

WRAP Wood Waste Market Situation Report – April 2011

Introduction

This report looks at the key factors influencing the market for wood waste in the UK, including changes in supply and demand, legislation, incentives and movements in the price of wood and its substitutes and examines the environmental benefits from dealing with wood waste sustainably.

In addition the special report investigates the issues around the growth in the biomass industry and its demand for wood waste.

Key themes to emerge from the UK wood waste sector are:

- Wood waste arisings have fallen substantially over the last few years due to reduced activity, particularly from the construction and furniture and joinery sectors.
- Wood wastes traditional customer, the panel board sector has seen demand decline as construction and furniture demand have waned. Wood recyclers have increasingly targeted animal bedding as a higher value end market and the biomass sector in order to secure end market tonnages.
- The biomass sector, supported by government incentives to increase the level of electricity generated from renewable resources has seen its demand for wood waste grow rapidly.
- The panel board sector, in particular is concerned that the expansion in the biomass sector and further government incentives to increase renewable electricity generation capacity will lead them to be unable to compete for wood waste.
- Gate fees for wood waste taken in by UK wood recyclers have dropped significantly since early 2009 reflecting the increasing competition for wood waste from biomass facilities and lower wood waste arisings.

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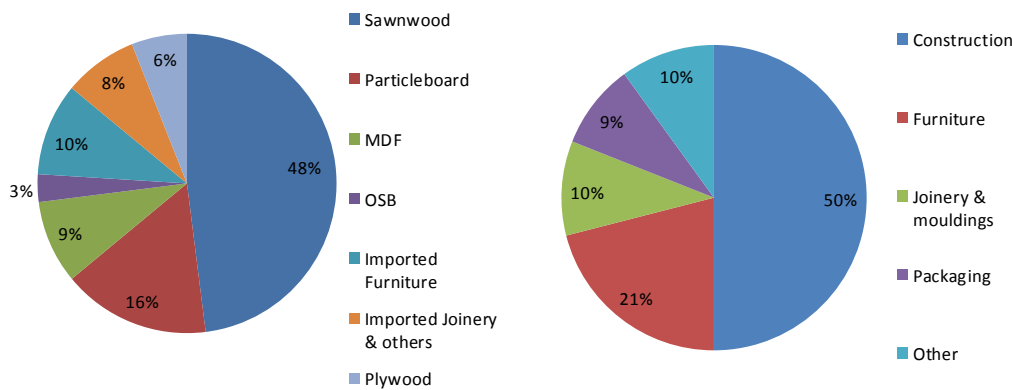
Consumption of wood and wood products used in construction/manufacture

It is estimated that around 10 million tonnes of wood was consumed in the UK in 2010 in the production of wood products (including timber frames, furniture and packaging manufacture)¹. Around 50% of total wood product input

¹ Source: Poyry (2011)

flow – about 5 million tonnes – is used in construction, 3.1 million tonnes (31%) is used in furniture, joinery and moulding manufacture, and 0.9 million tonnes (9%) is used in packaging manufacture (Graph 1).

Graph 1: Market segmentation of wood product types consumption, 2010



Source: Poyry (2011)

UK consumption of wood and wood products for use in manufacturing and construction has dropped sharply in the last few years, down by 2.5 million tonnes from 12.5 million tonnes in 2007². The key factors behind the decline have been the contraction in the construction sector during the recession and households reduced expenditure on home furnishings.

Overall UK construction sector output dropped 12% between 2007 and 2009, and despite a rebound, output in 2010 remains around 7% below its 2007 peak. However, output of private new housing (the component of construction that has the highest wood component through the use of timber frames) declined by around 40% between 2007 and 2009³. During this time overall wood consumption from the construction sector fell by 20%.

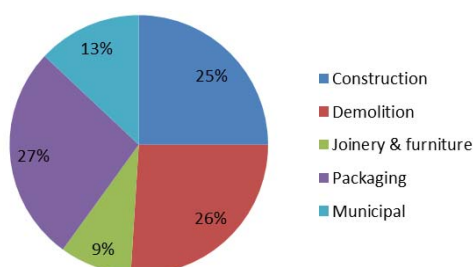
Overall wood consumption from the UK furniture manufacturing sector fell by 26% between 2007 and 2010. Domestic UK manufacturing is predominantly focusing on mid to high end furniture sectors, rather than lower end. While the lower end type furniture remained affordable during the recession it is all imported rather than produced domestically.

Despite a 20% decline in overall wood product consumption since 2007, there have been recent signs of a rebound in both construction output and demand for furniture. Overall wood product consumption increased by 380,000 tonnes (4%) between 2009 and 2010 to 10 million tonnes.

Wood waste arisings and management by sector

Estimates of wood waste arisings vary, but the most recent estimate from Poyry suggests that about 4.1 million tonnes⁴ of wood entered the UK waste stream in 2010 (Graph 2). Construction and demolition (C&D) activities each account for around one quarter of wood waste (between 1 and 1.1 million tonnes), with an additional 1.1 million tonnes coming from packaging (manufacture/end-use), 0.5 million tonnes from municipal sources and 0.4 million tonnes from joinery and furniture manufacture.

Graph 2: Wood waste arising by source, 2010



² Source: Wood Waste Market in the UK, WRAP (2009); Poyry (2009)

³ Source: ONS

⁴ Source: Poyry (2011);

The key types of wood waste arising in the UK are illustrated in Graph 3 which also shows the main processes by which wood waste is generated.

Graph 3: Types of wood waste



Source: Wood Waste Market in the UK, WRAP (2009)

UK wood waste arisings declined by 0.5 million tonnes (9%) between 2007 and 2010 to 4.1 million tonnes⁵. The joinery and furniture sector saw the largest decline in wood waste arisings, dropping by 130,000 tonnes (23%) to 330,000 tonnes followed by the construction sector, down 130,000 tonnes (9%) to 1 million tonnes. Note that wood waste arisings fell at a lower rate than wood consumption as the former includes arisings from wood already embedded in buildings, packaging etc.

BOX: Literature review & challenges in estimating wood waste arisings.

⁵ Estimates of wood waste arisings are based on top-down analysis which links tonnage of wood consumed by various industries with a wastage factor. The average waste factor for construction has been increased from 19% to 20% for the purposes of this analysis based on the increased use of solid wood in construction and the higher use of wood products in indirect construction applications. All other waste factors featured in 'Wood Waste Market in the UK', WRAP (2009) have been held constant in Poyry's updated 2011 analysis. Publicly available data for municipal and packaging arising have been adjusted to reflect market developments.

Previous studies⁶ have estimated UK wood waste arisings at a substantially higher level than the most recent estimate of 4.1 million tonnes in 2010. Estimates of UK wood waste arisings in some of the most recent comprehensive studies range from TRADA's 2002 study which estimated 5.2 million tonnes of wood waste arisings (C&D estimated at 0.9 million tonnes; industrial 1.8 million tonnes) to WRAP/MEL 2005 study which estimated arisings at 10.6 million tonnes (C&D accounting for 5 million tonnes and industrial 4.5 million tonnes).

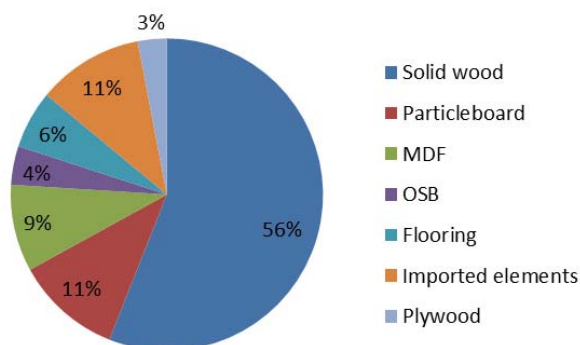
One of the main areas of uncertainty in estimating overall wood waste tonnages is the construction and joinery sectors. In part, the difficulty in generating robust estimates reflects the large number of small businesses that use wood and hence generate wood waste. For example, there are estimated to be around 40,000 construction and 21,000 joinery companies in the UK⁷, most of whom individually produce only small amounts of wood waste per year. The introduction of Site Waste Management Plans⁸ (SWMP) in April 2008 which require construction companies to plan, monitor and measure the waste they generate on site may make accounting of C&D wood waste arisings in particular more accurate in the future.

Construction and demolition

The construction and demolition sectors are the largest sources of wood waste in the UK, accounting for 2.1 million tonnes of wood waste per year in 2010. The majority of the wood waste from the construction sector consists of solid wood (Graph 4). The next largest component of construction wood waste comes from particleboard and imported structural elements.

Wood waste arisings from the construction sector are estimated to have declined by 170,000 tonnes (14%) between 2007 and 2010 to 1 million tonnes. Solid wood waste arisings fell by 120,000 tonnes (17%) while particleboard arisings fell 50,000 tonnes (32%). Meanwhile OSB arisings increased by around 5,000 tonnes (15%) to 40,000 tonnes in 2010 which can be attributed to the increased use of this panel in timber frame applications. Wood waste from the demolition sector is estimated to have declined by around 80,000 tonnes (7%) between 2007 and 2010. This is reflected in Office of National Statistics estimates for repair and maintenance output declining by 12% during this period.

Graph 4: Composition of construction wood waste



Source: Poyry (2011)

Joinery and furniture sector

The industrial sector (which includes joinery and furniture) is the smallest source of wood waste arisings in the UK, accounting for an estimated 0.4 million tonnes per year in 2010. The main type of wood waste from the sector is solid wood, accounting for almost 40% of wood waste tonnage followed by particleboard, 34% (Graph 5).

A 2009 survey from the British Woodworking Federation (BWF) provided an overview of how wood waste is managed in the sector. The main use for wood waste highlighted by the BWF's members was its use in animal bedding, its use by employees for fuel and finally burnt to provide heat for the factory.

Wood waste arisings from the industrial sector are estimated to have declined by 100,000 tonnes (22%) between 2007 and 2010 to 360,000 tonnes. Market anecdote reports that while output of domestic UK furniture manufacture

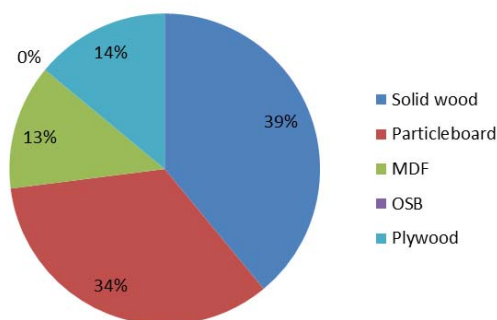
⁶ For example, TRADA (2002) and [Reference document on the status of wood waste arisings and management in the UK](#), WRAP/MEL (2005).

⁷ Source: Wood Waste Market in the UK, WRAP (2009)

⁸ See <http://www.legislation.gov.uk/uk/si/2008/314/contents/made>. This legislation applies to England only, but the use of SWMPs is also encouraged in Wales, Scotland and Northern Ireland.

(primarily focused on mid to high end products) slowed during the recession, imports of lower end furniture remained affordable. Arisings of particleboard fell by 60,000 tonnes (30%) while solid wood arisings fell 20,000 tonnes (13%).

Graph 5: Composition of furniture and joinery wood waste



Source: Poyry (2011)

Aside from a decline in wood waste arising from the construction and joinery and furniture sectors due to lower output, recent legislation and campaigns targeted at reducing wood waste may also have made an impact. SWMP's, introduced in April 2008 require construction companies to plan, monitor and measure the waste they generate on site. Meanwhile industry commitments such as 'Halving Waste to Landfill' for the C&D sector and Resource Efficiency Action Plans for the joinery sector have incentivised and supported the use of best practice in avoiding wood waste.

Packaging wood

Packaging is one of the largest contributors to wood waste arisings in the UK accounting for an estimated 1.1 million tonnes per year in 2010, down from 1.2 million tonnes in 2007. Potential explanations for the decline include a reduction in the amount of wood packaging registered by obligated businesses and also due to a reduction in packaging manufacture (including increase re-use of pallets) and a substitution away from the use of wood packaging towards alternative materials such as plastic.

packaging wood waste is considered clean wood and is used predominantly in panel board manufacture and also in animal bedding. There is great demand for this type of wood waste and very little is available for energy generation or composting.

The amount of packaging wood waste recovered for recycling in 2010 amounted to 770,000 tonnes⁹, according to data from the National Packaging Waste Database (NPWD), down from 915,000 tonnes in 2007. The wood packaging recycling rate has fluctuated between 75% and 80% between 2007 and 2010.

Municipal waste stream

In 2010 an estimated 535,000 tonnes¹⁰ of wood waste is estimated to have arisen from the municipal waste stream, representing 13% of overall UK wood waste arisings. Wood waste from municipal sources is estimated to have declined from 600,000 tonnes in 2007, potentially due to reduced levels of DIY activity during the recession.

Levels of wood waste arising from the municipal waste stream are estimated from tonnages collected and recorded in Waste Data Flow, assuming that all wood waste arising from householders is also collected. Estimates of wood waste arising from the municipal waste stream are only those reported as "separately collected wood" in Waste Data Flow. Wood waste may also be accounted for under "green waste only", "other compostable waste" or "other materials" with some estimates suggesting this may represent an additional 400,000 tonnes¹¹.

The overall quality of wood waste from the municipal sector is low as it includes all types of wood – sawn wood off-cuts, wood based panels, treated wood¹², painted wood, surfaced wood and is also generated commingled with furniture.

⁹ Note the true level of wood packaging waste recycled could be understated because the NPWD data include only wood packaging waste reprocessed by businesses accredited with the Environment Agency (EA).

¹⁰ Source: Waste Data Flow figures for 2010 Q1 and Q2 extrapolated and then adjusted to reflect market developments; Poyry (2011)

¹¹ Impact Assessment of a Quality Protocol for Wood Waste, EA (2010)

¹² A wood is treated when measures have been taken to extend the lifetime of the wood, e.g. preservative, paint etc

Other / hazardous wood

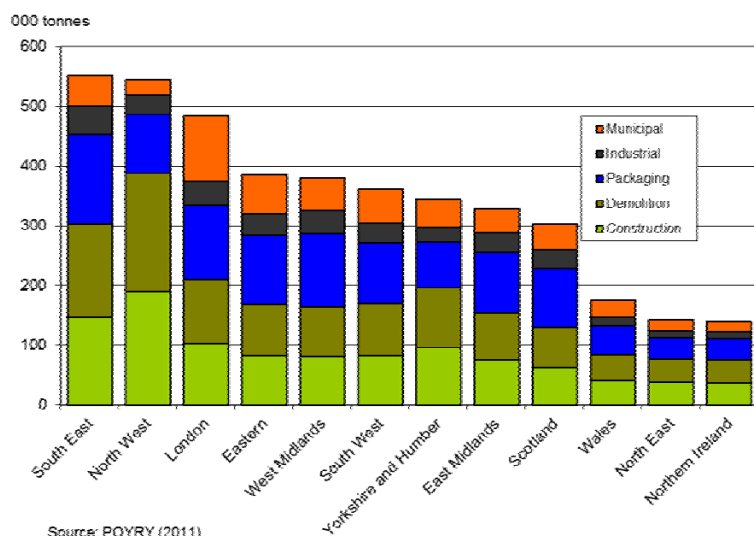
The hazardous wood waste arising from railway sleepers and utility poles is small (approximately 60,000 tonnes per year) and previous studies suggest that little enters the waste stream. In addition, data on availability of cooling tower packing timber are considered commercially sensitive, and this timber is expected to last the lifetime of a cooling tower.

Regional distribution of wood waste arisings

The majority of the UK's wood waste is generated in South East England, North West England and London (Graph 4). These are areas with high population density and significant construction and manufacturing activities.

The most significant declines in wood waste arisings between 2007 and 2010 have taken place in North East England and the Yorkshire and Humber region, down 19% and 17% respectively following significant drops in municipal wood waste arisings.

Graph 4: Estimated wood waste arisings by region



Box: Legislation

A Quality Protocol (QP) is being developed for wood waste that will define the point at which recovered wood is no longer a waste and therefore no longer be subject to waste legislation. The draft QP, published in spring 2011 includes untreated wood waste while excluding animal bedding and non-WID compliant biomass.

The Quality Protocol has been accompanied by the development of the PAS 111 standard. The standard is designed to create more consistency in the way wood waste is accepted, graded and processed by establishing a minimum set of criteria and processing requirements which wood recyclers should meet if they are to sell their products to secondary markets.

Section 2:

Wood waste usage

In 2009 an estimated 2.1 million tonnes of wood waste was either recycled or used in energy recovery in the UK (Table 1), approximately 50% of UK wood waste arisings (assuming 4.1 million tonnes per annum). The remaining 2.0 million tonnes is destined for landfill, primarily due to the wood waste being treated (poor segregation may also contribute to some untreated wood being sent to landfill) so is difficult to recycle and can only be used for energy recovery using WID compliant plants.

Table 1: Wood waste end market usage

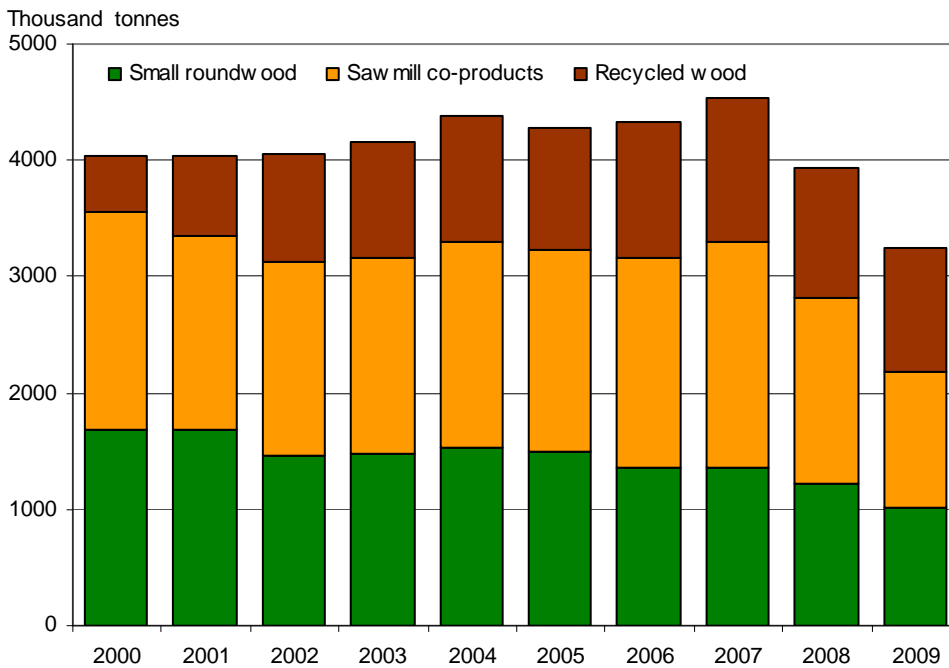
000 tonnes	2007	2008	2009	07/08 %	08/09 %
Panel Board	1200	1126	1065	-6%	-5%
Animal/Poultry Bedding	290	350	360	21%	3%
Equine Surfaces	56	73	75	30%	3%
Mulches, Soil Conditioners And Composting	75	95	98	27%	3%
Pathways and Coverings	15	17	18	13%	6%
Biomass/Energy - UK	250	370	495	48%	34%
UK Total	1886	2031	2111	8%	4%
Net Trade	-195	-435	-20	123%	-95%

Source: WRA, WPIF & HMRC

The panel board sector¹³ is the UK's largest end market for the recycling of wood waste, consuming 1.1 million tonnes in 2009 (just over half of total demand). The industry is primarily located in the North West of England, close to forest resources, sawmilling industry and large urban centres.

Usage of for wood from the panel board sector (including virgin and recovered wood) declined from 4.5 million tonnes in 2007 to 3.2 million tonnes in 2009, the lowest level since 1994 (Graph 6). The proportion of overall wood panel board usage being met through recovered wood (i.e. panel board recycled content) has risen from 12% in 2000 to 33% in 2009.

Graph 6: Panel board production by wood input source



Source: WPIF

Future growth in wood waste usage from the panel board sector will depend to a large degree on the recovery in end user demand from the construction and furniture sectors. Evidence from previous recessions suggest that panel board output and hence demand for wood waste is likely to remain subdued for some years following the peak in output in 2007¹⁴.

The second largest end market for the recycling of the UK's wood waste is in animal/poultry bedding and equine surfaces accounting for 360,000 tonnes per annum and 75,000 tonnes per annum respectively. The sector's use of wood waste has risen by about one-quarter since 2007 and accounts for around 20% of the UK's wood waste usage. Wood waste use in animal/poultry bedding and equine surfaces has grown as wood recyclers, looking to secure better financial returns and increased tonnages look to alternative markets. Cattle bedding is the lowest value product at around £40-£50 per tonne, rising to poultry bedding at £90-£100 per tonne with the highest value product being equine bedding at around £140 per tonne¹⁵. The depreciation in sterling since 2008 and the relative high price of bedding substitutes like straw/hay are likely to continue to support animal bedding demand for wood waste in the near future.

¹³ Panel board manufacturing includes the production of wood chipboard, oriented strand board (OSB) and medium density fibreboard (MDF).

¹⁴ Wood Waste Market in the UK, WRAP (2009)

¹⁵ Guide to marketing recycled wood products, WRAP (2005). *Market contacts report prices are still valid.*

Horticulture accounts for around 100,000 tonnes per annum of wood waste demand with recovered wood used in the production of mulches, soil conditioners and composts. Wood waste is also used for pathways and coverings, accounting for approximately 20,000 tonnes in 2009.

The growth in overall UK wood waste usage has been supported by the growth of the UK biomass industry. UK biomass usage of wood waste is estimated to have doubled between 2007 and 2009 to 0.5 million tonnes¹⁶. The development of the UK biomass industry and its impact on the UK wood recycling sector are examined in more detail in the Special Topic section.

Recovered wood suitability by end use

The quality of the recovered wood in different waste streams varies considerably and different end uses can utilise different types depending on their technical and commercial capabilities.

First, there is significant added value potential in using recovered wood for agricultural and horticultural purposes and for that reason this end market is able to attract the best quality recovered wood, mostly from the packaging industry.

Second, the panel board industry utilises recovered wood from all the wood waste streams. However as agricultural and horticultural uses have a significantly greater ability to pay for recovered wood the maximum potential availability of recovered wood from the packaging waste stream for use in panel board operations may be reduced; industry estimates suggest that approximately 40% of total packaging wood waste arisings are available to the panel board industry¹⁷ (Table 2). Of the other four waste streams potentially suitable for the panel board industry, industry sources estimate that that this varies between 30% and 60% depending on the waste stream because of contamination or segregation issues.

Meanwhile, all recovered wood is potentially suitable for wood energy plants and co-generation, provided the plant is WID compliant.

Table 2: Recovered wood suitability by end use

End use	Wood waste stream	Wood waste arising by waste stream	Proportion of waste stream suitable for end use	Estimated total wood waste suitable for end use
000 tonnes				
Horticultural and agricultural use	Packaging	1107	100%	1107
Panel board	Packaging	1107	40%	2078.7
	Industrial	328	60%	
	Construction	1066	60%	
	Demolition	1066	60%	
	Municipal	533	30%	
Biomass	Packaging	1107	100%	4100
	Industrial	328		
	Construction	1066		
	Demolition	1066		
	Municipal	533		

Source: Poyry (2011), John Clegg Consulting

International Trade

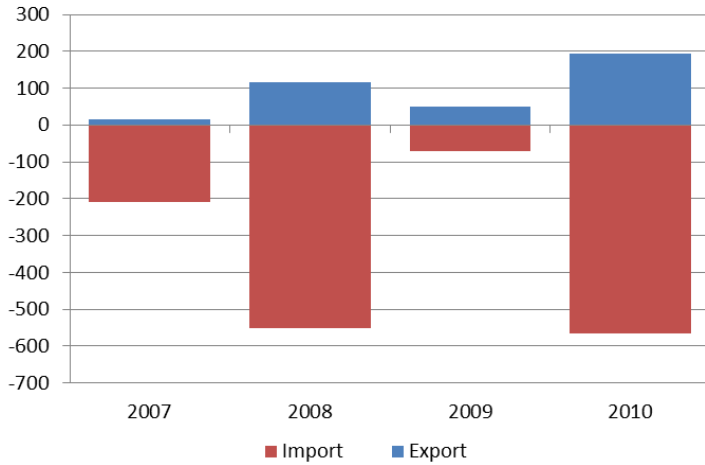
Net export data (exports minus imports) show that the UK is a net importer of wood waste. Since 2007 the UK has been a net importer on average of 250,000 tonnes of wood waste per annum (Graph 7). In order to secure consistent quality feedstocks many biomass operators are entering into long term contracts to secure wood waste tonnage from overseas.

Graph 7: UK wood waste trade

000 tonnes

¹⁶ Total wood waste demand from biomass may include an element of double counting due to wood waste being transported to third parties before reaching biomass facilities.

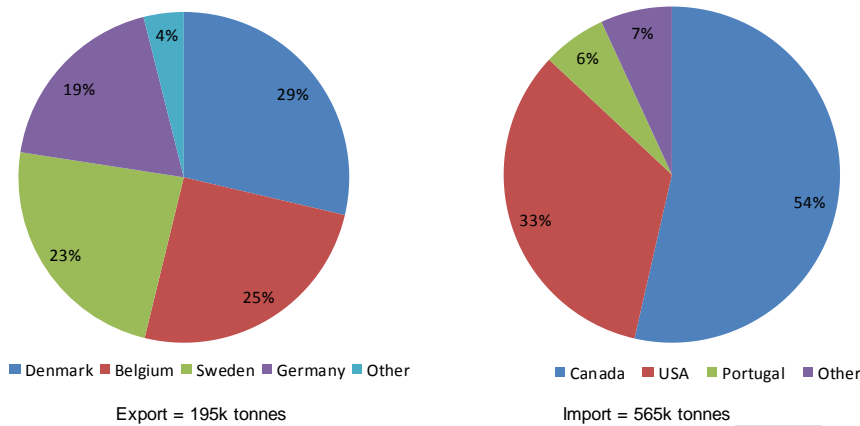
¹⁷ Wood fibre availability and demand in Britain 2007 to 2025, John Clegg Consulting (2010)



Source: HMRC

The primary source for the UK's wood waste imports is North America with around 490,000 tonnes imported in 2010. The UK exports relatively smaller quantities to continental Europe with the main destinations being Denmark and Belgium.

Graph 8: Wood waste export destinations and import sources, 2010

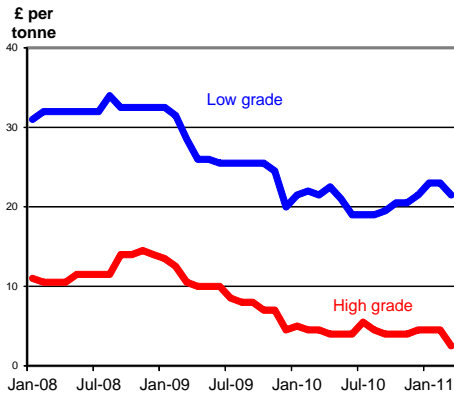


Source: HMRC

Gate fees

Average gate fees for wood waste taken in by UK wood recyclers have dropped significantly since early 2009. Average high grade gate fees have dropped from £14 per tonne in January 2009 to £3 per tonne in early 2011 while average gate fees for low grade wood waste fell £9 per tonne to £22 per tonne over the same period (Graph 8), although actual gate fees may vary significantly depending on quality and region. The decline in overall gate fees reflecting the increasing competition for wood waste from biomass facilities and lower wood waste arisings due to the recession. It should be noted that in the majority of cases wood recyclers supplying the animal bedding market, will actually pay for exceptionally clean wood waste.

Graph 8: Wood waste gate fees



Source: Letsrecycle

Section 3:

Environmental benefits

When wood waste decomposes in landfill, it produces biogas, a mixture of CO₂ and methane. Some of the biogas can be captured and used to generate heat or electricity. Nevertheless, wood is responsible for around 5% of UK landfill gas emissions¹⁸. In contrast to food and garden waste, wood contains a large quantity of lignin so that it degrades much more slowly.

In draft guidance on the implementation of the waste hierarchy in England¹⁹, DEFRA identify that little analysis has been undertaken on the environmental impacts of recovering wood, but that similar benefits are gained from both recycling and energy recovery across a range of environmental impacts. The exact impact and relative benefit varies depending on the wood type and waste management technology used. For recycling, the highest benefits are gained when wood recycling avoids intensive manufacturing processes (e.g. in particleboard or MDF). Lower grades of wood are particularly suited to energy recovery, and have been identified as an underutilised fuel source²⁰ which can help avoid the use of fossil fuels.

Section 4:

Special Topic - Biomass

Overall UK wood waste demand from the biomass sector has doubled between 2007 and 2009 to 0.5 million tonnes, accounting for almost a quarter of total wood waste demand.

The development of the UK biomass sector has been encouraged by government incentives, aimed at increasing the level of electricity generated from renewable resources. EU member states are required to submit national Renewable Energy Action Plans (REAP) which provide detailed plans on how they are to meet their renewable energy targets in 2020. The UK's REAP estimates solid biomass capacity of 0.6GW in 2010 and forecasts it will increase to 3.1GW by 2020. However, a recent study suggests that approximately 6-7GW of biomass capacity in the UK is currently at various stages of development²¹.

Biomass facilities can consume a variety of different biomass feedstocks, including wood waste. It is unclear how to categorise the type of biomass feedstock (i.e. the proportion that is wood waste) that each biomass facility uses, particularly as some biomass plants use a variety of biomass fuels, however a recent study suggested that the demand for wood waste from biomass plants could rise from 0.5 million tonnes in 2010 to over 4 million tonnes by 2015²².

Of the expected 4 million tonne increase in demand for wood waste from biomass plants, approximately 1 million tonnes is expected to come from plants in Scotland. However, as Graph 3 illustrates current wood waste arisings in Scotland are just 330,000 tonnes. This shortfall may be overcome in future through increased transport of wood waste from the rest of the UK to Scotland and/or increased imports of wood waste directly to Scotland from abroad.

¹⁸ Source Defra; estimate includes wood which is in landfills which are now closed.

¹⁹ <http://archive.defra.gov.uk/corporate/consult/waste-framework-revised/20100708-waste-guidance.pdf>

²⁰ Waste Infrastructure Delivery Programme (2008): *Waste Wood as a Biomass Fuel, Market Information Report*, Defra

²¹ A strategic assessment of UK investments in biomass power, Hawkins Wright (2010)

²² Wood fibre availability and demand in Britain 2007 to 2025, John Clegg Consulting (2010)

Box: Legislation

Since April 2002, electricity suppliers have been required to source a specified proportion of their electricity from renewable generators. Suppliers can meet their obligations by presenting evidence of sourcing from renewable generators (known as Renewable Obligation Certificates)²³. The average price of a ROC in March 2011 was almost £50 per MWh. To foster less well developed renewable electricity generation technologies, changes introduced in April 2009 band the value of a ROC dependent on the generation technology (Table 3). Although the ROC serves to incentivise the use of renewable generation technology and the use of its associated feedstock, it may also have the effect of disadvantaging other consumers of wood waste who do not receive the benefit of a ROC, impacting their ability to pay for wood waste relative to the biomass industry.

Table 3: Wood waste consuming generation technologies and associated ROC bands

ROCs per MWh	Renewables electricity generation technology
0.5	Co-firing of biomass
1.0	Co-firing of biomass with CHP
1.5	Dedicated biomass
2.0	Dedicated biomass with CHP

Source: UK Department for Business, Innovation and Skills

Further stimulus to the demand for wood waste may come from the introduction of the Renewable Heat Incentive (RHI) later in 2011. The RHI is designed to increase the proportion of heat produced from renewable forms of heating from 1% in 2010 to 12% by 2020. The renewable technologies included are solid biomass (including wood pellets), biogas, heat pumps and others.

Biomass plants and co-fired plants which accept wood waste as fuel must comply with the Waste Incineration Directive (WID) which aims to minimise the impact of negative environmental effects on the environment and human health resulting from emissions to air, soil, surface and ground water from the incineration and co-incineration of waste. The WID specifies what biomass waste can be burned for energy. At present 'clean' (free from halogenated organics, CCA and heavy metals) wood waste can be burnt outside the restrictions of the WID but if the wood contains contaminants then it can only be burnt inside a WID compliant boiler.

Typically biomass feedstocks come from a combination of different sources and there are a number of considerations in biomass fuel selection determining a plants utilisation of wood waste. Key factors for consideration include calorific value/moisture content and fuel cost, security of supply, biomass content and contaminants.

- The energy output from wood is closely linked to its moisture content. Wood waste generally has a low moisture content (18-25%), and so is generally preferable to forestry and biomass crops (~40%)²⁴.
- Forestry and biomass crops may be preferable to wood waste as biomass feedstocks as they are more likely to be available under long term contracts while contracted for tonnages and composition of forestry and biomass crops are likely to be more predictable over the long term than the supply of wood waste.
- Biomass energy content is critical in obtaining ROCs, which is, in turn, fundamental to the economics of a biomass project. Forestry and biomass crops have a biomass content close to 100%, whereas low grades of wood waste may have a biomass energy content as low as 80% - below the 90% biomass threshold in the RO. Some current projects use a blend of forestry, fuel crops and wood waste to achieve the overall 90% biomass energy content required to obtain ROCs.
- Non-combustible contaminants such as nails and grit may cause additional wear to biomass facilities and will add to the disposal costs of ash. In this respect forestry wood is likely to contain lower levels of contaminants than wood waste however wood waste can be processed to remove contaminants.

Conclusions and challenges going forward

²³ Under the current RO biomass is defined as a feedstock used in a generating station of which at least 90 per cent of the energy content is derived biomass.

²⁴ Waste wood as a biomass fuel, market information report, Defra (April 2008)

Wood waste arisings have fallen substantially over the last few years as reduced activity, particularly from the construction and joinery sectors has led to lower wood waste arisings.

The UK's wood waste traditional customer, the panel board sector has seen demand decline as construction and furniture demand have waned. Wood recyclers have responded by increasingly targeting higher value end markets such as animal bedding and the biomass sector to secure end market tonnages.

The biomass sector, encouraged by government incentives to increase the level of electricity generated from renewable resources has seen its demand for wood waste grow rapidly. However, the panel board sector, in particular are concerned that the expansion in the biomass sector and further government incentives to increase renewable generation capacity will lead them unable to compete for wood waste.

While wood waste arisings are likely to grow gradually as the economy recovers, demand for wood waste from biomass facilities is expected to grow significantly faster potentially putting upward pressure on wood waste prices.

Glossary

C&D	Construction & Demolition
NPWD	National Packaging Waste Database
EA	Environmental Agency
MDF	Medium Density Fibreboard
OSB	Oriented Strand Board
CA	Civic Amenity
QP	Quality Protocol
ROC	Renewable Obligation Certificate
GW	Giga Watt
MWh	Mega Watt hour
RHI	Renewable Heat Incentive
WID	Waste Incineration Directive
CCA	Chromated Copper Arsenate
CO2	Carbon Dioxide
PRN	Packaging Recovery Note
PB	Particleboard