

DINNER/DISCUSSION SUMMARY

UK Energy Policy - Security of Supply

Held at The Royal Society of Edinburgh on Thursday 28th October, 2004

The Foundation is grateful to the following for support for this event:

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In the Chair: **The Rt Hon the Lord Jenkin of Roding**
Chairman, The Foundation for Science and Technology

Speakers: **The Lord Sutherland of Houndwood KT PRSE FBA**
President, Royal Society of Edinburgh
Peter Mather
Director UK and Vice President, Europe, BP
Kieron McFadyen
Technical Director (Europe), Shell Exploration & Production

LORD SUTHERLAND referenced the House of Lords Science and Technology Committee Report (HL Paper 126-1: Renewable Energy: Practicalities¹) in his comments. He said that the Lords committee believes that the 2010 renewable targets, and particularly that of 10% of energy from windpower, are unlikely to be met. Wind variability adds another risk factor. Achieving a consistent 10% delivery from wind will need at least 20% by capacity to deal with this variation. This adds exponentially to the cost and the investment risk. The UK electricity distribution grid was designed around the concept of large generating stations. Renewable energy means a move to a greater number of smaller supply sources and will require the infrastructure to be modified accordingly. Much of the existing plant is ageing and needs replacing. But the current price of electricity is not supporting this new investment. Planning issues further complicate and delay these decisions. As the UK draws more of its oil and gas needs from overseas, UK security of supply will depend increasingly on other nations. In this context, the more sources, the less dependency but the greater complexity. Finally, nuclear is a significant part of current capacity. As it runs down, there is no clear policy on how this capacity will be replaced. There seems to be no focus for these discussions in government today and insufficient clarity about who has responsibility for them. There is a need for policy, planning and targets across the board to more 'joined up' with a dedicated Minister of Energy for whom this is the sole job and who can lead the discussion in cabinet and in the country. All involve government in some hard decisions. And concern that, without single point accountability, these decisions won't be taken.

PETER MATHER said that, because the UK has had self sufficiency for 20 years, we have not needed an en-

ergy policy. So what has changed? UK oil and gas production is declining and the UK will soon become a net importer again. The UK has ageing infrastructure in offshore production and onshore power generation and distribution and there have been infrastructure failures in the US. Prices for both gas and oil are increasing, with the UK gas market linked to Europe via the Interconnector. There is concern about geopolitical instability. However, import dependency, while unfamiliar, does not have to be bad. Much of Europe has always been in this position. The UK and Europe are well placed in that they are surrounded by gas, with import corridors from Norway, Russia, North Africa and the Caspian. Investment in infrastructure to provide pipeline links and for LNG transport and terminal facilities to bring these supplies to market will be required. Markets can provide these solutions if allowed to work properly within a consistent regulatory framework and a more liberalised and interconnected network across Europe. For transport, there is not yet an acceptable alternative to the internal combustion engine but a lot can be done to improve its efficiency and reduce CO₂ waste. Hydrogen and solar energy still struggle to be economic. Demand management has a role to play. Challenging people to know (and reduce) their energy costs in a business does impact behaviour.

KIERON MCFADYEN said that, by 2020, gas will overtake oil as the fuel of choice and 80% of UK electricity generation will come from gas. Global gas reserves are 50% higher than oil at some 60 years of current demand. It is the role of industry to get these reserves to market. Gas is being transported increasingly long distances, both as pipeline gas and as LNG. Italy, France and Germany have been gas importers for many years, so imports can be managed. Norway has only produced one third of its resource. Because security of supply relies on infrastructure, industry

¹ www.publications.parliament.uk/pa/ld200304/ldselect/ldsctech/126/126.pdf

needs integrated decision making along the supply chain: i.e. locally, nationally and across national boundaries. A recent example is the Langeled pipeline from the Ormen Lange field in Norway that has the capacity to supply 20% of UK gas demand in 2007. This requires collaboration across industry and government and a stable fiscal and regulatory regime to support the investment. It also builds on technology competence developed from the North Sea. Here there may be a problem because demographics indicate an ageing workforce and a challenge to recruit sufficient young people to replace this expertise.

The discussion supported many of the points made by the three speakers, particularly the need for infrastructure investment and for a predictable framework of policy and regulation to support this investment. Uncertainty tends to hold back investment and it was noted that, taking the last 20 years of the North Sea industry as an example, there can be a propensity by government to change the rules. The requirement for an integrated approach was also supported. Government agencies often appear to set targets independently and in conflict with each other. For example, the UK has embarked on a carbon lean economy but rules that govern electricity and transport run counter to efficiency. The challenge is to make meeting these targets good business: e.g. increasing car fuel efficiency. One speaker observed that security of supply, price and aspirations for a carbon lean economy are potentially in conflict and need more integrated consideration. The energy industry is an amalgam of complex inter-relationships and there needs to be more joined up thinking to provide clear market signals. This includes the signals we send to graduates about the careers available to them in the energy sector.

There was considerable discussion and diverse opinion about markets. There was agreement that markets are about making money and that they respond to opportunities they see. But can markets make decisions that involve longer time scales of 20 to 30 years? The UK tends to live off investment in the past. Currently, the electricity market place is not supporting long term investments; it hasn't built a coal power station in a long time. The CHP market place is also static. On the other hand, markets do sometimes make long term decisions e.g. gas fired power generation over the last 20 years. With investments such as the Isle of Grain terminal, the Langeled gas pipeline from Norway, expansion of the Interconnector and Milford Haven LNG, can we really say that markets are not working? Markets have inherent risks, particularly when related to diversity of supply. Surprise was expressed that there was not a shudder when it was said that 80% of electricity generation would come from gas, much of it imported gas. Is it sufficient to regard diversity simply as having different gas suppliers? Today's high 'forward curve' price for fuel gas does not support investment in gas fired capacity while rising electricity prices currently favour coal generators.

Clean coal marginally reduces CO₂ emissions because of efficiency but it also generates lots of secondary waste.

What is going to replace nuclear? There will be a gap, and how is that gap to be filled? Currently wind is 0.4% of UK generation. And all the wind farms in the world, if located on the South Downs, would not generate 20% of UK demand. Many of the solutions for renewables are a long way from fruition and need considerable research, and research funding, to move them forward. Major investment in transmission infrastructure is needed to provide wind power access to the grid. Industry uses big blocks of power so this too has to be part of the solution. Government needs to set some ground rules for planning bearing in mind that the planning system is there to protect people as well as allow economic development.

Security of supply is a major issue for the transportation that underpins much of the UK economy. Electricity has diversity of fuel for generation, transport has virtually none. More effort needs to go into demand management. With the technology available we should be able to reduce energy consumption by 30%, but how do we influence people to change their behaviour, even simply to better insulate their houses. Experience from the US suggests that customers do not decrease their demand, at least in the short term, until the cost rises six fold.

Recent events have influenced public thinking and raised the profile of climate change as a very real problem. But we need to be aware that economic expansion in China and India will result in major increases in CO₂ emissions. Whatever happens in the UK, there will be nuclear elsewhere. Whatever mix of solutions are chosen, this has to be driven by economics. One economic test may be whether consumers are willing to pay for the security of supply that they demand.

George Watkins

Background Information Links

www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf

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www.foundation.org.uk

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