

MEETING OUR ENERGY CHALLENGE : AMICUS RESPONSE TO THE ENERGY REVIEW 2006

1. INTRODUCTION

- 1.1. **Amicus is the UK's second largest trade union with 1.2 million members across the private and public sectors. Our members work in a range of industries including, manufacturing, energy, financial services, print, media, construction and not for profit sectors, local government, education and the NHS.**
- 1.2. Amicus has been campaigning for a long term strategic balanced energy policy and therefore welcomes the opportunity to contribute to the Government's Energy Review. The Energy White Paper 2003 made a useful contribution to the debate but, in our view, did not go far enough in determining clear policy and guidance. In the Amicus response to the White Paper we stated that we considered there to be an over reliance on imported gas and that this failed to recognise the crucial issues around the security of supply.
- 1.3. Amicus believes that a clear energy policy is essential to:
- protect our economic, industrial and social well being;
 - protect against environmental damage in the face of climate change;
 - safeguard our health;
 - ensure security of supply.
- 1.4. The essence of an energy policy must be that energy is secure, reliable and cost effective. Furthermore, the reality of climate change and the threat posed to the environment is ignored at our peril and we recognise it to be a crucial issue with regard to energy.
- 1.5. Amicus supports the Government's policy of moving to a low carbon economy and the targets to reduce CO₂ emissions by 60% by 2050. However, we also recognise that there are steep challenges to be tackled if we are to meet and deliver those targets.
- 1.6. It is clear, that the Government's policy to date has reduced carbon emissions, from power generation by 15.9% on 1990 figures¹. At the same time, however, emissions from other sources, like domestic and transport, have increased by almost the same percentage resulting in a 3.7% increase since the 1999 low². This clearly puts in doubt the achievement of the Kyoto targets. As a consequence Amicus believe government policy needs to focus more clearly on areas of emission growth to reverse this trend.

¹ DTI press release 30 March 2006

² Department of the Environment press release 30 March 2006

1.7. In addition, Amicus would want the Energy Review to address the following core issues:

- the future of the coal and nuclear industries;
- the decline in UK manufacturing;
- the incentives for investment;
- jobs and skills.

2. EXECUTIVE SUMMARY

- Our response to the Energy Review can be summarised as follows:
- A balanced energy policy must give equal consideration to investment in base load generation (e.g. nuclear) and peak load generation (e.g. hydro).
- The market alone is unable to deliver a reliable, efficient and secure supply of energy. The Government must set a broad framework with the necessary fiscal and policy regimes to allow the market to deliver and to ensure the security of supply.
- All low and carbon free energies should be given the potential to develop. The Renewables Obligation should be replaced with a low carbon obligation.
- A clear political lead must be given on the future of nuclear power including a decision to extend the life-time of the existing stations to synchronise with the decommissioning process and fill any potential gap in generation. The Government should also adopt a standardised design for new build.
- Government should support a structured Research and Development programme for a clean coal commercial demonstration plant to fully explore the options for carbon capture and storage.
- Amicus calls for increased exploration drilling in the UK Continental Shelf (UKCS) to explore the reported 3,000 prospective sights for further production.
- Greater emphasis should be given to raising public awareness in the workplace and at home to combat fuel poverty and reduce green house gas emissions.
- New investment in clean coal, nuclear and renewables could significantly support the manufacturing base in the UK. The Government should tackle the barriers to the development of a microgeneration industry.
- Amicus, welcomes the introduction of the Renewable Transport Fuel Obligation and, with some reservations, the inclusion of aviation in the European Emissions Trading Scheme (Phase 2).
- Massive investment is necessary in the UK skills base through the creation of adult and youth apprentice schemes. The industry must work with schools to promote its profile and encourage more entrance into science and craft career pathways.
- High energy costs will lead to high inflation and harm economic growth with the consequence of high manufacturing costs leading to an exodus of jobs and skills from the UK.

3. MARKET FRAMEWORK

3.1. Prices

- 3.1.1. In March 2006 the National Grid issued its first ever “gas balancing alert” to the market telling traders that gas demand might have to be reduced, initially for businesses. The move sent wholesale prices spiralling upward, hitting 250p a therm, three times more than in the Netherlands.
- 3.1.2. The British gas supply market this year has been caught out by unexpected bursts of cold weather and the fact that the country’s only significant gas storage facility on the Rough offshore field in the North Sea was temporarily out of action due to a fire. The National Grid’s announcement came at the end of a winter that had been plagued with energy price spikes and escalating fears over the security of gas supplies into the UK.
- 3.1.3. Over the last decade the UK has gone from being largely self-sufficient to being a net importer of gas. By 2020 the UK could be importing up to 80% of its gas needs,³ much of which will come from EU markets which have yet to liberalise fully. Other sources are from countries such as China, Russia, North Africa and the Middle East which creates a dangerous dependency on imports from less stable parts of the world. The recent disruption caused when Russia cut off gas supplies to the Ukraine revealed the potential vulnerability of UK supply to external influences. Over-reliance on foreign imports from one energy source will inevitably make UK industry and consumers hostages to energy price hikes and highlights the need for greater diversity of energy sources, particularly from our own indigenous sources.
- 3.1.4. The last 18-24 months have seen business users exposed to rising gas and electricity prices, with volatility and price spikes a feature of the forward gas markets in particular. Large industrial users in the UK now have amongst the highest energy costs in Europe. A recent survey published by the Engineering Employers Federation revealed that 93% of companies surveyed had experienced an increase in energy prices over the last 12 months with average weighted increases in gas and electricity of 47% and 34% respectively.⁴ These rates are more than double the level of increases reported in 2004.
- 3.1.5. Electricity prices are directly linked to gas prices due to the dominance of this fuel in the UK’s electricity generation (more than one third of UK electricity comes from gas fired power stations).
- 3.1.6. Amicus has warned of potential job losses and the impact this will have on the UK manufacturing industry. Increased energy costs can not easily be passed onto the customer due to agreed long term contracts. Companies are competing across Europe and beyond, where relative

³ CBI “Powering the Future.” (2005)

⁴ EEF Survey of Energy Prices. (2005)

prices are much lower and where companies are therefore able to operate within much wider margins. As a result UK companies may be forced to either shut down or consider outsourcing production to countries where energy prices are lower.

- 3.1.7. A recent survey by the Confederation of Paper Industries (CPI) of paper and tissue mills showed the need to increase their energy budgets by 43% to meet actual market prices. A number of paper mills have been forced to shut down papermaking machines in order to save energy. Amicus and the CPI estimate that up to 20,000 jobs could be at risk as a result of high energy prices.⁵
- 3.1.8. Domestic consumers have also been hit hard. Most major suppliers have increased their prices by at least 15% (British Gas, EDF Energy, Scottish Power, Scottish and Southern) and Npower have increased their prices twice since January 2006. Most recently Powergen announced an increase in its gas and electricity prices of 24.4% and 18.4% respectively.⁶ It is estimated that an average household will soon be facing energy bills of £1,000 per year. A recent report from Ofgem revealed an average of only £46 per year saving would be made via switching suppliers.⁷
- 3.1.9. Amicus recognises that national governments have limited control over world energy prices and that any external source of energy can be vulnerable to supply disruption. EU competition rules make it hard for the UK government to unilaterally offer direct short term relief on the cost of energy to the worst hit industrial sectors. We also recognise that the cost of gas is also linked to the high cost of oil which currently stands at around \$60 per barrel.
- 3.1.10. Specific examples of companies affected by energy prices include:

Nissan – Sunderland

3 years ago the cost of electricity for a year at the Sunderland plant was £6 million. This year it will be £17 million.

Corus/Steel

The UK Steel Director of the EEF in a statement to the House of Commons All Party Steel and Metals Group in June 2005 drew attention to the 40% plus rise in energy prices in under a year representing the highest gas prices in Europe and the fourth highest electricity prices in Europe.

Acordis fibre business was put into administration in May 2005. 200 jobs were cut in August that year. It said the business had been loss making since 1999, and that it "had been hit by high energy prices, the high cost of raw materials and exchange rates."

⁵ *CPI Press Release 20 February 2006*

⁶ *BBC News 28 February 2006*

⁷ *Trade and Industry Committee 6 February 2006*

Elementis is closing around 50% of the company's loss-making chromium chemicals capacity at Eaglescliffe. It blamed high energy costs as one of the factors responsible for the losses in its UK chromium operations. 120 of 230 jobs are expected to be lost.

Anglesey Aluminium is in danger of closure unless the Wylfa Nuclear station is granted an extension from its proposed closure date of 2010. This would lose over 1500 jobs and present an economic disaster for the area. This year energy costs at the smelter will increase by £7 million on top of the £52 million already being paid. Amicus is lobbying for an extension to the Wylfa power station to allow the market to return to economic levels and for the company to find another source of power.

DS Smith is to close its Sudbrook Mill near Chepstow in Monmouthshire at the end of May 2006, with the loss of 135 jobs. One major factor blamed for the closure is soaring gas and electricity costs and a fall in demand. It said the mill was losing approximately £3m annually, and fuel bills at the energy-intensive business have more than doubled over the last three years.

3.2. Security of supply

- 3.2.1. The UK has only enough reserves to sustain a short period of cold weather. Our strategic reserves are inadequate and in the event of a very cold winter a significant gas demand side response will be required.
- 3.2.2. At present the UK can store the equivalent of 13 days supply (when the gas storage facility at Rough is in action) compared with 60 days in Italy, 76 days in Germany and 90 days in France.⁸ Large industrial energy users in particular are concerned that they will be forced to shut down operations to keep the supply to domestic users. Fortunately, the predictions for a harsh winter this year have not come to fruition. However, there is clearly no place for complacency if we wish to avoid similar problems occurring next winter.
- 3.2.3. There is a conflict between the current high prices and the assertion from the National Grid that we are “awash with gas.” This would suggest that the prices are a distraction to the real issue which is security of supply. Furthermore, there is evidence that the current high price spikes are the result of a panic reaction due to the cold weather forecasts (in November 2005 wholesale prices soared by 40% to a peak of 170p a therm in the spot market.)⁹ In mid March the price topped 250p a therm which is three times more than in the Netherlands and seven times that of the US.
- 3.2.4. Amicus is of the view that the recent volatility of energy prices is a direct result of the weakness of the UK energy market. The rest of

⁸ FT 8 March 2006

⁹ Telegraph 28 November 2005

Europe has been slow to liberalise their national markets and the UK has so far stood alone in opening its markets to full competition. Furthermore, there is insufficient infrastructure on the continent to pipe more gas into the UK and this has further complicated the security of long term supplies from countries such as Russia.

- 3.2.5. Despite high prices and a pending gas shortage in the UK, supplies in France, Germany and the Netherlands are still plentiful. However, gas traders in London report problems to source new supplies from Europe.¹⁰ The Interconnector pipeline to Britain was only handling 8 million cubic meters when it could handle 16 million. A lack of transparency also means that it is hard to discover exactly where the bottlenecks are and why suppliers on the continent are not switching gas to Britain.
- 3.2.6. Amicus welcomes the European Commission's recent investigation into anti-competitive behaviour in Europe's gas and electricity industries. We also welcome more rigorous anti-trust enforcement. However, we have reservations that these measures will not be sufficient to prevent bad practice and to open greater access to European markets. In other member states' markets (France, Germany, Spain) single companies (EDF, EON, Gas Natural) dominate the national market. Mergers and take-overs have not been prevented by Brussels, as illustrated by the recently proposed take over by Eon of Spain's Endessa.¹¹
- 3.2.7. The Pre-Budget Report sets out some helpful short-term actions to ensure an adequate supply of gas, some of which Amicus and the employers have already raised with Government. These include:
- increasing the capacity and monitoring the flow of gas via the Interconnector from Continental Europe;
 - providing additional Liquefied Natural Gas storage capacity at terminals; and
 - addressing concerns over the operation of the EU gas market.
- 3.2.8. Events over the last eighteen months have prompted the realisation that the security of supply is too important to be controlled by market forces alone. The Government must retain decision taking rights over the flow of gas into the UK and take control over a proportion of strategic supplies to ensure the security of flow in the event of disruption. The Energy Review should set out what further measures could be put in place to cushion industry against sudden and unexpected energy price hikes.
- 3.2.9. Amicus acknowledges that there has been a shift in objectives and priorities for energy in the last few years. The privatisation of the utility companies and the liberalisation of the UK energy market have dominated government policy since the 1980s. Amicus accepts that

¹⁰ *Guardian* 13 March 2006

¹¹ *FT*, 22 February 2006.

this resulted in UK consumers and industry enjoying some of the lowest energy prices in Europe and the most competitive energy market. However, in our view, this came at a cost of reduced investment in the industry's infra-structure, and the loss of thousands of jobs. Furthermore, the emphasis on having the cheapest fuel possible led to the "dash to gas" which contributed to the depletion of North Sea gas reserves and the demise of our coal and nuclear industries.

3.2.10. The two most crucial issues facing the energy industry now are security of supply and climate change. Competition within the market is no longer the priority and experience has shown that market forces alone cannot safeguard our interests. The dominating factors of volatility, low investment and high wholesale price levels must be tackled with security of supply and climate change taking precedence.

3.2.11. **The political task now is for the Government to set a broad framework which allows the market to deliver within set constraints and objectives. Government also needs to be clear about what the political targets should be to meet our commitments to climate change and ensure security of supply.**

3.2.12. The framework must address the following:

Legislative and fiscal policy

Current uncertainty about government policy has stopped investment in crucial parts of the industry. The Government must clarify its position on matters such as the Emissions Trading Scheme (Phase 2), implementation of the Large Combustion Plant Directive and the tax regime in the North Sea.

Nuclear

The Government can no longer avoid the issue of civil nuclear energy. An open debate must be conducted regarding the future of the nuclear industry with full regard to the two substantive issues of cost and the effective disposal of waste.

Climate Change

In order to meet our commitment under Kyoto, all low carbon energies must be fully exploited, including renewables, clean coal, nuclear and gas. The Government must increase its spending on Research and Development and Demonstration projects for CO₂ storage. The framework should be "technology neutral" to maximise the full potential of all technologies. The option of carbon contracts should be explored.

Gas Imports

It is essential that we retain diversity of our gas imports and do not rely on one source. Amicus welcomes the initiatives already taken by the DTI to improve the infrastructure to cope with the demand for

imported gas including the new pipeline between Holland and the UK and the LNG terminal at Milford Haven. Government policy remains to pursue convergence of gas prices within Europe and to push for other European countries to liberalise their markets. Amicus is concerned that convergence with Europe may take a long time, if it happens at all, and that measures must be in place to ensure that gas continues to flow to the UK.

Planning

The completion of new power plants is often dogged by delays causing disruption and escalating costs. Sizewell B, for example, took over six years to get approval through the planning process. Greater efficiencies in the planning and consultation stages must be made to deliver projects on time.

Prices

The volatility of prices on the spot markets is not sustainable. Consumers in the UK should have access to long-term contracts in a similar manner to their European counterparts. This would help ensure the consistent flow of gas as well as avoid the price spikes and fluctuations that have dogged prices this winter.

4. THE CASE FOR A BALANCED ENERGY POLICY

- 4.1. Amicus believes that now is a prime opportunity for the Government to maximise investment in the UK energy market. The scale of the challenge however should not be underestimated. To quote a recent report from Matsui Babcock:
- 4.2. *“It is clear that a total of 29 GW (18 GW due to closures and 11 GW due to growth) of new generation plant could need to be operational by 2015, requiring 4000 – 6000 MW of projects starting each year from 2006 to 2011. The scale of this challenge is enormous. The total current generation capacity in the UK (75 GW) was installed over a period of more than 40 years. Nearly 40% of this has to be built in less than 10 years”¹².*
- 4.3. Given that many of our ageing power stations need to be replaced, now would be an opportune time to replace our traditional carbon based assets with carbon-abatement plants.
- 4.4. **Amicus supports a balanced energy policy that promotes the use of all available energy in the most productive manner possible and to the best economic, social and environmental effect. This should include conventional fossil fuels (coal and oil) gas, renewables and nuclear, all of which we believe are essential components in a balanced energy policy.**

¹² Mitsui Babcock, “Clean Coal Technology and the Energy Review. (2006)

- 4.5. Amicus believes that the UK is in a prime position to develop all potential energy sources. Oil and gas reserves are available in the North Sea and UKCS. We have an indigenous coal industry with potential reserves for 200 years and a nuclear industry that currently provides 20% of our electricity. In addition our location as an island lends itself to the exploitation of wind and tidal energies as alternative energy sources.
- 4.6. We set out below our rationale for each part of that balanced energy policy.

5. THE CASE FOR NUCLEAR

- 5.1. According to a recent MORI poll¹³ *“the public accepts that nuclear energy has a place in the overall energy balance (54% agree). A majority (55%) also agree that the best solution to the future “energy gap” would be to replace existing nuclear power stations with new ones at the same time as expanding renewable energy sources such as wind power”*.
- 5.2. Nuclear power generates 20% of the UK’s electricity but by 2020 that will have shrunk to 7% and by 2035¹⁴ the last of the current generation of stations will have closed, leaving the UK highly dependant on imported gas.
- 5.3. Nuclear is a low carbon technology with an impressive safety record in the UK. It could generate large quantities of electricity, contribute to stabilising CO₂ emissions and add to the diversity of the UK’s energy supply. According to British Energy about 40MtCO₂ of emissions each year are avoided by nuclear generation, which is almost twice the Phase 1 savings target brought about by the EU Emissions Trading Scheme.
- 5.4. **Amicus believes that it is vital for this Energy Review to recommend in the strongest possible terms, that the Government commit to ensuring that there will be replacement/new nuclear power stations built in the UK and the programme for same will commence within the next 12 months.** In our view it is vital for the future well being of the UK's economy and the quality of life of all people in the UK that this decision is taken.
- 5.5. In our view this means : building replacement/new nuclear power stations; life extensions for the existing nuclear power stations; a decision to deal with nuclear waste; incentives to encourage the UK supply chain to take full advantage of the opportunities for jobs; a review of the regulated system to deal with market related issues and a

¹³ 7 November 2005

¹⁴ DTI 5.11 Power Stations in the United Kingdom (May 2005)

review of planning regulations in order to speed up the process for allowing new build to take place.

5.6. Building replacement / new nuclear power stations

5.6.1. There is an urgent need to commit to building replacement/new nuclear power stations on the existing sites where we already have a nuclear site licence approved by the NII and also Grid connections to UK's transmission systems. An urgent evaluation of the various nuclear reactors that have been developed throughout the world needs to be conducted and the NII need to be strengthened in order that they can approve those designs from a nuclear and industrial safety point of view in terms of being compliant with UK Nuclear Safety legislation.

5.6.2. There is a major concern, however, that the time-scale for any new or replacement build will be too long to synchronise with the decommissioning of the current nuclear fleet and this will provide a vital gap in generation. It is possible to construct 8GW of new nuclear capacity over a 12 -15 year period, preceded by a robust planning and licensing process, but this would require a very strict adherence to schedules.

5.6.3. **The Government must also make a decision with regard to a standardised design. Amicus, based on anecdotal evidence, favours the Westinghouse AP1000 Reactor design as we must have a common reactor and ensure that we maximise the potential benefit to our manufacturing sectors by building much of the equipment in the UK.** Further, nuclear electricity generation should be brought to a level of 25% base load, the remaining 75% being taken up by other forms of electricity generation. In addition, there is a potential manufacturing opportunity i.e., the Springfields site currently makes the fuel elements for Westinghouse and could be developed as an international centre of excellence.

5.6.4. It is important for the country to control the scale and pace of new build to make sure it meets climate, security and economic objectives. At the same time, scarce skills in the nuclear industry must be used to good effect and not spread too thinly between new build, operating existing stations and decommissioning. To manage these risks, the Government must encourage British Energy to take a central role in any new build activity. This will create a positive future for their staff and will allow them to build staff numbers and manage transition as needed.

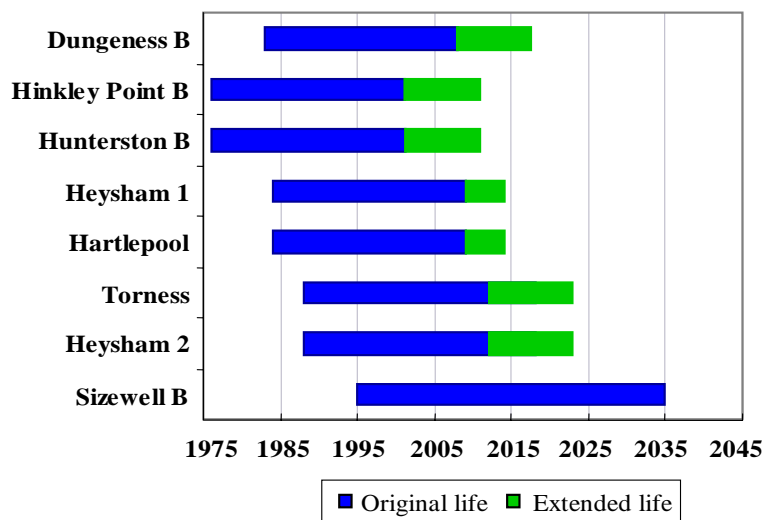
5.7. Life extension

There is a need to ensure that the maximum life extension is obtained from the existing British Energy fleet of power stations. At the moment, four of British Energy's stations are scheduled to close before the

earliest date that new stations are expected to be commissioned. It is important that everything feasible is done to extend the safe operating lives of all the AGR stations and to line up their eventual closure with commissioning of new ones. This will reduce climate change and security of supply concerns for the UK and will give greatest chances for continuity of employment in the communities that are affected by these closures.

Graph showing current AGR/PWR Station lifetimes:

Station Lifetimes



5.8. Dealing with nuclear waste

5.8.1. Successive Governments have failed in terms of taking a clear and unambiguous decision to build Deep Retrievable Nuclear waste repository. The legacy of this waste is mainly from the Ministry of Defence military programmes but also from hospitals and requires the nation to take this course of action.

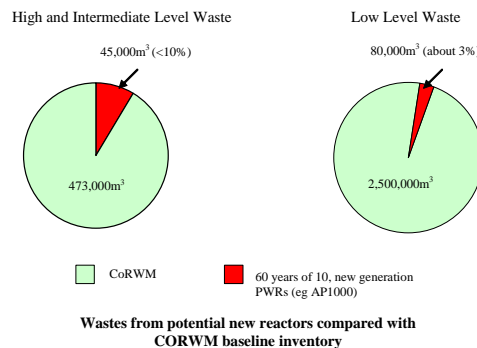
5.8.2. The Committee on Radioactive Waste Management, (CoRWM), delivers its recommendations in July 2006 and Amicus has made it clear that we would like them to recommend a Deep Retrievable Nuclear Repository. Amicus believes that there should be one repository built, near Sellafield, (75% of waste is already at Sellafield), and that there are existing nuclear resources with the necessary skills and capabilities as well as having the geological characteristics that would give us confidence from a security and safety point of view.

5.8.3. The issue of spent fuel is not singular to the British nuclear industry but is pertinent to the Ministry of Defence, hospitals and industry in general. The 2001 United Kingdom Radioactive Waste Inventory, prepared by

Nirex and DEFRA, reports that on 1 April 2001 there was estimated to be approximately 92,000³ meters of radioactive waste in stock of which just 2% was classed as High Level Waste (HLW) and Spent Fuel (SF) from energy generation. The BNES suggest that if we replaced the capacity of our current fleet with new build the amount of extra waste caused would amount to less than 10% of the legacy of Intermediate and High Level Waste we are already carrying.

Chart showing the potential waste from building 10 PWRs compare CORWM baseline inventory.

Waste from New Build



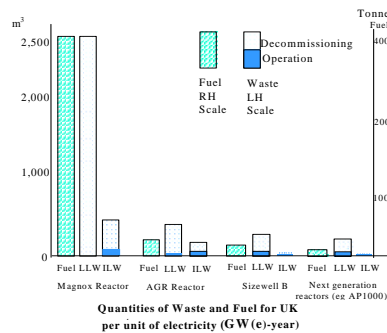
5.8.4. Amicus does not subscribe to the view that new nuclear stations should not be built until the treatment of radioactive waste is “solved.” This stricture is not applied to other energy sources. Most notably power stations using fossil fuels have continued to be built despite the fact that there is no “solution” in view for climate change.

5. 9. Decommissioning

5.9.1. The Nuclear Decommissioning Authority was set up by the Government to take responsibility for decommissioning all civil nuclear sites. Amicus welcomed the creation of the NDA which aimed to ensure effective decommissioning within shorter time scales by opening up the process to competition. It is important that they continue to get a better understanding of the "baseline". Amicus also welcomes the contribution being made by the restructured British Energy to cover expected costs of decommissioning the AGR and PWR stations. On the latest estimates, the value of these contributions is more than the cost of "back end" liabilities that should be passed on to the NDA as the stations close.

- 5.9.2. An extremely important issue is the future of the Thorp Plant at Sellafield. It is essential this plant is re-opened and operated in a safe and competent manner and be allowed to fulfil the orders it has in terms of commercial contracts. Similarly the SMP plant needs to be commissioned and operated. Once again every action should be taken to achieve that outcome.
- 5.9.3. For the future, the new designs take into account lessons learned about safe and economic decommissioning and will cost less to decommission.

Diagram showing – Quantities of Waste and Fuel for UK



5.10. Supply Chain

- 5.10.1. IBM Business Consulting Services have carried out a research study to evaluate the capability and capacity of the UK and global supply chains to support a new nuclear build programme in the UK, to investigate the key issues and barriers that exist and to identify what actions could be taken to facilitate a UK programme. This research study assumes, inter alia, a replacement/new nuclear build programme in the UK would commence shortly after 2010 and concluded.
- 5.10.2. The UK supply chain has the capability to deliver many of the elements of a new nuclear build programme, particularly the non-nuclear systems and infrastructure, but would require investment in facilities and staff in some of these areas.
- 5.10.3. The global supply chain may itself be capacity limited in some areas as global demand increases and, therefore, if the UK wishes to proceed with a new nuclear build programme, action would need to be taken to ensure that the UK is an attractive market for global suppliers, operators and investors.

5.10.4. For a new nuclear build programme to be successful in the UK and to attract both the UK and global supply chains, there are a number of critical issues and enablers which the supply chain cannot control and where strategic direction would be required. These include an energy policy with a clear position on nuclear power, a nuclear waste strategy, site selection, the public inquiry process and the impact of the regulatory environment along with the current planning requirements which include:

- Statement of need
- Justification - Justification of Practices Involving Ionising Radiation Regulations 2004
- Strategic Environment Assessment - Strategic Environment Assessment Regulations 2004
- Section 36 Application & Environmental Impact Assessment - Electricity Act 1989
- Discharge Application - Radioactive Substances Act 1993
- Article 37 Submission - Euratom Treaty
- Nuclear Site Licence - Nuclear Installations Act 1965
- Security & Safeguards Arrangements - Nuclear Industry Security Regulations 2003 & Euratom Treaty
- Also: Building Regulations, PPC Authorisations, Marine Construction Works Approval and CDM notification.

5.11. Costs

5.11.1. The current cost barrier to nuclear new build has to be overcome if we are to take advantage of the environmental benefits at stake. At present, economics and uncertainty act as disincentives to private investment. An indication from government about the future direction it intends to take towards nuclear would go some way to encourage investment in the industry.

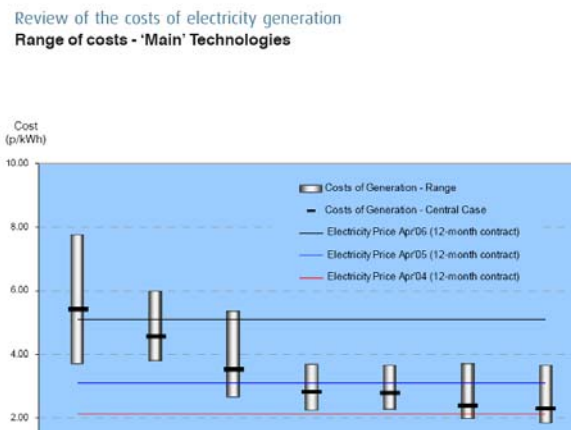
5.11.2. Nuclear is a base load energy, i.e. it is operated continuously. As such it can not compete in the present market where electricity prices are unpredictable and subject to hourly fluctuation. **The Government review of the market arrangements must ensure that base load energies can compete alongside peak load and other more “flexible” plants in order to attract more investors and meet the needs of customers and consumers.**

5.11.3. The capital cost of a new nuclear plant represents the majority of the total cost of generation, typically as much as 70% for a base load plant. However, operational and maintenance costs and fuel costs are relatively low. A recent study by the Royal Academy of Engineering took the actual costs of building, maintenance and running various types of power station in the UK and derived costs of producing electricity by using a common financing model with a nominal discount rate of 7.5%. The 2004 study showed that for base load operation, a nuclear fission plant was the second cheapest way

of generating electricity and clearly competitive with high technology clean coal.¹⁵ This was, however, at a time when the then cheapest form of generation, via natural gas, was at a price far lower than those of today.

5.11.4. PB Power was commissioned by The Royal Academy of Engineering to undertake the underlying analytical work on technology costs, fuel prices and other costs associated with the production of electrical energy from a wide range of electricity generating technologies. As a contribution to the Energy Review, PB Power has re-examined the work it carried out for The Royal Academy of Engineering in 2004 and updated some of the assumptions it made at that time on capital costs of generating plant, fuel costs and discount rates.

**Diagram showing range of costs – 'Main' Technologies
PB Power – Powering the Nation
A review of the costs of generating electricity, March 2006**



5.11.5. It is our view that new and replacement build can be encouraged without placing a massive burden on the UK tax payer. We also believe that the incentives for low or zero carbon emission technologies should equally apply to nuclear as it clearly falls into this category.

5.12. Manufacturing

Given that nuclear generation takes place in some remote areas of the UK, decommissioning without new build will cause wide spread effects to the local economy. Anglesey Aluminium is a huge user of electricity and, as its output goes up, so does its power consumption. The direct impact for Anglesey Aluminium will be the increase in cost

¹⁵ *The Cost of Generating Electricity* Royal Academy of Engineers. (2004)

of electricity currently being supplied by Magnox to the smelter via Wylva Power Station (nuclear) situated on the Island. It has been estimated that from October 2005 until 2010 the cost to the Smelter will be an additional £7 million per annum. It is no surprise that the future of this Anglesey Aluminium smelter is therefore at risk from these cost pressures causing one of the largest employers in North Wales to be at risk of closure.

5.13. Regulatory regime

- 5.13.1. The existing regulatory system does not have the flexibility required in order to allow a balanced energy policy to operate in the UK. Amicus supports competition, but we believe there will have to be detailed discussions with the industry, the regulators, the DTI and other stakeholders regarding the construction of a regulatory model that would be flexible enough to allow all forms of generation, including nuclear, to operate within a framework that would have restrictions but still maintain competition.
- 5.13.2. There are a number of issues that need to be addressed apart from cost and these include security of supply, environmental impact, national competitiveness and social concerns. In the view of Amicus, the advantages that nuclear provides with regards to the first two issues are significant and if combined with the overall cost of generation, makes it a viable component of a diverse energy policy. The high safety standards set by the World Association of Nuclear Operators (WANO) and the Institution of Nuclear Power Operators (INPO) are intrinsic to the industry and must be exported to other developing countries alongside the technology and expertise.

6. THE CASE FOR COAL

- 6.1. The high cost of gas has reignited the demand for coal as an energy source. Unlike other fossil fuels, coal can be stockpiled safely in the open air and its supply increased quickly whenever it is needed. The International Energy Agency stated that coal reserves worldwide are equivalent to almost 200 years of production at current rates, which exceeds those of gas and oil by a long way.
- 6.2. In 2003, the DTI published a review of the future production capability of UK deep mines. When combined with opencast data it shows that about 12.9 million tonnes per annum of coal is produced in the UK and is available for electricity generation in 2007/8. The UK coal industry's aspirations are for sales, at over 20 million tones per annum, which could meet a very large proportion of our short term needs.
- 6.3. The case for coal has not been helped since the 2003 Energy Review due to the uncertainty created in the industry by the Carbon Trading arrangements and the Large Combustion Plant Directive. Each

process has been flawed by uncertainty and last minute decisions which have caused financial problems to the generators.

- 6.4. Clean coal technology holds great potential for environmentally-friendly coal generation in the future. However, the most modern coal powered station in the UK at Drax is 30 years old. A huge investment drive is crucial if the UK coal industry is to meet the expectations demanded by our energy-intensive society.
- 6.5. The European Large Combustion Plant Directive requires all coal-fired plant to fit flue gas desulphurisation (FGD) equipment by 2008. In some cases retro fitting of stations on 30 or 40 year boilers reduces the efficiency to a level whereby closure is a more realistic option. This will create a further gap in the UK energy supply and cause the loss of more skilled jobs.
- 6.6. FGD is only a solution in the short to medium term as it does not prevent CO₂ emissions from entering the atmosphere. For the long term a proper carbon-capture and storage programme must be developed in order to keep green house gas emission levels from rising.
- 6.7. **For this to happen Government support would be required for a structured Research and Development programme for a clean coal commercial demonstration plant that identifies:**
 - the best engineering design;
 - the scope of the fuel route and the best fuel or mix of fuel (mix of coal/biomass);
 - the best method for carbon capture;
 - transportation method of emissions to storage.
- 6.8. In terms of CO₂ storage capacity the geological capacity of Norway's Continental Shelf is alone sufficient to store a large share of European CO₂ emissions for many decades. However, it is likely to be more economically attractive if developed on a large scale, which could mean collaboration with international organisations and the EU. **Research into CO₂ storage in the North Sea should also consider the positive impact on increased oil extraction performance.**
- 6.9. Large-scale investment in Clean Coal Technologies is imperative to meet the UK's energy challenge. By 2012 we will lose 6-10GW of coal fired generation leaving a critical short-fall in supply. Above all, a clean coal industry has significant export potential to emerging, coal dependent economies such as India and China who have massive pollution problems to address.

7. OIL AND GAS

- 7.1. It is generally agreed that the interaction of the UK's liberalised market in gas with the largely unliberalised Continental markets is the reason for the current gas price crisis. Despite higher UK prices which reached double those on the Continent, import capacity has been far from fully used.
- 7.2. Since the liberalisation of the energy market the UK has gone from a country with an energy surplus to the extent that on Thursday 9th September 2004, Britain was revealed as a net importer of oil for the first time in 13 years. Additionally given that parts of Europe are strongly resisting following in the UK's path towards liberalisation, their domestic customers are coming first with regard to supply due to long-term contractual agreements over the potential for profit from export to the UK.
- 7.3. At present there is only one pipeline heading east to Japan and China to feed those countries' expanding manufacturing base. If planned expansion of this capacity goes ahead, Russia's supply to Europe could be heavily affected pushing up European prices even further as supply is diverted east not west. Despite UK pressure on other European countries to open their markets, most countries are resisting this change and as a result are holding supply back to ensure their own needs are met before exporting gas to the UK. Consequently although the flow of gas often meets capacity out of the UK it is rare that the flow back comes anywhere near this level. This raises very grave concerns over supply.
- 7.4. The last two years has seen a dramatic decrease in exploration drilling in the United Kingdom Continental Shelf including a significant decline in Southern North Sea operations. In the past the UK had this cheap supply from the fields in the North Sea. However sources are drying up with only twenty years supply predicted from existing sources.¹⁶
- 7.5. **Amicus therefore calls on the government to invest in further exploration of the largely untouched areas of the North Sea to explore the reported 3,000 prospective sights for further production¹⁷.** We also call on the government to look into the high level of profits made by the current suppliers of this resource given the apparent doubling of cost per barrel or equivalent from drill head (\$25 - \$28 a barrel) to market (c\$60 a barrel).
- 7.6. It is felt that to encourage long term investment and vision, a more transparent tax regime is required. **Amicus believes that to have the "Transparent Fiscal" theme adopted it would be necessary to have in place a simple but effective system. It is accepted that Government will always have a natural and vested interest in**

¹⁶ Amicus "The Need for Increased Exploration Drilling" (2004)

¹⁷ Ibid.

this area, however Amicus calls on the Government to enter into dialogue with all stakeholders, including Amicus, and Westminster MPs to examine possible solutions.

- 7.7. One for example would be for the Government to set a fixed minimum rate of taxation irrespective of the price per barrel, followed by another set or variable rate of taxation if the barrel is over a certain level. This, we believe, would allow Government to be guaranteed its income via taxation and hopefully this would allow Oil Companies to provide long term investment and planning that would support jobs, national and local economies.
- 7.8. Since the end of 2002, in excess of 1500 jobs have been lost in the drilling sector. Amicus is of the opinion that the main reason for job losses is lack of investment in exploration drilling from established operators. Furthermore, new and potential operators have little or no access at all to UK Continental Shelf acreage, which offers massive potential for exploration.
- 7.9. The United Kingdom oil & gas industry represents a major pillar of the UK economy. The industry:
- employs 20,000 workers offshore.
 - supports 260,000 jobs.
 - has generated £190billion in revenue for the Treasury since the 1960s.
 - is the fourth largest gas producer in the world.
 - is the tenth largest oil producer in the world.
- 7.10. **Amicus believes that more has to be done by way of encouragement for operators to take drilling prospects into their North Sea portfolios.**
- 7.11. The statistics suggest that there is still a potential prize of up to 31 billion boe (barrels of equivalent) gas of which 5-11 billion boe is still undiscovered with 8 billion boe in undeveloped discoveries. This makes a very attractive potential proposition of some 13-19 billion¹⁸. Compare this with the total production so far equating to 33 billion boe and it is possible to see that UK production could be extended significantly if new exploration is carried out closer to home rather than developing supply from elsewhere.
- 7.12. Given the growing economic climate in the Far East and the development of Mid Atlantic Liquefied Natural Gas market, it is predicted that supplies of LNG will be handled by the big cartels in the same way oil supplies have in the past, with the ships diverted to the port with the best price. Consequently Britain's rush to build new

¹⁸ Source: UKOOA 12th May 2004

capacity to receive these shipments may be money wasted. To counter this situation, Exxon Mobil stated at a recent TUC/CBI/Carbon Trust Energy Conference¹⁹ that by 2008 they will be shipping enough LNG to meet 20% of the UK's energy requirements via Milford Haven from developments at the Tangguh LNG project in Qatar

- 7.13. According to the International Energy Agency, worldwide supplies are equivalent to almost 66 years worth of gas and only 36-44 years of oil production left at current rates. With expectation suggesting a greater demand on these resources, this could be a very generous prediction.
- 7.14. In the past it did, of course, make commercial sense to track and pursue the more attractive prospects, the largest and the least risky in terms of ratio of success. It was the norm in recent years for exploration wells to carry a success rate of 1:3. However the options available at this ratio have reduced dramatically. It is recognised that the prospects are smaller, but more alarmingly many carry a success rate of greater than 1:15 and unfortunately the majority of prospects are at the wrong end of the success ratio scale.
- 7.15. Given this, it is vital for Government to accept and realise that for the oil and gas industry in the UKCS to continue to play the vital and much needed role in the delivery of the country's future energy supply then the vital area of exploration drilling needs urgent upfront assistance. To ensure these less attractive drilling prospects are moved from the "back shelf" to the "shop window".
- 7.16. Amicus is prepared to have independent dialogue with the Government on these two very important issues. We fully accept and understand the importance of this industry in terms of both direct and Indirect jobs to the UK and beyond.**
- 7.17. For short, medium and long-term UK energy supply it is obvious that UK oil and gas has an essential part to play. This is only possible, however, through the continued investment and further exploration drilling within the UKCS. This will require confidence by all stakeholder and Amicus calls on the Government to take the lead by giving careful consideration to the contents of this section of our response to the Energy Review.

8. RENEWABLES

- 8.1. **Amicus believes that renewables make up an important component in a balanced energy policy. However, much of the technology behind renewable energy is immature and requires long term Research and Development investment before renewable energy can be relied upon to perform on a consistently significant basis.** For that reason we propose that for

¹⁹ *A Sustainable Energy Policy for the UK, 28th February 2006*

the foreseeable future renewable energy would provide mainly supplementary generation, leaving the more traditional fuels such as nuclear, coal and gas to provide base load generation.

8.2. The Renewables Obligation is the key policy mechanism by which the Government is encouraging the necessary growth to reach the UK renewable targets. The Renewables Obligation makes it a duty for electricity suppliers to source a minimum amount of their electricity from renewable energy sources such as hydro, wind, biomass and landfill gas. The Government is committed to 10% target for 2010 and for 20% by 2020. However, the Renewables Obligation is only focussed on electricity generation and is limited to wind power. The funding of renewables is therefore targeted at wind which has made it the most competitive source of renewable energy.

8.3. UK government expects three quarters of the 2010 target to be met by wind power.²⁰ This target is in our view over ambitious and will prove costly and difficult to achieve. Reports from Germany and Denmark, whose wind carpet is much larger than the UK, indicate that wind as an energy source can be unreliable²¹ as

- fluctuations in output are large;
- wind is only as reliable as the weather forecast. Standby generation is required to stabilise supplies. This capacity is fossil fuelled and inefficient as its use is unpredictable;
- wind generation is guided by extreme weather conditions - either too much or not enough wind will prevent wind turbines from functioning;
- wind is a supplementary generator.

8.4. The Renewables Obligation's focus on wind has been to the detriment of high volume renewables such as tide and biomass, which are more capital intensive and therefore most costly. To support a case for a balanced energy policy, a case can be made for building a wider Low Carbon Obligation into the Renewables Obligation. This would extend the Renewables Obligation to a much broader percentage of electricity generation from low/carbon free sources over at least the period to 2020, to underpin long-term investment decisions in other low/carbon free energies, and the contracts that would flow from them. Hopefully, this would help drive innovation in such areas as carbon capture, without undermining the expansion of renewables.

8.5. **Amicus believes that the Government must take a clear lead in ensuring the availability of adequate funding for new low carbon technologies from the Research and Development stage through to demonstration projects.** Substantial sums are involved in getting new technologies to market, and there are only limited options for

²⁰ DTI Energy White Paper. (2003)

²¹ E.ON Netz Wind report 2005,

Hugh Sharman "Why Wind Works for Denmark" ICE 2005

publicly-financed support: a carbon tax; a windfall tax; or appropriate adjustments to EU Emissions Trading Scheme allowances, which so far has not triggered significant investment in low carbon devices.

8.6. Wave and Tidal

The DTI stated that large tidal range along the west coasts of England and Wales provide some of the most favourable conditions in the world for the utilisation of tidal power. If all reasonable exploitable estuaries were utilised, the annual generation of electricity from tidal power plants could achieve a potential level of 50 terawatt hours, equivalent to about 15 per cent of current UK electricity requirements. The TUC estimates that 7,000 Scottish jobs could be created in wave and tidal power systems by 2010.

8.7. Hydro

Hydro production of electricity has two major advantages. It is carbon clean, except during construction and it is flexible in that it can be switched on and off quickly to meet demand. The UK has 28 hydro electric plants in operation in England, Scotland and Wales with capacities of 20MW to 400MW and the massive 1,728MW Dinorwig facility in Gwynedd. Hydro is responsible for 10% of energy generated in Scotland.

8.8. Hydrogen

In 2005 Scottish and Southern Electricity and Partners commenced engineering design of the world's first industrial scale project off Peterhead to generate "carbon-free" electricity from hydrogen. The planned project by producing "decarbonised" fuel and using it for power generation, would convert natural gas to hydrogen and carbon dioxide gases then use the hydrogen gas as fuel for a 350m MW power station, and export the carbon dioxide to a North Sea oil reservoir for increased oil recovery and ultimate storage. The full project would require total capital investment of some \$600 million. It would also require an approximate policy and regulatory framework which encourages the capture of carbon from fossil fuel-based electricity generation and its long-term storage.

8.9. Waste for generation

- 8.9.1. Methane (CH₄) is known to be about 21 times as powerful in trapping heat as CO₂ in the atmosphere is, by weight. For this reason CH₄ is an important green house gas for two reasons. Currently land-fill sites and other areas of natural methane production such as chicken litter are being vented to the atmosphere. Analysis of air bubbles trapped in ice-sheets indicates that methane is more abundant in the atmosphere today than at any time during the past 400,000 years. Since 1750 global average atmospheric concentrations of methane

have increased from approximately 700 to 1,751 parts per billion by volume in 1998.²²

- 8.9.2. By capturing these gasses and burning them in energy production, both the levels of CH₄ are decreased and the resulting emissions of CO₂ and water can be scrubbed using technology developed for fossil fuel plants. Amicus calls on the government to look more closely at this technology to see if its opportunities for energy generation could be more widely exploited. Currently 1116MW is produced from sources such as landfill, sewage and other forms of waste, which is over twice as much as wind generation.

8.10. Combined Heat and Power (CHP)

CHP generation combines the production on site of electricity and water heating at the same time. This is a plausible alternative in company settings to reduce the energy drain of large companies. This technology has been around for years but has not been implemented on a larger scale. The disadvantage with CHP is that the production of the heat required, comes from conventional sources such as fossil fuel boilers.

8.11. Solar

- 8.11.1. The experience in other Northern European markets by the Solar Trade Association Ltd. (STA) demonstrates that the UK solar thermal market could be able to be grown from the present 15,000kWth (5,000 installations) per annum to significantly more than 600,000kWth (200,000 installations) per year with the obvious carbon savings, job creation and development of the UK's intellectual property (IP) and manufacturing base.

- 8.11.2. Job creation will be a particularly valuable dividend to the UK from growth of the UK solar thermal market. Much of the price of a solar water heating system pays for UK installers, UK system designers and, in many instances, UK manufactured product. In this sense, each £1000 value of the UK solar thermal market provides a much higher economic return to the UK than each £1000 spent on fossil fuel energy or on most other renewable and micro generation technologies

8.12. Microgeneration

- 8.12.1. Government support for microgeneration (small-scale generators that can be attached to a building or small development to provide local energy) would provide one step to address fuel poverty and climate change. It is also an ideal way to provide electricity and heating to local authority housing developments with low running costs.

²² Source :- CO2 Science Magazine June 14, 2004 and from the EPA web site. August 1, 2004

8.12.2. There is a need for a greater and more rapid uptake of microgeneration and we await the Government's formal strategy on microgeneration, due for release this spring. The new capital grants scheme, the Low Carbon Building Fund is particularly welcome. This should create a large market that will boost volumes and, in turn, lower capital costs that should increase uptake.

8.12.3. There are, however, a number of obstacles in the way of microgeneration technologies that hinder an effective strategy and need to be addressed. These include:

- greater capital cost compared with existing gas and electricity infrastructures;
- connection and metering process and cost;
- obtaining payment for electricity exported to the grid;
- claiming ROCs;
- planning permission;
- lack of product standards within the industry;
- lack of qualified installers;

lack of understanding among both public and the construction industry.

8.12.4. In addition, clear measurable targets need to be set with an obligation on the Government to achieve them.

8.12.5. Incoming building legislation should help increase the momentum behind microgeneration. Approved Document Part L 2005 of the Building Regulations on reducing CO₂ emissions will encourage some developments to utilise microgeneration using renewables to achieve their target CO₂ reductions.

8.12.6. Microgeneration is potentially a significant business that can offer new jobs and training opportunities. It will also contribute to helping the Government meet its own targets and benefit the environment.

8.12.7. Amicus believes that renewables technology has the potential for delivering long term reliable energy. Investment is essential to enable the development of that potential and to encourage all forms of renewable energies. The market framework must be established to facilitate all forms of renewable technologies and not skewed towards the prevalence of the strongest lobbying group. We support the argument that the Renewables Obligation should be replaced with a low carbon or carbon free obligation to provide the incentives to develop all potential carbon free energies.

8.12.8. A balanced energy policy is centred on acknowledging the limits and capabilities of all technologies. The Renewables Obligation in Scotland is 40% - double to the UK - due to the capacity generated by hydro. However, this admirable target will be jeopardised unless a

decision is reached on the future of Scotland's fossil fuel and nuclear plants which produce approximately 60% of total energy generated. The two nuclear plants at Torness and Hunterston B are both due for closure by 2020. The 401MW coal powered station at Cockerzie²³ is due for closure in 2008 leaving only the coal powered station at Longannet and the gas powered station at Peterhead. It is unlikely that the capacity generated by renewables will be sufficient to replace the capacity generated by the nuclear and coal station within the given time scale. For example, the closure of Hunterston will mean a loss to the grid of 1300 megawatts. To replace this with wind generation would mean installing 800-850 wind turbines (at current capacity of 1.5 megawatts per turbine). To regard one form of energy as a replacement for another is, in our opinion, an artificial distinction.

9. TRANSPORT

9.1. Transport produces over a quarter of the UK's green house gas emissions and the share is increasing rapidly. Due to increases in car usage and road freight, carbon emissions from transport are now almost 10% above 1990 levels. Transport strategy must be an integral part of the Energy Review and should include:

- the further development of more fuel-efficient road vehicles;
- investments in lower carbon rail, light rail and tram to encourage individuals to switch from private car use;
- encouraging firms to switch some long distance freight movements from road to rail.
- the inclusion of air transport into European emissions trading.

9.2. **Amicus welcomes the Transport Secretary's announcement in November 2005 of plans to introduce the Renewable Transport Fuel Obligation (RTFO.)** This would require 5% of all UK fuel sold on UK forecourts to come from a renewable source by a proposed implementation date of 2010. The RTFO is predicted to save around 1 million tonnes of carbon dioxide emissions in 2010, equivalent to taking 1 million cars off the road.

9.3. The introduction of an RTFO would give industry more certainty to invest in bio-fuel production for the longer term, stimulating innovation and advances in technology. A growing proportion of renewable transport fuels in our economy would also contribute to the UK's diversity and security of energy supply. The RTFO would provide a mechanism to ensure the gradual substitution of fossil fuels for bio fuels and other renewable fuels over the long term. With advances in technology, it is estimated that by 2050 the UK could produce as much as one third of its transport energy needs from biomass.²⁴

9.4. Aviation is often cited as a significant contributor to emissions, but current technology cannot provide an effective alternative fuel source

²³ DTI 5.11 Power Stations in the United Kingdom

²⁴ Department of Transport 2005

for current aircraft. In 2003 British Airways (BA) and the DTI commissioned research into the combination of bio-fuel ethanol and aviation fuel via Imperial College with less than encouraging results.

- 9.5. Only three fuel options were finally considered to warrant more detailed analysis:
- 9.6. **Synthetic Fischer-Tropsch kerosene** produced from biomass could be blended with or used as a substitute for conventional kerosene.
- 9.7. **Bio-diesel** has the potential to be used as a “kerosene extender” by blending it with conventional kerosene up to a maximum of approximately 10% - 20% by volume.
- 9.8. **Hydrogen** aircraft have been the subject of much research in Europe, the USA, Russia and elsewhere since the 1950s. In the long term, H₂ could be used in place of kerosene to fuel jet aircraft, although major changes in aircraft design and engines would be required.
- 9.9. Any alternative fuel source will clearly be required to meet the same stringent safety standards as conventional ones, although if public perception of H₂ safety is negative this may require particular effort.
- 9.10. Amicus is concerned that the imposition of levies on flight emissions will only serve to drive traffic and UK jobs elsewhere unless imposed on a more global scale. This is a view shared by British Airways.
- 9.11. **With this reservation, Amicus welcomes the Government’s support for the inclusion of aviation’s emissions within the EU Emissions Trading Scheme and believes that this should take effect from the beginning of ETS Phase 2 in 2008.** At the moment aviation is outside the Kyoto agreement and all international and national targets. If unmanaged, aviation’s rising CO₂ emissions would place greater strain on other sectors to contribute towards cutting their carbon emissions.

10. WORKPLACE FOCUS

- 10.1. The Energy Review asks what more the Government could do on the demand side for energy to ensure that the UK’s long-term goal of reducing carbon emissions is met. The Government’s chief scientific advisor Sir David King estimates that carbon emissions now make up 381 parts per million of the earth’s atmosphere, as opposed to 316 ppm in 1960.²⁵ The UK is responsible for around 2% of global CO₂ emissions, which for a country that is less than only 0.05% of the earth’s surface area and accommodates less than 1% of its population is very high.²⁶ Although this country has been making

²⁵ BBC News 13 March 2006

²⁶ Based on 2002 World Health Organisation records.

progress in the right direction, there clearly remains much that can be done with regard to ensuring we meet our Kyoto agreements.

- 10.2. The threat of climate change affects us all. **Amicus is of the view that the burden of reducing our carbon emissions should not be met by industry alone but must be supported by the whole of society.** The Greater London Authority estimates that 80% of all carbon emissions in London come from domestic and commercial buildings. Small, mid and large scale businesses, the public sector and individuals must all contribute to meeting our emissions targets and protecting the environment.
- 10.3. **Amicus is concerned that the Review does not include a workplace focus. We believe this is an important omission and that much can be achieved by influencing changes in consumer behaviour and lifestyle patterns.** The Carbon Trust, a government agency sponsored by the DTI, promotes carbon reduction by focussing on demand and reducing consumption. The financial benefit to business and industry through reduced energy costs acts as a powerful incentive. Working together with management and employees, the Carbon Trust has demonstrated how real efficiency savings can be made, e.g. BAA reduced their CO₂ emissions of half a million tonnes by 100,000 tonnes and saved £500,000.
- 10.4. Trade unions can play a valuable role by working together with employers to educate the workforce and help implement policy. A report by the trade union members of TUSDAC (Trade Union Sustainable Development Advisory Committee), a joint TUC/DEFRA body, "Greening the Workplace"²⁷ argues for far greater workforce involvement in energy and resource efficiency in the workplace, using joint union/management agreements to develop sustainable workplaces. Good practice examples are featured in the report, and the TUC is supporting plans to roll out this initiative in many more workplace settings. **We urge the Government to consider what more can be done to support workplace initiatives by reviewing the scope and scale of existing funds to promote energy-efficient and resource-efficient workplaces.**
- 10.5. Environmental issues and the reduction of energy consumption should be part and parcel of all government policies. There is a widely held criticism that government thinking is fragmented and lacks a comprehensive, long term strategic overview of its different departments. Departments such as Defra, DTI etc are seen as acting independently of each other and inconsistent decisions result. A prime example is the situation in Scotland where there exists huge capacity for wind generation but not the necessary infrastructure to provide access to the Grid. A case has been made for the creation of a new Energy Agency to replace all existing government agencies and form a single coherent body to tackle the

²⁷ "Greening the Workplace" TUC 2005.

twin objectives of carbon reduction and security of supply. **Amicus supports further exploration and discussion about the benefits of a single energy agency.**

10.6. Skills

10.6.1. The availability of skilled employees is fundamental to productivity and economic success. Education, training and reskilling are political issues which every nation and organisation should be involved in to enhance the profile and competitive edge of the nation. The clear links between productivity and the right skill base has been well established and highlights the need to create a sustainable future. Cogent, the Sector Skills Council for the chemical, nuclear, oil and gas, petroleum and polymer industries has stated "*There is significant concern regarding the in-flow of skills to the industries to meet future demands and a potential demographic time-bomb with the capacity to significantly constrict GDP growth.*"²⁸ Where in the past the problem was the brain drain of skilled innovative forward thinking individuals to other nations, today we face a similar problem with the need to rebuild a skilled labour market. A much more ambitious and clear message that the UK must 'raise its current game' is urgently needed.

10.6.2. To drive forward productivity we must up-skill the existing workforce and prepare the next generation. This requires the co-operation of the Government and educators as well as companies in the industries to engage in this project.

10.6.3. The Offshore Petroleum Industry Organisation (OPITO) and Cogent have identified the following key strategic themes:²⁹

Innovation. To succeed in the long run and have competitive modern production and manufacturing we need to innovate both in terms of products and processes.

Management and Leadership. The potential for success will depend heavily on leadership. Concerns have been raised throughout our industries regarding leadership capability to drive forward improvement and change. There also appears to be undeveloped industry career paths and in some areas limited and inconsistent opportunities to progress from operative to management levels.

Skills Gap. Real concern has been expressed by Cogent industries whose license depends on them operating to the highest standards in safety, health and environment. This relates not just to a gap in technical skills but in core behavioural skills such as communications, business improvement, customer service and team working.

²⁸ Cogent E-Bulletin Jan 2006

²⁹ Ibid.

Workforce Demand and Industry Attraction. The industry profile is that of an aging workforce and is retiring at a faster rate than those entering the industry. Demographic trends indicate that there is decreasing amount of available talent entering the workforce and this issue is more distinct in certain UK regions. Replacement demand is forecast to outstrip the total number of individuals retiring. There is also a lack of understanding about the sector and type of work available. Fewer young people opt for a career pathway in scientific disciplines as the industries appear unattractive. Furthermore women and ethnic minority groups are significantly under-represented.

- 10.6.4. Without investment in people none of the planned production will be possible. **Amicus believes that much work could be done with pre-school leavers in terms of raising the industry's profile and presenting the scientific and technical disciplines as attractive career options. Work experience schemes as forerunners to apprentice schemes would be one such example. Companies also need to examine their employment policies and practices to encourage a more diverse workforce. Greater emphasis should be given to family friendly policies and flexible and part time working to maximise the potential for new recruitment.**
- 10.6.5. The development of new technologies in manufacturing industries and the development of our environmental industries, including clean coal, will require investment in the right skills and specialities. Renewable energies are developing technologies and there is an ongoing need for staff trained in maintenance and development of these potential and newly implemented forms of generation. In this form of generation not only is there a shortage of qualified staff but also a lack of direction in deciding what skills are to be needed. In microgeneration, one of the main barriers to increasing the uptake of new microgeneration devices is the shortage of appropriate skills and training courses for each of the emerging microgeneration technologies.
- 10.6.6. Sector Skills Councils and trade unions have long worked toward the goal but will now face a new challenge to create the skilled staff to run these new generation facilities. The Leitch report suggests that if the Government meets its current ambitious targets for improving the UK's skills, by 2020, the proportion of working age people without any qualifications could fall to 4%; and the proportion of adults holding a degree is predicted to increase from 27% to 38%. This would have significant benefit for the economy and boost the UK's performance as a competitive world player.

11. FUEL POVERTY

- 11.1. There is confusion about which government department has responsibility for fuel poverty (defined as a household that spends more than 10% of income on energy bills.) At the moment it is split between Department of Trade and Industry (DTI) and Department for Environment, Food and Rural Affairs (Defra) as well as some overlap with the Department of Health (DoH), Department for Work and Pensions (DWP), Office of the Deputy Prime Minister (ODPM) and devolved administrations. This makes it difficult to establish a clear, co-ordinated approach.
- 11.2. Hard to heat homes are a big priority for tackling fuel poverty through improving energy efficiency. They are also expensive to improve causing such improvements to be regarded as non cost-effective. This could change, however, when faced with rising fuel prices. Despite previous work of organisations such as Energy Watch and Association for the Conservation of Energy (ACE) which raised awareness of the scale of this issue, policy makers have not addressed the problem of improving these homes to an appropriate standard will cost far less than a policy of demolish and rebuild. At least 30% of UK housing can be classed as hard to heat, and this problem is intractable due to the very low rates of demolition currently taking place.³⁰ Housing providers have to make the investment to improve their properties to comply with other governmental requirements, such as the Decent Homes Standard. An increasing percentage of those in fuel poverty live in hard to heat homes, simply because the programmes to eliminate fuel poverty do not address the issue. Additionally, hard to heat homes often form part of these stocks and the investment decisions which may not favour houses facing particular problems in reaching a Decent Standard of thermal comfort.
- 11.3. In the UK, approximately 66% of the total energy consumption goes towards buildings and building construction.³¹ Energy consumed in operation of the building overshadows that of the construction - typically 90% is consumed in operation over the lifespan of the building. As a consequence, much research has focused on means to reduce energy consumption for house and water heating³².
- 11.4. There is now a legal obligation to eradicate fuel poverty by 2016 in England, Wales and Northern Ireland and by 2018 in Scotland. This requires cheap secure supplies to be available. Several other factors also come into the equation. Rising fuel prices have caused fuel poverty in two main areas, 'hard to heat' & 'hard to treat' homes. It was announced in the 2005 Pre-Budget Report that an additional £300 million would be made available to tackle fuel poverty across

³⁰ Association for the Conservation of Energy –Rising Fuel Prices

³¹ Vale R and Vale B Towards a Green Architecture RIBA London 1999

³² Source:- WINTHER B. N. and HESTNES A. G. Solar versus green: the analysis of a Norwegian row house. *Solar Energy*, 1999, 66, No. 6, 387–393. & EATON K. J. and AMATO A. A comparative life cycle assessment of steel and concrete framed office buildings. *Journal of Construction in Steel Research*, 1998, 46, No. 1–3, 286–287.

the UK over the 2005–08 period. In England alone, this means that total fuel poverty funding over the same period will exceed £800 million.

- 11.5. New statutory measures to make buildings more energy efficient, saving one million tonnes of carbon per year, were announced by the Office of the Deputy Prime Minister (ODPM) and Defra on 13 September 2005. The new measures taken together with 2002 Building Regulations aim to improve standards by 40%. Interim versions of the approved documents for Part F (ventilation) and Part L (energy efficiency) and other supporting material have been published prior to changes to the Building Regulations, coming into effect on 6 April 2006. This should reduce the number of buildings in the long run which are hard to heat through demolition and rebuilding. These provisions will apply equally to improvements to existing buildings both residential and non residential.
- 11.6. Incentives should be made available not only to enable compliance with Part L regarding improvements, to existing buildings such as extensions but also to bring buildings where no new build improvements are planned, to comply with this standard wherever possible.
- Within the home there are innumerable small measures that can be taken to save energy and reduce heating bills. These include:
 - changing from standard to “long life” light bulbs;
 - closing curtains at night;
 - keeping dust of the condenser coils at the back off the fridge;
 - not keeping electrical goods - TVs, microwaves etc - on standby.
- 11.7. There needs to be greater publicity of such facts and a drive to increase public awareness. **The Government should embark on a mass programme of education and awareness raising to bring about the necessary culture change to reduce energy consumption and alleviate fuel poverty.**

12. CONCLUSION

Our response to the Energy Review can be summarised as follows:

- A balanced energy policy must give equal consideration to investment in base load generation (e.g. nuclear) and peak load generation (e.g. hydro).
- The market alone is unable to deliver a reliable, efficient and secure supply of energy. The Government must set a broad framework with the necessary fiscal and policy regimes to allow the market to deliver and to ensure security of supply.
- All low and carbon free energies should be given the potential to develop. The Renewables Obligation should be replaced with a low carbon obligation.
- A clear political lead must be given on the future of nuclear power including a decision to extend the life-time of the existing stations to synchronise with the decommissioning process and fill any potential gap in generation. The Government should also adopt a standardised design for new build.
- Government should support a structured Research and Development programme for a clean coal commercial demonstration plant to fully explore the options for carbon capture and storage.
- Amicus calls for increased exploration drilling in the UKCS to explore the reported 3,000 prospective sights for further production.
- Greater emphasis should be given to raising public awareness in the workplace and at home to combat fuel poverty and reduce green house gas emissions.
- New investment in clean coal, nuclear and renewables could significantly support the manufacturing base in the UK. The Government should tackle the barriers to the development of a microgeneration industry.
- Amicus welcomes the introduction of the Renewable Transport Fuel Obligation and, with some reservations, the inclusion of aviation in the European Emissions Trading Scheme (Phase 2).
- Massive investment is necessary in the UK skills base through the creation of adult and youth apprentice schemes. The Industry must work with schools to promote its profile and encourage more entrance into science and craft career pathways.
- High energy costs will lead to high inflation and harm economic growth with the consequence of high manufacturing costs leading to an exodus of jobs and skills from the UK.

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