Second Overview of the work of the UK Coal Forum: July 2007 to July 2008

Coal Forum Overview Report; August 2008
Foreword
John Harris CBE DL Chair Coal Forum

The Coal Forum was convened by government in 2006 to facilitate dialogue with and within the energy industry and over the last two years it has sought to fulfil its remit - to 'work to ensure that we have the right framework, consistent with (government's) energy policy goals, to secure the long term contribution of coal fired power generation and optimise the use of economical coal reserves in the UK'.

I was delighted last year to accept the invitation to chair the Coal Forum and wish to express appreciation to all those who have contributed to its work and the dialogue.

Over the last two years, the energy policy debate has become increasingly focussed on three main issues and this overview report summarises the Coal Forum's views on these and other practical issues of significance:

- security of supply (in winter months coal fuels c.50% of electricity generation)
- the 'energy gap' between generating capacity and future demand for electricity
- climate change and global warming, and the environmental impact of coal use

Over these last two years, the UK position has become more uncomfortable and concerns have increased - as has controversy as to what should be done - but the Coal Forum believes that coal continues to have an important contribution to make.

As the nation becomes more familiar with the implications of dependence on external sources of energy supplies, the position has become more uncertain for uninterrupted availability and cost volatility. In this scenario, the confidence of the British coal mining industry in its ability to produce for the foreseeable future c.20 million tonnes of indigenous coal pa should provide a welcome element of re-assurance to government, consumers and electricity generators. However, coal producers require a level playing field, balancing the need for coal with acceptance of their ability and commitment to deliver the highest standards of environmental performance in producing these tonnages economically and acceptably.

There is increasing concern at the energy generating 'capacity gap' as the closure of ageing nuclear and coal power stations comes ever closer which requires, with increasing urgency, the commencement of construction of new modern efficient plant as replacement capacity (a third of existing capacity is due to close by 2015) and to meet the future rising demand. An 'energy mix' including coal serves both the national need and commercial considerations, for both of these contributing to security of supply through diverse sources of origin and fuels, mitigating risk to supply.

But, as the knowledge and awareness of the impact of global warming on the environment increases, so the adoption of international, European and national targets for emissions stabilisation and substantial reduction highlights the need for decisive action to be taken urgently. For coal fired power generation, attention is focussed on the need for the adoption of clean coal technology generally, and in particular, if there is to be any realistic prospect of emissions reduction on the substantial scale seen to be required, on the essential contribution of carbon capture and storage for fossil fuel power stations world wide, given the scale of existing and future investment in coal and gas fired generation (in 2007 globally the fastest growing fuel use was of coal for the fifth year in succession, a 32% increase since 2002).

In summary, the needs in relation to the basic policy elements of the framework, as envisaged from the Coal Forum dialogue, look for overall recognition as follows:

- coal (including the contribution of indigenous coal) as a continuing element of a required 'energy mix' in the generation of electricity to contribute to security of supply as part of a diversity of sources of origin and fuels
- the mining of British coal, through the continuing commitment by coal mining producers to high environmental operating standards and government support in optimising the working of economical coal reserves, contributing a welcome valuable indigenous element from a national asset to security of supply (as coal use increases globally, prices are volatile, balance of payments pressured, while nationally employment is stimulated)
- efficient and effective 'clean coal' electricity generation through the proving of and progressive application urgently of the best available technology (through research and development, demonstration and commercial deployment) to contribute to the meeting of future national energy needs and of the revolutionary emissions reduction targets
- in particular the urgent development of an effective legal, regulatory, and operational framework and of regional CCS networks to incentivise the availability of carbon capture and storage for all significant carbon emitters including fossil fuel powered generators.

The future dialogue of the Coal Forum will need to continue to focus on the means of delivering this framework; on

- how the coal supply contribution, including the mining of indigenous coal, to our national energy needs can be effectively and acceptably delivered as part of the energy mix,
- how the best available clean coal technology including CCS for coal fired power generation can be proved and applied urgently, effectively and commercially,
- how generators will undertake investment in new coal fired power stations as part of their energy mix approach, and in time to close the generation capacity gap,
- how negative public perception and attitudes of opposition to coal can be changed so that its contribution is accepted,
- and a level playing field is available both in the working of coal and its utilisation;

So that clean coal can contribute strongly to the twin national challenges of how to achieve both security of energy supply and genuine environmental improvement.

2 Executive Summary

Background to the UK Coal Forum

Following the publication of 'The Energy Challenge' in 2006 the Government convened the UK Coal Forum to bring Government together with coal producers, generators, unions and equipment manufactures. By facilitating this dialogue within the industry the Forum has sought ways to secure the future of UK coal production, working to ensure that the UK has the right framework, consistent with energy policy goals, to secure the long-term contribution of coal-fired power generation and the best use of economical coal reserves.

At the initial Phase Two meeting in October 2007, under new Chair John Harris, members re-confirmed the Forum's objectives and Terms of Reference. The full Forum has then met a further three times – in February, May and July. Copies of the Forum's minutes are available to download on the Coal Forum pages of the BERR website. By the end of Phase Two the economics of coal were beginning to change and there was an increasing focus on the UK's energy mix.

Key Issues

The Forum's sub-groups considered a number of issues during the past year and these are addressed in detail in the main body of this report. This summary brings the work together under two main headings – Security of Supply and Infrastructure.

Security of Supply

Much of the Coal Forum's work this year has been about bolstering the need to ensure that coal plays a key role in the energy mix and the need for the Government to acknowledge this publicly.

The work done by the Future Generation sub-group on updating the scenarios produced for the Forum's First Overview, Chapter 3 of this report, has been important in focussing on the implications of both national and EU legislation and regulation on future energy build. The sub-group has also continued to work closely with officials from the BERR Energy Group both in relation to CCS and ensuring that the Energy Markets Outlook reflects the current position correctly. The Forum has welcomed a number of statements made by Government Ministers about the contribution made by coal.

That said the Forum believes there is strong need for Government to play a more active role in endorsing the use of coal in the energy mix and ensuring the right legislation and regulations are implemented.

The key recommendations of the Forum include:

Government should acknowledge the need for coal in the energy mix and the implications of the impending closures of the current coal and nuclear plant.

Government should give a stronger and strategic endorsement for indigenous coal.

Government needs to progress the CCS demonstrator urgently and support this as quickly as possible with the necessary regulatory regime.

Within Europe there is a need to "push" speedy adoption of the CCS directive, albeit with equal treatment for coal and gas as fuel sources for power plant and establish a funding mechanism.

In partnership with Coal Forum members establish a specific plan for greater public awareness about the role of coal fired power generation.

Infrastructure

The Coal Forum continues to believe that planning policy and its processes are having a significant effect on future levels of indigenous coal production, particularly that produced by surface mining. Particular reference was drawn to the Government's Planning Bill and the Welsh Assembly's consultation paper (http://new.wales.gov.uk/consultations/closed/plancloscons/finalcoaltanconsultation/?lang=en).

The Forum notes that although the proposed Infrastructure Planning Commission (IPC) will, in future, deal with planning applications for major infrastructure projects it is unlikely to deal with coal mining infrastructure projects, such as large new deep mines, nor will there be a National Policy Statement related to coal production.

The Forum does however believe that a key issue for ensuring coal is considered on a level playing field has to be a change in public perception.

It made a number of recommendations including:

Urges Government to continue making supportive statements referring to security of supply, diversity of fuel mix and a need to maximise the utilisation of our own coal resources wherever environmentally possible.

Requests Government to consider a National Policy Statement which makes reference to the production of coal, or at the very least to the production of minerals in general.

Coal Producers should ensure they fulfil their commitments to local communities.

Government should build on its recognition of the importance of indigenous coal by ensuring that there is a level playing field for coal in relation to planning regulations.

Power station owners and their parent organisations should recognise the need to promote to the public, customers and other stakeholders the importance of indigenous coal as a source of electricity.

Future Work

Following the publication of this report the Forum membership plans to review their work, including the lessons learnt from last year, and consider how best the core objectives of the Forum might be taken forward in the broader context of UK Energy Policy.

3 Future Market Share

3.1 Scenarios Update

In the first Coal Forum overview report in 2007 we gave details of a scenario modelling exercise which looked at the future generation mix of power technologies out to 2025. It incorporated the effect of closures of the nuclear fleet and the coal plant opted out under the EU Large Combustion Plants Directive. It is now quite common-place to see references to the fact that about a third of UK existing capacity will be closed by 2015.

It remains clear that nuclear has no prospect of closing this "gap" within the next 8 years and that even with the enhanced build programme for renewables there will be a need for significant new fossil fuel fired plant – coal or gas. Hence the Future Generation sub group has re-visited last year's work. The main elements are summarised below and assumptions are detailed in Appendix 1.

Scenarios Analysis – update

Scenarios considered by the Coal Forum in 2007

In 2007, the Forum considered four Scenarios, each denoted by the capacity of new coal power plant which it was envisaged might be built by 2016 to replace the coal, oil and nuclear stations which are closing and thereby fill the "generation gap" between the predicted peak demand and the available capacity. Having adopted Government estimates for renewables build during this period, the balance of the 22GW needed would be gas or coal – nuclear being assumed later. The four scenarios were:

- Zero Coal 0 GW
- Low Coal 5 GW
- Medium Coal 10 GW
- High Coal 15 GW

It was noted that the Zero Coal Scenario would lead to a 58% dependence on gas in 2016. The Medium Coal scenario would approximately maintain the current capacity mix and could be possible if all the coal fired projects under discussion in May 2007 were to go ahead. All scenarios would give about 40% reduction in CO_2 emissions if all the new plant was fitted with CCS by 2025.

Scenarios Update

By June 2008 there were 12 GW of gas CCGT projects started or planned and only one coal power plant 1.6 GW (Kingsnorth) has reached the tender stage. Other coal projects are awaiting outcome of the Kingsnorth Section 36 consent. At least a further 8GW of fossil plant will be needed by 2014/5.

A major new threat to continued operation of Opted In plant beyond 2016 has emerged due to the potential changes in EU emissions regulations (LCPD/IPPC/IED) – see "other issues" below. There is more certainty about a future nuclear programme.

Updated Scenarios

The 2008 Update has two Scenarios:

- Optimistic for Coal
- Pessimistic for coal

Both Scenarios

- Assume 1.6GW nuclear new build in 2018, 2.6GW by 2020
- Assume 25GW of wind in 2020
- Nuclear station closures as BERR predictions
- Use latest BERR demand predictions
- Used the energy markets outlook (EMO) logic on derating of capacity to reflect the probable contribution of the type of plant on days of peak demand
- Assume no CCGT closures due to the Industrial Emissions Directive despite current indications these may be necessary

The "Optimistic for Coal" Scenario has
- 6 GW of new coal by 2016, all carbon capture ready, the most we can now envisage
- 4.6 GW of opted-in plant closing in 2016 - due to EU changes in emissions regulations (LCPD/IPPC/IED)
- Three CCS demonstration plants (1.6GW) operational by 2018
- 6GW of CCS retrofitted on coal by 2025

The "Pessimistic for coal" has
- No new coal by 2016
- 10 GW of opted-in plants close in 2016
- No CCS demonstration

Note for comparison: the BERR CCS consultation suggests 2.5 GW of new coal.

Scenario Modelling
The model lists "installed capacity" by type and year, calculates an "available capacity" by multiplying by "derating factors" and then calculates the % dependence on generation type on days of peak demand. The reliable 'available capacity' is compared to the forecast peak demand to check if there is a positive generation margin.

Load factors for different types of plant are then inserted and the resulting generation (TWh), CO_2 emissions and coal use are calculated.

Detailed assumptions are given in Appendix 1.

Outcomes of model
There will be a generation capacity gap unless a further 2GW of Gas CCGTs are built by 2012 and 5GW by 2016 on top of the 12 GW planned/under construction.
Optimistic for Coal Scenario would produce
- 60% dependence on gas during a cold still spell in winter in 2016 (cf 36% now)
- 42% of generation (TWH) from gas, 16% from renewables in 2016
- 33% reduction in CO_2 emissions in 2025 vs 2006
- Annual coal demand 40 Mt/y in 2016, 45 Mt/y in 2020

Pessimistic for Coal Scenario would produce
- 75% dependence on gas during a cold still spell in winter in 2016 (cf 36% now)
- 54% of generation (TWH) from gas, 17% from renewables in 2016
- 34% reduction in CO_2 emissions in 2025 vs 2006
- Annual coal demand 18.6 tonnes/year

Lessons from modelling of the Power Generation Mix
There has been considerable debate amongst members of the Future Generation group on the outcomes reported in the foregoing section and the way to interpret them. Some see a need for Government to follow the same path as for renewables and increasingly for nuclear by clearly indicating how much coal firing would be appropriate on security of supply grounds, whilst others feel that the market is already too constrained and generators should be left to make sensible choices between the two main fossil fuels based on their own perceptions of risk, costs and portfolio management. Both points of view have validity. The dilemma arises because although the basic principle espoused by Government is a free market this is not the reality as recent policy initiatives on renewables and nuclear leave little room for market forces to operate.

When these constraints are combined with low carbon policies and the 100% auctioning of allowances currently suggested for the EU ETS, coal is at a significant disadvantage, notwithstanding its obvious security of supply credentials. Hence, it is hardly surprising that industry will more often select CCGTs as the principle means of filling gaps in their portfolios. Another likely consequence is that old unabated coal plant will be kept available to run for longer

than intended as a hedge against power shortages. Thus there is a strong possibility that UK finishes up with higher carbon emitting coal plant combined with much more unabated gas plant. The unit rate of CO2 emission from gas is about half that of coal but there will be a lot more of it on the system so UK's CO2 footprint will not improve.

For markets to work they must be efficient and recent policy initiatives are impacting on this efficiency because there are too few degrees to freedom within which to act. Immediate actions for coal are those which level the playing field between coal and gas. Government needs to consider whether action beyond this is appropriate.

3.2 Recommendations

Government needs to:

1. Acknowledge that impending closures of coal and nuclear plant could bring the nation perilously close to brown outs and/or restrictive power management under certain winter conditions in only a few years hence and therefore action to replace the closing capacity is extremely urgent.

2. Take note of and consider action to offset the poor prospects for new coal fired plant, given coal's security of supply and system flexibility advantages. This arises because of constraints on market operation arising from policies on renewables and nuclear and impending effects of the EU ETS 100% allowance auctioning system. Some figures from our own market analysis are reproduced below to illustrate the potential gas fired generation dependency as in point (ii) below and the real possibility of shortages in electricity supply from around 2012 in point (iii) below:
    i. Our most optimistic case for coal shows 60% dependence on gas during a cold still spell in winter in 2016 (cf 36% now);
    ii. Our pessimistic case with no new coal shows 75% dependence on gas during a cold still spell in winter in 2016 (cf 36% now);
    iii. There will be a generation capacity gap unless a further 2GW of gas CCGTs are built by 2012 and 5GW by 2016 on top of the 12 GW planned/under construction – note that as currently proposed all new gas fired capacity would also have to provide evidence of being "capture ready"

3. Give a stronger lead on how it sees the place for coal – fired power generation in the UK. The two key questions are:
    a. Which Scenario meets the Government's views of a satisfactorily balanced portfolio and can be used by industry as a basis for planning?
        i. "Optimistic for Coal" being the closest to answering security of supply concerns whilst
        ii. "Pessimistic for Coal" brings major risks to security of supplies, electricity costs, and no improvement in CO2 emissions.

    b. What actions are necessary to secure achievement of the "Optimistic for Coal" Scenario? Some are suggested below
        i. Satisfactory early result from CCR consultation and
        ii. Rapid inception of the CCS demonstration and
        iii. Ensuring that gas and coal are treated the same way in related carbon management trading and regulatory systems
        iv. Satisfactory outcome from the LCPD/ IED negotiations

4 World Markets

4.1 Introduction

The World Markets Sub-Group has not met since the production of the first Overview report in August 2007. However, a number of developments in world coal markets are worthy of note. These have been routinely reported at Coal Forum meetings.

4.2 World Coal Consumption

In 2007, coal was the fastest growing fuel in the world for the fifth consecutive year.[1] Global consumption rose by 4.5% giving a total increase in coal demand of 32.0% since 2002.

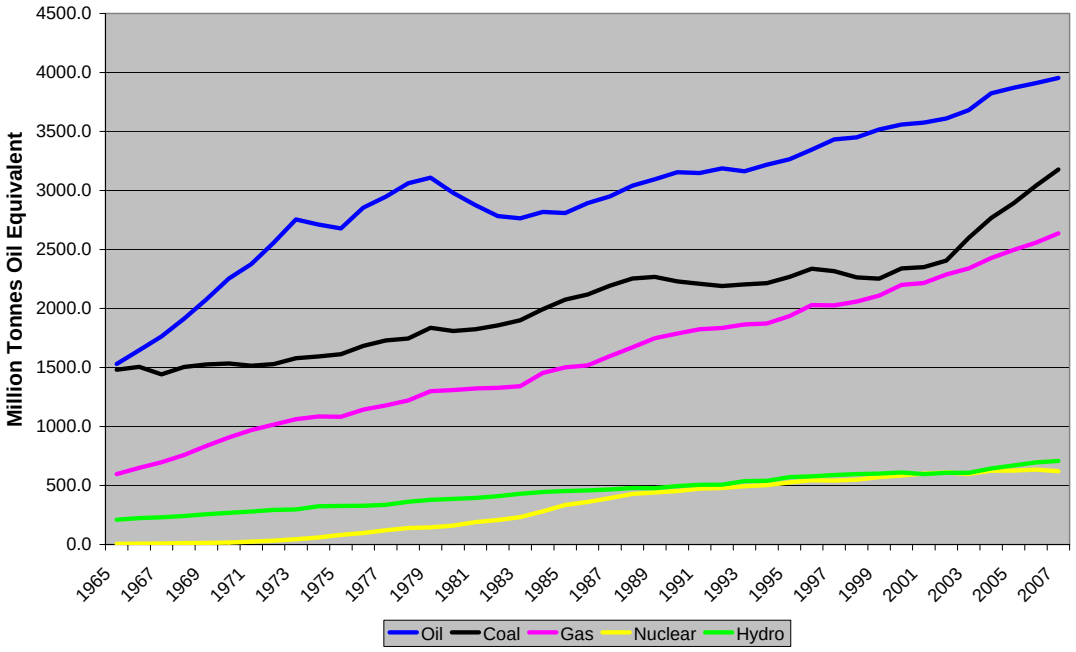

Figure 1 - World Energy Consumption

Chinese coal consumption rose by 7.9% in 2007, the weakest growth since 2002, but still sufficient to account for more than two-thirds of global growth. Indian consumption rose by 6.6% and OECD consumption rose by 1.3%.

4.3 World Coal Reserves

The World Energy Council's 2007 Survey of Energy Resources[2], published after last year's Overview report, gives global coal reserves at the end of 2005 as 847.5 billion tonnes, estimated sufficient for almost 150 years at current rates of production. The survey states that, "While questions regarding the size and location of reserves of oil and gas abound, coal remains abundant – and broadly distributed around the world. Economically recoverable reserves of coal are available in more than 70 countries worldwide, and in each major world region. With authorities reporting some 850 billion tonnes of coal as currently recoverable (the geological resource is far larger), it is clear that coal will be with us for many decades, if not centuries, to come."

The fact that coal reserves were 61.5 billion tonnes (or 6.8%) lower than the corresponding total at end-2002 is described by WEC as "more of a refinement than a revision".

[1] BP Statistical Review of World Energy – June 2008
http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2008/STAGING/local_assets/downloads/pdf/statistical_review_of_world_energy_full_review_2008.pdf

[2] http://www.worldenergy.org/documents/ser2007_final_online_version_1.pdf

WEC does not produce fully comprehensive resource figures, and the widely used BP data concentrates solely on proven reserves. The German Federal Institute for Geosciences and Natural Resources (BGR), however, stated in its 2007 report[3] that coal and lignite resources totalled 8,710 billion tonnes coal equivalent[4]. This would correspond to over 10,000 billion tonnes of coal at 6,000 kcal/kg (the internationally traded standard).

The BGR report notes that coal resources comprise about 75% of all non-renewable fuels. Natural gas amounts to about 19 % (conventional gas 2.3% and non-conventional gas 17.1%), followed by oil (about 4%) and nuclear fuels (almost 2%). The latest assessments of currently proven recoverable reserves are therefore less than 10% of the total resource, compared with 47% for gas and 67% for oil.

4.4 International Prices

Since the publication of last year's Overview report international coal prices have more than doubled. The dramatic rise is illustrated by the following chart[5]:

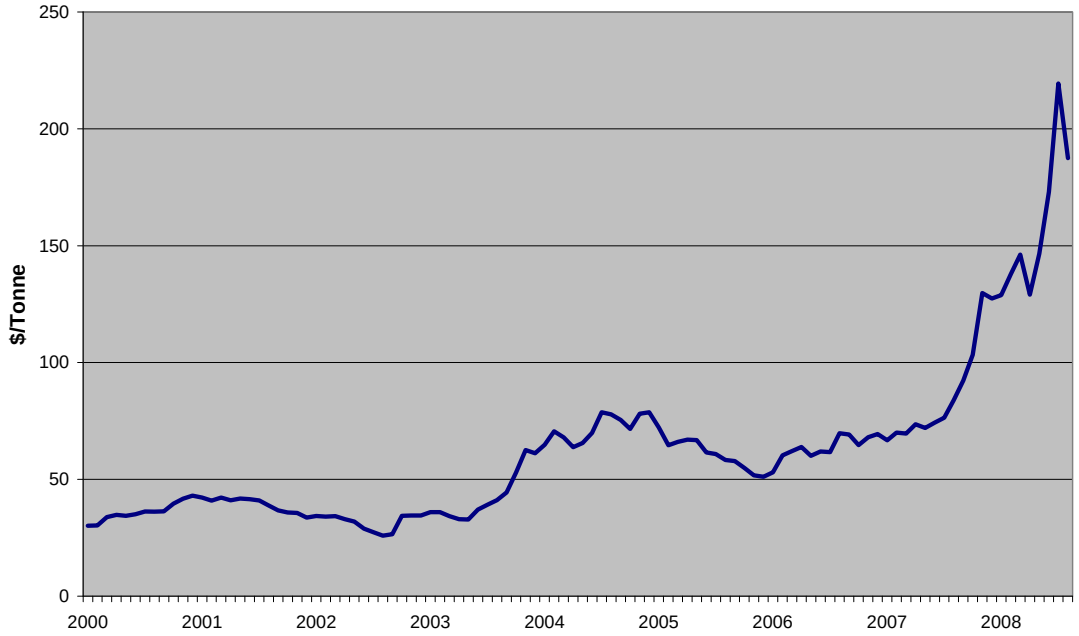

Figure 2 - McCloskey's NWE Steam Coal Marker Price

Prices to North-West Europe reached $219.35 on 4th July, equivalent to £4.41/GJ. Initial indications at time of writing (early August) are that prices may have peaked, with the price at 1st August having fallen back to $187.50. (NB additional costs for delivery to a UK power station include freight mark-up, port charges and rail freight – currently estimated by McCloskeys' Coal UK at around £0.27/GJ.)

Although there will have been some change in the fundamentals – the costs of mining and transport – associated with high oil prices, this would be insufficient to drive prices to these high levels. The massive and rapid increase in prices appears to have been driven by a combination of tightness in the supply/demand balance and sentiment in the market. Continued demand growth has been coupled with a number of supply disruptions. There has also been some 'pull' from the coking coal market where supplies have been very tight following floods in Australia at the beginning of the year; some coals normally destined for the steam coal market have been prepared as 'semi-soft' coking coals.

[3] BGR Reserves, Resources and Availability of Energy Resources 2006
http://www.bgr.bund.de/cln_006/nn_335074/EN/Themen/Energie/Produkte/energiestudie__kurzf__2006__en,templateId=raw,property=publicationFile.pdf/energiestudie_kurzf_2006_en.pdf
[4] Coal of 7,000 kcal/kg calorific value
[5] Source – McCloskey Information Services

Although a correlation with oil prices has not generally been apparent in the past, very high oil prices have provided 'headroom' for movement in coal prices, and it is noteworthy that coal and oil prices both peaked and fell back at around the same time in July 2008.

The first Overview report noted a number of future price forecasts considered by the World Markets Sub-Group, with central case forecasts from around 2010 broadly between $50 and $60 per tonne delivered to north west Europe (in 2006 money).

It was stated that at these levels of pricing, both opencast coal and deep mined coal from UK sources would be able to compete on equivalent delivered price to inland power stations. However, investment in new areas of coal in established deep mines would not be attractive at the lower end of this price scale and, if the forecast of $60 is indeed the top of the range, then new deep mine production capacity would not be created.

It is noteworthy that international prices are currently (as at early August 2008) more than three times this level.

5 EU emissions

5.1 Legislation and its consequences

Existing and proposed EU environmental legislation could have a serious adverse impact on the prospects for coal-fired generation. It has been known for some time that the Large Combustion Plants Directive (LCPD) will lead to the closure of 8GW of coal-fired plant by 2016. However, the Commission is now proposing a revision to the LCPD within a new all-embracing Industrial Emissions Directive (IED). As drafted, the proposals further reduce the Emission Limit Value (ELV) for sulphur dioxide (SO_2) but, just as importantly, remove much of the flexibility in the existing LCPD in relation to the definition of BAT, BREF reference documents and the ability to manage emissions of nitrogen oxides (NOx). Together they could lead to the premature closure of further significant coal-fired generating capacity by 2016. In addition the proposed SO_2 limits could have an adverse impact upon the ability of the UK's higher sulphur coals to find a place in the market, and sterilise a significant proportion of the UK's economic coal reserves.

The potential impacts of the draft IED are compounded by the Commission's proposals for Phase 3 of the European Union Emissions Trading Scheme (EU ETS) which will take effect from 2013. These provide for 100% auctioning of carbon allowances for the electricity generating sector. As the highest carbon emitters, coal-fired generators will be particularly hard hit and the proposal will significantly reduce profitability and increase risk making it all the more difficult to finance the investment needed to modernise and replace existing coal-fired plant in general, and to meet the possible requirements of the IED in particular. It is disappointing that the UK Government has already decided to support 100% auctioning.

The potential impacts on total coal-fired generating capacity, a consequential increased reliance on gas and the security of supply implications are analysed elsewhere in this overview.

Representatives of the Future Generation Sub Group have met DEFRA and BERR officials to explain the potential implications with a view to establishing a UK negotiating position in relation to the IED proposals. Various options were discussed ranging from complete acceptance of the proposals to outright opposition but focussing on removing or amending the most damaging elements, in particular the reduced ELV for SO_2 and the removal of flexibility in relation to NOx.

The likely impact of 100% auctioning under the EU ETS was also discussed. Whilst the Government has already decided to accept this proposal, it makes it all the more important to take a robust approach to the IED.

5.2 Recommendations

1. The government, through DEFRA, needs to take action on the consequences of some currently proposed EU environmental regulations and respond to ensure that UK operations are not unduly and unintentionally adversely affected. This would involve taking a robust negotiating position with the European Commission on the Industrial Emissions Directive with a view to ensuring flexibility within the existing LCPD is maintained and that there is no reduction in the SO2 Emission Limit Values from that contained in the existing LCPD.

6 CCS

6.1 BERR position regarding CCS

In late 2007 BERR launched a CCS competition to build a post combustion commercial scale CO2 capture and storage plant with the aim to have the full chain operating by 2014. At this time the first stage in the selection process has been completed and the Government has announced a list of 4 companies/consortia with which further negotiations will occur. Placing a contract is not anticipated until well into 2009. Given that the UK first set about claiming a leadership role in promoting CCS as long ago as 2003 this is hardly rapid progress. The underlying justification for choosing post combustion technology included that the world (with particular eyes on China and India) will need a retrofit technology and the UK demonstration would facilitate both the building of a UK export capability and technology transfer to developing countries – a "win-win" for the world and for UK. Meanwhile in the UK there is only one new coal fired fired power plant awaiting completion of the permitting process with all other prospects on hold until policy on what constitutes "carbon capture ready" is resolved. Whilst welcoming the intention to support a CCS demonstration there is a feeling amongst Coal Forum members that the process needs to be accelerated as the UK's leadership position is being steadily eroded as others take matters forward – see "worldwide" below.

The UK's CCS consultation has been taking place during the period of this report's production. The Coal Forum has taken the opportunity to collectively respond to the questions raised by BERR in section 3 which deals with "Carbon Capture Ready". This is important as having a clear understanding of what, in regulatory terms, constitutes capture ready is necessary in order that Kingsnorth and other possible new coal fired power stations can be built. Our response is at Appendix 2. The general thrust is that we wish to see a regulatory regime which can be evolved as industry "learns by doing" from the CCS demonstration and other related activities over the coming decade or so.

6.2 Worldwide position regarding CCS

The rest of the world is also moving forward and there have been many announcements of intentions for large pilot and small demonstration plants of several technologies. Particular attention should be given to the fact that a major Chinese company Huaneng is now running its own post combustion capture pilot plant attached to a real power station, this puts China only 2 years behind the EU and ahead of anything yet built in UK. Furthermore the Chinese build coal fired power stations 2-3 years faster than in the west. It is conceivable that they could have their own technology demonstrated in a similar time frame to the UK. Clearly, this is a positive development from a global climate change perspective and raises a possibility of accelerating interactions between UK and China regarding application of post combustion capture.

6.3 EU position regarding CCS

Following the deliberations of the Zero Emission Technology Platform (ZEP) their recommendations to start 10-12 demonstrations of CCS across Europe have been accepted by the Commission (the UK CCS demonstration project is expected to be one of these). The criteria for what constitutes a demonstration are still to be decided, but are likely to require sizing at a scale to give confidence in subsequent commercial deployment. However, although progress is being made on the regulatory front the important business of how to finance such a programme appears to be an intractable problem (see later section). As in UK, progress is entirely step wise with no clarity yet as to when, where, what types or how many CCS demonstrations will eventually emerge.

We note the commissioning in September 2008 of the new 30MW coal-fired power station built by Vattenfall at Schwarze Pumpe in Germany with carbon capture and storage in a nearby former gas field. Although small scale and a different capture technology to that likely to be chosen for the UK demonstration this is a welcome demonstration project for the feasibility of CCS.

The draft CCS Directive published in January 2008 has been well received in UK, but there are significant concerns elsewhere which may affect the Commission's ability to convert it into law

before the present term expires in mid 2009. For instance the German Ministry of Economy is questioning whether it is worthwhile to proceed without similar developments in the rest of the world – especially countries like USA, China and India. Other countries such as Poland, which produces 95% of its electricity from coal are concerned at the huge cost of implementation when other major countries such as France use little coal and comparatively little gas for power production and so would barely notice the impact.

The CCS directive is still at a draft stage and various amendments have been proposed. One of these suggests an emissions target for a fossil fuel power unit of 350gmCO2/Kwh. This is achievable by modern CCGTs without CCS whereas coal plant would have to have CCS fitted. This would have the effect of driving operators to build only gas fired plant with adverse implications for security of supply. To retain a balanced portfolio of technologies the need to fit CCS should be equal for all fossil fuelled power stations.

The ETS is going through a transition period in which CO2 allowances are to be auctioned more and more with 100% auctioning by 2013. The process in itself discriminates against coal in favour of gas and will not assist in maintaining a balanced portfolio of power supply sources.

6.4 Financing of CCS demonstrators and beyond

Coal Forum members are agreed that supporting finance or some form of enhanced incentives will be needed to encourage deployment of CCS beyond the initial demonstration(s). There is a significant risk that the revised European Trading Scheme (ETS) from 2013 will not generate a carbon price which will encourage the building of a second generation of CCS power plant. A framework for longer term financial support needs to be established, in parallel with a continuing focus by Europe on delivering a stable and appropriate carbon price. BERR has commissioned a study to look at options and alternatives. For instance these include feed-in tariffs, and enhanced capital allowances. Another option is a “contract for differences” to set a floor for the required carbon price. The UK Government is keen to ensure that any special measures do not detract from the optimal operation of the ETS.

The proposition by the European Commission to recycle income from the auctioning of CO2 allowances as a part of the ETS is supported by most members of the Coal Forum in the knowledge that around £5bn /yr will be raised from operation of fossil fuel power plant. Whilst recognising that the UK Government is generally opposed to hypothecation of revenues, this is one way of dealing conveniently and temporarily with an urgent issue so we urge the government to support this proposal.

6.5 C02 Transport and Infrastructure

How to transport CO2 and set up the associated network of pipelines may seem a distant requirement but needs serious consideration now if the technology is to be applied to coal and gas fired power plant and possibly eventually to large industrial emitters. During 2008 an excellent study, based on the area around the Humber estuary, on how to collect and transport CO2 was produced and published by Yorkshire Forward (“A Carbon Capture and Storage Network for Yorkshire and Humber – an introduction to understanding the transportation of CO2 from Yorkshire and Humber emitters into offshore storage sites”. It can be found on line at http://www.yorkshire-forward.com/asset_store/document/carboncapturebros8_4_14410.pdf and this followed a similar study by the IEA Greenhouse Gas R&D programme in 2007, based on Merseyside. These indicate the merits and economies of organised regional collection schemes. What remains very unclear is how these would fit into a national system, or indeed if there is even a need for a national system and these are issues for Government consideration.

6.6 Public perceptions and acceptance of coal in its role in the UK Economy

It is recognised that various statements made by the Secretary of State and the Minister for Energy constitute positive support for the proposed new coal fired power station at Kingsnorth and a clear recognition of the need for continued coal-fired generation in the UK. However, it is also clear that the case has not been generally accepted and looking to the future, some of the green NGO’s give conditional support to CCS. Others such as Greenpeace are hostile to its

development. Further, the concept of "capture ready" is regarded by some as an excuse to do nothing towards mitigation of carbon emissions to the air. The public in general is uninformed about the issues. This is true throughout virtually all levels of UK society. In a recent meeting of the Coal Forum, the Minister for Energy, Malcolm Wicks, indicated that the he felt that the Coal Forum would do a valuable job if it could find ways to deploy the skills and resources at its disposal to promote a better informed awareness and debate on coal and its future role in the economy.

6.7 Recommendations

Government Needs to:

1 Inject greater urgency into progressing the CCS demonstration.

2. Follow up the CCS consultation as quickly as possible with regulation on "carbon capture ready" in order to expedite new power plant at Kingsnorth and subsequent coal fired plant build.

3. Continue to "push" in Europe for
    a. Speedy adoption of the CCS directive, albeit with equal treatment for coal and gas as fuel sources for power plant, and
    b. Adopting a policy of only proceeding beyond the "capture ready" stage when it is clear that other major economies are planning similar action, and
    c. Establishing a mechanism for funding secondary and possibly tertiary generation fossil fuelled power plants with CCS until such time as the long-run carbon price in the ETS is sufficient to incentivise building CCS fitted power plant without further support.

4. Examine the need (or otherwise) for a national CO2 collection system and how regional systems with many CO2 sources might be integrated into it.

5. In partnership with Coal Forum members, establish a specific plan for public education about the role of coal fired generation fitted with CCS as part of a rational, responsive, controllable power system based on a balanced portfolio of technological approaches.

7 Coal Resource - Assessment And Production Prospects

7.1 Background Information

During the 11 year period 1974 - 1985, the then National Coal Board undertook a National Exploration Programme which involved the drilling of more than a thousand surface boreholes, supplemented by many thousands of kilometres of seismic surveys, both on land and offshore. This investment proved new areas of coal at existing mines and the identification of a number of potential new mine sites in particular, at Selby and Asfordby, and the development of a number of larger and longer-life surface mine sites. Following 1985, however, the emphasis of the NCB's programme was placed on exploration at designated existing long-life collieries and surface mine sites in order to ensure the continuity of mining operations at those sites.

A Planning Application was made in 1987 for Hawkhurst Moor Colliery, a new deep mine to the west of Coventry, which at a cost of £400-£500 million was intended to access substantial reserves to the south of the current Daw Mill Colliery. This Planning Application, however, was unsuccessful. In South Wales, a new mine project study, resulted in a Planning Application being submitted to work in excess of 50 million tonnes of coking coal at Margam, adjacent to the Port Talbot steel works. Whilst this application was successful at the time, subsequent market conditions resulted in no actual work being undertaken on the project and it was eventually shelved. Within the last 2 years, however, the Coal Authority has been able to issue conditional licences to two adjacent areas of the Margam Reserves. The relevant British Coal data will inevitably be accessed during the current feasibility assessment.

The vast array of information relating to workable coal reserves and prospective mine projects remains. The main bulk of this information is held by the Coal Authority (CA) and British Geological Survey (BGS). The records were transferred to these organisations for safekeeping following the formation of the CA in October 1994. The basic geology of the coal resource in the UK is therefore well mapped and documented. However, the detailed identification of workable coal reserves, their overall assessment, the likelihood of gaining planning approval to work and the technical design of their working that is both practical and economic, remains to be examined for each individual prospect.

The CA has recently undertaken an assessment of coal resources for current mines and of prospects for development (see Appendix 3). There are additional prospects that could be included, but those listed are representative of what is available.

7.2 Market For Coal

> *"...Fossil fuels will continue to play an important role in ensuring the flexibility of the electricity generation system as well. Electricity demand fluctuates continually, but the fluctuations can be very pronounced during winter requiring rapid short-term increases in production. Neither wind nor nuclear can fulfil that role. We therefore will continue to need this back up from fossil fuels, with coal a key source of that flexibility...."*
> Rt. Hon. J Hutton, Secretary of State, BERR, March 2008

> *"Alongside nuclear, renewables and gas, coal is and will continue to be a feature of the UK's electricity mix."*
> Rt. Hon. J Hutton, Secretary of State, BERR, 30 June 2008

Coal currently provides the basis for up to half of the electricity generated in the UK over winter and has averaged some 37% of the fuel mix over the past 8 years. Whilst expert opinions may vary, it is generally accepted that coal will remain a vital energy fuel for probably at least the next 15 years. The Coal Forum Report 2007 stated:-

> *"Globally ...., the supply of coal can be regarded as secure."*

and

> *"The Generators supported the views that the increased diversity of supply created by using indigenous coal can help to guard against any supply problems".*

All such statements are helpful and were subsequently repeated in the Energy White Paper 2007 quoted earlier in this report.

Table 1 shows UK coal production and usage from 2002 to the present. This indicates some consistency in the coal usage during the period - well in excess of 60 million tonnes/annum. During 2007, the mining industry produced some 27% only of the total coal used in the country. There is therefore a market for indigenous coal provided production costs and prices reflect favourably with world coal markets generally.

> "*Under all the Coal Forum scenarios there is a demand for power station coal in excess of the amount currently supplied by UK extraction companies. UK suppliers will have a market throughout the 2007-2025 period provided they remain competitive on price."*
> Coal Forum Report 2007

The Coal Forum Report 2007 suggested, *"that the figure of 20 mt/annum be taken as a (production) yardstick against which the success (or otherwise) of the Forum against its objectives could be measured*". The production sub-group has had this figure in mind during all its discussions this year.

7.3 Alternatives to Mining

Any reputable estimate of the coal resource available, both onshore and offshore the UK, shows considerable amounts of coal, most of which cannot be mined by conventional mining methods. There are, however, alternatives to conventional mining, whereby the coal seams may be utilised in situ to release gases which can then be converted to energy.

7.3.1 Underground Coal Gasification

Underground Coal Gasification (UCG) is a relatively old concept which has seen considerable interest worldwide over the last few years. A number of coal producing countries, including the UK, have instigated studies and/or "demonstration trials" of the technology.

Further developments need to be monitored, with the practical application of the technology raising any number of concerns that need to be addressed. With this in mind, the IEA Clean Coal Centre has initiated the preparation of a Report to examine issues and experience of UCG worldwide.

The Production Sub-Group has been offered a presentation of this work later this year. In the meantime, however, there remains some uncertainty as to licence issues for accessing coal resources for UCG purposes. Discussions are ongoing between BERR (Production Exploration Development Licence) and the CA (Coal Access Licence) regarding respective roles and responsibilities.

7.3.2 Coal Mine Methane/Coal Bed Methane

Abandoned underground coal mines have been found to provide a valuable resource of methane gas (CMM) for power generation purposes. There are a number of sites being exploited for this purpose in the UK.

Coal Bed Methane (CBM) is methane that remains "trapped" within the coal itself. Whilst UK coal seams have not shown themselves to be particularly susceptible to the technology to release its methane gas in any great amounts, efforts are being made with demonstration trials to improve and develop the technology accordingly.

The Production Sub-group will continue to monitor advances in this work during the next year.

7.4 Conclusions

The basic geology of the coal bearing regions of the UK is well documented. During 1999, the CA and BGS produced a "Coal Resources Map of Britain" depicting in particular coal resources, both onshore and offshore. This is available in both paper and CD format. However, the vast bulk of the UK's coal resources are not within the reach of operating mines.

Operating underground mines, with appropriate investment levels, can still access considerable reserves of coal. Owners of all current deep and surface mines have investment programmes identified, designed to at least maintain current levels of production and, in most cases, for levels to be increased and maintained there for the foreseeable future.

The CA, BGS and mine operators together hold substantial data on new prospect areas of coal. However, given the current circumstances for raising finance, the time to develop a new mine and the levels of investment needed for a new deep mine prospect in particular, there probably requires greater certainty from generators and Government of coal requirements beyond 2015. It should be noted that the last large underground mine in the UK to be developed, Asfordby Mine:-

commenced development	1984
commenced production	1995
closed	1997
Development cost	£320 million

There is also the potential for small underground mine development at much lower investment levels, albeit with consequent lower levels of production. Each and every prospect considered will be subject to the existing planning regime and timescale.

The impact of duty increases on red diesel for the surface coal mining industry has been significant, and represents a significant increase in costs of some £10 million per annum for the industry.

The underground and surface mines are certainly capable of producing coal at the Forum "yardstick" levels of 20 mt/pa. This level of output, however, will be dependent on the ability of operators to maintain investment at appropriate levels, and consistency of decisions made on planning applications for surface mine sites by Local Authorities.

The Forum recognises that there are substantial reserves of indigenous coal available to be mined, given appropriate investment levels in the industry commensurate with the "reasonable" market expectation by the Forum of some 20m tonnes/annum.

The work undertaken by the CA to review available coal resource and reserves data and make it available in suitable format for consideration by MPA and mine operators, is commended. Furthermore, initiatives taken by coal mine operators to identify and progress investment opportunities, both for "extensions to existing workings" at mines and for new underground and surface mine prospects is to be appropriately supported by the Forum.

8 The Planning System

8.1 Background

The Coal Forum Report 2007 outlined the work of its Planning Sub-Group on:-

"planning issues related to coal mining and, in particular, to surface mining ...."

Planning policy and its processes generally were, and still are very much viewed by the Forum as having a significant effect on future levels of indigenous coal production, particularly that produced by surface mining. The current planning regime is viewed as a "barrier to the industry" resulting mainly from "the presumption against" principle contained in MPG3 and SPP16. However, there is little, if any indication that this will be modified. Indeed, the "Draft Minerals Technical Advice Note 2: Coal" (MTAN), produced for Wales by the Welsh Assembly Government, if adopted as drafted will jeopardise the viability of a surface coal mining industry in Wales with consequent loss of economic and employment benefits. It would also impact on the working of underground mines in Wales.

The work of the 2008 Production Sub-Group has involved a consideration of these "planning barriers" to the working of indigenous coal reserves, and reviews progress being made on a number of initiatives put in place to ensure the Industry, Local Authorities (LA), Mineral Planning Authorities (MPA) and Government Departments (GD) each better understands their respective roles and responsibilities.

8.2 Local Authority/Mineral Planning Liaison

8.2.1 The Coal Authority

The Coal Authority (CA) has established a multi-disciplined Planning and Local Authority Liaison team to manage the Authority's involvement in the planning processes. The team's role will include ensuring:-

- the provision of information
- awareness of the risks from the legacy of coal mining
- safer and more sustainable development in coalfield areas
- due regard given to the consideration of coal as a mineral resource

There are some 198 LA in coalfield areas, each of whom has been contacted by the team to introduce the concept. There are some 118 MPA made up of County Councils, Unitary Authorities and National Parks. The team has prepared a strategy and programme of work and a number of LA have been approached to pilot implementation of the liaison process. The programme will commence with the first 3 LA in September 2008.

Coal Resource Maps, showing shallow coal resources and previously worked areas, have been developed for all coalfield areas. Particular priority will be given to identify "areas of potential risk from past coal workings" and the consultation process associated with local development plans. The information will enable the CA, in liaison with the MPA, to better advise areas where coal resources may become inadvertently sterilised by development and also where "old mineworkings" may form a future hazard with ignorance of the risks associated with surface development above or adjacent to these old workings.

It is intended that Coal Resource Maps (paper and CD) will be available for release to appropriate MPA commencing August 2008, subject to appropriate terms and conditions of agreement relating to the information. Furthermore, information relating to deep coal resources will be available for release during 2009. In this way it is to be hoped that the MPA ensure that coal resources are identified as appropriate in the development of mineral safeguarding policies and plans.

Furthermore, the CA is now a statutory consultee for all "Development Plans" in England and Wales, both within and off coalfield areas. Whilst this will result in some considerable workload, it will provide the opportunity to comment on the protection and future exploitation of coal reserves within these Plans. This in itself should address concerns raised by the 2007 Forum that *"inadequate attention (paid) to the presence of coal in regional and local Development Plans and Strategies leading to approval of surface developments that sterilise workable resources"*.

8.2.2 CoalPro

The Confederation of UK Coal Producers (CoalPro), the trade organisation representing most of the deep and surface mine coal producers, actively works with LA and MPA to ensure both fully understand and appreciate responsibilities and concerns of both the industry and community at large.

Liaison Meetings have commenced between CoalPro and the Planning Officers' Society in relation to England and Wales. Similar meetings are also being held between CoalPro and the Scottish Society of Directors of Planning in respect of Scotland.

CoalPro and the Planning Officers' Society have, in the past, drawn up a joint Code of Practice. Proposals are in hand to review and update this Code of Practice which is intended to document the minimum standards and procedures to be followed by members of CoalPro and by the appropriate MPA.

8.3 Planning Process - Surface Mining

The greatest impediment to surface mining production over the past 15 years has been the difficulty in obtaining planning permission for sites. This has been reflected in the steady decline in production over the period, particularly in England. There is no doubt that 2007 saw a marked improvement in the success rate for consents. Some 55/60m tonnes are currently consented for working, and a further 14m tonnes is in the planning process (Appendix 4).

However, the reserve base for surface mining is considerable and is capable of supporting a higher rate of production for many years ahead. Whilst all concerned within the industry recognise the need for proper and detailed consideration of community issues, environmental considerations and public concerns as to health, property and restoration issues, surface mining of coal deserves recognition for the contribution it makes to the local economy and to the needs of this country.

Minerals Policy Statement 1 (MPS1) published in November 2006, states that there should be the:

> *"... aim to source mineral supplies indigenously, to avoid exporting potential environmental damage, whilst recognising the primary role that market conditions play..."*

Some 70% of the coal currently used in the UK is imported. It may be desirable that the country maximise the use of indigenous coal resources wherever environmentally possible. The 2007 increase in the number of surface mine sites granted consent to work has probably followed due recognition now being given to:-

- the need for indigenous coal
- the implementation of the highest possible environmental standards during the operation of sites
- the innovative designs for after use
- the benefits to the local economy

Furthermore, there is evidence that early engagement with the local community in relation to the intention to work sites is an issue in the subsequent success rate. Opposition to surface mining by one or a number of organisations, individual members of the public, LA policy or individual members of the LA, is an inevitable part of the planning process and any operator can only seek

to mitigate against such opposition using the current process and by demonstrating their operational track record.

The "presumption against" principle, introduced in England and Scotland was designed to create an uneven playing field, leading to unsuccessful applications and inevitably to a reduction overall in applications being submitted. Supportive statements made by Government, Generators and the Forum as to the need for indigenous coal can only but help to at least reduce the barriers. The decision of the Welsh Assembly Government following the consultation process for the MTAN draft will be awaited with some concern. Implementation of 500m "Buffer Zones" to "settlements" would have a major impact on the mining industry in Wales with implications probably to follow elsewhere in the UK. The Forum has formally raised its concerns with the Welsh Assembly during the consultation process, supported by evidence.

A reasonable assessment of ongoing production rates from surface mining of between 10-12 mtpa would suggest that operators will need to prepare and submit an increased number of planning applications than has been the case in recent years. The potential for high and sustained world coal prices suggest that operators may very well accept the risk of initial refusal and the subsequent additional cost of appeal, albeit reluctantly. However, it is in everyone's interest to engage all affected and involved parties at the earliest possible opportunity. The MPA in particular should have an integral and even earlier role in this regard in their preparation and identification of mineral development documents.

8.4 Planning Process - Underground Mining

The majority, if not all existing underground mines should not have any particular concerns regarding the working of their existing reserves. In most cases, however, substantial extensions to existing workings could involve a planning application, whereby the "presumption against" principle may very well apply. Such developments will also invariably invoke "working rights issues" which will need detailed discussions with many different organisations.

It is also noted that the draft MTAN-COAL for Wales makes reference to:-

> *"deep mine development and colliery spoil disposal ..... is the same tests as for opencast development ....."*

Further development of underground mining may be a more likely prospect in South Wales, given the opportunities for access by surface drifts rather than mine shafts (the only mine shaft in operation in Wales is at Big Pit Mining Museum). Whilst there are a number of existing licensees who have not worked their licence areas for some years, any proposals to "open up" these mineral areas may require suitable and appropriate planning applications.

8.5 Infrastructure Planning Commission (IPC)

The proposed Infrastructure Planning Commission (IPC) will, in future, deal with planning applications for major infrastructure projects. The policy context will be set by a series of National Policy Statements. Whilst the IPC will deal with major energy projects, including electricity generation projects, and whilst there will be a Statement on such projects, there is no indication that the Commission will deal with coal mining projects, such as a large new deep mine, nor that there will be a National Policy Statement directly related to coal production contained within their remit. The impact of the Planning Bill was also considered by the Infrastructure sub-group. A note of their work is attached at Appendix 5.

8.6 Conclusions

There are substantial reserves of surface coal that could be worked and which could provide identifiable planning gains for the local communities. Surface mining can be utilised to remove dereliction, eliminate problems created by old mineworkings and provide a variety of options for consideration for afteruse for the benefit of the community. Furthermore, some 1750 persons are currently employed within the surface mining industry, the vast majority local to their working sites.

Workable and accessible reserves of coal are an increasingly valuable resource for this country given the world price of coal. There is an increased appreciation of this value, both for economic reasons and to ensure diversity of supply, whilst still ensuring that such reserves can be worked in an environmentally acceptable way. However, there appears little enthusiasm by Government to moderate the "presumption against" planning principle.

Consideration needs to be given to the planning processes and working rights issues which will inevitably arise if new underground mines are thought feasible. This applies also to those existing mines that extend outside their current permitted areas.

Following the work of the Coal Forum 2007, both the CA and CoalPro have reviewed liaison arrangements with LA, MPA, Scottish Government and the Welsh Assembly Government representatives. This form of engagement is viewed as an essential element of the planning process for coal mining. Such liaison will hopefully also contribute to a better understanding by everyone of surface coal mining in particular, and help in some way to break down the existing public perception of the industry.

8.7 Recommendation

The Forum notes the progress made to date with efforts to improve liaison and understanding between the CA, CoalPro, LA and MPA generally, and recognises the concerns of coal producers in relation to the operation of the planning system have focused, in the main, on surface mining prospects. However, investment opportunities for "extension of workings" at existing underground mines and proposals for "new underground mines" will also involve planning applications for both the mining areas and possible surface access points. Therefore, the Forum believes that a number of actions by stakeholders would be appropriate:-

1. Whilst Government is unlikely to wish to remove the "presumption against" principle, the Forum urges Ministers to continue making supportive statements referring to security of supply, diversity of fuel mix and a need to maximise the utilisation of our own coal resources wherever environmentally possible. Such statements should help to "level the playing field" when consideration is given to appropriate planning applications.

2. Indications are that the proposed IPC will have little concern with coal mining directly. The Forum requests Government to consider a National Policy Statement which makes reference to the production of coal, or at the very least the production of minerals.

3. Operators of both underground and surface coal mines must adopt and demonstrate their commitment to the highest possible environmental standards that can be achieved.

4. Representatives of mine operators and the Planning Officer's Society of England and Wales need to complete the review and subsequently maintain a Code of Practice which can be accepted as an agreed guide for the planning process. A similar process should be implemented in conjunction with the Scottish Society of Directors of Planning. Respective Governments should monitor appropriately.

5. The liaison arrangements being set up between the CA and the various MPA should be encouraged as appropriate by Government.

9 The Public Perception Of The Surface Mining Industry

9.1 Background

The work of the Forum has demonstrated that coal can play an essential part as a fuel in a UK strategy for a diverse, secure and competitive energy supply. However, cessation of some or all coal mining in this country would merely result in an increase in reliance on imported coal.

The more recent and vociferous opposition to coal has added to the negative public perception that has existed around surface mining for many years. Originally introduced during the 1940s to

exploit "outcrop deposits" in a country desperate for energy, it has always been susceptible to political, social and economic pressures. By the same token, it has, on many occasions during the time since, provided certainty and flexibility for coal when needed by the country. The industry was often seen as having a detrimental social impact due to insensitive methods of working, a lack of measures to mitigate effects, and a general failure to relate and liaise with local communities and Local Authorities (LA). It was often seen as a direct competitor to deep mines which were consistently being closed with subsequent job losses in areas of high unemployment. It has always been perceived by the deep mine community as competing with rather than complementing its own activities. These early days, therefore, resulted in a legacy of poor working practices, poor restoration of sites and an apparent imbalance between the commercial objectives outlined by the need for coal and the environment, coupled with the communities' needs. This image is still a factor today.

A report by the Trade and Industry Select Committee 1993 (TISC(93)) and The White Paper 1993 which referred to the "Prospects for Coal" mentions evidence submitted as *"sites being intrusive, disruptive and a need for restriction"*. It is perhaps not too surprising that there exists an apparent public's picture of *"huge machinery ripping up pristine landscapes, displacing wildlife, leaving a path of destruction and dereliction"*. The introduction of the "presumption against" planning guidance was perhaps an inevitable result of this opposition, channelled by LA members and MPs and subsequently agreed by Government. Indeed, the TISC(93) made a recommendation that *"British Coal or the proposed "Coal Reserve Authority" should use their control over licences to bring about a reduction in opencast coal output".* However, this description is an image of an industry from 30 years ago. There is much to commend the benefits brought to the country and communities by surface mining in the years since.

9.2 Surface Mining Industry Today

The surface mining industry has developed significantly and current operators strive to deliver sustainable mining businesses capable of balancing social, environmental and commercial objectives. Modern operations are well designed and follow early and extensive consultation, environmental assessment, and the planning process. Equipment used is modern and technically innovative, designed to reduce its impact whenever it is being operated. In general, the perceived impact of a surface mine site is far worse than that experienced during the working of the site. There is often significant objection during the planning stages for a proposed site which, once it commences operations, gives rise to minimal impacts and few complaints, particularly by the local community.

One current surface mine company operates under a "Development with Care" approach for all parts of its business, and claims an exceptional 92% planning success rate for surface mine schemes over the past 30 years. It has a successful track record of working and restoring more than 100 surface mine sites across the UK, and has won a number of prestigious awards for work in successfully controlling the environmental impact of sites. Its own engineers have pioneered world first technology for controlling noise of machinery which is now being incorporated into machine design by manufacturers.

The industry's contribution to the removal of industrial dereliction has been enormous, and its site restoration designs are both innovative and technically challenging. The industry has changed since those early days. Operators today demonstrate they are able to work with, and on behalf of the community, incorporating the highest possible achievable environmental standards in doing so. There are those whose perception of surface mining will never be changed and who will always be vociferous in their objections. However, the public in general, and particularly the communities who may feel they could be affected in some way, require information and awareness of the benefits, good practice techniques, environmental impacts, after-use potential etc. in order that they may form their own opinions.

9.3 Surface Mining - A Public Image

There is much evidence to commend the work of surface mine operators. Unfortunately, despite extensive consultation with local communities and demonstrable public benefits enjoyed with the

aftercare use of sites, surface coal mining in particular still retains a poor image in the minds of many members of the general public.

The public in general have little knowledge of measures taken by operators to mine coal, and probably do not even realise that the leisure amenity being enjoyed has been created and funded by surface mining. Coal in general is grossly misrepresented by vocal and very active groups who are able to "grab" the public's attention by nationally organised publicity stunts which serve to demonise coal. Surface mining is a particularly easy "side target" in this regard for those protest groups currently targeting climate change and coal's use as a fuel for energy generation.

It is interesting to compare the public profile of the 1300 quarries that exist in the UK and which produce some 210 million tonnes of aggregates, valued at some £3 billion. Its operations are much more geographically widespread than that of coal's 35 current surface mine sites. They operate over much longer periods with the potential to affect communities and can have a significant environmental impact. The industry does experience "protest", but it is recognised by Government and MPA that the products are an essential element for improving living standards and the quality of life in the UK. Unfortunately, coal as a mineral does not enjoy this same level of recognition and support by Government and MPA, particularly with regard to its identification as an important mineral resource and designated areas available for working.

The fragmentation of the coal mining industry in 1994 and the gradual decline of the indigenous coal industry since, meant the industry ceased to have an effective champion, even though coal has retained an essential role in the energy mix with the use of imports. The surface mining industry in particular, composed mainly of small/medium sized companies, did not have the resources to launch and sustain major publicity campaigns. Over the last few years, however, CoalPro has managed to harness resources in a more direct campaign, working with both the LA/MPA levels, and with individual Government Departments in England, Scotland and Wales. There is no doubt there is a greater awareness of issues at these levels.

9.4 Conclusions

Contrary to most forms of mineral extraction, surface coal mining is a "temporary" operation that can also provide access to other useful minerals, such as clay and other associated materials. It leaves no surface spoil heaps and, unlike quarrying, there are no voids. Environmental benefits can be "designed in" and can be numerous, varying only with individual site requirements.

Surface mining is constantly criticised by politicians, planners and pressure groups and the public perception is invariably prejudiced as a result, with, in reality, surface mine operations bearing little resemblance to that expounded by others. The industry has much to commend itself for but few others prepared to champion its achievements. It needs to widen its public image beyond the localities in which it works.

9.5 Recommendations

9.5.1 Coal Producers

1. To comply implicitly with their commitments, through the processes of planning, operation and the opportunity of restoration and/or redevelopment using sustainable principles to improve biodiversity, community relations, workforce development and positive long-term benefits.

9.5.2 Government

1. To build on its recognition of the importance of indigenous coal and its contributions to energy security and poverty relief within a framework of encouraging clean coal technology to ensure its sustainability.

2. To ensure that the workings of the “presumption against” policy are understood and enacted properly by all its authorities and development agencies.

3. To provide support for a level playing field for planning regulations and to seek to minimise the sterilisation of coal. Buffer zones should be set according to the circumstances of each case and should also apply to built development to avoid sterilisation.

4. To welcome the confidence of the UK coal industry in its ability to produce some 20 million tpa, assuming appropriate investment and planning application success.

9.5.3 Power Station Owners and Utilities

1. To recognise the need to promote to the public, Government and other stakeholders the importance of coal and, in particular, indigenous coal, and to explain the work being undertaken to ensure that coal remains an important element in a sustainable portfolio of fuel supplies.

10 The future work of the Coal Forum

This report sets out a number of conclusions and recommendations for Government and stakeholders. These arise from the dialogue which the Coal Forum was convened by Government to bring about. They seek to establish the ways and means whereby the future of UK coal production and the long term contribution of coal-fired generation can be secured through the adoption of the right framework, consistent with the Government's energy policy goals.

The conclusions of the Coal Forum are that coal can continue to contribute, as part of the energy mix, to meeting both future energy needs and security of supply, as well as the achievement of emissions reduction targets.

The Coal Forum sees the need for urgency in action being taken. It sees the need to raise public awareness of the benefits of coal's contribution and how this can be delivered acceptably and responsibly.

The Coal Forum will therefore be looking to its sub-groups, through which its work is undertaken, to review the conclusions and recommendations reached and how they can best be pursued.

The focus on the means of delivering the framework identified will therefore be on:

- How the coal supply contribution, including mining of indigenous coal, is to be effectively and acceptably delivered;
- How the best available clean coal technology, including CCS for coal powered generation, can be proved and applied urgently, effectively and commercially;
- How generators will undertake investment in new coal-fired power stations as part of the new energy mix approach, and in time to close the generation capacity gap;
- How negative public perception and attitudes of opposition to coal can be changed so that there is awareness and recognition of the benefits which can be contributed.

So that clean coal can contribute strongly to the twin national challenges of how to achieve both security of energy supply and genuine environmental improvement.

APPENDIX 1

Detailed Assumptions in Future Markets Scenarios

Nuclear close-down takes account of announced life extensions (Dungeness, Hinkley and Hunterston.
Wind. The installed capacity is based on the EWP 2007 "aspiration" of 20% of generation from renewables in 2020. Subtracting hydro and applying a 30% load factor gives 24.9GW in 2020. Note: The Renewable Energy target of 15% of energy from renewable sources by 2020 could require 50GW of renewables, 30GW being wind.
Some closure of Opted In coal predicted in 2016. Assumption is 2 x 200MW and 600MW. (Pessimistic Scenario has 10GW closing.)
Opted Out plant. 4GW close 2010-14 and last 4GW in 2015.
New capture ready coal is forecast as 6.4GW (made up of 1.6 + 2.4 + 1.6 + 0.8).
Three demonstrations are assumed on coal, assumed to be the competition winner 400MW, then the other half 400MW, then one more station 800MW. No demonstration for Pessimistic Scenario.
New gas under construction or planning was 12GW (EMO Nov 2007). To offset the generation gap, 5GW more is needed for the optimistic scenario and 15GW more for the Pessimistic Scenario.
Assume 1 CCGT with CCS in 2020 in the Pessimistic Scenario.
New nuclear adjusted to 1.6 + 1.6 + 1.0 + 1.0 + 1.6 from 2018.
Derating factors. The factors used are: Nuclear: 0.65 for existing, 0.85 for Sizewell B and new stations Pumped storage: 90% Wind: 5% based on REF recommendations Interconnector: Assumes France exports to UK and UK exports to Ireland, 75% Coal Opted in 85% Coal Opted Out 75% Coal New 85% Gas existing/new 90%
Calculates the peak gas demand during a cold still spell when wind is generating only 5%. This number should be compared with: (i) Predicted UKCS supplies in 2015 - 0.7 TWh/d (ii) Peak total gas demand predicted for a 1 in 50 day - 5.6 TWh/d.
Demand figures are the EMO central case demand figures from October 2007.
Load factors based on recent experience.

APPENDIX 2

Coal Forum Response to BERR's Consultation Document-
"Towards Carbon Capture and Storage"

Section 3: Questions Relating to Carbon Capture Ready
Introduction
This is a response to the BERR consultation document "Towards Carbon Capture and Storage", issued in June 2008. It represents a synthesis of the views of members of the Future Generation sub Group of the Coal Forum and is submitted on behalf of the Coal Forum. This group is particularly interested to comment on section 3 of the consultation document on the topic of "Carbon Capture Ready". Before dealing with all the questions posed by BERR in section 3 we would like to enumerate some key principles which we believe should be adopted and explicitly stated in arising regulations.

Principles
1. The arising regulations on capture ready have to be flexible and relatively easily adaptable as circumstances and technologies change and as many of the current uncertainties are removed or reduced. At this time UK industry is confident that current carbon capture technologies being proposed for demonstration will work at an acceptable level. There is a real possibility that they will be displaced by better techniques as R&D now underway comes to fruition. This could mean different configurations of capture plant and integration with the existing power plant.

2. Following from point 1 above, the emphasis in future capture ready regulation should be on dealing with how to overcome barriers based on the four elements of the definition given in the BERR consultation document. It is understood that, at this time, the intention is to build "capture ready" considerations into Guidance Notes for regulators and inspectors rather than into the CCS regulations themselves. This is entirely appropriate as it will facilitate change and flexibility of approach.

3. The temptation to require new coal fired plant to be built capture ready but not gas fired plant should be resisted. Any such proposition will encourage more gas fired plant than would otherwise have been the case with adverse implications for a balanced portfolio of affordable power generation plant. Fitting CCS to gas fired power plant is expensive relative to the unabated plant's capital cost and would help to encourage the balanced portfolio that both government and generators see as sensible.

4. Regulation on "capture ready" should not be expressed in such detail that, the unabated plant performs more poorly because of the compromises required to facilitate later introduction of a capture process. Such decisions should be left to the operators and their investors.

Question 2: Do you agree that developers should have suitable space on site or adjacent to it to accommodate future carbon capture and processing plant?
Answer:
YES; this is the minimum contribution to satisfying a "capture ready" condition. It allows the power station to operate in the period up to installation of capture plant at optimal conditions without prejudicing later addition of CCS. It should be noted that whilst some space will be required immediately adjacent to the main power plant, it will not always be necessary for some of the ancillary activities. Just one example: two of the currently available approaches to carbon capture require an oxygen supply. There is no inherent reason why the air separation plant should be immediately adjacent – indeed an air separation company may have contracts to supply a number of customers and would expect to site its production and any arising pipelines appropriately.

Question 3: What do you see as the appropriate space requirements to accommodate different types of capture technologies and why? How might these vary in relation to different sizes of plant?
Answer:
For the purposes of illustration, the 6 hectare example provides helpful guidance and is consistent with figures from other studies available to the IEA Greenhouse Gas Programme. In reality, the amount of

land used for CCS will be different for each plant and the CCS technology deployed. Over time, developments in the same or new technologies will lead to design improvements that could reduce the footprint of a CCS system, and therefore reduce the need for land area that might be previously required. Hence fixing the CCS space requirement at an early stage could impose an unnecessary constraint. It is likely to be better to assess the land requirement as part of the feasibility study and use the arising results as a basis for establishing capture readiness – see next question.

Question 4: Should developers be required to assess the feasibility of retrofitting carbon capture technology to their combustion plant?
Answer:
YES; and it is suggested that this should include preliminary process design work with flowsheets, mass and energy balances and appropriate plant layout work, the latter to define space requirements. However, apart from the arising space requirement, the other details should never become a binding part of any permission since technology advances and changes so that some years later details might change significantly. Expensive detailed engineering and construction assessments are not needed to establish such feasibility.

Feasibility studies of retrofitting for the purposes of regulation and permitting should consider current known technologies. Consideration of more advanced technologies is a matter for the operator and the investors given the associated technical and commercial risks and should not form a part of any regulatory requirements.

Question 5: Do you know of other evidence that provides a more appropriate benchmark (in respect of post capture amine technology or for oxy-fuel) than the IEA document as to what issues need to be considered for the power station design?
Answer:
No.

Question 6: Do you know of other documents for other capture technologies we should be considering as reference documents?
Answer:
There are many published studies on CO2 capture, but very few which are free of the influence of vested interests. The IEA report used to support this consultation document deals with more than just post combustion capture with amines. It includes sections on oxy fuel and IGCC as well. It does not deal with use of ammonia as a post combustion capture solvent. There are a plethora of other capture technologies under investigation as research funding builds up world wide. However, none of these are advanced enough for application at significant pilot scale let alone for demonstration and so are best discounted for the immediate future until the activities engender greater confidence.

Taking the first of the principles enumerated at the head of this response, flexibility to adapt regulation in future is important to allow adoption of state-of-the-art technologies as they become available for demonstration and later for commercial deployment.
It would be expected that with time other reference documents become available to complement or supersede the IEA report, and in accordance with the evolutionary principle proposed at the beginning of this document, we would expect such reference documents to be used if/when available.

Question 7: Should a developer have to identify a potential storage area or areas when it develops new combustion plant? If so, do you think that identifying a potential area by reference to the DTI study is appropriate or can you identify other studies on storage sites that might be relevant?
Answer:
The DTI study is regarded as an adequate basis for selecting a storage area and suggesting alternative options, given what could be a significant interim period before CCS is added. To be clear this approach would define an area for storage but not a specific oil or gas field or aqueous saline aquifer.

The Coal Forum members support the approach in the EU draft directive of maintaining open access. This does not preclude developers from indicating, in permitting processes, where and how the CO2

might be stored, but such indications should not be binding at the start and throughout the "capture ready" phase. We would suggest that it will be sufficient to name an area for storage in the most general way for the reasons indicated above and to satisfy commercial sensitivities

Question 8: Is a feasibility study for each application the appropriate means of addressing the transport component of CCR?
Answer:
YES; every site is different and a credible site specific route should be conceptually established even if it transpires that there are some potential impediments to be addressed. When considering the suitability of CCR, a suite of potential pipeline corridors or another similar broad approach to meeting the CCR criteria could pose less of a barrier to later establishment of a particular route. Otherwise speculative land purchase or obstruction by third parties could prejudice the chance of least cost addition of CCS. Detailed way-leaving of the pipeline routes is not deemed appropriate at the capture ready stage, and would be inconsistent with a feasibility study.
Coal Forum members view the first 10 kilometres or thereabouts as being the critical part of any CO2 pipeline. Generally, if a satisfactory "way out" from the power plant can be established there will be sufficient alternatives route thereafter to ensure that the CO2 can get to the coast for further sea bed transportation.

Question 9: Should this transport assessment address the three issues set out in paragraph 3.25?
Answer:
YES; conceptual routes and pipeline corridors, listing of barriers and how they might be tackled are all necessary if the route is to be credible.

Question 10: Are there any other factor(s) you believe should be included in Article 32? If so, why?
Answer:
YES; Article 32 needs to emphasise that CCS has to be considered in the light of energy security as well as mitigation of climate change. Amendments currently proposed by the EU Parliament's rapporteur would require coal fired power plant to meet an emission concentration of not more than 350 gC02/kWh. This could be met by gas fired plant without installation of CCS.

This would drive developers to install gas plant and no coal plant. There is a serious risk of locking in CO2 emissions from CCGTs for a long period while discarding plans to develop coal-fired plants that would be subject to CCR and CCS requirements and would emit less CO2 than CCGTs. This could be a perverse result of discriminating in favour of gas over coal.

The Coal Forum has modelled several situations related to UK's future generation mix. In one of them we assume no new coal plant is built. Closures of old coal and nuclear plants in the next 8 years leaves a large capacity gap which can not be filled with any new nuclear plant and is unlikely to be filled to the necessary extent by renewables, leaving gas fired plant as the "default condition" under which gas would be providing much of UK's electricity, irrespective of source or price (In 2016 we could have 75% dependence on gas during a cold still spell in winter compared with 36% now)
Clearly, this is not an outcome that the Commission intend and the drafting needs to be re worked to eliminate encouraging such an unhealthy outcome.

Question 11: Should the UK support a 300MWe threshold or should we be arguing for a higher or lower threshold? Why?
Answer:
Given that the eventual intention must be to include all large point source CO2 emitters, specifying a threshold in terms of electrical output is questionable. The Coal Forum members feel it would be fairer to specify any threshold in thermal terms since this more closely equates to actual CO2 emitted from a variety of sources.
For power only plant 300MWe is a good choice as a starting point. Around 60% of EU coal fired unit sizes are bigger than 300MWe and most new plant will be bigger. Gas fired plant unit size is generally made to match available gas turbines with 400-450MWe being typical. Scale up of CCS plant to sizes to

match 800-1000MWe units on coal fired stations must be a long term aim. So for coal, it would not be advantageous to go any smaller.

Question 12: Should the coverage of CCR extend to all fossil fuel power plants with a capacity of 300MWe or more?
Answer:
Yes; It would be pointless restricting new regulations to just new coal plants as operators would then build gas fired plant to the extent that security of supply would be seriously compromised – see Answer to Q 10. Therefore regulations should also apply to new gas fired power plant.

Question 13: What impact might a CCR requirement have on the likelihood of new build, whether for a 300MWe or more standalone CHP or Good Quality CHP plan attached to coal and gas generating stations?
Answer:
This is not a serious issue for UK at the moment as there is reportedly only one CHP scheme which exceeds 300MWe. If new large CHP is a UK Government policy objective, then CCR is not helpful to the economics of such prospects. But it should be recognised that large scale CHP linked to CCS would provide an excellent low carbon footprint and should be encouraged.

Irrespective of the discussion above, large CHP schemes at bigger than 300MWe (or equivalent) should be included since there is always a possibility that they may lose heat load and operate as power only plants.

Question 14: Should the Government explore with the Commission and other Member States the possible disincentive effect on proposed "Good Quality" CHP plants which might otherwise be caught by a CCR requirement? If not, why not?
Answer:
It would seem perverse to insist on CCR and CCS for such efficient schemes especially if doing so were to change their status as "Good Quality" schemes. However, this is not perceived as a major issue for UK. Good quality CHP would suffer a loss in efficiency were CCS to be added, so the definition of "Good Quality CHP" may need revising.

Question 15: What might be the impact of the potential costs of CCR for 100% biomass power plants and so the implications for their future build? Should the Government explore excluding 100% Biomass schemes from the proposed Article 32?
Answer:
100% biomass plant fall under current renewables regulations of the Renewable Obligation, and so double regulating is probably not appropriate.
In practical terms it is unlikely that many biomass units over 300MWe would be built due to the sheer logistics and expense of collecting the fuel. Hence the national CO2 footprint may be only marginally affected, so for this reason also it may be simplest to exempt them from CCR and CCS requirements. Such a derogation should not be extended to partial biomass use.

Question 16: In EU negotiations do you agree that the UK Government should support the proposals in Article 32 relating to carbon capture ready?
Answer:
In principle, YES, but as the final outcome of the Commission's proposals in this respect is not finalised it is not possible to express unequivocal support. We believe that in examining any variations and/or development of article 32 the principles that we enumerate at the start of this response should be firmly borne in mind.

Question 17: If, following the negotiations, the adopted EU Directive does not contain Article 32, should UK Government take steps domestically to introduce requirements equivalent to Article 32 in England and Wales? Why do you think this would be justified?
Answer:
The only reason for the UK to adopt a "capture ready" regulatory requirement in the event of failure to do so at the EU level in the next year would be in the expectation that a global agreement on CO2

emissions will ultimately be achieved or that the EU position has some real prospect of being reversed in the near future. This would have the advantage of allowing applications to proceed through the planning process whilst the EU failure was being reversed.

This argument will stand up against counter arguments about loss of UK competitiveness whilst the regulation is restricted to the relatively low cost of "capture ready". To proceed beyond that to mandatory installation of CCS when others are not doing so or intending to do so would be inadvisable.

Question 18: Do you envisage any difficulties with using the consent regime under section 36 Electricity Act 1989 to implement Article 32?
Answer:
NOT regarding the power plant itself; it appears that this is already happening with the consents for gas fired plant referred to in para 3.44 being conditional on being built "capture ready". However, it is not clear that the capture ready provisions for these plants covered the feasibility of transmission and storage as suggested in the consultation document. These are the areas more likely to cause difficulties.

Question 19: Is the Environment Agency (EA) the appropriate agency to advise the consenting body on whether the proposed plant could be built CCR? If not, who might be better placed to do so?
Answer:
Noting that the new Infrastructure and Planning arrangements would come under BERR and set the terms under which new plant would be permitted it is considered that the EA would be a good lead on advising whether CCR conditions had been met. Presumably this would mean building up the capacity of the EA in an area in which they have not been prominent hitherto.

It is noted that consent to proceed with a new plant "capture ready" will not provide a license to go ahead and build the subsequent CCS add on. This will require a new and separate permit as it constitutes a substantial plant modification (cf addition of FGD). Presumably the EA would also be the advisory body.

Question 20: Are there any of the proposed factors another body might be better placed to advise on and why?
Answer:
Whilst there are many other organisations which will necessarily have an input to regulation and to the permitting of particular facilities none appear better placed than the EA to lead.

Question 21: Should a plant only be consented if the studies and assessments carried out demonstrate that it could be capable of being built CCR?
Answer:
Not in every case; there may be exceptions. – see answer to next question

Question 22: Do you agree that the CCR factors might have the consequences described in paragraphs 3.71-2? Would such consequences cause concern and if so why?
Answer:
There may be circumstances where CCR need not be mandated. Energy security issues are probably the main ones which might so suggest, but only in specific cases. For instance, rapid start up and shut down capacity aimed at peak lopping, which would only operate intermittently and which has to be very responsive to demand surges would be an obvious potential exception. It is possible that peak lopping plant at 300MWe or more will be needed particularly as the proportion of renewable energy increases on the system. Some form of derogation or cap on operating hours needs to be considered. Such uncertainty illustrates why the principle of having an evolutionary approach over a rigid prescriptive set of conditions applies.

Hence, CCR should be a feature of new fossil-fuelled power station applications provided the system is able to provide some degree of freedom for developers to consider every power station that is fit-for-purpose and appropriate for location, function, and meets the overall objective of the government in reducing CO2 and encouraging energy security.

Question 23: Do you agree that in certain circumstances Government should be permitted to consent to power stations that do not meet all the four factors that underpin the CCR criterion? If yes, what might such circumstances be?
Answer:
The intention should be that all fossil fuel plant be treated the same in order to maintain a fair market situation. So, the four factors should almost always apply, but not necessarily to the same degree due to the issues of site specific uniqueness for almost every power station site in the country. This reinforces the need for a flexible evolutionary approach to CCR that adapts as the situation for technical and regulatory changes through learning by doing.

In particular, as already indicated in earlier answers considerations of peak power provisions and grid stability may throw up a very few exceptions.
Based on maintaining flexibility, the government should be able to consent non capture ready plants, in the knowledge that each case will require justification and the developer accepts that he will have to buy the necessary carbon credits.

APPENDIX 3

Coal Resource Assessment - May 2008

UNDERGROUND MINING		**Million Tonnes**	**Million Tonnes**	**Million Tonnes**
Current mines	131			
Conditional Licences (includes Margam Prospect)	130			
		261		
Prospects				
Well Developed Information				
N.E. Leicestershire	508			
Park	103			
South Warwickshire	400			
Witham	120			
		1,131		
Identified Information				
Amble	50			
East Durham	200			
East Yorkshire	300			
Kesteven	240			
St Bees	20			
Vale of Till	90			
		900		
			2,292	
SURFACE MINING				
Current sites	42			
Approved sites	17			
In planning process	14			
		72		
Prospects				
Pre-planning	34			
Ex-conditional lics.	65			
Fully & Partly proved	142			
Potential	474			
		715		
			788	
			GB TOTAL	**3,080**

Coal Reserves

There are substantial coal resources remaining throughout the UK. However, detailed feasibility studies will involve an estimation of the recoverable coal available to be worked within a particular designated area.

UK Coal Plc, the largest producer of coal in this country, categorises its coal resources and reserves as shown at end of this appendix on page 38. Other companies may offer a slightly different classification, but overall, "reserves" are always more certain for exploitation than "resources".

A review of available data clearly shows that there are abundant workable reserves of coal available to be mined by both underground and surface mining methods. However, it must be accepted that some reserves, particularly deep mined, previously categorised as "workable" are now deemed as being "unworkable" as a result of surface developments and rising minewater levels, causing the working of some reserves to be unsafe or even uneconomic due to minewater pumping costs, mine shafts being filled and environmental concerns.

The infrastructure of existing mines will always be assessed as a preferred option to access coal reserves. This applies particularly for further underground mine development, although where possible it is also a substantial advantage in planning applications for adjacent or neighbouring surface mine sites to utilise existing infrastructure.

The 2007 Energy White Paper included the following statement relevant to coal:-

"4.31 Making the best use of UK energy resources including coal reserves, where it is economically viable and environmentally acceptable to do so, contributes to our security of supply goals. The Government believes that these factors reflect a value in maintaining access to economically recoverable reserves of coal."

Unfortunately, the closure and abandonment of underground mines, with very few exceptions, results in a permanent inability for re-use of access infrastructure to the reserves. Furthermore, placing any form of mine into a care and maintenance situation can develop into a substantial financial and environmental liability.

The more recent pricing environment for coal, however, coupled with its apparent long term demand worldwide, is now enabling mine operators to reconsider their options for both underground and surface mines in the UK. The Coal Forum Report (2007) stated that:-

> *"If producers can obtain world market equivalent prices, profits can be generated sufficient for investment in existing deep mines and in new surface mines. World prices would have to rise considerably for development of new deep mines to be economic in the UK given the current investment climate in the industry."*

With regard to existing deep mines, there is evidence that mine owners are now prepared to identify investment opportunities at mines to at least maintain levels of production for the short term. Furthermore, it is apparent that confidence levels within the industry *"have opened the door to new investment opportunities not previously thought possible". (UK Coal CEO, 2008)*

Whether this level of confidence will become sufficient for the development of "new" deep mines remains to be demonstrated. A feasibility study for a new mine at Margam in South Wales is being undertaken by CORUS/TATA, albeit this is primarily a coking coal prospect and may involve relatively short surface access developments. Whilst other deep mine prospects are available, the access costs by vertical shafts may well still be prohibitive, particularly given the longer term uncertainty to ensure a return on this investment. The mining industry well remembers the "planning compromise decision" for the siting of the Asfordby mine shafts, their costs and that of the other infrastructure (£320 million) and the eventual closure of the mine in 1997 after only 2 years production.

Underground Mining

There are currently 15 underground operational coal mines in England and Wales, working coal reserves under licences issued by the Coal Authority. There is also one other mine, Harworth

Colliery, which, since closure in June 2006, has remained on care and maintenance, a decision made by UK Coal subsequent to improving coal prices. However, of these 15 mines, 7 currently produce some 98% of the total underground tonnage and this amount is unlikely to change to any great extent in the foreseeable future. The remaining mines generate relatively small tonnages, and even with improved investment at these sites, will probably not impact to any great extent on the overall percentage shown above.

UK Coal, the largest mine owner with 5 mines (including the non-operational Harworth Colliery) has substantial investment programmes at all its mines except for Welbeck Colliery, which is scheduled for closure 2009/10. The company now has a Project Team re-examining prospects for Harworth in particular, with an investment decision pending late 2008.

Another owner, Maltby Colliery Ltd, is considering investment options to access further reserves at Maltby. Particular reference should also be made to Hatfield Colliery, which was re-licensed to Powerfuel Ltd by the Coal Authority in April 2006 and has recently successfully completed its first production face. Due recognition needs to be given to the company for the successful recovery of the mine following abandonment some 2½ years previously. Furthermore, there is the potential for access to neighbouring reserves.

In South Wales, the number of small mines will probably increase though tonnages will remain relatively small. However, both Aberpergwm and Unity mines have the reserves and potential to increase tonnages substantially relative to current production levels given the investment opportunity generated by improved coal prices. Evidence of investment is to be seen in South Wales with the efforts by Metal Innovation Ltd to mechanise the work systems in the small mines.

These existing mines are currently producing at a rate of 8 million tonnes per year, though there is every indication that this will now increase slightly and can be maintained with continuing and rising investment levels accessing adjacent areas of reserves at each site. The re-opening of Harworth Colliery would potentially raise total deep mine output levels to above 10 million tonnes per year from 2012 to beyond 2016, even with the closure of Welbeck Colliery during 2009/10.

Surface Mining

There are some 35 surface mine sites currently operating under licences issued by the Coal Authority, and which have produced some 8.8 million tonnes during the past year. The higher number of sites (and tonnage) are to be found in Scotland (17 sites, 5.7 million tonnes) followed by England (8 sites, 1.85 million tonnes) and Wales (10 sites, 1.25 million tonnes).

This rate of output has been fairly consistent over the past 3 years following substantial decline in output (27%) during the 2004/2006 period. However, surface mine operators are now more optimistic that output overall will rise this year, reflecting the increase in the number of sites receiving planning approval during 2007. This optimism is hopefully reflected in forecasts of output levels rising to 10.5 million tonnes, with the potential to achieve up to 12 million per annum in the period 2009-2014.

However, such levels are obviously critically dependent on planning applications being successful on a consistent basis over this period. Appendix 4 (Surface Mine Sites in Planning - May 2008) indicates that some 17 potential sites with total coal reserves of almost 14 million tonnes are currently being considered within the Planning system. If all are successful, some 72 million tonnes of consented reserves are available to be worked – see the table above.

Whilst there is optimism as to the market regarding availability and price, there remains some considerable caution within the industry concerning operational costs and planning applications. Surface mines in particular are experiencing substantial rises both in the cost of purchasing the large earth moving machinery, but particularly in the cost of diesel used by these machines. This is especially the case for the larger sites which require increased capability of its machinery to move larger amounts of overburden. The increases in the duty on red diesel in recent years have added to the costs of production of surface coal mines and represent a cost that the industry's international competitors do not have to incur. Also, it should be noted that gas oil used by electricity generators is exempt from duty. The total cost to the industry of the duty increases are some £10m per annum and are equivalent to some 6p/GJ and to one point on the economic ratio at any given level of international prices. This inevitably results in the sterilisation of some coal that would otherwise be worked. Representatives of the Coal Forum are in discussion with HM Treasury and HM Revenue and Customs on the economic implications with a view to identifying whether and how relief might be obtained. Formal representations have been made by the Forum.

With regard to the planning issues of future sites, the CA now has available Coal Resource Maps showing coal reserves potentially workable by surface mining. These are to be released to all Mineral Planning Authorities subject to agreed terms and conditions.

UK Coal PLC Reserves And Resources

UK Coal estimates that it has approximately 105 million tonnes of reserves and resources at its ongoing mines of which 45 million tonnes of coal are accessible under existing 5 year mining and investment plans. The additional resources will become accessible with future investment required as current mining plans approach completion.

Reserve	Reserves which are accessible using the broad infrastructure in place at the current time and which are in the current 5 year mining plan.
Resource	Reserves which may require substantial development and other costs to allow accessibility and are not currently in the 5 year mining plan.
Mineral Potential	Coal that has been assessed (although possibly not to the same extent as Reserve and Resource coal) but UK COAL does not have any licences or planning permission to extract the deposits.

SURFACE MINE SITES IN PLANNING - MAY 2008

ENGLAND

Site	Operator	MPA	Status	Planning Reference	Coal	Planning Comment
Bradley	UK Coal Mining Ltd	Durham	Planning	CMA/1/37	555,922	Applied Dec 07
Carters Fold East	LEM Mining & Restoration Ltd	St Helens	Planning	P/2008/0450	105,000	Applied Apr 05; Refused Jan 08; Re-applied Apr 08
Huntington Lane	UK Coal Mining Ltd	Telford & Wrekin	Planning	W2007/1648	900,000	Applied Nov 07
Langley Marina	Shires Developments Ltd	Derbyshire	Planning	CM6/0603/33	12,500	Applied May 03
Newton Lane	H J Banks & Company Ltd	Leeds	Planning	06/07671/FU	1,000,000	Applied Dec 06; Decision Jul 08?
Park Wall North	UK Coal Mining Ltd	Durham	Planning	CMA/3/21	1,274,500	Applied Dec 06; Decision May 08?
Potland Burn	UK Coal Mining Ltd	Northumberland	Planning	05/00269/CCMEIA	2,027,000	Applied Dec 05; Decision Jun 08?
				TOTAL	**5,874,922**	

SCOTLAND

Site	Operator	MPA	Status	Reference	Coal	Planning Comment
Blair House	UK Coal Mining Ltd	Fife	Planning	08/00607/WEIA	620,068	Applied Feb 08
Glenmuckloch Extension	ATH Resources plc	Dumfries & Galloway	Planning	07/P/3/0779	727,100	Applied Dec 07
Headless Cross East	The Scottish Coal Company Ltd	North Lanarkshire	Planning	?	1,100,000	Applied Apr 04.
Nettly Burn (Outh Farm)	The Scottish Coal Company Ltd	Fife	Planning	04/01833/WEIA	470,000	Applied May 04
Rigg	ATH Resources plc	Dumfries & Galloway	Planning	07/P/3/0506	600,000	Applied Aug 07
Rusha	H J Banks & Company Ltd	West Lothian	Planning	1199/M/07	1,500,000	Applied Dec 07
				TOTAL	**5,017,168**	

WALES

Site	Operator	MPA	Status	Reference	Coal	Planning Comment
Margam Extension Revised	Celtic Energy Ltd	Bridgend & Neath Port Talbot	Appeal	P/07/569/MIN (B) P/2007/663 (NPT)	1,700,000	Originally applied Dec 04 but withdrawn in Nov 06. Revised app May 07. Refused Jan 08. Appealed Apr 08
The British	Spring (Talywain) Ltd	Torfaen	Planning	08/P/00283(W)	350,000	Applied May 2008
Pont Henri / Pentremawr Reclamation	Draeth Developments Ltd	Carmarthenshire	Planning	S/18128	350,000	Applied Jan 2008
Varteg Hill	Glamorgan Power Ltd	Torfaen	Planning		350,000	Applied Oct 03
				TOTAL	**2,750,000**	

TOTAL FOR GB 13,642,090

TABLE 1

UK COAL PRODUCTION & USAGE

Year	*U/g m/tonnes*	*Surface m/tonnes*	*Total (incl. slurry)*	*Imports*	*Used m/tonnes*
2002	16.4	13.2	30.0	28.7	58.5
2003	15.6	12.1	28.3	31.9	63.0
2004	12.5	12.0	25.1	36.1	60.6
2005	9.6	10.4	20.5	44.0	61.8
2006	9.4	8.7	18.6	50.4	67.4
2007	7.7	8.9	17.1	43.3	62.8
2008 Q1 + Q2	3.8	4.3	8.3	20.9	29.4

APPENDIX 5

Infrastructure Sub-Group

Rail

In its First Overview Report the Coal Forum Infrastructure sub-group identified a number of areas of concern in relation to the reviews being undertaken by the Office of the Rail Regulator (ORR) into the different charges imposed on those using the rail network to transport coal. Full details of the ORR consultations can be found at www.rail-reg.gov.uk/.

During the year members have continued to meet with officials from the ORR and Network Rail as part of the ongoing consultation exercise.

Track Access Charges

One of the key areas that has been discussed at all the meetings is the issue of Track Access Charges. The Track Access Charge is paid by all freight operators for using the rail network. In 2006/07 around £95m was paid in Charges but these rates have not been reviewed since 2001. The ORR is in the process of reviewing Network Rail's costs and charges including Access Charges for the period from April 2009 to March 2014. Members of the Infrastructure sub-group had in their own right taken part in the consultation exercise carried out by the ORR during 2007.

Although a final decision is yet to be made by the ORR on the levels of charges during the next period they issued a draft determination of costs and charges in June 2008. Members believe that progress has been made, in that the overall increase may now be minimal, but concerns continued to be raised about how the charges were split between urban and rural routes. Individual member organisations have agreed to continue to engage with the ORR. The consultation on the draft determination closed on 4 September 2008 (http://www.rail-reg.gov.uk/upload/pdf/368.pdf) and the final determination will be published on 30 October 2008.

Electricity Supply Industry (ESI) Coal and Spent Nuclear Fuel

As part of the review of Track Access Charges, under the 2004 Future of Rail White Paper, the ORR are continuing to propose the imposition of a new charge on freight only lines used for transporting ESI coal and spent nuclear fuel. Members expressed concerns that charges aimed at specific groups, on top of the freight access charge, were unfair. On the basis of a market analysis the ORR believes that some markets are more able to meet a specific levy on their use of freight lines, and ESI coal and spent nuclear fuel are the two that have been identified. The ORR will limit the charge to terminal freight lines only but members did not believe there was a justification for imposing the charge on just two markets.

Members agreed to continue to take part in consultations on the charging.

Coal Spillage Charges

Another area of concern for members of the Infrastructure sub-group continues to be the blanket coal spillage charge. The charge is imposed by the ORR to cover damage caused from coal spilling from wagons transporting coal on the rail network. The charge covers points and track circuit failures which are said to be caused by the spillage. The current spillage charge is around £5m a year but Network Rail had informed the ORR that they believe that around £7m damage is caused in additional points failures and other related impacts. The new charges proposed by Network Rail would include a rebate where spillage is minimised.

A number of the members of the Infrastructure sub-group are also members of the CoalImp Spillage Working Group and following a presentation at their fifth meeting sub-group members were unanimous in endorsing the Working Groups recommendations. The recommendations called for a reduction in the annual charge to £2m; retain the current uplift spread across all traffic, and not introduce a specific rebate; establish a £250,000 per annum fund to finance projects looking at reducing spillage and its impact; and review the charge in with measured improvements.

The Working Group and sub-group are both continuing to engage with the ORR on a mutually agreeable way forward.

Rail Network Investment Proposals

Members of the Infrastructure sub-group have continued to engage throughout the year with Network Rail on issues relating to the enhancement of the rail network. Network Rail stated their wish to work proactively with all parties to develop their plans and to manage potential risks to the operation of the network. Members raised concerns regarding the lack of guidelines for new investment proposals, specifically the extent of private party funding of the network for enhancements remote from a new facility. Network Rail said there was no single model which fitted all circumstances, also that the availability of public funding had varied over time and would no doubt do so again in the future. Network Rail negotiated with each developer in an open way for the individual scheme in question. The current climate for freight scheme funding is the best that the industry has seen for c. 50 years and this should be welcomed. Over £250m of funding of freight schemes through the Productivity Transport Innovation funding for freight has already been announced alongside a further £200M available for "Strategic Freight Network" schemes – for which a draft list of proposals has been published by Network Rail in its April 2008 update to its Strategic Business Plan (http://www.networkrail.co.uk/browse%20documents/StrategicBusinessPlan/Update/Strategic%20Freight%20Network%20paper.pdf) and Network Rail welcomed industry feedback on this.

Individual member organisations agreed to draw up a wish list of proposals, beyond those already submitted, for Network Rail to consider.

Ports

The Forum continued to express concerns over the timeliness of the planning processes but with the Planning Bill currently making its way through Parliament it was anticipated that the creation of the Infrastructure Planning Commission (IPC) would speed up the timescales for planning applications for major infrastructure projects.

Members of the Infrastructure sub-group were awaiting the circulation for consultation of the National Policy Statements, which it was anticipated would focus the IPC on the relevant issues impacting on any planning application.

APPENDIX 6

Membership

UK Coal Forum Members

Chair:
John Harris CBE

Government:
Malcolm Wicks, Minister of State for Energy, BERR
Jeremy Cousins, Head of Secretariat to the UK Coal Forum, BERR
Jim Campbell, Energy Development Unit, BERR
David Rennie, Scottish Government
Philip Lawrence, Chief Executive, Coal Authority
Ron Loveland Welsh Assembly Government
Richard Vincent, DEFRA

Attendees:
Adam Lent, TUC;
Alistair Black, ATH Resources plc
Barrie Jones, Mines Rescue Service
Bob Taylor, E.On
David Brewer, CoalPro
David Jerome, Clyde Port
David Porter, Association of Electricity Providers
Dorothy Thompson, Drax;
Guy Buckenham, EDF Energy
Ian Lavery, NUM
Ian Marchant, SSE
James Poyner, Miller Argent
Jim Beynon, EDF Energy
John O'Neill, Scottish Power
John Topper, IEA Clean Coal Centre
Jon Lloyd, UK Coal
Mel Hunt, H J Banks
Mike Farley, Doosan Babcock Energy
Niall Crabb, Scottish Coal
Nick Otter, Alstom
Nigel Yaxley, CoalImp (Association of Coal Importers)
Owen Michaelson, Peel Holdings
Philip Cave, Keir Mining
Phill Garner, UK Coal
Rhidian Davies, Energybuild
Sandy Rae, ScottishPower
Simon Brett, Associated British Ports.

Coal Forum Sub-Group Members

Future Generation Sub-Group

John Topper, Chair, IEA Clean Coal Centre (Chair)
Charles Eickhoff, Progressive Energy
David Acres, EDF Energy
David Brewer, CoalPro
David Porter, Association of Electricity Providers
James Poyner, Miller Argent
Jeremy Cousins, Coal Forum Secretariat
John Mitchell, SSE
Karl Bindermann, ARUP
Melanie Wedgbury, Drax
Mike Farley, Doosan Babcock Energy
Nick Otter, Alstom
Nigel Yaxley, CoalImp (Association of UK coal Importers)
Pat Carragher, BACM
Paul Baruya, IEA CCC
Phil Garner, UK Coal
Robin Irons, E.On

Infrastructure Sub-Group

David Brewer, CoalPro (Chair)
David Jerome, Clydeport Operations Limited
Geoff Bounds, Network Rail
Iain Morgan, Office of Rail Regulation
Jeremy Cousins, Coal Forum Secretariat
Martin Higgins, International Power
Martin Wilks, Freightliner Heavy Haul Limited
Matthew Hunt, Port of Tyne Authority
Nigel Yaxley, CoalImp (Association of UK coal Importers)
Richard Plumb, EDF Energy
Robert Groves, Argent Group Plc
Satnam Johal, BERR
Susie Northfield, Department for Transport
Tom Carmichael, The Bristol Port Company

Production Sub-Group

Dr Barrie Jones, Mines Rescue Service Ltd (Chair)
Adrian Scourfield, Mines Rescue Service Ltd
Clare Harding, BERR
David Brewer, Coalpro
David Flack, Federation of Independent Mines
Ian Lavery, NUM
Ian Wilson, Coal Authority
James Poyner, Miller Argent
Jeremy Cousins, Coal Forum Secretariat
John Delaney, Coal Authority
Pat Carragher, BACM
Phil Garner, UK Coal
Philip Cave, Kier Mining
Rhidian Davies, Energybuild
Rohan Courtney, UCG Partnership
Sandy Rae, Scottish Power
Steve Harrison, HJ Banks