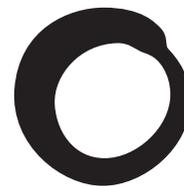


# Friends of the Earth Scotland

## SUBMISSION TO THE ENTERPRISE AND CULTURE COMMITTEE INQUIRY INTO RENEWABLE ENERGY

JANUARY 2004



**Friends of  
the Earth  
Scotland**

### Executive Summary

- **To date Scotland has achieved a reduction of just 4.9% in greenhouse gas emissions since 1990 (less than half the 12.8% average achieved by the UK as a whole), climate change emissions from the energy sector increased by 27% between 1990 and 2000.**
- **Increasing the proportion of electricity from renewable sources in Scotland is an essential component of a Scottish climate change strategy and should be linked to clear commitments and targets to both reduce Scotland's dependence on hydrocarbons across all sectors, and to improve energy efficiency.**
- **Scotland has a tremendous natural resource for renewable energy, the development of which provides significant employment opportunities and should be used to ensure that communities benefit from schemes.**
- **Scottish based manufacture, assembly and construction of renewable technologies (including wind) needs to be encouraged and funding schemes established to support communities wishing to develop their own schemes and meet their own energy needs.**
- **A Scottish energy strategy should be developed, including stronger strategic guidance on renewables development, targets for energy efficiency and ruling out new nuclear power.**

### 1) Context - Renewable Energy and Climate Change

A UN panel of scientists and over 160 governments agree that the burning of fossil fuels (coal, oil and gas) is causing our climate to change dramatically. Last year the UK Government predicted that global warming will expose many millions more people to the risks of hunger, drought, flooding and diseases like malaria, and produce irreversible losses of species. In Scotland 1 in 12 properties are deemed to be at risk of flooding. <sup>(1)</sup>

The Royal Commission on Environmental Pollution recommend that the UK government take steps to cut carbon emissions by 60% by 2050. <sup>(2)</sup> It is essential that Scotland makes an equitable contribution to the UK government's commitment under Kyoto to reduce greenhouse gas emissions by 12.5% against 1990 levels by 2008-2012.

To date Scotland has achieved a reduction of just 4.9% in greenhouse gas emissions since 1990 (less than half the 12.8% average achieved by the UK as a whole) <sup>(3)</sup> and is not on track to deliver our share of the UK commitment of a 20% reduction by 2010 or 60% by 2050, as recommended by the Royal Commission on Environmental Pollution and referred to in the Energy Review. The urgency with which we take action to reduce climate change emissions should not be underestimated; for every year that we fail to address the challenge, the scale of the resulting threat increases.

Emissions from the energy sector in Scotland comprise 34% of Scotland's total emissions and have risen by 27% between 1990 and 2000. In order to meet climate change targets, securing a significant proportion of electricity is supplied from clean renewable energy is essential.

The Scottish Executive have made positive commitments to environmental justice. In an international capacity this requires Scotland to massively cut greenhouse gas emissions, without this the effects of climate change threaten the welfare and livelihoods of many citizens in an international context.

## **2) Scotland's Renewable Energy Capacity**

With around 23% of the total European wind energy resource, a very large part of the UK's marine energy resource and opportunities for biomass, the potential for renewable energy development in Scotland is enormous. A Scottish Executive commissioned report by Garrad Hassan estimated that Scotland could generate more than its total electricity use from renewable sources without damaging any designated nature conservation areas. Using up-to-date information on each resource, modelled against economic, environmental, planning and technical constraints, the study estimates the renewable energy potential both on and off-shore Scotland to be 75% of the UK totalled installed capacity (59 of 79 GW).<sup>(4)</sup> Scotland currently generates just 13% of its energy needs from renewable sources, the majority of which comes from hydro.<sup>(5)</sup>

Garrad Hassan have identified onshore wind as one of the cheapest of the renewable energy technologies with the "available" 11.5 GW (i.e. over twice the consumption of electricity in Scotland) modelled at under 3 p/kWh in 2010. They also note the huge marine potential from offshore wind, wave and tidal (46.5 GW at under 5-6 p/kWh in 2010).

## **3) Public Support for Renewable Energy**

Public opinion surveys conducted by Greenpeace and RSPB show high levels of support for renewable energy developments, with acceptance levels for technologies such as wind and hydro-power much higher than for coal or nuclear generation. NOP and an Energy Saving Trust poll found that 85% of the public wanted government to invest time and money in renewables, while only 10% thought government should invest in new nuclear facilities.<sup>(6)</sup>

## **4) Economic Opportunities from Renewable Energy**

The development of renewable energy provides excellent economic opportunities for job creation and the exporting of new technologies. 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 NOI Scotland factory in Kirkcaldy currently employs 90 people to manufacture wind turbine blades and the Danish wind turbine manufacturer Vestas currently employs over 100 people at Campbeltown in Kintyre.

Ocean Power Delivery estimate that a significant wave power installation programme in Scotland would lead to around 150 long-term direct jobs for each 10 MW/year of installed capacity<sup>(7)</sup> and potentially it is estimated that between 750 and 1000 direct jobs per 100 MW/year of export sales could result.<sup>(8)</sup>

A recent report produced for WWF Scotland 'A Smart, Successful, *Sustainable* Scotland: the potential for green enterprise and green jobs' estimated that over 24,000 jobs could be created from investing in wave power and solar water heating.<sup>(9)</sup> The UK Renewables Advisory Board has recently suggested that up to 35,000 new jobs would be available in the UK renewable energy sector by 2020 as a result of a viable, long term renewable energy industry.<sup>(10)</sup>

## **5) The Role of Onshore Wind**

Onshore wind is currently the best developed renewable energy technology and has a critical role to play in pursuing a more sustainable energy policy for Scotland:

- Scotland has 23% of the European wind energy resource and the resource is much greater during the colder months of the year, when energy demand is at its highest.
- Onshore wind energy is highly cost competitive, with many wind farms producing energy more cheaply than nuclear. The UK Government's figures show that all wind power will be cheaper than nuclear power by 2020.

- Wind energy is one of the most popular energy technologies. Opinion surveys regularly show that just over eight out of ten people are in favour of wind energy, and less than one in ten (around 5%) are against it.
- Wind energy works. Denmark already gets 20% of its electricity from wind power.
- Wind energy offers job opportunities. The wind industry could bring thousands of new jobs to Scotland, many of them using offshore engineering skills developed by the declining oil and gas industry.

20% of Scotland's electricity needs could be produced by on-shore wind over an area of less than 2% of Scotland, and given Scottish Natural Heritage's 'Strategic Locational Guidance',<sup>(4)</sup> wind farms need not pose a threat to designated sites. Most of the new renewable energy capacity required to meet the target for 2010 will have to come from on-shore wind power. Other technologies are likely to make up most of the extra capacity needed to meet the 2020 target.

There is no evidence to suggest that wind farms deter tourists, indeed many wind farms are themselves tourist attractions. A Mori poll was undertaken in 2002 regarding wind farms in the Argyll area, and 80% of tourists said they would be interested in visiting a wind farm if it were open to the public with a visitor centre. Over 90% of tourists visiting Argyll said the presence of windfarms made no difference to their decision to return. The UK's first commercial wind farm in Cornwall received 350,000 visitors in its first 8 years of operation.

Friends of the Earth support a pro-wind web resource called Yes2Wind ([www.yes2wind.com](http://www.yes2wind.com)). We agree that not everywhere is suitable for the development of wind power and that a balance needs to be struck between the urgent need to install wind power capacity to reduce climate change emissions and the need to protect Scotland's important landscapes.

## 6) Areas for Action

### i) Community Rights and Roles

A number of issues need to be addressed to ensure the most appropriate types of onshore wind development occur, particularly relating to the role and rights of communities in wind energy schemes. The Scottish Executive should investigate methods to ensure that communities are not only fully involved and consulted, but receive positive rewards and benefit directly from developments. It is important to consider both how to maximise jobs from developing new renewables, and show to support communities in developing their own projects or being involved in larger scale renewable projects.

**Recommendation: The Scottish Executive should consider how the planning system can encourage community benefit, in particular in terms of planning gain (i.e. not cash bribes but real involvement and opportunities for ownership).**

The predominance of large scale, developer led projects has contributed to difficulties associated with local acceptance of new renewable energy. As a result, smaller scale renewable developments are likely to be more amenable to local communities. The Scottish Community & Household Renewables Initiative (SCHRI) has shown that there is a high level of interest throughout Scotland in developing smaller scale renewable projects. Experience in Denmark has shown that small-scale renewables can greatly assist in overcoming planning familiarity and public acceptability barriers that can currently restrict renewables investment.<sup>(11)</sup> In both Germany and Denmark a mixture of commercial scale wind farms and smaller sites developed by landowners and communities occurs. This has been achieved through financial support mechanisms that support small scale investment. Developers can use community benefit payments as investment funds so that communities can either take a stake in larger projects, or use this funding to support their own schemes. Finance packages can also be developed to support communities, small businesses and even individuals in raising money to build renewable projects.

**Recommendation: Support mechanisms such as a Scottish loan scheme to support community ownership of projects need to be considered.**

#### **ii) Strategic Guidance**

The approach taken by Scottish Natural Heritage to classify Scotland's land into three distinct zones on the basis of suitability for consideration for wind energy development is welcome. Further action would improve the delivery of renewable electricity in Scotland:

- Local authorities should be required to assess the potential for renewables within their area, identifying potential locations and setting targets in development/structure plans. This would ensure that they all contribute to Scotland's renewable electricity targets.
- Planning authorities should ensure they fully consider the cumulative impact effect to prevent specific hotspots.
- The focus for wind development should not solely be on remote rural areas. It is important to maximise opportunities to utilise wind near to where electricity is consumed, and encourage development opportunities within Scotland's Central Belt and in brownfield sites.

**Recommendation: Development of national strategic locational guidance would reduce the likelihood of cumulative impacts and support each local authority in contributing to renewables development in Scotland.**

#### **iii) Scotland's Renewable Electricity Targets**

Given the scale of Scotland's renewable resource, the fact that Scotland currently sources about 13% of its electricity from renewables and the scale of onshore wind applications currently being progressed, the Scottish Executive's target of 17.5% of electricity from renewables by 2010 will be easily met.

**Recommendation: The 17.5% target should be revised upwards to 25% to ensure continued momentum in renewables development through to 2010.**

#### **iv) Grid Infrastructure**

Grid infrastructure requires considerable investment. This will be particularly necessary to ensure that communities in rural Scotland can benefit from renewable energy developments and that offshore wind and wave energy schemes are facilitated.

Research suggests that local transmission system constraints limit the onshore wind resource to 3.1-3.4 GW and for offshore wind and wave figures are 2.5 and 0.3 GW respectively <sup>(4)</sup>. The grid on the West and North coast is a severe limitation to the generation of offshore wind, wave and tidal energy in Scotland. Without upgrading the grid many communities will be unable to benefit from the development of renewable energy generation schemes, particularly those in parts of the Highlands and Islands. The main transmission network in South Ayrshire and Galloway also needs upgrading, as an estimated 250 MW of additional generation could be accommodated at a cost of approximately £45m to reinforce the 132kV network. 500 MW could be accommodated by upgrading the grid in the area from 132kV to 275kV at a cost of £65 million. <sup>(12)</sup>

**Recommendation: The Scottish Executive should work with generating companies to identify funds to facilitate grid upgrades.**

#### **v) Resources**

The Executive should further stimulate research and development of a broad mix of renewables including those that work well on a small scale.

**Recommendation: Further investment is needed to stimulate the development of wave, tidal, offshore wind, solar and biomass, and in the infrastructure which will help renewable energy develop.**

**Recommendation: Additional resources for planning authorities and SNH would assist in rigorous application of the current SNH and NPPG guidance and ensure that it is the best schemes that progress.**

#### **vi) Scottish Enterprise**

The enterprise network should prioritise support to assist in the development of green energy projects. The Executive should provide financial support for practical courses in renewable energy and support for training/skill development/apprenticeships in renewable energy technology.

**Recommendation: The proposed green jobs strategy should include opportunities in fabrication and maintenance of renewable energy installations.**

#### **vii) Electricity Trading Arrangements**

Since it came into operation NETA appears to adversely affect smaller embedded and renewable generators. The costs and financial risks involved in setting up their own systems for administering trading and forecasting output are unfavourable for small generators. In their review of NETA Ofgem found that prices obtained by smaller generators had fallen by 17% and output by 44%. Analysis of the Ofgem figures indicates that, in April and May 2001, the profit per unit of output for small generators fell by 72% compared with the same period in 2000.<sup>(13)</sup>

NETA penalises generators who fail to meet their contract requirements. Over the first two months of NETA, the Ofgem review shows that such generators have had to pay on average £60 per MWh for any shortfall. Because the output of electricity from generating sources such as wind and CHP tends to be more variable than from other sources, their output is particularly exposed to these imbalance charges. Following the introduction of NETA, Ofgem reports that, in April and May 2001, the output from small CHP and wind generators dropped significantly (61% and 13% respectively) compared to 2000.<sup>(13)</sup>

It is crucial that when NETA is expanded to BETTA and encompasses Scotland renewable energy sources are not placed at a disadvantage because of the nature of the more intermittent supply.

### **7) Energy use in Scotland – The Bigger Picture**

#### **i) Electricity Demand**

Given the 11% increase in energy consumed in Scotland between 1990/1991 and 2000/2001 (29,851 GWh to 33,011 GWh)<sup>(14)</sup> a target based solely on the percentage of electricity to come from renewables, without being accompanied by a target for total electricity use or total fossil fuel resource use could potentially have less impact on reducing emissions and dependency on fossil or nuclear sources than necessary if the overall energy use continues to increase. Targets for overall consumption or for other forms of energy use are needed (alongside renewable electricity) and renewable development must be used to replace the generation capacity currently provided by non-sustainable fossil and nuclear sources.

#### **ii) Energy efficiency**

An ambitious energy efficiency programme is also needed, in particular the adoption of the UK government's Performance and Innovation Unit's energy efficiency target of a 20% increase in efficiency by 2010 and reforming the operation of the Home Energy Conservation Act (HECA) in Scotland. (To date, Scottish councils have made little more than half the desired energy-efficiency improvements set out in the Act and achieved less than a 2% reduction in carbon dioxide emissions on 1990 levels).

### **8) Conclusion**

Scotland has an exceptional opportunity to reduce its climate change emissions and benefit from the economic opportunities available from renewable energy development. A number of practical and policy actions are essential to facilitate this shift.

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