

## **BIOMASS FUEL FEASIBILITY STUDY 2008/9**

Report by Director of Development

**PURPOSE OF REPORT:** To consider the findings of a feasibility study on the viability of using woodchip biomass as a heating fuel in larger buildings in the Outer Hebrides.

### **COMPETENCE**

- 1.1 There are no legal, financial or other constraints to the recommendations being implemented.

### **SUMMARY**

- 2.1 The Comhairle was offered £10k by the Scottish Government in 2008/09 to undertake research on the viability of woodchip as a fuel. A study has been carried out by RDI Associates Ltd of Inverurie in association with Steve Luker Associates Ltd following a tendering process. A final draft copy of the report was given to the Comhairle on 16 April 2009 and a presentation was made to the Energy Member / Officer Working Group on 1 June.
- 2.2 The Feasibility Study notes that woodchip is a relatively cheap low carbon fuel in comparison to fossil fuels. It identifies a number of buildings in Stornoway with a heat demand that makes them potential sites for woodchip biomass boilers. These include Comhairle properties (the main office building, Sports Centre and the new Nicolson Institute) as well as the Western Isles Hospital and Lews Castle College. The proximity of the Comhairle's property is suggested to be particularly attractive as this lends itself to a district heating approach.
- 2.3 While the woodchip could be produced from wood imported from mainland forests, the Study calculates that existing island forestry has the potential to meet the woodchip demand, wholly or in part, in a sustainable manner. The use of island forestry has the potential to stimulate an under developed area of economic activity on the islands. While the capital cost of installation can be significantly more than for fossil fuel (oil and gas) boiler plant, lower fuel costs can lead to relatively short pay-back periods. In addition, the use of woodchip biomass would contribute to delivering the Comhairle's carbon emission reduction target. The Carbon Management Plan specifically identifies the use of biomass fuels in achieving the target.

### **RECOMMENDATIONS**

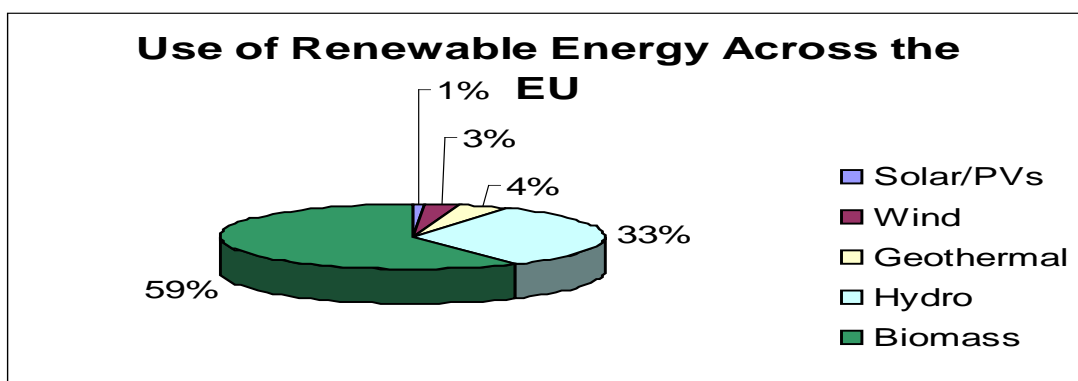
- 3.1 **It is recommended that the Comhairle:**
  - a) **notes the findings of the Study;**
  - b) **agree that the findings of the Study are considered by the Outer Hebrides Community Planning Partnership; and,**
  - c) **agree that woodchip fired boilers are considered as part of the assessment process for new build projects or the replacement boiler programme for Comhairle's buildings.**

Contact Officer:  
Background Papers

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1. Western Isles Biomass Audit April 2007  
2. Outer Hebrides Biomass Feasibility Study 2008/9  
3. Outer Hebrides Biomass Study presentation June 2009

## BACKGROUND

- 4.1 Lewis has 900 hectares of mature conifer plantations that are ready to be harvested within the next five to ten years and there is one plantation on North Uist which is ready for felling in the same time frame. There are also crofter forestry plantations that will be available for cropping in 20 to 30 years time.
- 4.2 At present, no effective end use for this woodland is currently envisaged. Exporting the wood for woodpulp or other uses is not likely to be commercially viable. Developing a demand for wood fuel would provide an effective end use.
- 4.3 Wood is used as a renewable heating fuel on mainland Europe to a far greater extent than in Britain. However the incoming Carbon Reduction Commitment will require a substantial change in amount and type of fuels used to heat buildings. Woodfuel is well placed to help deliver low carbon heating systems for buildings.



- 4.4 8% of EU energy comes from Renewables while the figure for the UK is 1.5%
- 4.5 The Feasibility Study notes that
  - There is currently no usage of wood as a fuel on the islands for any building larger than a house.
  - The plantations are suitable for providing a supply of timber which can be turned into woodchip for use as fuel, and this supply can be “topped up” with logs imported from the Scottish mainland.
  - Woodchip is a low-cost fuel that is also “Carbon Neutral”, which can help the Comhairle achieve its Carbon Reduction Commitment.
  - A large boiler plant serving a group of buildings on a district heating scheme would give the best payback time. The Comhairle’s Stornoway offices, the Sports Centre and the Nicolson Institute are suggested as offering the shortest payback period if a wood chip boiler plant was constructed to provide the main heating load for these buildings.
  - A new depot would be needed to provide an outdoor storage and drying area for round log timber and a building to provide indoor storage of woodchips in readiness for delivery to boiler plants for burning. Machinery would also be required to handle and chip the timber.

- 4.5 Comparative fuel costs show that woodchip is a cheap fuel. However the capital cost of the boiler plant is more than for other fuels. Further detailed analysis for specific buildings is required to establish overall cost effectiveness of a wood biomass boiler.

Comparative 2009 Fuel Costs for commercial heat	
Fuel	Cost of delivered heat in £\MWh
Electricity	£70 to £150
LPG	£70
Oil	£65
Wood pellets	£40
Imported wood chips	£30 to £35
Island produced chips	£28

- 4.6 There are some houses currently being built which will use wood pellets as the primary heating fuel. Wood pellets are supplied as a factory produced product with controlled low moisture content. While they are suitable for domestic boilers they are more expensive to use than wood chips which are burnt with a moisture content of 30%.

## CONCLUSION

- 5.1 The Biomass Feasibility Study undertaken by RDI Associates Ltd. with Steve Luker Associates Ltd. has been a useful introduction to the woodfuel possibilities for the Outer Hebrides. Woodfuel as a heat source is becoming more common on the mainland. It would be possible to start a supply system on the Outer Hebrides which will reduce the usage of other fossil fuels.
- 5.2 It is recommended that woodchip fired boilers are considered as part of the assessment process for the replacement boiler programme for the Comhairle's buildings and by other organisations.
- 5.3 The Comhairle has an ongoing supply of waste wood from its Cleansing service and it may be possible to incorporate this fuel source into a wood fuel boiler plant, although different and more onerous regulations apply to burning waste wood.
- 5.4 The Consultants presented their findings of the Study to a meeting of the Energy MOWG on 1 June 2009. Copies of the report and the slideshow have been placed in the Members lounge and are available on request.