

Woodfuel

Demand and Usage in Scotland

Update Report to March 2008

Woodfuel Demand and Usage in Scotland 2008

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1 The brief

To update information in “Final Report – May 2005” (unpublished report on existing and potential woodfuel usage in the commercial, industrial and electrical energy sectors of the Scottish market) to June 2008. The information gained from the study is used for planning purposes: firstly, in the short term, to establish the extent of the continuing growth of the woodfuel sector and to inform the Scottish Government on the progress towards it’s targets for woodfuel use and renewable energy generation; secondly, in the longer term, to assess the effects of projects in the planning stage on long term supply and demand in the sector, and the likely effects on long term markets for timber from the national forest and other potential sources of woodfuel.

The report is part of the work of the Scottish Woodfuel Task Force Report to the Minister for the Environment, specifically recommendation 3:

“Undertaking an annual update of woodfuel usage in Scotland. In the longer term, a full review of woodfuel market development is needed in 2010 to assess progress and determine if mechanisms and policies need to be changed”.

2 Methodology

The information has been gathered through emails, telephone calls and interviews with respondents to the initial study. New leads during this process led to contact with new respondents, expanding information sources.

Figures have been given for a number of the industrial users on strict conditions of commercial confidentiality.

The source of the woodfuel was sought from all respondents during the update phase. Four source categories were used:

- Virgin wood fibre
- Imported fibre (in the form of wood pellets)
- Recycled fibre
- Energy crops

The respondents for projects at the planning phase of development were asked to give a probability factor, in percentage terms, of the project going though to build phase. Data on all projects was recorded, but only those projects with a probability factor equal to or in excess of 50% have been included in the forward planning figures.

Carbon Saving element

A new feature of the 2007 update and repeated for 2008 is the determination of carbon saving from substitution of fossil fuels for all existing and new operational wood fired heat and power generation plants defined in the earlier studies.

3 Results

The data derived for this survey has been obtained on a confidential basis from a number of the respondents and is not available for distribution outwith this report.

3.1. Operational projects

There has been an increase of some sixty three operational projects since the last unpublished update in 2007. Part of this increase has been the result of natural growth in the woodfuel industry, but there has been a major increase in operational projects as a result of the success of the Scottish Biomass Support Scheme (SBSS) with some fifty of the sixty three additional projects supported by SBSS.

The increase in operational projects in the larger +1,000 odt/yr usage category has led to a re-categorisation of operational woodfuel plants into three main categories:

MAJOR INDUSTRY/COMMERCIAL (using >10,001 odt/yr)
INDUSTRY/COMMERCIAL (using 1,001 to 10,000 odt/yr)
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 odt/YR

3.1.1. MAJOR INDUSTRY/COMMERCIAL (using > 10,001 odt/yr)

Total woodfuel usage in this category was recorded at 367,848 odt/yr. This has risen by 72,600 odt on an annual basis since the last survey in 2007 (Figure 1). There will be further substantial annual increases in consumption of woodfuel as two major plants currently in the build stage come on stream in early summer 2009.

3.1.2. INDUSTRY/COMMERCIAL (using 1,001 to 10,000 odt/yr)

Total woodfuel usage in this category was recorded at 27,788 odt/yr. This has risen by 8,500 odt on an annual basis since the last survey in 2007 (Figure 2). The increase arises from the commissioning of a further four plants in this category (three of which were supported under SBSS) during the last year.

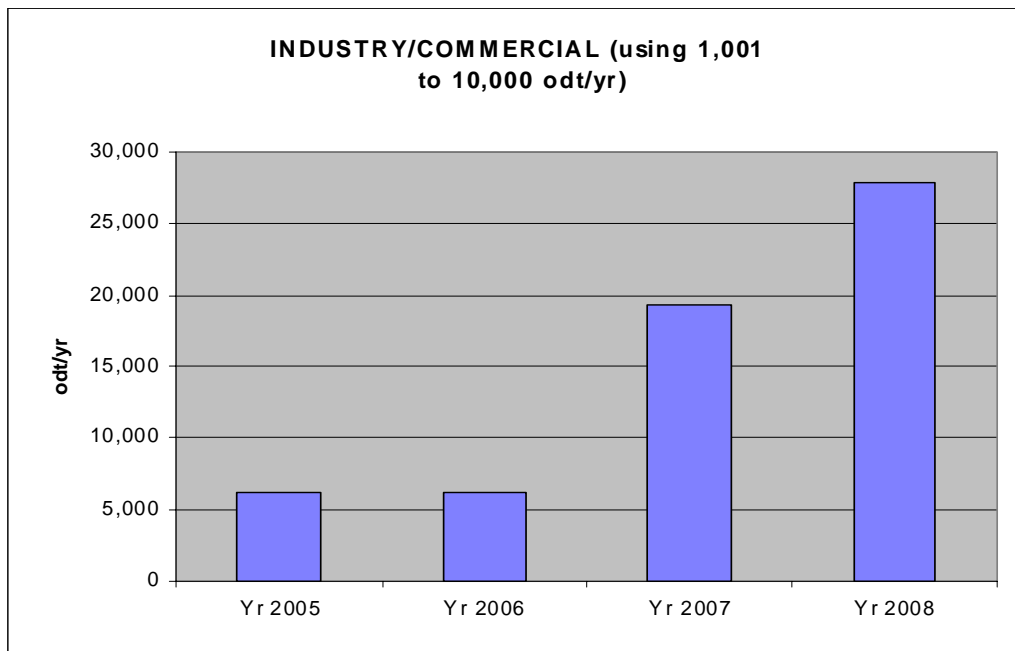
Figure 1.

Woodfuel Use - Major Industry/Commercial (using >10,001 odt/yr)



Figure 2.

Woodfuel Use - Industry/Commercial (using 1,001 to 10,000 odt/yr)

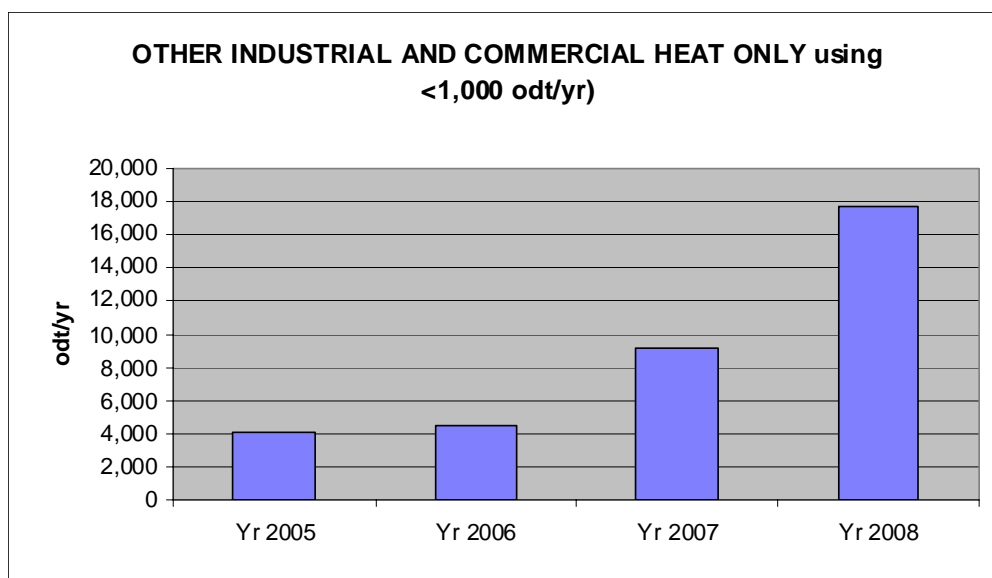


3.1.3. OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 ODT/YR

Total woodfuel usage in the category Woodfuel Use - Industry/Commercial (using <1,000 odt/yr) was recorded at 17,721 odt/yr. This has risen by some 8,500 odt on an annual basis since the last survey in 2007 (Figure 3). The increase arises from the commissioning of a further fifty nine plants in this category during the last year, of which some forty seven plants were supported under SBSS.

Figure 3.

Woodfuel Use - Industry/Commercial (using <1,000 odt/yr) 2005 to 2008



The total numbers of installations using less than 1,000 odt/yr has increased from thirty three in 2005; forty two in 2006; seventy nine in 2007 to one hundred and thirty nine in 2008 (Figure 4).

Installed capacity in this category stands at 25.22 MW across some 139 individual plants with an average plant size of 181 KW using an average of 127 odt/yr of woodfuel. The average woodfuel consumption of installations has varied from 123 odt/yr in 2005; 105 odt/yr in 2006; 116 odt/yr in 2007 to 127 odt/yr in 2008 (Figure 5).

Figure 4.

Woodfuel Installations - Industry/Commercial (using <1,000 odt/yr) 2005 - 2008

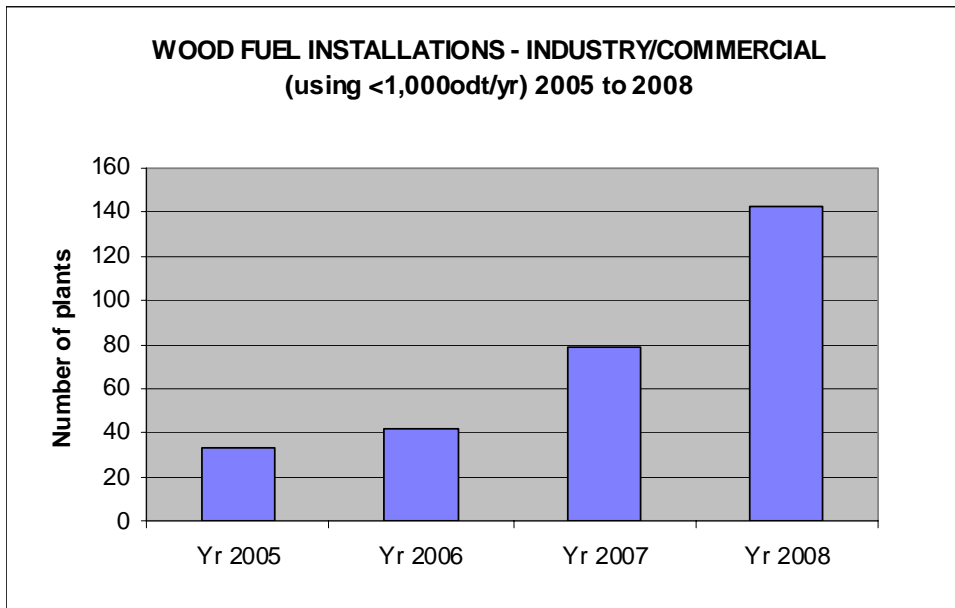
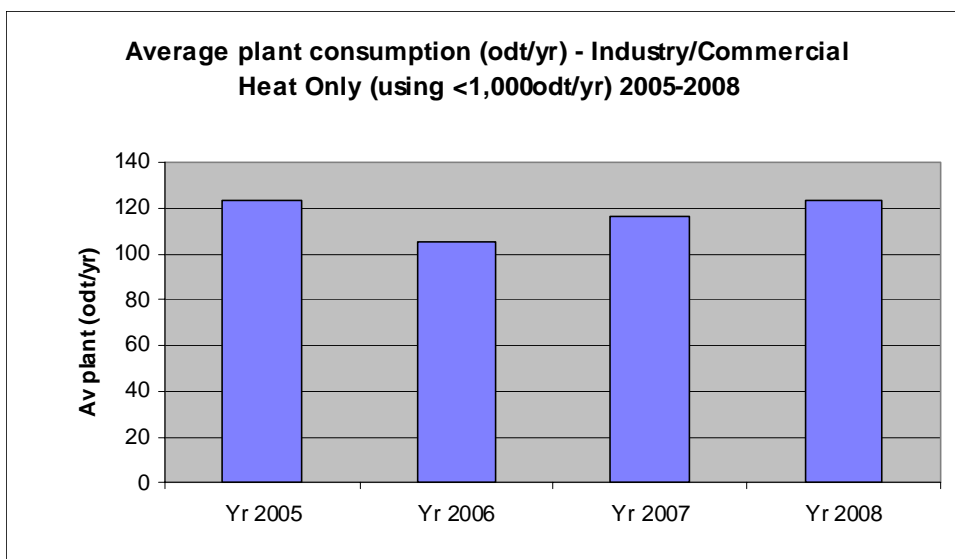


Figure 5.

Woodfuel Use - Industry/Commercial (using <1,000 odt/yr) 2005 - 2008



Obtaining the finer details of all the small scale heat only installations <1,000 odt/yr is more problematical as a result of the large number of individual contacts. Figures collected, especially on the quantities of woodfuel being used, give rise to some concern on the accuracy of the figures obtained in the survey on actual wood usage. However, the inaccuracy applies only to some 4% of total woodfuel use and is therefore insignificant in the overall figures.

3.1.4. TOTAL WOOD FUEL USE - ALL INDUSTRIAL AND COMMERCIAL PROJECTS

The total woodfuel use over the three categories of projects has been recorded as 413,357 odt/yr in 2008 (Table 1). Industrial and commercial plants utilising over 1,000 odt/yr account for 96% Of the total.

Table 1.

Total Wood Fuel Use by category

	Oven Dry tonnes	%
MAJOR INDUSTRY/COMMERCIAL (Using > 10,001 odt/yr)	367,848	89%
INDUSTRY/COMMERCIAL (Using 1,001 to 10,000 odt/yr)	27,788	7%
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY (<1,000 odt/yr)	17,721	4%
	413,357	100%

The total woodfuel use over the three categories has risen just over 90,000 odt in the past year (Figure 6). The total woodfuel use by fuel category (virgin fibre (chip), pellet and recycled fibre) is shown in Figure 7.

Figure 6.

Total Wood Fuel Use – All Industry/Commercial - 2005 to 2008

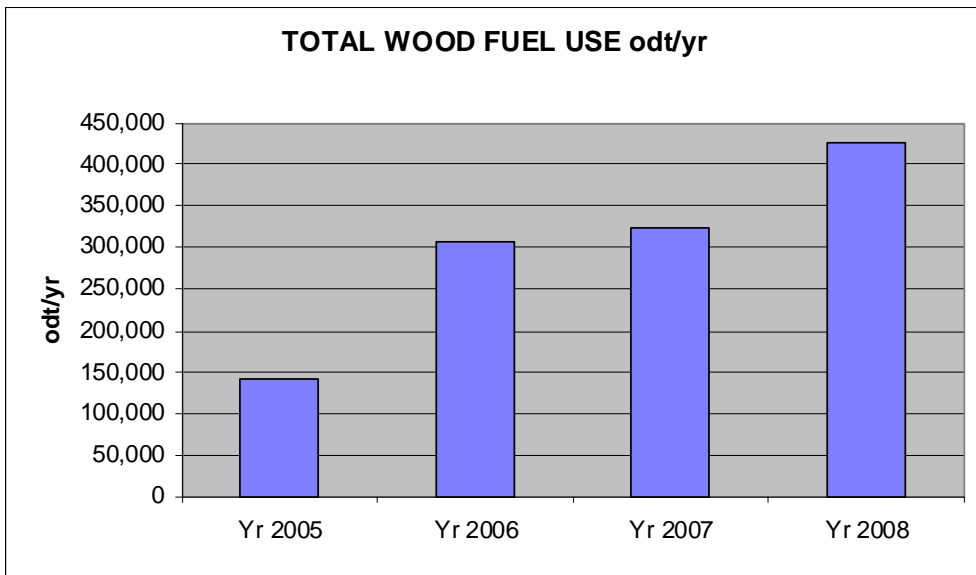
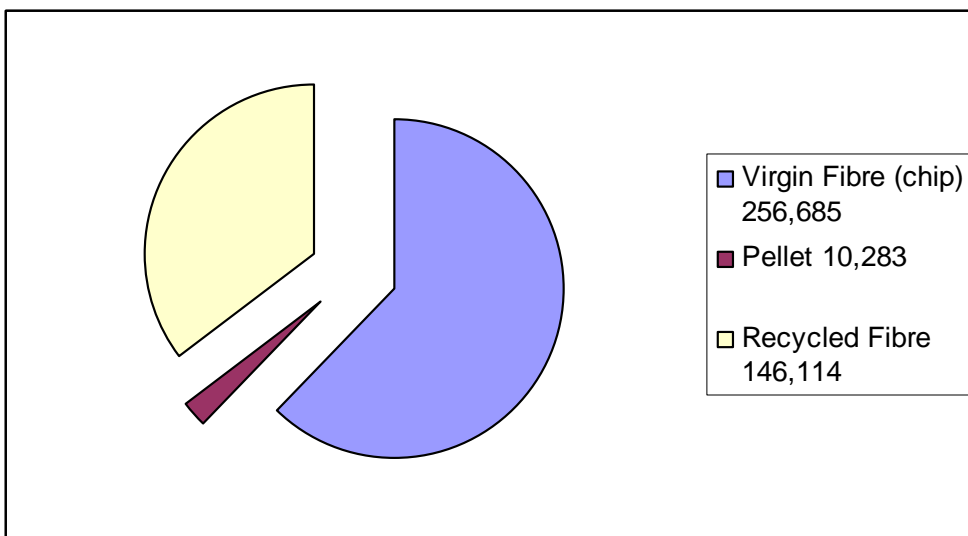


Figure 7.

Total woodfuel usage by major fuel category 2008.

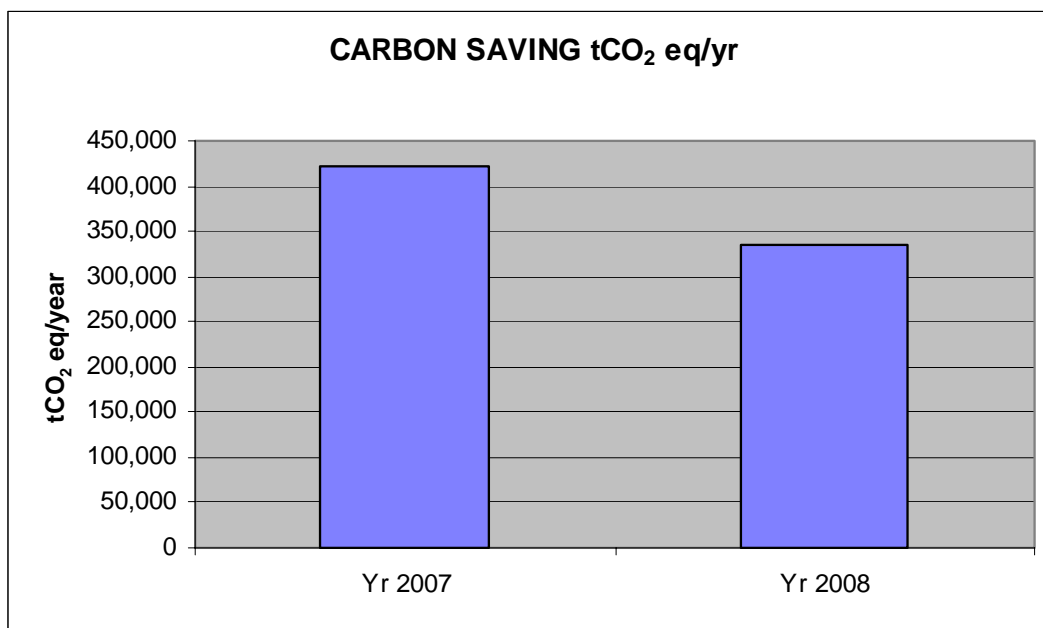


3.2. Carbon saving

Woodfuel projects currently operating in Scotland are estimated to save some 334,020 tonnes of CO₂ emissions annually. This is a fall of 88,000 tonnes from the tCO₂ saving figure calculated in 2007 (Figure 8). The 2007 figure represented high levels of co-firing with pellets, which have since been substituted for other forms of non-woody biomass. The fall in CO₂ emissions savings is due to this change in generating electricity through coal and co-firing, and displacement of electricity generation from other fossil fuels, such as gas, by dedicated biomass plants.

Figure 8.

CO₂ savings



3.3. Projects in planning

Of ten projects in the planning stage:

- four electrical generation projects all have a probability factor of 50% or >50% and would utilise some 300,000 odt/yr of woodfuel,
- of six CHP units, five projects have a probability factor of 50% or >50% and would utilise 706,000 odt/yr of which some 245,000 odt/yr would be from recycled wood.

Only one district heating scheme for private housing has been picked up in the report, although it is understood that a number are now under consideration across Scotland. Given the perceived importance of this potential development, an emphasis will be placed in the 2009 report in locating such schemes.

4 Discussion

The number of operational plants rose from forty three to one hundred and fifty four since the initial study in 2005. The dominance of the large scale users in the form of the wood processing sector, and the increasing importance of electrical energy generation, was paramount in the initial survey and remains so.

The increase in total woodfuel usage in the category of major Industrial/Commercial (using >10,001 odt/yr) was recorded at 367,848 odt/yr. This has risen by 72,600 odt on an annual basis since the last survey in 2007. Total woodfuel usage in the category of Industrial/Commercial (using 1,001 to 10,000 odt/yr) was recorded at 27,788 odt /yr. This has risen by 8,500 odt on an annual basis since the last survey in 2007. The increase arises from the commissioning of a further four plants in this category during the last year.

Total woodfuel usage in the category Industry/Commercial (using <1,000 odt/yr) was recorded at 17,721 odt/yr. This has risen by some 8,500 odt on an annual basis since the last survey in 2007. The increase arises from the commissioning of a further fifty nine plants in this category during the last year, of which some fifty plants were supported under SBSS.

Current woodfuel usage on an annual basis over all categories has risen by 28% (89,665 odt) from 323,692 odt/yr in 2007 to a current 413,357 odt/yr as at June 2008.

In the operational projects some 96% of existing woodfuel use fell in the large scale plant sector (using >1,001 odt/yr). This dominance of the potential large scale users in the form of the wood processing sector and the increasing importance of electrical energy generation is paramount.

Woodfuel projects currently operating in Scotland are estimated to save some 334,020 tonnes of CO₂ emissions annually, a fall of 88,000 tonnes from the carbon saving figure calculated in 2007 (Figure 7). This fall is due to a change in displaced fuels for electrical generation. In 2007, a large amount of imported wood fibre was used for co-firing displacing electricity generation by coal. Over the last year co-firing has shifted to using other forms of biomass (outwith the scope of this report). This is offset by an increase in wood chip usage in dedicated biomass plants, however, the displaced emissions for

substitution of other forms of electricity production are lower than for coal used in co-firing.

Of the projects in the planning stage:

- four electrical generation projects all have a probability factor of 50% or >50% and would utilise some 300,000 odt/yr of woodfuel,
- of six CHP units, five projects have a probability factor of 50% or >50% and would utilise 706,000 odt/yr of which some 245,000 odt/yr would be from recycled wood.

Forestry Commission Scotland serves as the forestry directorate of the Scottish Government and is responsible to Scottish Ministers

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