Response of UK COAL Mining Limited to the Royal Society of Edinburgh Inquiry into Facing up to Climate Change

Introduction

1. UK COAL Mining Limited (UKC) is the UK’s largest coal producer accounting for around 45% of UK production. Around 95% of our annual 8 million tonne production goes to the electricity generation industry. The Group has four deep mines located in Central and Northern England with substantial reserves and employs 3,100 people. UKC has recently secured planning permission to work the Blair House surface mine in Fife.

2. We welcome the invitation to contribute to the Royal Society of Edinburgh (RSE) inquiry into Facing up to Climate Change. UKC is fully committed to reduce its own carbon footprint and was recently awarded the prestigious Carbon Trust Standard for its work in this area. However this response focuses on the need to develop carbon capture and storage as a means to delivering secure, affordable and low carbon supplies of energy.

Coal within the Current UK Energy Mix

3. Energy is a necessary prerequisite of a modern economy, in terms of its development and political stability. In the UK, our energy strategy comprises of three main strands; security, low carbon and affordability.

4. Coal is a major energy source within the UK, accounting for around one third of electricity generated in 2008. In 2008 electricity generators consumed 47.8Mt and this sector accounts for over 80% of UK coal demand.

5. Coal-fired power stations provide security and diversity of supply. They are also able to respond more quickly to peaks in demand on the electricity grid than either gas or nuclear stations. This provides a vital load following capability, which ensures that the National Grid is able to meet fluctuations in electricity demand.

6. The UK is facing energy security challenges presented by a dramatically changing global economic, geopolitical and energy landscape. Global reserves of oil and gas are increasingly concentrated in a limited number of countries and there is a clear risk that global supplies will not keep pace with demand.

7. The current winter cold spell has highlighted our reliance on gas with two national balancing alerts in the first week of January and many industrial consumers having their supply cut off. Future planned gas build will exacerbate this position.

8. Coal generation, therefore is vital to the UK’s diversity and security of energy supplies especially at time of dwindling indigenous gas supplies and volatile international energy markets.

Coal within a Future UK Energy Mix

9. Looking forward coal can contribute to a low carbon future via the introduction of carbon capture and storage (CCS) technology. A fleet of clean coal stations with CCS would allow indigenous coal production to contribute to the UK’s security of
energy supply by limiting energy imports from either unstable or potentially unstable countries.

10. CCS technology is the only currently available technology that allows very deep cuts to be made in CO$_2$ emissions to atmosphere from fossil fuels at the scale needed. CCS has been demonstrated in a few small projects around the world but would require to be scaled up to handle emissions from the electricity sector.

11. The Committee for Climate Change (CCC) have stated that 'any path to an 80% reduction by 2050 requires that electricity generation is almost entirely decarbonised by 2030', (page 173, Building a Low Carbon Economy December 2008). In order to achieve this we need wide scale CCS deployment as soon as possible.

12. The CCC however goes on to warn of the consequences of only applying CCS to coal fired plant; 'Investors choose to invest in increasingly expensive gas-fired rather than low-carbon generation through the 2020s, resulting in deviation from the path towards meeting long-term targets' and ‘These scenarios lead to lock in to high-carbon assets and failure to make sufficient progress with decarbonisation by 2030'.

13. The Chancellor in his Pre Budget Report (December 2009) announced that financial support would be given to fund four demonstration projects. These projects would be at a level (400MW) previously not demonstrated and there would be a requirement on the operator to retrofit to later retrofit CCS on the non abated capacity by 2025. The Government also intend to review progress on CCS in 2018.

14. Current Government policy is that all new fossil fuel generating stations must be constructed carbon capture ready, but new coal stations must in addition demonstrate the full CCS chain on at least 400MW of capacity.

15. Support for four CCS demonstration projects whilst to be welcomed as an important first step, will not maintain coal’s current position in the UK’s future energy mix. There is a danger that all existing coal stations (28GW) will have closed by 2023 because of a combination of the LCPD and IED, leaving only the 4 demonstration CCS stations in existence. This would push coal out to the margins within the UK and make it difficult for continued investment within coal production industry. UKC is facing such problems in trying to reopen Harworth Colliery.

---

1 Harworth Colliery is situated in North Nottinghamshire and is currently mothballed following the exhaustion of the reserves in the Deep Soft seam in 2006. Boreholes and seismic exploration have identified up to 54Mt in the Top Hard seam which would be suitable for the local power station market. If the project went ahead the mine would produce in excess of 2 Mt per annum, which would directly replace imports as well as providing employment for 550 employees.

The overall cost of the scheme would be around £200m and in the current economic climate UK COAL has approached the European Investment Bank (EIB) as a possible source of finance. UK COAL has been told that although the scheme meets the criteria for funding in terms of creating jobs in an area of high unemployment, security of supply and return on investment; it fails in terms of its ‘low carbon green credentials’. Therefore in order to secure funding from the EIB, they would require coal to be sold to a power station with CCS installed. Hence a further urgent need from a coal producer’s perspective to see CCS up and running within the UK as soon as possible.
16. For a number of potential replacement CCS coal stations to be operationally ready by 2023 will require the Government’s CCS review to reach its conclusion much earlier than 2018 planned. This is due to the lengthy time required for design, planning and construction of a new coal plant within the UK.

17. The UK Government needs to map out how it envisages the next tranche of coal stations to be deployed to ensure coal continues to play a meaningful role in the UK’s energy mix.

CCS Worldwide

18. Coal meets just over one quarter of the world’s demand for primary energy, 40% of the world’s electricity and two thirds of the world’s steel and is the fastest growing fuel around the globe.

19. Countries such as China and India are sitting on vast reserves of coal and with little other natural resources it is inconceivable that they will not use these reserves to fuel their ever expanding economy. China already mines around 40% of the world’s coal production and this volume is forecast to double by 2030 to meet internal demand.

20. Current trends in energy supply and use are patently unsustainable – economically, environmentally and socially. Without decisive action, energy-related emissions of CO2 will more than double by 2050. We can and must change our current path, but this will take an energy revolution and low-carbon energy technologies will have a crucial role to play.

21. CCS is an important part of the lowest-cost greenhouse gas (GHG) mitigation portfolio. International Energy Agency (IEA) analysis suggests that without CCS, overall costs to reduce emissions to 2005 levels by 2050 increase by 70%. They have produced a roadmap which includes an ambitious CCS growth path in order to achieve this GHG mitigation potential, envisioning 100 projects globally by 2020 and over 3,000 projects by 2050.

22. This roadmap’s level of project development requires an additional investment of over USD 2.5-3 trillion from 2010 to 2050, which is about 6% of the overall investment needed to achieve a 50% reduction in GHG emissions by 2050. OECD governments will need to increase funding for CCS demonstration projects to an average annual level of USD 3.5 to 4 billion (bn) from 2010 to 2020. In addition, mechanisms need to be established to incentivise commercialisation beyond 2020 in the form of mandates, GHG reduction incentives, tax rebates or other financing mechanisms.

23. Although the developed world must lead the CCS effort in the next decade, CCS technology must also spread rapidly to the developing world, China in particular must widely adopt CCS. This growth will require expanded international collaboration and financing for CCS demonstration in developing countries at an average annual level of USD 1.5 to 2.5 bn from 2010 to 2020. To provide this funding, CCS needs to be approved in the Clean Development Mechanism\(^2\) or an alternative financing mechanism.

---

\(^2\) Part of the Kyoto Protocol
24. CCS is more than a strategy for “clean coal.” CCS technology must also be adopted by biomass and gas power plants; in the fuel transformation and gas processing sectors; and in emissions-intensive industrial sectors like cement, iron and steel, chemicals, and pulp and paper.

25. CO$_2$ capture technology is available today, but the associated costs need to be lowered and the technology still needs to be demonstrated at commercial scale. Additional research and development is also needed, particularly to address different CO$_2$ streams from industrial sources and to test biomass and hydrogen production with CCS.

26. CO$_2$ transport via pipeline has been proven; the challenge for the future of transport technology is to develop long-term strategies for CO$_2$ source clusters and CO$2$ pipeline networks that optimise source-to-sink transmission of CO$_2$. To address this challenge, governments need to initiate regional planning exercises and develop incentives for the creation of CO$_2$ transport hubs.

27. There is an urgent need to advance the state of global knowledge of CO$_2$ storage capacity. While depleted oil and gas fields are well mapped and offer promising low cost opportunities, deep saline formations are the most viable option for the long-term. However, only a few regions have adequately mapped the CO$_2$ storage potential of these formations. There is also a need for common international methods for CO$_2$ storage site selection, monitoring and verification, and risk assessment.

Summary

28. Greater emphasis should be placed on indigenous coal as part of a diverse, secure and affordable energy policy.

29. CCS provides a low carbon solution to the continued use of fossil fuels and in particular coal in the UK and around the world.

30. The UK is in a unique position to benefit from the development in CCS technology and become a global leader in this field. Efforts should be made to demonstrate CCS on commercial coal generation plant in a timely manner within the UK.

31. Our geographical situation close to potential storage sites in disused North Sea oil and gas fields and deep saline formations means we have a natural storage site on our doorstep, perhaps sufficient to hold 500 years worth of UK emissions.

32. The UK also has the skill set to take the lead in this field. The expertise within our North Sea oil and gas industry can be transferred, thus maintaining well paid and highly skilled jobs.

33. The UK Government should develop a strategy and support mechanism to ensure CCS is rolled out in a timely manner across all fossil fuels. If gas fired plant is allowed to be built unabated then we will see a further ‘dash for gas’ which will threaten our security of energy, increase the cost to the consumer and result in future carbon lock in over the next 30 years.