 2010

A Strong Britain in an Age of Uncertainty: The National Security Strategy, October 2010, p. 3

These new threats can emanate from states, but also from non state actors: terrorists, home-grown or overseas; insurgents; or criminals. The security of our energy supplies increasingly depends on fossil fuels located in some of the most unstable parts of the planet. Nuclear proliferation is a growing danger. Our security is vulnerable to the effects of climate change and its impact on food and water supply. So the concept of national security in 2010 is very different to what it was ten or twenty, let alone fifty or a hundred years ago.

Ibid., p. 17

1.25 Innovation will be key in ensuring our **energy security**. We will rely on the development of new energy production technologies to move us away from dependence on hydrocarbons. We will need to find ways to integrate these new technologies into existing systems to ensure the availability and integrity of supply.

Ibid., p. 30

crises and armed conflict. Malign powers may wish to exert influence that impacts on the security of our vital networks, including for example our energy supplies, or that could have an adverse effect on the international system of trade and

Strategic Defence & Security Review

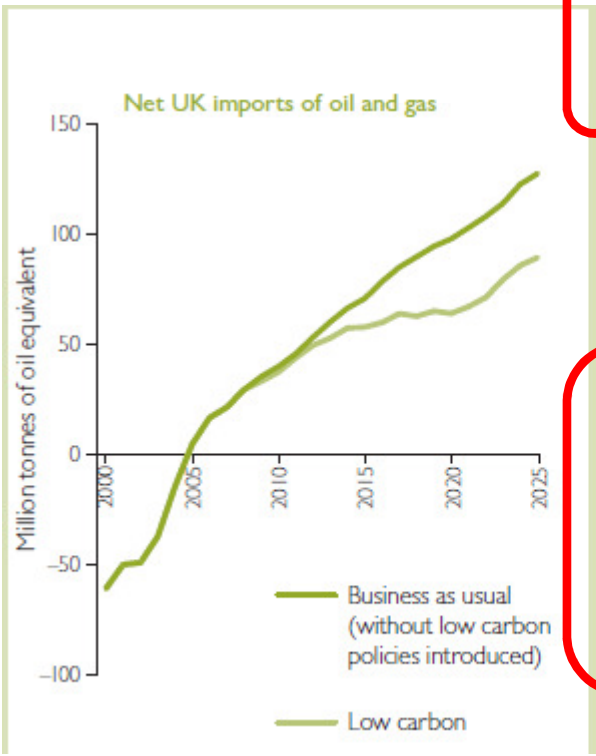
Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review, October 2010, p. 4

We have also re-assessed and reformed our approach in a wide range of other areas crucial to UK national security – including civil emergencies, energy security, organised crime, counter proliferation and border security. We will maintain robust intelligence capabilities to contribute across the spectrum of national security activity.

pp. 50-51

E. Energy security

4.E.1 The UK faces a range of risks related to our ability to access secure, diverse and affordable supplies of energy, which are essential to economic stability and growth. These include political instability in key energy countries, insufficient investment in states that supply energy, and imperfections in the functioning of global and UK markets. As the box below suggests, these risks are likely to intensify over the coming years, due to our growing dependence on imports of fossil fuels at the same time that global demand and competition for energy is increasing.



Falling UK production of oil and gas, coupled with sustained demand, will make us increasingly reliant on fossil fuel imports. Without low carbon policies ('business as usual' on the graph), net oil and gas imports will rise rapidly. Our low carbon policies can help us reduce this demand and encourage other countries to do the same, but as the graph shows, we will still need to import considerably more in the future than we do at present. This is why we need to deepen engagement with energy producers, both bilaterally and in multilateral forums, to encourage investment in necessary transitional oil and gas, enhance price stability, promote low carbon growth and improve the reliability of energy supplies. The latter will involve ensuring that business and political conditions support key infrastructure projects, including pipelines to bring gas from the Caspian region to the EU, and

Charles Hendry to House of Commons

16 September 2010

> "There is no doubt that we have historically low levels of gas security – gas storage, compared to other European countries, and we are keen to address that as well as looking at issues of long-term contracts and more pipeline interconnections, which all will have an important part to plan in this process."

Video at: http://youtu.be/DdT_adU9fk8

Hendry to CBI Energy Conf (June 2011)

That is why the Government's proposals to reform the electricity market are the best deal for Britain: getting us off the hook of relying on imported oil and gas by creating a greener, cleaner and ultimately cheaper mix of electricity sources right here in the UK; nurturing a new generation of power sources including renewables, new nuclear, and carbon capture and storage, bringing new jobs and creating new expertise in the UK workforce. And establishing a long term role for hydrocarbons like gas as well, taking account of how the global market has changed over the years.

Hendry in Edinburgh, Feb 2012

CHARLES HENDRY'S SPEECH TO THE UNIVERSITY OF EDINBURGH BUSINESS SCHOOL -- 20 FEBRUARY 2012

There are four key challenges to address for UK energy security – in the medium to long term:

- Declining domestic production: The UK became a net importer of gas in 2004, making us increasingly exposed to risks from rising global demand.

- Global factors are driving wholesale fossil fuel price rises: international demand – such as from China.

- Power Station Closures: A quarter of existing power stations to close over the next decade, and;

- The need to decarbonise: Huge investments – up to £110bn in electricity sector by 2020 alone, to meet greenhouse gas emission reduction targets. And a potential doubling of electricity demand by 2050 for heating and transport.

Chris Huhne to the House of Lords, 2011

- Chris Huhne to the House of Lords, Select Committee on Science & Technology, 2011
  - Energy security: “our ability to access imports of crucial physical supplies of energy … [and] our ability to withstand serious shocks to the economy from price movements”

Conclusions: What politicians think

The problem

- Import dependence means insecurity
- Gas import dependence poses threats to national security – *"securitisation" of energy policy discourse*

The solution

- The UK needs more gas storage
- Ofgem should be servant, not master – *it should deliver the new storage obligation*

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Ofgem SCR gas security

- Unfreezing cash-out prices in emergencies
  - Price mechanism should be allowed to work in extreme scarcity
  - Involuntary interruptions should be compensated at “Value of lost load”
- Need for “further intervention”
  - Several options mentioned, but storage obligation for suppliers seems the preferred one
  - Storage obligation strongly supported by ministers
- Both are disputed by industry as unneeded and prone to unintended consequences

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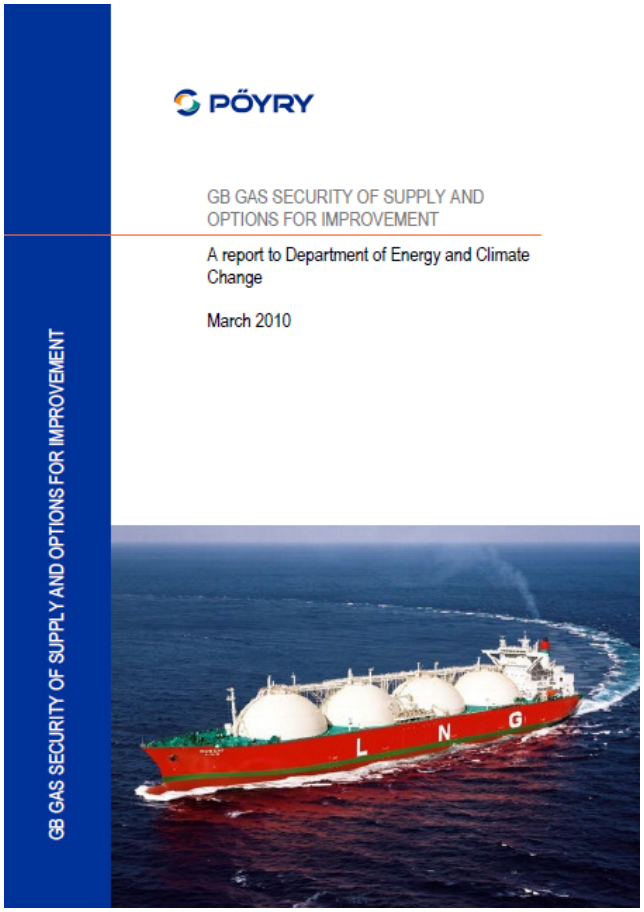
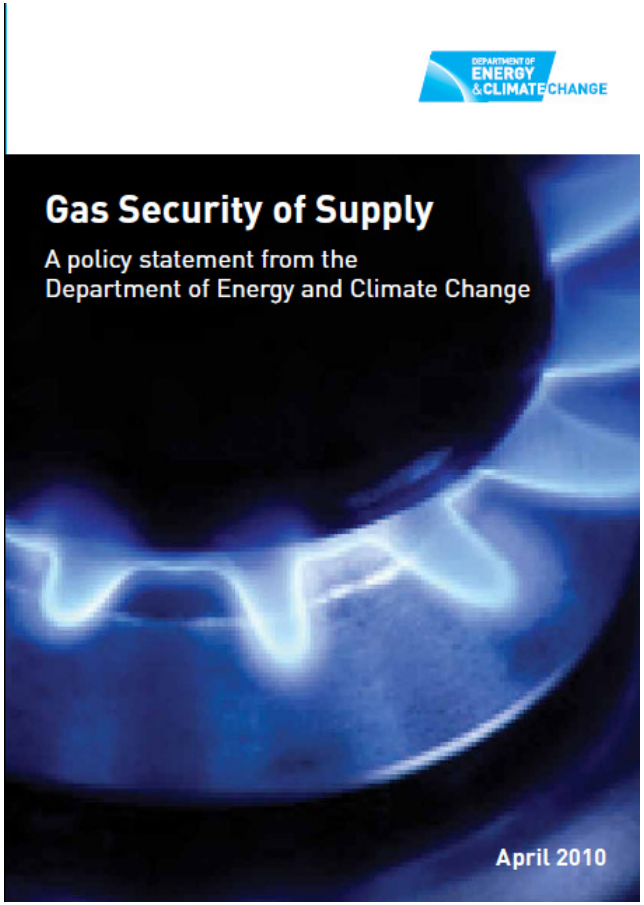
Pöyry for DECC – March 2010



http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20markets/gas_markets/114-poyry-gb.pdf

- UK market can meet peak demand in situations of major disruptions and severe weather
- Probability of 'unserved energy' -- 1 day in 19 years
- Expected value of unserved energy (30 years): £7.8m
- I&C interruptibility + distillate mandate for CCGTs cheapest of SoS interventions
- But none passes the CBA
- Recommends no intervention

DECC Policy Statement – April 2010



Based on Pöyry report

- UK market enjoys and adequate level of security of supply now and beyond 2020
- The current arrangements have delivered and will continue to do so
- No need for a new policy

http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20markets/gas_markets/1_20100512151109_e_@@_gassecuritysupply.pdf

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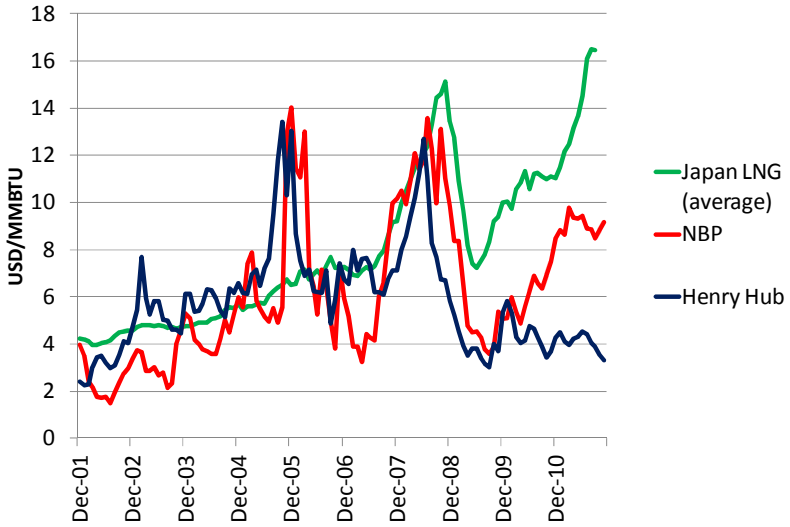
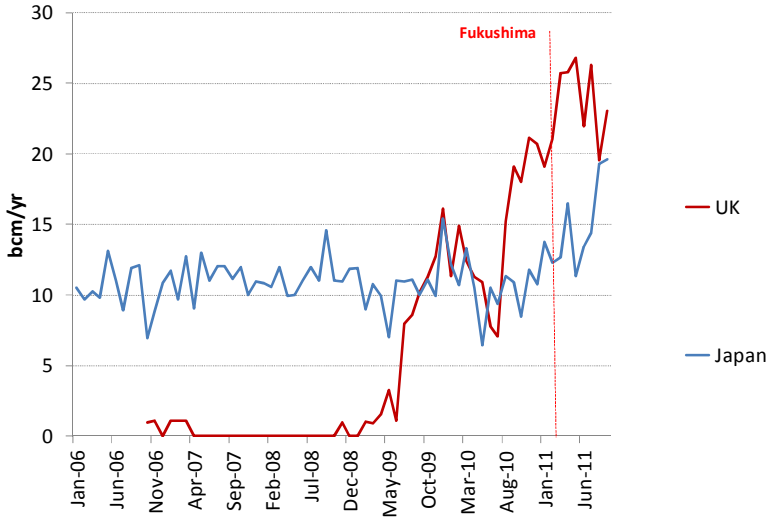
Global markets

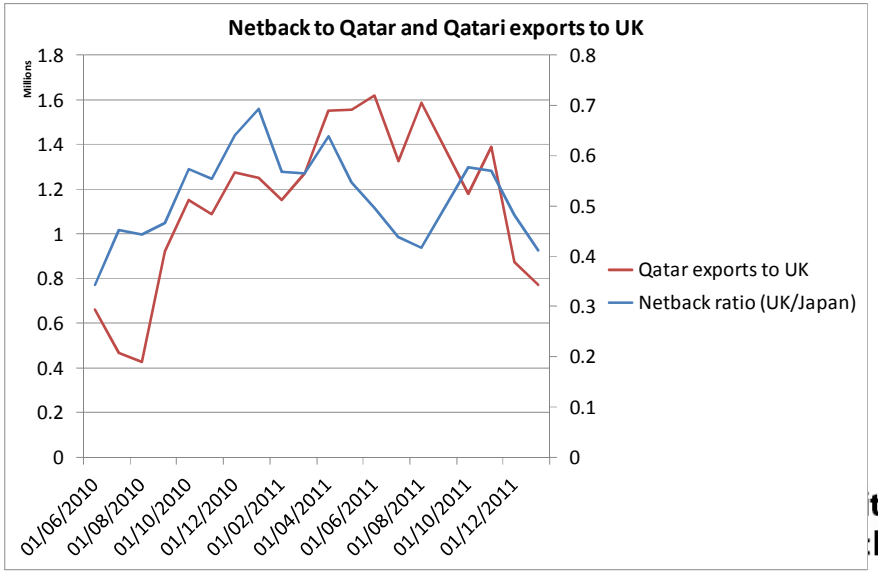


Source: Bloomberg

- 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?



Source: Poten Partners database



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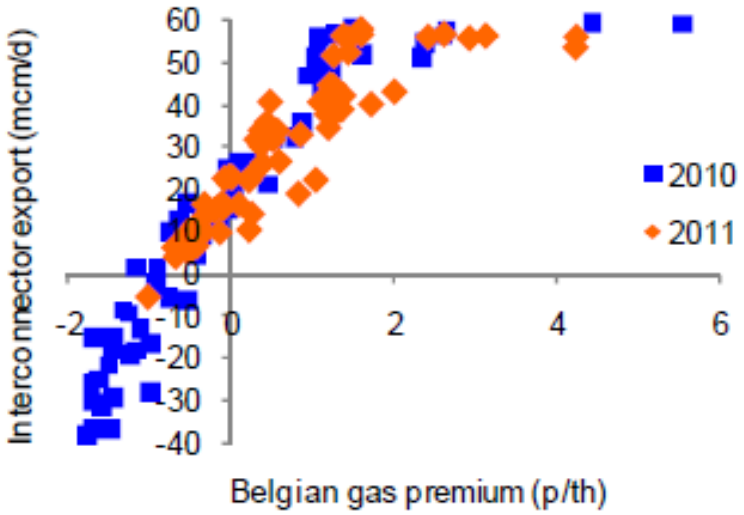
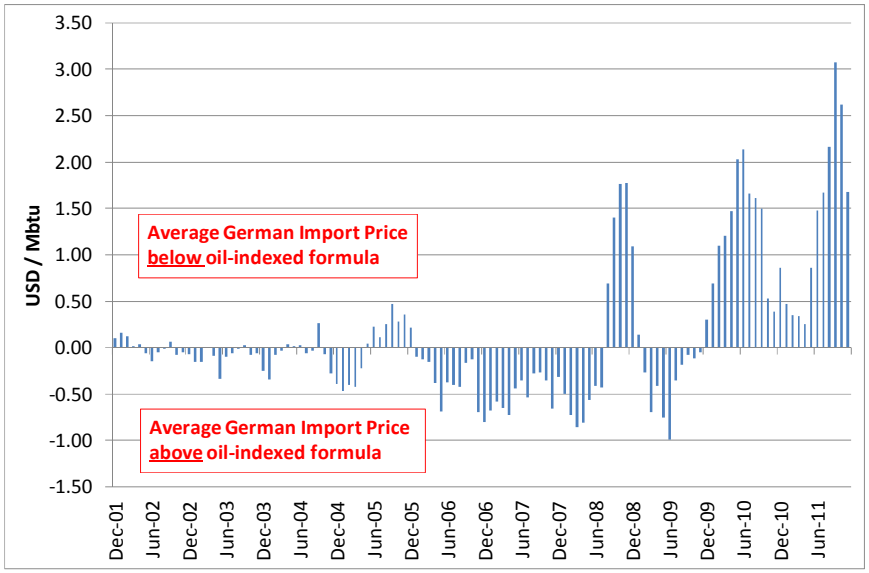
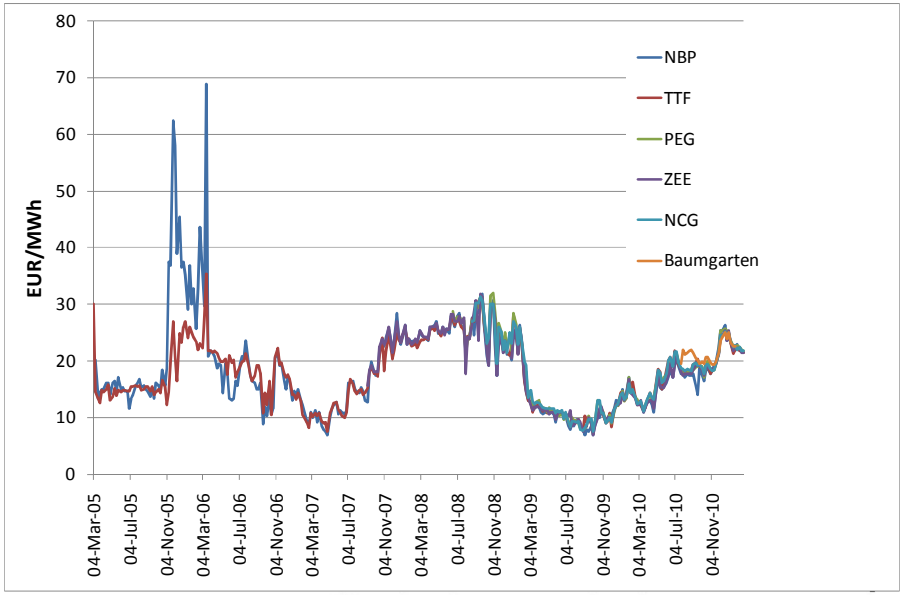
North West Europe = one large market



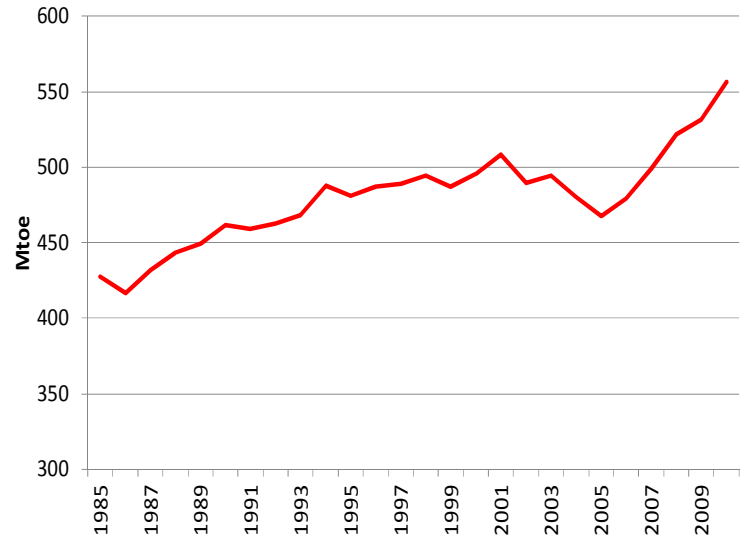
Source: Interconnector UK, Deutsche Bank

- Efficient arbitrages between NBP and ZEE
- More effective TPA in continental markets (NL; BE; FR; DE)
- Less "contractual congestion" (DG COMP action)
- Oil-indexation is vanishing
- Noth-West European market is being integrated into global market – via the UK

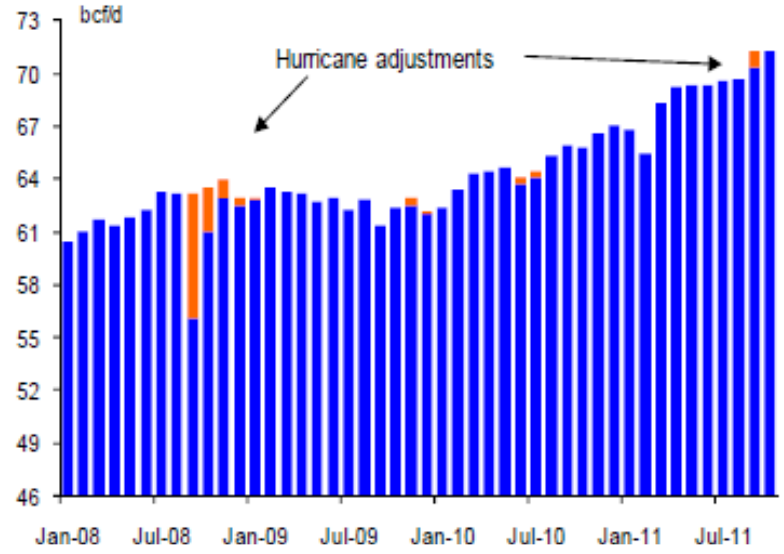




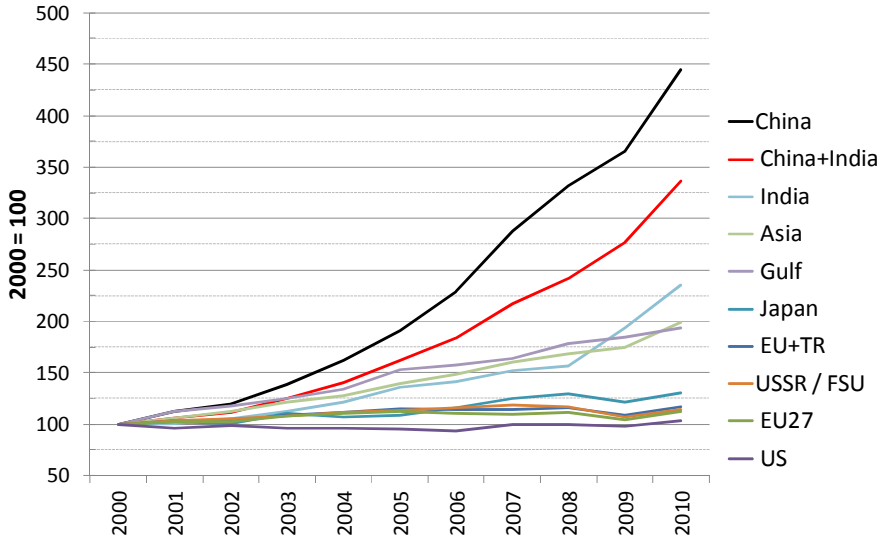
Global market – *Asia vs. North America*



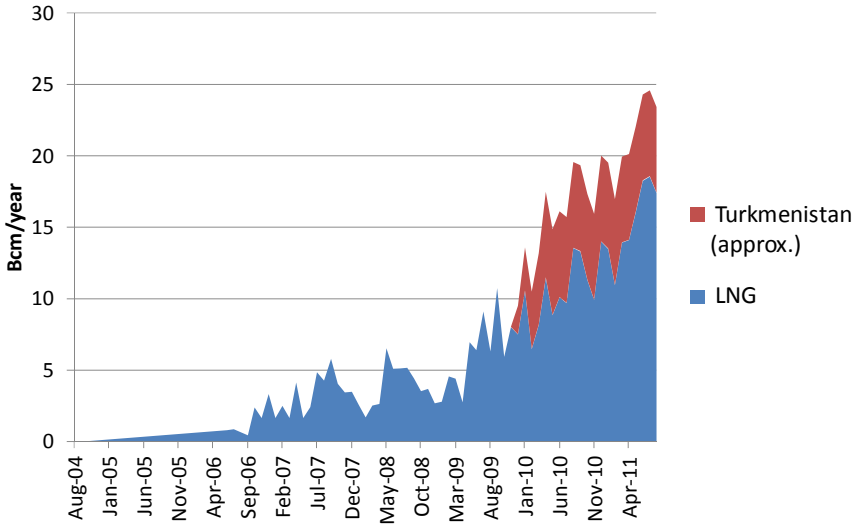
Source: BP Statistical Review (2011)



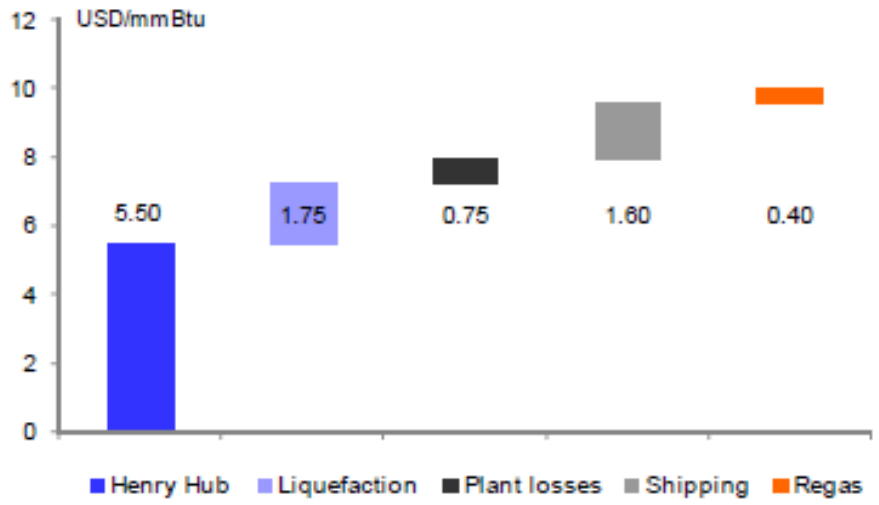
Source: US DOE/EIA, Deutsche Bank



Source: BP Statistical Review (2011)



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
FOB Cost	**$8.46**
Vessel charter	$0.83
Fuel	$1.06
Boiloff	$0.16
Panama Canal crossing	$0.07
Regasification terminal tariff	$0.35
Delivered Cost	**$10.92**
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
FOB Cost	**$8.46**
Vessel charter	$0.35
Fuel	$0.44
Boiloff	$0.07
Regasification terminal tariff	$0.35
Delivered Cost	**$9.67**
NBP Cal-14 (Forward curve)	$11.03
NBP Cal-14 (DB forecast)	$15.00

Source: Bloomberg Finance LP, Deutsche Bank

Conclusions on market developments

- Structural trends favorable to UK "access to gas"
  - North-West Europe one large, increasingly traded market, increasingly priced on hubs
  - UK fully integrated into North-West European market
  - Huge expansion of global resource base; diversity of suppliers and importers; arbitrage between regional markets
- UK consumers now procure gas on an international market – *they have to pay the international price*
  - West-European price attracted towards Asian levels
  - Eurasian price should be set by implicit co-ordination between pipeline suppliers to Europe and LNG swing supplier (Qatar)
  - North-American exports (and, later, Asian shale production) should re-globalise the market and put pressure on Eurasian oligopoly

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The risk of price spikes

- Back to Poyry (2010): Key drivers supporting the analysis
  - "Sufficient LNG around the world and marginal volumes will react to price signals" (p. 85)
  - Integration with North America gives virtual access to US storage through cargo diversions
  - Flexibility can be accessed in Netherlands and Germany
    - No "overzealous protectionism"
    - EU SoS Regulation has no major impact on storage availability
- These assumptions raise legitimate questions
  - Short term supply elasticity was low during 2012 cold spell
  - Short term demand elasticity will go down significantly with retirement of 9GW of coal
  - UK market exposed to price spikes

Risk of price spikes (2/2)

- How much should be spent to address this risk can be debated…
- …but if ministers so decide it can be addressed
  - Reinstate "top-up support" (in place until 2004?)
  - Reliability options
  - One-sided CfD on the price of gas
- It is important to be clear what ministers want to achieve, to provide clarity to Ofgem and the market
  - Ministers should say: *"After careful analysis we think that the country is exposed to potentially harmful price spikes. We have decided to reduce this risk by subsidising the supply of storage and demand response. Ofgem is tasked to explore technical options."*

Bad reasons to intervene

- Security of supply as cheap gas
  - No amount of intervention will change the *price level*, which is determined by the international market
- Security of supply as self-sufficiency
  - No amount of storage will reduce import dependence
  - Gas can be displaced by energy policy choices – *if that is the goal, announce it and do it*
- Insuring against price spikes or reaching "emergency self-sufficiency"?
  - "Emergency self-sufficiency" calls for strategic storage
  - Absurd policy, especially in the UK context
  - Though encouraged by EU Regulation… (which is supported by UK government…)