



UK COAL MINING LTD

Security of Supply

UK COAL welcomes the opportunity to respond to the PIU's scoping note on security of supply. UK COAL believes energy security is the key issue to be debated within the Energy Policy Review. Consumers now expect a reliable and ordered energy supply, delivered in a timely manner to meet their business and domestic needs. The petrol crisis of last year showed that consumers valued security and low cost energy over the environment. Therefore security of energy supply must be put in place before we can look to deliver environmental benefits.

Over the past decade the use of gas in the UK has more than doubled, due mainly to the growth in the electricity generation sector. Despite higher prices, gas is still the dominant fuel in the electricity generation market due to lower capital cost of equipment, minimal technical risk and shorter build time.

However, UK gas reserves are fast running out. DTI figures show that we are using gas at a quicker rate than new reserves are being found. In 1990 total UK reserves equated to 36 years consumption, by 2000 this had fallen to only 14 years. The 1998 White Paper on 'Energy Sources for Power Generation' stated that the UK would become a net gas importer at some point between 2003 and 2009 and the UK might need to import between 55 - 90% of its gas by 2020.

Future supplies of oil and gas within the EU will be more expensive. The North Sea has reached maturity and most of the reserves from the larger fields have now been recovered. Future production will concentrate on much smaller fields and those previously classified as 'uneconomic'.

Therefore the UK will become more and more reliant on imported gas supplies. Over 70% of world gas reserves are concentrated in the Middle East and the Former Soviet Union. Further investigation shows that two companies Gazprom of Russia and the Iranian National Gas Company have control of almost half the global reserves.

These are regions of the world which are subject to political instability and uncertainty. Gas imports into the UK would have to be transported over large distances across many countries. The UK, at the end of the pipeline, would be subject to the highest transportation costs and would have the greatest risk of supply interruption.

The events of recent weeks have made the world a more uncertain place and it is essential that the UK look to maximise its own indigenous resources to minimise the risk of energy shortages.

Coal unlike gas, offers security and diversity of supply. In the UK we have reserves for over 50 years production at current rates and internationally traded coal is available from a variety of politically stable countries. Coal can be easily and safely stored and transported. It also adds flexibility to the nation's electricity supply, as it can supply either base load or to respond rapidly to variations in demand.

UK COAL believes that the market takes a short term approach and there has to be political intervention to introduce a market mechanism which values security of supply. UK COAL therefore, proposes a Clean Coal Obligation should be introduced to promote more efficient, environmentally friendly technology which would maximise the benefits of indigenous coal.

With reference to the specific questions on security of supply posed by the scoping note, please find below our more detailed response.

1. What is Energy Security?

1.1 *What is the appropriate balance between emphasis on short-term physical elements of security and longer-term price elements, bearing in mind that as we look further into the future, security seems increasingly to resemble long term economic objectives?*

System risks tend to be under the control of the nation, whereas strategic risks are generally outside of UK Government control. Consumers are mainly interested in short-term elements of energy security, they expect that governments will look to the long term to ensure that there is always an abundance of competitively priced energy. Because everyone expects energy to be readily available, system failure can cause immediate problems of a high profile nature. Long-term implications for energy supply are of much less interest to today's consumer, but are nonetheless equally important to the future economic wellbeing of the nation's economy.

Managing both elements of system risk are important in ensuring a continuing reliable energy supply. However, UK COAL believes that the balance of emphasis should be tilted towards those strategic risk elements which are outside immediate government control.

1.2 *Bearing in mind other objectives of energy policy, especially economic (achievement of low costs) and environmental (especially tackling climate change), what priority among policy objectives should be given to the idea of security?*

During the 1990s there has been a surfeit of cheap energy within the UK. This has allowed environmental factors to become prominent within energy policy. This energy surplus is now coming to an end and security issues must now come to the fore.

Consumers now expect a reliable and ordered energy supply, delivered in a timely manner to meet their business and domestic needs. The petrol crisis of last year showed that consumers valued security and low cost energy over the environment. Therefore, security of energy supply must be safeguarded before we can look to deliver environmental benefits.

However, UK COAL believes low cost secure sources of energy exist that are compatible with environmental targets. For example, indigenous coal consumed in efficient new clean coal power stations has the potential for zero carbon emissions through capture and sequestration of CO₂.

1.3 *What are the weak links in the supply and delivery chains for different sources of energy?*

Coal: Coal for UK electricity generation is supplied from indigenous producers and from imported sources via UK ports. UK production units tend to be close to power stations minimising transport. Internationally traded coal is available from a variety of different countries around the world and can be moved easily in large bulk carriers.

Competition amongst ship owners ensures that there are a few problems with delivery of supplies.

Coal power stations also have the ability to hold several months of coal stocks which can act as a buffer against any break in the supply chain.

Gas: As the UK's indigenous gas reserves dwindle we will become more dependent imported supplies. The North Sea is now mature and most of the reserves from the larger fields have been recovered. Future production will concentrate on much smaller fields and those previously classified as 'uneconomic'. The UK Offshore Operators Association sums up the position in their 2000 Economic Report when they state:

"What is clear is that the development of the remaining oil and gas will be more difficult, given the combination of smaller field sizes, higher development costs, ageing infrastructure and lower real product prices ".

Additional reserves do exist in the much deeper waters of the Atlantic to the west of the Shetlands. However, these will require new infrastructure and because of the more difficult operational environment will inevitably cost substantially more to exploit.

Over 70% of the world's gas reserves are concentrated in the Middle East and the Former Soviet Union (FSU). Therefore gas imports into the UK will be by pipelines which will have to pass through many countries, some of which are subject to political instability. There is the opportunity in each country for supplies to be cut. The current impasse between Azerbaijan and Georgia over transit fees for gas passing through Georgia is just one example of potential problems ahead.

Storage facilities for gas, unlike coal and oil, are severely limited within the UK. Most gas power stations in the UK have been built without any backup fuel supplies and none have the ability to store gas. These stations are extremely vulnerable to any break in the supply chain.

Oil: Around two thirds of the world's oil reserves are in the Middle East. UK production is transported by North Sea pipeline and oil imports into the UK are via bulk tanker and hence are not limited to a single supply route. Due to recent international events the cost of moving oil cargoes has risen due to increased insurance costs, with ship owners reporting premiums of \$1m per voyage.

However, as the recent petrol crisis showed, oil is delivered into a handful of major refineries which if blockaded can have an immediate effect on supplies to the nation.

1.4 Security policy is sometimes framed in terms of an insurance analogy: policy may involve paying a set of 'risk premiums' in order to guard against a range of possible future events. Is this a useful approach to thinking about security?

This is a useful approach to thinking about fuel security with the cost of stocking a fuel being analogous to an insurance premium. Coal and oil are currently paying this premium, yet the inability to store large quantities of gas means that it is not contributing to this security policy.

1.5 If there is a quantifiable framework in which to gain some idea of insurance benefits of paying a system security insurance premium, but no such framework for making the same calculations in the case of strategic security, how can policy makers reach conclusions about the right balance of effort to give to insuring against strategic rather than system risks?

To avoid a crisis people are willing to pay an additional affordable premium. The bigger the perceived crisis, the larger the premium people are prepared to pay.

World order has been irrevocably altered by recent events; UK COAL believes it would be unwise to let the market place a heavy emphasis on imported energy supplies from potentially unstable regions of the world.

Policy makers therefore have to have contingency measures which take into consideration possible events outside the control of the UK Government.

1.6 Is it (a) practical and (b) desirable for there to be different security standards for different consumers? To what extent should energy suppliers be encouraged to offer a range of products with varying degrees of security?

In some cases consumers can reduce demand in others they simply switch to a backup supply and continue consuming.

Industrial gas consumers can opt for interruptible supplies at a reduced cost, however if they wish to continue with production during an interruption, a backup fuel source is required. In most cases this is heavy fuel oil. An industrial consumer is therefore more likely to have the ability to utilise a backup fuel source.

Most householders want a continuous supply for electrical appliances etc. and it is very difficult for domestic consumers to revert to backup supplies. It might be practical to improve system security by introducing half hour domestic meters so that consumers are aware of the peaks and troughs of energy demand throughout the day.

It is not practical to introduce an interruptible supply for domestic gas consumers. The need to purge pipelines and re-light pilot lights following an interruption would render this option unfeasible.

2. Why does Energy Security Matter?

2.1 Do existing, mostly competitive, energy markets deal adequately with risks to energy security?

The UK has no experience of operating in the energy market with a net import dependency. This is a situation which is going to occur within the next few years. UK COAL believes that the market does not place a value on security of supply especially in the long term.

On a day to day basis the market reacts to perceived scarcity by simply adjusting the price. At present, oil and gas prices are only available in the market over a forward four to five year period. The market cannot ensure total security and is unable to prevent actual physical disruption of supplies especially if inspired through political intervention.

2.2 Are market failures large enough to suggest that existing markets do not provide the right levels of security?

The failure of the electricity market in California was sufficiently large to suggest that the 'market' in the absence of an appropriate regulatory framework, does not provide the right level of security.

California is unique among the 50 states in generating more electricity from non-hydro renewable sources than from coal, and in comparison with other states, its reliance on natural gas (46% generation) is disproportionate.

Due to environmental incentives set out by the 'market', gas fired generation has been the only option that generation companies have considered. As Californian gas production has fallen over the years, the State has become reliant on imported gas from other regions. Gas prices have therefore included a significant transportation charge, especially in periods of peak demand when pipeline capacity is scarce.

There is a striking similarity between the situation in California and the projected scenarios in the DTI's EP68 for the UK. Both are reliant on large quantities of imported gas, through limited network capacity over large distances. It is important that the UK does not force the market towards one solution, as in California, and instead creates true security and diversity.

2.3 If these market failures are large enough, can we be confident that Government interventions to correct for the failures will generally have the desired results, especially bearing in mind the difficulties of measuring the risk reduction / cost trade off?

Government interventions can have the desired results if they are properly considered. The consequences of a market inspired supply failure with no Government intervention could be disastrous. Therefore the Government should look to minimise risks by drawing up contingency plans to cover major potential supply interruptions.

3. Strategic Security: Current Issues

3.1 To what extent should we be concerned about importing a proportion of our energy needs? Where there is a concern about security of supply from a particular set of overseas suppliers, how far should we be concerned with market power (limited number of suppliers) or with political unreliability, or are the two inextricably linked in the cases of say, gas supply and Middle East OPEC oil supply?

As oil and gas production from the North Sea increased during the 1980's the UK, in the main, has been a net energy exporter.

It could be argued that to import small quantities of energy is actually good for the economy as pricing pressures keep the indigenous industry competitive. However, there is a grave danger of becoming too dependent on energy imports from a few concentrated suppliers; the UK would then have no influence on price or control on supply.

Cartels can have an influence on price and availability. Despite previous failures, OPEC has shown over the past two years a hardened resolve to keep the price of oil between \$22-28 / barrel. Whilst there is no formal gas cartel, around 50% of world supplies are held by two companies: Gazprom of Russia and the Iranian National Gas Company.

The instability of the Middle East has been highlighted over the past few days. History has shown that there is a direct relationship between the price of oil and the perceived political situation in this region.

With the planned increase in gas imports, as envisaged in the DTI's Energy Paper 68, the UK will be on the end of a gas pipeline running across many different countries. Some of these countries will carry a risk of political instability. The threat of some form of future supply interruption has to be taken into account when looking at overall energy supply and contingency plans have to put in place to counter a major gas supply interruption.

4. System Security: Current Issues / Policy Approaches to Security: Generic Ideas

4.1 Is the current regulatory regime for electricity and gas networks, led by OFGEM, adequate to minimise risks of power or gas shortfalls due to inadequate production capacity or network inadequacy?

This answer must be prefaced by the statement that OFGEM have no control over UK oil and coal markets, nor do they have any influence on energy supplies outside the UK borders. Therefore, their scope to minimise energy supply risk is severely limited. With respect solely to UK electricity and gas networks the following applies.

The market is not interested in adding diversity or security to the energy mix. As stated in the scoping note, gas generation grew at the expense of coal, eventually reducing diversity. During the early to mid 1990s powerstation developers were encouraged to use gas by the regulatory system.

Despite gas generation being more expensive than existing coal stations, the Electricity Pool allowed the incumbent coal generators to set artificially high prices which encouraged new entrants. OFFER at the time wanted to encourage new entrants, the capital costs of gas stations were lower and build time shorter than new coal stations, making gas CCGTs the preferred choice.

But most importantly, the regulatory system allowed the pass through of these more expensive gas stations to the captive domestic consumer. OFFER at the time refused to listen to the long term security of supply arguments put by the coal industry, with the result that gas became the dominant fuel in the electricity generation mix.

The desire to promote competition in generation drove the regulator's actions rather than any potential adverse effect on fuel security on consumers. At present, under the Utilities Act, there is a duty for the regulator to carry out his duties in a manner which secures a diverse and viable long term energy supply.

The current proposals by OFGEM on transmission loss factors will put further incentives towards building gas fired generation in the south of the country and will disadvantage coal generation in the north. OFGEM have insisted on carrying on with their proposals despite the ongoing PIU Energy Review which may determine another outcome.

Past and current experience in the UK shows that the regulator has a different set of priorities to those envisaged by the government and careful direction has to be given to ensure government policy is implemented.

4.2 How far are generic ideas like diversity, robustness and flexibility a useful starting point for analysis of the risks against which security policies are designed to protect?

UK COAL believes these generic ideas do provide a starting point for analysis. These concepts allow current trends and projected scenarios to be modelled and provide a simple indication of UK energy security.

5. Specific Policy Approaches

5.1 What is the appropriate balance between market based and more political approaches to security?

As stated above UK COAL believes that the market takes a short term approach and there has to be political intervention to ensure long term energy security is delivered. An approach that takes into account both elements would be the introduction of a market mechanism which valued security of supply. This would then allow the market to find the most appropriate solution. This approach has been successfully adopted in promoting environmental objectives. We are not yet able to propose how such a mechanism would operate across the whole energy sector, but see below for a proposed clean coal technology obligation.

5.2 What is the appropriate balance between instruments and approaches on the supply side and the demand side?

Energy conservation is an important aspect within the UK energy balance, but outside of crisis situations it has had little impact on consumption which continues to rise.

However, whilst demand side measures can help in smoothing out peak demand within the energy system, by definition it can never create the physical energy needed to meet demand. In this respect, UK COAL believes the major emphasis should be placed on the supply side.

5.3 Among all the instruments described what are the most appropriate in the UK'S situation?

As previously stated, a market mechanism which places a value on security of supply should be adopted. This is in effect what has been proposed with the Renewables Obligation. UK COAL therefore, proposes a Clean Coal Obligation should be introduced to maximise the benefit of indigenous coal.

As with all new technologies, initial investment is difficult to arrange given the associated risks. Private finance is available but is unlikely to be attracted without the guarantee of long term contracts. Therefore, to pump-prime the initial building of commercial units, the introduction of a Clean Coal Obligation would require electricity suppliers to purchase specified quantities of electricity generated from clean coal sources, with the possibility of many of these being linked to carbon capture and sequestration.

5.4 Is there a risk that government measures to improve security would undermine provision of

security by the market, perhaps in the way that insurance might reduce the incentive to avoid risks?

The government should create a robust framework which takes the market in the right direction, but then allows the market to decide on the best way of achieving the objective.

5.5 What sort of government measures are most likely to add to the security that the market would otherwise have provided ?

As stated above the introduction of a Clean Coal Obligation would provide a mechanism to ensure that new clean coal technologies are developed which would add to the security and diversity of UK energy supplies.

6. Cross-Cutting Issues, Conflicts and Synergies

6.1 How far is it true that pursuit of security and of environmental objectives are synergistic?

Clean coal technologies linked with carbon capture and sequestration can provide security and diversity of energy supply with near-zero carbon emissions.

6.2 Should we use security policies that harmonise with environmental objectives compared to those which do not?

Cost considerations do play a part in the overall energy mix; the alleviation of fuel poverty is a key Government objective. Coal is currently the cheapest form of generation on the system and has played an important role in keeping electricity prices low during the recent increase in gas prices. Environmental objectives are most likely to be met by economies that are buoyant and well supplied with energy.

6.3 In these three areas, is the net result of market developments to lead to greater or lesser security, or is it impossible to judge?

There is no doubt that the market signals during the early to mid 1990s were to encourage new entrants into the generation market. Because of lower capital costs and shorter build time there was only one option: gas fired combined cycle gas turbine (CCGT) plant. So the market and the electricity regulator (OFFER) initially increased diversity, but then reduced it as many more plants came onto the system. OFFER had no duty to look after security of energy supplies and failed to see the consequences of its actions. In this case, the lack of a co-ordinating body has had an adverse effect on energy security.

Over the years a game has been played between the regulator and the distribution companies. Each distribution company has attempted to maximise return to shareholders and has not always spent the full amount declared as necessary to the regulator. The position was not helped by the lack of fully transparent accounts which allowed cross subsidy between regulated and non regulated areas of the business. The net result is that the regulator now takes a more stringent view on future expenditure on the basis of past experiences. It is currently impossible to judge the effect of this on future network

development.

The move towards more local distributed generation can only improve security of supply through the reinforcement of local networks. The effect of the failure of one small plant will have much less impact on the network security than the failure of one much larger station and hence could be more easily accommodated. However, large central power stations continue to offer unmatched economies of scale that are not lost in transmission.