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# Wood Waste Landfill Restrictions in England Call for Evidence

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# Executive Summary

The Waste Policy Review 2011 announced the Government's intention to consult on introducing a restriction on the landfilling of wood waste in 2012. This call for evidence invites views and information on the sustainable management of wood waste and measures to divert wood waste from landfill where this is the best environmental option.

Evidence shows that landfilling biodegradable waste such as wood waste leads to greenhouse gas emissions. Some countries have used landfill restrictions to drive waste out of landfill.

The data on wood waste, particularly on the amount going to landfill or informal markets, is not clear. The total amount of wood waste produced in the UK each year is in the region of 4.3 million tonnes (mt) and for England around 3.4mt. In the UK over half of this wood waste (almost 2.3mt) is recycled or used for energy recovery, around 300,000 tonnes (t) is exported and between 0.8 and 1.2mt of wood waste is going to landfill. Most wood waste comes from construction and demolition sources and pallets for packaging, with smaller volumes from municipal waste, joinery and furniture manufacture. The main markets for wood waste are panelboard, biomass for energy generation, animal bedding, equine surfaces, mulches, pathways and coverings, with a growing export market. The demand for wood as a source of biomass for energy generation in the UK has also been increasing over the last few years and is likely to continue to grow, if planned Waste Incineration Directive compliant plants are built.

Our analysis estimates that by 2024 wood waste going to landfill will have declined to under 300,000 tonnes, driven by increases in the landfill tax and by subsidies for renewable energy generation. To drive greater diversion of wood waste beyond this trend, new policy interventions could be required. Most of the additional landfill diversion is expected to be low grade wood waste which would be diverted to energy recovery rather than higher up the hierarchy (for example to recycling).

Key issues to consider for any restriction of wood waste include the practicalities of sorting wood waste and establishing grading quality; lead in times; and practical enforcement of any restriction. We are also interested in accompanying or alternative measures to restrictions. Government's collective approach is to ensure that regulation is only used as the last resort and we would therefore welcome views on other measures such as improved collection and sorting infrastructure, producer responsibility schemes and increasing re-use of wood waste. In addition we are interested in the 'do nothing' option, given the direction of travel.

# Section One: Introduction

1. The Waste Policy Review 2011 announced the Government's intention to consult on introducing a restriction on the landfilling of wood waste in England in 2012. Our aim is the sustainable management of wood waste and to divert wood waste from landfill where this is the best environmental option. We are looking specifically at wood waste as evidence shows that around 1 million tonnes (mt) still goes to landfill or informal markets each year.

2. A consultation on landfill restrictions was carried out jointly by the previous administration and the Welsh Assembly Government in 2010. This was a high level first stage consultation across a range of materials and although the responses provided useful generic evidence on restrictions there were no detailed responses on wood waste.

## Purpose of this Call for Evidence

3. This Call for Evidence invites views on the management of wood waste in England and measures to divert wood waste from landfill to the most appropriate use.

4. We have set out our understanding of available data on wood waste, how wood waste is managed and wood waste markets. A series of questions aims to gather additional evidence to address gaps in our knowledge base and explore some practical issues surrounding landfill and wood waste. Responses will be used to help develop options, (which may include 'do nothing'), aimed at ensuring wood waste is managed in a way that delivers the best outcome for the environment and economy. Please see Annex A for a full list of questions. A separate template is available to record responses.

**We have set out areas where we are particularly keen to receive evidence. If there are other areas you believe we have missed, or do not highlight sufficiently, please draw them to our attention.**

## What we mean by waste wood

5. We are using the definition of waste as set out in the Waste Framework Directive (2008/98/EC) 2008[1]: *'waste' means any subject or object which the holder discards or is required to discard.*

6. For the purposes of this Call we are including all wood waste in the scope of potential restrictions. This includes wood waste arising from virgin wood processing (e.g. wood offcuts, shavings etc from sawmills), wood waste arising from Forestry and arboriculture and green waste (garden waste), as well as from furniture and construction, etc[2].

**Q.1.** Do you know of any reasons why any of these types of wood waste, or any others should not be included in any potential restrictions? Y/N Please provide supporting evidence.

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF
[2] http://www.environment-agency.gov.uk/static/documents/Research/PS_005_Regulation_of_wood_v3.0.pdf (this regulatory position statement is due to be updated)

## Who has an interest?

7. This Call will be of interest to:
   - Wood producers/timber merchants;
   - Wood recycling industry;
   - Construction & demolition industry;
   - Furniture industry;
   - Panelboard industry;
   - Operators of waste recycling, recovery or disposal facilities including landfill sites and companies interested in using bio-based waste as a source of renewable energy (heat, electricity and /or transport fuel);
   - Waste management companies;
   - Re-use organisations;
   - Local authorities;
   - Trade Associations;
   - Environmental interest groups;
   - Joinery industry;
   - Forestry industry;
   - General public.

# Section Two: Policy context

8. The Government's **Review of Waste Policy 2011** includes measures designed to put us on the path to "a zero waste economy". This Government is committed to being the greenest ever. How we deal with our waste is important for a range of broader concerns such as material security, energy, climate change and wider environmental protection. Good progress has been made over the last decade to reduce the volume of waste sent to landfill and increase recycling, but additional environmental benefits can be realised by going further.

9. Landfill should be the last resort for biodegradable waste. The landfill tax – with announced increases towards a floor in the standard rate of £80 per tonne in 2014/15, below which it will not fall until 2020 – will remain the key driver to divert waste from landfill and remains necessary to help ensure we meet key EU targets in 2013 and 2020[3]. Despite this, England is still heavily reliant on landfill, the final destination for 43 per cent of local authority collected waste[4], 24 per cent of commercial and industrial waste[5] and 13 per cent of construction and demolition waste[6].

10. Government policy follows the waste hierarchy. Landfill is at the bottom, with waste prevention (including re-use) the preferred option, followed by preparation for re-use, recycling and other types of recovery (including energy recovery).

[3] Under the Landfill Directive the UK's targets for the reduction of the amount of BMW disposed of to landfill are: 50% of the 1995 amount by 2013 and 35% of the 1995 amount by 2020. We are on track to meet these.
[4] WasteDataFlow - http://www.defra.gov.uk/statistics/environment/waste/wrfg23-wrmsannual/
[5] Defra C&I Survey - http://www.defra.gov.uk/statistics/environment/waste/wrfg03-indcom/
[6] Defra, EA, Strategic Forum for Construction
http://www.strategicforum.org.uk/pdf/Report_11_Wasteprogressreportfinal%20May2012.pdf
http://www.defra.gov.uk/statistics/environment/waste/wrfg09-condem/

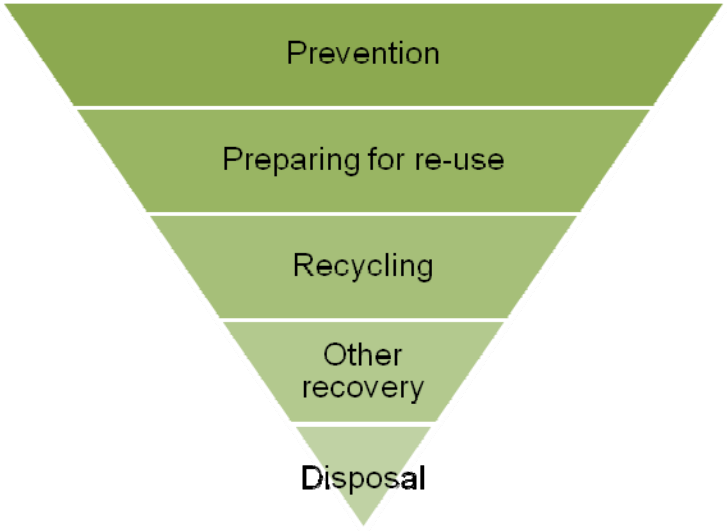



***Figure 1: The Waste Hierarchy***

11. However, the Defra waste hierarchy guidance explains that with wood there can be valid reason to deviate from the waste hierarchy. With low grade wood (see section three), energy recovery options appear more suitable than recycling (see next section).

12. It has been argued that landfill restrictions would help stimulate the development of alternative waste management infrastructure and generate market certainty around availability of materials. New measures to restrict the landfilling of wood waste may help to generate a reliable source of sufficient material to drive the market forward for recycling or energy recovery options.

# Greenhouse Gas Emissions

13. The waste management sector of the **UK's Greenhouse Gas Inventory** (GHGI) accounts for about 3% of the total UK emissions. The majority of this is from methane emissions from landfill sites. We aim to reduce the greenhouse gas (GHG) emissions associated with landfill, thereby helping to ensure that the UK meets its overall greenhouse gas emissions caps ('carbon budgets') set under the Climate Change Act 2008.

14. Restricting wood waste to landfill is likely to result in reduction of GHG emissions (also called 'carbon savings'). A report by AEA[7] (published alongside this Call) included a life cycle assessment (LCA) of wood waste. The LCA shows that, in the majority of cases, routes that end in energy recovery as a final disposal, via recycling into panelboard or animal bedding are more sustainable in terms of carbon savings. (The use of wood in energy recovery has the potential to replace GHG emissions from fossil-fuel based energy production.) All routes show significant savings compared to disposal to landfill, and diverting wood waste from landfill to any of the routes identified would deliver significant carbon savings. The net emissions from a tonne of wood waste going to landfill were

[7] An Assessment of the environmental impact of the management options for wood waste (WR1209), AEA for Defra, 2012

calculated as almost one tonne of $CO_2$ equivalent ($tCO_2e$) (see section five, paragraph 69 onwards). These results are based on standard emissions for wood in landfill from WRATE[8]. Recent studies[9] indicate however, that wood in landfill does not degrade at the rate currently used, especially where treated with preservative, so there is some uncertainty about avoided emissions from landfill. However, according to the evidence[10], landfill would still have the highest GHG emissions, even taking this lower rate of degradation into account.

**Q.2.** Do you have any additional evidence that could improve our estimate of greenhouse gas emissions from wood waste in landfill?
Y/N. Please list any sources.

15. Other countries have used or are considering additional tools such as landfill restrictions to drive waste out of landfill.

# The Devolved Administrations

16. **Scotland**'s Zero Waste Regulations set out a statutory framework for the future delivery of waste collection, recycling and treatment across Scotland. Included in the regulations are measures to significantly increase the capture rates of key recyclable materials including food waste, bans on these resources going to landfill or incineration when they have been separately collected, and, from 2020, a total ban on the landfilling of biodegradable municipal waste. Collectively, these measures are aimed at helping Scotland achieve its target of 70% recycling by 2025.

17. Landfill bans for biodegradable waste are a commitment of the **Wales** Programme for Government. Wales is intending to bring forward landfill bans via Regulations using powers under the Waste (Wales) Measure 2010. It is anticipated that a ban would be material based.

18. **Northern Ireland** is currently reviewing the NI Waste Management Strategy. As part of the review, it is bringing forward proposals on banning separately collected food waste from landfill. At this stage it has no firm plans in respect of any other waste streams, including wood.

# Internationally

19. Reducing landfill is on the **European Commission**'s agenda. The Roadmap to a Resource Efficient Europe sets out the ambitious milestone of virtually eliminating landfill by 2020, but it hasn't put forward any proposals[11], and the Commission are considering options on how this might be achieved. The Commission's current focus is on the 10 or so poorest performing Member States, which do not include the UK.

20. Research by the Green Alliance (2009)[12] looked at landfill bans and restrictions in the EU and US. Table 1 presents the findings. All countries reviewed introduced landfill bans alongside other instruments such as: landfill taxes and moratoriums; incineration bans and

[8] Waste and Resources Assessment Tool for the Environment
[9] Biodegradability of wood products under stimulated landfill conditions. North Carolina State University MSc Thesis, J Padgett, 2009
[10] An Assessment of the environmental impact of the management options for wood waste (WR1209), AEA, 2012
[11] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF
[12] Landfill bans and restrictions in the EU and US , (WR1202), Green Alliance for Defra, 2009

restrictions; incineration taxes and moratoriums; or mandatory or incentivised separate collection for certain wastes. From these examples, factors that are considered to aid success are: long lead in times; simple compliance systems; effective supporting instruments; resources to enforce; and public support.

***Table 1: Landfill bans and restrictions in the EU and US***

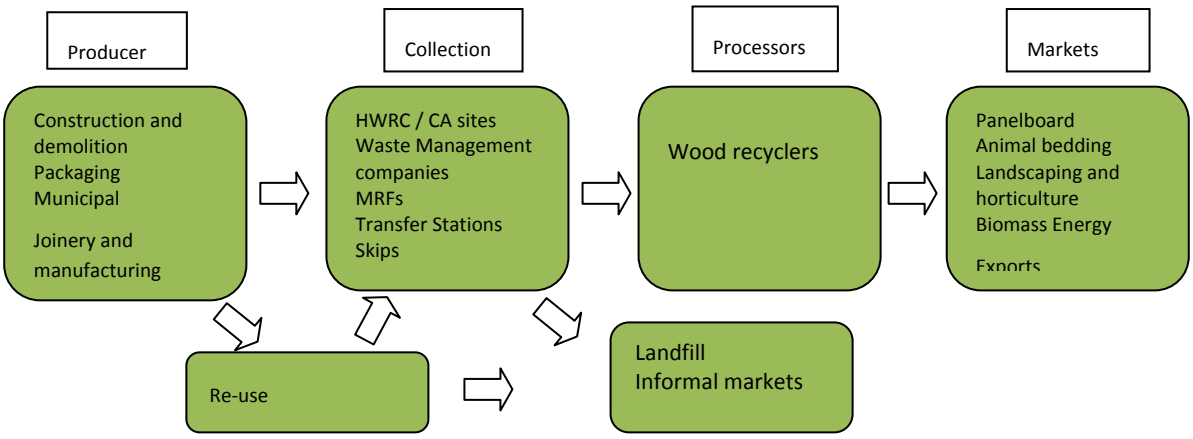
| **Country** | Bans/ Restrictions |
|---|---|
| **Austria** | Restriction on all organic waste to Landfill (1996) |
| **Germany** | Ban on both separately collected waste materials and unsorted municipal waste – the part of municipal wastes that can be recovered (1993 with 12 year lead in period) |
| **Sweden** | Bans on the landfilling of sorted combustible waste (2002), and organic waste (2005). |
| **The Netherlands** | Ban on the landfilling of combustible and biologically<br>decomposable waste, as well as separated construction and demolition waste (1995) |
| **Flanders, Belgium** | Landfill ban on both unsorted waste and on separately collected waste materials (1998). Landfill ban on combustible residual wastes (2000).<br>Incineration ban on separately collected waste materials (1998) and on unsorted waste (2000). |
| **Massachusetts, USA** | Bans on the incineration and landfilling, of<br>a range of materials, including:<br>Asphalt pavement, brick and concrete; Glass and metal containers; Leaves and yard waste; Metal; Recyclable paper; Single polymer plastics; White goods; Tyres (banned from landfill only); and Wood (banned from landfill only) |

Source: Landfill bans and restrictions in the EU and US, Green Alliance

# Section Three: Current situation and context

21. Wood waste is produced by a number of sectors and as part of the municipal waste stream. Wood waste arises in different fractions ranging from untreated, pre-consumer off-cuts to treated wood containing preservatives and via a variety of post-consumer waste streams. Producers of wood waste dispose of it either by landfill or through wood processors/ recyclers or waste management companies. The user (e.g. a wood panel manufacturer) will pay for wood waste which meets agreed specifications.

***Figure 2: The wood waste supply chain***




## Waste wood data[13]

22. Although our focus for policy options to manage wood waste will be on England, most research reports use UK data. WRAP research[14] concludes that the total amount of wood waste produced in the UK each year is in the region of **4.1mt**. Further analysis[15] reveals that for England alone wood waste arisings totalled 2.05mt (although this data includes only separated wood waste and also excludes virgin wood waste, so the real figure is likely to be higher and possibly around **3.4mt**[16]).

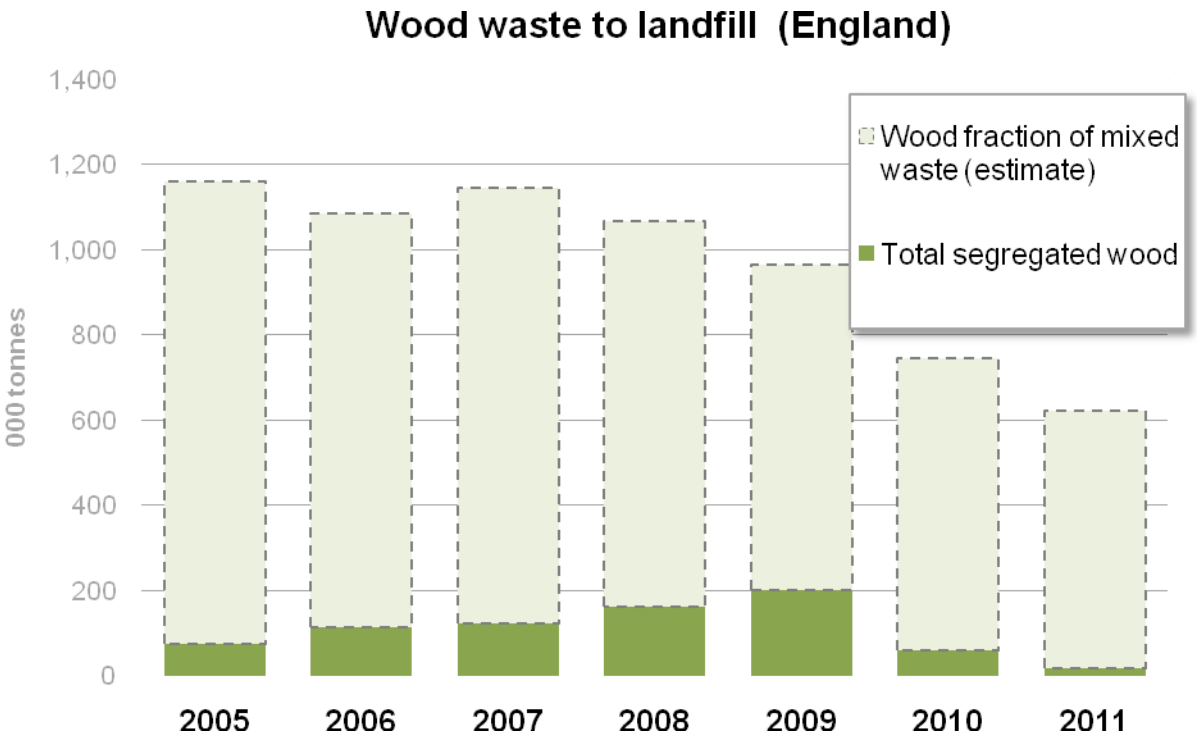
23. Reports tend to use recovery when talking about both recycling and energy recovery. Almost **2.3mt** of wood waste (over 50%) was recycled or used for energy recovery in the UK in 2010[17] and a further 300,000t or more were exported for recycling or recovery to Scandinavia and Germany. However there are discrepancies in the export data (see also section four).

24. The destination of the remaining **1.7-2mt** remains unclear. Estimates vary and show between **1-1.2mt of wood waste are going to landfill in the UK** with the remainder managed through informal routes such as being burned (on-site) or used in land recovery.

[13] These sources do not appear to include virgin wood waste from forestry or park and garden waste
[14] Market Situation Report: Realising the value of recovered wood, WRAP 2011
[15] Environment Agency Waste Data Interrogator 2009
[16] Market Situation Report: Realising the value of recovered wood, WRAP 2011
[17] Market Situation Report: Realising the value of recovered wood, WRAP 2011

Our most recent analysis (see figure 3) shows approximately 0.6mt of wood waste going to landfill in England.

***Figure 3***




Source: Environment Agency landfill site operator returns. Data for 2011 is provisional

25. Figure 3 shows the segregated wood waste going to landfill in England. This has been falling since 2009 and is currently less than 20,000t. It also estimates the amount of wood waste in mixed waste which has also been falling but which counts for a substantial amount of the wood estimated as going to landfill (over 600,000t).

26. The ranges described above show there is uncertainty in the data on the management routes for wood waste and in particular in the amount going to landfill or informal markets. Difficulties stem, in part, from the large numbers of small businesses that use wood and generate wood waste. It is not clear how much wood waste is being re-used. The Furniture Re-use Network estimates that over 24,000t (almost 800,000 items) of furniture are re-used in England each year; a large proportion of this will be made up of wood.

27. Despite the number of reports in this area there are problems obtaining reliable statistics on wood waste arisings and on how some wood waste is managed. The questions below seek information to address this.

**Q.3.** Do you agree that approximately 0.6mt of wood waste is going to landfill in England? Y/N If not please provide evidence to show otherwise.
**Q. 4.** Do you agree that wood waste is going to informal markets? Y/N What are these informal markets?
**Q. 5**. What other sources of evidence on a) wood waste arisings and b) wood waste management routes are there?

# Main sources of wood waste

28. The main sources of wood waste are: construction and demolition; packaging; municipal; and joinery and furniture manufacture.

29. New targets (2013-2017) for the recovery and recycling of packaging waste, including wood, were announced as part of the 2012 Budget. Although the 22% recycling target for packaging wood waste will be rolled forward, the actual rate achieved in 2011 was almost 60%[18].

***Table 2: The main sources of wood waste***

| Source | Materials | UK Tonnage 2010 (mt) | Trend |
|---|---|---|---|
| **Construction and Demolition** | Solid wood<br>Particleboard<br>Imported structural elements<br>Oriented strand board (OSB) | 2.1 | Wood waste from sector has declined between 2007 and 2010. As well as recession, recent legislation, campaigns and industry commitments such as 'Halving waste to landfill' may have contributed |
| **Packaging** | Pallets | 1.1 | Shows a decline from 2007 probably because of greater re-use of pallets and substitution away from wood towards alternative materials. |
| **Municipal** | All types: sawn off-cuts; wood based panels; surfaced wood (e.g. foil or melamine-faced) | 0.6 | Typically this is of low quality and often co-mingled with furniture. Furniture taken to civic amenity sites (CA) may be re-used |
| **Joinery and furniture manufacture** | Solid wood<br>Particleboard | 0.4 | Industry commitments such as resource efficiency plans may have incentivised some best practice in avoiding wood waste.<br>Most likely to be going to landfill in mixed loads? |

Source: Market Situation Report, WRAP 2011. The total here is 4.2mt arising due to rounding.

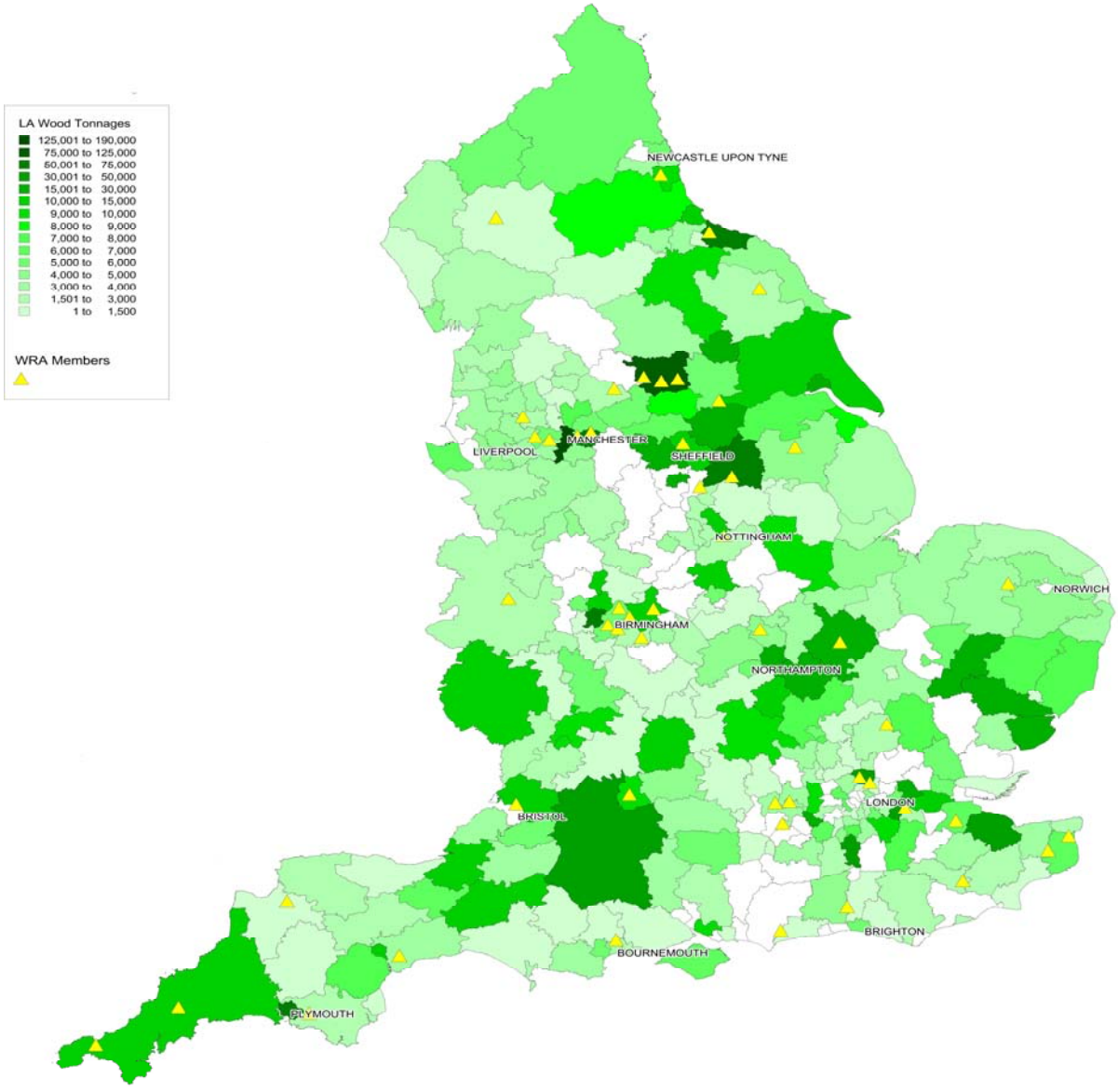
[18] Targets for wood have been kept flat as the actual achievement rate for wood recycling was almost 60% in 2011 (and around 75% in 2010), as many producers meet their general recycling/recovery requirements by obtaining wood PRNs. An increase in the targets would therefore only serve to increase costs on producers without delivering an increase in the amount of wood packaging recycled.

# Regional distribution of wood waste arisings

30. Analysis undertaken by WRAP[19] shows that around 40% of English wood waste arisings are generated in London, South East England and North West England due to the higher population density and significant construction and manufacturing activities.

31. Figure 4 shows geographical wood waste arisings with darker areas indicating higher levels of wood waste. As wood is a heavy commodity to transport, proximity to end markets is an important consideration both economically and environmentally. Wood panel facilities and biomass electricity installations[20] are shown as yellow triangles.

***Figure 4: Wood waste arisings by LA area***




Source: WRAP

[19] Market Situation Report: Realising the value of recovered wood, WRAP 2011
[20] Only installations accredited under the Renewables Obligation are shown.

# Wood Waste Grades

32. The publication of the Publicly Available Specification for the requirements and test methods for processing waste wood (PAS 111) affirms the grading system developed by the Wood Recyclers Association and is generally accepted by the wood recovery industry (recyclers and end users) who base transactions on these grades. Some reports suggest that the lack of consistency and understanding of wood waste grades is hampering sorting of wood waste.

33. Grade A wood waste is without visible surface treatments and typically comes from pallets, joinery and forestry shavings. This wood waste generally goes to higher value markets such as animal bedding and is often called 'clean or untreated' wood waste. Grade A can also be co-fired in a non-WID[21] biomass plant. Grade A is effectively reprocessed and recycled. Grade B wood waste is Construction and Demolition (C&D) industrial wood waste and is destined for panel product manufacture (chipboard, fibreboard etc.) and WID compliant plants. Grade C wood waste is from panel products and or C&D containing treatments like glues and varnishes and is destined for WID compliant plants. Both Grade B and C are often termed 'treated' wood waste. However, identifying treatments on wood waste and therefore applying grading to the wood waste is not straightforward as outlined in PAS 110[22].Grade D is hazardous and only suitable for specialist landfill or WID compliant combustion.

34. For wood waste producers (e.g. door manufacturers) and those handling smaller volumes of wood it is more common for transactions to be based on 'high' 'low' grades or on 'treated' 'visibly clean' grades with more flexible pricing based on assessed quality of the load.

***Table 3: Wood waste materials and typical markets***

| Wood Waste grade | Typical markets | Typical sources of raw material | Materials within wood waste grade |
|---|---|---|---|
| **Grade A "Clean, recycled"** | Manufacture of products such as animal bedding, horticulture, panelboard<br>Fuel in non WID installations | Packaging (pallets)<br>Secondary manufacture (joinery) | Solid softwood and hardwood, packaging waste, scrap pallets, packing cases, cable drums. Process off-cuts from joinery / manufacturing |
| **Grade B Industrial Feedstock Grade** | Feedstock for industrial wood processing operations such as the manufacture of panel products, including chipboard and medium density fibreboard | As Grade A, plus construction and demolition operations and transfer stations | May contain up to 60% Grade A material, plus building and demolition materials and domestic furniture made from solid wood |
| **Grade C Fuel Grade** | Biomass fuel for use in generation of electricity and / or heat in WID compliant installations | All above plus municipal collections, recycling centres, transfer stations, and civic amenity recycling sites | All of the above, plus fencing products, flat pack furniture made from board and DIY materials.<br>High content of panel products (chipboard, MDF, plywood, OSB, fibreboard) |
| **Grade D Hazardous Waste** | Requires disposal at special facilities | All of the above plus fencing, track work and transmission pole operators | Fencing<br>Transmission poles<br>Railway sleepers<br>Cooling towers |

Source: Wood Recyclers Association

[21] Waste Incineration Directive

[22] PAS 110 notes that many different chemical compounds are used in treated wood and; that most types of wood preservative cannot be identified by visual means and that some treated wood will contain compounds which are not acceptable to some end uses.

35. The reprocessing sector has good links with waste management companies and with Commercial and Industrial (C&I) and C&D waste wood producers.

36. Grade C and D is the fraction most likely to go to landfill. Grade B may be contaminated with Grade C material and therefore rejected by recyclers / reprocessors and may therefore also go to landfill

37. The grade of the wood waste will influence the end market.

# Section Four: The wood waste market

38. The main markets in the wood waste industry in the UK are: panelboard; biomass/ energy; animal/ poultry bedding; mulches (soil conditioners and composting), equine surfaces and pathways and coverings. There is also a growing export market (for recovery) in wood waste. Anecdotal evidence also suggests that a considerable amount goes to informal markets.

39. Informal markets, which are unregulated, include wood off-cuts from small manufacturing operations being sold on for use in homes or small scale biomass energy installations[23] or land recovery. Land recovery is the use of 'untreated' wood waste on land to confer benefit, for example such as tracks, land levelling or for nature reserves. It is possible that wood waste containing treatments is being used for land recovery.

40. The panelboard industry is the largest single user of waste wood in the UK accounting for an estimated **950,000t** in 2011. Usage of wood waste in panelboard had been increasing as manufacturers moved away from more expensive virgin wood but 2011 did see a fall in consumption of 15% (due to the suspension of operations at the Sonae panelboard mill following a fire at the Merseyside site in 2011). Demand for wood waste as biomass for energy recovery has increased and in 2011 accounted for **594,000t.** Animal bedding accounted for **348,000t** followed by equine surfaces which accounted for **55,000t**. Both of these markets saw a fall in consumption in 2011 whereas previously usage of wood waste in these markets had been increasing, partly as wood recyclers diversified from panelboard and partly due to higher prices for substitutes (e.g. straw). In 2011 there was a switch from animal bedding and equine surfaces to mulches and composting partly related to cost-cutting by farmers and mild weather (which resulted in lower demand for animal bedding).

41. The panelboard and animal bedding industry use Grade A wood waste. This is because the panelboard industry is restricted in its use of processed wood[24] whilst the animal/poultry bedding sector demand products that are free from contaminants (as required by regulation).

42. It is really difficult to get an accurate picture of the amount of wood waste exported as data varies from one report to another. WRAP's 2011 report estimated wood waste exports in the UK to be **194,000t,** however, the Wood Recyclers Association (WRA) estimates that wood waste exports accounted for **540,000t** in 2010 and **654,000t** in 2011 and also note that the pace of increase in exports has slowed. In 2012 the South East of England and Midlands market has been affected by low demand for waste wood from Europe largely due to the mild winter.

[23] The Business Case for Wood Waste Collection Hubs, WRAP, 2012 forthcoming
[24] Set out in PAS 104, EPF regulations, European Toy Regulations

43. Wood waste destined for European markets is low grade with little end use in the UK particularly in the south of England due to a lack of WID compliant plants. The rising trend suggests that export is likely to become a long term market for waste wood. However, there is also other evidence to suggest that the wood waste export market would decline as soon as further UK energy recovery sector capacity becomes operational as expected from 2012[25].

***Table 4: End markets for wood waste and % changes from 2007 - 2011***

| Thousand tonnes | 2007 | 2008 | 2009 | 2010 | 2011 | 07/08 | 08/09 | 09/10 | 10/11 |
|---|---|---|---|---|---|---|---|---|---|
| **Panelboard** | 1200 | 1126 | 1065 | 1119 | 952 | -6% | -5% | -5% | -15% |
| **Animal /poultry bedding** | 290 | 350 | 360 | 391 | 348 | 21% | 3% | 9% | -11% |
| **Equine surfaces** | 56 | 73 | 75 | 77 | 55 | 30% | 3% | 3% | -29% |
| **Mulches (soil conditioners and composters)** | 75 | 95 | 98 | 95 | 189 | 27% | 3% | -3% | 99% |
| **Pathways and coverings** | 15 | 17 | 18 | 17 | 10 | 13% | 6% | -6% | -41% |
| **Biomass / Energy (UK)** | 250 | 370 | 495 | 551 | 594 | 48% | 34% | 11% | 8% |
| **Total recycled/ recovered UK** | **1886** | **2031** | **2111** | **2250** | **2148** | **8%** | **4%** | **7%** | **-5%** |
| **Exports** | 15 | 117 | 49 | 194 | 654 | 680% | -58% | 296% | 237% |
| **Total recycled / recovered** | **1901** | **2148** | **2160** | **2444** | **2802** | **13%** | **1%** | **12%** | **15%** |

***Source**: WRA, WPIF & HMRC [WRAP market situation 2011 report + latest WRA figures from 2011]*

44. Demand for wood (virgin and waste) as a source of biomass for energy generation in the UK has increased significantly over the last few years. Consumption of wood waste has more than doubled between 2007 and 2010 (estimates vary for 2010 between 395,850[26] and 551,000t[27]) to become the second largest market. Growth has in part been encouraged by government incentives to increase electricity generation from renewable resources. Tolvik note that relatively small tonnages of grade A wood pellet are also being used in co-incineration facilities.

45. AEA research[28] describes the balance of risk between long term fuel contracts at a higher price and procuring from the open market at a lower price but risking shortfalls in supply. The report finds that many larger biomass energy generators have medium to long term supply contracts for a proportion of their wood supply, and it is highly likely that they would be burning a combination of virgin wood and treated wood. They will then supplement this with short term – or on the spot buying to make the most of lower prices when available. However, Environment Agency permit storage conditions will affect how much they will be able to store on site which means spot buying could be difficult.

[25] Market Situation Report: Realising the value of recovered wood, WRAP 2011
[26] Ofgem dataset covering biomass used under the Renewables Obligation (RO) from April 2010 to March 2011. The Ofgem report only covers electricity generation under the Renewables Obligation. It excludes biomass used in installations not under the RO and all biomass heat generators
[27] 2011 Briefing Report: The UK Waste Wood Market
[28] An Assessment of the environmental impacts of the management options for wood waste, AEA, 2012

# Current energy recovery capacity

46. Waste wood can be used as a biomass fuel either: in existing infrastructure (originally built to run on fossil fuels – co-firing); in a waste incinerator or dedicated biomass plant; or in dedicated wood-fuelled biomass plant[29].

47. Wood waste originating from construction and demolition sites has to be burned in a WID compliant plant as does wood that has undergone any treatment involving heavy metal or halogenated organic compounds[30].

48. There are currently 159 installations (including 33 in planning stages) in the UK[31] that fall within the scope of the WID. The main fuel source of these WID plants is municipal waste, and, increasingly, commercial mixed waste (sources that contain a low proportion of wood waste). In 2011 nine plants reported using recycled/waste wood as a one or all of their feedstocks. There are currently only two plants open to the market that can take hazardous wastes with a content of more than 1% of halogenated organic substances and they come with higher gate fees.

49. In addition to these large scale facilities, there is small scale 'on-site' biomass burning for heat recovery down to household wood burners. This small scale informal burning could account for as much as 150,000t[32] and take grade A and B wood waste provided the grade B has not come from construction and demolition sites (they are not WID compliant so cannot burn other grades).

# Future energy recovery capacity

50. As the main market for wood waste driven out of landfill is likely to be WID Compliant biomass power plant we have looked at future development. At present one of the main drivers for the development of WID compliant biomass power plants is the current financial incentives that are available for renewable electricity generation under the Renewables Obligation[33].

51. Tolvik[34] identifies new facilities under construction that would bring demand for wood waste up to 1.1mt a year by the end of 2012. The report concludes that this would leave 0.1mt as potential feedstock for additional new plants rising to 0.5mt by 2015 assuming the projected improvement in recovery rates. An example is RWE Markinch taking 400,000t of mixed virgin and waste wood[35] of which 75% is expected to be waste wood by late 2012.

52. The Biomass Energy Centre however identifies over 32mt of capacity from planned biomass energy facilities (UK wide) with wood being the feedstock for over 20mt of this capacity. There would be a shortfall in feedstock supply if all of this plant was developed, but many planned sites do not become a reality for a variety of reasons. The Tolvik report concludes that there would be a shortfall in biomass supply if just 25% of planned biomass energy facilities were developed, and it is therefore likely that there will be reliance on imported

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[29] waste wood can also be used as a fuel in advanced conversion technologies such as gasification and pyrolysis
[30] Article 2 of WID (2000/76/EC)
[31] Member States reports on their implementation of the Waste Incineration (WI) Directive 2000/76/EC for the period 2006 – 2008, Goovaerts et al (2010)
[32] 2011 Briefing Report: The UK Waste Wood Market, Tolvik Consultancy, 2011
[33] See the DECC website for more details on the RO: http://tinyurl.com/65bjywk

[34] 2011 Briefing Report: The UK Waste Wood Market, Tolvik Consultancy, 2011
[35] The report states "clean and waste wood" but it is likely the intention is virgin and waste wood

biomass. The Bioenergy Strategy agrees that imported biomass will be a key contributor towards UK carbon reduction targets to 2030 and beyond.[36]

53. We understand the bulk of the wood that is currently sent to landfill to be low grade wood (i.e. Grade B, C and D). Grade B can be used in panelboard but Grade C can only be used in a WID compliant plant. It may well be that the main viable market for this wood waste, if a restriction on landfilling were imposed, would be incineration for energy recovery in a WID compliant plant. Additionally, if there is a lot of hazardous wood waste diverted from landfill some of the future capacity for incineration would need to be permitted to deal with this.

**Q.6**. Will planned facilities be sufficient to deal with wood waste diverted from landfill? Y/N
**Q.7**. Is it likely that export supply will be diverted to UK facilities? Y/N
**Q.8.** Is there any risk that higher grade wood would be displaced from higher up the waste hierarchy to meet the 90% biomass required for ROCs? Y/N

# Section Five: Economics of wood waste management

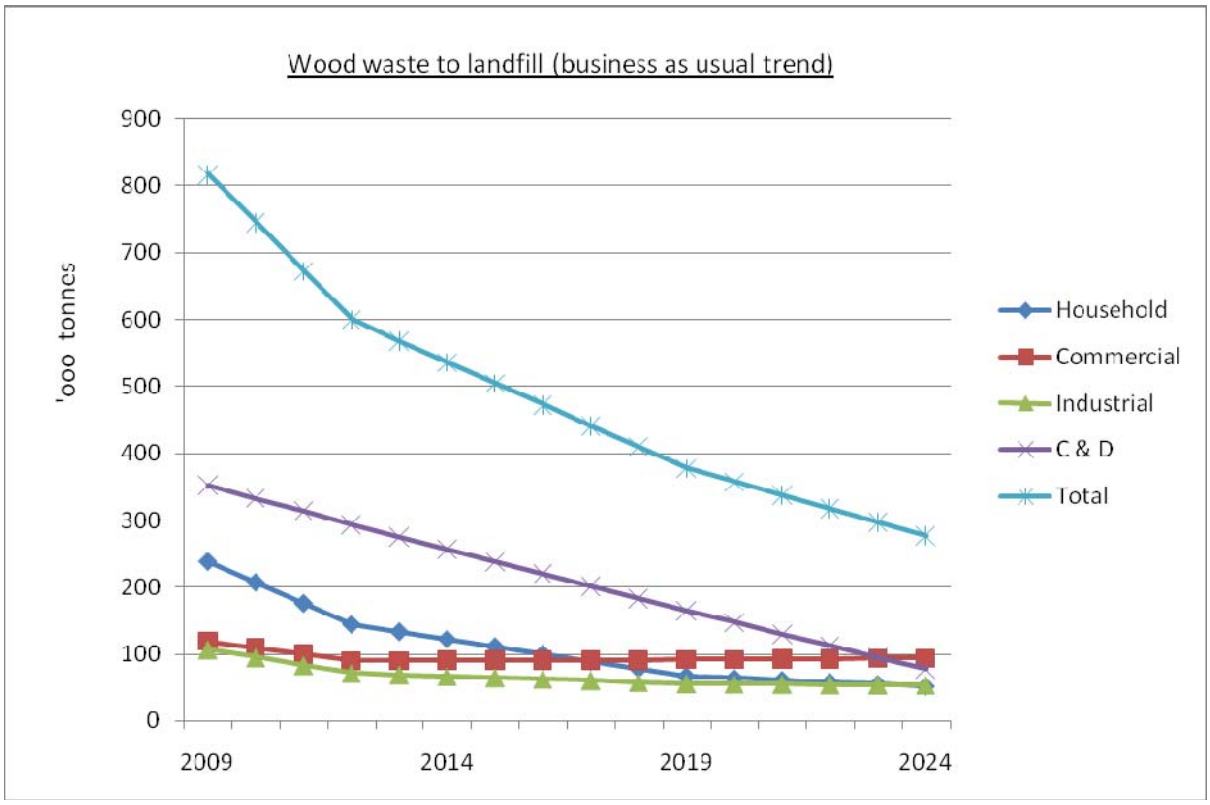
## Trends and Projections

54. Table 4 in section four describes the current state of the wood waste market. However, it is important not only to consider the current state but also what we expect to happen to the market in the future, even without new policy instruments. This business as usual (BAU) baseline is significant as the market may already be moving towards the desired outcome without the need for additional policy interventions. Research on the feasibility of landfill bans[37] assessed the likely evolution of waste types to landfill in a BAU scenario. Although this analysis was undertaken in 2009, the policy landscape in relation to landfilling of wood has not changed dramatically so general trends are still valid.

55. The assessment of the BAU for wood waste estimated a decline in landfilling from over 800,000t in 2009 to under 300,000t by 2024, as shown in the chart below. Although the analysis was completed in 2009, the trend to 2011 has approximately tracked actual outcomes. The analysis suggests that a significant amount of the current wood waste landfilled (over half) will be diverted to alternative treatments in the normal course of events, as a result of the current suite of policy instruments.

[36] http://www.decc.gov.uk/en/content/cms/meeting_energy/bioenergy/strategy/strategy.aspx
[37] Landfill ban: feasibility study, Eunomia 2010

***Figure 5: Wood waste to landfill (business-as-usual scenario)***




Source: Landfill bans: feasibility study, Eunomia 2010

56. At the time, primary drivers behind the reducing trend (current and future) of wood waste to landfill included the landfill tax and Renewable Obligation subsidies to renewable energy generation. These drivers remain, indeed the landfill tax is now scheduled to increase to £80/t by 2014/15.[38]

57. However, the quantity of wood landfilled also depends upon the amount of wood waste which arises, and therefore depends on the waste output from the relevant sectors.[39] We do not have a quantitative projection of wood waste arisings in future, but it is clear from Table 2, that developments in the C&D and the packaging (pallets) sector could have a significant impact in reducing overall arisings. As noted in Table 2, these two sources have declined since 2007, a likely result of the recession and policy/other changes. These sectors could increase their landfilling, but higher recovery rates[40] and waste prevention activities should mitigate that risk.

58. To drive actual change, any policy intervention would need to deliver additional diversion above and beyond the BAU trend identified. Given the low levels of wood landfilling

[38] At the time of the landfill bans feasibility study the landfill tax was not scheduled to rise above the rate of £72/t in 2013/14.
[39] For the non-household sectors, the quantity of wood waste is determined by overall production and the wood waste intensity of that production. The amount of wood waste could be reduced through falling overall output, a more efficient use of wood in production, or a substitution away from the use of wood to other materials.
[40] As a result of the revised WFD target to halve waste to landfill and the packaging recovery targets. Although the wood waste target itself is only 22%, the rate of recovery of packaging wood waste in 2010 was 75.4% and in 2011 60% (as it is part of overall compliance with the packaging recovery/recycling target).

expected by 2020 and beyond we would like to understand the potential effectiveness of additional policy instruments.

**Q.9.** Do you agree with the 'business as usual' assessment above? Y/N Please comment
**Q.10.** How do you see the wood waste producing sectors evolving to 2020 without further policy intervention? Please comment on sectors and treatment routes as appropriate.
**Q.11.** What evidence do you have regarding any potential for further diversion of wood waste over and above the BAU trend?

# Costs and benefits

59. In assessing the merits of a particular policy intervention, economic analysis is used in order to compare the relative size of the potential costs and benefits of different options. Although this call for evidence is not proposing specific policy options, we are seeking evidence to help us assess the underlying (technical) costs and benefits of diverting wood waste from landfill to alternative treatment methods.

60. The following table sets out the categories of expected cost and benefits that would arise from diverting wood waste from landfill. It looks at the costs of the change in waste treatment vs landfill, the change in environmental outcomes, and other items such as energy production/material value.

***Table 5: Cost and benefit categories***

| Costs | Benefits |
|---|---|
| Treating wood waste via reprocessing/energy generation | Reduced cost of landfilling |
| Cost of collecting wood waste | Reduced residual waste collection costs |
| Reduced landfill gas energy | Greenhouse Gas benefits (net)[41] |
| Administration and enforcement costs | Value of material and energy outputs |

61. Financial costs and benefits can either be looked at in a 'bottom-up 'fashion' or through reference to market information, such as the recently published WRAP 2012 Gate Fees Report[42]. The latter gives up-to-date information, but is subject to the inherent volatility of prices in such markets (whether as a result of overall commodity and energy market volatility, or because of particular trends in the waste wood market). The former may therefore provide a better estimate of the financial costs and benefits over the likely lifetime of a policy intervention. In addition market prices may reflect current policy interventions such as landfill tax, which would need to be stripped out of policy appraisal in order to avoid double-counting (and to allow an accurate appraisal of costs and benefits[43]).

[41] There are emissions from both landfilling and alternative treatments, however, the table above refers to net emission impacts. There are also air quality impacts from any waste treatment, but these are relatively small in comparison to the GHG impacts.
[42] Gate Fees Report 2012: Comparing the cost of alternative waste treatment options, WRAP, 2012
[43] This formulation of costs and benefits (stripping out transfers, taxes and /subsidies, the use of social discount rates) is known as 'social' cost benefit analysis, as opposed to private cost benefit analysis, such as that performed by businesses in making decisions.

62. WRAP 2012 Gate Fees Report included two types of information:

    - the cost of onward management of waste from local authority household waste recycling centres (HWRC's), with a median fee of £27/t, with a range of £8 -76/t; and
    - the gate fees **paid** by end markets, with median fees paid by different end markets between £21 – 43/t, with only the WID-compliant biomass market straddling £0/t).

63. Based on this information, it would be cost effective for local authorities to divert any wood they source at HWRC's to onward management rather than landfill[44].

64. The 'negative' gate fees charged by end markets reflect the fact that the treatment process costs are outweighed by the value of the product/energy

65. The range of management fees charged to local authorities for HWRC wood waste will reflect the cost of collection, any costs of sorting and transporting to end markets, as well as the end market value. Therefore, based on published end market gate fees, median intermediate costs of collection, sorting, onward transportation is estimated to be between £48 – 70/t[45], depending on end market.

**Q.12.** Are there any other costs and benefits to consider? Y/N Please list.
**Q.13.** Is this a reasonable representative cost (and range) for collection, sorting and onward transportation from HWRCs? Y/N Please comment

66. The 2010 Landfill Feasibility Study provides the most recent bottom-up analysis of costs and benefits[46] of diverting wood waste from landfill to either recycling or energy recovery[47]. The revised analysis of this study has a positive net present value for a wood waste restriction – of £ 20m to £ 50m depending on the type of restriction. However, our cost benefit analysis based on this study, and which uses the same methodology but a different assumption for methane capture at landfill, has a marginal or negative net present value of £0m to £-50m[48][49]. Based on the study and using our assumptions, the unit (per tonne) costs and benefits are summarised below

[44] as the upper end of the range (£76/t) is below the landfill gate fee + tax cost (average £84/t in 2012/13, excluding transport to the landfill site.
[45] i.e. £27/t plus £21- 43/t
[46] Landfill Bans: Feasibility Study, Eunomia 2010. Some revisions have been made to this analysis since the original report has been published to correct a calculation error and to update for more recent information on the methane emission associated with landfilling.
[47] Note that these are social costs, so will not necessarily exactly correspond with the WRAP gate fee survey estimates. However, this is how policy appraisal will be undertaken in a subsequent consultation, and the underlying capital and operational expenditure can still be examined and compared to industry understanding.
[48] The revised analysis based on the Landfill Bans: Feasibility Study by Eunomia has a positive net present value for a wood waste restriction because it uses Monte Carlo analysis of key variables to arrive at a median for the net present value. The figures in the text above are based on central assumptions only. The key difference is that our figures have a landfill gas capture of 75%, whereas the Monte Carlo approach includes a range of possible values of capture – this means that the implicit capture rate in the Monte Carlo analysis is lower, and hence the environmental benefits of diversion are greater. In addition, our analysis uses a shorter time horizon than Eunomia's analysis, although the effect of this is insignificant'.
[49] Figures are rounded to the nearest £10million.

- the net additional cost of collecting and treating wood for recycling was around minus £10-11/t[50] and the additional environmental benefit[51] was approximately £15/t.

- For energy recovery via incineration, the net additional cost of collecting and treating wood was between £14-22/t and the additional environmental benefit[52] was approximately £16/t.

67. So whilst wood recycling produces significant additional benefits per tonne diverted, the net benefits of diverting to energy recovery were marginal or negative as the costs are comparable or slightly larger than the environmental benefits. Overall net benefits of a restriction are estimated to be marginal or slightly negative, as most of the additional landfill diversion was expected to come through energy recovery via incineration (suggesting that most of the available tonnage is likely to be of low grade).

68. Clearly, there is likely to be variation in terms of the costs of collecting/treating waste from different sectors and different sources within sectors (e.g. large versus small construction sites). Table 6 sets out some of the assumptions used in calculating the additional costs of alternative wood waste treatments:

***Table 6: Cost and benefits - assumptions***

| Item | Sub-item | Cost |
|---|---|---|
| Non-household sources, collection and treatment | | £40/t |
| Household sources (i.e. management from an HWRC) | | £11.50/t |
| Wood energy recovery via incineration (treatment) | | |
| | Unit capital costs | £500/t |
| | Lifetime of capital | 20 years |
| | Unit operating costs | £20/t |
| | Electricity generation | 933kwh/t |

**Q.14** Do the cost and benefits estimates in table 6 look reasonable from your knowledge? Y/N Please also comment on the variability of costs across and within sectors
**Q.15** Is it right to assume that most of the additional landfill diversion is likely to come through recovery via incineration, suggesting that most of the available tonnage is likely to be of low grade? Y/N Please comment

[50] i.e. a cost saving
[51] Of net changes in greenhouse gases and other air pollutants.

[52] Of net changes in greenhouse gases and other air pollutants

69. On the environmental benefits side of the equation, the GHG estimates are as in the following table. Other air pollutant impacts[53] are not specified here as their net impact, although still positive, is much smaller than that of greenhouse gases.

***Table 7: Emissions impacts of diverting wood waste from landfill ($tCO_2e$/t waste wood)***

| | Landfill methane | Offset emissions (landfill gas) | Material/energy offset emissions |
|---|---|---|---|
| Wood energy recovery | -0.4 | 0.06[54] | -0.36[55] |
| Wood recycling | -0.4 | 0.06 | -0.08 |

70. The table shows the greenhouse gas impacts of diverting wood waste. Clearly, the reduction in methane will be the same whether the wood is diverted to energy recovery or recycling, and is equal to 0.4 tonnes $CO_2$ equivalent ($tCO_2e$) per tonne wood diverted. By reducing methane, the potential for landfill gas is reduced therefore there is a reduction in offsetting of fossil electricity generation elsewhere in the economy. The routes then either reduce materials required for virgin products (recycling), or offset emissions elsewhere by producing energy (combustion).[56]

**Q.16.** Do you have any comments on the GHG estimates in table 7?

# Section Six: Other issues to consider

## Sorting wood waste

71. There is evidence that more wood waste is being separated and recovered. Over the last 3 years waste movements categorised as separate wood waste fractions and being handled by permitted facilities in England and Wales have increased from approximately 2.2mt to over 3mt in 2010.[57] This indicates that the disposal of wood waste within mixed waste is reducing and more wood waste is being separated, particularly Grade A and possibly Grade B.

72. However, it remains likely that Grades B, C and D make up a large proportion that is going to landfill and may be mixed in with other materials that are difficult to separate. For some

[53] The emissions impacts arise from: any changes in use of fuels (including indirectly through electricity); process emissions (such as burning of wood); and any offsetting energy production which reduces air pollutants elsewhere.
[54] Net output of landfill gas per tonne wood waste assumed to be 0.41MWh/t.
[55] Derived from offsetting marginal electricity production (Combined Cycle Gas Turbine CCGT), and a net output of around 0.93MWh/t waste combusted.
[56] Although the net emissions savings from diverting wood waste, according to this research, are higher for the incineration route, the different carbon values for different carbon impacts in the traded and non-traded sectors mean that the monetised value of GHG benefits are very similar (essentially the material offset savings are assumed in the research to occur in the non-traded sector, which has a much higher valuation of carbon than the traded sector. See DECC/HMT guidance for further information: http://www.decc.gov.uk/en/content/cms/about/ec_social_res/iag_guidance/iag_guidance.aspx).
[57] The Business Case for Wood Waste Collection Hubs, WRAP, 2012 forthcoming

fractions, tests to identify different treatments and therefore allow better separation of the grades are required[58]. We would like to understand whether it is practical and economical that wood waste mixed with i) other waste streams and ii) other grades of wood waste could be separated for recycling and / or recovery. This may require increased awareness from producers, source separation where feasible and ability to process the separated fraction.

73. Where wood waste is currently disposed of to landfill or informal markets we would like to understand whether this is largely because the wood recycling sector is unable to provide economically viable recovery routes because the material is treated, mixed with other wastes and uneconomic to separate, arises in individual quantities too small to allow for cost effective collection, or for other reasons.

74. In addition we do not know enough about the destination of wood waste from smaller businesses.[59] These businesses either do not produce enough wood waste for skip based collections[60] or are small construction and demolition companies who have limited space which restricts the way wood waste is handled. The issue can affect civic amenity sites who also have limited space[61]. Forthcoming WRAP research has examined the scope for 'Collection Hubs' which are additional points at which wood waste can be collected before processing and recovery.

**Q.17**. Can wood waste mixed with other waste streams be separated? Please comment on a) practicality and b) cost
**Q.18**. Can different grades of wood waste be separated? Please comment on a) practicality and b) cost
**Q.19**. Is the grading system effective for identifying suitability for different end uses?
**Q.20**. What are the key issues in separating wood waste in addition to those mentioned above?
**Q.21**. How practical would it be to apply a restriction to mixed loads?
**Q. 22**.Are there any sectors where sorting wood waste would be particularly difficult and why?

# Accompanying or alternative measures

75. Better Regulation is the Government's collective approach to ensure that, when we regulate, we do so because it is the last resort and the best way of achieving the outcome we want whilst avoiding unintended consequences and keeping costs on the economy as low as possible. In developing policy options we will therefore be considering what alternatives there are to a restriction on wood waste and whether given direction of travel 'do nothing' is also an option. We would like views on other measures that could be taken to manage wood waste. These could be as an accompaniment to a restriction or instead of a restriction. It is possible that some of the initial ideas below could be addressed by a voluntary agreement and that voluntary agreements may hasten and increase the level of diversion.

76. Prevention of waste and increasing re-use of wood waste. Increasing the re-use and preparation for re-use of waste wood would help to divert wood waste from landfill. We know that much good work is undertaken, particularly with furniture re-use, but that it is still likely that many items which could be re-used are sent to landfill. Better promotion of re-use through education and awareness raising, for example with households may be needed.

[58] The Business Case for Wood Waste Collection Hubs, WRAP, 2012, forthcoming
[59] The Business Case for Wood Waste Collection Hubs, WRAP, 2012, forthcoming
[60] The main route for recovery of wood waste to be cost effective
[61] An Assessment of the environmental impact of the management options for wood waste (WR1209), AEA, 2012

77. Improved collection and sorting infrastructure. Our research in preparing for this Call has shown that there may well be instances where the amount of waste wood generated is too small for separate collection (particularly from small businesses). Forthcoming WRAP research[62] has reviewed current collection routes and the prospects for further increasing wood recovery using wood collection hubs. Opportunities considered include: composters operating wood collection hubs; provision of recycling services to small businesses via Household Waste Recycling Centres on a fee paying basis; increased collection activity through collections (e.g. collection clusters) from small businesses; and reverse logistics (where deliveries of wood products to wood sector businesses are matched with a service for collection and back haulage).

78. Reducing contaminants on wood products. A major issue and one which impacts on the end market is identification of treatments in wood waste. Although this is a longer term solution (as wood waste stays in the supply chain for many years) it may be worth exploring replacing the treatments which cause problems with alternatives which pose fewer recycling or recovery problems.

79. Producer responsibility schemes. For example placing an obligation on the producers to set up schemes for recovery and recycling. These could be voluntary or mandatory. Other ideas include an obligation to sort which could involve sorting wood waste from other waste or separating wood waste by grade or by source.

**Q.24**. Is there merit in considering a) alternative approaches to a restriction? Y/N b) accompanying approaches? Y/N
**Q.25.** What would be the benefit in these approaches?
**Q.26**. What are the barriers to these approaches?
**Q. 27**. Are there any other approaches we should consider? Y/N Please outline

# Lead-in times

80. Introducing a restriction on wood waste to landfill would require a lead-in period to allow local authorities and industry to make necessary adjustments and for infrastructure, particularly WID compliant plants and possibly sorting mechanisms, to develop. This may involve new infrastructure or adjustments to existing infrastructure.

81. Green Alliance work[63] identified lead-in times for the introduction of landfill bans in its case studies of between two and twelve years and Eunomia[64] suggested it would be difficult to implement landfill restrictions in less than five years, particularly for wood waste where there is a strong reliance on treatment infrastructure. In addition in 2011 the Government introduced a three-year freeze on new domestic regulation for businesses with fewer than 10 employees - micro-businesses.

**Q.28.** What should be the lead in time for any restriction on wood waste to allow time for the necessary infrastructure to develop? < 5 yrs, 5-10 yrs, > 10 yrs
**Q.29.** What infrastructure is necessary?

[62] The Business Case for Wood Waste Collection Hubs, WRAP, 2012, forthcoming
[63] Landfill bans and restrictions in the EU and US , (WR1202), Green Alliance, 2009
[64] Landfill ban: feasibility study, Eunomia 2010

# Enforcement

82. A key consideration is the practical enforcement of a wood waste restriction. This would need to be done in a way that provides confidence for those investing in waste infrastructure that wood waste is kept out of landfill and diverted to appropriate alternative facilities. More detailed consideration to enforcement will be given if, having reviewed the evidence, Government is content that restrictions on wood waste to landfill are the best way of managing wood waste.

83. The Landfill Directive has already banned the landfilling of liquids, certain hazardous wastes and tyres. The experience in bringing about these diversions will provide valuable guidance in considering the enforcement of any wood waste restriction.

84. There is likely to need to be a mixture of measures which could include:

- Visual inspection at landfill sites
- Duty of Care
- Guidance and sharing of best practice
- Minimum standards (e.g. for producers, reprocessors setting out requirements)
- Updated regulatory position statement on wood waste

85. We will need to consider where the onus of enforcement and burden of responsibility would fall. Placing this on the landfill operator is an end of pipe approach and a restriction is likely to work better when responsibility is shared with producers and or another party acting on behalf of the producer such as the collector of the waste.

86. Previous experience has shown that partnership groups between industry, the regulator and the Government have helped significantly in identifying issues in the lead up to bans and in monitoring implementation.

**Q.30**. What would be the practical difficulties and issues in implementing a restriction on wood waste? Please outline
**Q.31**.Where should burden of proof/ responsibility lie (producer, waste management company)?
**Q.32**. How much would the additional administration activity associated with compliance of a restriction cost you?
Please comment
**Q. 33**. Are there any possible unintended consequences of a restriction on wood waste? Y/N Please outline
**Q. 34**.Given the evidence available do you think there is a case for a further Government action on wood waste? Y/N. Should this be a) a restriction b) other measures c) combination of a restriction and other measures.
**Q.35.** Please outline further what Government action you would like to see.

# Next steps

87. Defra will consider the responses to this Call for Evidence. If, having reviewed the evidence, Government is content that restrictions on wood waste to landfill are the best way of managing wood waste, these will help inform development of policy options to meet the aims described in section one.

# How to respond

This Call for Evidence opens for responses on **31st July 2012** and will run for eight weeks. The Call will close on **28th September 2012**. Responses should be sent by email if possible to: wsm@defra.gsi.gov.uk

Or by post to:

The Landfill Restrictions team
Defra
Area 6C
Ergon House
Horseferry Road
London SW1P 2AL.

Any queries should be addressed to the Landfill Restrictions team as above.

Respondents are requested to explain who they are and, in the case of representative groups, to give a summary of the people and/or organisations they represent.

We may not be able to consider your response if it arrives after the deadline. Please contact the Landfill Restrictions team to discuss an extension if you think your response will be late.

Information provided in response to this call for evidence, including personal information, may be published or disclosed in accordance with the access to information regimes. These are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004.

If you want the information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals with, amongst other things, obligations of confidence. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding.

We will process your personal data in accordance with the DPA and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

# Publication of responses

If you do not consent to this, you must clearly state that you wish your response to be treated confidentially. Any confidentiality disclaimer generated by your IT system in email responses will not be treated as such a request. Please be aware that there may be circumstances in which Defra will be required to communicate information to third parties on request, as set out above.

# Annex A: List of questions

**Q.1.** Do you know of any reasons why any of these types of wood waste, or any others should not be included in any potential restrictions? Y/N Please provide supporting evidence.

**Q.2.** Do you have any additional evidence that could improve our estimate of greenhouse gas emissions from wood waste in landfill?
Y/N. Please list any sources.

**Q.3.** Do you agree that approximately 0.6mt of wood waste is going to landfill in England? Y/N If not please provide evidence to show otherwise.

**Q. 4.** Do you agree that wood waste is going to informal markets? Y/N. What are these informal markets?

**Q. 5**. What other sources of evidence on a) wood waste arisings and b) wood waste management routes are there?

**Q.6**. Will planned facilities be sufficient to deal with wood waste diverted from landfill? Y/N.

**Q.7**. Is it likely that export supply will be diverted to UK facilities? Y/N

**Q.8.** Is there any risk that higher grade wood would be displaced from higher up the waste hierarchy to meet the 90% biomass required for ROCs? Y/N

**Q.9.** Do you agree with the 'business as usual' assessment above? Y/N Please comment

**Q.10.** How do you see the wood waste producing sectors evolving to 2020 without further policy intervention? Please comment on sectors and treatment routes.

**Q. 11**. What evidence do you have regarding any potential for further diversion of wood waste over and above the BAU trend?

**Q.12.** Are there any other costs and benefits to consider? Y/N  Please list.

**Q.13.** Is this a reasonable representative cost (and range) for collection, sorting and onward transportation from HWRCs? Y/N. Please comment

**Q.14** Do the cost and benefits estimates in table 6 look reasonable from your knowledge? Y/N Please also comment on the variability of costs across and within sectors

**Q:15** Is it right to assume that most of the additional landfill diversion is likely to come through energy recovery via incineration, suggesting that most of the available tonnage is likely to be of low grade? Y/N Please comment

**Q:16** Do you have any comments on the GHG estimates in table 7?

**Q.17**. Can wood waste mixed with other waste streams be separated? Y/N Please comment on a) practicality and b) cost

**Q.18**. Can different grades of wood waste be separated? Please comment on a) practicality and b) cost

**Q.19**. Is the grading system effective for identifying suitability for different end uses?

**Q.20**. What are the key issues in separating wood waste in addition to those mentioned above?

**Q.21**. How practical would it be to apply a restriction to mixed loads?

**Q. 22**.Are there any sectors where sorting wood waste would be particularly difficult and why?

**Q. 23**. Please provide any additional evidence on the nature of wood waste disposal by small businesses

**Q.24**. Is there merit in considering a) alternative approaches to a restriction? Y/N b) accompanying approaches? Y/N

**Q.25.**What would be the benefit in these approaches?

**Q.26**. What are the barriers to these approaches?

**Q. 27**. Are there any other approaches we should consider? Y/N Please outline

**Q.28** What should be the lead in time for any restriction on wood waste to allow time for the necessary infrastructure to develop? < 5 yrs, 5 yrs, 10 yrs, > 10 yrs

**Q.29.** What infrastructure is necessary?

**Q.30**. What would be the practical difficulties and issues in implementing a restriction on wood waste? Please outline

**Q.31**.Where should burden of proof/ responsibility lie (producer, waste management company)?

**Q.32**. How much would the additional administration activity associated with compliance of a restriction cost you?
Please comment

**Q. 33**. Are there any possible unintended consequences of a restriction on wood waste? Y/N Please outline

**Q. 34**.Given the evidence available do you think there is a case for a further government action on wood waste? Y/N. If yes, should this be a) a restriction b) other measures c) combination of a restriction and other measures.

**Q.35.** Please outline further what government action you would like to see.

**Q.36.** We have set out areas where we are particularly keen to receive evidence. If there are other areas you believe we have missed, or do not highlight sufficiently, please draw them to our attention.

# Annex B: Glossary

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| **Carbon Budgets** | Legally binding 5-year cap on greenhouse gas emissions that should be emitted through UK production. The system was set out in the UK Climate Change Act 2008 |
| **Carbon Savings** | Reduction of Greenhouse Gas emissions |
| **Combustion routes** | Different ways of extracting energy from waste eg pyrolysis, gasification and incineration |
| **Hazardous Wood Waste** | Wood waste only suitable for specialist landfill or WID compliant combustion. |
| **Informal Markets** | Are unregulated and include wood off-cuts from small manufacturing operations being sold on for use in homes or small scale biomass energy installations or land recovery. |
| **MRF's** | Materials Recovery (or Recycling) Facility |
| **OSB** | **Oriented Strand Board** - is an engineered wood-based panel consisting of strands of wood which are bonded together with a synthetic resin; the strands are pressed together in layers. |
| **Panel board** | Products are categorised as sheet materials in which wood is the dominant material in the form of strips, veneers, chips or fibres. They include plywood, particleboard (including chipboard), oriented strand board (OSB) and fibre boards including medium density fibre board (MDF). |
| **PAS 110** | Notes that many different chemical compounds are used in treated wood and; that most types of wood preservative cannot be identified by viual means and that some treated wood will contain compounds which are not acceptable to some end uses. |
| **PAS 111** | **Publicly Available Specification 111** - provides the definitions, minimum requirements and test methods for processing waste wood into a material suitable for use in new applications or end products. It is applicable to the receipt, storage, grading, preparation and testing of waste wood intended for secondary end markets. |
| **Regulatory Position Statement on wood** | Advises on when to consider wood to be a waste, what regulatory controls should be followed and recommendations to industry. |
| **RO** | **Renewables Obligation** - is a scheme owned by DECC and delivered by Ofgem and is the main support scheme for renewable electricity projects in the UK. The RO places an obligation on suppliers of electricity to source an increasing proportion of their electricity from renewable sources (see also Renewable Obligation Certificates). |
| **ROCs** | **Renewable Obligation Certificates** – (*see Renewables Obligation*) is the green certificate issued for eligible renewable electricity generated and supplied to customers within the UK by a licensed supplier. ROCs are issued by Ofgem to accredited renewable generators. Different technologies receive different numbers of ROCs for each megawatt hour (MWh) of eligible renewable output generated. |
| **Treated Wood** | Any wood product that has been chemically treated (e.g. to enhance or alter the performance of the original wood). Treatments may include penetrating oils, tar oil preservatives, waterborne preservatives, organic-based preservatives, boron and organo-metallic based preservatives, boron and halogenated flame retardants and surface treatments. |
| **Untreated Wood** | Any wood product that has not been treated and used in the Manufacture of products such as animal bedding, horticulture, panelboard. |
| **Virgin Wood** | Consists of wood and other products such as bark and sawdust which have had no chemical treatments or finishes applied. |
| **WFD** | **Waste Framework Directive** - sets out the basic concepts and definitions related to waste management, such as definitions of waste, recycling, recovery. It explains when waste ceases to be waste and becomes a secondary raw material (so called end-of-waste criteria), and how to distinguish between waste and by-products. |
| **WID** | **Waste Incineration Directive** - aims to limit the risks that waste incineration poses to the environment and human health. The Directive applies to most activities that involve burning waste, including burning waste for fuel. |
| **WRATE** | **Waste and Resources Assessment Tool for the Environment** - a software tool that compares the environmental impacts of different municipal waste management systems. |