

Woodfuel

Demand and Usage in Scotland
Report 2010

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1 The brief

To update information reported in “Final Report – May 2005” (unpublished report on existing and potential woodfuel usage in the commercial, industrial and electrical energy sectors of the Scottish market) to 30 December 2009.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 are used:

- Virgin wood fibre (chip and sawmill co-product)
- UK Pellet
- Recycled fibre
- Energy crops and tree stumps

Previous reports on wood fuel usage data have been collected and reported on an historical basis for periods encompassing financial years. The data for this report has been gathered for the calendar of 2009. In addition, for the major users of wood fuel in the categories of >10,000 odt/yr and >1,000 to 10,000 odt/yr, forecast demand has been estimated for the calendar year of 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 32 in the numbers of operational projects rising from 171 in the preceding period to 203 in the calendar year 2009. This is double the increase compared with the preceding period increase of 16 projects. The current increase coincides with the introduction of the first round of the Scottish Biomass Heat Scheme (SBHS)

3.1.1. MAJOR INDUSTRY/COMMERCIAL (using >10,000 odt/yr)

Total wood fuel usage in this category for the calendar year of 2009 has been recorded at 453,847 odt (Figure 1). This figure has increased by some 26,000 odt since the preceding recording period. Three plants had a decrease in usage, offset by two new plants coming partially on stream during the year.

The wood fuel demand for 2010 is forecast to be in the region of 620,300 odt (Figure 1), an anticipated increase of some 170,000 odt as a result of the two new plants coming fully on stream and outages in existing older plants being minimised.

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

Total wood fuel usage in this category for the calendar year of 2009 has been recorded at 23,353 odt (Figure 2), a decrease of some 2,600 odt from the previous period.

Wood fuel demand for 2010 is forecast at 25,633 odt back almost to the usage figure for 2008-2009 with one new plant coming on stream for part of the year.

Figure 1.

Wood Fuel Usage - Major Industry/Commercial (using >10,000 odt/yr)

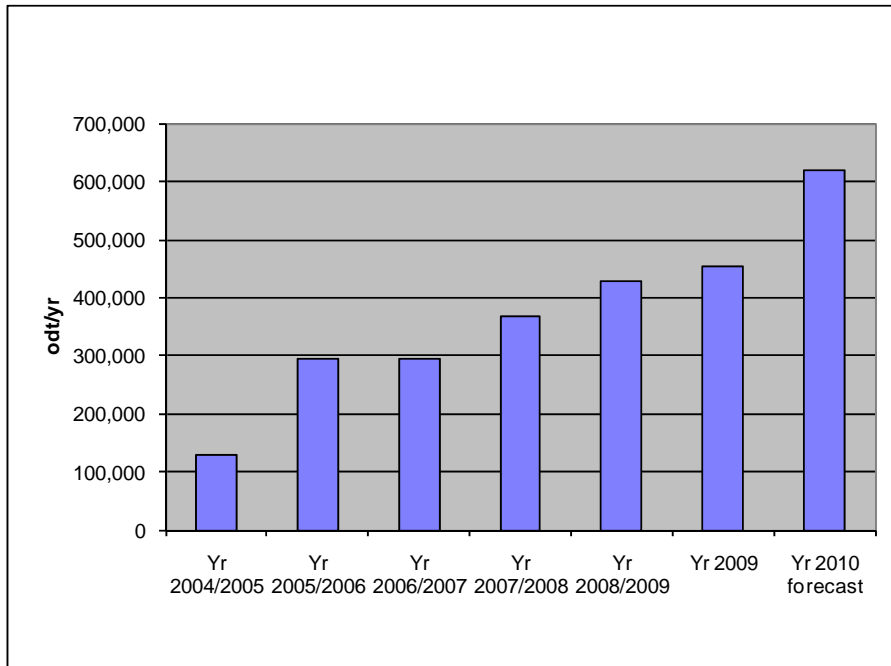
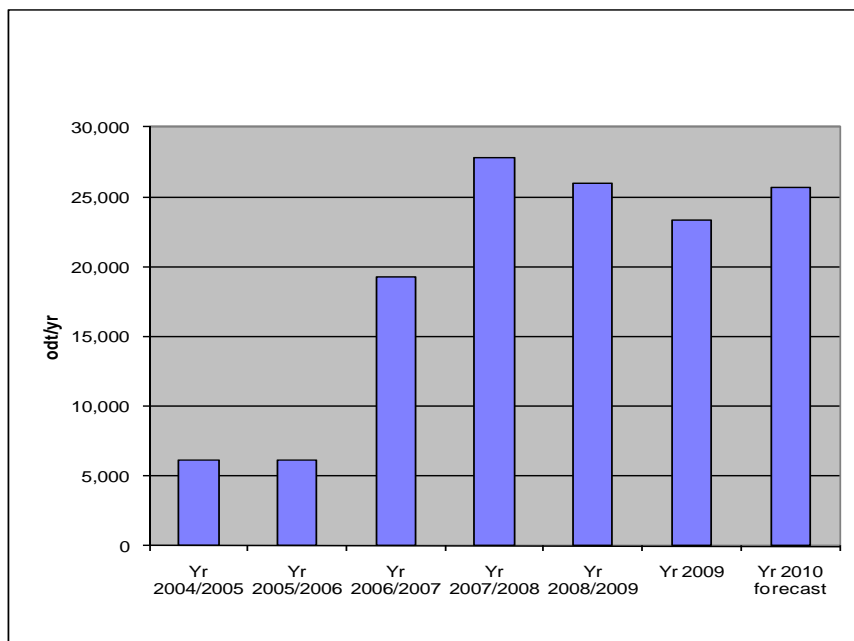


Figure 2.

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

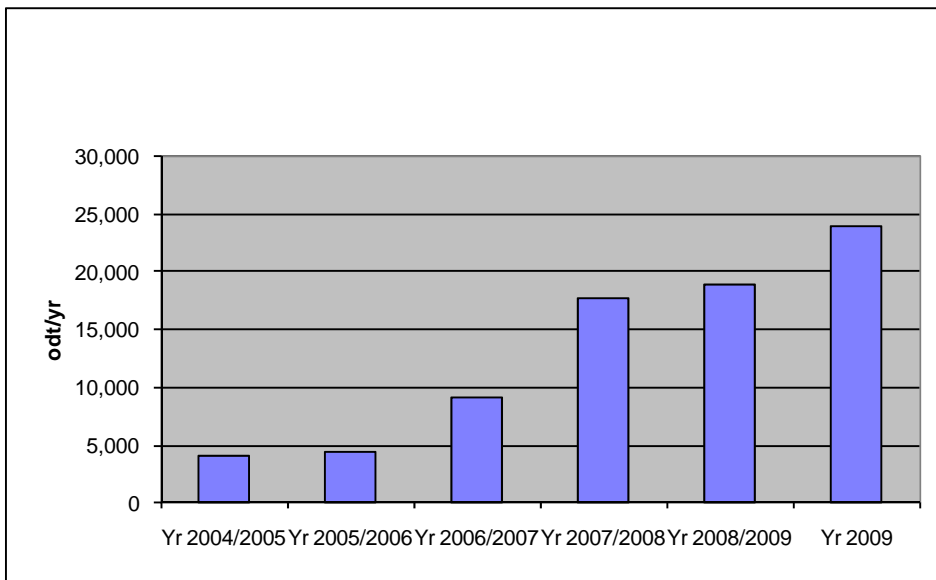


3.1.3. OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY up to 1,000 ODT/YR

Total wood fuel usage in the category Other Industrial and Commercial using up to 1,000 odt/yr was recorded at some 23,907 odt/yr (Figure 3) indicating an increase over the previous year of some 5,000 odt. No attempt has been made at forecasting demand in 2010 in this category.

Figure 3.

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



The total number of installations using up to 1,000 odt/yr has increased by a net 32 units to 187 units in 2009 (Figure 4).

Installed capacity in this category stands at 35.05 MW across some 187 individual plants with a mean plant size of 187.43 kW using an average of 128 odt/yr of wood fuel (Figure 5).

Figure 4.

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

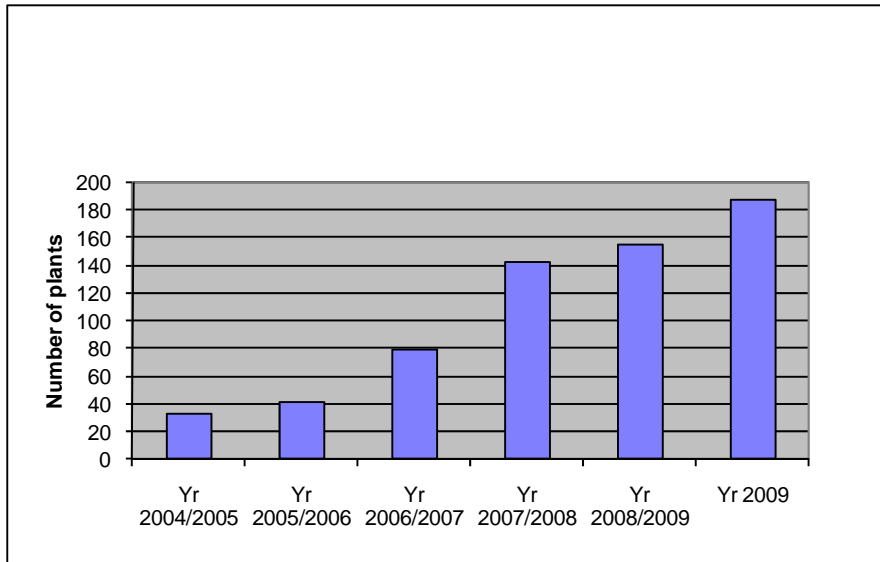
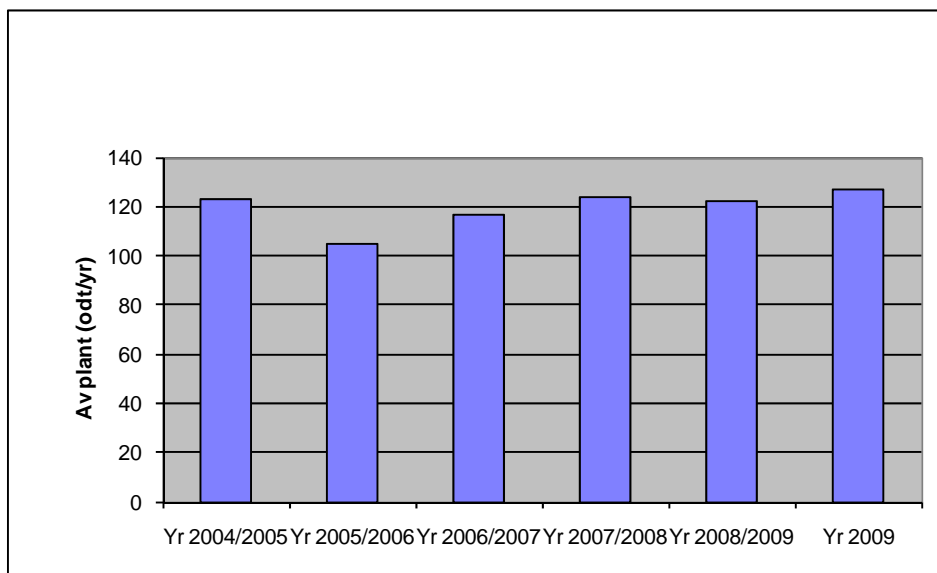


Figure 5.

Average Plant Consumption - Industry/Commercial (using up to 1,000 odt/yr)



Obtaining the finer details of all the small scale heat only installations up to 1,000 odt/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 to only some 4.8% of total wood fuel use and therefore has little impact on 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 calendar year 2009 has been recorded at 501,107 odt (Table 1), an increase of some 28,000 odt since the previous reporting period. Demand is forecast to increase in the financial year 2010 to 669,840 odt (Table 2 and Figure 6). As noted above, no attempt has been made at forecasting any increase in demand in 2010 in the usage category up to 1,000 odt/yr.

Table 1.

Total Wood Fuel Use by category 2009

	odt	%
MAJOR INDUSTRY/COMMERCIAL (using >10,000 odt/yr)	453,847	90.6%
INDUSTRY/COMMERCIAL (using 1,000 to 10,000 odt/yr)	23,353	4.7%
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 odt/yr	23,907	4.8%
	501,107	100%

Table 2.

Total Wood Fuel Forecast Demand by category 2010

	odt	%
MAJOR INDUSTRY/COMMERCIAL (using >10,000 odt/yr)	620,300	92.6%
INDUSTRY/COMMERCIAL (using 1,000 to 10,000 odt/yr)	25,633	3.8%
OTHER INDUSTRIAL AND COMMERCIAL HEAT ONLY <1,000 odt/yr	23,907	3.6%
	669,840	100%

Of the total wood fuel use of 501,107 odt in 2009, some 56% (279,461 odt) was derived from virgin wood fibre in the form of chip from roundwood and sawmill co-products; 39% (193,796 odt) from recycled fibre; 3% (16,956 odt) from UK produced wood chip and a further 2% (10,895 odt) from "other" sources (short rotation coppice and stumps) (Figure 7).

Figure 6.

Total Wood Fuel Use – All Industry/Commercial – 2004/05 to 2009 and forecast for 2010

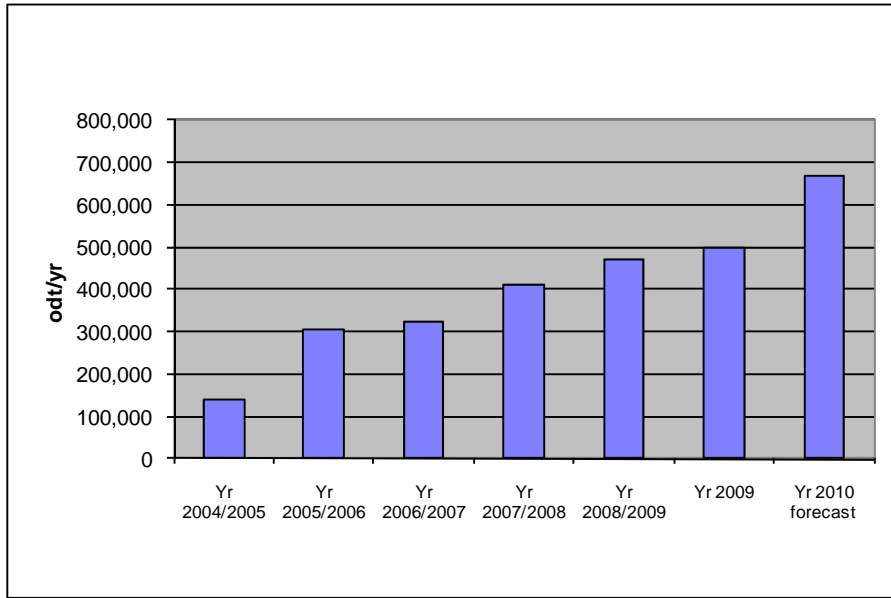
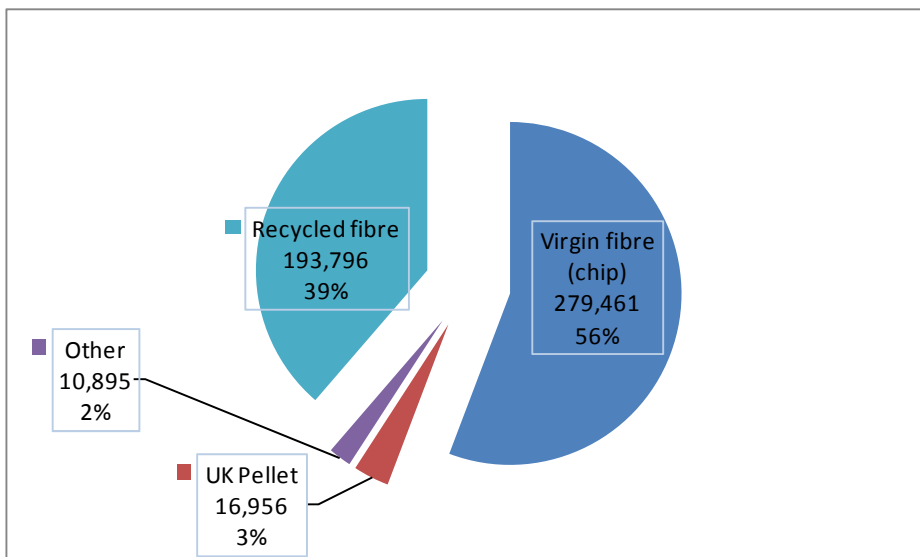


Figure 7.

Total wood fuel usage by major fuel category 2009.



3.2 Pellet plants

Some 16,956 tonnes of wood pellets were burnt in Scotland in 2009, primarily in co-firing with coal. This tonnage is contained within the wood fuel usage figures in this report.

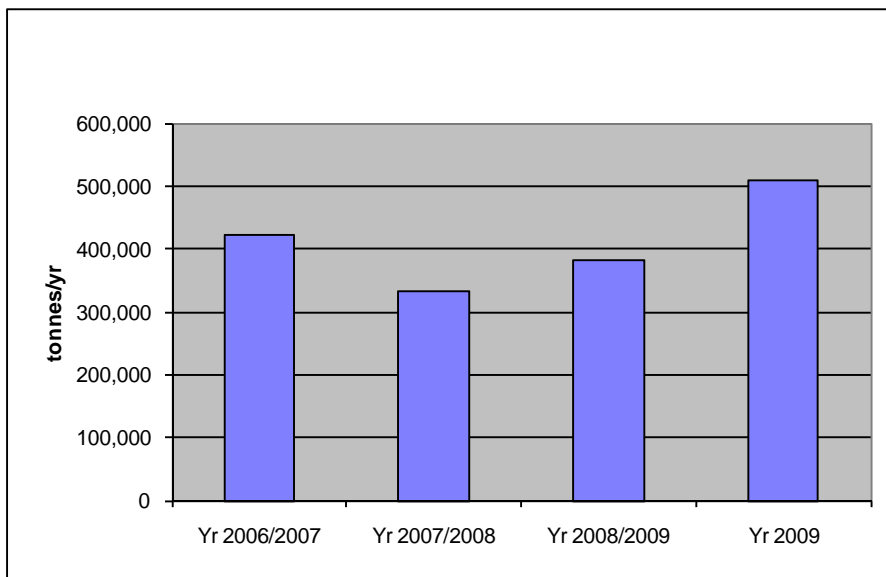
There are currently five pellet plants operating in Scotland an increase in two since the previous reporting period. It is estimated that the five plants used in total some 33,000 odt of wood in 2009 and the forecast is to increase this to 157,000 odt in 2010.

3.3. Carbon savings

Wood fuel projects currently operating in Scotland are estimated to save some 509,326 tonnes of CO₂ emissions annually, a rise of some 127,000 tonnes on the previous reporting period (Figure 8). This is a large increase in comparison with the relatively low increase in wood fuel usage of some 28,000 odt, but the high figure is driven mainly by the starting up of one plant which replaced coal burning plant previously used.

Figure 8.

Carbon savings 2009



3.4. Projects in planning

Of twenty projects in the planning stage:

- five electrical generation projects all have a probability factor of at least 50% and would utilise some 300,000 odt/yr of woodfuel;

- of fifteen CHP schemes (one of which, has five plants in the scheme), eleven projects have a probability factor of at least 50% and would utilise a total of 3,321,500 odt/yr of which some 165,000 odt/yr would be from recycled wood.

4 Discussion

The number of operational plants rose from forty three recorded in the initial study in 2005 to two hundred and three currently. 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 2009 in the category of major Industrial/Commercial (using >10,000 odt/yr) was recorded at 453,847 odt/yr, an increase of some 26,000 odt on the previous reporting period. The forecast demand for 2010 is predicted to rise by 170,000 odt giving a total demand of some 620,300 odt.

Total woodfuel usage in the category of Industrial/Commercial (using >1,000 to 10,000 odt/yr) was recorded at 23,353 odt/yr. This has fallen by just under 2,600 odt on an annual basis since the previous reporting period. The number of plants remained constant, but the decrease arose from decreased demand within a number of plants in this category during the last year. The forecast demand is predicted to rise back to 2008-09 levels in 2010.

Total woodfuel usage in the category Industry/Commercial (using up to 1,000 odt/yr) was recorded at 23,907 odt/yr. This has risen by some 5,000 odt on an annual basis since the last survey.

Total wood fuel usage for the year 2009 over all categories has risen by 28,000 odt to 501,107 odt/yr from 472,620 odt/yr in the previous survey period. Demand is forecast to increase by some 170,000 odt to 669,840 odt in 2010. The majority of this increase is confined within the major industrial/commercial plant sector using >10,000 odt/yr.

Some 96% of existing woodfuel use took place in the major and large scale plant sectors (using >1,000 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 remains paramount.

Some 16,956 tonnes of wood pellets were burnt in Scotland in 2009, primarily in co-firing with coal. This tonnage is contained within the wood fuel usage figures in this report. There are currently five pellet plants operating in Scotland an increase in two since the previous reporting period. It is estimated that the five plants used in total

some 33,000 odt of wood in 2009 and the forecast is to increase this to 157,000 odt in 2010.

Wood fuel projects currently operating in Scotland are estimated to save some 509,326 tonnes of CO₂ emissions annually, a rise of some 127,000 tonnes on the previous reporting period (Figure 8). This is a large increase in comparison with the relatively low increase in wood fuel usage of some 28,000 odt, but the high figure is driven mainly by one scheme which replaced coal burning plant previously used.

Of twenty projects in the planning stage five electrical generation projects all have a probability factor of at least 50% and would utilise some 300,000 odt/yr of woodfuel, and of fifteen CHP schemes (one of which has five plants in the scheme), eleven projects have a probability factor of at least 50% and would utilise a total of 3,321,500 odt/yr of which some 165,000 odt/yr would be from recycled wood.

Total woodfuel usage on an annual basis in the year 2009, rose by 26,000 odt from the previous reporting period to 472,620 odt to 501,107 odt. Demand is forecast to increase to some 670,000 odt in 2010. In addition there is a major increase in forecast demand in the current year for wood to be used for pellet production with a total in the region of 157,000 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 some 3.5m odt/yr annually by 2015.