



# The Geopolitics of Energy Security (The Case of UK Gas Security)

Professor Mike Bradshaw



# Workshop Outline

- Introduction
- Quiz: UK Gas Facts
- The Changing UK Gas Balance
- UK Gas Balance Vectors
- Breakout Groups
- Conclusions: A Supply Chain Approach to Gas Security

# DECC's Energy Security Strategy

“There is no perfect definition of energy security. When discussing energy security the Government is primarily concerned about ensuring that consumers have access to the energy services they need (physical security) at prices that avoid excessive volatility (price security). Energy Security must be delivered alongside achievement of our legally binding targets on carbon emissions and renewable energy.”

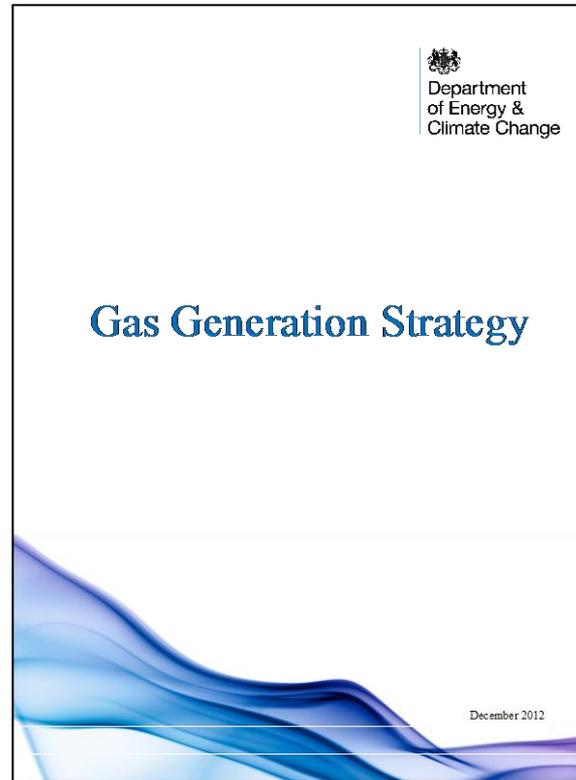
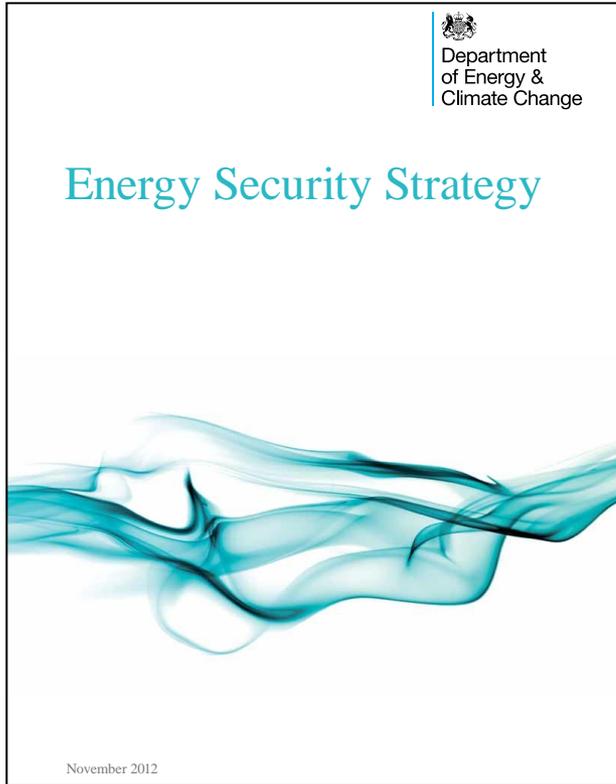
DECC 2012, 5.

# Geopolitics of Energy Security

“...the geopolitics of global energy security relates to the influence of geographical factors, such as the distribution of centres of supply and demand, on state and non-state actions to ensure adequate, affordable and reliable supplies of energy.”

Bradshaw 2009 ‘The Geopolitics of Energy Security,’ *Geography Compass*, 3/5, 1920–1937, DOI 10.1111/j.1749-8198.2009.00280.x.

# The issue of the UK's Gas Security is attracting attention!



**ofgem** Promoting choice and value for all gas and electricity customers

## Gas Security of Supply Report

**Ofgem report to Government**

<b>Submitted:</b>	November 2012	<b>Contact:</b>	Alex Whitmarsh, Stefan Bojanowski or Wil Barber
		<b>Tel:</b>	020 7901 7000
		<b>Email:</b>	<a href="mailto:alex.whitmarsh@ofgem.gov.uk">alex.whitmarsh@ofgem.gov.uk</a> <a href="mailto:stefan.bojanowski@ofgem.gov.uk">stefan.bojanowski@ofgem.gov.uk</a> <a href="mailto:wil.barber@ofgem.gov.uk">wil.barber@ofgem.gov.uk</a>

**Overview:**

In November 2011, the Secretary of State requested Ofgem assess the potential risk to medium and long term gas security of supply in Great Britain and appraise potential further measures in the gas market which could enhance security of supply. This report responds to that request by:

1. Assessing the scale and nature of the risks to security of supply given developments in the global gas market;
2. Assessing the level of risk that remains after Ofgem's proposed reform of emergency gas cash-out arrangements;
3. Considering the range of potential measures in the UK gas market to mitigate risks that remain; and
4. Assessing the relative merits of each of these measures, including the risks of market distortion, unintended consequences and providing initial views on cost-benefit comparisons. It also provides initial thoughts on how these measures might be designed and implemented.

This report is intended to be considered by the Government as part of its wider review of security of supply.

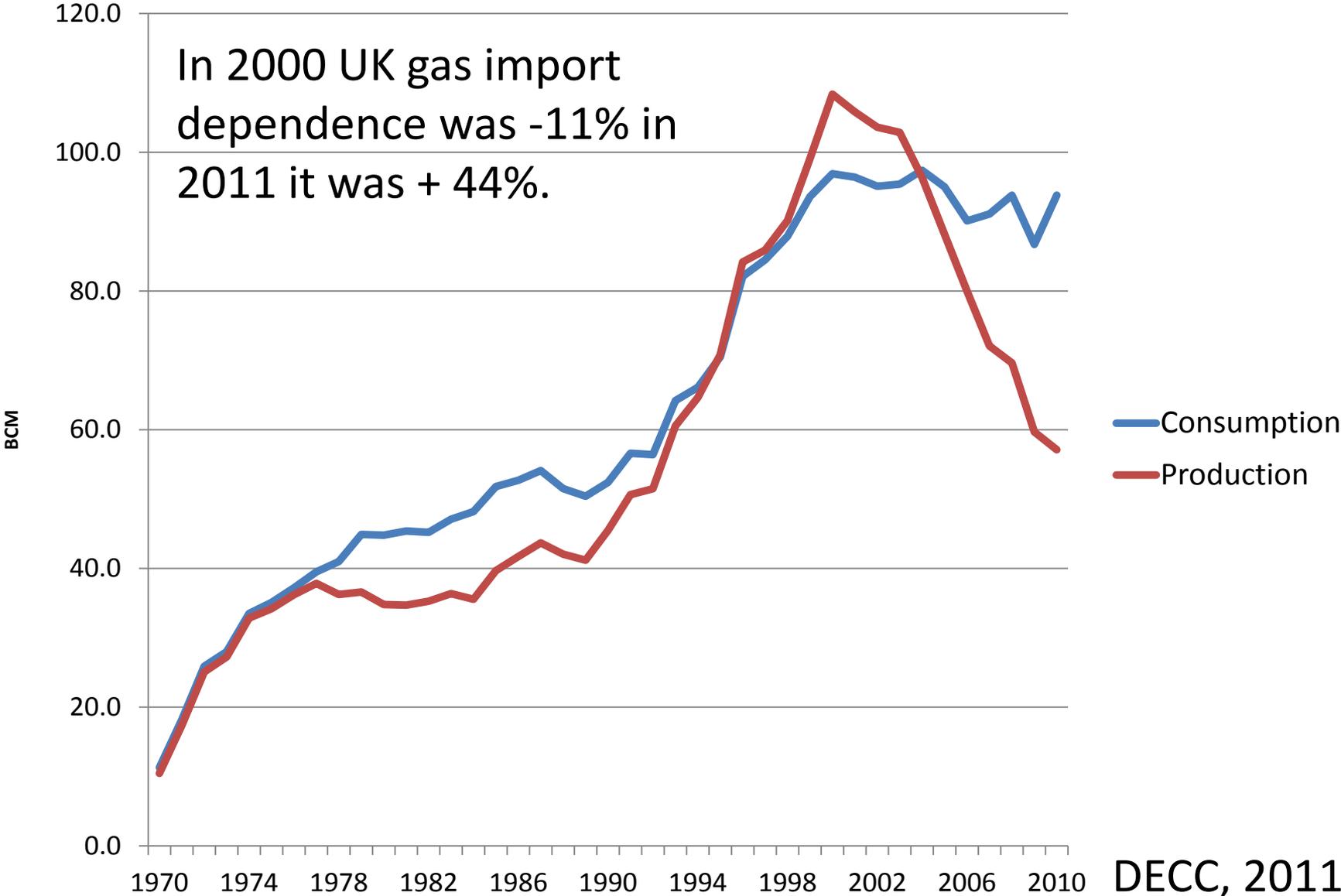
**Ofgem/Ofgem E-Serve 9 Millbank, London SW1P 3GE [www.ofgem.gov.uk](http://www.ofgem.gov.uk)**

The report cover has a light beige background with a darker beige horizontal band containing the title. The contact information is presented in a table format.

# A Gas Facts Quiz

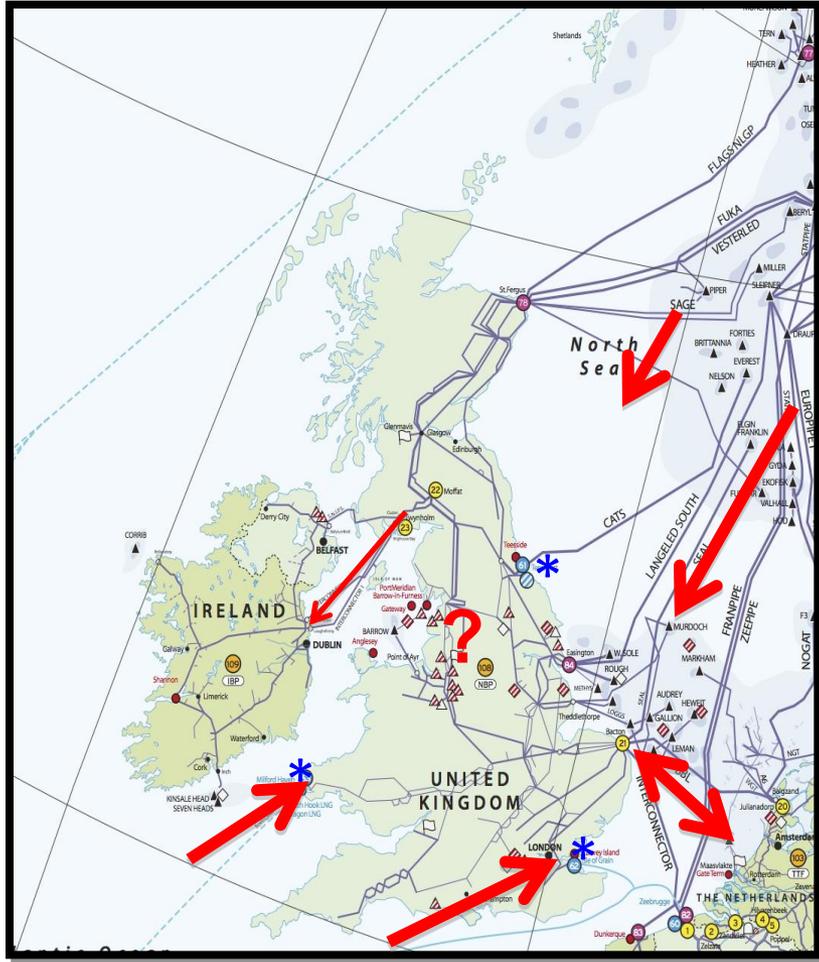
1. When did natural gas production in the UK peak?
2. When did the UK become a net importer of natural gas?
3. In 2011, what proportion of UK gas imports was accounted for by LNG?
4. In 2011, two countries each accounted for more than 40% of UK gas imports, what were they?
5. In 2011, how much gas did the UK import from Russia?
6. In what year did the UK achieve a record volume of gas exports?

# The UK Gas Balance: 1970-2010





# THE UK'S GAS BALANCE VECTORS



1. UK Continental Shelf (UKCS)
2. Norwegian Continental Shelf (NCS)
3. Interconnectors (IUK & BBL)
4. Liquefied Natural Gas
5. Exports to Ireland
6. Domestic gas storage
7. Domestic unconventional gas (biogas & shale)

# UK Gas Security Supply Matrix

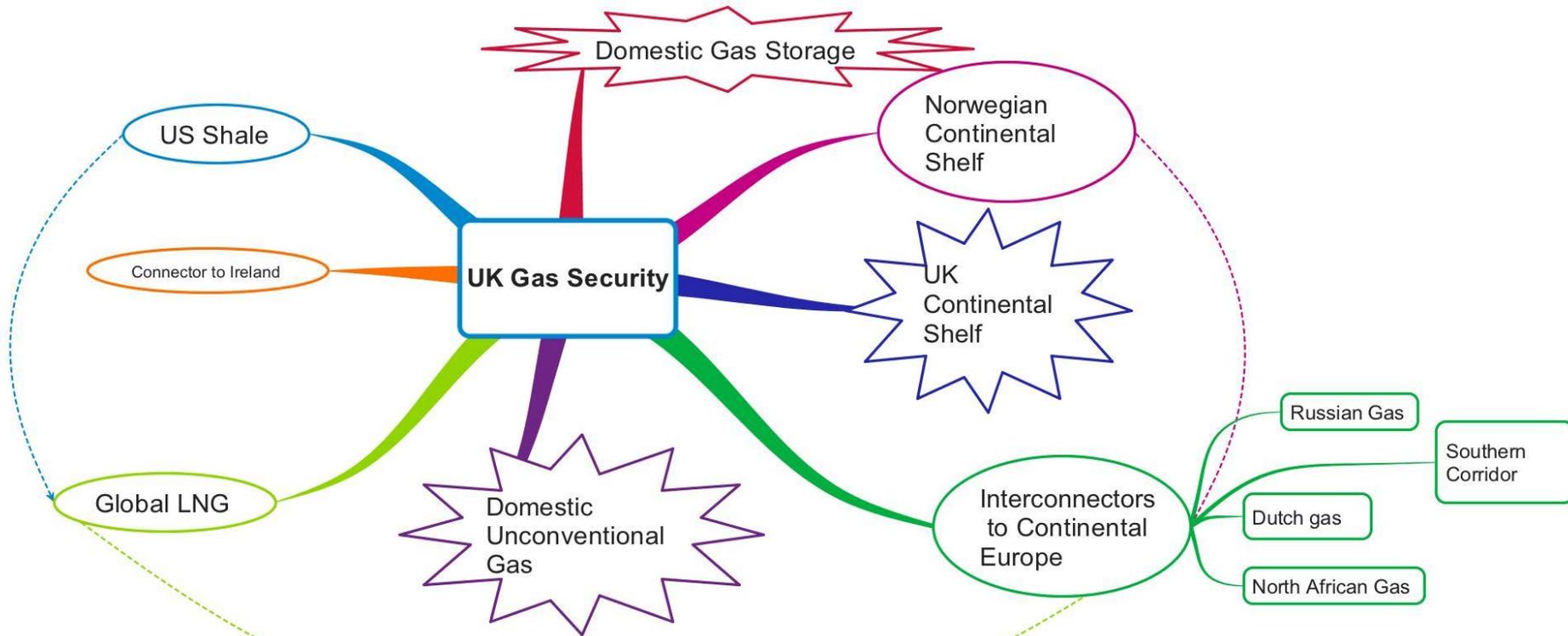
Each group should discuss a particular element of the matrix and report back on at least three measures that might be taken to realize opportunities to mitigate gas security of supply risk.

Group	Source of Supply
1	The Future of North Sea production and onshore infrastructure—UKCS & NCS, NTS, Storage etc. (Vectors 1,2 & 6)
2.	Interconnectors and gas supply from Continental Europe (Russia, N. Africa, Southern Corridor, etc.) (Vector 3)
3.	The Future reliability and affordability of the UK LNG supply chain (Vector 4)
4.	The potential for Domestic unconventional gas production (Shale & Biogas) (Vector 7)

# A Supply Chain Approach to UK Gas Security

	Geopolitics	Dimensions	Issues
UPSTREAM	Security of Supply	<ul style="list-style-type: none"> <li>• Resource Base</li> <li>• Technology</li> <li>• Investment</li> </ul>	<ul style="list-style-type: none"> <li>• Production from UKCS</li> <li>• Domestic unconventional gas production (biogas &amp; shale)</li> <li>• Production from NCS</li> <li>• Production from Russia/N. Africa</li> <li>• Upstream of LNG supply chain</li> <li>• Access to LNG cargoes</li> </ul>
MIDSTREAM	Security of Transport (Transit)	<ul style="list-style-type: none"> <li>• Processing</li> <li>• Transportation</li> <li>• Storage</li> </ul>	<ul style="list-style-type: none"> <li>• Re-orientation of the NTS</li> <li>• Access to LNG Shipping</li> <li>• Regasification facilities</li> <li>• Interconnection (domestic and external)</li> <li>• Processing &amp; storage</li> </ul>
DOWNSTREAM	Security of Demand	<ul style="list-style-type: none"> <li>• Power</li> <li>• Industrial use</li> <li>• Domestic use</li> </ul>	<ul style="list-style-type: none"> <li>• Role of gas in UK energy strategy</li> <li>• Price Competitiveness (coal)</li> <li>• Contract Structures (spot vrs long-term)</li> <li>• Gas-to-Gas market/hub evolution</li> <li>• Gas intermittency</li> <li>• Carbon floor price and ETS</li> <li>• Carbon Capture &amp; Storage</li> </ul>

# Conclusion: Globalizing UK Gas Security of Supply



- Globalization of LNG
- Geopolitics of Eurasian Gas Supply
- The Future of Norwegian Gas Production
- The Consequences of the US Shale Gas Revolution
- Prospects for Shale Gas in the UK and Europe

# Discussion topics

- Perceptions of gas security in the UK
- Shale gas – development issues and timescales
- Natural gas and climate change – the role of natural gas in carbon emission reductions
- Flexible capacity – will expansion of gas provide system flexibility or should alternative methods of increasing flexibility be pursued?
- Storage - What kind of storage do we need? And who will pay for it?
- Interconnectors - What is the role of interconnectors?
- Markets and price volatility