Agenda Item 2

Environment and Rural Development Committee

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SUBMISSION FROM FORESTRY COMMISSION SCOTLAND

THE PRACTICALITIES OF DEVELOPING THE BIOMASS INDUSTRY AND USING BIOFUELS

Summary

The Forestry Commission Scotland welcomes the opportunity to present its experience on the practicalities of developing the biomass industry and using biofuels. Some of the work we have achieved to date is highlighted and the issues and our experience of the barriers & issues faced in developing biomass and biofuels on the ground are discussed.

Progress & ongoing work on biomass & bioenergy

Whilst not comprehensive the following information provides a brief overview of our existing work programme and highlights the spectrum of activity needed to help develop this new market. This ranges from: provision of the right policy framework to resource information; development of an informed advice network; support for the development of actual supply & use clusters and bespoke training.

FREDS

The Forestry Commission Scotland (FCS) sits on the Forum for Renewable Energy Development in Scotland (FREDS) Biomass Energy Group and has taken forward some of the key recommendations such as developing European funding proposals to appoint two more wood fuel officers based in Hamilton and Perth. Through their participation in the Scottish Renewables Forum's Biomass Working Group FCS has also supported the establishment of the Bioenergy Network and appointment of the network development officer. FCS has also worked in conjunction with Executive colleagues in the SEPA Sponsorship & Waste Division to address the waste definitions issues raised by FREDS and SEPA has now issued clear guidance entitled 'Is it waste – understanding the definition of waste' (www.sepa.org.uk).

Highland Wood Fuel Programme

Highland Wood Fuel Programme – this programme is jointly delivered by FCS in partnership with Highlands & Islands Enterprise (HIE) and is supported by European Regional Development Funds. Rebecca Carr is directly employed by FCS and delivers the programme across the Highlands and Islands. It is the only programme in Scotland that can support both the supply chain and end user and is targeted at small-medium sized enterprises (SMEs). To date it has provided

support in the region of £250k towards projects with a value close to £500k. Seven clusters are being supported across the Highlands & Islands and these are in Kintyre, Islay, Mull, Ardnamurchan, Badenoch & Strathspey, Lochaber and the Black Isle.

Nation-wide wood fuel usage study

FC undertook a nation-wide wood fuel usage study in 2005 that detailed the current amount of wood fuel being used in Scotland in both the domestic and commercial sectors. This study also recorded all the known projects proposed or under development and an estimate as to their potential demand. While this report will be published later this spring FCS is continuing to update the information and the preliminary findings of this year's update are mentioned in the Minister's written evidence.

Wood fuel availability in Scotland

Forest Research has produced a report on the available wood fuel resource across the UK and this can be found on (www.woodfuelresource.org.uk)

Bioenergy Infrastructure scheme

FCS is administering this scheme in Scotland on behalf of DEFRA and has offered four applicants a total of £416,800 for a range of capital investment ranging from purchase of a baling machine to construction of a bespoke chip drying and storage facility.

Ignite

FCS in co-operation with a number of other partners including HIE, Scottish Enterprise, European Regional Development Funds is supporting two projects called Ignite: HI and Ignite: Scotland. These pan-Scotland projects will provide an innovative training programme of practical seminars and workshops with a focus on wood fuel. They are based on a successful programme already operating in the North of England and are designed for those wanting to know more about wood fuel, and to equip new and existing wood fuel business with the skills and knowledge required to meet increased demand in the future.

Interreg Northern WoodHeat projects

This international project, supported by FCS and managed by Highland Birchwoods, is aimed at developing small-scale supply chains and involves over eleven Scottish partners from Abriachan & Dunnet Forest Trusts to Highland Wood Energy, Woodtherm Fuels and DWP (Tomintoul). It is well on the way to achieving its objectives and is undertaking work ranging from harvesting and drying trials in the Highlands to, whole tree chipping and designing and adapting a lorry for woodchip delivery in Lochaber.

Wood fuel information officers

The three wood fuel information officers, two of whom were only appointed last autumn, have so far dealt with over 300 business, individual or community contacts; organised 6 seminars; made over 60 presentations & supported the development of 7 operational clusters. They are currently finalising a one-stop shop web-site for wood fuel (www.usewoodfuel.co.uk) and working on the development of at least another 7 clusters across Scotland.

Supply information

FCS regularly provides production forecast, volume availability and transport solutions for larger scale electricity, CHP and electricity generation projects. To date FCS has handled over 15 larger scale developer enquiries and well over 50 smaller scale supply information requests.

Progress & ongoing work on biofuels

FCS, through the mechanism of a recently established interdepartmental group, is working with Executive colleagues to look into the issues around the production and use of energy crops and biofuels. Consequently FCS & ETLLD are now jointly taking forward the development of a National Biomass Action plan.

FCS are also in close discussion with the National Farmers Union of Scotland (NFUS) about the development of this plan and are working on a joint seminar for farmers on what the options and issue are around growing bioenergy & biofuel crops and how to establish supply chains. FCS is also now represented on the NFUS Scottish Biofuels Committee.

FCS operates 639 ‘business vehicles’ (cars and vans), plus a fleet of HGV's and other equipment ranging from chainsaws and mowers through to complex tree harvesters and forwarders, forest management and road building machinery. For many years we have developed a policy to encourage 'best environmental practice' such as introducing bio degradable, vegetable based chainsaw oil in 1994, bio degradable hydraulic oil in 1995, and we started using 5% bio diesel in 2002.

In respect of our vehicle fleet, our initial focus was on introducing more fuel-efficient vehicles and alternative carbon neutral fuels such as bio diesel, which was first used by us in Scotland in February 2005. In Scotland, about 8% of our total road fuel purchased is now bio diesel (supplied by RIX Petroleum), 78% is DERV, 7% is LPG and 7% is unleaded petrol and we now have about 110 vehicles in Scotland (17% of the fleet) using bio diesel.

Most of the vehicles using biodiesel are running on 5% bio diesel blended with 95% ULSD. However we are trialing one vehicle at Moray on 100% bio diesel, a further 23 at Inver on 25% bio diesel, 14 vehicles at Huntly are using 10% bio diesel and we have one van at Fochabers which legally runs on waste cooking oil. We have also encouraged Citroen to extend their engine warranty to allow us to use bio diesel blends up to 30%.

Further expansion of the use of bio diesel is being limited by the fact that it is not economically viable to send a delivery tanker to many of our outlying locations. We have overcome this on a number of sites by taking delivery of 100% bio diesel, and blending our own fuel in bulk tanks with local ULSD. Consequently, we now have our own bulk tanks in six locations in Scotland; Aberfoyle, Ae, Inver, Newton, Huntly and Newton Stewart and plans to expand to further sites in the future. We are also trying to encourage a number of Local Authorities to move on to bio diesel, in the hope that increasing demand in an area will encourage large suppliers to deliver, and so improve the supply chain to ourselves.

Issues & barriers to the development of biomass & bioenergy

Based on our developing experience, the following issues would seem to constitute the main practical barriers to developing the bioenergy industry in Scotland:

Cost of equipment

Bioenergy equipment, whether for use on a domestic, or commercial, scale is more expensive than its conventional fossil fuel counterparts. Whilst in an ideal world this differential would disappear it is felt that some cost difference is likely to remain in certain market segments due to the size of the equipment, feed mechanisms and storage, and the associated civil and structural works. Therefore there may always be a need to level the playing field for certain sectors of the market through incentives to encourage end users, or developers, to choose the bioenergy option. Mechanisms such as ROCs are obviously important for large-scale electricity generators, but even small-scale heat only projects (e.g. <1MW) will need incentivising. The Scottish Community & Householder Renewables Initiative (SCHRI) has been very successful in securing community projects and few if any of the 49 heat only installations so far operational would have happened without capital grant support from SCHRI or the Woodfuel Development Programme. There is therefore a strong case to continue this support ideally broadened to include SMEs as eligible applicants.

Supply chain development

This is an issue for all scales of development. Firstly, for many large scale electricity, or CHP developers, securing long term supply contracts is often a pre-requisite for projects to secure the necessary investment capital, or even board

approval for off balance sheet investment. The need to secure this so-called "bankable volume" is one reason why every developer has approached FCS for direct supply contracts or supply underwrites.

However, this demand should be set against the fact that the total production from Scotland's forests is now estimated to be around six million cubic metres of timber per annum of which over half is from the private sector. Whilst private sector production has the capacity to grow in the future, state production is actually set to remain reasonably static at c. 3 million cubic metres per annum. Importantly 69% of FCS's production of 3 million cubic metres is committed to existing processors under long-term contracts and thus FCS has a limited capacity to satisfy this new demand from the bioenergy sector. Therefore, the private sector is taking up this challenge and there are some examples of private forest management companies successfully taking on the role of procurement & supply chain managers for bioenergy projects. However our experience has shown that projects which have seriously addressed their supply issues early in the development process have the best prospect of succeeding.

Secondly, at the smaller local scale, sourcing biomass may not be so much of a problem as the volume requirements are generally quite small (ranging from tens to hundreds of oven dried tonnes per annum). However there are issues relating to market confidence and scale. Suppliers need the confidence that there will be enough end user demand to make it worth their while to invest in the necessary supply infrastructure and end users need the confidence that the supply they need will be there at the right time, price and quality. Hence our focus on developing clusters of users and suppliers. However it should be recognised that this sector requires considerable support in terms of advice, awareness raising and market development, as well as capital investment.

Thirdly there is the issue of raw material price. In simple terms growers will not sell at any price, as like any business, they justifiably want a return. Thus end users should make realistic assumptions on the price they will have to pay for the resource. For example, chipwood currently has an average price in Scotland of between £18.50 -£19.00 per green tonne delivered in to the mill. Of this price, haulage costs approximately £6.00 and harvesting £10.00 to £13.00 per green tonne. Therefore it is apparent that growers are currently operating on tight margins and unless the bioenergy industry can offer comparable prices to existing chipwood buyers then private sector growers will have little incentive to sell to such new markets. To put this in the context of the bioenergy industry, which generally uses the term oven dried tonnes, and where 1 oven dried tonne (odt) equates to roughly 2 green tonnes, this price of £19.00 per green tonne equates to a theoretical minimum of £38.00 per odt for unprocessed dried roundwood. Obviously, few modern wood fuel boilers are designed to use 2 metre long logs as their main fuel and therefore this roundwood would require further processing (e.g. chipping) into a usable fuel. This additional processing will add further to the cost of production and thus the final wood fuel should

attract a price considerably in excess of £38.00 per oven dried tonne. That said, many growers are extremely interested in the opportunity that a developing bioenergy market presents and the prospects it might offer for them to start viably thinning crops again.

The information gap & expertise in installations

The information gap is being addressed through the various networks being established, however this provision needs to continue to inform decision making on equipment selection or project design. Clearly poor design and project management can lead to installation and maintenance issues, which can affect confidence in the sector. In addition, the lack of Clear Skies accredited installers in Scotland and considerable delays in getting some approved is a constraint, which needs to be addressed. Broadening the skills base beyond the current specialised companies would also help bring the sector into the mainstream.

Historic focus on electricity

Too much emphasis on using biomass for electricity generation could not only skew the supply chain due to the potential wood fuel paying capacity of the co-firing sector, but could also be perceived as an inefficient use of the resource. As the committee will have heard, converting wood to electricity is only about 30-35% efficient whereas converting it to both heat and power can be over 80% efficient. Thus logic suggests that using biomass for both heat and power generation is the best option. The Executive's recent commitment to develop a renewable heat strategy for Scotland will inform this area and biomass will clearly have a critical role to play in any such strategy.

Issues & barriers to expanding the use of biofuels

Based on our developing experience FCS would suggest that the following issues constitute some of the key practical barriers to developing the biofuel sector in Scotland:

Uncertainty over what to grow

There is considerable willingness and interest in the land use sector in growing biofuel crops such as oil seed rape. For example the farming industry in the North East of Scotland are still looking into the options for establishing a medium scale crushing & biodiesel production facility in the region.

Biofuel supply & supply network

The supply network in Scotland is developing, but there are only 25 filling stations with biodiesel in the whole of Scotland, all supplied by RIX Petroleum. It is difficult to get deliveries of bio diesel to new locations, because it is not economically viable for the tanker. In FCS we are now taking delivery of 100%

bio diesel, and blending in our own bulk tanks with locally supplied ULSD (mineral diesel).

Current demand

The easiest way is to encourage more demand and thus build the supply network for public sector bodies with large vehicle fleets and bulk fuel storage facilities (such as Councils) and to move on to using at least a 5% blend of bio diesel immediately. Once a tanker is routinely in the area, deliveries can be expanded to new locations. Fortunately several councils are currently considering trials with 5% bio diesel and FCS is working with a number of councils to share its experiences to date.

Competition from other bio fuels

The other main bio fuel is bio ethanol, most of which is currently produced in Brazil, and some in Spain. It can either be blended at 5% with petrol, and run in standard engines, or run as an 85% blend with 15% petrol in modified engines (Ford and SAAB in Sweden). Bio ethanol is mainly produced from sugar cane, but there are plants being built in England to produce it from grain and from sugar beet. It is widely used in Sweden, where there are plans to produce it from timber residues, although it is currently being imported mainly from Brazil.