

An initial response to the government's energy policy consultation from the Confederation of UK Coal Producers (COALPRO)

July 2002

Policy actions called for by COALPRO

- The White Paper on energy policy must recognise that coal, and indigenous coal in particular, has a security value to the nation beyond that of the commodity price it commands in the market.
- To maintain a healthy level of indigenous coal production will require support; otherwise local producers will disappear. Fortunately, there is a range of flexible support options available to the UK government under State aid rules recently agreed by the EU.
- The Environment Agency and DEFRA must not go beyond the already onerous requirements of EU environmental directives. To do so would damage UK competitiveness, weaken our traditionally strong economy and hinder our contribution to the technological progress that has consistently delivered environmental benefits to an ever-demanding global society.
- The government should establish a framework that makes it attractive for owners of existing coal-fired power stations to maintain these assets, and carry coal stocks, as a necessary back-up to renewables and as cheap insurance against gas supply interruptions.
- The DTI must start the supercritical boiler retrofit project at an existing coal-fired power station. This project was recommended in the department's own Cleaner Coal Review earlier this year and requires the DTI Cleaner Coal Technology R&D Programme's budget to be increased.
- To stimulate the market for carbon-saving clean coal technologies, such as IGCC, the country needs a Clean Coal Obligation to reward those who invest in the technologies that must ultimately be deployed on a global-scale if CO₂ levels in the atmosphere are to be stabilised as the Royal Commission on Environmental Pollution recommends.

Key points

- Global consumption of fossil fuels will continue to rise and we must either face the environmental consequences or demonstrate how they can be avoided.
- A strong economy, underpinned by plentiful supplies of competitively priced energy, often in the form of coal, has been the precursor to the technological revolutions that have led to the better quality of life and improved environment we now enjoy.
- Stakeholders should work together to create pragmatic energy policies that deliver technological progress rather than promoting idealistic Utopias; renewables alone are not a solution to the issues we face in the short to medium term.

- Existing coal-fired power stations are a valuable national asset that can provide the reserve capacity needed to back-up less reliable renewable sources such as wind at a competitive price.
- The risks of an over dependence on gas from dominant suppliers are transparent - coal continues to offer the balance needed for price and supply security.
- The ability to stock pile substantial volumes of coal at power stations gives us the option to carry back-up fuel for electricity generation at a minimal cost compared to the alternatives of storing gas in expensive underground caverns or LNG tanks.
- Clean Coal Technologies offer immediate benefits and, in the longer-term with carbon capture and storage, can help achieve the deep cuts in CO₂ emissions called for by the Royal Commission on Environmental Pollution at a cost significantly below other options.

1. Introduction

Energy, predominantly in the form of fossil fuels, underpins everything we do. Disrupt supplies and, within a few days, society becomes paralysed. Some now question whether Europe's liberalised energy markets will materialise in a way that delivers the security of supply consumers have taken for granted, at least since the oil shocks of the 1970s. With the EU forecast to become dependent on imported energy supplies for two thirds of its needs by 2020, it is time to consider what constitutes a robust energy policy.

This briefing note explains why the use of coal for electricity generation should be a central component of UK energy policy.

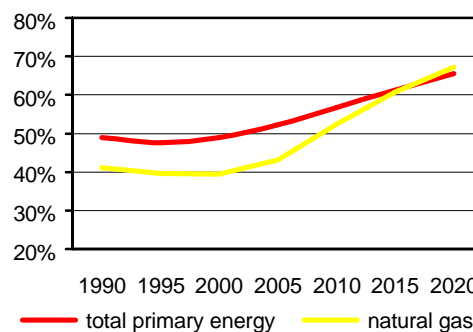


Figure 1 - EU energy import dependence to 2020
(source: EU Energy Outlook to 2020, European Commission)

2. Growing demand for coal

Coal is dismissed by many in Western Europe as a fuel of the past with little to offer us in the future. Images of smoke rising from the stacks of Lowry's industrial landscape paintings obscure the realities of today:

- total world coal production stands at over 4,500 million tonnes of which the UK consumes just 65 million tonnes, or less than 1.5%;
- global demand is forecast to rise by 1.7% annually, *ie* by more than the UK consumes;
- coal consumption in the USA has doubled over the last 30 years to an all-time high of a billion tonnes; and,

- coal-fired power stations produce 33% of the electricity we use in the UK.

Coal will continue to supply around one quarter of the world's total primary energy demand and almost 40% of electricity production well into the future.

The world has an insatiable appetite for coal - a safe, secure and cheap fuel.

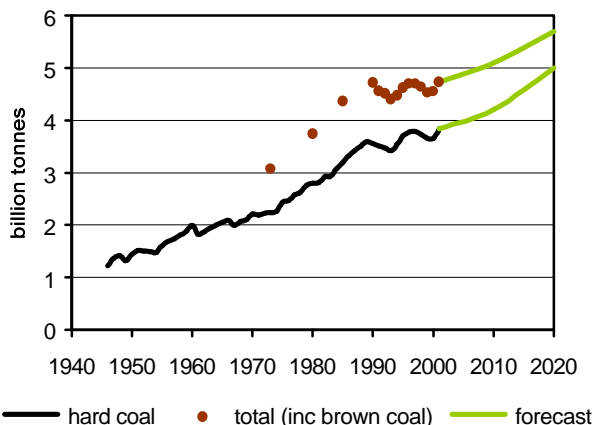


Figure 2 - Global coal production since Second World War
(source: IEA Coal Information 2001 ed.)

3. Democracy from coal

With reserves of coal distributed fairly around the world and mined by many competing producers with no monopoly of transportation routes, coal is a fuel accessible to all. Contrast this with oil and gas where the world's principal reserves are held by just a few countries, sometimes in the hands of national monopolies such as Gazprom in Russia and the National Iranian Oil Company.

Coal is a democratic fuel available to all.

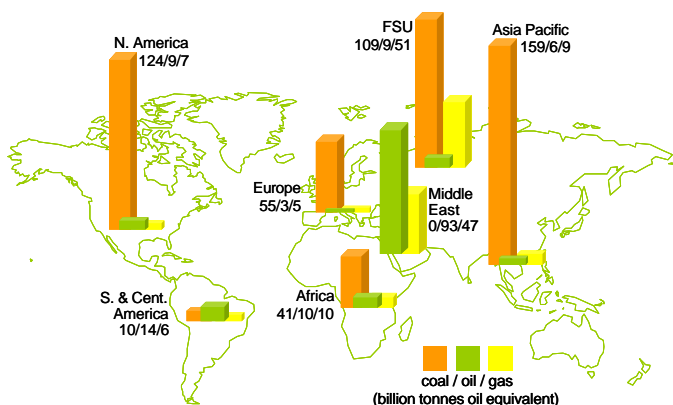


Figure 3 - Global reserves of coal oil and gas
(source: BP Statistical Review of World Energy 2001)

4. Security from coal

The minor interruption to transport fuel supplies in 2000 demonstrated how important energy security is to a nation. If 60-70% of our electricity was to come from gas, as predicted by the government, then the consequences of an interruption would be devastating. The country would quickly grind to a halt. The consequence of the miners' strike in 1985 was bad enough, but at least power stations held sufficient stocks of coal for economic activity to be maintained for almost a year. With our limited gas storage capacity, it would be

impossible not to avoid serious economic and social impacts within days.

Stockpiling coal gives cheap energy security and avoids the heavy investment that will otherwise be needed in gas storage facilities.

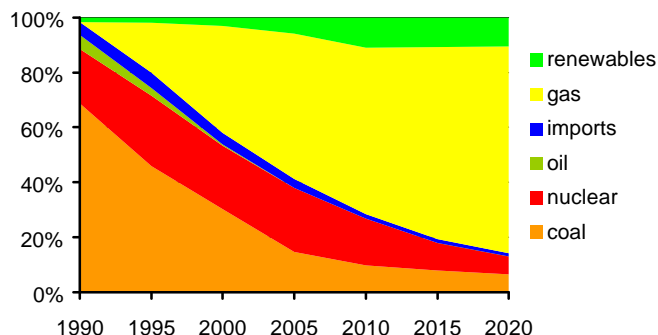


Figure 4 - DTI forecast of fuel use for power generation
(source: DTI Energy Paper 68, central low scenario)

5. Gas - expensive and short-term

The fallacy that coal is a dirty fuel in decline suits the oil and gas multinationals who need to justify the massive infrastructure needed to ship gas into Europe from Russia and the Middle East. The European Commission is supporting feasibility studies and investment in the gas pipelines needed to bring distant gas supplies to market. The sums involved are large: bringing gas from Siberia through the Yamal gas pipeline will alone cost €5 billion; and the 74 Trans European Energy Network (TEN-Energy) projects are estimated to cost €26 billion to strengthen Europe's gas and electricity distribution networks. Against this, the infrastructure to transport coal and convert it to electricity is already in place and provides us with a valuable hedge against high gas prices.

The European Commission is pushing €billion projects to bring gas from monopoly producers into Europe.



Figure 5 - Potential suppliers into EU gas network
(source: Eurogas)

6. Strategic regulation of energy markets

The government has stated that it is unwilling to interfere in the market to set a particular mix of primary fuels for electricity generation that would give a desirable level of diversity and security. However, some of the

government's own advisors have suggested this, common advice being a 33% : 33% : 33% split for coal : gas : nuclear/renewables. The coal industry believes that a policy where around one third of the UK's electricity continues to be generated from coal would avoid an over dependence on gas and allow a growing and viable contribution from CO₂ neutral sources. The Utilities Act 2000 is clear about where responsibility lies for energy security: the Secretary of State for Trade and Industry and OFGEM shall "secure a diverse and viable long-term energy supply"; there is currently no explicit policy measure to achieve this.

For diversity and security reasons, one third of the UK's electricity should be generated from coal.

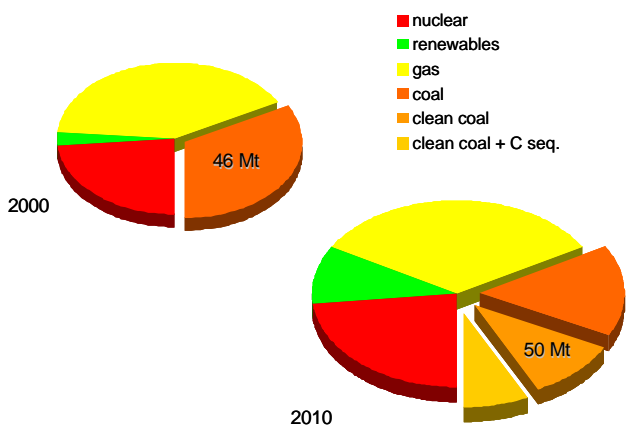


Figure 6 - Primary energy mix for UK power generation

7. Indigenous supplies

There are good reasons why indigenous coal production should be maintained to supply a proportion of the coal needed for power generation:

- coal mining in the UK is a £1 billion industry, employing 20,000 people and making a doubly valuable contribution to our economy since the only alternative to indigenous production is imports;
- the UK's coal-fired power stations were designed for, and work best with UK coal;
- local production offers security and avoids the unnecessary transport of coal from distant countries; and,
- the demands on rail infrastructure made by coal imports are reduced, leaving more of the network free for passenger services.

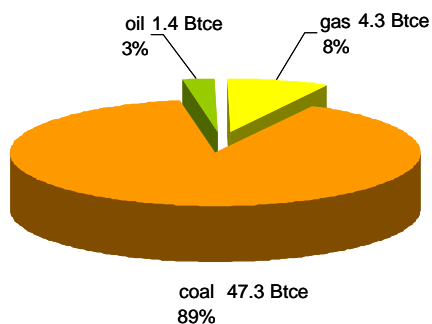


Figure 7 - EU energy reserves

(source: BP Statistical Review of World Energy 2001)

The European Commission has outlined why it is desirable for Europe to maintain a base indigenous energy

production, including coal. The UK is the only producer in the EU with any signs of economic viability and competitively supplies about 50% of UK demand from deep and surface mines. Production costs in the UK are a fraction of those in Germany and Spain where subsidies total almost £4 billion each year (over £90/tonne in Germany). It would be illogical for Europe to lose its most efficient coal producers simply because the UK government failed to support the Commission's proposals.

EU indigenous energy production has a value beyond that of a commodity.

8. Investment aid

Some coal mines in the UK have a relatively short life ahead of them as their reserves near exhaustion. Targeted investment aid under the new rules replacing the ECSC treaty would allow mining companies to access new reserves from existing mines. However, any investment in coal production, whether public or private, must be underwritten with long-term supply contracts. In today's liberalised energy markets, producers are often unable to negotiate anything other than short term or spot contracts, so are in a poor position to finance capital projects.

Investment aid can help maintain indigenous production levels by extending the productive life of collieries.



Figure 8 - Kellingley Colliery (courtesy of UK COAL PLC)

9. Imported supplies

Imported coal will continue to be needed and is available from an increasing number of sources as the progressive relaxation of trade barriers has provided new opportunities for developing nations and eastern European countries with rich coal reserves. However, many of these countries have not established robust environmental legislation, and those that have done, find it difficult to enforce. This is particularly the case in Indonesia, Poland, South Africa and Venezuela. Allied to this, the use of child labour in Columbian mines raises ethical issues that coal buyers must face. To ensure that the highest health, safety, labour practices and environmental protection standards are applied around the world demands first hand knowledge of best practice. Exploitation of poorer nations by those in the developed world is an undesirable consequence of free trade. Indigenous production ensures that environmental impacts are properly dealt with and not simply shifted to

other parts of the world. Indeed, coal producers in the UK play a leading role in setting the standards by which others can be judged.

A growing awareness of foreign direct liability demands that coal users consider ethical and environmental issues alongside price when sourcing supplies.



Figure 9 - Restoration of an opencast coal mine in the UK

10. Existing mining and power generation assets

Existing coal-fired power stations in the UK can continue to generate electricity for many years. Some are fitted with FGD to reduce sulphur emissions, and more FGD is under construction or is planned to meet European emissions legislation. Given a regulatory framework that encourages and rewards investment in environmental protection technologies, then an on-going demand from existing power stations of 40 million tonnes or more is likely over the next 10 to 20 years. UK producers can continue to supply a healthy proportion of this demand, around 30 million tonnes. Clearly, there will be more closures as collieries exhaust, but those remaining will be internationally competitive. Opencast mining can also supply a significant quantity of coal, but only if planning guidelines are changed to allow proposals for coal extraction to be determined as part of a rolling production programme, in the same manner as proposals for minerals extraction.

The presumption against opencast coal mining in Minerals Planning Guidance note 3 should be removed.



Figure 10 - Excavator at work on an opencast coal mine

We should not ignore what can be achieved today at existing coal-fired power plants with modest investment. Indeed, the Government has already indicated its willingness to support the demonstration of a high-efficiency, supercritical boiler retrofitted to an existing power station. The 15-20% reduction in CO₂

emissions would be valuable enough at a single unit, equivalent to the carbon dioxide saved with 300 wind turbines. Across the country, the saving would be well in excess of the anticipated carbon saving from the Renewables Obligation, but at a fraction of the cost. Demonstration at an existing plant would cost the government just £30 million and provide UK industry with a shop window for a product that could reduce emissions from many hundreds of power stations around the world.

Clean coal power generation must be adopted by the UK and around the world to reduce the environmental impact of rising coal consumption.



Figure 11 - An existing coal-fired power station

11. Investment in new power stations

Over the next ten years, the UK will have to replace 10 GW of the very oldest coal and nuclear power stations. The government appears prepared to rely on more gas-fired CCGTs, throwing out its policies on diversity, security and competitiveness. An alternative, more robust scenario would be to include a minimum level of new coal-fired generation. Whether indigenous or imported, we need to have the ability to convert coal cleanly into electricity at new power stations. Clean coal plants based on coal gasification offer a route to significantly higher efficiencies with negligible pollution. Add CO₂ capture, and carbon emissions can be largely eliminated. Large-scale demonstration projects should go ahead in the UK where we have the opportunity to use captured CO₂ for enhanced oil recovery from the North Sea. To encourage the commercialisation of these technologies, there needs to be an incentive, as there is for renewables, to reward those who are prepared to invest in clean coal.

A Clean Coal Obligation is one way the UK could steal a lead in the commercial deployment of technologies that guarantee significant environmental benefits.



Figure 12 - A modern coal gasification power station
(courtesy of Chevron Texaco)

12. Inexorable rise of CO₂ emissions

With 30% of the world's population using less energy in one year than a US citizen uses in two weeks, the demand for energy will rise steeply as nations develop. Any environmental benefits obtained by switching from coal to gas in the UK are dwarfed by the growing environmental impact of all forms of energy use around the world. Additionally, as a wealthy trading nation, the UK indirectly adds to the burden of CO₂ emissions by consuming imported products, many produced in countries, such as China, with a high energy intensity and low environmental standards.

If the UK genuinely wants to show environmental leadership, then it must engage in an international effort to demonstrate the clean use of all fossil fuels, including coal.

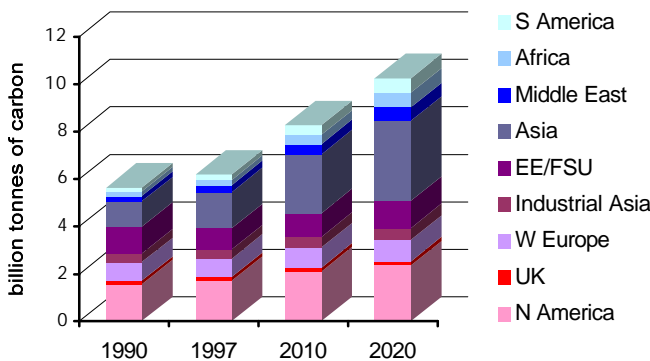


Figure 13 - UK contribution to global CO₂ emissions (source: US Energy Information Administration)

13. Life Cycle Analysis

The impact of energy consumption on the environment is rarely confined to the immediate effects at the point of use. Despite this, many environmental comparisons between fuels used for power generation are made by looking solely at the gaseous emissions from power stations, where natural gas scores highly compared with coal. However, such a comparison distorts the true picture as revealed by a Life Cycle Analysis that considers the whole process from primary energy exploration and extraction through processing, storage, transformation into electricity, up to and including final use of the electricity and any by-products. In the case of natural gas, methane leakage from pipelines adds to the environmental impact of gas-fired power generation, whereas the use of fly ash and gypsum from coal-fired power stations (in cement and plaster production) offset greenhouse gas emissions from other sectors of the economy. A full life cycle analysis accounts for all these debits and credits to give a clearer basis upon which policy-makers can make decisions.

A transparent energy policy demands proper Life Cycle Analyses of the alternatives.

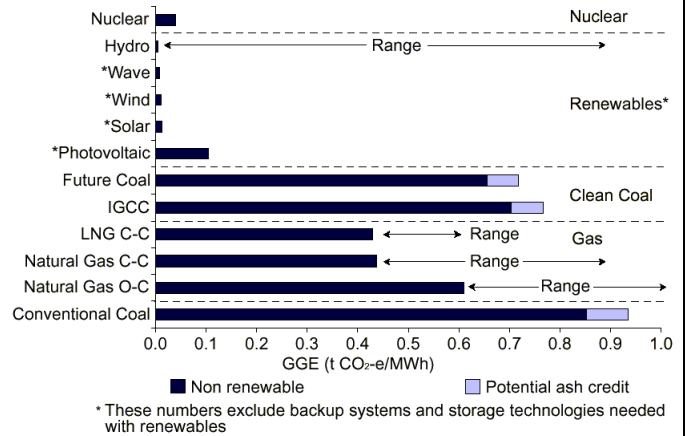


Figure 14 - Greenhouse gas emissions for different power generation technologies (source: Coal in Sustainable Society project)

14. Coal - a sure option

Russian gas might keep us warm in the future, but at what cost? There are certainly many oil companies with vested interests who assure us that this is the way forward. The UK should keep its options open, including coal. To do that requires a balanced energy policy, not simply a policy to liberalise. The inability of deregulated markets to value long-term energy security warrants government intervention and, together with an understanding of life-cycle emissions, points to the need for incentives to support deployment of clean coal technologies. It requires the foresight and determination to invest in new technologies that address a global problem and an appreciation that the UK's role is not simply to reduce our own emissions, but to demonstrate how others can as well.

The coal option - energy security at an affordable cost.

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