

Friends of the Earth Scotland's response to the UK Energy Review

Introduction

Friends of the Earth Scotland (FoES) is a major environmental campaigning, policy and research based NGO with over 5,000 members. FoES focuses heavily on issues such as climate change and has, therefore, a central interest in energy and energy efficiency.

Climate change is the most serious problem facing the globe not only in terms of the environment but also for global health and the global economy. In Scotland it will mean more unpredictable weather, more storms and rising seas, which could lead to floods, droughts, failed harvests, the spread of disease and whole species being wiped out. It could even mean changes to the Gulf Stream with Scotland getting cooler while most of the world warms up.

It is vital, therefore, that we take on board the recommendations of the Royal Commission for Environmental Pollution and reduce greenhouse gas emissions by at least 60% by 2050. The UK Energy Review should be a major step on the road to achieving this target and must put energy efficiency and renewables at the heart of future energy policy.

This response will look at the specific headings and questions highlighted in the UK Energy Review but will very much focus on the Scottish perspective which, in many ways, is different from the UK perspective as a whole. It will also try to highlight the many possible opportunities for positive measures that tough energy and climate targets present.

Security of Supply

What is the risk of a security of supply failure over a 5-year/10-year/20-year horizon?

By introducing and working towards tough renewables and energy efficiency targets now, there should be little risk of a security of supply failure in the future. With Scotland having the potential to supply 75% of the UK's energy demand from renewables, according to the Garrad Hassan report, there should be no need for new nuclear reactors and no shortfall in supply. The arguments for both renewables and energy efficiency and that against nuclear will be expanded in the following sections.

Climate Change

Is it right to give climate change and other environmental objectives greater emphasis within overall energy policy?

It is necessary for climate change and other environmental objectives to receive the greatest emphasis within any overall energy policy. Some of the potential implications of climate change and the urgent need for action have already been highlighted and economic factors will not be benefited in the long term by giving them precedence in the short term. There are, additionally, a number of synergies that should be stressed in the short term. Renewables, for example, provides excellent economic opportunities for job creation and the exporting of new technologies. Energy efficiency schemes will also require skilled workers to install measures and will improve public health, reducing the national health bill.

Over what timescale?

A long term approach will be necessary to ensure enough stability in the market to allow investments into schemes such as renewables to take place. Friends of the Earth Scotland entirely supports the PIU's recommendation that "*where possible, Government should adopt long lasting policy signals in order to affect energy investments and ensure long-term change*". To this end the government should commit itself to the RCEP's target of a 60% reduction in greenhouse gases by 2050 as soon as possible. This should be backed up with interim targets at the UK and devolved nations levels.

To what extent is it desirable for the UK to set a further lead at national level if we wish to influence effectively the international debate?

In chapter three of the PIU report the possibility of gaining "first-mover" advantages from unilateral action on climate change is discussed. There would appear to be a great potential here for the UK to take the lead and benefit economically at the same time. By developing renewables and other low carbon technologies the UK will open up a potentially huge export market, as other countries begin to wake up to their global climate responsibilities.

What would be the implications for our industrial competitiveness, whether positive or negative, of taking further action to reduce emissions?

If the UK goes down the route of promoting renewables and energy efficiency to reduce emissions the implications for our industrial competitiveness could be very positive. Taking renewables as a case study, the European Commission estimates that a doubling of energy from renewables from 6% to 12% could create between 500,000 and 800,000 new jobs. The UK, and Scotland in particular, is ideally placed to capture many of these jobs. Scotland has skill bases in both the traditional heavy industry and new hi-tech sectors that would be necessary to develop and manufacture renewable technologies. The declining oil rig fabrication industry is a case in point. Yards used in this industry could provide well-located facilities for wind and wave development and many of the skills employed are transferable. The same is true for the declining nuclear industry in Scotland where renewable planning applications have been proposed in Hunterston, Chapelcross and near Dounreay. Again, the skills employed in the nuclear industry are transferable to those needed in the renewables industry. The Vesta wind turbine plant in Campbeltown on the Mull of Kintyre should generate around 170 jobs.

Energy Efficiency and Combined Heat and Power

What contribution can we expect energy efficiency to make to reducing carbon emissions by 2010/2020?

Energy efficiency is the most sustainable form of energy policy and it is essential that we make major advances if we are to achieve a low carbon energy system. Taking a look at buildings, in the UK energy use in buildings accounts for a massive 40% of greenhouse gas emissions. There are already a number of schemes operating aimed at improving energy efficiency, however, progress has been very slow. New initiatives should be introduced and current schemes strengthened to ensure that the PIU's targets of a 20% improvement in energy efficiency by 2010 and a further 20% by 2020 are achieved.

What contribution can we expect CHP to make to reducing carbon emissions by 2010/2020?

Combined Heat and Power has been adversely affected by the low price for wholesale electricity. The government's CHP strategy must properly incentivise renewed investment in CHP. CHP should also benefit from reduced over-capacity as a result of closures of old plant.

What instruments can we use to bring about the desired savings and what evidence is there about the effectiveness and cost effectiveness of different measures?

Building Standards

Friends of the Earth Scotland welcomed the Sixth Amendments to the Building Regulations that were introduced in Scotland in April and recognize the energy savings which will result from them. However, in Scotland nine out of ten houses fail to meet this new standard and at the rate new houses are being built it will take one hundred years until the Scottish housing stock is up to the current standard. This is not an acceptable situation. Scotland is committed to achieving an equitable contribution towards the UK's Kyoto targets; this will not be possible unless the energy efficiency of existing buildings is tackled; simply building new energy efficient buildings will not be good enough. We believe that new building standards should be introduced which cover existing buildings in a meaningful way. In the domestic sector this would have the major knock-on benefit of aiding the Scottish Executive's target for the eradication of fuel poverty in Scotland within fifteen years. In the commercial sector this would help to improve the profitability and competitiveness of businesses.

It should be possible to implement standards which require that, where extensions and alterations are being carried out, buildings be made to comply to some degree. If work is being done, especially extensions, which would increase the environmental impact of a building, then the overall environmental impact of that building should be considered in the public interest.

HECA

The Home Energy Conservation Act was introduced in Scotland in 1997 with guidance that 'substantial improvements' in energy efficiency meant around 30%. This was adopted by English local authorities. In Scotland, however, many negotiated the figure downwards with the Scottish Office and some now have targets as low as 9%.

The 2000 Scottish Executive HECA report shows a national figure of 2.86% improvement in energy efficiency (equivalent to 1.4% pa). This results in 21% over 15 years, as opposed to 30% over the same period which was the intent of the Act. However, the Act is vague and talks of 10 to 15 years. Current progress falls far short of both figures.

In addition these figures take no account of deterioration in the stock which is generally estimated at around 1% per annum. Therefore, factoring this in results in an improvement of only 6.5% for Scotland over 15 years.

It gets even worse when household numbers are estimated to rise by 12% by 2012 and CO₂ emission 6%. Therefore even though we may see a minuscule increase in energy efficiency, total energy use in the domestic sector will increase. Although the Act is concerned with energy efficiency it is part of the strategy for overall energy use.

HECA could be a very useful mechanism for improving home energy efficiency and should, therefore, be revised. The Act could be made far more effective by introducing mandatory 30% targets for all local authorities and providing additional resources to back these up.

Non-domestic Sector

While the PIU sets energy efficiency targets for the domestic sector there is no equivalent for the commercial and industrial sectors. This situation needs to be remedied. There are many possible measures which could be brought in to tackle poor energy efficiency in this sector. Some of the measures which the Energy Review should consider include: extending the Energy Efficiency Commitment to SMEs; reflecting environmental performance of buildings in business rates; and rewarding high energy efficiency commercial development.

Renewables

There is also great potential for more joined up thinking between those working on energy efficiency and those promoting very small-scale renewable technologies such as solar power and micro combined heat and power. One very simple way of reducing our demand for electricity is to encourage us to make our own from the natural energy sources that surround us.

What possible ways are there for encouraging (or requiring) the owners of the existing stock of dwellings and other types of buildings to improve market efficiency and to incentivise efficiency savings?

Building Standards

See above.

Energy auditing

The energy auditing and rating of all buildings should be introduced as a matter of urgency. The EU Directive on the energy performance of buildings, which is likely to require member state compliance within the next three years and by 2008 at the very latest, will make this mandatory. Energy auditing and rating would: build a detailed picture of the UK housing stock; assist in the production of local housing plans; allow for resources to be targeted (including grants, loans and advice); give homeowners incentives to invest in improvements; give tenants and buyers information regarding potential homes; and provide indicators of sustainability.

Reduce VAT on energy efficiency measures and products

The Energy Review should seek to reduce VAT to 5% on all insulation materials installed under Government grant schemes and on energy efficient central heating and hot water systems (including micro CHP and solar thermal) installed in non-grant schemes when householders employ contractors. At present these products are discriminated against as other energy saving materials installed are charged at 5% VAT. VAT should also be reduced to 5% on DIY energy saving materials bought by

the householder to install. We believe that EU law does allow this reduced rate of VAT, despite government claims to the contrary.

Renewables

What contribution can we realistically expect renewables to make by 2020?

Scotland has around 23% of the total European wind energy resource, a very large part of the UK's marine energy resource and opportunities for biomass and further hydro. The potential for renewable energy development in Scotland is, therefore, enormous. The Garrad Hassan report states that renewable energy generation in Scotland could meet 75% of the UK energy demand, the equivalent of 60GW. The suggested PIU renewable targets of 10% by 2010 and 20% by 2020 could then, obviously, be easily surpassed in Scotland and therefore emphasis must be put on setting, and achieving, specific, ambitious Scottish targets. The Scottish Executive has gone a long way to doing this recently by setting a target of 40% of Scotland's electricity supply coming from renewable sources by 2020. The unambitious target of 18% by 2010, which looks likely to be met early, must now be revised to give the Scottish Executive an opportunity to exceed even the 40% target. A target of 25% by 2010, for example, would be much more meaningful.

What impact will increased reliance on renewables have on the risk management of supplies including flexibility, diversity and the availability of back up?

There are a huge number of different ways of capturing renewable energy and they all have different characteristics. Plants and biological waste for example can be turned into gas and used in a very similar way to existing gas supplies. Tidal power, though not available all the time, is very predictable and in some designs the energy can be stored until it is needed in the same way as hydro electric dam. The large hydro power stations provide some of our most prized electricity today as they can produce large amounts very quickly to help keep the lights on if there is a sudden surge in demand. Pumped storage, which currently benefits mainly nuclear energy, will be important in the future for smoothing out the delivery of renewable energy.

Out of the technologies likely to contribute most to 2010 renewables targets only wind might pose a potential problem for security of supply. However, at the UK level, the National Grid, whose job it is to make sure the lights stay on, says that *"sufficient fast response and reserve services will be available for a situation in which the entire 2010 renewables target is met by wind."* In Scotland, there are strategic issues which need to be addressed and the government should take a leadership role.

Wind energy also coincides well with the period of peak electricity demand. Demand often peaks on cold windy winter days, just when wind turbines are at their most productive.

The government must take the lead on establishing adequate infrastructure for renewables as it has been demonstrated that the market clearly will not.

Transmission, Distribution and Trading

In what ways would the transmission and distribution system need to adapt to facilitate renewable supplies?

It is crucial that when NETA is expanded to BETA and encompasses Scotland that renewable energy sources are not placed at a disadvantage. At present, NETA favours energy sources which generate a guaranteed, predictable energy supply. This situation must be altered before BETA is introduced.

Nuclear

The PIU recommended keeping the nuclear option open. We are entirely opposed to this view. Nuclear power is the ultimate unsustainable form of energy, creating wastes that will be dangerous for thousands of years and it should have no role in Scotland's sustainable energy future beyond the life of the current stations.

It is wrong to consider nuclear as a carbon free technology. When a nuclear reactor uses nuclear fission to produce heat and electricity virtually no CO₂ is emitted. However, the mining and fabrication of nuclear fuel and the construction of stations uses considerable amounts of fossil fuels.

Nuclear power generation creates far too many major problems for which there is no solution. In large doses radiation can cause death by radiation sickness. At lower doses it causes a range of problems such as cancer or genetic damage. In normal use, all nuclear stations have routine emissions of radioactivity to air and water, and since there is no safe level of radiation all nuclear power stations are adding to the health burden of the local population. More severe problems are likely to be caused by nuclear accidents.

Accidents - over its forty-year history, accidents and breaches of safety culture have become just another part of the routine of the nuclear industry. In Scotland alone there have been a number of incidents. At Dounreay, for example, there has been a catalogue of disasters with an explosion in 1977, a 1997 report finding waste where it should not have been and three workers being contaminated with plutonium in 2000, to name just a few. As a result an inevitable part of nuclear power is the risk of a catastrophic release of radiation. The unreliability of the nuclear industry has been highlighted recently in Scotland with Torness power station likely to be offline for up to a year as a result of a failure in the circulation fans.

Nuclear Waste - nuclear power produces long-lived radioactive wastes for which no disposal route has been found. Back in 1976 the Royal Commission on Environmental Pollution stated: "we must assume that these wastes will remain dangerous and will need to be isolated from the biosphere for hundreds of thousands of years. In considering arrangements for dealing safely with such wastes man is faced with timescales that transcend his [sic] experience." Despite having had over forty years to deal with the problem created, no repository for high level wastes has been established anywhere in the world. Forty years' research has only demonstrated the failure of the idea that nuclear waste can be "disposed of" underground, without leaking back into the environment and threatening the health of future generations. In 1997 the UK Government rejected the nuclear industry's plan to begin building a nuclear dump because of the appalling science that was put forward to support the plan. Friends of the Earth strongly support the Scottish Executive's stance that no

new nuclear build can take place until a solution to the issue of waste disposal is found.

Proliferation and Nuclear Terrorism - plutonium is made in nuclear reactors. Some countries such as France and the UK separate it so that it is readily available as the raw material for nuclear bombs. Monitoring the stocks of plutonium both in the spent fuel and in the raw form is difficult and the International Atomic Energy Agency lack confidence in their own system. They have commented: *“The IAEA’s verification system cannot physically prevent diversion of nuclear materials or the setting up of any undeclared or clandestine nuclear weapons programme”*. Some years ago New Scientist magazine carried details of how to make a simple nuclear bomb the size of a large suitcase.

In 1976 the Royal Commission on Environmental Pollution concluded on plutonium that: *“we should not rely for energy supply on a process that produces such a hazardous substance as plutonium unless there is no reasonable alternative.”*

Nuclear power stations are also potential terrorist targets. Recent world events have served to highlight our vulnerability to terrorist activity and evidence suggests that nuclear power stations have already been considered as targets, including a plot relating to an Australian nuclear research reactor at the time of the Sydney Olympics. David Kyd of the International Atomic Energy Agency admitted that nuclear power stations were not built to withstand the impact of a wide-bodied passenger jet full of fuel. He told the Times that: *“these are vulnerable targets and the consequences of a direct hit could be catastrophic”*. A report commissioned by the European Parliament concluded that a plane crashing on Sellafield could release forty times as much radioactivity as Chernobyl.

Cost - A really free market in energy would never invest in nuclear energy - it is far too expensive. City analysts told the Herald newspaper that such a politically sensitive and long term project would never be funded by the private sector. The situation that British Energy is in at present gives us absolute proof that this is the case. The Government has, we believe mistakenly, just agreed to give British Energy a loan of £410 million to prevent it facing insolvency. With a market value of just £100 million and existing debts of £850 million, UK taxpayers have been left to foot for a loan that no commercial lender would be willing to risk.

Research financed by the British Nuclear Industry Forum concluded that nuclear power required a subsidy of the order of £232 per year per kW of installed capacity. Already some renewables are cheaper than coal and nuclear and require no subsidy.

A recent review saw the expected costs of cleaning up the contaminated nuclear facilities at Sellafield rise from £27bn to £34bn. The decommissioning of Dounreay has been estimated at £4.5 billion and as no full size nuclear reactor has yet been fully decommissioned anywhere in the world the actual costs remain unknown.

Gas and Oil

Will the international gas markets deliver access to the supplies we need in the longer term at competitive prices?

While gas and oil may have to play a fairly major role in the energy mix in the short term, in the longer term we should be focusing on a renewables dominated energy policy. The instability of global fuel markets combined with the environmental implications reinforces the message that we should be promoting indigenous renewables rather than importing oil and gas. Despite the Climate Change Levy the full external costs of using oil and gas are still not factored in.

Coal

To what extent and over what timescale can we expect cleaner coal technologies to impact on an extension of existing coal options?

We cannot continue to burn coal in existing power stations, releasing huge amounts of carbon dioxide, and still meet our obligations under Kyoto and the agreements which will follow. It is likely that in the short to medium term there will be a role for coal in energy policy and we are supportive of new innovations in clean coal technology such as the Integrated Gasification Combined Cycle (IGCC). In Scotland, however, with the huge potential for renewables it would make most sense for research and development funds to be put into renewable technology in the first instance.

Transport

What are the implications of the ‘hydrogen economy’ in transport for the UK’s renewable energy policy objectives and low-carbon transport objectives?

The first priority should be to reduce the use of private motorised transport. Investment in road upgrades that promote car use should be discouraged and mechanisms to encourage cycling and walking promoted.

In addition, we share the Government’s conviction that the long-term solution to rising emissions from transport includes a shift to fuel-cell-powered vehicles using renewably generated hydrogen. However, the PIU’s target that 20% of UK electricity be generated from renewable sources by 2020 is only 7-15% of what would be needed to power all our electricity and transport needs in 2050. This suggests that the government should adopt a higher target for the amount of renewable electricity generated by 2020.

Until sufficient renewable power is available to meet all our electricity needs, it is likely to be inefficient to use renewable energy for transport purposes (though it might make sense to use renewable power to produce hydrogen at times when power output is high, but demand low).

It is unlikely that this will happen before 2020. At current rates of progress, it is also unlikely that motor manufacturers will make hydrogen fuel-cell-powered vehicles widely available until government policy ensures a strong market for them.

In the meantime, therefore, as well as reducing demand, Government should focus on promoting more efficient internal combustion technology and greater technological diversity i.e. differently powered vehicles for different transport needs (e.g. electric vehicles for regular journeys over short distances, biofuels for rural transport). They

should also prepare the ground for the hydrogen revolution. This principally implies setting tough targets for the uptake of low emission vehicles, backed by high fuel prices and differentiated road and company car taxes, but should also involve incentives for fuel cell powered fleet vehicles.

The rapid growth of aviation represents a serious long-term threat to the low-carbon policy, as technological options for reducing emissions are limited. Policy should focus on making airlines pay the full cost of their environmental impact, through an aviation fuel tax (agreed at European level) and by promoting alternatives such as teleconferencing and rail. Airport provision should not be based on the 'predict and provide' methodology. Additional aviation emissions should be included in the Kyoto agreement.

Conclusion

The UK Energy Review should recommend:

- adopting the RCEP's target of a 60% reduction in greenhouse gas emissions by 2050;
- setting tough renewables targets for the UK and putting the infrastructure and resources in place to achieve them;
- supporting the PIU's domestic energy efficiency targets of 20% by 2010 and a further 20% by 2020 and introducing commercial energy efficiency targets;
- ruling out, once and for all, any nuclear new-build;
- promoting a reduction in private motorised transport.