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European energy security and coal – a response to the European Commission Green Paper on Energy Security

Like all developed societies, Europe depends on the continued availability of secure and reliable energy at affordable and internationally competitive prices. The fluctuations in oil and gas prices over the past three years provides a sobering backdrop for assessing the issues that surround the maintenance of European energy security and sustainability in the coming decades.

Energy systems must be able to withstand shocks and uncertainties. The policy framework that supports our energy systems must accommodate medium and long-term objectives such as energy security, as well as the short-term objectives such as providing low cost energy today that often dominate political priorities.

Over recent years, key European policy objectives have included energy market liberalisation and the attainment of environmental goals. It is not surprising that energy security has not been a key objective given over-supply and low energy market prices through the 1990s.

The shift to an increasing dependence on oil and gas imports from outside of Europe will undermine energy security. Energy security must be incorporated into energy policy design balanced alongside other objectives, such as environmental goals. A possible way to achieve multiple energy policy goals is to incorporate the externalities associated with energy choices, including energy security, diversity and reliability externalities, into decision making.

Europe is becoming more reliant on imported energy and this trend will accelerate as North Sea production declines. An increasing future reliance on oil and gas imports will expose Europe to unexpected and uncontrollable changes in energy prices and increase the risk of physical supply disruption. The global reliance on oil from OPEC countries and the evident co-operation (in controlling supply) between OPEC and non-OPEC producers (including Russia and Norway) increases the uncertainty of oil prices. There is a real possibility that an OPEC-style arrangement could develop in the international gas market because gas exports are from fewer sources than oil and there are an increasing number of gas importers. This gives major gas exporters, such as Russia, a high degree of market power.

The recent opportunity to switch back, to some extent, from gas to coal in the electricity generating sector in Europe has defused the impact of rising gas prices on electricity costs over the last three years. This element of reduced demand for gas dampened the height of the recent rises in the gas price. Coal-fired plants that were operating at low load factor have been running at higher utilisation, displacing generation at gas stations. In the UK, coal consumption in electricity generation in the first six months of 2001 was 32% higher than the corresponding period in 1999. But, what happens in the future if the existing European coal-fired capacity is reduced and not replaced?

The role of coal as a supply (and price) 'shock absorber' in the competitive electricity market is threatened by the retirement or reduction of coal-fired plant capacity from the European electricity sector. At present around 63% of coal-fired electricity power plants in the EU are at least 20 years old. With little additional hydro capacity available and the likely retirement of some nuclear power plants without replacement, energy security will become increasingly dependent upon gas-fired electricity and gas imported from outside Europe.

The liberalisation of energy markets across Europe has helped to deliver lower market prices for customers and exposed large parts of the energy supply chain to competitive pressures. However, the liberalisation process could contribute to lower levels of energy security and higher price variability in the medium to longer term unless the EU introduces a strategic energy security policy framework.

It seems likely that, in the absence of any strategic framework, new gas-fired power stations will replace coal and nuclear power stations on their closure. This could result in an over-dependence on imported gas.

In a liberalised energy market, project developers are shaping Europe's energy mix. At present there is no mechanism to entice developers to consider long-term energy security issues when investing in new power generation capacity. The choice of gas-fired plants is due to relatively low establishment costs – shorter construction time and lower capital costs – coupled with investor preference for quick returns (as opposed to returns in the future). Energy security of supply considerations need to be addressed at the national and/or EU level.

Coal-fired electricity is a competitive form of energy. Maintaining coal's contribution in the European energy mix by encouraging the upgrading of older coal-fired power plants with new cleaner coal technologies would be a low-cost option to ensure future energy security while delivering significant environmental benefits. New cleaner coal technologies are more efficient and cleaner – reducing fuel consumed and emissions produced per unit of electricity relative to existing older generation technology plant.

Coal is Europe's most abundant fossil fuel resource, but large parts of the European coal industry offer little prospect of being competitive with coals traded on the world market for the foreseeable future. There are valid arguments for retaining European coal production capacity where it can be competitive within the short to medium term. However, competitive coal is available from a wide range of geopolitically stable sources to help meet Europe's energy demand.

Imports of coal by sea do not pose the same environmental and safety threats (associated with transportation and distribution) as those created by imports of oil and gas. Furthermore, coal can be easily and safely stockpiled, therefore enhancing the ability of Europe to withstand any disruption to other energy sources. This is in contrast to gas where a number of EU member states have little or no gas storage capacity.

In responding to the EC Green Paper, the World Coal Institute acknowledges the positive recognition and consideration given to coal:

- **a competitively priced fuel...** “For coal, one can talk of a competitive international market, for oil of a market dominated by a cartel, and for natural gas markets of a unique situation which might be described as regional oligopolies forming functional cartels in which prices are effectively determined by the oil market”, p. 23.
- **a safely transportable fuel...** “Coal is the only energy product which has been removed from the International Maritime Organisation's (OMI) list of dangerous products”, p. 25.
- **an abundant fuel...** “In absolute terms, the world has substantial reserves of solid fuels – 4-5 times as much as oil, or some 200 years' supply”, p. 20.
- **an available and reliable fuel...** “The characteristics of the world coal market (geographical and geopolitical spread of supply and absence of price tensions) are reassuring in view of growing external dependence. In this respect one can speak of a stable economic and physical supply”, p.24.

The Green Paper raises a number of issues that we believe require further consideration.

There needs to be a clear distinction between the production of coal and the consumption of coal in the European context. Statements such as “Pursuing the coal option in Europe is primarily for regional and social reasons” (p. 35) can only refer to European production, not use. For the reasons set out above, we believe that there is a strong case for retaining coal in the generation mix.

The paper highlights an option for European coal would be “...maintaining minimal capacity of coal production in realistic economic conditions, which would ensure the maintenance of the equipment and thus guarantee the continuity of good operation, while ... allowing European technology to keep its leading position in clean-coal mining and consumption” (p.21). This policy action should be viewed as a separate matter to energy security and the cost of such a policy should be clearly attributed to support for the European equipment manufacturing sector, not energy security.

Any policy framework aimed at ensuring the security of European energy systems should be integrated with all elements of sustainable development: economic security and prosperity; social development and advancement; and environmental sustainability. The provision of adequate, reliable and affordable energy is fundamental to achieving these objectives. Coal should be an enduring element in a modern, balanced energy portfolio as an important low cost and secure energy source, providing a bridge to a sustainable future.

We agree with the thesis that “Coal’s future depends largely on the development of techniques which ... lessen its environmental impact in terms of pollutant emissions through clean combustion technologies and CO₂ sequestration”, pg. 38.

There are technologies currently available, such as integrated coal gasification combined cycle (IGCC) and fluidised bed combustion (FBC)/pressurised fluidised bed combustion (PFBC) that can reduce emissions per unit of electricity produced. IGCC technology also offers the longer-term prospect of hydrogen production should such a move be required to meet long-term energy and environmental objectives. Carbon capture and sequestration has the potential to significantly reduce CO₂ emissions to the atmosphere from coal combustion at an affordable cost (e.g. the US Department of Energy has a target of US\$10/t of carbon avoided by 2015). Not only is there a need for further development, particularly on carbon sequestration and storage, there is also a need to ensure that there are no barriers to the deployment of these technologies.

It should be noted that the expansion of renewable energy sources in isolation could jeopardise the reliability of energy supply. Most renewable sources such as wind, solar and hydro are unreliable and/or intermittent. Whilst these sources have an important role to play in achieving environmental objectives, the need for secure, sustainable and competitively priced electricity production from other sources such as coal should not be understated.

The challenge for energy policy makers is to introduce a framework that brings energy security (and environmental) concerns into energy policy decisions, particularly on matters of future capacity investment. If this framework is established, coal – accessible, reliable and price stable (relative to other fossil fuels) – will continue to play an important role in providing Europe with secure and affordable energy – and deliver environmental objectives through the further development and deployment of cleaner coal technologies.