

THE RIGHT APPROACH TO ENERGY

A PROPOSAL FOR A COHERENT CONSERVATIVE ENERGY POLICY

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1. INTRODUCTION

The energy policy proposed in this document is derived from a Conservative perception of duty to our international obligations and the necessity of protecting the overall national interest. The policy would preserve and build on our inheritance by using the environmental imperative as the framework within which the free market can operate.

Today, Britain's energy consumers and generators suffer from a confused and complicated policy framework. This was not improved by the Government's delayed, much anticipated, but disappointing White Paper. Labour's reluctance to make clear choices of objectives, but to have numerous policies that sound as though they will achieve worthwhile aims, has resulted in a multiplicity of schemes with multiple objectives, some contradictory, none of which they can be sure of delivering.

It is not possible simultaneously to achieve economic, social, security and environmental objectives with individual policy instruments. Choices have to be made by government over the trade offs between these objectives. My choice is to have market based instruments that can deliver the most economically efficient energy policy within a framework that *will* deliver Britain's environmental obligations. Whilst social policy objectives, such as reducing fuel poverty, are aided by policies that deliver the most economic fuel, precise social policy goals should be addressed separately with policies that are designed to meet a precise objective.

Evaluating the nation's security objectives within an overall energy policy is perhaps the most difficult challenge facing policy makers. The market itself places a value on security of supply with supply companies seeking, for example, the reduction of risk that comes from diversity. If government intervenes to impose security considerations, this comes at a price. Conservatives understand the cost of government intervention. Beyond the current duty imposed on the regulator, the government should only intervene in the market if its constant evaluation of national security requirements concluded this was necessary. The cost of this would be a proper charge to the national security budget.

My approach would mean that the government lays down the framework and then minimises its day to day involvement. This will allow the market to make the necessary decisions knowing it has a Government that understands the need to allow price signals to be sent without interference and appreciates the damage done by repeated surprise changes in the tax regime.

Our energy providers enable British economic success and quality of life. If we can enable them to meet our needs in the most efficient manner we will have re-laid the foundations of a successful economy and society. However none of this is worth achieving at the price of our environment, which is why our policy will ensure that Britain meets its obligations to address global climate change.

2. EXECUTIVE SUMMARY

The process of privatisation and liberalisation begun in Britain under the last Conservative Government has become the model for the whole of Europe. The UK energy market has served the country well. It has delivered significant reductions in price¹, to both domestic and industrial consumers and has delivered continuity of supply. The price reductions alone have lifted one million people out of fuel poverty, twice as many as have been helped by direct government action, and has delivered carbon dioxide reductions following the building of gas fired power stations.

For the UK major changes have to be accommodated: from 2005 the UK will cease to be self-sufficient in oil and gas; the future role of nuclear power and the nuclear legacy as the first generation of nuclear power stations are taken out of production; the meeting of internationally agreed targets for carbon dioxide emissions to address climate change and the appropriate framework for encouraging new renewable sources of energy.

Continuity of supply needs to be an ongoing concern of government. These objectives should be pursued by supporting continued European liberalisation and the potential diversity of generation and supply within the single market. Beyond Europe we should press for global energy market liberalisation to deliver a diversity of sources for all fuels but particularly for natural gas, allowing the market to decide the success of renewable and nuclear generation within appropriate and transparent parameters.

The market should continue to meet the demand for power, with the UK government providing a clear long-term framework for the market to decide the energy mix. Distorting barriers to the market need to be removed to allow suppliers to plan and invest over the required timescale to meet market needs.

To achieve this we should implement the following policy framework:

- **The UK should meet its Kyoto and future internationally agreed carbon dioxide reduction targets by means of a comprehensive emissions trading scheme from 2008. The UK should sell permits up to its internationally agreed limits – a so called “cap, auction and trade” approach.**
- **The government should consult on a scheme to require all wholesalers of fuel to buy a permit for the carbon emitted when the fuel is combusted. The scheme should be comprehensive and cover the 96% of the UK’s emissions from the domestic, transport and commercial sectors.**

¹ 35% reduction in real terms since 1990 for all customers. Productivity has doubled.
Electricity Association, "Energy Policy Review. Submission to Cabinet Office – Policy and Innovation Unit" 31
August 2001

- **The money raised by the government from the sale of permits should be returned to the economy as a cut in taxation. There are variety of ways this could be done: One could examine the case for returning a proportion of the revenue raised from the transport sector to support fiscal initiatives for green fuels and technologies; a share of the revenue raised from the domestic sector could also be used to pursue social policy objectives – addressing fuel poverty, the quality of social housing and incentives to promote energy efficiency in the home. Evidence also shows that if the money is returned by cutting employment taxes, such as employers’ national insurance, the overall effect will lead to a rise in GDP.**
- **Britain should press for the EU to develop a similar scheme to address emissions comprehensively, not least in the European Parliament under the co-decision procedure where there is support for a more definitive environmental policy.**
- **If necessary Britain could operate the proposed mandatory but partial EU scheme in parallel with our own under Article 23(a) of the proposed EU directive. This proposal applies to a different part of the supply chain to the EU approach and is compatible.**
- **As this scheme will ensure the UK meets its climate change obligations it will be possible to end the considerable number of other policy instruments currently in place and their attendant regulations and bureaucracy, chief among these will be the Climate Change Levy. I have also identified 28 other schemes costing the taxpayer £1.3 billion in the period 2001–2004 and the consumer £950m which could also be ended.**
- **Having set the environmental framework the cardinal principle will be to allow market forces to work in the electricity market and enable new private investment to be triggered by allowing the price mechanism to work.**
- **The current market failure represented by consumers being relatively unprepared to invest in energy saving measures should be addressed by allowing consumers to enter into longer term agreements with energy service companies, who will be able to amortise the upfront capital investment in such developments as micro combined heat and power, home insulation and energy saving devices within an energy supply agreement.**
- **The regulator should be required to ensure that the transmission and distribution network gives a fair opportunity for distributed generators to access the market.**
- **GHG free nuclear and renewable power should enjoy an advantage over fossil fuels. However new nuclear power stations will have to provide for their radioactive legacy. I recommend a mechanism to ensure their legacy is provided for as well as an insurance premium to the government to cover for their**

possible commercial failure. This premium will be spent on addressing the cost of the existing legacy. These fees should be set by an independent body.

- **Artificial barriers to new nuclear capacity should be addressed with the length of the planning process time for new plant being made similar to other major power station proposals.**
- **Licensing for new nuclear reactor designs should be put on an international basis.**
- **Until emissions trading has matured it will not be possible to assess the advantage it will give renewable sources of energy. To send consistent signals to investors in capital for renewable energy projects it is right to sustain the current renewable obligation scheme for new investment until at least 2010.**
- **The renewables obligation should be widened to include electricity generated by domestic CHP plants administered by energy service companies in place by 2010.**
- **Energy policy must feature as a key element of our diplomatic relations with Russia, Norway, and the Gulf States and be a central part of our global free trade agenda.**

3. THE BACKGROUND TO FUTURE POLICY

We are at an historic moment in the development of British energy policy. For centuries Britain has been self sufficient in her main fuel supply. This position is about to change. The world faces potentially catastrophic damage through climate change. The world may also be on the edge of a technological revolution in energy provision through the successful introduction of a combination of fuel cells, Hydrogen, nuclear fusion and widespread distributed electricity generation.

The Government has failed to deliver the answer to this historic turning point in energy policy in their own White Paper. Whilst it analyses the problem adequately it completely fails to offer remotely convincing solutions. A critique of the White Paper is attached at Appendix A, which is a copy of an article written for the Parliamentary Group for Energy Studies.

Arguments are strongly advanced for the Government to have an interventionist policy that essentially decides the split of electricity generation between coal, nuclear, gas and renewables in the interests of security. However these are thinly veiled arguments for taxpayer support for policies that are neither in the economic, social or environmental interests of the UK. In today's interdependent world arguments for British energy autarky are hopelessly out of date and we will have to find security of supply in other ways.

SECURITY

Although the UK currently has some diversity of supply, with coal, nuclear and gas providing 95% of current electricity generation in the UK, this is not the same as having a secure supply. If one fuel becomes dominant, as many predict for gas in the medium term, then the security that comes from diversity will have to be found in multiple sources for that fuel. This is an immediate challenge for the UK, where gas already provides 42% of our energy needs and this figure will rise. As it does so, the UK will become increasingly dependent on imported gas.

It is expected that natural gas will shortly be imported from outside the EEA, and the sources will need to be as diversified as possible to reduce risk.

The Supply Chain

As Britain becomes increasingly dependent on imported gas the government will have to be confident that the required physical infrastructure will exist to enable Britain to access gas from a variety of overseas sources.

Liberalisation in Europe and hopefully in Russia should lead to long term supply contracts that will underwrite the investment in developing the super giant Siberian fields and the pipelines to get the gas to the UK market. This will include pipeline capacity into the UK. There are signs this is already happening. It is estimated² that the equivalent of five Bacton-Zeebrugge interconnectors will be needed by 2020. Two are already under discussion with outline agreements signed during President Putin's recent State visit.

The government will have to monitor carefully and where necessary influence the regulation of the gas and electricity transmission networks in the EU to ensure the UK has access to open markets and that the Trans European Energy Networks are developed to enable an open market to operate in Europe.

The government also needs to ensure that its own taxation regime does not prevent other markets opening. Currently the Petroleum Revenue Tax regime operates against the potential supply of North Norwegian Sea gas through the existing North Sea pipeline infrastructure. This will serve to increase the landed price, reduce demand and is disadvantaging the UK at a crucial stage of the development of new markets by Norway.

Storage

The UK's oil and gas storage capacity should increase as the UK ceases to be self-sufficient. Whether the government will have to intervene to set a required strategic reserve storage capacity to allow for possible interruptions of supply should mainly reflect a judgement about national and strategic security rather than market issues, although the planning regime may require attention to avoid unreasonable obstruction to the creation of storage facilities. The re-evaluation will need to be constant and part of the continuous assessment of the threat.

Gas storage is currently at 3% of annual demand in the UK, which compares with 4% in Belgium, and 20% in Germany.³ The requirement for storage can be reduced by a larger number of supply pipelines, a large number of sources, a flexible, secure UK network, dual fuel generators, and access to trading hubs. Storage will have its own economic value, not least as owners of storage capacity are able to buy fuel at times of low demand and prices and sell at peak demand and prices. As the gas market develops independently of oil so this trend will be more marked for natural gas storage thus driving the market towards greater storage capacity.

Policy Challenges

Security of supply can be reinforced in many ways, political, economic or physical. Some of these will be the direct responsibility of government, some of the regulator through

² *An Engineering Appraisal of the Policy and Innovation Unit's Energy Review*, Memorandum prepared by the Royal Academy of Engineering, August 2002

³ All figures from Appendix C of *Security of European Natural Gas Supplies. The Impact of import dependence and Liberalization*, by Jonathan Stern, July 2002. Royal Institute of International Affairs Sustainable Development Programme

duties placed upon him by Parliament and others should be created by the market. Some examples of issues that need to be addressed are:

- Insufficient gas entry points to the UK
- Potential choke points in the current gas supply system
- Possible market failure in an inability to price potential scarcity to trigger investment in storage
- Need for greater interconnector capacity with other energy markets
- Negotiations with Russia to enable long term supply contracts to promote investment in and development of the super giant Siberian fields and the pipelines to bring that gas to the European market
- Addressing the taxation regime in the North Sea to maximise potential production from a mature oil and gas basin.
- Agreement with Norway to maximise the advantage of Britain's proximity to new north Norwegian sea sources and the existence of the current north sea infrastructure
- Planning system support to enable greater competition from potential new nuclear power stations and new sources of supply such as new LNG terminals
- Enabling new market entrants fair access to increase distributed generation

These are some of the security of supply challenges to be faced. Physical security from attack presents another set of challenges and the government must maintain an overview of the internal and external security challenges. The work of the Joint Energy Security of Supply Working Group should be linked to that of the Joint Intelligence Committee. As Britain becomes a fuel importer so our requirement for global peace and stability and the resulting trade flow grows.

ENVIRONMENT

Climate Change

The need to curtail the emission of greenhouse gases is now almost universally accepted. The UK contributes about 2–3 % to global man made emissions of CO₂, which are currently estimated to range between 6.2 and 6.9 billion⁴ tonnes carbon per annum. The UK's emissions of carbon were recorded at 154m tonnes of carbon (564.7 m tonnes CO₂) in 2001.

Under the Kyoto protocol the UK has agreed to reduce emissions of a basket of six greenhouse gases by 12.5 % below 1990 levels of 208 million tonnes of carbon (763 million tonnes of CO₂) by the first commitment period of 2008–2012. The UK government also has a domestic goal to cut CO₂ emissions by 20% below 1990 levels by 2010. Most commentators agree the current wide range of policy instruments are failing and will fail to achieve these objectives.

⁴ Source: DEFRA The Environment in your pocket 2002.

The electricity generation sector (34%) is the largest generator of CO₂, which is by some margin the greatest contributor to global warming. The transport (23%), domestic (22%), manufacturing and construction sectors (17%) are also significant.

Submissions to the Government's energy review are calling for one over riding instrument to address climate change through a market mechanism. Authoritative sources such as the Royal Society and Ofgem are endorsing an emissions trading scheme or a carbon tax as the central policy instrument.

Industry views published on the DTI website on 27th November 2002 on the Energy White paper showed;

“agreement that more action should be taken to address climate change, especially through market mechanisms, such as carbon trading.”

The Nuclear Legacy

Just as climate change is a global problem for this century so the radioactive waste from the nuclear fission industry will be an environmental problem for many centuries, although this problem is likely to be on a local rather than a global basis unless there is a worst case catastrophe.

The Government is engaged in a 7-year consultation on the final disposal of nuclear waste and is due to present draft legislation this year to establish a Legacy Management Authority. The slothful timetable is both a reflection of political cowardice and an indication of the difficulty of addressing long term energy issues where the wider national interest measured over decades is sacrificed to narrower short term interests.

The central issue for the future is how to pay for the waste generated by the next generation of nuclear power stations.

ENERGY EFFICIENCY

27% of the UK's carbon dioxide emissions come from the energy used to run household appliances, lighting and heating.⁵ Therefore clearly any improvements in household energy efficiency will have significant impact on helping the government meet not only its Kyoto emissions targets but also the Home Energy Conservation Act (HECA) target⁶.

Household use of energy is increasing by 0.8% a year. On current trends the household sector will increase its energy use by 6% by 2010.⁷ Part of the reason is consumers'

⁵ Energy Savings Trust – Climate Change Brief – 12th March 2002

⁶ In 1996 in guidance under the Home Energy Conservation Act 1995 the last Government set local authorities a target of achieving a 30% improvement in energy efficiency in 10-15 years – i.e. by 2011 at the latest.

⁷ Energy Savings Trust – Climate Change Brief – 12th March 2002

reluctance to invest to reduce energy consumption and eliminate wastage. In this area most consumers can improve their own position and thus also assist the UK in meeting its emission targets in the most efficient manner.

There have been many micro policy initiatives to promote energy efficiency. There have been calls for the Government to properly co-ordinate these within an Energy Efficiency Strategy.

ECONOMIC

Britain's energy policy should always have in mind the need to improve our competitive position where possible. It should be noted that early privatisation and liberalisation has given the UK significantly cheaper electricity and gas than many other countries⁸. The creation of a wider liberalised EU market should further assist.

Effective measures to tackle environmental risks are likely to affect global competitiveness. It is therefore vital that the international community should move together towards measures that address global climate change. There is no point the UK crippling its economy to deliver massive reductions in carbon dioxide emissions way beyond those agreed at Kyoto if China, India and the USA do not follow suit.

The last Conservative Government succeeded in placing this issue firmly on the international agenda through the leadership shown that led to a successful Rio conference in 1992. Multilateral international action remains the key to tackling climate change and it is through successful and successive rounds of negotiation that the targets should become more stringent, moving the entire world towards the target of a 60% reduction by 2050 promoted by the Royal Commission on Environmental Pollution.

FUEL POVERTY

This energy policy would seek to deliver Britain's energy needs within an environmental framework in the most economic manner. Social objectives should and will be met independently of our energy policy.

The Labour Government has added social goals to energy policy and they are addressed in a bureaucratic and opaque fashion from DTI and DEFRA funding. These departments between them operate 29 separate sources of funding to and levies on consumers, most of which operate a multitude of sub funds addressing broad social issues. Many schemes overlap and have similar objectives.

However over the last decade fuel poverty has been more effectively addressed by opening up energy markets to competition as any direct measure. Energy policy can contribute to social objectives by lifting more people from fuel poverty by keeping prices to a minimum through relative price reductions delivered in a competitive market. Thus

⁸ Proof that the UK has significantly cheaper power

the wider economy can generate the wealth to provide the resources to tackle social goals directly.

CURRENT PRIMARY FUEL AVAILABILITY

Any analysis of energy policy must also proceed from an appreciation of current and future fuel technologies.

Natural Gas

The UK has been sufficient in gas for many years based on the reserves in the North Sea and Morecombe Bay. From 2005 the UK is expected to become a net importer and may be importing significant gas by 2010⁹ and between 55% and 90% by 2020². However there is 100 years of supply for the world at current consumption rates in global reserves already identified. It is available to the UK from multiple sources. It is possible that by 2020, 90% of all EU gas will be imported from Russia, which will have to double its exports. Since Russia has 30% of the world's reserves and a desperate need for cash to develop its economy and a desire to promote a free market economy this trade has strategic attractions. However other options exist for the UK such as supplies from the north Norwegian Sea, from North Africa via pipelines through southern Europe and LNG from Iran, Qatar and Saudi Arabia who have 15%, 8% and 4% of global reserves respectively though the Saudis may have significantly more. Since their production costs are 25% of those of Norway the liquefaction and transport costs make them a competitive option.

The PIU report is confident about the future availability of gas.

“However, there appear to be no pressing problems connected with increased dependence on gas, including gas imported from overseas. The liberalisation of European gas markets will make an important contribution to security;”

Non-gas electricity generators have been particularly anxious to challenge this conclusion. However the evidence overwhelmingly supports the view of the PIU.

Nuclear Fission

Uranium oxide supplies are available from Australia, Canada and other countries and we can expect these to continue for the foreseeable future. The UK possesses the infrastructure to manufacture and reprocess spent nuclear fuel, a valuable strategic skill particularly when addressing the question of the legacy as spent fuel will require processing in order to be stored with the necessary degree of safety.

Climate change, primarily due to carbon dioxide emissions, is accepted as the greatest environmental challenge. Nuclear generated electricity possesses the great advantage

⁹ 1/3 according to *An Engineering Appraisal of the Policy and Innovation Unit's Energy Review, Memorandum* prepared by the Royal Academy of Engineering, August 2002

that it is carbon free. However nuclear also has its own environmental legacy to deal with. There is widespread agreement that these environmental externalities need to be internalised into the price. I propose mechanisms for doing this. Having done so, it is possible to address the critics of the first generation of nuclear power who maintain that it has received massive hidden state subsidies and has never been properly economic.

It will be for the nuclear industry to convince potential investors it can generate electricity competitively within this framework.

Coal

The UK has abundant supplies of coal. However most of it is accessible only by deep mining and despite Britain possessing the most efficient deep mine producers in Europe it sustains barely half the domestic market share against imports from Poland, South Africa and China amongst others. As Carbon taxes and emissions trading develop in the face of the threat of climate change the competitive position of coal continues to deteriorate. A possible option for using coal for generation is sequestration, where CO₂ is removed from exhausts and stored rather than vented into the atmosphere. Such technology is currently high cost, undeveloped and does not yet serve to make coal generation competitive in a low carbon emission environment.

Coal also has its own health and environmental costs as evidenced by the substantial payments the DTI is making to those former miners suffering from lung disease and vibration white finger.

Current coal fired generation will become subject to EU emissions controls on sulphur dioxide on 1 Jan 2008 and will then require flue gas desulphurisation (Clean Coal Technology) to be retrofitted to generating plant. Much electricity plant is too old to justify this investment and will be taken out of production.

Oil

Oil dominates the transport sector as a fuel source. It provides 31% of Britain's energy needs. As with gas Britain is expected to become a net importer of oil in 2005. Other OECD sources are also declining requiring additional supply from the Middle East and Russia. The long-term outlook for oil appears more constrained than for gas though previous predictions of the exhaustion of oil reserves have all proved pessimistic.

There is a risk that over a medium to long term period, prices may be raised, as supplies become more concentrated in a smaller number of exporters. Therefore alternatives become more important over the medium term.

Renewable Energy

Wind

There were around 70 active wind farms at the end of 2001 with a total capacity of 474 MW¹⁰. The availability of these sites is generally around 40%, i.e. when the wind blows. To meet the proposed target for renewable generation of 20% by 2020, as suggested by the PIU, would require over 20,000 windmills. This is unlikely to be an acceptable on-shore option.

There is also an issue of power quality as more distributed generation is attached to the network. The limit seems to be about 15% before problems arise, as Denmark has experienced¹¹. There is a cost to attach small-scale generation to the network. It therefore tends to be attached to the lower voltage distribution network, rather than to the higher voltage transmission network. Challenges arise from managing fluctuations in voltage, phase and intermittency. This may require upgrades to networks, creation of energy storage schemes or availability of conventional generation, which needs to be allowed for in estimating the likely cost per kWh of renewable energy.

Onshore wind farms are proving economic, with support from the Renewables Obligation which makes purchases at up to 3p / kWh more than conventional generation. Estimated cost of the best onshore farms is currently 2.5p /kW¹² and 4.0p /kW¹² for off-shore farms, which also makes off-shore wind viable under the current obligation.

Hydro

Currently hydro provides 2.5% of the UK's electricity supplies. Crucially it also provides a vital part of the current balancing mechanism being the only current technology that allows concentrated release of stored power to meet surges in demand. The UK does not have the physical geography to significantly increase this share.

FUTURE ENERGY SOURCES AND TECHNOLOGIES

Fuel Cells

The last Conservative Government initiated the Advanced Fuel Cells Programme in 1992. The programme's focus is on improving the economic prospects for fuel cells and encouraging competitive businesses to develop technologies and quantify environmental costs and benefits of such systems.

Fuel cells usually operate by electrochemically converting hydrogen and oxygen into electricity. They combine high efficiency with very low pollutant emissions; if run on hydrogen the only emission at point of use is water. If run on hydrocarbons (or hydrogen

¹⁰ British Wind Energy Authority

¹¹ Danish Transmission and Distribution issue

¹² The Royal Society "Economic Instruments for the reduction of carbon dioxide emissions" Page 17. Nov. 2002

derived from hydrocarbons), emissions of Nox, Sox and particulates are near zero, with CO₂ emissions dependent upon the hydrogen source.

If hydrogen is derived from non-carbon sources such as renewables or nuclear then fuel cells offer the prospect of 'zero emission' power for transport and stationary applications.

Interest in fuel cells focuses on two areas:

- Road transport, where potential for zero emissions of local air pollutants combined with high efficiencies and high power density (high power from small units) is driving considerable R&D activity; and
- Power generation – primarily for small scale decentralised (less than 1MW) applications, where fuel cells offer considerable efficiency gains over combustion technologies. Quiet operation and availability of waste heat for CHP make them particularly suitable for small scale CHP installations in buildings. The potential for low cost, mass produced generation units is driving interest in both areas.

Estimates of current capital costs range from £300/kW to £700/kW. The speed with which fuel cells will achieve cost reductions is not clear. In the long term fuel cells will become competitive in many applications, with decentralised CHP the likely first market, followed by transport applications.

The Hydrogen Economy

Burning hydrocarbons is cheap and convenient – but dirty and wasteful. Science has dreamt of a clean, simple answer to the energy equation –after 50 years this is becoming a reality. The fuel is water and the waste is water. In short, H₂O is split, the harmless oxygen released, the hydrogen cooled, liquefied and stored under pressure for burning in vehicles to produce motion, emitting pure water. Despite the physics being simple, the energy demanded to produce the liquid hydrogen is great and the engineering complex.

Market decisions have been made by Ford, BMW and General Motors to move to this technology within 20 years. The oil refining giants are repositioning themselves. Their main customers will in future be the chemical companies. The Petrol Retailers Association foresees an end to the petrol forecourt monopoly and a new role for secure hydrogen fuel distribution in both urban and rural Britain.

Fuel cell technology in combination with hydrogen production adds up to a social as well as a technological revolution. It has the potential to end the world's reliance on imported oil and gas and bring a highly decentralised form of energy production and use. Millions of local operators generating electricity from fuel cells on site will produce power much more efficiently than centrally generated power plants. The speed with which the hydrogen economy is delivered is an open question, but the potential benefits of progress in this direction are immense.

Government policy must act to facilitate and not obstruct progress. For example, enabling provision of science and research development expenditure, if necessary, for the

development of the hydrogen economy and avoiding regulation obstructing the provision of hydrogen distribution points around the country. Since progress may be significant before the next election Conservative policy will have to be reviewed to make the appropriate judgements about the necessary level of direct and regulatory support required to ensure the benefits of the hydrogen economy can be taken at the earliest economic opportunity.

Nuclear Fusion

The next generation of nuclear technology, based on fusion not fission, offers as much hope as the first. We must proceed in the expectation that it does not flatter to deceive as the potential benefits are enormous for the whole world. It may be the key to delivering the solution to global climate change by enabling the hydrogen economy in a cost effective way in the second half of this century.

Nuclear fusion is joining together the nuclei of relatively light atoms and releasing immense amounts of energy in the process. The type of fusion reaction that powers the sun and stars - and fusion experiments on Earth - involves isotopes of hydrogen.

The UK is already at the leading edge having invested heavily for many years in plasma physics research at Culham – research which is now bearing fruit and may be ready for commercial use in 30 years. This may be the timescale in which large quantities of carbon free hydrogen will be required.

Fusion and nuclear fission are opposite processes. Fission, which powers existing nuclear power stations, releases energy by splitting heavy atoms such as uranium and plutonium. Fusion is a cleaner process because it does not leave as much radioactive waste as fission. The radiotoxicity of a fusion power station's waste materials decays very rapidly; after less than 100 years it is equal to the radiotoxicity of the waste from a coal-fired power station. Thus, fusion wastes present no accumulating or long-term burden on future generations. They would not need guaranteed isolation from the environment for very long time spans. In addition to these favourable results, fusion produces no climate-changing or atmosphere- polluting emissions.

Large-scale fusion experiments are producing increasingly impressive results after decades of flatter to deceive. JET has produced up to 10 megawatts of fusion power in short bursts lasting less than a second.

Iter, the £3.5bn next step, would aim to produce 300 megawatts of heat; the level of a medium-sized power station, for many minutes but it will not generate electricity. On present schedule this global collaboration would run from about 2013. If the results were encouraging, and the political and economic climate favourable, a full-scale demonstration fusion power station would then be built.

At present Iter is a partnership between the European Union, Russia, Canada and Japan - though there are hopes that the US, which pulled out in 1999, will rejoin soon, as the Bush administration pursues a high technology energy policy.

Over the past year Britain has moved from scepticism to strong support for Iter, under the influence of Sir David King, the Government's chief scientist. He is pushing for a 'fast track' to fusion power, including an intensive international programme to develop materials that can withstand the extreme conditions inside a reactor.

Micro CHP

BG MicroGen and TXU are developing CHP for domestic users in the UK. These are 90% efficient compared to 40% for major stations, due to loss of heat, distribution losses, etc. The first product is expected to be available within a year. In a typical household, this could reduce emissions by 1.5 tonnes per year, (38%) and reduce the fuel bill by £150. Nationally this gives the potential of 18 million homes contributing to electricity generation at twice the efficiency of CCGT power station, adding 70,000 MW of capacity whose pattern of generation matches national demand.

Micro CHP therefore has substantial environmental and security of supply benefits to offer. Energy service contracts are an essential component of bringing this product successfully to market to help address consumer resistance to the high capital costs of the equipment, especially for those that take up this new technology early.

It is not now expected that the Renewables Obligation will be fully taken up by 2010. Therefore we can support the early investors in micro CHP, defined as that equipment capable of generating up to 5kW of electricity. **I propose to allow energy service companies to claim a renewable electricity obligation certificate in respect of electricity supplied to both the home and the grid by micro CHP units installed in homes.**

Renewable Energy

Wave and Tidal

The largest potential UK scheme is the Severn Barrage Project, which could generate power at a cost of 5.5 p/kWh². This is not currently economic and has raised significant environmental concerns. Other smaller tidal systems may be more viable, costing 3-5p/kWh. The technology is still being proved but considerable effort is being made to demonstrate reliable systems. The same applies to wave technology where a Wells turbine harnesses wave power in western Scotland though this has so far not proceeded beyond the demonstration phase.

Biomass combustion

This is assumed to be renewable as the gases emitted would be absorbed by the replacement crops. The only net emission is due to planting, harvesting and transport. Biomass is usually wood, wood waste, manure, etc, which can all be dried and burnt. By combining with other fuels, costs have been reduced to 5.5p/kWh¹³ but it is yet to prove viable in the UK as a major source of future energy.

Photo voltaic solar thermal energy

Photo Voltaic cells are silicon cells than covert sunlight directly into electricity. At the moment the technology is uneconomic for the UK except in very specific sites, costing around 40p/kWh¹⁴, due to poor efficiency in conversion (currently 16% but improving) and low incoming solar radiation. In sunnier climates, and where connection to a grid is expensive, PV has an economic use. The technology is also continuously improving and is benefiting from significant government support.

Solar Thermal Energy concentrates the energy onto a receiver. Current costs are high at 13p / kWh¹⁴, but this is expected to improve over time.

¹³ The Royal Society “*Economic Instruments for the reduction of carbon dioxide emissions*” Page 20. Nov. 2002

¹⁴ The Royal Society “*Economic Instruments for the reduction of carbon dioxide emissions*” Page 19. Nov. 2002

4. CURRENT GOVERNMENT POLICY

THE UK ENERGY MARKET

De-regulation in the UK has delivered secure supplies and cheaper power since introduced by the Conservative Government in the Nineties. This has given savings of 40% in real terms to consumers and, through OFGEM, has not generated any significant non-network failures. Indeed, the regulator has successfully created a market driven system which has successfully survived such shocks at Enron and market changes such as complex restructuring of the major players.

Indeed there has been considerable benefit from this system, including the reduction in fuel poverty, driven by these significant reductions in energy prices.

The New Electricity Trading Arrangements have made a promising start. An over supplied electricity generation market has allowed prices to fall and, as capacity is removed, so prices will and have firmed. Equally, the price mechanism, if allowed to operate, should produce new capacity in generation when required. In California, the price mechanism was not allowed to work, so new investment was not forthcoming and the natural monopoly of the transmission network was not properly regulated. There is no evidence that the California experience would be repeated in the United Kingdom under current arrangements.

THE CURRENT UK EMISSIONS TRADING SCHEME

Launched in April 2002, this is a voluntary scheme unique in offering financial incentives to join, funded by the Government, which pays participants according to their success in reducing emissions, each participant being able to bid for a share of £215¹⁵ million spread over 5 years. Flaws have been found in the scheme including a realisation that the scheme may not have delivered emission reductions additional to those required by regulation and the UK scheme will not be compatible with the proposed EU scheme. Environmentalists have argued it is a complete waste of money and extremely bureaucratic.

Incentive payments and emissions targets for direct participants were set in an auction that took place on 11 and 12 March. The 34 companies that entered via the auction route collectively submitted a total of just over 4 million tonnes of CO₂ reductions by the end of five years. Providing they meet these targets these companies are eligible to receive an incentive payment of £53.37 for each tonne of carbon dioxide equivalent beyond their target.

¹⁵ Source: DETR, Draft Framework Document for the UK Emissions Trading Scheme, May 2001

THE CLIMATE CHANGE LEVY (CCL)

From April 2001 business and public sector users were required to pay a levy in pence per kilowatt hour of energy used, unless the energy was supplied by an accredited renewable energy supplier. This raised cash receipts in 2001-2002 of £551 million¹⁶. In its current form the CCL is an inefficient means of reducing emissions primarily because it excludes certain energy users (including households and transport) and targets energy use in general rather than carbon emissions in particular. The tax also penalises nuclear power that is effectively carbon free.

Areas most affected by CCL;¹⁷

	Cost of levy (£m)	Reduction in NIC (£m)	Net Cost (£m)
Mining	11.4	5.1	+6.3
Manufacturing	328.2	185.6	+142.6
Utilities	2.38	6.8	+17.0
Services	356.1	417.7	- 61.6

RENEWABLES OBLIGATION (UTILITIES ACT 2000)

The Renewables Obligation was a development of the non-fossil fuel obligation introduced by the last Conservative Government. Electricity suppliers must supply a proportion of their electricity from renewable sources (solar, landfill gas, wind, wave, photovoltaic cells, fuel cells, energy crops, etc). By 2010 this obligation will be set at 10.4% and will remain so until 2027¹⁸. Suppliers must either physically supply the power from renewable generating stations or purchase “green certificates” from others who have supplied such power. It is estimated that the cost of the Renewables Obligation to consumers in 2010/11 with a target of 38.8TWh at a price of 3p/kWh would be £779 million¹⁹, with an impact on average electricity prices compared to 1999 actual levels of 4.4%.

OTHER ENERGY / ENVIRONMENTAL SCHEMES

There is a multiplicity of Government schemes. For example there are currently 17 schemes listed in the Energy Saving Trust Annual Report 2000/2001 with Government funding of £24.6 million. These schemes usually have dual climate change and social objectives. The climate change element could be met by one overall policy leaving social objectives to be met by policies designed to this end. Other schemes that currently exist include:

¹⁶ Table 2.1D ONS publication “Financial statistics “ May 2001

¹⁷ source: CBI, The Climate Change Levy: First year assessment

¹⁸ Renewables Obligation Order 2002/S.I. 2002 No 914

¹⁹ source: DTI website, Regulatory Impact Assessment The Renewables Obligation Order 2002.

- The Energy Efficiency Commitment (EEC) on domestic energy suppliers, from 2002 to 2005.
- In England the Home Energy Efficiency Scheme – now marketed as Warm Front - which provides assistance to private sector households in receipt of certain benefits.
- Revised Building Regulations which require high energy efficiency standards
- The Market Transformation Programme
- A wide range of measures to support Combined Heat and Power (CHP) including climate change levy exemption on fuel inputs to Good Quality CHP and on Good Quality CHP electricity outputs sold direct to end users, eligibility for enhanced capital allowances, Business Rates exception for CHP power generation plant and machinery, changes to the licensing regime, a reduction in VAT on certain grant funded domestic micro CHP installations, and the £50m Community Energy programme to encourage CHP in community heating schemes.
- Funding of the Carbon Trust, in non domestic markets, and the Energy Savings Trust, in domestic markets, for the development of energy efficiency and low carbon technologies.

In summary Government policy is opaque, confused, complicated and ultimately ineffective.

A CASE STUDY IN LABOUR POLICY – THE CLIMATE CHANGE LEVY

The Climate Change Levy is a good example of all that is wrong with New Labour Administration in practice. It sounds attractive, but is not what it seems and fails to achieve its stated objective. In practice it is a complicated and unfocused way of attempting to deliver the UK's environmental objectives.

The CBI report entitled 'Green Taxes: Rhetoric and Reality' makes clear that the CCL is bad for both the environment and business. It has distorted markets and is placing disproportionate burdens on British manufacturing.

The CCL was overtly designed to be broadly neutral on business, but it penalises capital-intensive sectors, such as manufacturing, to the benefit of labour intensive sectors such as the public sector. According to a survey by the Engineering Employers Federation, the engineering sector pays 17 per cent of the increase in energy costs, more than double its share of the economy with the net increase in costs around £90 million.²⁰

The reality is the CCL was designed more with politics in mind than sound environmental policy. It is based on energy use and not carbon emission to avoid undermining the coal industry. It has had no supply-side effect. CCL falls on business,

²⁰ Engineering Outlook – October 2001

not domestic users. The CCL therefore has had no effect on domestic demand, which accounts for 29 per cent of final energy consumption²¹.

When the Chancellor of the Exchequer was asked why he had decided not to implement a carbon tax, he issued the following reply:

“The Government believe that a downstream tax on energy, such as the CCL is the best approach to take to the taxation of energy products, as it allows the Government to balance the need to encourage improvements in energy efficiency with other policy considerations.”

Other policy considerations appear to be much about avoiding difficult choices. The result is that the CCL has spawned a whole industry of agreements, exemptions and regulations that has created complexity and inconsistency, with high costs and limited benefits.

²¹ The Energy Report 2000 published by the DTI – Chart A2.3 Final energy consumption by sector, 1999

5. THE INTERNATIONAL FRAMEWORK

ENVIRONMENTAL

Kyoto

Kyoto envisaged an international emissions trading scheme in 2008 and ratifying nations agreed individual carbon dioxide targets. For the UK this was to reduce by 12.5% our 1990 level of emissions by 2012.

The European Union

In June 2001 EU leaders declared that the Union would meet its commitment under the Kyoto protocol to reduce its emissions by 8% whether or not the protocol came into force.

Current EU proposal

The Commission has proposed, and the Council agreed on 11th December 2002, that the EU should establish its own internal trading regime by the year 2005. The planned EU scheme would be a mandatory cap and trade scheme, but it only applies to the largest fixed point emitters of GHG. It will therefore only apply to a minority of emissions. The first phase of the scheme is proposed between 2005 and the end of 2007. Member states need to establish allocation plans for each trading period, which will be submitted in 2004 to the Commission. It is proposed that in the period from 2005 to 2007 all Member states allocate allowances to participating installations for free and in 2008-12 the major plants will have 90% free allocation.

A participant that fails to limit its emissions and does not buy sufficient extra allowances in the preliminary period will be obliged to pay €40 per excess tonne of CO₂.

The Labour Government has been party to a missed opportunity. The European Parliament may attempt to improve the scheme through the co-decision procedure. It is however likely that the UK will have to operate this scheme, but under Article 23 the Government can operate its own comprehensive scheme, which is what I would recommend.

ECONOMIC

Europe's electricity and gas markets are intimately linked. Energy costs form a large part of production costs, and the energy industry is one of the largest sectors of the European economy, with annual electricity production worth £95 billion and gas sales worth £63 billion.²²

²² Financial Times – 14th March 2002

The adoption of the EU Gas & Electricity Directive will help the EU move towards an integrated single European energy market. However, the timetable will be slower than hoped due to the failure by Britain's energy minister to support the Commission's proposal when France was isolated at the November 2002 Energy Council in favour of a bilateral compromise delaying liberalisation for 2.5 years.

Around 8% of EU electricity production is traded across frontiers.²³ Compared to other sectors of the economy, this is still relatively modest.

France has been slow to open its own domestic energy markets to outside companies while Electricité de France (EdF), the state-owned utility, has been busy buying up companies in other countries. EdF now owns shares in energy companies in Italy, Spain and the UK.²⁴

The European Competition Commissioner launched an enquiry in February 2001 into complaints that a few large companies control both the transmission and supply to customers, leading to anti-competitive behaviour. Again, at the November 2002 Energy Council, the Labour Government undermined a clear EU Commission commitment to legal "unbundling" that was to address this anti-competitive behaviour by agreeing a compromise, this time at the behest of Germany.

The EU will need to consider interconnector capacity between the UK, the rest of Europe and our future sources of supply. They will need to ensure that the UK has fair access to gas and electricity in the liberalised EU market in the same way as the UK regulator acts within the UK market. Existing installations will need to be extended. Whilst the market should achieve this, if it fails then this would be an appropriate area for intervention.

It is also critical that the supply of gas into the EU market needs to be as open as possible, to reduce the power of key gas suppliers, such as Gazprom, the monopoly supplier in Russia and controller of pipelines from Russia. Alternative suppliers must be encouraged and enabled from the Caspian, North Africa and the Middle East.

²³ Proposal for a Regulation of the European Parliament and of the Council on conditions for access to the network for cross-boarder exchanges in electricity - 2001

²⁴ 'Power Politics' – Financial Times – 24th May 2001

6. A CONSERVATIVE CONCLUSION

A Conservative Government should deliver our environmental obligations in the most economically efficient way.

In particular we should give stability to industry by long term signals and making clear that any intervention will be to address national security not market security.

My first proposal is to introduce comprehensive Carbon Emission Trading.

- **The UK should meet its Kyoto and future internationally agreed carbon dioxide reduction targets by means of a comprehensive emissions trading scheme from 2008. The UK should sell permits up to its internationally agreed limits – a so called “cap, auction and trade” approach.**
- **The government should consult on a scheme to require all wholesalers of fuel to buy a permit for the carbon emitted when the fuel is combusted. The scheme should be comprehensive and cover the 96% of the UK’s emissions from the domestic, transport and commercial sectors.**
- **The money raised by the government from the sale of permits should be returned to the economy as a cut in taxation. There are variety of ways this could be done: One could examine the case for returning a proportion of the revenue raised from the transport sector to support fiscal initiatives for green fuels and technologies; a share of the revenue raised from the domestic sector could also be used to pursue social policy objectives – addressing fuel poverty, the quality of social housing and incentives to promote energy efficiency in the home. Evidence also shows that if the money is returned by cutting employment taxes, such as employers’ national insurance, the overall effect will lead to a rise in GDP.**
- **Britain should press for the EU to develop a similar scheme to address emissions comprehensively, not least in the European Parliament under the co-decision procedure where there is support for a more definitive environmental policy.**
- **If necessary Britain could operate the proposed mandatory but partial EU scheme in parallel with our own under Article 23(a) of the proposed EU directive. This proposal applies to a different part of the supply chain to the EU approach and is compatible.**
- **As this scheme will ensure the UK meets its climate change obligations it will be possible to end the considerable number of other policy instruments currently in place and their attendant regulations and bureaucracy, chief among these will be the Climate Change Levy. I have also identified 28 other schemes costing the**

taxpayer £1.3 billion in the period 2001–2004 and the consumer £950m which could also be ended.

In principle only tradable permits based around a limited issue can guarantee to meet environmental targets. An overall quota of emission allowances is first determined, this would be a quota based on a national target, which would be bid for by polluters. Once purchased firms are free to trade them further. Typically firms who find it expensive to reduce emissions will be able to buy further permits from other permit holders if they wish to trade beyond their initially purchased permits. Permits could be internationally tradable with other Kyoto compliant countries.

The most important feature is that it secures the environmental target in question, by specifying the quantity of CO₂ that will be allowed in total, based on our national target. Moreover the quantity can be decreased through time as environmental targets become stricter.

Our proposed scheme allocates by auction not by allocation based on previous emissions. The EU scheme gives a value to earlier environmentally damaging behaviour and fails to reward current or past attempts to reduce emissions.

Another advantage this system has over a carbon tax is that government does not need to worry that a tradable permit scheme may not achieve its objectives (clearly set from the start) unlike a carbon tax where price elasticity of demand is likely to be insufficient to achieve the environmental target objectives.

The tradable permits scheme would replace a confusing plethora of existing schemes, reducing regulation and red tape, and ensuring the UK delivered on its internationally agreed emissions targets. Where these schemes have social as well as environmental objectives, these objectives could be pursued in instruments designed to achieve the precise social objective.

Introducing an emissions trading scheme based on auctioned tradable permits would be a simple and transparent method of meeting our environmental objectives. It would enable us to guarantee to meet our climate change commitment in the most economically efficient manner. It would also be a major de regulatory measure and has broad third party support.

Therefore the comprehensive emissions trading scheme we will introduce will be aimed at delivering our international obligations and establishing the vehicle by which further more stringent international targets can be set and delivered in the UK.

Current analysis of the effect on economic growth of introducing an Emission Trading Scheme (or even a Carbon Tax), quoted by the Royal Society, give a range of estimates for OECD Europe to reach Kyoto protocols targets. Without emissions trading it results in a 0.3-1.5% cut in GDP. With emissions trading a cut of 0.1-0.5% of GDP, but

interestingly some studies report that if the revenue from emissions permits is returned by cutting employment taxes, such as employers national insurance in the UK, it would result in a growth of GDP of between 0-2%.

Our second proposal is to allow the liberalised market to operate in the United Kingdom and to work to advance a free market in energy in the EU and around the world.

- **Having set the environmental framework the cardinal principle will be to allow market forces to work in the electricity market and enable new private investment to be triggered by allowing the price mechanism to work.**
- **The current market failure represented by consumers being relatively unprepared to invest in energy saving measures should be addressed by allowing consumers to enter into longer term agreements with energy service companies, who will be able to amortise the upfront capital investment in such developments as micro combined heat and power, home insulation and energy saving devices within an energy supply agreement.**
- **The regulator should be required to ensure that the transmission and distribution network gives a fair opportunity for distributed generators to access the market.**
- **Energy policy should feature as a key element of our diplomatic relations with Russia, Norway and the Gulf States and be a central part of our global free trade agenda.**

Our third set of proposals set the framework for future investment in nuclear, renewable and energy efficient electricity generation.

- **GHG free nuclear and renewable power should enjoy an advantage over fossil fuels. However new nuclear power stations will have to provide for their radioactive legacy. I recommend a mechanism to ensure their legacy is provided for as well as an insurance premium to the government to cover for their possible commercial failure. This premium will be spent on addressing the cost of the existing legacy. These fees should be set by an independent body.**
- **Artificial barriers to new nuclear capacity should be addressed with the length of the planning process time for new plant being made similar to other major power station proposals.**
- **Licensing for new nuclear reactor designs should be put on an international basis.**

- **Until emissions trading has matured it will not be possible to assess the advantage it will give renewable sources of energy. To send consistent signals to investors in capital for renewable energy projects it is right to sustain the current renewable obligation scheme for new investment until at least 2010.**
- **The renewables obligation should be widened to include electricity generated by domestic CHP plants administered by energy service companies in place by 2010.**

The proposal for any new nuclear reactors is a levy designed to ensure that adequate monies are available to pay for waste and spent fuel disposal, at full allocated cost.

The accumulated fee from all such reactors would be used to pay for the packaging, transport and disposal of irradiated fuel, (assuming that disposal is selected as the long term waste management strategy). In addition the fund would be used to pay for transport and disposal of reactor ILW, although its packaging and the storage of ILW and spent fuel pending disposal, would be borne directly by the reactor owner.

A joint steering group would be established, based on expertise from RWMAC, NUSAC and LMA, in order to periodically advise the fund administrators what level of fee was required. This group would take evidence from the Utilities, Nirex and the UK and international nuclear industry and other interested parties such as environmental groups, economists and academics.

The levy paid to the fund for future waste arising will be accompanied by a levy paid to the government to provide insurance to address the risk that the reactor had to be closed early for whatever reason, and that the accumulated fund proved to be inadequate, and to contribute to the liability of waste arising from earlier nuclear activity which has contributed to the development of the next generation of nuclear power stations.

Having “internalised the externalities” a Conservative Government would not propose to make such judgements in respect of the next generation of nuclear power stations. We would welcome proposals for new nuclear power stations and treat them equitably with proposals for other power stations. Whether proposals come forward will be for the market to decide, the environmental costs and benefits having been taken into account.

The payback on investment in energy saving measures usually represents more than a satisfactory commercial rate of return. Fixed term energy service contracts would enable consumers to share these benefits without facing the upfront capital investment costs in such developments as condensation boilers or in due course micro CHP. This could also extend to investments such as, double-glazed windows and loft insulation.

Energy service contracts that delivered immediate benefits to consumers in the form of reduced overall energy bills may also trigger other consumers to take all the benefits from making the investment themselves. The probable extra cost resulting from the required

purchase of carbon permits will also add to the incentive though consumers have shown themselves to be remarkably price insensitive, which is why a carbon tax is unlikely to deliver the necessary carbon reductions.

In summary, this energy policy demonstrates how Conservative philosophy and beliefs in action can deliver the best outcome for our citizens. By delivering a simple, clear and consistent framework, we will deliver our global environmental obligations in the most economically efficient way. Thus we will discharge our responsibility to protect the planet as well as advancing the competitive position of the United Kingdom.

APPENDIX A

CRITIQUE OF THE GOVERNMENT'S WHITE PAPER

AN UNSUSTAINABLE ENERGY WHITE PAPER

Crispin Blunt MP

Shadow Minister for Energy

Seldom has a document that was so widely trailed and so eagerly anticipated been so disappointing. There is an extraordinary contrast between the Prime Minister's commitment to deal with the threat from Iraq and the absence of courage and decisiveness in the White Paper. Hopefully his courage on Iraq will be rewarded over years. We may live with the consequences of its absence over energy for decades.

The Paper is long on aspiration and short on conclusions. It ducks hard decisions and leaves Britain without a coherent energy strategy just when clarity and decisiveness are most needed. It is a year since the performance and innovation unit's report was published, and two and a half years since the Royal Commission published its report. Now the Government have a series of targets, some watered down into aspirations, and an "ambition" to double the amount of energy generated by renewable sources. These aspirations are rather like yours and mine to aspire to a new car or a foreign holiday; they will stay as aspirations without a delivery mechanism.

Brian Wilson said the Government's ambitions for renewables were challenging. There is no point hiding exactly how challenging these aspirations are, particularly when many renewable projects are quite properly rejected by planning departments as they try to find the balance of environmental advantage. Their task is made more difficult as the Government have failed to deliver one overall mechanism for internalising the cost of greenhouse gases. Instead the Government intend to continue to rely on a wide range on complex policy instruments, each of which taken in isolation may have merit, but collectively are a muddle. The arbitrary

subsidy to renewables according to Ofgem's submission to the policy review is a most expensive way of saving carbon dioxide emissions. Surely there must be a better way with politicians producing the framework for energy investment rather than a complex menu of a la carte solutions for each part of the energy mix including different renewable sources of energy.

Sadly the Paper has some of the more unfortunate hallmarks of New Labour. The overview in Chapter One is fine, but the rest of the content is inadequate to meet the challenges that Britain faces. The headline goal of cutting Britain's greenhouse gas (GHG) emissions by 60% is an example. It is a meritorious aspiration, but there is an unwillingness to present the bad news of any of the discomforts of the effect of delivering it in practice. When the Royal Commission put forward its recommendations of a 60% reduction, it did so with the caveat that there must be an accompanying step change in the way the UK used fuel in all sectors, particularly transport and the domestic sector. This is an issue that has yet to be adequately addressed. The "long term policy framework" contains little in the way of achievable timetables, objectives, implementation measures or economic funding plans.

It is frankly incredible to suggest that a growth in expensively subsidised renewable energy and energy efficiency is going to set us on the way to a low carbon future, whilst at the same time the Paper deals a crippling blow to the future of the nuclear fission industry and endorses a scheme to present valuable "grandfather" rights to the current emitters of greenhouse gases.

I believe that the Government's responsibility in relation to energy policy should be to promote security of supply and deliver our environmental commitments in the most economically efficient way. The White Paper fails this test at a time when Britain is moving from self-sufficiency in energy supply to being a net importer, and when the Government is presiding over an increase in carbon dioxide emissions and whose policy encourages dirty generation at the expense of clean.

The White Paper places a heroic emphasis on improving energy efficiency to deliver half the GHG reductions. It is almost as if they identified a target for renewables that didn't sound too outrageous, 20% by 2020, but having done the sums then realised they were still going to fail to make any progress towards a serious reduction in GHG emissions. So the renewables target is then matched by an energy efficiency target. However experience shows that relying on greater energy efficiency to achieve carbon dioxide savings is wishful thinking. Our consumption of energy may become more efficient, but our demand for it grows

consistently. Real growth at 1% p.a. is a trend that looks relentless and it is unwise to bet the shop on changing this or we will start to run into problems with security of supply, which will cause serious economic damage.

Ironically where there is an enormous opportunity for an advance in energy efficiency it is missed by the White Paper. It produces an analysis of the failure of installing condensing boilers in the UK, but fails to spot the step change Britain can now achieve in energy efficiency by moving from conventional boilers to micro combined heat and power over the next two decades. This could be a very important contribution to greater energy efficiency and generating capacity, yet the White Paper produces no new policies on energy service companies to assist capital investment that will help get this product to market. Early action and investment in this one area, which could be deployed into a million homes a year in a mature market, would enable the domestic sector make a sizeable contribution to the targets. Instead the targets will remain the almost exclusive burden of industry and the wealth creating part of our economy.

Britain must play its part in meeting internationally agreed targets to tackle climate change. That process originated under the Conservative Government at Rio. However unilateral British targets will not save the planet's climate. Our approach must be a multilateral one, in particular getting the non-Kyoto players to take part. What happens in the USA, China and India is of more significance than anything Britain does unilaterally. It may be that our greatest contribution to the climate could be gifting China carbon sequestration technology. In any event we are going to have to be imaginative and innovative to make multiplateral progress. This area remains the greatest challenge for policy makers, but we must be prepared to say that this is not something we will impose on ourselves alone if the world fails to make progress together.

The most vague, but perhaps hopeful area of the White Paper is on emissions trading. There is a growing body of opinion that sees emissions trading as the most effective and economically efficient way of internalising the environmental costs associated with energy production. However there are some serious flaws with the way policy is being developed, that will work against sustainable clean energy. This area might represent the biggest missed opportunity of all.

The current British scheme will be incompatible with the proposed European Union scheme and will have to be scrapped between 2005 and 2007. But the EU scheme itself is not comprehensive and will only apply to the big fixed point emitters thus missing two thirds of emissions. Development of policy is beset by

vested interests protecting their position. The EU has produced a policy that will be based on an allocation i.e. on “grandfather rights”. The national allocation plans are now being drawn up. The result will be to reward existing emitters with valuable emission rights. This cannot be right. The distorting effects of this are already being shown in the UK where SOX emissions policy is working against clean coal plants such as Drax.

A truly sustainable energy policy should be based on a comprehensive emissions trading programme that applied to all sectors. It would also not reward existing polluters. It could also serve to deliver emissions targets by emissions permits only being issued to the national limit the Government has prescribed. This “cap” should represent the level of emissions the Government has agreed to with other countries in international negotiations. The price of these permits would reflect the success or failure in achieving carbon dioxide and other GHG reduction targets. They could also be tradeable between countries who had signed up to the targets.

At the moment Britain and the EU are making a limited advance in this area. It is not enough. It may also result in a scheme that rewards existing emitters, making it more difficult for carbon free renewables to enjoy their proper advantage. Comprehensive emissions trading can provide the one overarching economic instrument to effectively and efficiently price in the cost of GHG emissions. It would then mean that we would have an economic basis to compare alternative fuels and ministers would not have to be making hundreds of different judgements within dozens of bespoke schemes as to the right level of support for this or the right level of support for that. It is an opportunity not to be missed, but the EU is far doing just that.

The White Paper’s lack of courage is best exemplified by its approach to nuclear power. A decision even in principle has been ducked despite the overt support of energy minister Brian Wilson. This leads us to the conclusion this is a White Paper designed to get the Government around the next corner without upsetting the environmentalists, but this attitude has precious little to do with a long term energy policy. If the Government can’t take a decision in principle in a White Paper on Energy policy it is difficult to see it ever doing so before the damage is irreversible. With no undergraduate courses in nuclear engineering, and only one master’s course still operating in Britain, keeping the nuclear option open will soon be meaningless. There will be no talent to build and operate the plant.

Given the current lead time for planning, approving and building nuclear power stations, awaiting the publication of yet another White Paper before any decision

can be made will effectively kill off Britain's nuclear industry. This doesn't even give us the opportunity to assess whether the next generation of nuclear power stations might be the economic answer for a low carbon economy. Government should provide a framework for internalising the environmental costs of new nuclear generation so potential investors can make an assessment of the economics of new stations. The absence of leadership on this issue may make the UK even more dependent on imported gas and even less likely to achieve our climate change targets.

We waited a long time for this White Paper but perhaps it would have been better for us to wait a bit longer so that the gaps in the policy could be filled in and the uncertainties that it perpetuates could be resolved. The long lead times in the energy industry, and the fact that Britain faces the most acute energy challenges for a generation, mean that the Government's actions and, more particularly inactions, will have effects in the years to come. It has all the hallmarks of a hospital pass to a future energy minister who will be responsible for the power cuts that may ensue. As an aspirant future energy minister I'm not wildly impressed!

This White Paper represents a missed opportunity that could have disastrous results. Dodging the difficult decisions today may mean the lights will go off tomorrow. The only certainty in this White Paper is further uncertainty. Aspirations may make us feel virtuous but of themselves they do not keep the lights on or contribute to improving our environment.

APPENDIX B**GLOSSARY AND ACRONYMS**

<u>Abbreviation</u>	<u>Explanation</u>
CCL	Climate Change Levy
CHP	Combined Heat and Power
DCHP	Domestic Combined Heat and Power
EEC	Energy Efficiency Commitment
EESoPs	Energy Efficiency Standards of Performance
ETS	Emission Trading System
GHG	Green House Gases
ILW	Intermediate Level Waste
kWh	Kilo Watt Hours – a measure of energy consumed
LMA	Liabilities Management Authority, suggested in July 2002, will be responsible to government with a specific remit to ensure that the clean up is carried out safely, securely, cost effectively and in ways which will protect the environment
NII	Nuclear Installations Inspectorate
NUSAC	Nuclear Safety Advisory Committee
Ofgem	The Office of Gas and Electricity Markets
PIU	Performance and Innovation Unit
PV	Photo Voltaics
RWMAC	The Radioactive Waste Management Advisory Committee was established in 1978 to offer independent advice to Ministers on radioactive waste management issues.