



Security of Supply for the UK

Jonathan Stern

Director of Gas Research

Oxford Institute for Energy Studies

Honorary Professor CEPMLP,

University of Dundee/Visiting Professor

Imperial College

**BIEE Seminar: “The Energy White
Paper – an academic critique”**

DBERR, London, September 25, 2007



ENERGY SECURITY: DEFINITIONS*

- **“Security of supply requires that sufficient fuel and infrastructure capacity is available to avoid socially unacceptable levels of interruption to physical supply and excessive costs to the economy from unexpectedly high or volatile prices**
- **Security of energy supplies requires sufficient, diverse and reliable:**
 - **Supplies of energy to meet customers’ demand**
 - **Capacity on the import, transmission and distribution networks to deliver supplies to customers”**

Good - but insufficient - definitions



Dimensions of Energy Security

DOMESTIC :

- Failures of supply and infrastructure
- Industrial action preventing the production or transportation of energy

INTERNATIONAL:

- All of the above plus
- Political and geopolitical difficulties of supply, transportation and transit
- Producer/Exporter cartels eg OPEC, GECF

SHORT TERM SUPPLY/PRICE DISRUPTION

LONGER TERM SUPPLY AVAILABILITY

The White Paper is mainly focussed on international oil and gas, and domestic electricity generation, issues



Security Risks Identified by the White Paper*

- Concentration of oil and gas supplies in unstable parts of the world
- Rise of “resource nationalism”: state intervention may restrict access to resources
- National champions (ie state-owned production and utility companies) may be inefficient and subject to political influence
- Market power over reserves and pipelines may be used to influence prices
- Inadequate information may cause price volatility
- Regulatory uncertainty may undermine investor confidence
- Terrorism, accident or natural disaster may increase the likelihood of disruptions

Are these the most important risks?

*Source: UK White Paper 2007, para 1.18



Security Remedies Suggested by the White Paper*

- 1. Promote open and competitive markets which:**
 - **provide fair access to energy supplies**
 - **foster investment throughout the energy chain**
 - **deliver diverse and reliable supplies at competitive prices**
- 2. Promote policies to improve energy efficiency**

Do these remedies address the energy security events most likely to be experienced?

* Source: UK White Paper 2007, para 1.22



Why is the UK Suddenly so Concerned About International Oil and Gas Security?

BECAUSE THE UK IS MOVING FROM A POSITION OF OIL AND GAS EXPORTER TO OIL AND GAS IMPORTER AND SUDDENLY FEELS VULNERABLE TO EXTERNAL DEPENDENCE



But Most of the Major Energy Security Disruptions Experienced in the UK have been of Domestic, not International Origin

- **Refinery blockade/petrol price protests of 2000**
- **Power outage in London, August 2003**
- **Rough storage outage, February 2006**
- **Widespread UK power outages, January 2007 (resulting from major storms, which – in White Paper terms – don't count)**

Why is the White Paper – and most other official literature – completely silent on these events/problems?



Conceptual/Definitional Energy Security Assumptions in the White Paper

- that important energy security problems faced by the UK will arise as a result of increased oil and gas imports
- that markets provide a complete solution to energy security and therefore that...
- giving foreigners (EU and non-EU) lectures on the merits of markets will improve energy security

Where is the evidence that such assumptions have been true, and policies have been effective, in the past?



The Geopolitics of Oil

Middle East, the key oil region but has serious long and short term conflicts involving major OECD oil importing nations:

- Israeli-Palestinian (Lebanese) conflict
- Iraq conflict
- Iranian-US problems

Problems in other regions:

- Latin America – particularly US conflict with Chavez regime in Venezuela
- Africa – political instability in Nigeria
- Russia and the Caspian: tensions over pipeline transportation

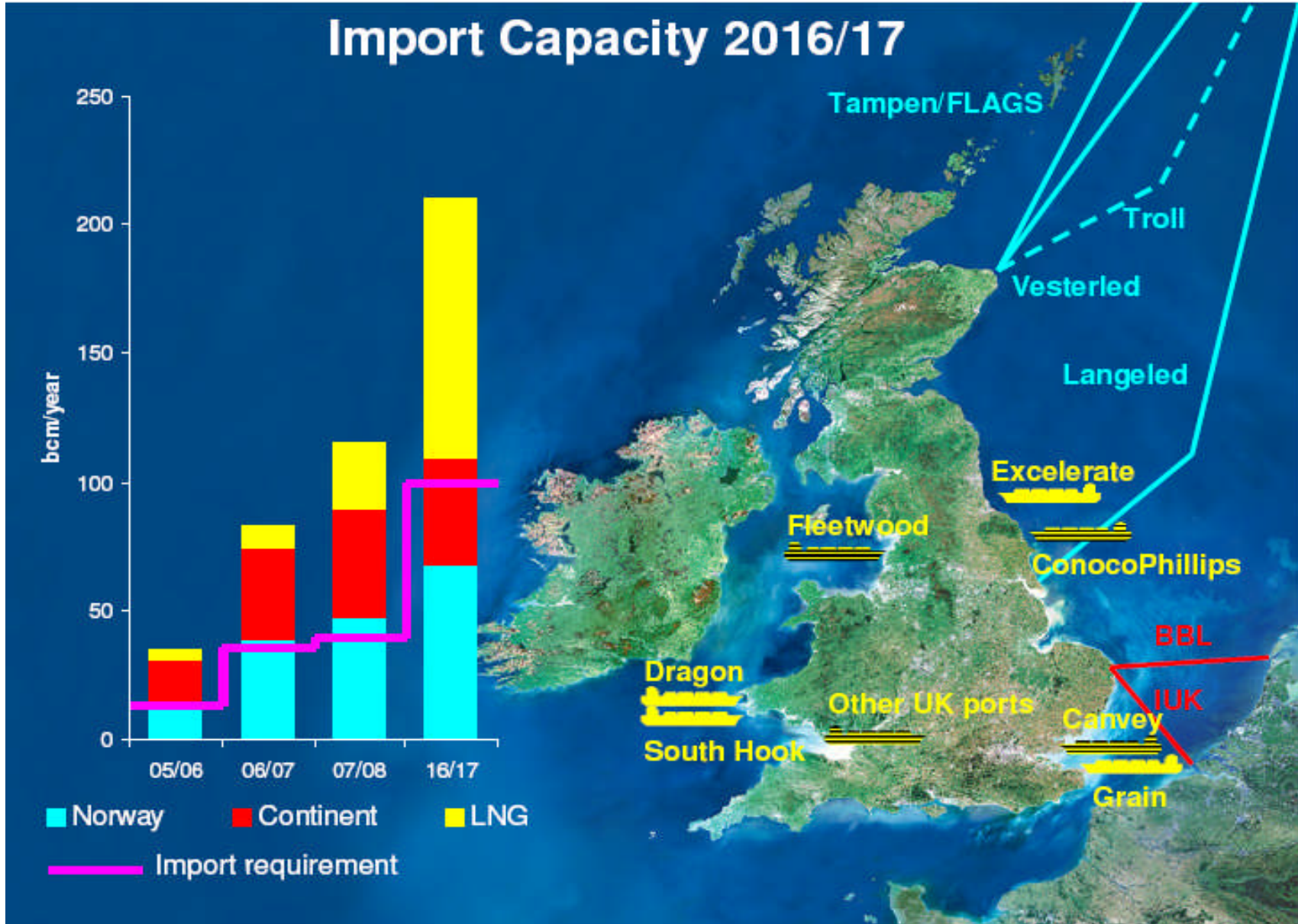
On which of these can UK policy have a significant impact?



The Geopolitics of Gas: worsening relations with Russia

- **Natural gas (and general political) relations between Russia and Europe (particularly the UK) have entered a period of increasing difficulty**
- **When Russian long term contracts reach their maximum 180-200 Bcm (~160 Bcm in 2006) – a limit on exports will be reached from the European side because of...**
- **fears of over-dependence and Russian political leverage: gas supplies and Gazprom downstream ownership**

UK has probably the worst relations with Russia of all major EU countries



Highly successful investment in import capacity



WE HAVE A MAJOR GAS SECURITY PROBLEM IN THE UK – IT IS CALLED THE UKCS; WE HAVE VERY LITTLE IDEA HOW MUCH WE CAN RELY ON THE UKCS EITHER ON A DAY TO DAY BASIS, OR OVER THE NEXT DECADE

Import dependence and long term supply adequacy are UK policy preoccupations; but short term disruptions of domestic supplies and facilities are the biggest problems



UK Gas Security: a potentially serious issue

Gas is >40% of UK energy demand:

- **reliability of supplies – from all sources – becomes much more important**
- **a liberalised and competitive gas market delivers a high level of efficiency but a low level of insurance**
- **UK has little or no contingency planning against short term extreme events**
- **addressing this problem requires a policy/regulatory and contractual framework of obligations on market players**

But it requires altering the current market framework and is therefore unacceptable



Security of Electricity Supply

Problems of supply security associated with generation options:

- intermittency of renewables
- risk of nuclear plant outages
- gas-fired generation has similar risks to gas security

Only coal has no obvious serious security (as opposed to carbon) problems

There seems no obvious reason why power generated domestically should be automatically less secure than power generated by imported fuels



Analytical Shortcomings of the White Paper

REMEDIES DO NOT ADDRESS THE MOST IMPORTANT PROBLEMS WHICH THE UK FACES

DEFINITIONS/RISKS NEED TO INCLUDE:

- **resilience of production and network infrastructure to weather-related events**
- **ability to cope with catastrophic technical failure/accident – “shocks”**

Most energy security incidents are caused by domestic supply and infrastructure failure but most of the academic, policy and media literature on security is focussed on the international dimension



The Way Forward for UK Energy Security Policy

- **International/geopolitical problems cannot be solved by the UK alone**
- **Lack of (what the UK considers to be) appropriate EU markets cannot be solved by further lectures**
- **The market framework which has been created for gas (and possibly also electricity) is not conducive to making insurance investments for gas/electricity infrastructure failure – is this an acceptable risk?**

Recognise that future energy security events are as likely (more likely?) to have domestic, rather than international origins