



Forestry Commission  
Scotland

# Woodfuel

Demand and Usage in Scotland

Update Report to March 2009

# Woodfuel Demand and Usage in Scotland 2009

[www.forestry.gov.uk/pdf/Woodfuelusagelstudy2009.pdf](http://www.forestry.gov.uk/pdf/Woodfuelusagelstudy2009.pdf)

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## 1 The brief

To update information reported “Final Report – May 2005” (unpublished report on existing and potential woodfuel usage in the commercial, industrial and electrical energy sectors of the Scottish market) to March 2009. 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 wood fuel sector and to inform the Scottish Government on the progress towards its 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 wood fuel.

The report is part of the work of the Scottish Wood Fuel 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 wood fuel was sought from all respondents during the update phase. Four source categories were used in previous reports:

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

With increasing pellet production taking place in the UK, a fifth category of “UK Pellet” has been added in this latest report to the source categories of wood fuel.

A further refinement to earlier reports is in the collection and presentation of wood fuel usage and demand data which is more clearly defined than in previous reports. Wood fuel usage data has been collected and reported on an historical basis for the

preceding financial year, in this case, 2008-2009. In addition, for the major users of wood fuel in the categories of >10,001 odt/yr and 1,001 to 10,000 odt/yr, forecast demand has been introduced for the current financial year, in this case, 2009-2010.

For projects that are likely to come to fruition in the medium to longer term the section on projects in planning has been retained, as has been the case in earlier reports, with the respondents asked to provide a probability factor in percentage terms, of the project going through 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

The determination of carbon saving from substitution of fossil fuels for all existing and new operational wood fired heat and generation plants defined in the earlier studies has been carried out.

## 3 Results

### 3.1. Operational projects

There has been a net increase of sixteen in the numbers of operational projects in the financial year 2008-2009, the increase in total numbers has been slower than in previous years, as the effect of the Scottish Biomass Support Scheme has worked its way through the system.

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

Total wood fuel usage in this category (Figure 1) for the financial year of 2008-2009 has been recorded at 427,700 odt, an increase of some 60,000 odt from the previous year. However, there are major developments in this category with two industrial and commercial plants, using in excess of 10,001 odt/yr, that will enter operational status during the current financial year of 2009-2010 (Figure 1). These two plants will increase demand by 190,000 odt in the year 2009-10 giving a total demand of some 620,000 odt.

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

Total wood fuel usage in this category for the financial year of 2008-2009 has been recorded at some 26,000 odt, a small decrease on the previous year of just under 2,000 odt.

There is a single development in this scale of industrial/commercial plants for 2009-2010, demand overall is predicted to remain constant (Figure 2).

Figure 1.

Wood Fuel Usage - Major Industry/Commercial (using >10,001 odt/yr)

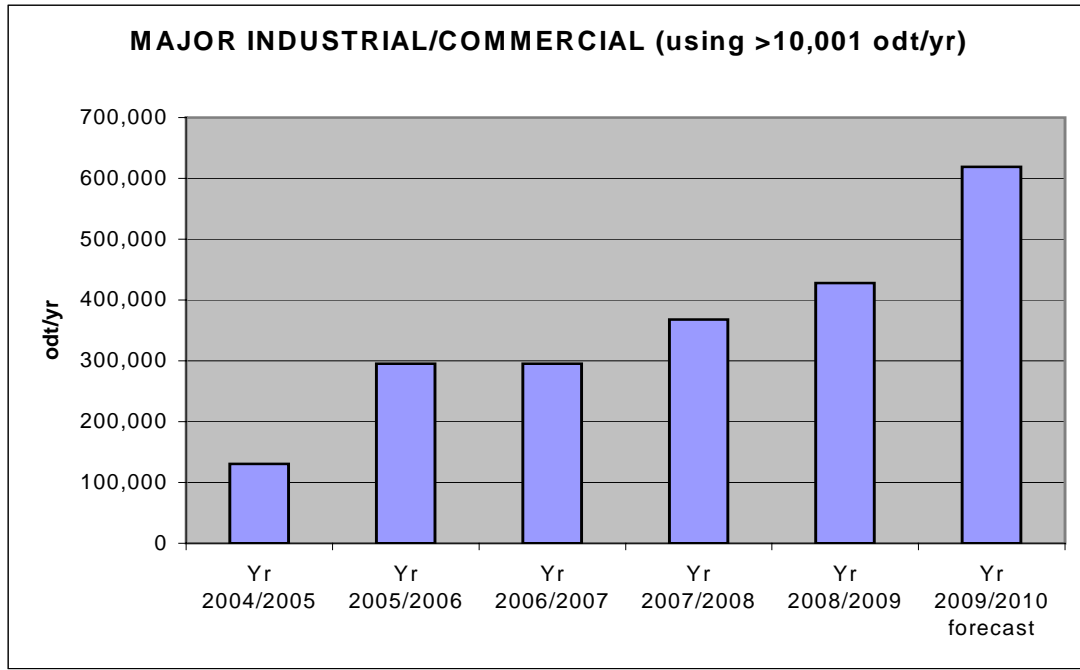
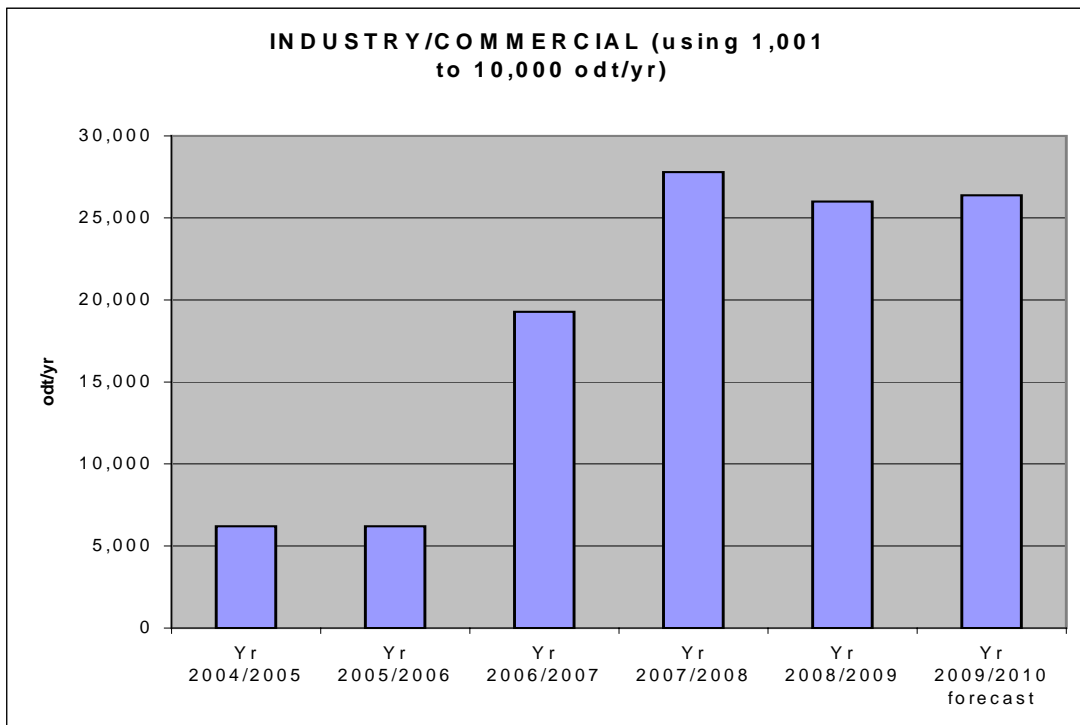


Figure 2.

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

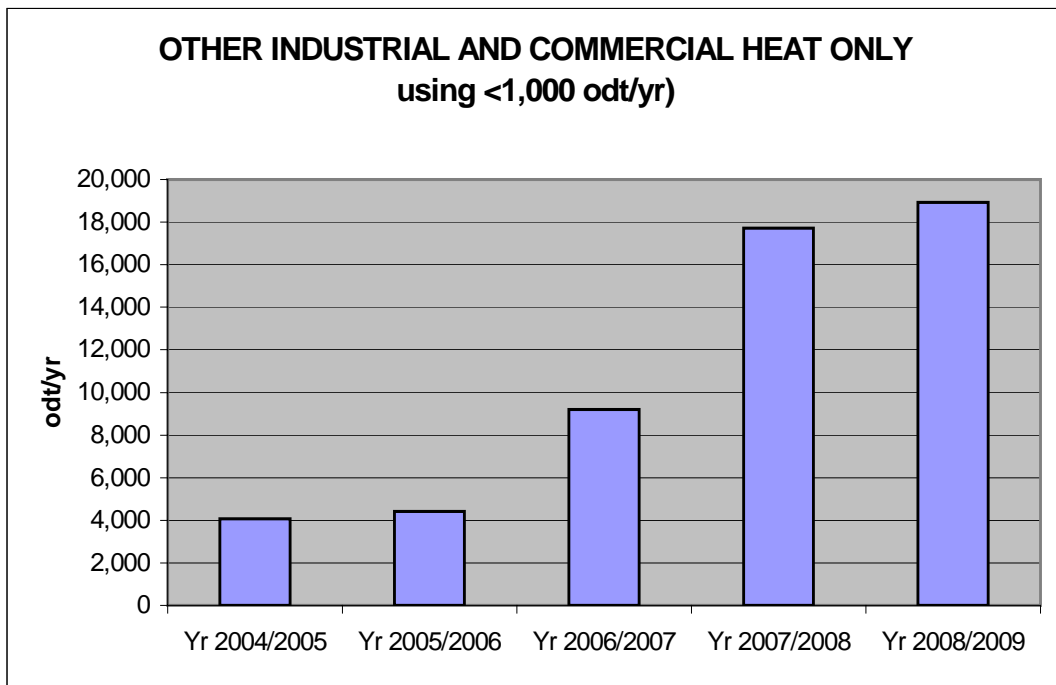


### 3.1.3. OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000ODT/YR

Total wood fuel usage in the category Other Industrial and Commercial (using less than 1,000 odt/yr) was recorded at some 19,000 odt/yr indicating an increase over the previous year of just over 1,000 odt (Figure 3). No attempt has been made at forecasting demand in the current financial year in this category.

Figure 3.

Wood Fuel Use - Industry/Commercial (using <1,000odt/yr)



The total numbers of installations using less than 1,000 odt has increased by a net 16 units to 155 units (Figure 4).

Installed capacity in this category stands at 27.11 MW across some 155 individual plants with an mean plant size of 175 KW using an average of 122 odt/yr of woodfuel (Figure 5).

Figure 4.

Number of Wood Fuel Installations - Industry/Commercial (using <1,000odt/yr)

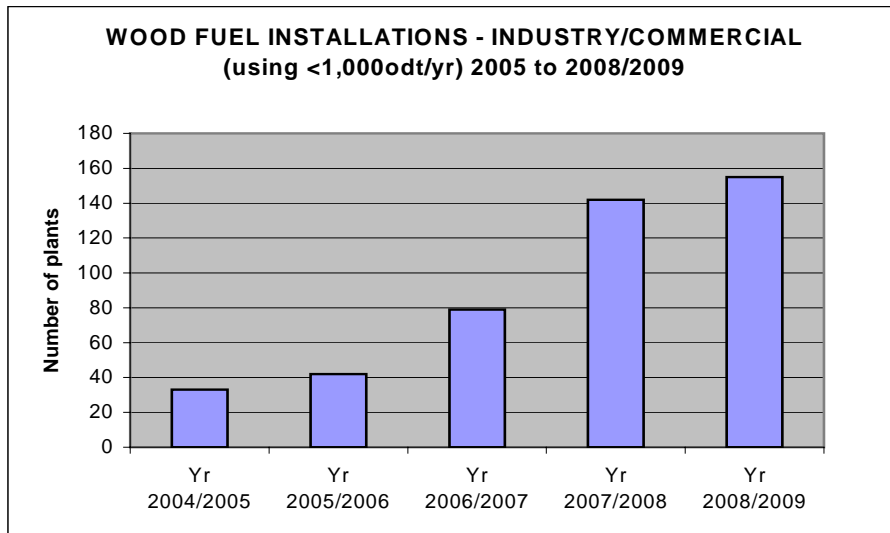
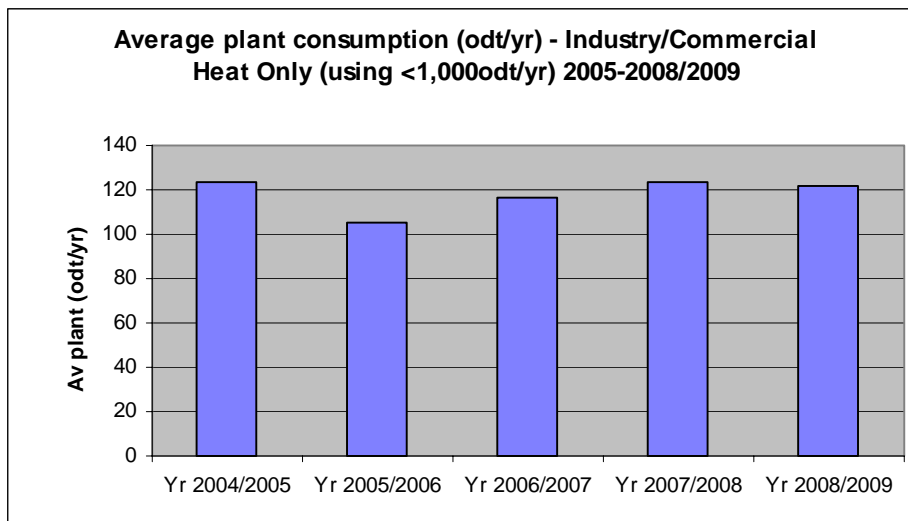


Figure 5.

Average Plant Consumption - Industry/Commercial (using <1,000odt/yr) 9



Obtaining the finer details of all the small scale heat only installations <1,000odt/yr is problematical as a result of the large number of individual contacts. Figures collected, especially on the quantities of wood fuel 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 wood fuel use and is therefore insignificant in the overall figures.

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

The total wood fuel use over the three categories of projects in the financial year 2008-2009 has been recorded at 472,620 odt (Table 1), an increase of some 60,000 odt from the previous year. Demand is forecast to increase by 190,000 odt to 664,141 odt in the financial year 2009-2010 (Table 2 and Figure 6). The increase is confined to the major industrial/commercial plants (using >10,001 odt/yr), their percentage demand is forecast to rise to 93% of the use of wood fuel in the industrial and commercial sectors in Scotland.

Table 1.

Total Wood Fuel Use by category 2008/2009

	odt	%
<b>2008/2009</b>		
MAJOR INDUSTRY/COMMERCIAL (using >10,001 odt/yr)	427,700	90%
INDUSTRY/COMMERCIAL (using 1,001 to 10,000 odt/yr)	25,998	6%
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 odt/yr	18,922	4%
	<b>472,620</b>	<b>100%</b>

Table 2.

Total Wood Fuel Forecast Demand by category 2009/2010

	odt	%
<b>2009/2010</b>		
MAJOR INDUSTRY/COMMERCIAL (using >10,001 odt/yr)	618,841	93%
INDUSTRY/COMMERCIAL (using 1,001 to 10,000 odt/yr)	26,378	4%
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 odt/yr	18,922	3%
	<b>664,141</b>	<b>100%</b>

The total wood fuel usage for 2008-2009 by major wood fuel category is shown in Figure 7). Sixty seven percent (315,351 odt) of fuel comes from virgin wood fibre in the form of chip, 27% (127,732 odt) from recycled fibre, 4% from imported pellet and 2% from UK produced pellet.

Figure 6.

Total Wood Fuel Use – All Industry/Commercial – 2004/05 to 2008/2009 and forecast for 2009/10

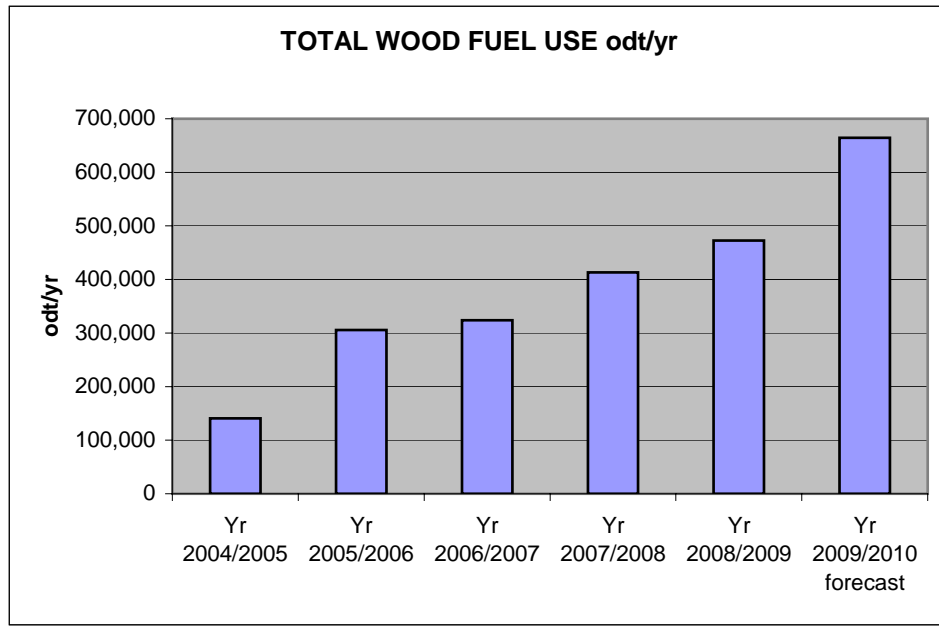
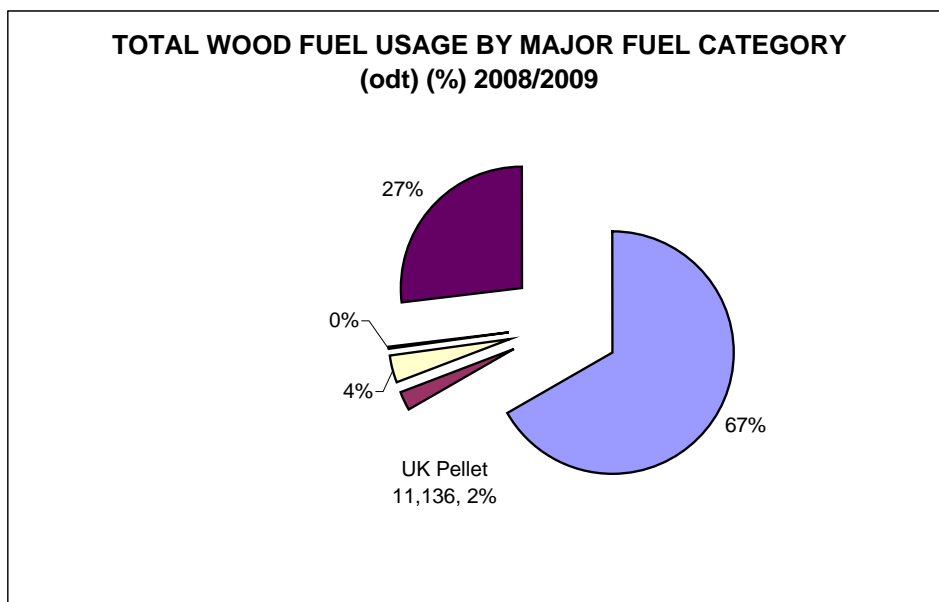


Figure 7.

Total wood fuel usage by major fuel category 2008-2009.



## 3.2 Pellet plants

In addition to wood going directly to combustion plants, Scotland is seeing the beginning of a wood pellet production industry where the wood is dried and pelletised before being burnt primarily in domestic pellet boilers, smaller scale industrial or commercial plants and at the larger scale in co-firing with coal for electricity production. Some 29,000 odt of wood pellets were burnt in Scotland in 2008-2009, primarily in co-firing with coal. This tonnage is contained within the wood fuel usage figures in this report.

In dealing with pellet production the raw material entering pellet plants in Scotland has not been considered in the wood fuel usage figures in this report. The decision is centered around double counting of the wood as a fuel if both pellet production and pellet utilisation were both recorded as wood fuel use in Scotland. It must also be considered that this report is centered around wood fuel usage and demand in Scotland, and given that we believe that the bulk of Scottish pellet production is burnt outwith Scotland, then Scottish wood fuel usage figures would be distorted.

It has therefore been decided to count only the use of wood in pellet form when burnt as an end product. However, for forward planning purposes the quantities of wood as a raw material used for pellet production has been recorded as it increases the demand on a finite resource.

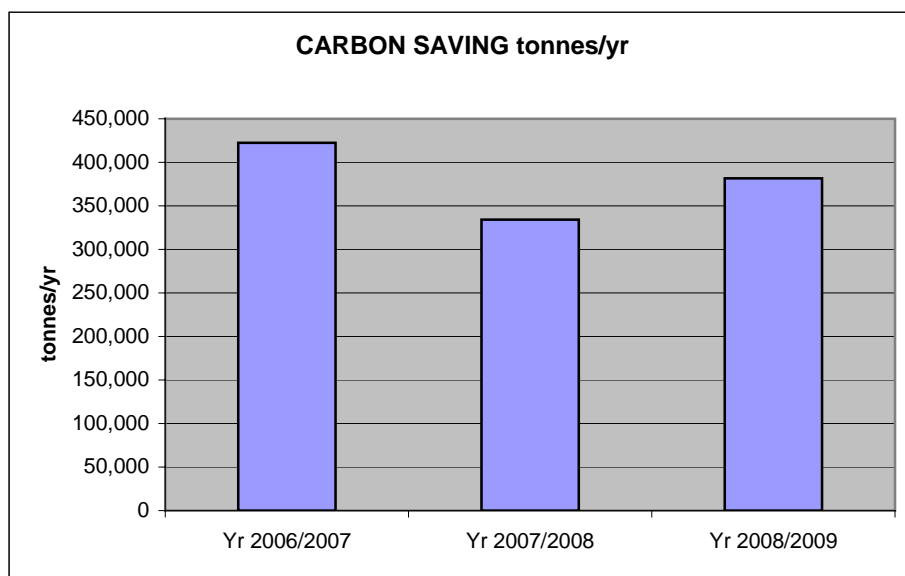
There are currently three pellet plants operating in Scotland, by coincidence all in the east and north east of Scotland; two of the plants are new and only started production during 2007-2008; the third plant has been producing over a longer period, but not, it is believed, consistently over that period. It is estimated that these three plants used some 33,000 odt in the financial year 2007-2008. However, there are two new plants coming on stream in the current financial year and the two plants started in 2007-2008 are expected to increase production as commissioning and start-up difficulties are overcome. The forecast demand for the five plants that will be producing for the whole or part of the financial year 2009-2010 is in the region of 133,000 odt. Added to the wood fuel forecast demand figures for 2009-2010 of some 664,000 odt reported elsewhere in this report, this represents an increase of a further 21% to a total of some 800,000 odt.

### 3.3. Carbon savings

Wood fuel projects currently operating in Scotland are estimated to save some 381,610 tonnes of CO<sup>2</sup> emissions annually, a rise of 47,590 tonnes from the carbon saving figure in 2007-2008 (Figure 8).

Figure 8.

Carbon savings 2008/2009



### 3.4. 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 ten CHP units, four projects have a probability factor of 50% or >50% and would utilise a total of 493,000 odt/yr of which some 344,000 odt/yr would be from recycled wood.

## 4 Discussion

The number of operational plants rose from forty three to one hundred and seventy 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.

Total woodfuel usage in financial year of 2008-2009 in the category of major Industrial/Commercial (using >10,001 odt/yr) was recorded at 427,700 odt/yr, an increase of some 60,000 odt on the previous year. The forecast demand for the current financial year 2009-2010 is predicted to rise by 190,000 odt in the year giving a total demand of some 620,000 odt.

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 fallen by just under 2,000 odt on an annual basis since the previous survey. The number of plants remained constant, but the decrease arose from decreased demand within two plants in this category during the last year. The forecast demand is predicted to remain constant.

Total woodfuel usage in the category Industry/Commercial (using <1,000 odt/yr) was recorded at 18,922 odt/yr. This has risen by some 1,200 odt on an annual basis since the last survey in 2007-2008. The rate of increase was considerably reduced from the previous year which had seen the effect of the commissioning from the Scottish Biomass Support Scheme.

Total wood fuel usage for the financial year 2008-2009 over all categories has risen by 16% (some 60,000 odt) to 472,620 odt/yr from 413,357 odt/yr in the previous year. Demand is forecast to increase by some 190,000 odt to 664,141 odt in the financial year 2009-2010. The increase is confined within the major industrial/commercial plant sector using >10,001 odt/yr.

Some 96% of existing woodfuel use took place in the major and large scale plant sectors (using >1,001 odt/yr). This dominance of the major scale users in the form of the wood processing sector and the increasing importance of electrical energy generation is paramount.

In addition to wood going directly to combustion plants, Scotland is seeing the beginning of a wood pellet production industry. There are currently three pellet plants operating, two of the plants are new and only started production during 2007-2008; the third plant has been producing over a longer period. It is estimated that

these three plants used some 33,000 odt in the financial year 2007-2008. However, there are two new plants coming on stream in the current financial year. The forecast demand for the five plants that will be producing for the whole or part of the financial year 2009-2010 is in the region of 133,000 odt. Added to the wood fuel forecast demand figures for 2009-2010 of some 664,000 odt reported elsewhere in this report, this represents an increase of a further 21% to a total of some 800,000 odt.

Woodfuel projects currently operating in Scotland are estimated to save some 381,610 tonnes of CO<sup>2</sup> emissions annually, a rise of 47,590 tonnes from the previous carbon saving figure in 2007-2008.

Of the projects in the planning stage, four electrical generation projects all have a probability factor of 50% or greater and would utilise some 300,000 odt/yr of woodfuel, in addition, of ten CHP units, four projects have a probability factor of 50% or greater and would utilise a total of 493,000 odt/yr of which some 344,000 odt/yr would be from recycled wood.

Total woodfuel usage on an annual basis in the financial year 2008-2009, has risen by 16% from the previous year to 472,620 odt. Demand is forecast to increase to 664,141 odt in the current financial year. In addition there is a major increase in forecast demand in the current financial year for wood to be used for pellet production with a total in the region of 133,000 odt bringing the total of wood going directly or indirectly into wood fuel to some 800,000 odt. If all the longer term projects, with a probability of 50% or greater, currently at the planning stage came to fruition, this would increase demand for wood for fuel by a further 750,000 odt/yr to some 1.5 million odt annually by 2012.