



**Friends of  
the Earth  
Scotland**

Department of Trade and Industry  
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### **Energy Review 2006 Consultation Response**

Friends of the Earth Scotland is a Scottish charity, promoting environmental justice. As part of our work we have undertaken research into, and argued for greater investment in measures to tackle fuel poverty and promote energy efficiency, alongside increased investment in Scotland's renewable energy resource.

We are therefore pleased to offer comments with regard to the future direction of energy policy in the UK, which is the critical factor in relation to meeting climate change goals. Emerging scientific evidence on climate change highlights the need for more rapid and far-reaching action to reduce emissions. The outcome of the review must trigger the process of switching to a low carbon economy, so that the UK can make equitable and meaningful steps towards averting unprecedented global environmental change.

In relation to the critical questions in the review we believe that the Government should develop a more sustainable strategy by:

- 1. Establishing an energy 'hierarchy', reflecting relative environmental impacts, and thus prioritising increased investment in conservation, efficiency and renewables.**
- 2. Reconfiguring the grid to aid the rapid deployment of micro-renewables and combined heat and power, plus new connections for larger scale renewables where required.**
- 3. Closing the door on nuclear generation, which is uneconomic, unnecessary and unpopular with the public, and would undermine the delivery of options higher up the hierarchy**
- 4. Reserving a limited role for carbon sequestration as an interim measure to help address emissions.**
- 5. Taking radical action in relation to building standards and rapid improvement and retrofitting of the existing building stock to promote conservation and efficiency.**
- 6. Strengthening policies aimed at capping and eventually reversing emissions from the transport sector to reduce energy usage and tackle climate change both in the short and medium term.**

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There is no single solution to sustainable energy supply, but a hierarchy of options with different impacts. Rather than choosing particular technologies an ‘energy hierarchy’ (see figure 1) provides guidance to policy makers to direct policy measures. The strategy should be framed around such a clear hierarchy, which would prioritise energy conservation and efficiency, even over renewables, and prioritise renewables over carbon capture technologies. Given overall demands for energy, long-term and sufficient investment will need to be delivered in all these areas. Such a strategy would be a more cost effective and substantive solution to climate change than nuclear power, which in comparison is costly, slow to deploy and highly problematic in terms of radioactive waste. Nor is nuclear mutually compatible with such a strategy because it undermines investor confidence, public support and the potential market and role for most renewables, as well as the incentive for conservation.

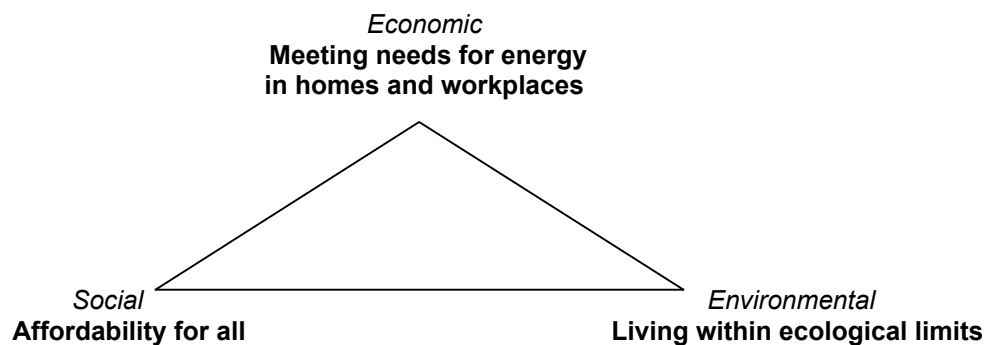
**Figure 1: Energy Hierarchy**

	<b>Approach</b>	<b>Examples</b>
<b>Best</b>	Conservation and Avoidance	Substituting walking for car use, or digital communications for flying
	Efficiency	Building insulation, public transport, better appliances
	Micro-renewables and CHP	Rooftop solar thermal, micro-CHP
	Macro-renewables and CHP	Large scale wind, wave, tidal, biofuels
	Carbon-capture and storage	Power stations with carbon-capture and storage
	Measures to stimulate carbon sinks	Offset policies and land management practices (forests, organic soils etc)
<b>Worst</b>	Nuclear power	Nuclear fission power stations

**Priorities for a sustainable energy strategy**

We believe that future strategy must be sustainable in the sense that it reconciles economic, social and environmental priorities, whilst meeting not just today’s needs but those of future generations (See Figure 2).

**Figure 2: The Sustainable Energy Triangle**



At present energy policies meet only one of these basic but mutually connected and reinforcing objectives, in that today’s energy needs are being met, although the economic costs to businesses and consumers are rising. Meanwhile the limited and irreplaceable economic resource of fossil fuels is being depleted at an alarming rate both globally, and locally in the form of North Sea reserves. Moreover, the growth of CO<sub>2</sub> emissions, and the production of radioactive waste, accompanied by depletion of non-renewable resources can only be described as unsustainable in environmental terms. Social impacts include unacceptably high levels of fuel poverty, which are set to grow as wholesale energy prices increase, whilst certain communities suffer disproportionately from mining for fuel stocks. Finally climate change will have negative social and economic consequences, both in the UK and more significantly the developing world. For this reason we believe the review is important and must establish a radically different path for UK energy policy. In this regard we are disappointed that the path set out

by the last review has not yet influenced policy to any great extent, especially in relation to delivery of efficiency, support for renewables and recognition that nuclear power is inherently unsustainable, even in the context of climate change.

## 1. Sustainable solutions to supply and demand

The government can do much more to reduce demand for energy, through greater incentives for energy conservation and efficiency. Energy conservation and efficiency measures will be the foundation of moves towards the necessary reduction in emissions by 2050<sup>i</sup>. Energy efficiency in heating is also critical to security of supply as it reduces our dependence on gas for space heating<sup>ii</sup>. Substantial improvements in efficiency are acknowledged both as highly cost effective<sup>iii iv</sup> and achievable according to the government's own research, and as stated in the last energy White Paper<sup>v</sup>. The review itself notes the progress that has been made in terms of energy efficiency<sup>vi</sup>, despite limited intervention and an era of historically low prices. On a like for like basis, the current costs per kWh of energy efficiency measures are less than for generation<sup>vii</sup>, delivering pound for pound, massively more CO<sub>2</sub> displacement than nuclear power<sup>viii</sup>. One recommended trigger for greater activity in this sphere is reforming the energy efficiency commitment (EEC) creating a cap and trade system, as proposed by the Government's own Energy Efficiency and Innovation review<sup>ix</sup>.

The UK, and especially Scotland<sup>x</sup>, could be a world leader in meeting our energy needs from renewable sources<sup>xi</sup> and this should be the second overarching goal of policy (after reducing demand). Future strategy should seek to promote a swift and continuous switch to a wide range of renewable energy sources, exploiting both existing and emerging technologies, especially micro-generation and community scale renewables which reduce transmission costs and enhance domestic energy security. In the case of the micro-generation in UK has been less ambitious and successful than other European nations such as Germany<sup>xii</sup>. In the UK levels of installation correlate closely to levels of grant funding, indicating that much more generous support programmes will be necessary until the technologies are market ready<sup>xiii</sup>. The DTI has already determined that the extensive deployment of micro-generation could lead to a substantial and cost effective reduction in carbon emissions<sup>xiv</sup>.

Scotland could and should lead the way in meeting the majority of its electricity needs from renewables by 2030<sup>xv</sup> and this should be a distinct part of, and goal of, wider UK policy. Across the rest of the UK there will be more need to adopt more efficient and cleaner fossil fuel technologies<sup>xvi</sup>.

As previously stated, to aid the focus and clarity of future policy the government should create a clear energy hierarchy to take into account the costs and externalities associated with different measures and technologies. Whilst policy should be technology neutral, there should be sufficient regulation and incentives to both capture externalities and to reflect the relative maturity of broad categories of generation and other emission reduction measures.

## 2. Addressing grid and network issues

The current need to replace ageing generation plant with sustainable energy technologies should also be seen as an opportunity to replace a supply network that is inefficient<sup>xvii</sup> (through energy lost as heat and during transmission), costing millions according to OFGEM<sup>xviii</sup>. Meanwhile the conventional grid fails to provide optimum support and opportunities for micro-renewables, household scale generation, remote renewables and distribution of heat. A recent study by the Energy Saving Trust estimates the costs range from £150m-£240m to mitigate voltage rise, £60m-£650m to mitigate reverse power flow and £2.5bn to mitigate all network issues for expansion of micro-renewables and household generation<sup>xix</sup>. Such costs should be seen in the context of ongoing work to upgrade the grid, the number of consumers and the long timescales for the investment.

Action should also be taken to allow Scotland's macro-renewable capacity to be exploited but this should be done in a strategic way after a strategic environmental assessment to identify and resolve environmental impacts. In addition grid upgrading associated with the Peterhead Carbon Capture and Storage plant should be included.

Improvements to the network must start at a household level working outwards or from the bottom up. A priority should be improvements to household metering so that individual consumers have better

information and incentives to reduce energy use. Policy should not be dictated by the pattern and nature of existing centralised generation. Instead the long-term focus should be on securing the benefits from micro-generation in terms of greater efficiency in generation<sup>xx</sup>.

### **3. Ruling out nuclear new build**

The last energy review ruled out new/replacement nuclear stations largely on economic grounds. Meanwhile, the Scottish Executive has ruled out nuclear power until such time as the waste issue is resolved. In the last three years little has changed to trigger a change in policy, as despite rising electricity prices, the costs of nuclear have also increased, in terms of decommissioning and waste disposal. Meanwhile any proposal by CoRWM will only set a course of action and it will be upwards of 20 years before a (interim at best) waste management facility is available.

Nuclear is neither needed nor essential to preventing the emergence of an energy-gap due to lack of capacity, as modelling has shown for both Scotland and the UK<sup>xxi</sup>. Nor is it needed to meet climate change targets<sup>xxii</sup>, which can be addressed by energy conservation, greater efficiency in use, the rapid roll-out of renewables and if necessary the deployment of more efficient and cleaner fossil fuel generation. Nor is nuclear necessary for energy security given that it will displace a relatively small amount of gas used in energy production, whilst requiring imported uranium in the process. In fact the prospect of enhanced large-scale capacity from nuclear new build could seriously diminish the motivation to secure energy efficiency gains<sup>xxiii</sup>, whilst any unreliability of, or security threat to, nuclear reactors could lead to significant breaks in supply thus compromising energy security.

Nuclear is uneconomic compared with energy efficiency<sup>xxiv</sup> which is a more cost effective way of both ensuring energy needs are met and emissions reduced. The economics of nuclear energy are also uncertain and unreliable based on previous estimates<sup>xxv</sup>. Using nuclear, as part of the solution to climate change, will waste money that could have been spent on more cost effective alternative means of meeting energy needs and emissions targets<sup>xxvi</sup>. The uncertainty surrounding nuclear and the resources required will entail governmental influence in the market, undermining investor confidence in renewables and potentially fiscal support, thus diminishing the sectors development<sup>xxvii</sup>. Renewables are a young and rapidly developing and diverse sector offering considerable scope for further cost efficiencies and economies of scale. Such opportunities do not exist for nuclear new build given the maturity of the technology and the nature of a new build programme<sup>xxviii</sup>. Nor will the nuclear industry create a jobs bonanza, as it is one of the least labour intensive forms of energy production, despite being highly capital intensive<sup>xxix</sup>. Further more, the employment potential of future nuclear stations will be less than for current installations due to the nature of their designs<sup>xxx</sup>.

Nuclear is unwanted and unpopular according to most polls<sup>xxxi</sup>, with the public favouring renewables as their preferred solution to climate change. People who have invested in micro-renewables have cut their fuel bills and will see a long-term return on their investment. People who invested in British Energy lost their investment, while most of the company's liabilities had to be met by the taxpayer. Popular disapproval will grow if the UK is saddled with nuclear generation for another 40-50 years (a risk identified by the Sustainable Development Commission) whilst other countries are able to adopt lower cost renewables or the government is obliged to bail out the industry once again. The nuclear industry is also unpopular with the scientific community according to a letter by 40 leading scientists<sup>xxxii</sup>. Nor is nuclear acceptable to insurers concerned about exposure to risk<sup>xxxiii</sup>, leaving the industry effectively underinsured and therefore subsidised by government<sup>xxxiv</sup>.

### **4. The role of carbon sequestration**

The UK and Scotland have relied on fossil fuel generation as an important part of the generation mix. In Scotland the switch to renewables and phase out of coal can be more rapid<sup>xxxv</sup>, whereas in England this will be more difficult to achieve in the medium term up to 2030. Friends of the Earth Scotland therefore foresees a potential role for carbon capture and storage (CCS) from large fossil fuel plants, as an interim measure to meet pressing climate change targets.

CCS should not however be prioritised ahead of energy conservation and efficiency and the rapid adoption of renewables. Nor should the future deployment of CCS impair or detract from the need to decentralise energy production, therefore applying to a small number of large plants. CCS must not be

used to promote a 'business as usual' solution or techno-fix to addressing the unsustainability of energy use and demand, not least because it would then detract from efficiency and renewables investments<sup>xxxvi</sup>.

The key advantage of CCS is that it may well be necessary for the delivery of CO<sub>2</sub> reductions in the developing world, and the UK and Scotland through the Peterhead scheme can pioneer and promote this technology as a means to win export markets.

## **5. Action to provide affordable heat and tackle fuel poverty**

Current measures to address fuel poverty could work in the case of most households, although existing programmes neither sufficient in scale or scope. Sizeable reductions in the energy usage of existing buildings can be achieved from both existing and emerging technologies. The Energy Saving Trust has demonstrated that there is substantial scope for savings and emission reductions from the residential sector<sup>xxxvii</sup>. We believe urgent action is needed in the following areas:

1. Better building standards for new build properties, renovations and extensions, including the incorporation of micro-renewables (and better enforcement of standards to ensure delivery in practice).
2. More generous grants direct from the public sector targeting fuel poor households and poor quality buildings/neighbourhoods. Such programmes should be funded on a long-term secure basis.
3. New incentives and reforms for energy conservation such as council tax rebates.
4. Reform of the Energy Efficiency Commitment as proposed in the Defra/Treasury review in 2005.
5. Demolition and replacement of the least efficient 'hard to heat' homes, where investment in insulation is not cost effective

It has been demonstrated that it is possible to reduce emissions from the household sector by 60% by 2050 allowing the sector to make an equitable contribution to emission reductions, without compromising comfort and service levels<sup>xxxviii</sup>.

## **6. Cutting energy use and emissions from the transport sector**

Transport is a major and growing user of energy in the form of fossil fuels and also accounts for a substantial and expanding share of CO<sub>2</sub> emissions<sup>xxxix</sup>. Without tackling the growth in transport the key aims of the energy strategy will not be met - namely energy security and emissions reductions. Nor will improvements in vehicle efficiency and the greater use of bio-fuels alone address growing emissions from road transport. Plans to accommodate the growth of aviation are incompatible with reduced energy usage and achieving climate change goals<sup>xl xli</sup>. Current policies do little to counter existing trends and in some cases reinforce them, in the case of Government support for new roads and runways. Urgent action is needed to:

- Ensure the costs of transport use fully internalise environmental costs through reforms to taxation such as vehicle excise duty, fuel duty and parking charges as well as air passenger duty and tax on aviation fuel.
- Invest in alternatives to road transport and aviation to promote modal shift including facilities for cycling and walking.
- Rigorously apply standards for new developments in the planning system, to prevent the growth in new car journeys.
- Review and rigorously enforce speed limits to promote more efficient driving

## **Summary & conclusions**

A logical and rigorous analysis of the available evidence including factors such as carbon displacement, cost effectiveness, ease of deployment, potential for innovation and externalities suggests a hierarchy for future decisions on investment. Based on these factors a logical and effective strategy can be built around the priorities shown in Figure 1. Otherwise, we are gravely concerned that the energy review may reinforce and replicate existing patterns of inefficient energy generation and use, and unsustainable levels of CO<sub>2</sub> emissions and radioactive waste. Instead the lessons from the last energy review should be learnt. This means radical change in terms of investment, fiscal measures and regulation, rather

than a half-hearted and piecemeal approach to the delivery of a low carbon economy. In this respect we remain convinced that solutions in the form of energy/conservation and the rapid adoption of renewables await adoption given the right strategy and sufficient political will.

Yours Faithfully,

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