



**Environment and Rural Development Committee**

**7th Meeting, 2006**

**Wednesday 1 March 2006**

The Committee will meet at 10.00 am in Committee Room 2.

1. **Inquiry into developments in the biomass industry:** The Committee will take evidence from—

Panel 1

Willie McGhee, Managing Director, Edinburgh Centre for Carbon Management;

Flavia Pigot, Woodland Task Force Convener, Scottish Environment LINK;

Bruno Berardelli, Director, Highland Wood Energy;

Chris Stockton, General Director, Buccleugh BioEnergy;

Panel 2

John Picken, Chairman, NFU Scotland;

Jonathan Hall, Head of Rural Policy, Scottish Rural Property and Business Association; and

Patrick Krause, Chief Executive, Scottish Crofting Foundation.

2. **Scottish Water:** The Committee will consider issues relating to the governance of Scottish Water.

**Mark Brough**  
Clerk to the Committee  
Direct Tel: 0131-348-5240

The following papers are attached:

<u>Agenda Item 1</u>	
Briefing Paper <i>[Members only]</i>	<a href="#">ERD/S2/06/7/1a</a>
Submission from Edinburgh Centre for Carbon Management	<a href="#">ERD/S2/06/7/1b</a>
Submission from Scottish Environment LINK	<a href="#">ERD/S2/06/7/1c</a>
Submission from Highland Wood Energy	<a href="#">ERD/S2/06/7/1d</a>
Submission from Buccleugh BioEnergy	<a href="#">ERD/S2/06/7/1e</a>
Submission from NFU Scotland	<a href="#">ERD/S2/06/7/1f</a>
Submission from Scottish Rural Property and Business Association	<a href="#">ERD/S2/06/7/1g</a>
Submission from Scottish Crofting Foundation	<a href="#">ERD/S2/06/7/1h</a>
<u>Agenda Item 2</u>	
Letter from the Minister for Environment and Rural Development	<a href="#">ERD/S2/06/7/2a</a>

## SUBMISSION FROM EDINBURGH CENTRE FOR CARBON MANAGEMENT

Edinburgh Centre for Carbon Management (ECCM) views on priorities for support to the development of the biomass sector

It is important for the policy to recognise that the biomass industry includes three main areas – HEAT; POWER; and LIQUID BIOFUELS. At present policies across these areas are not harmonised and there is not yet a good overview of how these are best developed, strategically.

Regarding the HEAT sector. ECCM agrees with the findings of the SDCS report regarding appropriate measures to stimulate development. In particular, we emphasise the importance of grants for capital equipment (particularly wood chip or pellet boilers and associated handling facilities). We also emphasise the important role of local authorities and other public bodies in providing a “backbone” for local supply chains for wood fuel. We recommend the establishment of a central Scottish fund that Local Authorities and other public bodies (e.g. NHS Trusts) can apply to support the costs of feasibility studies and capital equipment and also to enable the establishment of longer-term supply contracts. Finally, we recommend that Local Authorities and other public bodies should be required to consider the potential for incorporating bio-heat in any new building project with a projected heat demand of greater than 200 kWh per year.

Further, regarding a Renewable Obligation for the HEAT sector, we believe that a separate RO for heat would be difficult to administer as it would need to cover a very large number of installations. However, we believe that a “crediting scheme” whereby emission reductions achieved by the installation of bio-heat plants could be sold to participants in either the EU Emissions Trading Scheme or the (electricity) ROC Scheme should be considered.

Regarding the POWER sector, we believe that this should have a lower priority than HEAT. While there are significant carbon benefits to be obtained from co-firing coal fired power stations with wood, one of the limiting factors is the limited availability of local wood fuel at the scale required (it is therefore recognised that these generators are likely to depend to a significant degree on imported biomass). There is future potential for combining biomass inputs to these plants with Carbon Capture and Storage to provide “negative carbon energy”.

Regarding the availability of suitable biomass material from existing forests. It is recognised that one way of increasing the supply of local woody material is by providing incentives to forest owners to carry out thinnings. This mechanism can also deliver timber quality and local biodiversity benefits. A payment for these environmental services (through the new SEERAD Land Management Contracts) could deliver significant additional quantities of biomass.

Regarding LIQUID BIOFUELS, it should be recognised that Scottish agriculture will find it difficult to compete with the levels of productivity for bioenergy

feedstocks (both oilseeds and starch crops) found in tropical countries such as Brazil, SE Asia and Africa. We believe that further applied research into identifying suitable crops and land types and processes that could compete is necessary.

Dr Richard Tipper  
Willie McGhee

February 2006.

## SUBMISSION FROM SCOTTISH ENVIRONMENT LINK

### **Introduction**

Scottish Environment LINK is the forum for Scotland's voluntary environment organisations comprised of 36 member bodies representing a broad spectrum of environmental interests with the common goal of contributing to a more environmentally sustainable society.

The Committee's interest in the development of biomass is welcomed. Electricity represents approximately 20% of all the energy used in households in Scotland, leaving around 80% as energy generated for heat. The generation of an increasing proportion of this energy from sustainable sources, such as biomass, in conjunction with targets for emission reduction, stabilisation of energy consumption and energy efficiency will contribute significantly to Scotland meeting aspirations for a 60% reduction in carbon emissions by 2050.

### **Climate Change and Forests**

Carbon is stored under the earth's crust for millions of years. Carbon is also stored for considerably shorter periods of time in surface vegetation, soil and sediments under the sea and fresh water. Disturbance of these releases CO<sub>2</sub> into the atmosphere. Forests and trees are therefore inextricably linked to the causes of, and responses, to climate change. New research is continually adding to our knowledge of the complex relationship forests have with the climate. For example, the Hadley Centre, has developed a model which shows that the release of carbon from soils could outstrip the ability of vegetation, including trees, to absorb it as the climate changes and temperatures rise<sup>1</sup>.

Planting new woodland has a role in absorbing carbon. However, it cannot sequester more than a tiny proportion of total carbon emissions generated by Scotland each year. As Oliver Rackham a Cambridge historical ecologist commented on the effect of sequestration in relation to climate change, "For its practical effect, telling people to plant trees is like telling them to drink more water to keep down rising sea levels."

Trees also have a role to play in reducing emissions through the sustainable use of woodfuel to generate energy, particularly heat. The development of a Renewable Heat Strategy and a Biomass Action Plan should contribute significantly to the development of a biomass industry.

### **Forestry Biomass**

The use of woodchip, wood pellet and logs can be an efficient way to generate heat, running up to 80%. By comparison, the use of biomass to generate electricity runs at an efficiency of around 30%. Reducing emissions

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<sup>1</sup> [http://www.metoffice.com/research/hadleycentre/models/carbon\\_cycle/results\\_trans.html](http://www.metoffice.com/research/hadleycentre/models/carbon_cycle/results_trans.html)

through the extensive use of small to medium scale woodfuel heating from sustainably managed woods will produce a number of positive outcomes including:

- Social benefits from new areas for recreation and sports and, with prices of gas and electricity on the increase and estimates that 80,000 houses are facing fuel poverty, biomass could help address this, particularly in areas off the mains gas network
- Environmental benefits from contributing to the reduction in emissions, promoting the sustainable management of woodlands, increasing forest cover by creating forest habitat networks and providing new habitats for wildlife
- Economic benefits from providing a market for the increasing volume of timber, job opportunities for woodland management, timber extraction, processing and the manufacture of heating systems

However, Scotland has one of the lowest forest covers in Europe (17% of land area, compared to a European average of 35%). However, with low timber prices, increased global competition and timber production set to rise over the next 10-15 years by over 65% the potential for developing new markets, such as woodfuel, is at a premium.

There is, however, a danger that a small number of large scale biomass plants generating electricity will promote single purpose forestry and intensive woodland management rather than the economic, environmental and social benefits which are currently delivering sustainable, multi-purpose forestry, accredited to the UK Woodland Assurance Standard<sup>2</sup>.

At a smaller scale, farm woodlands are an untapped resource, generally neglected and used for sheltering cattle, storing machinery or as cover for game. Encouraging land managers to view their woodlands as a source of income will help stimulate a new rural industry.

However, following the launch of the Land Management Contract Menu Scheme in April 2005, of the 10,000 farmers who applied there were only 185 applicants for the Woodland Plan option (covering 3,000ha) and 162 applicants for the Farm Woodland Management option (covering 1,000ha).

Taking into account that the Menu Scheme was only launched last year, the figures above show that there is a marked reluctance on the part of land managers to consider active management of farm woodlands. This is likely to be for a number of reasons:

- There is no perceived market for biomass or financial benefit to managing woodlands for biomass.
- There is a reluctance to enter into woodland management due to a lack of skills and training and a perception that it would be costly to employ contractors to manage the woodlands, extract timber and restock.

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<sup>2</sup> <http://www.ukwas.org.uk/>

- Increasing the area of woodland on a landholding will remove the area's eligibility to the Single Farm Payment
- Other options in the Menu Scheme are more attractive. For example, there were 7,500 applicants for the option of SEERAD to pay for membership of a Quality Assurance Scheme.

There is however, an opportunity to build on the good work being carried out through the Farm Woodland Premium Scheme which, during the duration of the scheme from 1992 to 2003, had 2689 agreements and woodland cover of 52,521 hectares.<sup>3</sup>

### **Agricultural Biomass**

The demand for energy crops is driven by the requirement in the Renewables Obligation for coal plants co-fired with biomass to include a minimum percentage of energy crops by 2009. However, co-firing will not be eligible for Renewable Obligation Certificates after 2016. Short Rotation Coppice is currently being incentivised at £1,000 per hectare to farmers who have a supply contract with an end user such as a power-generating company. SRC requires good quality arable land with high water levels. The management, extraction, processing and transportation of these crops is energy intensive.

In addition, SRC can have a significant impact on the landscape, wildlife and sites of archaeological interest. It is important that they are appropriately located, designed and that chemical inputs are minimised. There is also a need for research into high yield crops, their invasive characteristics and how this can be managed.

### **A Sustainable Resource**

The environmental impact of biomass production in forestry is potentially wide ranging and an important aim for the Scottish Executive in encouraging the development of biomass from forests, woodlands and short-rotation coppice should be to ensure biomass production complies with existing, multi-purpose forestry principles and environmental standards. In addition, if the aim of renewable energy is to reduce emissions, particularly carbon, it is vital that the development of a biomass industry takes into account the energy used to establish, maintain and process the resource: it is only likely to be 'carbon neutral' if it is used close to the source.

### **Recommendations**

To ensure biomass is undertaken at a sustainable level and the environment is protected:

1. The development of a biomass industry is small to medium scale
2. Existing woodlands and created woodlands planted for biomass should be managed sustainably through UKWAS accreditation (with grants for small woods)

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<sup>3</sup> The State of Scotland's Farmed Environment 2005, Macaulay Land Use Research Institute, 2006

3. The overall emissions lifecycle analysis is taken into account in order to deliver emissions reduction and that transportation is minimised and energy efficiency maximised in processing.
4. Development of Short Rotation Coppice is appropriately located, designed and that chemical inputs are minimised.
5. A market is developed through the setting of targets for each local authority for the use of biomass in public buildings such as schools, swimming pools, council and government offices. The Scottish Procurement Directorate should be involved in ensuring biomass is incorporated into appropriate tenders for new buildings.
6. Working with Forestry Commission Scotland, local authorities are resourced to contact contractors, forest managers and farmers to discuss the local availability of wood chip
7. Funding for the capital costs of installing woodfuel heating through the Scottish Community and Householder Renewables Initiative should be increased



## SUBMISSION FROM HIGHLAND WOOD ENERGY

### **Renewable Heating from Wood Fuel**

We are a Highlands based company working exclusively on the installation of automated wood heating systems (wood chip, log and pellet) heating systems. At present we are installing approximately 2-3 wood heating systems per month, either in domestic properties (mainly pellet stove/boilers and log heating systems) or in larger buildings such as leisure centres, offices, estate houses and industrial workshops (mainly wood chip heating systems).

To date we have installed approximately 1.5 MW capacity of wood heating systems.

Our company also provide consultancy services and assistance with the establishment of wood fuel supplies. We have assisted the establishment of a localised wood chip fuel supply in areas such as Skye and Lochalsh, Lochaber, Argyll, Badenoch and Strathspey and Aberdeenshire, as well the distribution of wood pellets to domestic premises.

Personally, I have been involved in the wood heating industry in Scotland since 2000, when localised wood chip fuel supply chains first began to emerge.

At present the wood fuel heating industry in Scotland is developing, though at a faltering pace and in a somewhat disjointed manner. The rate of development has recently been increasing due to a number of factors including oil and gas price hikes, greater awareness of the technology amongst architects, consultants, contractors and the general public, and the greater prevalence of localised wood chip fuel suppliers. A certain amount of grant assistance has also been available from a number of various sources.

A growing number of wood chip heating systems are being installed in a variety of buildings such as leisure centres, office buildings, social housing district heating schemes and care homes across the country.

Simultaneously, local wood chip fuel suppliers are emerging to supply these installations, and consequently, a reliable and low cost source of wood chip fuel is available in many parts of rural Scotland.

The beginnings of a wood pellet supply have also emerged, with companies distributing imported pellets (from Northern Ireland and Scandinavia for example) to primarily domestic customers with pellet boilers and stoves. (Though also for larger buildings where a wood fuel supply is not available or practical).

However, considering the potential for growth, this has been disappointing and due in no small part to the lack of a comprehensive and determined wood heating policy developed by government. The concentration of government policy on electricity (even though electricity represents a far smaller proportion of our energy demand than heating) has meant that despite the fact that wood heating is the most widespread form of renewable energy production in Europe, and despite our widespread timber resource, wood heating has not enjoyed a sufficient support framework in Scotland

The development of the wood fuel industry over last two years has demonstrated several positive points:

**1) That wood fuel is extremely competitive in the heat market place**

Even before the recent hikes in energy prices, the cost of wood heating has been very favourable against oil and electric heating.

With the recent price rises, wood heating is considerably cheaper than all traditional forms of heating, and significantly, approximately 50% of the cost of oil fired heating at today's prices.

**2) That demand has increased substantially**

The demand for wood heating has increased greatly over recent months. This is due primarily to the substantial increase in heating costs as aforementioned, but has also been intensified by a range of factors including the spread and consolidation of fuel suppliers, the

general awareness of biomass as a heating option amongst the general public, the carbon neutral aspect of wood heating etc.

**3) That awareness of and satisfaction with technology is significantly increased**

The successful installation of biomass heating systems has demonstrated the technology and increased awareness amongst the public in those areas.

**4) That the viability of the fuel supply chains has been proven**

A number of wood chip suppliers have been established in areas of Scotland, and have successfully demonstrated the viability of producing high quality woodchip fuel, and distributing this to local customers in these areas.

The emergence of a wood pellet supply has demonstrated the future potential for this form of fuel.

**5) That rural economies benefit from wood heating**

The development of the wood fuel industry in certain areas has visibly contributed to the local economies in those areas, with the jobs created in the fuel supply chain, and by adding value to the local wood resource, with a far greater proportion of the 'energy pound' spent retained within the local area. Additionally, having access to a lower cost supply of heating has benefited local energy consumers, both in the public and private sectors.

**6) That wood heating helps eliminate fuel poverty**

The establishment of wood chip district heating schemes for social housing projects and the installation of domestic pellet and log heating schemes (many with assistance from the SCHRI domestic programme) have shown how wood heating can help alleviate household fuel poverty, especially in rural areas.

From the development that has taken place to date, it is clear that wood heating in Scotland has significant potential which has hereto been largely untapped. The competitiveness of the fuel against alternatives in the heat market place and the economic success of wood heating projects to date demonstrates that a co-ordinated wood heating policy and funding frame-work would deliver unrivalled value for money within the renewable energy sector.

The socio-economic benefits of wood heating (by adding significant value to a low value resource abundant in many parts of the country) are well documented and have been underlined by the slowly emerging industry of localised wood fuel suppliers.

An 'integrated wood heating strategy' would encourage penetration of all sectors of the vast heating market, with locally sourced wood chip fuel (as the lowest cost alternative) exploited for larger single buildings and district heating networks in areas where a local supply is available, and wood pellet fuel targeted towards domestic premises (where pellet heating is better suited than wood chip) and other buildings in areas where a woodchip supply is not accessible.

Public procurement will be a key area in increasing the up take of wood heating, as in most rural and semi rural communities many of the largest buildings with the greatest heat demand are often under local authority ownership. Additionally, much of the housing stock lies within local authority or housing association control.

Greater commitment by local authorities and public agencies to wood heating will be invaluable, providing critical mass for localised wood chip fuel suppliers and enabling them to grow their businesses, as well as demonstrating viability to other heat users.

At present any such commitment is seriously lacking, due in part to little direction or encouragement from government level. The longer this continues, the more opportunities to expand the use of wood heating are being lost.

For example, with many of the Public Private Partnership funded schools building programmes currently underway in Scotland, wood heating is not being entertained as an alternative, and therefore this significant heat market and potential 'pump primer' for the wood heating industry is being lost.

With the culmination of several key studies, the Scottish Executive are currently considering implementing a support programme for bio-energy. With fossil fuel prices currently spiralling, and concern over security of supply growing, there has perhaps never been such a pertinent time to finally recognise Scotland's significant resource of widespread and low grade timber as a valuable, secure and low cost source of energy.

A support frame-work for wood heating will involve capital grants for the installation of wood heating systems (which are generally more costly to install than fossil fuel fired heating systems), awareness raising and possibly support for the renewable heating produced.

A concentration on the most efficient and effective means of generating energy from wood (i.e. producing heat on site from efficient wood fired heating systems) will ensure multiple benefits at a localised level for the country as a whole.

## SUBMISSION FROM BUCCLEUCH BIOENERGY

The Buccleuch Group encompasses a diverse range of companies who work together to provide a broad spectrum of top end services.

Buccleuch is a name making an indelible impression in the world of business. From bio-energy and woodlands to vet pharmacies and an award-winning food range, Buccleuch has established itself as a primary player.

With a shared heritage of tradition and an inherent sense of integrity, we are uniquely placed in today's market to provide an unparalleled service.

### Context of Response:

Scotland's energy needs can essentially be broken down into four areas:

1. Electricity
2. Transport
3. Process Heat
4. Domestic Heating and Hot water

These areas each have their own particular mechanisms and problems associated with climate change and security. To date the majority of effort and government focus to combat energy security and climate change has focussed on the electricity market. This does however, account for only about 17% of primary energy production and is the smallest of the four areas above. If 100% of our electricity came from renewables, it would only have the effect of reducing our carbon output by around 20% (electricity producing more carbon per KWh than all other energy forms other than coal).

However, to take these four areas separately:

#### 1. Electricity

Regarding electricity production in the UK, it is probably worth putting it in some context following the White Paper produced by the DTI in 2004:

- All existing power stations (coal, nuclear and gas), with the exception of Sizewell B nuclear station, will close by 2020, with many of the coal and nuclear going off line by 2015.
- This is as a result of their differing working lives ending in a similar period. (Coal fired stations =40-50 years, nuclear=40 years and gas 25 years).
- Coal and nuclear have been abandoned as energy sources and the DTI's prognosis is that by 2025 some 80% of UK electricity will come from gas and the rest from renewable energy, mainly wind power (although this is likely to change).

- The gas is proposed to be 90% imported, primarily from Russia via pipelines that have not yet been built. (We note that since the White Paper there has been licence provision to extend some coal power stations e.g. Longannet and some nuclear sites in the last few months).

There are several serious concerns about this scenario, not least the security and cost of the gas supply.

In addition, all the UK's major utilities are now foreign owned and in the private sector (ie driven by profit motives). The Electricity Act of 2000 started the New Electricity Trading Arrangement system for energy trading and established Ofgem to control prices. Since then a number of coal and nuclear plants have closed and excess capacity has been reduced from 30% to below 10%. The coal and gas stations that have been closed are being dismantled rather than mothballed and soon the UK is likely to either face hikes in energy costs or shortfalls in energy supply. Consequently this has left the UK government with some fairly blunt instruments with which to encourage foreign private sector utilities to invest in new plant, such as gas-fired power stations. Unfortunately so far there have been no takers.

## 2. Transport

All transport fuels are fossil fuel based and there are no mechanisms or acceptable alternative technology to replace this scenario in the near or medium term other than a modest renewable fuel target of 5%. This market is just under 30% of our primary energy use.

## 3. Process Heat

Process heat is normally created using fossil fuels (with possibly the exception of aluminium production). Each process is different and large plants are often committed to carbon reduction measures either through the EU Energy Trading Scheme (EUETS) or specific Climate Change Arrangements traded against a reduction in the Climate Change Levy. Mechanisms therefore are in place for reduction of carbon in these single, generally very large plants with the EUETS already making a significant impact with Emission Reduction Units.

## 4. Domestic Heating and Hot water

There are no targets for reduction in the space heating and domestic hot water market specifically. Energy efficiency measures are promoted and there are ad hoc schemes to promote the use of renewables in houses and/or energy efficiency measures. Domestic Heating and Hot water and the Process Heating market accounts for around 40 – 50% of the primary energy use in Scotland.

**Consequently, this situation would suggest to us that the focus of government strategy for the reduction in carbon emissions and for the greater production of renewable energy should be concentrated firstly on the Domestic Heating and Hot Water Market (including process heat) and then Transportation.**

### **Specific Response:**

There are several issues that the committee are considering, but with particular reference to how forestry and agricultural policy can support the development of biomass renewable energy.

The Buccleuch Group, through its trading arm of Buccleuch BioEnergy, is particularly well placed to comment on the current opportunities and difficulties with biomass energy provision.

The recent increases in oil, gas and electricity markets, coupled with local authority action in relation to carbon foot prints for buildings has to an extent stimulated the market for heat only boiler systems running on woody biomass fuels. However, there are a number of difficulties that need to be overcome prior to this industry moving from the embryonic phase to full commerciality:

- It is still difficult to make equipment sales without grant funding.
- The lower cost biomass equipment does not work as effectively as the more expensive equipment. Consequently providers are abandoning the low cost equipment.
- Facilitation of industrial and commercial scale schemes is expensive relative to the purchase cost of the equipment due to the engineering design and project management required.
- The profit margin available for domestic scale equipment is small when balanced against the manpower required for installation. Consequently some companies will choose to avoid this market until the equipment is less expensive and more reliable.

### **Forestry and Agricultural Policy requires:**

- A co-ordinated approach by the government agencies for the promotion of short rotation coppice and short rotation forestry to produce fast growing woody biomass energy crops.
- Including specific incentives to stimulate the conversion of agricultural land to energy crop production.
- Including specific incentives to stimulate the conversion of forestry land to energy crop production.
- Including specific incentives to stimulate the management (thinning) of moribund woodland areas that are currently regarded as uneconomic to harvest.



- Including specific incentives to stimulate the recovery of currently unutilised biomass material – such as tree tops, branch wood, straw etc.
- Including specific incentives to stimulate investment in the processing of the woody biomass into a fuel form that can be easily used by biomass energy systems.
- Including specific incentives to stimulate investment into the storage, conditioning and delivery of biomass fuel.

The development of biomass energy production will contribute to several of the Priorities for Action in the Scottish Forestry Strategy (2000):

- Improve competitiveness by developing a strong forest industries network.
- Ensure continuing investment in wood processing.
- Promote more use of timber.
- Develop products that meet market needs.
- Improve management of semi-natural woodlands.
- Increase the diversity of the farmed landscape.
- Encourage alternatives to clear-felling.
- Create wider employment opportunities.

The development of biomass energy production will have significant social benefits in terms of:

- Rural Development through work creation in the management/silviculture of (moribund) broadleaved and coniferous woodlands.
- Rural Development through work creation in thinning, harvesting, extraction and haulage of timber and the processing to fuel grade biomass.

Ultimately there must be a coordinated approach between the Agricultural and Forestry policies and the overall Scottish Executive approach to biomass renewable energy. Therefore Scottish Executive policy can help stimulate the market for biomass renewable energy and pave the way for agricultural and forestry policy changes. Consequently we would recommend that the Scottish Executive consider:

- Setting targets for biomass heating within the public sector.
- Mechanisms to promote the installation of systems (such as continuation or extension of existing capital grant schemes).

- Embedding the necessity to install renewables into PPP projects.
- Reduce the VAT on ALL biomass boilers to 5%.
- Provide better clarity of the legislative framework for inclusion of biomass boilers into projects.
- There are significant delays and lead times in tender process and feedback, particularly when dealing with local authorities. This is difficult for new entrants and small businesses to deal with and is a positive disincentive to becoming involved in this area of the market. Whilst we have the backing of a large parent company, we would ask the Executive to look at the issue of timescales to allow businesses to achieve a steady flow of tender, install and fuel supply to underpin their viability.

## SUBMISSION FROM NFU SCOTLAND

### Introduction

1. NFU Scotland welcomes the opportunity to contribute to this inquiry into the biomass industry. We represent a high proportion of those who occupy land suitable for biomass production - both forestry and cropping. NFUS is a member of the Forum for Renewable Development in Scotland (FREDS) Biomass Energy Group and the new Biofuels Energy Network established by Scottish Renewables.
2. The ending of production-linked agricultural support is encouraging farmers to produce to meet market demand rather than simply maximising output. Faced by low or negative margins for many agricultural products, farmers are considering biomass production to improve the income of their businesses. There is also farmer interest in the on-farm use of biomass to reduce energy costs.
3. The public interest issue is global warming - the use of plant material as a substitute for fossil fuels to produce electricity, heat or road fuel, thereby reducing net carbon emissions. Energy demand is too great for total substitution from renewable sources under present technology, and employment of these technologies is only commercially feasible through government intervention.
4. There is confusion of terminology used to describe agricultural and forestry material that can be used for energy production. The generic term "biomass" covers all but biomass used to produce road transport fuels is often excluded, as was the case in last year's FREDS report. (NFUS has previously sought assurance from the Scottish Executive that this topic will be separately addressed.)
5. The UK Government has acted to encourage power generation from renewable sources. Although slower to support biomass for road fuel use it has reduced excise duty and set a mandatory target for inclusion of 5% by the end of 2010. It has offered only limited capital investment aid for conversion processes but aid for farm biomass projects is to be piloted by the Forestry Commission as a possible Tier 3 Land Management Contract measure.

### Biomass from farms

6. Biomass from farms is in use as the raw material for existing energy technologies.
  - **to burn for electricity and/or heat generation:** farm woodland, short

rotation coppice (SRC), whole crop cereals/oilseeds, straw from cereals/oilseeds, chicken litter (i.e. manure), biogas (methane from livestock slurry)

- **to convert into liquid fuel for internal combustion engines, road or static:** cereals (bioethanol), oilseeds (biodiesel), tallow from rendering animal carcasses (biodiesel).
7. New technologies are under development, which could also allow woody material or straw for lignocellulose conversion to bioethanol.
  8. In addition to reduced carbon dioxide emissions, the advantages of replacing fossil fuels with renewables supplied by Scottish farms include:
    - superior environmental “footprint” of Scottish supplies, i.e. no destruction of habitat, natural vegetation or traditional agriculture in third world countries and less “energy miles”
    - reduced reliance on imported energy
    - improved balance of payments
    - better optimisation of existing infrastructure
    - improved sustainability of Scottish rural communities
    - ability to combine clean energy production with other environmental aims such as disposal of sewage sludge and waste water and reduction of emissions from slurry.

### **Biomass for electricity and heat generation**

9. There is now significant international trade in biomass, prompted by the artificial creation of demand by governments. Scottish production must compete against miscanthus grass, olive pips, bagasse from sugar cane, copra and palm oil by-products.
10. In Scotland the only contender for agriculturally produced biomass is SRC. Scottish Coal intends to grow willow on reclaimed mining and spoil sites. The principal Scottish competitor is timber from private and public sector forestry. Much of the forest estate is fast growing conifers, which for optimal production should be thinned after 10-15 years growth. The wood produced at thinning, together with tops from older saw log trees, supplies particle board mills and the paper industry. Potential supply is expected to soon be double current demand.
11. There are two distinct components of likely demand for biomass for power/heat generation, co-firing and straight firing. Co-firing of

biomass with fossil fuels qualifies for Renewables Obligation Certificates (ROCs), the device whereby electricity suppliers satisfy their obligation to buy power from renewable sources. For example, power from Longannet Power Station generated by co-firing with sewage sludge (60,000t/yr), earns ROCs. The extra cost is passed on to consumers.

12. There is a timetable for increasing the proportion of energy crops in the biomass used for co-firing - intended to increase the stimulus for energy crop development and to make ROCs available to a wider range of smaller generators. The Renewables Obligation (Scotland) Order 2004 extended the time for which co-firing is eligible for ROCs from 2011 to 2016, to allow co-firing of any biomass up to 2009, to increase the proportion of biomass that must come from energy crops by stages between 2009 and 2016, and to reduce by stages the amount of ROCs an individual supplier can produce from co-firing.
13. Target proportions for biomass from energy crops are: 25% from 1 April 2009 to 31 March 2010, 50% from 1 April 2010 to 31 March 2011 and 75% from 1 April 2011 to 31 March 2016.
14. Failure to meet targets would mean that the electricity generated would not qualify for ROCs. It appears likely that conventional timber will qualify as a ROCs qualifying raw material, as well as SRC. The FREDS report recommended that: "The Scottish Executive should consult on amending the definition of energy crops in the Renewables Obligation (Scotland) Order 2004 to include material derived from any sustainably managed woodland, i.e., a woodland certified to the UK Woodland Assurance Standard."
15. Straight firing of biomass is encouraged in the Order by obliging electricity suppliers to source a decreasing part of their renewables electricity from co-fired plants: by no more than 25% up to 31 March 2006, no more than 10% from 1 April 2006 to 31 March 2011 and no more than 5% from 1 April 2011 to 31 March 2016.
16. The contribution of energy crops to biomass used in this way is not regulated, i.e. biomass from any source can be used for power or heat and power eligible for ROCs. Therefore downward price pressures on supply to this market can be expected due to home and overseas competition from alternative fuels.
17. An issue for farmers considering the growing of SRC is the potential effect on land drainage. Unlike switches between different food crops and grass, conversion to SRC represents a long-term commitment. Tree roots are likely to destroy field drainage systems and are difficult to remove. Maintenance of land in good condition is a condition of the Single Farm Payment Scheme (SFPS). These are less important issues if land drains are already in poor condition and in need of replacement, or if there is no intention to return the land to conventional

agriculture.

18. Another consideration is the impact of using of sewage sludge, commonly applied to prepare ground for SRC and after each harvest and the use of waste water. Safe disposal of these materials can offer an added environmental benefit and a financial gain to the grower but some customers will not purchase food crops grown on land ever applied with sewage sludge. Usage within rules of the Sludge (Use in Agriculture) Regulations 1989 is a cross compliance condition of the SFPS.

### **Biomass for liquid biofuels**

19. Bioethanol, an alcohol which can be blended with petrol, is manufactured from a range of crops. Spirit yield is key to its economics, favouring sugar cane, sugar beet, maize and wheat. Of these, only wheat is grown in Scotland in any quantity. Even at its most economic, production costs are higher than for petrol. Commercial feasibility is therefore dependent on government intervention e.g. reduced excise taxation, capital grants or obligations to use renewable resources, thereby creating artificial demand.
20. Scotland's deficit of wheat / higher wheat prices and the lower spirit yield of barley makes bioethanol production here less attractive than in some other places.
21. In theory, spare Scottish distillery capacity could be used to produce bioethanol for fuel use or one distillery could be devoted to non-food use. The advantage of the second option would be that chemicals unsuitable for potable spirit production could be used to increase spirit yield. To date, Scottish distillers have shown little interest in bioethanol production.
22. Biodiesel can be produced from fresh vegetable oils such as soya, palm or oilseed rape or from recovered cooking oils and tallow. It can fully substitute for petroleum diesel but blending is more common to meet vehicle manufacturer specifications. High Scottish oilseed rape crop yields and oil content make biodiesel production in Scotland a more attractive option than bioethanol but costs of production are higher than standard diesel so as with bioethanol, government support is needed.
23. Scotland is already a producer of biodiesel but not from oilseed rape. Argent Energy is capable of producing 50,000t/yr from used vegetable oil and tallow. To meet the 5% inclusion target for 2010 in diesel used in Scotland around twice as much biodiesel will be needed. This would require 125,000 tonnes of oilseed rape, 10% above the average Scottish crop for the past 5 years. At the peak of our oilseed production, in 1998, around 182,000 tonnes were produced in Scotland.

24. An October 2005 report by SAC, commissioned by Aberdeenshire and other councils has suggested that a 60,000t/yr plant could be viable. A plant of the more typical size (250,000t/yr) would potentially be more commercially viable but would require a mix of home grown and imported oilseeds. The inclusion of a dedicated oilseed crushing plant would improve the carbon balance of production and reduce transport costs.
25. Other UK developments include Biofuels Corporation 250,000t/yr biodiesel plant at Middlesbrough due to come into operation by the end of February 2006 and GreenSpirit Fuels 100,000t/yr bioethanol plant (using wheat feedstock), construction of which has recently been approved in Somerset with production due to start in 2007.

### **Support measures**

26. Support is available for the establishment and maintenance of farm woodland. For conventional plantations, to remain uncut for 30 years, establishment grants of 60% of costs are offered plus annual maintenance payments ranging from £60-300 depending on the type of land put into trees. For SRC a one-off establishment grant of £1000/ha is available.
27. A payment of €45/ha is available under the Energy Crop Scheme (ECS), introduced in 2004. This can be claimed in addition to the SFPS payment. Up to half of the value of the payment is currently charged by merchants/processors to cover administrative costs.
28. Energy crops can also be grown on set-aside land but are not currently eligible for ECS payments. Extra administrative checks generally delay support payments to those who grow non-food crops on set-aside. Under the old Arable Areas Payment Scheme only the set-aside element of payments was delayed. The inability to do this under SFPS has meant that complete payments were delayed this year by several weeks. The potential for this to discourage energy crop production, especially by farmers for whom arable production is a small part of their farming activity, has been raised with SEERAD.
29. A lower, 27.1p/l (vs. 47.1p/l) UK excise duty applies to bioethanol and biodiesel. Under Council Directive 2003/96/EC of 27 October 2003 this can continue until 27 October 2007.
30. Capital grants have been given for biofuel production facilities
31. The European Commission and European Parliament are both considering strategies to increase the production and use of biomass for energy in Europe.

## **Issues affecting development of the Scottish biomass industry**

32. Climatic and land availability/suitability limit cropping options (although new varieties of crops could be developed which would be suited to Scottish production).
33. Political acceptability of novel crops and processing facilities or large areas of energy crops.
34. Lack of processing infrastructure (oilseed crushing, biodiesel and bioethanol plants).
35. Commodity prices for grain, oilseed rape and SRC are simultaneously too low to encourage new/increased production and too high for energy use without artificial incentives.
36. Competitive disadvantage versus countries with more generous incentives, i.e. rates of tax on fuels, availability of capital grants, and shorter investment write-off periods, or with lower production and compliance costs.
37. Uncertainty over future of incentives/support measures and commodity prices militate against investment in biomass and discourage long-term commitment from farmers.

## **Added incentives for biomass**

38. In addition to putting into place measures to help overcome the issues highlighted above Government should:
  - require full consideration of options to use community heating / renewable energy sources in applications for planning permission for housing developments and public buildings
  - alter rules on diversification grants to allow joint applications by farmers wishing to participate in 'new generation' farmers' co-operatives for energy projects



## SUBMISSION FROM SCOTTISH RURAL PROPERTY AND BUSINESS ASSOCIATION

### **Introduction**

The Kyoto Treaty became legally binding in February 2005 and includes targets for reductions in greenhouse gases in order to tackle climate change. Signatories such as the EU are committed to a reduction of their total emissions compared with 1990. Each Member State, including the UK, is also obliged to reduce its own emissions.

As a consequence, attention has turned to the development of renewable energy in order to help meet carbon reduction. Whilst energy efficiency could be considered the first option, in the UK and Scotland renewable energy has taken a poor second place in sectors other than electricity. Renewable heat and renewable transport fuels can be better developed on appropriate scales to help meet renewable energy needs.

The SRPBA's view is that land management and biomass have a significant role to play in help meeting UK Government and Scottish Executive targets, not only for carbon saving but for security of supply and sustainable development. As a consequence, the SRPBA identifies the role of biomass to a meaningful 'renewable energy policy'.

Scotland has some of the best renewable resources in the world, in the form of wind, wave and tidal resources, as well as great potential from biomass.

With the challenge of climate change, and the importance of ensuring that there is sufficient future supplies to meet energy needs, biomass in particular represents an opportunity for Scotland in meeting it's future energy needs from renewable sources, while creating new business and employment opportunity in rural Scotland.

### **Background**

The Scottish Executive has set a target that by 2020 some 40% of electricity needs come from renewable sources (Scottish Executive, 2003). However, electricity use represents only 20% of Scotland's total energy demand (Royal Society of Edinburgh, 2004). The other 80% is for transport and heating.

This means that the 40% renewable electricity target is really only an 8% renewable energy target. Consideration also needs to be given to how Scotland can do more to reduce the impact of heating and transport fuels.

Biomass and biofuels (carbon neutral as long as material is burnt locally) have an increasingly important role to play.

Current interest and activity is focused almost exclusively on wind power and wind farms. There are a substantial number of wind energy projects now in the Scottish planning system, and wind could provide up to 20% of Scotland's electricity needs.

At the same time, much is still expected from wave and tidal power generation. However, this industry still has a long way to go to prove itself, and the first generation of wave and tidal projects will receive substantial government help. This support could be seen as an investment in building a new industry in Scotland and helping solve how to capture the energy from the seas cost-effectively.

What is clear is that there are trade-offs to be made with each and every technology in relation to renewable energy. Each form of renewable energy carries its own strengths and weaknesses. Therefore, the future of successful renewable energy generation will almost inevitably rely on a balanced mix of technology development and resource use in the future.

The SRPBA firmly believes that Scotland cannot afford to rely simply on wind farms and hydro-power. Choices need to be made, but those decisions are often made within the planning process and controversy arises only to polarise debate.

Difficult decisions do need to be made about the balance of competing environmental concerns, while developing a mix of technologies to meet all energy needs and provide valuable economic opportunity. The SRPBA believes that, to date, the Scottish Executive has shown little or no leadership in this respect.

### **Energy Policy Objectives**

The SRPBA accepts that energy efficiency is perhaps the best option to reduce greenhouse emissions, but notes that it is extremely unlikely that this will be sufficient in itself to deliver the scale of emissions reductions required within the next decade or so.

The SRPBA also contends that all sources of energy, including biomass, should be assessed according to their costs. However, it is vital that total costs, including direct and indirect and full environmental costs on a life-cycle basis, are included in such appraisal.

The development of renewable energy is clearly essential in the UK's approach to meeting its commitments within the Kyoto Treaty. In the pursuit of such targets, the SRPBA believes that all sectors of energy use (heat and transport fuels as well as electricity) should be examined for their potential to contribute to emissions reductions. Therefore, the wider benefits of the greater use of biomass.

The SRPBA recognises that security of energy supplies will also be a central consideration of any policy development for energy. No longer can the UK

rely on North Sea oil and gas production. Coal powered or indeed nuclear-fuelled electricity generating capacity carry costs and limitations for overall energy use. The development of a significant contribution from biomass is therefore an attractive proposition in creating a coherent energy policy.

In addition, any policy for energy must also engage with concerns of the public in relation to the relative environmental impact of renewables. Nuclear power, electricity power lines and wind turbines can all carry their own controversies. Any renewable energy policy fully embracing biomass will also provide an opportunity for society to resolve the dilemmas and public concerns over many specific proposals. In many cases, biomass entails relatively small scale, local renewable energy provision.

### **Biomass Energy Resources in Scotland**

Biomass is organic material of plant or animal origin that can be processed to provide direct heat, electricity via combustion, biogas or biodiesel, or ethanol as a substitute for petrol. It can be stored, and used for heat, transport of electricity.

The lifecycle carbon balance of biomass can result in significant savings in greenhouse gas emissions compared with fossil fuel alternatives. Low input crops for energy use, such as short rotation coppice (SRC) or miscanthus, exemplify such savings.

Anaerobic digestion of biomass, often from agricultural 'wastes' such as slurry, captures the methane which when burnt produces carbon dioxide and water. The residue is environmentally benign and can be used as a soil conditioner and nitrogenous fertiliser, replacing artificial inputs.

The use of biomass for energy where otherwise it would be left to decompose, such as the 'bi-products' of the forestry industry, reduces greenhouse gas emissions and safeguards against diffuse water pollution threats.

The environmental benefits from biomass are numerous and significant. The SRPBA believes that there is significant opportunity, especially in the wake of CAP Reform, to further develop biomass as a renewable energy option in Scotland.

There is an obvious opening for the development of energy crop production in a 'decoupled' era, where cross-compliance conditions will be met through this alternative land use. Such policy developments may increase biodiversity, protect landscape features and improve resource protection across the whole of the farmed landscape.

The SRPBA also believes that where has sensibly sited, and so long as the transportation is minimised, any adverse affect from the location of biomass power stations may well be less than the landscape effect of large-scale wind farm proposals. Biomass plants do not have to be located in exposed

positions and are ideally suited to small and medium scale combined heat and power (CHP) production units.

The SRPBA firmly believes that appropriate scale biomass energy generation can have a significant influence on both sides of the 'renewables equation'. Biomass is both carbon saving and secure and sustainable in supply. In addition, there would be significant benefits for the local economy, whilst having minimal adverse impact on both the local environment and landscape.

### **The SRPBA's Renewable Energy Policy**

The UK government and the Scottish Executive have implemented a range of policies in relation to energy efficiency, carbon trading and the promotion of renewable energy. Clearly the cheapest and most effective carbon savings can be achieved by reducing energy use, and both energy efficiency and carbon sequestration have a major role to play.

However, efficiency savings alone will not be able to deliver the necessary reductions in emissions soon enough to resolve climate change issues. Moreover, there are serious concerns about the security of supply of fossil fuels. Substitution of fossil fuels by a range of renewable resources, including biomass, must become a more important part of energy policy.

The SRPBA believes that Scotland's rural economy has a huge role to play in meeting the challenge, not only in improving its own energy efficiencies but in delivering renewable resources for the full range of energy needs at competitive prices. Land managers can provide land, crops and timber for renewable uses, providing the policy framework is right, for the benefit of the wider environment and economy, as well as local jobs, incomes and biodiversity.

Energy may be generated or captured in the form of electricity, heat or transport fuels. The SRPBA argues that all three categories must contribute to climate change targets through renewables, as well as energy efficiency. The widest possible range of cost-effective measures is needed to deliver the carbon savings required.

Renewable energy policy to date has concentrated on electricity generation, despite the fact that other renewables, particularly biomass, offer equal or better and cheaper carbon saving opportunities. Better co-ordination across the Scottish Executive's responsibilities is required to address this problem, as well as more co-ordinated action between the UK's devolved administrations.

Renewable heat offers a far greater carbon saving at a much lower cost than renewable electricity. The SRPBA believes that a heat obligation would incentives for biomass energy generation from a wide range of extensive sources. Such an approach would provide wide benefits in terms of cheap heat as well as opportunities for rural businesses.

Equally, the SRPBA believes the new Road Transport Fuels Obligation was the only immediately available option to address the significant and dangerous increase in carbon emissions from road fuel transport. Biofuels have been rapidly introduced across much of the developed world and renewable transport fuels provide an opportunity for both carbon savings and economic gain.

There is potential for further expansion of wind power, but the SRPBA believes that the attractiveness of wind declines as the best sites are used up and as more has to be backed up to cover the intermittence problem. Meanwhile, the landscape impacts of larger turbines on an increasing number of sites, many in sensitive areas, will increase unless the real costs of connecting generation plant in remote areas to the grid is factored into the price of delivery.

The SRPBA considers that these landscape and environmental impacts are sufficiently important to justify a change in the handling of proposals for wind farms in the planning system, to bring them into line with the treatment of other energy, industrial, commercial and residential development proposals.

Simultaneously, the SRPBA also believes that the development of biomass energy has benefits not only for climate change but also offers the opportunities for Scottish agriculture and forestry and would increase the security of the UK's energy supply. Biomass energy could make a vital contribution to UK and Scottish targets for combating climate change, but is failing to fully develop under fractured and misguided government policies.

The SRPBA stresses the importance of biomass as a renewable energy resource, and believes that the Scottish Executive should go further in looking at the unrealised potential for the biomass waste stream to make a significant contribution through renewable CHP.

Energy efficiency, technological innovation and changing patterns in behaviour will take a long time to deliver. Carbon, once emitted remains in the atmosphere. The SRPBA argues that much more can be done much sooner to bring the full range of renewable technologies that are already widely adopted elsewhere in the world to full use in Scotland, saving emissions now.

## SUBMISSION FROM THE SCOTTISH CROFTING FOUNDATION

The Scottish Crofting Foundation appreciates the opportunity to give evidence to this Committee on general aspects of the development of biomass in the crofting areas and believe that this could be an exciting development with a lot of potential. This is not a subject however in which we have specialist knowledge, so we confine our brief comments largely to general principles.

### Key points:

- The development of biomass for own use and local markets offers great potential in a crofting context to enhance the sustainability of rural communities, many of them in peripheral and sparsely-populated areas.
- Many people are involved or interested in growing short rotation coppice or managing existing woodland for biomass for their own use. Further development beyond this will require local assistance and co-ordination to make links in the supply chain between smaller-scale growers and to help find and develop markets.

### **Biomass in a crofting context**

Recent studies have indicated that many in remote rural areas are living in fuel poverty. With an uncertain future facing fossil fuels, we believe that biomass grown for your own use or local market offers the potential for remote rural communities to become increasingly sustainable and self-sustaining.

There would seem to be scope for expansion of biomass supply chains within a local radius at which it is cost-efficient, for e.g. schools and swimming pools, which could lead to greater local sustainability and increased woodland area. Many efforts are being made in this regard and it is perhaps beginning to fall into place - biomass does seem however to be slightly the 'poor man' of renewable energy development and there is no doubt that investment in both local supply and market infrastructure would enable swifter development of biomass systems.

The crofting system, with access to land and a tradition of collaborative working fits well with the idea of growing for your own domestic use or as part of a local syndicate, with shared investment in machinery or the creation of a local machinery ring. Many people are interested in managing birch woods or short rotation coppice for their own logs or chips. The step up to the next stage into supplying a local market requires a level of co-ordination to help make the links.

It appears that there is something of a chicken and egg situation – people are unwilling to commit land on a larger scale to growing biomass and invest in machinery without knowing that it has a local market within reasonable distance. The change to biomass systems similarly depends on knowing that there is a steady local supply.

**Support from policy**

Although there is evidence of ancient intensive coppice management systems in many parts of the Highlands and Islands, the modern connection between crofters and their own woodland management has been more recent. As a result of this historical separation between forestry and agriculture these complementary land uses have not been as integrated as they could be and skills and confidence in woodland management are still developing.

The closer policy and administrative links now being developed between agriculture and forestry may help to further integrate these important land uses.

The recently-announced extension of Single Farm Payment consolidation for afforestation may encourage more – now considering their future land uses post CAP-reform – to consider biomass development.

Rural development instruments, currently under discussion for 2007-13 may be used to support the development of biomass. Small-scale development of local biomass supply chains and the infrastructure/co-ordination required to stimulate them should not be overlooked in favour of large projects – as they also have the potential to deliver real local benefits.

**Agenda Item 1**  
**Environment and Rural  
Development Committee**

1 March 2006  
ERD/S2/06/7/2a

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## **SCOTTISH WATER: APPOINTMENT OF INTERIM CHAIR**

Further to our telephone conversation today about Alan Alexander's resignation as Chair of Scottish Water, I am writing to place on the record the Executive's position and the steps that we are taking to replace Alan.

Alan sent Rhona Brankin Scottish Water's delivery plan for 2006-10 on 1 February. Our judgement, and that of SEPA, the Drinking Water Quality Regulator and the Water Industry Commission, was that the plan fell short of our respective requirements in a number of material respects. Alan for his part believed the plan to be wholly compliant with these requirements. In view of this material divergence of opinion, Alan decided to resign as Chair of Scottish Water.

With the agreement of the Commissioner for Public Appointments in Scotland, we are moving quickly to identify an individual capable of being appointed as an interim Chair within the next few days. The appointment will be for a period of up to a year. The interim Chair's first task will be to oversee the production of a new delivery plan that we and the regulators can accept as the basis for Scottish Water achieving the improved standards and increased capacity that are required of it within the financial limits set in the determination of charges.

In slower time, we will mount an open competition to appoint a permanent Chair.

I am sending a copy of this letter to Des McNulty in his capacity as Convener of the Finance Committee.

**ROSS FINNIE**