www.defra.gov.uk

Consultation on the introduction of restrictions on the landfilling of certain wastes

A consultation document issued jointly by Defra and the Welsh Assembly Government

March 2010

Department for Environment, Food and Rural Affairs
Nobel House
17 Smith Square
London SW1P 3JR
Telephone 020 7238 6000
Website: www.defra.gov.uk

Information about this publication and further copies are available from:

Landfill Restrictions Consultation
Waste Permitting Unit
Defra
Area 6D Ergon House
Horseferry Road
London SW1P 2AL.

Tel: 0207 238 6372 / 0207 238 4660

Email: landfill.restrictions@defra.gsi.gov.uk

This document is available on the Defra website at:
www.defra.gov.uk/corporate/consult/landfill-restrictions/index.htm

Published by the Department for Environment, Food and Rural Affairs

Contents

Chapter 1: Executive summary

1.1 This joint Defra and Welsh Assembly Government consultation fulfils the Government's commitment given in the *Waste Strategy for England 2007*[1] and the commitment of the Welsh Minister for Environment, Sustainability and Housing's written cabinet statement of 2nd December 2009[2] to consult on the impact of further restrictions on the landfilling of biodegradable and recyclable wastes and whether they would make an effective contribution to meeting the key twin objectives of reducing greenhouse gas (GHG) emissions and increasing resource efficiency, and in respect of Wales, of decreasing the ecological footprint associated with waste.

1.2 This consultation document sets out the policy drivers behind the Governments'[3] aim to divert recyclable and biodegradable wastes from landfill and presents the evidence from recent research on banning such wastes from landfill and how this could potentially contribute to furthering this aim. It lists a number of candidate waste types for which the evidence suggests the benefits of diversion from landfill in terms of GHG and resource efficiency gains could outweigh the costs of diversion. In addition the affordability in public finances terms of introducing restrictions would need to be carefully considered before a decision to proceed with any form of restriction could be taken. It will also be important to assess clearly the likely impact of landfill bans for different materials in the context of the full package of instruments in place to deliver our waste objectives, and to identify what additional net benefit a ban would add in combination with or instead of other instruments, including the impact on businesses.

1.3 The following options for introducing new policy measures to restrict biodegradable and recyclable wastes from landfill in England and Wales are outlined:

- Do nothing
- Introduce landfill bans either a) on their own or b) accompanied by a requirement to sort
- Introduce a sorting or tougher pre-treatment requirement but without a landfill ban
- Introduce producer responsibility systems linked to recycling targets

1.4 Views are requested on a number of questions on options for restrictions on landfilling certain wastes. Responses are required by Thursday 10th June 2010.

[1] [1] http://www.defra.gov.uk/environment/waste/strategy/strategy07/documents/waste07-strategy.pdf

[2] http://wales.gov.uk/about/cabinet/cabinetstatements/2009/091202waste/?lang=en

[3] A reference to "the Governments" should be taken to mean the UK Government and the Welsh Assembly Government

1.5 This document also identifies some of the practical issues that would arise from restricting waste from landfill such as the need for alternative waste management infrastructure and the enforcement of bans.

1.6 This is a first stage consultation on the principle of introducing landfill restrictions. Responses from this consultation will inform Government consideration of whether it is desirable, practical and affordable to bring forward restrictions.

1.7 Should either Government conclude they wish to introduce restrictions the specific proposals would be the subject of a separate second stage consultation on the chosen options including draft Regulations for implementing them.

Chapter 2: Introduction

Purpose of this consultation

2.1 This joint Defra and Welsh Assembly Government consultation is in response to the commitment in the *Waste Strategy for England 2007* and the commitment of the Welsh Minister for Environment Sustainability and Housing's written cabinet statement of 2nd December 2009 to consult on whether the introduction of further restrictions on the landfilling of biodegradable and recyclable wastes would make an effective contribution to meeting the objectives set out in the respective waste strategies for England and Wales, of reducing GHG emissions and increasing resource efficiency and in respect of Wales, of decreasing the ecological footprint associated with waste. This commitment was reaffirmed in the Government's Low Carbon Transition Plan (LCTP) in July 2009[4]. The consultation aims to obtain the views of interested parties on the policy options presented with a view towards introducing one or more of them into law(s) in England and Wales.

2.2 This is a first stage consultation on the options under consideration for restricting wastes from landfill. It is intended to be a high-level consultation to identify option(s) which could be taken forward if desirable, practical and affordable. If Government decides change is desirable a second stage consultation will follow containing further detail on the preferred option(s) and the way any restriction or requirement would be introduced and who the onus would fall upon and accompanied by draft Regulations to implement these option(s).

Who has an interest?

2.3 This consultation will be of interest to:

- Waste producers and in particular those disposing of waste to landfill,
- 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 and local authorities including those collecting or transporting waste
- Trade Associations
- Environmental interest groups
- Consumer interest groups and members of the public

[4] http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

2.4 We have sent an electronic copy of this consultation document to those included in the above groups whom we think will be most interested in this consultation. A list of consultees is available alongside the consultation document on the Defra website. This is a public consultation and anyone is welcome to respond.

Where to find the consultation document

2.5 This document and the accompanying Consultation Stage Impact Assessment and list of Consultees are available on the Defra website at:

www.defra.gov.uk/corporate/consult/landfill-restrictions/index.htm

and on the Welsh Assembly Government Website at:

www.wales.gov.uk/consultations / www.cymru.gov.uk/ymgynghoriadau

(under Environment and Countryside).

2.6 It is in line with Defra's and the Welsh Assembly Government's environmental aims not to widely distribute paper copies of consultation documents, however if you require a paper copy of this document please contact the Landfill Restrictions team (contact details below).

How to respond

2.7 This consultation opens for responses on Thursday 18th March 2010 and will run for 12 weeks. The consultation will close on Thursday 10th June 2010. Responses should be sent by email if possible to landfill.restrictions@defra.gsi.gov.uk

Or by post to:

Landfill Restrictions Consultation
Waste Permitting Unit
Defra
Area 6D Ergon House
Horseferry Road
London SW1P 2AL.

Any queries should be addressed to the Landfill Restrictions team as above or by phone on 0207 238 6372 or 0207 238 4660.

Consultees in Wales should copy their responses to
wastestrategy@wales.gsi.gov.uk

Or by post to:

Kate Reed
Waste Strategy Branch
Department for Environment, Sustainability and Housing
Welsh Assembly Government
Ty-Cambria
29 Newport Road
Cardiff CF24 0TP

Or by fax to: 029 2046 6413

2.8 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.

2.9 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.

Comments or complaints

2.10 Comments or complaints about this consultation process (as opposed to comments about the issue which is the subject of this consultation) should be addressed to:

Consultation Co-ordinator
Defra
Area 7C Nobel House
17 Smith Square
London SW1P 3JR
Email: consultation.coordinator@defra.gsi.gov.uk

Publication of responses

2.11 In line with Defra's policy of openness, at the end of the consultation period, copies of the responses received will be made publicly available through the Defra Information Resource Centre for six months. The information contained in the responses may also be published in a summary of responses.

2.12 The Welsh Assembly Government intends to publish a summary of the responses received from Wales. Normally, the name and address (or part of the address) of its author are published along with the response, as this gives credibility to the consultation exercise.

2.13 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. You should also be aware that there may be circumstances in which Defra/the Welsh Assembly Government will be required to communicate information to third parties on request, in order to comply with their obligations under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004.

2.14 The Defra Information Resource Centre will supply copies of consultation responses to personal callers or in response to phone or email requests. An administrative charge will be made to cover photocopying and postage costs. Wherever possible, personal callers should give the Centre at least 24 hours' notice of their requirements. Please contact the Defra Information Resource Centre, Lower Ground Floor, Ergon House, Horseferry Road, London SW1P 2AL, tel. 020 7238 6575, email defra.library@defra.gsi.gov.uk .

Outcome of this consultation

2.15 At the end of the consultation period Defra and the Welsh Assembly Government will consider all the responses received and will produce a summary document which will be available on the Defra and Welsh Assembly Government websites. The Welsh Assembly Government will also produce its own summary document specifically for the consultation responses it receives and will make it available on its website.

2.16 Subject to the outcome of this consultation, it is intended that it will be followed by a second stage consultation, if appropriate, on detailed proposals for introducing policy measures including draft regulations. Details of a second stage consultation will be made available on the Defra and Welsh Assembly Government websites.

Chapter 3: Why consider landfill restrictions?

3.1 This chapter explains the aims and policy drivers behind a consideration of landfill restrictions in England and Wales and describes the policy instruments currently in place to encourage the diversion of waste from landfill.

3.2 The Governments consider that landfill should be the home of last resort for most wastes. The amount of waste being sent to landfill decreased from 80 million tonnes in 2000-2001 to 53.8 million in 2008 in England and from 4.45 million tonnes in 2000-2001 to 2.89 million in 2008 in Wales. The number of permitted operational landfill sites in England and Wales has reduced from about 2,600 prior to 2001 to 461 sites today. Policy instruments such as landfill tax (see paragraphs 4.23-4.28) and the landfill allowance schemes in England and Wales (see paragraphs 4.29-4.32) have helped to reduce the amount of waste going to landfill. This document will consider whether this amount could be further reduced by introducing restrictions on the landfilling of biodegradable and recyclable wastes taking account of the practicality and affordability of such measures.

Policy drivers for considering landfill restrictions

3.3 Government is considering the introduction of new measures to restrict the landfilling of biodegradable and recyclable wastes in order to meet the following policy objectives. The *Waste Strategy for England 2007* identified two key drivers to reduce GHG emissions from landfill and improve resource efficiency. Similar drivers were included in the Welsh Assembly Government's consultation on its new waste strategy, Towards Zero Waste.

Reduce direct GHG emissions from landfill

3.4 The Climate Change Act 2008[5] is the principal driver for action on climate change. It introduced legally binding GHG reduction targets of 34% by 2020 and 80% by 2050 (compared to 1990 levels). The Act also introduced a carbon budgeting system, which caps GHG emissions from a range of different sectors (including the waste sector) over 5 year periods, to help deliver these reduction targets.

3.5 The LCTP set out how Government will keep within the carbon budgets. To stay within the carbon budget for the waste sector, Defra pledged to reduce direct methane emissions from landfill by an additional 1 million tonnes carbon dioxide equivalent (CO_2e) by 2020 (compared to emissions levels projected for 2020 through implementation of existing policies).

3.6 Defra will shortly publish its Climate Change Plan setting out how it will help deliver the emissions reductions pledged in the LCTP. For the waste sector we

[5] http://www.opsi.gov.uk/acts/acts2008/pdf/ukpga_20080027_en.pdf

believe the 1 million tonnes CO_2e target reduction can be achieved through implementation of a range of additional policy measures which reduce the amount of biodegradable waste produced; divert more biodegradable waste away from landfills; and capture more of the methane produced by landfills. A specific reference will be made to the important role that landfill bans could make to achieving the emissions savings target.

3.7 Landfill gas, a large component of which is methane, is produced by the decomposition of biodegradable wastes inside a landfill site. Methane is emitted to the atmosphere where there is no method of gas capture present or where the gas capture is inefficient, both at operational and closed landfill sites. Methane is a powerful greenhouse gas (21 times more powerful than CO_2[6]) which contributes to climate change. Methane emissions from biodegradable waste in landfill account for 40% of all UK methane emissions and 3% of overall greenhouse gas emissions.

3.8 The EU Landfill Directive[7] requires operators to capture and treat landfill gas. This can be used to generate electricity where facilities are present or where this is not possible it can be "flared" to convert it to CO_2. However, some sites have inefficient methane capture, or in the case of older closed sites, no capture at all, resulting in methane emissions to the environment. Since 1990 emissions from landfill have reduced by 59%. Nonetheless, Defra, the Welsh Assembly Government and the Environment Agency are considering in a separate strand of work how to bring about further improvements to methane capture at landfill sites. Reducing the biodegradable wastes disposed of to landfill would therefore reduce the amount of methane emitted to the environment from landfill gas.

Improve resource efficiency

3.9 Generating and disposing of waste results in a loss of valuable natural resources, both in the UK and overseas, and damages the environment and the economy. Reducing waste can make an important contribution towards conserving scarce resources and improving resource efficiency.

3.10 Waste puts pressure on the environment, not only as a result of the impact of disposal, but also due to the additional impacts associated with the extraction and processing of new materials, and the manufacturing and distribution of new goods.

3.11 The economic cost similarly extends beyond the direct costs of waste treatment and disposal. The inefficient use of resources is a drag on the economy and on business. Making products with fewer natural resources saves money. Improving the

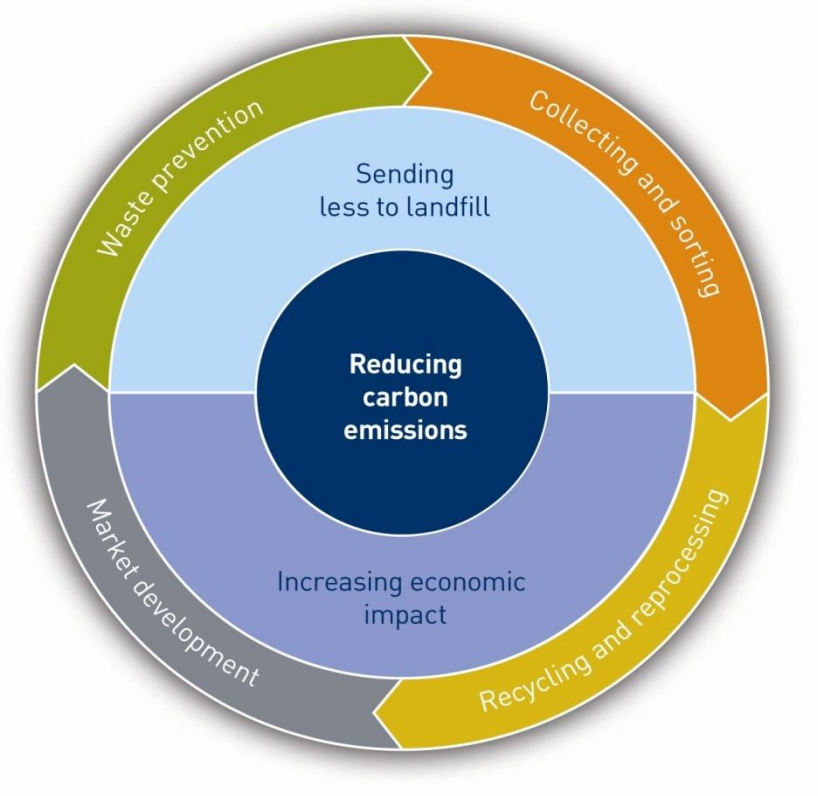
[6] UNFCCC figure

[7] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0031:EN:HTML

productivity with which natural resources are used can help generate new business opportunities and new jobs.

3.12 Landfilling materials, even where they do not biodegrade into methane and directly add to GHG emissions, means that materials made using valuable energy and scarce resources are certainly underutilised, if not simply wasted, while additional energy and resources have to be used to extract and process new raw materials. This makes no sense.

3.13 Effective management of resources necessitates a consideration of the whole life cycle of products and materials, and a suite of complementary policy measures. The Government is seeking to develop an approach which would bring resource use, production, consumption, and waste management into a "closed loop", where material flows and embedded carbon are re-introduced into the economy via re-use and recycling and energy recovery. WRAP's Resource Efficiency Loop, below, illustrates the "closed loop".



Source: WRAP

3.14 The *Waste Strategy for England 2007* and the draft new waste strategy for Wales, *Towards Zero Waste* set out a waste "hierarchy" – prevention, re-use, recycling, recovery and disposal. The Government has introduced a number of policies to reinforce this Strategy, including the landfill tax escalator (see paragraph 4.26), waste regulation, initiatives to create markets for secondary materials, and information and behaviour change campaigns.

3.15 Action on landfill can help support resource efficiency objectives. Landfill costs have risen considerably in recent years, mainly as a result of the landfill tax escalator. However, the tax is set by reference to weight and does not discriminate between high or low-impact waste materials. For example, high embedded carbon materials such as aluminium are taxed at the same rate per tonne as low carbon materials. Regulatory interventions such as landfill restrictions or bans could complement the landfill tax, and contribute towards resource efficiency objectives.

3.16 In addition to the main policy drivers above, the introduction of restrictions on landfill could also support the delivery of other policies or targets. However, these are secondary considerations to any proposals the Government and the Welsh Assembly Government may adopt.

Contribute towards EU requirements to divert biodegradable municipal waste from landfill and pre-treat landfilled waste, and EU targets on preparing for re-use, recycling and recovery

3.17 The revised EU Waste Framework Directive[8] (WFD) sets targets for achieving certain levels of preparing for re-use, recycling and recovery (see paragraph 4.13). The EU Landfill Directive sets progressive targets for diverting biodegradable municipal waste (BMW) from landfill (see paragraph 4.21). Although not a primary reason for introducing such measures, any new measures to restrict the landfilling of biodegradable and recyclable wastes will have the advantage of helping England and Wales to meet their targets under EU legislation.

3.18 There is already a policy instrument in place in England and Wales to restrict the landfilling of BMW collected by local authorities. This is the Landfill Allowance Trading Scheme in England, and the equivalent Landfill Allowance Scheme in Wales. No similar mechanism exists to restrict the landfilling of other biodegradable wastes not collected by local authorities. The implications of broadening the UK's current interpretation of the definition of municipal waste to waste not collected by local authorities for the achievement of the Landfill Directive diversion targets for BMW for 2010, 2013, and 2020 will be considered in the separate consultation *Changing the UK's landfill diversion targets*[9], which was published simultaneously with this consultation. This includes consideration of the effectiveness of existing measures to ensure that the targets are met, and the need for additional measures.

[8] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF

[9] www.defra.gov.uk/corporate/consult/landfill-diversion/index.htm

Contribute directly to EU and UK targets on renewable energy by diverting bio-based waste from landfill to a range of different energy recovery outlets

3.19 The EU Renewable Energy Directive[10] sets the UK an ambitious target to source 15% of its overall energy from renewable sources by 2020. There is also a separate 10% target for transport. The UK Renewable Energy Strategy[11] highlights the important part that a range of energy from waste technologies will play in helping the UK to meet these commitments. Recovering energy from waste that cannot be re-used or recycled would make an important contribution to meeting the UK renewable energy target. In addition, bio-based waste, including the biodegradable part of municipal solid waste, can be used to produce a wide range of fuel and/or chemical products combined with heat and power. Government is supporting the development by industry of a commercial scale plant to demonstrate this technology in England. In Wales there is a programme of support in place for anaerobic digestion of both bio-wastes collected by local authorities and those produced by business.

Stimulate the development of alternative waste management infrastructure and generate market certainty as to the availability of materials

3.20 The reliance on landfill has led to a lack of development of other recycling and recovery options. New measures to restrict the landfilling of biodegradable and recyclable wastes could help generate sufficient material to drive the market forward for recycling /recovery.

Reduce Wales's Ecological Footprint and promote sustainable development

3.21 The Welsh Assembly Government's sustainable development scheme *One Wales: One Planet: A new sustainable development scheme for Wales*[12] and the draft new Waste Strategy *Towards Zero Waste*[13] both use ecological footprinting to measure sustainability. Ecological footprinting measures the impacts of how we consume things and compares it to what the planet can cope with. It calculates how much land is needed to feed, produce energy and absorb the pollution and waste generated by our supply chains. Sustainability requires us to live within the planet's ecological limits.

3.22 Recent research has estimated that waste generation contributes 15% to Wales's ecological footprint. The ecological footprint of waste shows the environmental consequences of what people in Wales buy, use and then throw away. It takes into account the impact of products produced in other countries but

[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF

[11] http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx

[12] http://wales.gov.uk/topics/sustainabledevelopment/publications/onewalesoneplanet/?lang=en

[13] http://wales.gov.uk/docs/desh/consultation/090429wasteconsultationen.pdf

consumed in Wales. The ecological footprint of waste includes what is achieved through recovering materials and recycling them into new products as well as any energy recovered from the waste stream. *Towards Zero Waste* has identified that Wales's ecological footprint of waste can be reduced by achieving very high levels of recycling.

Chapter 4: Background and context

4.1 This chapter explains the national waste strategies set up to deliver the Governments' aims in England and Wales which provide the rationale for the current considerations of landfill restrictions. It sets out the legislative context to any new measures to restrict biodegradable and recyclable wastes from landfill, including the revised WFD targets for increasing recycling and waste recovery and the Landfill Directive targets for reducing the landfilling of biodegradable municipal waste. This chapter also identifies the wastes already prohibited from landfill by EU legislation. The chapter then describes the two main current policy instruments to divert waste from landfill – landfill tax and the two landfill allowance schemes.

National waste strategies

England

4.2 The *Waste Strategy for England 2007* set out a number of actions for Government to take forward to contribute to Government's objectives in relation to waste:

- Decouple waste growth (in all sectors) from economic growth and put more emphasis on waste **prevention and re-use**;
- Meet and exceed the **Landfill Directive diversion targets** for biodegradable municipal waste in 2010, 2013 and 2020;
- Increase diversion from landfill of **non-municipal waste** and secure better integration of treatment for municipal and non-municipal waste;
- Secure the **investment in infrastructure** needed to divert waste from landfill and for the management of hazardous waste; and
- Get the most environmental benefit from that investment, through increased **recycling of waste and recovery of energy** from residual waste using a mix of technologies.

4.3 The Strategy highlighted that landfill should be the home of last resort for most wastes. It explained that Government would continue to pursue the reduction of landfill while recognising that landfill is an appropriate way to dispose of some specific types of waste (for example hazardous wastes like asbestos).

4.4 The Strategy highlighted that a number of other EU Member States had found that imposing restrictions on the types of waste that could be landfilled had led to higher rates of recycling and recovery. Drawing upon this conclusion, the Strategy contained a commitment to consult, subject to further analysis, on whether the introduction of further restrictions on the landfilling of biodegradable and recyclable wastes would make an effective contribution to the objectives set out in the Strategy.

This consultation would be linked to further work on the priority waste types set out in the Strategy - paper, food/garden waste, glass, aluminium, wood, plastic and textiles.

4.5 The Strategy identified these seven priority waste types on the basis of evidence on potential reductions of GHG emissions resulting from diversion from landfill and increased recycling and recovery. Using the findings of studies which used a life-cycle approach to consider the relative benefits for climate change of the recovery of different wastes[14] and taking into account the range of uncertainties around this work, the Strategy drew the conclusion that significant potential savings in GHG emissions (in the UK and elsewhere) could be achieved from greater diversion of certain wastes from landfill, through recycling and energy recovery, over and above current efforts.

Wales

4.6 The Waste Strategy for Wales 2002, *Wise about Waste*[15] seeks to maximise the use of unavoidable waste as a resource, and minimise where practicable, the use of energy from waste and the landfilling of waste.

4.7 *Towards Zero Waste* is the Welsh Assembly Government's draft new Waste Strategy. It proposes a target of "by 2025: a high recycling society of at least 70% recycling across all sectors, and diverting waste from landfill sites". It also identifies that recyclables should be separated at source so that they are clean and of high value. By 2050 the aim is to achieve 'zero waste', which means producing no waste in the long term, by designing products and services that reduce or re-use waste as far as possible, and developing a local and highly skilled economy for waste management and resource efficiency.

4.8 In *Towards Zero Waste*, the Welsh Assembly Government strongly promotes waste reduction, by proposing to:

- use targets to set goals and encourage action, with support provided where appropriate and needed, and with a strong focus on eco-design.
- encourage everyone to reduce, re-use and recycle, and use waste management treatment and disposal facilities that contribute to tackling climate change and reducing Wales's ecological footprint. To achieve a high level of recycling, we need to make sure that all our recyclates are separated at source so that they are clean and of high value. In particular, we aim to

[14] Carbon Balances and Energy Impacts of the Management of UK Wastes, report by ERM (with Golder Associates) for Defra, Final Report, March 2007 and Environmental Benefits of Recycling: An international review of life cycle comparisons for key materials in the UK recycling sector, WRAP, May 2006.

15

http://cymru.gov.uk/about/programmeforgovernment/strategy/publications/environmentcountryside/2096132/;jsessionid=L5LSLsfTnjhxz22fhVvYRZqbycnnhcRty4gq0ZpCZVxPNfxqny7w!-1129944059?lang=en&ts=4

develop an efficient and effective collection system to separate mixed commercial and industrial waste.

- prioritise the waste materials that are dealt with first - these waste materials will be those which, if managed in the best way, will give us the greatest environmental benefits.
- seek to make producers more responsible for the waste that they produce, or cause others to produce.
- generate renewable energy from biowastes.
- phase out landfill sites and develop high efficiency energy from waste plants for residual waste.

4.9 *Towards Zero Waste* has highlighted that significant benefits in terms of reducing both GHG emissions and the ecological footprint associated with waste in Wales can be achieved by diverting priority materials (food, paper and card, wood, metals and plastic) away from landfill and into recycling or recovery.

4.10 The Welsh Assembly Government regard landfill bans as one of the primary mechanisms by which Wales will meet the targets set in *Towards Zero Waste*. On 22nd February 2010 the proposed Waste (Wales) Measure 2010 was introduced for consideration by the National Assembly for Wales. The Measure includes a provision to give Welsh Ministers the power to make Regulations to ban or restrict the deposit of specified kinds of waste in a landfill in Wales.

The revised Waste Framework Directive

4.11 The revised WFD[16] (Directive 2008/98/EC of 19 November 2008) defines "waste" throughout the EU and provides the overarching legislative framework for the collection, transport, recovery and disposal of waste. Article 4 of the Directive requires that the following hierarchy ('the waste hierarchy') shall apply as a priority order in waste prevention and management legislation and policy:

a) Prevention

b) Preparing for re-use

c) Recycling

d) Other recovery, eg. energy recovery; and

e) Disposal

[16] A revised WFD (Directive 2008/98/EC) was published in November 2008. The revised WFD will not replace the present WFD (Directive 2006/12/EC) in UK legal systems until it is transposed in December 2010. However, because the policy options discussed in this consultation paper will not be realised until after the revised WFD is transposed and implemented, we refer in this paper to the requirements of the revised WFD.

However Article 4 allows for specific waste streams to depart from the hierarchy where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste.

4.12 Defra has commissioned the Waste and Resources Action Programme (WRAP) to investigate the best way of managing various types of waste in terms of the relative environmental impacts. The aim of this work is to produce guidance on the most sustainable option for dealing with each waste type and on when a departure from the waste hierarchy would be appropriate. It is intended this will form part of the second stage consultation on the transposition of the revised WFD in England and Wales.

4.13 Article 11(2) of the revised WFD sets targets for Member States to achieve:

a) By 2020 a minimum of 50% by weight of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be prepared for re-use[17] or recycled

and

b) By 2020 a minimum of 70% by weight of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04[18] in the list of waste shall be prepared for re-use, recycled or recovered.

4.14 Member States are required to transpose the revised WFD by 12th December 2010. A Stage One Consultation on the Transposition of the revised Directive in England and Wales took place between July and October 2009[19]. Defra and the Welsh Assembly Government are currently considering the responses received and a second stage will follow.

4.15 The UK said in a Minutes Statement tabled at the Environment Council on 20th-21st October 2008 that in respect of achieving compliance with the Article 11(2)(a) target it intends to apply the 50% preparing for re-use and recycling target contained in the revised WFD across paper, metal, plastic and glass from households but not apply the target to each of the wastes specified individually.

4.16 The European Commission has confirmed that this is one of four permissible interpretations of the household waste recycling target that Member States may use. The Welsh Assembly Government reserves the right to go beyond the requirements

[17] 'Preparing for re-use' is defined as checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other re-processing.

[18] Category 17 05 04 in the List of Waste (England) Regulations 2005 and the List of Waste (Wales) Regulations 2005 is soils and stones other than those in category 17 05 03, i.e. those not containing dangerous substances.

[19] http://www.defra.gov.uk/corporate/consult/waste-framework/index.htm

of the Directive should this prove necessary to deliver the outcomes laid out in the final version of its revised waste strategy, *Towards Zero Waste*.

4.17 The Consultation on the revised WFD listed a number of possible measures that could be introduced to help meet the 50% target for preparing for re-use and recycling in Article 11(2)(a). One of the listed measures was landfill bans, in order to drive increased diversion of waste into recycling. However it is considered that England will meet the target without the need for any additional measures. The consultation asked, for England only, for views on the "no further measures" approach, if any further measures should be introduced, and if so which materials are considered high priority. In respect of Wales, it asked for views on whether Wales's approach (i.e. proposed progressive municipal waste recycling targets contained in the Wales Waste Strategy) will meet the target. Any views expressed in response to the revised WFD consultation on whether landfill bans should be introduced in order to help meet the Article 11(2)(a) will also be considered in the current consultation.

The Landfill Directive

4.18 The Landfill Directive (1999/31/EC) standardises the engineering, operation and regulation of all landfill sites, prohibits certain types of waste from landfill and sets targets for the diversion of BMW[20] from landfill. The provisions of the Directive are implemented in England and Wales by the Environmental Permitting (England and Wales) Regulations 2007[21] and the Waste and Emissions Trading Act 2003[22].

4.19 Under the Landfill Directive the following wastes are banned from landfill:

- liquids
- wastes which are explosive, corrosive, oxidising, highly flammable or flammable
- hospital and clinical wastes
- whole and shredded used tyres

In addition, the Batteries Directive[23] (2006/66/EC) introduced a ban on disposing of automotive and industrial batteries to landfill and incineration.

[20] The Landfill Directive defines 'municipal waste' as waste from households, as well as other waste which, because of its nature or composition, is similar to waste from households. It defines 'biodegradable waste' as any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard.

[21] http://www.opsi.gov.uk/si/si2007/uksi_20073538_en_1

[22] http://www.opsi.gov.uk/acts/acts2003/ukpga_20030033_en_1

[23] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:266:0001:0014:EN:PDF

4.20 The Landfill Directive also prohibited any other type of waste which does not fulfil the waste acceptance criteria set out in the Council Decision of 19th December 2002 (2003/33/EC)[24] and waste which has not been pre-treated. "Treatment" is defined in the Directive as the physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery. Treatment is intended to reduce the impact of the waste that continues to be landfilled and to encourage recycling.

4.21 Article 5.2 of the Landfill Directive sets targets for EU Member States to reduce the amount of BMW disposed of to landfill. Using the 1995 Eurostat figures as a baseline, Member States are required to reduce the amounts of BMW landfilled by certain percentages in certain timeframes. The UK is taking advantage of a four year derogation allowed by the Directive for Member States which landfilled 80% or more of their waste in 1995. Therefore the UK's targets are:

- 75% of the 1995 amount by 2010
- 50% of the 1995 amount by 2013
- 35% of the 1995 amount by 2020

Member States may be subject to penalties from the European Commission if they fail to meet their targets.

Current policy instruments to divert waste from landfill

4.22 There are two main existing policy instruments in England and Wales aimed at diverting waste from landfill – landfill tax and landfill allowances schemes.

Landfill tax

4.23 Landfill tax applies throughout the UK and is a key driver in the UK's aim of diverting waste from landfill. The tax was introduced by the Finance Act 1996[25] to reduce the amount of waste sent to landfill by better reflecting the environmental cost of this form of waste management.

4.24 The aim of landfill tax is to encourage the disposal of less waste to landfill, to recover more value from waste through recycling and composting, and to stimulate more sustainable waste management approaches.

4.25 The tax is paid by landfill site operators per tonne of waste disposed of at permitted landfill sites. Costs are passed on by the operators to waste producers

[24] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:011:0027:0049:EN:PDF

[25] http://www.opsi.gov.uk/acts/acts1996/ukpga_19960008_en_1

through increased gate fees. Landfill tax in the UK is administered by HM Revenue & Customs (HMRC).

4.26 The initial rate of tax when it was introduced in 1996 was £7 per tonne for active waste and £2 per tonne for inactive waste. The rate for active waste has risen each year since 1999 (known as the landfill tax escalator). Currently for 2009/10 the standard rate of landfill tax for active waste is £40 per tonne and for inactive waste is £2.50 per tonne. The Chancellor's April 2009 Budget announced that the rate for active waste will continue to increase by £8 a tonne each year until at least 2013 when the rate will reach £72 per tonne.

4.27 Materials which qualify for the lower rate are defined by The Landfill Tax (Qualifying Material) Order 1996[26] which specifies the materials which are to be taxed at the lower rate. The lower rate recognises that there is a relatively low level of environmental impact associated with the landfilling of wastes which are inert. The materials qualifying for each rate are currently subject to review as part of HM Treasury and HMRC's consultation *Modernising Landfill Tax Legislation*[27]. A Government response to the consultation is expected to be published in spring this year.

4.28 The landfill tax has been very successful as an economic disincentive to landfill. The overall quantity of waste recorded at landfill sites registered for the tax fell by around 45% between 1997 and 2009. As landfilling has become more expensive, waste has been diverted into more sustainable forms of waste management and there has been greater investment in alternative waste management facilities.

Landfill allowances schemes

4.29 In England and Wales there are two parallel schemes in place to achieve the BMW diversion targets under the Landfill Directive. In England this is the Landfill Allowances Trading Scheme (LATS) and in Wales the Landfill Allowances Scheme (LAS).

England

4.30 LATS was implemented in England in April 2005. It is one of Government's key measures to reduce the amount of BMW going to landfill in accordance with the targets set in Article 5.2 of the Landfill Directive. The scheme is intended to provide a cost effective way of enabling England to meet its share of UK targets. LATS sets allowances on the amount of BMW that can be landfilled by Local Authorities and allows them to bank, borrow or trade their allowances to meet requirements.

[26] http://www.opsi.gov.uk/si/si1996/uksi_19961528_en_1.htm

[27] http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&propertyType=document&columns=1&id=HMCE_PROD1_029489

4.31 The separate consultation C*hanging the UK's landfill diversion targets* will consider the UK's approach to meeting the targets in the Landfill Directive to divert BMW from landfill. The Government intends to amend the approach the UK is taking to reporting against the targets to the European Commission. In recent discussions with the Commission over the UK's approach we have come to agree that the UK's existing approach is focused too narrowly on waste collected by local authorities. The new approach will include more commercial waste than currently and will mean amending the baseline and the 2010, 2013 and 2020 targets for the UK. The consultation sets out the change of approach to municipal waste and the targets, as well as the implications for reporting obligations and existing policies to divert BMW from landfill, in particular LATS. This will inform a second stage consultation which will present specific proposals in response to the change of approach to the targets.

Wales

4.32 Waste is a devolved issue so the Devolved Administrations for Wales, Scotland and Northern Ireland are responsible for delivering their proportion of the UK targets. LAS was implemented in Wales in October 2004. The scheme is intended to provide an equitable way of ensuring that all local authorities achieved the same proportionate level of reduction in the landfilling of BMW as a way of enabling Wales to meet its share of UK targets. LAS sets allowances on the amount of BMW that can be landfilled by local authorities each year. It does not allow them to bank, borrow or trade their allowances.

Chapter 5: The evidence on landfill bans

5.1 The *Waste Strategy for England 2007* included a commitment to undertake further analysis on whether the introduction of further restrictions on the landfilling of biodegradable recyclable wastes would make an effective contribution to the key twin objectives set out in the Strategy.

5.2 As a first step towards this commitment, in April 2008 Defra commissioned Green Alliance to examine landfill bans and restrictions in a number of other countries/regions/states (mainly EU Member States) to identify any lessons that could be learnt.

5.3 In April 2009 Defra and the Devolved Administrations commissioned a joint piece of research on the feasibility and practicalities of introducing landfill bans or restrictions in the UK. This research was managed by WRAP and sub-contracted to Eunomia Research & Consulting. This chapter summarises the key findings of these two pieces of research and identifies where work may be required to address gaps in our current evidence base.

Green Alliance research on landfill bans/restrictions in other countries

5.4 Defra commissioned Green Alliance to investigate how landfill bans or restrictions were used mainly in other EU Member States by examining a number of case studies. Green Alliance undertook a three stage process of research:

1. Desk research to identify appropriate case study countries
2. Interviews with Government officials, regulators and waste management companies from the countries in question
3. Engagement with UK stakeholders on the results of the first two stages.

5.5 The case studies identified were Austria, the Flanders region of Belgium, Germany, the Netherlands, Sweden, and Massachusetts, USA.

5.6 Green Alliance's final report was published in September 2009[28]. The report consisted of a summary drawn from across the six case studies and an individual report from each of the six countries/regions/states covered. The report detailed how the case studies implemented bans or restrictions, their rationales for doing so and their effects and interactions with other policy instruments. It drew on the experience

[28] http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=16103&FromSearch=Y&Publisher=1&SearchText=Green%20Alliance&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

of the case studies to highlight a number of points for Government to consider in developing any similar policies in the UK.

Conclusions from Green Alliance research

Effectiveness of landfill bans

5.7 The key conclusion from the research was that landfill bans can work but only alongside the right set of complementary policy measures. The supporting measures identified fell into three types:

a. Economic instruments e.g. landfill or incineration taxes/fees/moratoriums to reinforce the signal sent by landfill bans

b. Upstream measures, such as mandatory separation or waste collection; or producer responsibility

c. Quality standards for recycled products and market development/support for recycled materials/products to ease the implementation of bans or restrictions

5.8 The context for each case study was unique and how bans/restrictions worked in each case was dependent on context. Different policy instruments had different levels of importance in any policy mix. Interviewees from the case study countries were therefore unable to specifically attribute successful diversion of waste from landfill to any bans/restrictions implemented.

Lessons for the UK

5.9 Green Alliance cited key points in considering introducing landfill bans/restrictions as a clear view of objectives, sufficient lead-in times with clarity as to when bans/restrictions were coming online, effective supporting instruments, simple compliance and enforcement systems, adequate resourcing of compliance and enforcement and public support.

5.10 The case study countries used *bans (*according to material types, categories, sources and potential for alternate treatment) to increase recovery of particular materials/energy, and/or *restrictions* based on criteria (e.g. total organic carbon), which are generally applied to residual waste streams to encourage alternative treatment/reduce environmental impact of landfill. The waste types that bans/restrictions were applied to were dependent to an extent on the current state of material recovery in any given nation.

5.11 Green Alliance identified that waste policies can have the effect of making it feasible to export waste for recycling or recovery to countries with cheaper waste treatment/processing. Illegal dumping (fly tipping) was not widely reported as a

consequence of bans/restrictions. Adequately resourcing enforcement and compliance was widely reported as a key issue.

5.12 The type of bans/restrictions used influenced how (and how effectively) they could be enforced. For example, Massachusetts used only bans on certain waste types, necessitating complex enforcement practices. In contrast the Netherlands banned 34 waste *categories* but enforced these solely on load densities – a system which generally, apart from for construction and demolition waste, worked well.

5.13 However in some cases effective upstream or complementary policy measures were found to reduce the need for strict downstream enforcement of bans, or even the need for bans to be implemented at all. Massachusetts, for example, accredits some municipal recycling schemes, whose waste collections are then not subject to downstream inspection. Austria and Sweden have not banned aluminium and glass – other (upstream) instruments (e.g. producer responsibility, deposit schemes) are considered successful in diverting them from landfill.

5.14 Lead-in/transitional periods were widely regarded as necessary in implementing bans effectively. In case study countries such periods has varied between 2 and 12 years. During such periods some countries granted, where justifiable (e.g. where alternative capacity was lacking), chargeable exemptions, gradually increasing landfill charges/taxes and withdrawing exemptions as alternative capacity grew. Germany (employing a combination of regulatory and voluntary measures) was the only country not to describe an increasing landfill tax as playing a key role in transitional/lead-in periods. The research concluded that an overly long lead-in period without clear means of making the transition to a fully-implemented ban can be problematic.

Eunomia/WRAP research on the practicalities of landfill bans

5.15 Defra and the Devolved Administrations commissioned WRAP to undertake a study into the feasibility and practicalities of introducing landfill bans or restrictions in the UK[29]. This work was sub-contracted by WRAP to Eunomia Research & Consulting.

5.16 The research involved:

- A literature review of international experience
- Discussions with regulators regarding existing bans
- Stakeholder workshops to discuss design issues and the possible impacts of a ban
- Preliminary environmental modelling

[29] *Landfill Bans: Feasibility Research* by WRAP/Eunomia, March 2010

- A cost/benefit analysis

5.17 Eunomia drew up a list of candidate waste types to take forward to the cost benefit analysis stage in consultation with Defra and the Devolved Administrations. The list was based on a preliminary assessment of which waste types would bring the greatest GHG benefits as well as a feasibility assessment based on a literature review and discussions at stakeholder workshops. The candidate waste types were broadly in line with Defra's priority waste types identified in the *Waste Strategy for England 2007* and Wales's priority materials identified in *Towards Zero Waste*.

5.18 The candidate waste types were:

- Metals
- Glass
- Food
- Wood
- Textiles
- Paper/card
- Plastics
- Green (garden) waste
- Waste Electrical and Electronic Equipment (WEEE)

5.19 Two measurable properties were also considered. These were:

- Biodegradable waste
- Non-segregated waste

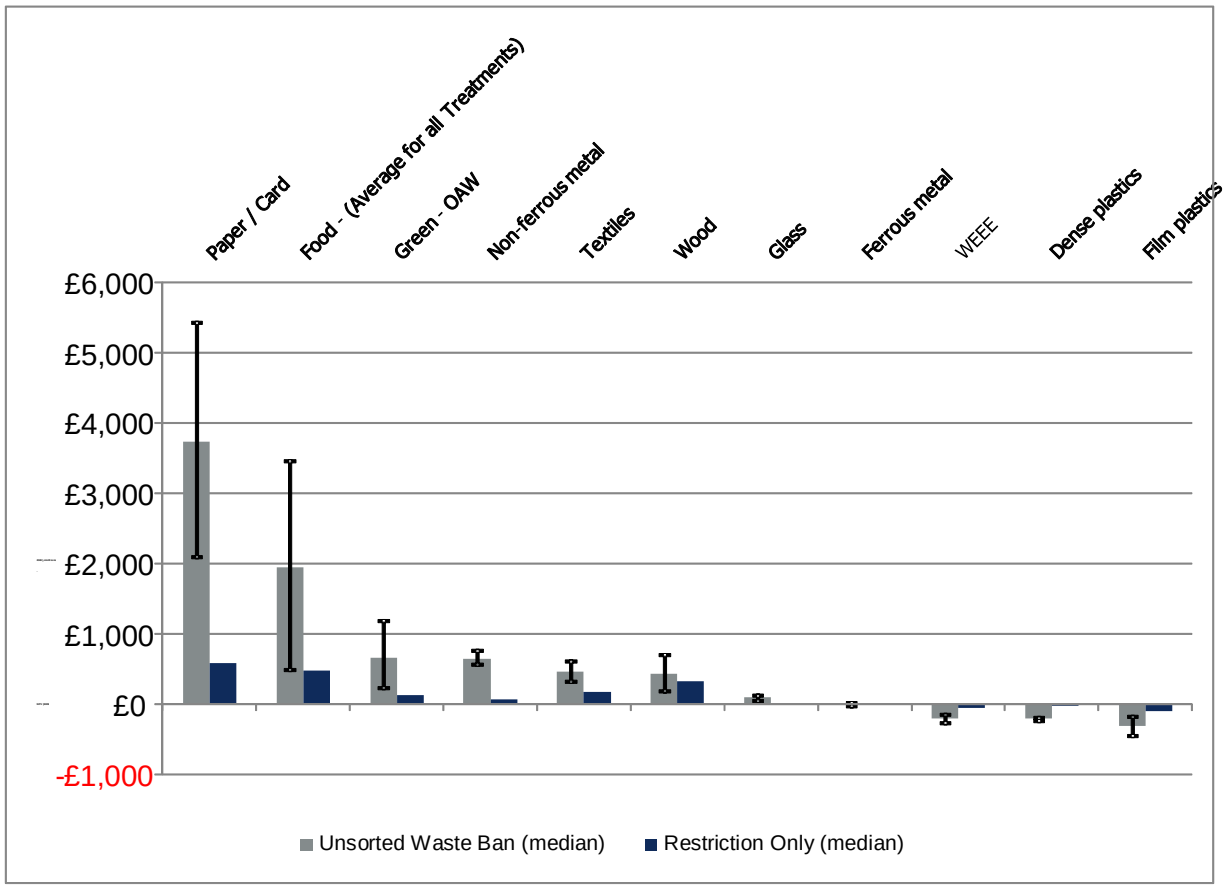
5.20 Future landfill bans were modelled relative to a "baseline scenario" which estimated the effects of existing and planned policies, such as landfill tax and the landfill diversion measures already in place (including the initiatives outlined for each waste type/category in Chapter 6 of this document). The bans were assumed to come into effect in 2015 (or 2018 in the case of the "biodegradable" property). Eunomia estimated the CO_2 savings that could be achieved by introducing landfill bans, quantified the net cost or benefit to society, and identified the bans which produced greater benefits to society than costs. The net cost or benefit to society was considered to be the sum of the financial costs (including the collecting and sorting of waste, regulating the bans and communications about the bans) and environmental benefits (including the monetised impacts of savings in GHGs and other air emissions, and other benefits from diverting waste into alternative treatments).

5.21 Eunomia included sensitivity analysis in their main report. They used a type of modelling to examine a wider range of potential outcomes by varying the most significant parameters to the cost benefit model (such as landfill gas capture rate, costs) in order to calculate ranges for the key results. This produced results showing median figures as well as upper and lower bounds rather than precise figures based on a central assumption.

Conclusions from Eunomia research

5.22 As can be seen in Figure 1, Eunomia concluded that the types of waste which offered the greatest opportunities to reduce GHGs and increase resource efficiency whilst delivering net benefits to society were **paper/card, food, textiles, metals, wood, green waste and glass.** Eunomia concluded that these benefits are likely to be greater where landfill bans are accompanied by a requirement to sort wastes.

Figure 1: Net Benefit to Society (NPV 2009-2024, £ millions), for restriction only and restriction plus requirement to sort ("unsorted waste ban")



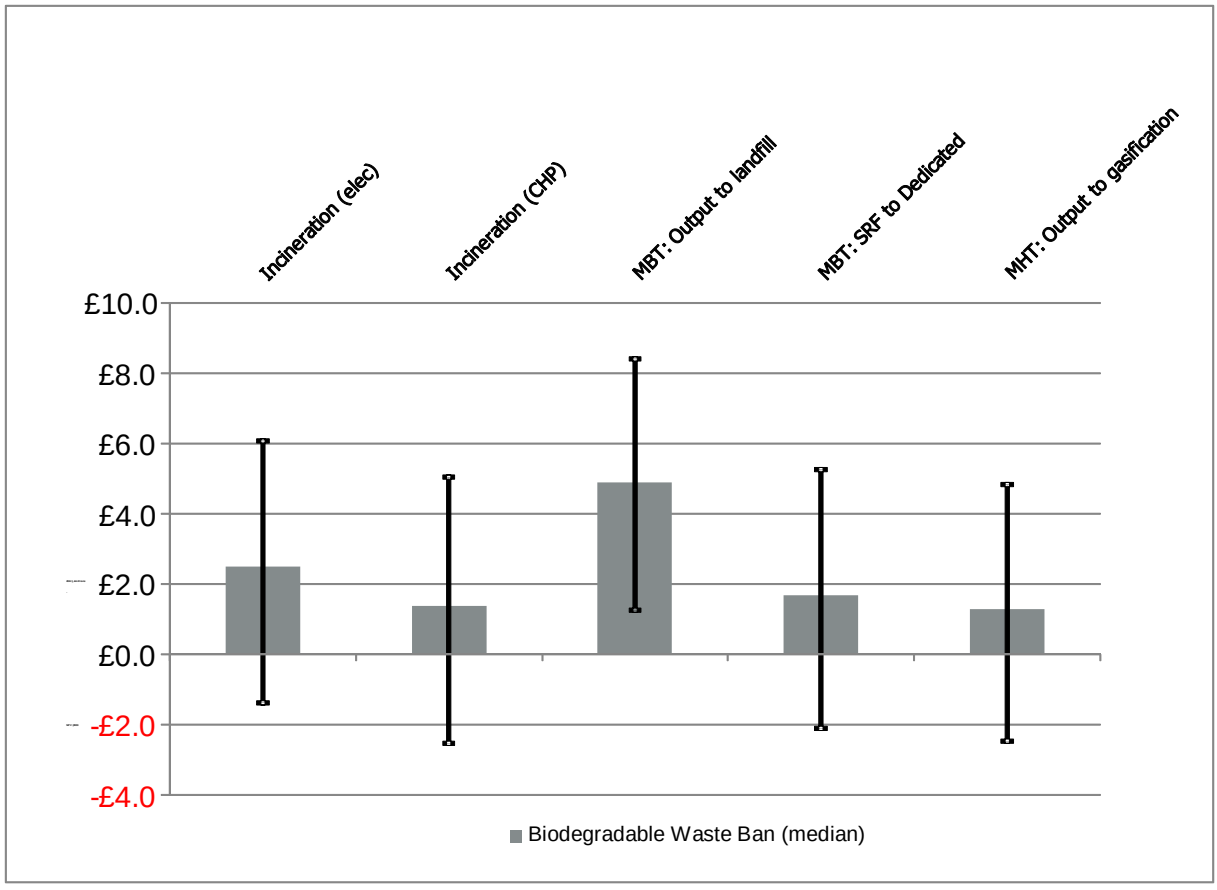
Source: WRAP/ Eunomia
Notes: a positive figure indicates a net benefit to society; a negative figure indicates a net cost to society. Vertical lines represent the upper and lower values bounding the 80% confidence interval.

Biodegradable wastes

5.23 A ban on biodegradable wastes was modelled as a ban on materials being landfilled where they exceed a certain measurable threshold. Eunomia found that benefits to society could be achieved through a ban on all biodegradable wastes (not just the biodegradable waste types examined separately), however at the lower confidence limit this type of ban could result in costs to society

5.24 As can be seen in Figure 2, the magnitude of these benefits or costs depends on the type of residual waste treatment used and the sensitivities around the key parameters used in the modelling (the main one being the rate of landfill gas capture). This was also the case for the individual waste types which were biodegradable (i.e paper/card, food, wood, green waste and textiles).

Figure 2: Net benefit to society from a biodegradable waste ban (£ million NPV, 2009-2024)



Source: WRAP/Eunomia
Note: a positive figure indicates a net benefit to society; a negative figure indicates a net cost. Vertical lines represent the upper and lower values bounding the 80% confidence interval.

Glass, plastics and WEEE

5.25 For glass, there was found to be little benefit from a landfill ban since glass is already assumed to be recycled at high levels in the baseline scenario. The requirement to sort was found to generate little additional tonnage at a significant cost.

5.26 For both plastics and WEEE, the research found a net cost to society with or without the addition of a requirement to sort. For plastics the large GHG saving was outweighed by the assumed costs of collection and reprocessing, resulting in a net cost.

Costs and benefits

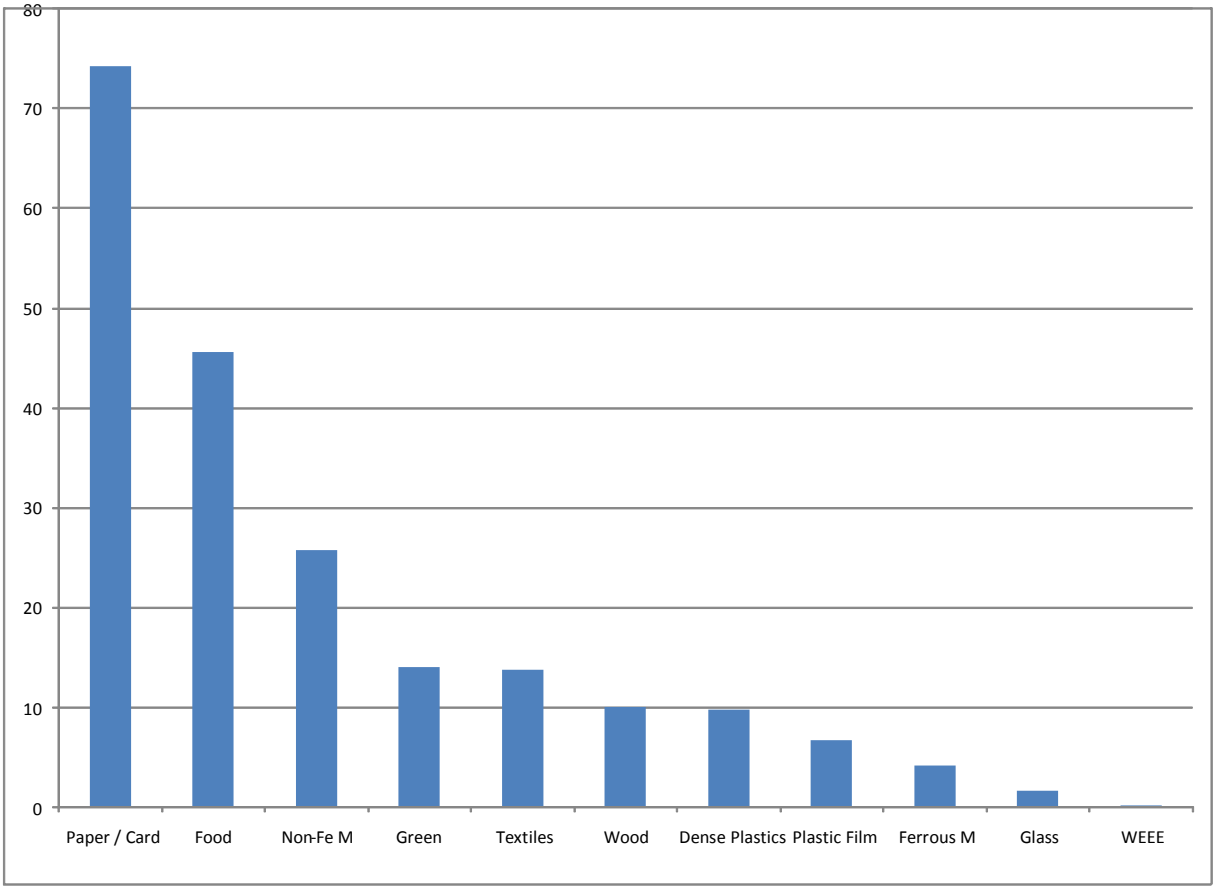
5.28 The net benefit to society from restricting those waste types from landfill is £470 million for a ban on its own and £2,805 million where a ban is accompanied by a requirement to sort (Net Present Value (NPV) over the 15 years between 2009-2024), which includes valuation of GHG benefits[30] (figures calculated using the central assumption of a landfill gas capture rate of 75%).

5.29 Eunomia calculated the GHG savings that could be made by diverting each of the candidate waste types from landfill for the period 2009-2024, shown in Figure 3. These savings were found to be highest for **paper/card, food, non-ferrous metals and green wastes**[31].

[30]Following standard Government guidance, see "Valuation of energy use and greenhouse gas emissions for appraisal and evaluation" http://man270109a.decc.gov.uk/en/content/cms/statistics/analysts_group/analysts_group.aspx

[31] Based on the entire quantities diverted from landfill. Aluminium, textiles and paper/card give the greatest CO2 savings per tonne of waste diverted from landfill.

Figure 3: Cumulative Greenhouse Gas Reductions (2009-2024) for the Restriction Plus Requirement to Sort Policy, million tonnes CO_2e



Source: WRAP/Eunomia
Note: graph includes savings made outside the UK

5.30 It is important to note that banning or restricting wastes from landfill will not in itself influence the alternative destination of those wastes. Banning materials from landfill does not necessarily result in those wastes being diverted into the preferred waste management option. Also landfill bans are unlikely to have an impact on increasing the prevention of waste and the re-use of products. For these reasons the complementary instruments in place to accompany any landfill bans or restrictions are important.

Further evidence needed

5.31 As part of the Impact Assessment accompanying this consultation, a considerable amount of sensitivity analysis has been carried out, because of uncertainties. This reveals that it is unclear whether landfill bans for some waste types would bring net benefits. The consultation is intended to help identify the circumstances in which net benefits might arise for these waste types, given the

likely impact of existing policies, diversion rates and the impact on markets for recycling. It is particularly important to assess clearly the likely impact of landfill bans for different waste types in the context of the full package of instruments in place to deliver the objectives, and to identify what additional net benefit a ban would add in combination with or instead of other instruments; and the impact on administrative burdens to businesses. Several non-monetised costs and benefits have been identified and the consultation is intended to help gather further evidence on these. In addition, further work will be done to improve the evidence base and to expand the coverage of relevant impacts.

Chapter 6: Candidate waste types

6.1 This chapter sets out the evidence for introducing bans on the landfilling of each of the candidate waste types/categories: paper/card, food, textiles, metals, wood, green (garden), glass, plastics, WEEE, biodegradable wastes and non-segregated wastes. It is emphasised that any reference to descriptions of materials in this is a reference to materials that are waste. This chapter outlines the evidence from the recent work commissioned by Defra and the Devolved Administrations (Green Alliance and Eunomia/WRAP research on landfill bans). Finally this chapter describes, for each candidate waste type/category, current or planned Government initiatives to divert these wastes from landfill. Any new landfill restriction measures would be in addition to, and complementary to, these current initiatives.

6.2 It should be noted that the figures for costs/benefits used in this chapter and in the Consultation Stage Impact Assessment are calculated from the Eunomia research using the central assumption of a 75% landfill gas capture rate and thus will differ from the figures used in the graphs in Chapter 5. We assume that the landfill gas capture rate is 75% as this is the rate used in the UK GHG Inventory which calculates UK GHG emissions, whereas Eunomia use a range of 30%-75% for landfill gas capture rate.

Paper/card

The case for considering a landfill ban

6.3 Both recycling and energy recovery of waste paper and card show significant GHG and energy benefits over landfill. The relative benefits of these depend on the quality of the waste and the efficiency of energy recovery.

The evidence

6.4 The Green Alliance research identified that paper/card was banned or restricted from landfill in all of the case studies.

6.5 The Eunomia research found that out of all the waste types considered the highest levels of net benefits to society could be found from a landfill ban on paper/card[32]. The central estimate for the period 2009-2024 was a net benefit of £253 million for a ban on its own and £1,817 million where a ban is accompanied by a requirement to sort.

6.6 Where paper/card is assumed to be diverted away from landfill into recycling the estimated savings are 1,780kg CO_2e per tonne. There are also significant GHG benefits over landfill from energy recovery (savings of 1,574kg CO_2e per tonne).

[32] Assumed to include newspaper, magazines, office paper, packaging card and other card.

The relative benefits of recycling versus energy recovery will depend on the quality of the waste and the efficiency of the recovery.

Current initiatives

6.7 Government has put in place voluntary producer responsibility agreements to increase the recycling of direct mail and magazines. The Direct Marketing Association and the Periodical Publishers Association have both agreed to raise recycling levels to 70% by 2013 and to promote recycling.

Food

The case for considering a landfill ban

6.8 For rapidly degrading wastes such as food waste, anaerobic digestion (AD) offers climate change and energy benefits over landfilling while additionally the outputs of composting and anaerobic digestion have the potential to sequester carbon in soils and to improve soil fertility, which may confer additional climate change and resource efficiency benefits.

The evidence

6.9 The Green Alliance research identified that food was banned or restricted from landfill in all of the case studies.

6.10 The Eunomia research found net benefits to society from a landfill ban on food waste[33]. Figures were calculated for food diverted to a number of residual waste treatments[34]; below are the average figures. The central estimate for the period 2009-2024 was £48 million for a ban on its own and £179 million where a ban is accompanied by a requirement to sort.

6.11 Where food is assumed to be diverted away from landfill into AD the estimated savings are 523kg CO_2e per tonne. Where it is diverted into composting the estimated savings are 426kg CO_2e per tonne.

Current initiatives

6.12 Defra support for AD includes development of an Anaerobic Digestion Implementation Plan[35], based on the recommendations of the Anaerobic Digestion Task Group; a demonstration programme on the use of AD to create renewable

[33] Assumed to include waste food which is, or once was, fit for consumption by humans or animals.

[34] AD used for on-site biogas (electricity only), AD used for on-site biogas (combined heat and power), AD used for biogas in vehicles, AD used for biogas injected into gas grid and in-vessel composting.

[35] Due to be published on 19th March 2010 and available at http://www.defra.gov.uk/environment/waste/ad/implementation-plan.htm

energy, reduce GHGs and divert waste from landfill; support under financial incentives for renewable energy and capital grant programmes; and an online anaerobic digestion advice portal. Defra has funded a grant scheme to support local authorities trialling or introducing segregated food waste collection schemes and research into improving food waste collection practices and economics.

6.13 The Welsh Assembly Government has an accelerated programme for supporting municipal food waste collection and for procuring AD as the preferred way to manage the collected food waste. It has announced an additional £90m over three years (2008/09 - 2010/11) for local authorities to increase sustainable waste management including recycling and the collection of food waste by local authorities. The Welsh Assembly Government has agreed to provide capital support for AD facilities worth £20 million in 2011/12 and revenue funding by means of additional Sustainable Waste Management Grant towards the cost of food waste and residual waste treatments (of up to 25% of the revenue costs).

Textiles

The case for considering a landfill ban

6.14 The re-use of textiles (not considered to be waste) and the recycling of waste textiles provides environmental benefits, partly due to the high resource requirements of primary material production. However current levels of re-use and recycling of clothes are low despite the work of charity shops and textile banks.

6.15 The Defra report *Maximising Reuse and recycling of UK clothing and textiles*[36] found that in 2007 there were 2 million tonnes of textile waste in the UK of which almost half was disposed of to landfill while around a quarter went for re-use or recycling. However the report noted that the amount of textiles collected for re-use and recycling had grown substantially in the last five years and the volume of textiles discarded as municipal solid waste had decreased. The report drew the conclusion that the best environmental option for textiles (in terms of carbon impact) was re-use as non-waste followed by the recycling of waste textiles.

The evidence

6.16 The Green Alliance research identified that textiles were banned/restricted from landfill in all but one of the case studies.

36

http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=16096&FromSearch=Y&Publisher=1&SearchText=clothing&SortString=ProjectCode&SortOrder=Asc&Paging=10

6.17 The Eunomia research found net benefits to society from a landfill ban on textiles[37]. The central estimate for the period 2009-2024 was £94 million for a ban on its own and £312 million where a ban is accompanied by a requirement to sort

6.18 Where textiles are assumed to be diverted from landfill into recycling the estimated savings are 4,870kg CO_2e per tonne.

Current initiatives

6.19 The Sustainable Clothing Roadmap voluntary industry initiative is increasing re-use and recycling of end of life clothing. To date, UK clothing retailers, commercial recyclers, charities and their industry associations are participating by taking actions to increase re-use and recycling of UK clothing and its packaging. WRAP and BRE are working jointly with industry on a resource efficiency plan for flooring waste, a large proportion of which is carpet waste.

Metals

The case for considering a landfill ban

6.20 The recycling of all waste metals yields significant GHG benefits because of the large amounts of energy needed to extract and process them. Ferrous metals already achieve a high rate of recycling. The greatest further potential lies with non-ferrous metals, in particular aluminium which saves 9 tonnes of CO_2 per tonne recycled.

The evidence

6.21 The Green Alliance research identified that aluminium was banned/restricted from landfill in three of the six case studies. Other metals were not considered.

6.22 The Eunomia research found net benefits to society from a landfill ban on metals[38]. For ferrous metals, the central estimate for the period 2009-2024 was £12 million for a ban on its own and £110 million where a ban is accompanied by a requirement to sort.

6.23 Where ferrous metals are assumed to be diverted from landfill into recycling the estimated savings are 1,325kg CO_2e per tonne. Where aluminium (the main non-ferrous metal) is assumed to be diverted from landfill into recycling the estimated savings are 9,155kg CO_2e per tonne.

Current initiatives

[37] Assumed to include clothes, shoes, leather goods, carpets, curtains, textile elements of furniture and mattresses and any other textiles wastes arising from the manufacture of the above.

[38] Assumed to include any solid metal not part of a composite product and separable from other materials with reasonable effort.

6.24 Defra and the Devolved Administrations published a consultation on 4th March 2010[39] on higher packaging recycling targets for steel and aluminium (as well as glass and plastics) which aim to go beyond the 2008 European targets. Other existing producer responsibility regimes are also driving increasing diversion of metals from landfill, namely that for end-of-life vehicles (which require that 95% of all end-of-life vehicles be re-used or recovered by 2015) and WEEE.

Wood

The case for considering a landfill ban

6.25 Waste wood has relatively low embodied energy but high calorific value. The use of wood as a fuel generally gives greater GHG benefits than recovering the material but for some kinds of wood waste re-use or recycling are better options.

The evidence

6.26 The Green Alliance research identified that wood was banned or restricted from landfill in all of the case study countries.

6.27 The Eunomia research found net benefits to society from a landfill ban on wood[40]. The central estimate for the period 2009-2024 was £105 million for a ban on its own and £115 million where a ban is accompanied by a requirement to sort.

6.28 Where wood is assumed to be diverted from landfill into incineration with energy recovery the estimated savings are 1,340kg CO_2e per tonne.

Current initiatives

6.29 A programme of work is taking place to develop energy markets for waste wood and producing non-statutory guidance to accompany site waste management plans which will encourage separate collection of materials at construction and demolition sites. Defra has commissioned research into the environmental impact of management options for waste wood, due for publication in March 2011. In addition the Strategy for Sustainable Construction aims to halve waste to landfill by 2012.

Green (garden) waste

The case for considering a landfill ban

6.30 Along with food waste, green wastes have a significant GHG potential when landfilled, and there are environmental benefits to be gained from diverting the waste to anaerobic digestion or composting.

[39] http://www.defra.gov.uk/corporate/consult/packaging-regs/index.htm

[40] Assumed to include natural wood, wood packaging, composite wood materials, wooden furniture, wood from tree surgery and wood from construction and demolition, except where bound to other materials.

The evidence

6.31 The Green Alliance research identified that green waste was banned or restricted from landfill in all of the case studies.

6.32 The Eunomia research found net benefits to society from a landfill ban on green waste[41]. The central estimate for the period 2009-2024[42] was £30 million for a ban on its own and £158 million where a ban is accompanied by a requirement to sort.

6.33 Where garden wastes are assumed to be diverted from landfill into composting the estimated savings are 751kg CO_2e per tonne.

Current initiatives

6.34 WRAP's *Recycle Now* home composting programme in England has encouraged approximately 1.6 million households to start composting green waste at home, enabling the diversion of over 260,000 tonnes of waste per year.

Glass

The case for considering a landfill ban

6.35 The recycling of waste glass can yield significant GHG benefits, however this depends on the processing route with closed loop recycling offering significantly greater benefits than lower grade uses.

The evidence

6.36 The Green Alliance research identified that glass was banned or restricted from landfill in four of the case studies and was considered to be diverted from landfill by other means in the other two cases.

6.37 The Eunomia research found net benefits to society from a ban on glass[43]. The central estimate for the period 2009-2024 was £7 million for a ban on its own and £17 million where a ban is accompanied by a requirement to sort.

6.38 Where glass is assumed to be diverted from landfill into closed loop recycling the estimated savings are 295kg CO_2e per tonne.

6.39 At the lower confidence limit a net cost of £19 million was found instead of a benefit where a requirement to sort was included. The requirement to sort was considered to generate limited additional tonnage but at a significant cost. However, Eunomia noted that the costs of enforcement and communication for a ban would be

[41] Assumed to include garden waste from households, other garden waste from commercial and industrial premises and landscaping wastes comprising wastes similar to garden wastes.

[42] Based on green waste being diverted onto open air windrow composting.

[43] Assumed to include container and flat glass.

spread across all of the waste types covered by the ban. If a number of waste types were banned and such costs were shared the ban on glass with a requirement to sort would achieve a net benefit to society.

Current initiatives

6.40 Collection services for container glass are being developed and trialled for small businesses, including pubs and restaurants. As mentioned above, Defra and the Devolved Administrations are currently consulting on higher packaging recycling targets for glass.

Plastics

The case for considering a landfill ban

6.41 Waste plastic recycling shows significant potential for carbon and energy savings through displacing virgin materials, although the scale of this varies widely depending on the processing route. Burning plastic has a general net adverse GHG impact due to the release of fossil carbon therefore the aim would be not to divert plastic from landfill into incineration.

T*he evidence*

6.42 The Green Alliance research identified that plastics were banned or restricted from landfill in all of the case studies (in one case only certain types of plastics were banned).

6.43 The Eunomia research found that in the case of plastics[44] the costs of a landfill ban appear to exceed the benefits resulting in a large net cost to society, due to the assumed high costs of collection and reprocessing. For dense plastics the central estimate for the period 2009-2024 was a net cost of £86 million for a ban on its own and £309 million where a ban is accompanied by a requirement to sort. For film plastics the central estimate was a net cost of £40 million for a ban on its own and £180 million where a ban is accompanied by a requirement to sort.

6.44 Where dense plastics are assumed to be diverted from landfill into recycling the estimated savings are 1,385kg CO_2e per tonne. It should be noted however that some plastics are more difficult to recycle than others.

6.45 Eunomia noted that although banning plastics from landfill would result in a net cost to society, such a ban would give considerable environmental benefits (including positive air quality impacts and high GHG savings). Eunomia suggested that the case for targeting plastics might become greater in the future if the benefits to society of reduced GHG emissions increases in real terms. It is also possible that

[44] Assumed to include all items made from dense plastics, including those for which dense plastic is one part of the material and constitutes its majority by weight and plastic films other than those used to contain waste and those which are bound to other non-plastic materials.

the cost of a collection infrastructure for plastics will be much lower than predicted. The figures above do not factor in efficiencies of scale that would be available if sorting was done on a national basis.

Current initiatives

6.46 Government continues to support WRAP in its work on increasing the recycling of plastics and the use of recycled content in plastic containers and electrical and electronic equipment. As mentioned above, Defra and the Devolved Administrations are currently consulting on higher packaging recycling targets for plastics.

WEEE

The case for considering a landfill ban

6.47 The England Waste Strategy 2007 identified WEEE as one of the priority products for initiatives to increase resource efficiency and reduce the amount of waste going to landfill. Many electrical items such as mobile phones, computers and PDA's contain valuable plastics and metals. Precious finite metals (those that have a more limited supply) include gold, silver, copper and indium (used in liquid crystal displays). These are valuable in the recycling process and can be re-used in new products. Some WEEE also contains chemicals such as mercury that could pose a threat to the environment and human health where it is landfilled.

The evidence

6.48 The Green Alliance research did not consider WEEE.

6.49 The Eunomia research found that in the case of WEEE[45] the costs of a landfill ban appear to exceed the benefits resulting in a net cost to society. The central estimate for the period 2009-2024 was a net cost of £18 million for a ban on its own and £193 million where a ban is accompanied by a requirement to sort.

Current initiatives

6.50 The Waste Electrical and Electronic Equipment (WEEE) Directive aims to reduce the quantity of waste from electrical and electronic equipment and increase its re-use, recovery and recycling by making producers responsible for financing the collection, treatment, and recovery of waste electrical equipment, and by obliging distributors to allow consumers to return their waste equipment free of charge. Targets to collect WEEE from households are set at 4kg/person and to treat and recover/recycle WEEE range from 50-80% recovery and recycling depending on the product category. The UK Regulations came into force in January 2007 and the full

[45] Assumed to include large and small household appliances, IT and Telecommunications equipment, consumer equipment, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment, medical devices, monitoring and control instruments, automatic dispensers, display equipment, cooling appliances containing refrigerants and gas discharge lamps.

producer and distributor obligations took effect in July 2007. The Commission published proposals to recast the directive in December 2008. This proposes collection targets of 65% by 2016 based on the amount of Electrical and Electronic Equipment placed on the market. Discussions are continuing at a European level.

Biodegradable wastes

The case for considering a landfill ban

6.51 A ban on biodegradable wastes would encompass any wastes considered biodegradable by some means of testing including several of the waste types considered individually above (paper/card, food, wood, green and textiles).

The evidence

6.52 The Green Alliance research did not consider the category of biodegradable wastes.

6.53 The Eunomia research found that a landfill ban on biodegradable wastes[46] could potentially bring the greatest net benefit to society as it covers the greatest amount of material. The central estimate, for the period 2009-2024 was a net cost of £1,955. A requirement to sort was not included for this category.

6.54 However at the lower confidence limit a ban on biodegradable wastes resulted in a cost to society, therefore it is not certain that this ban will result in a net benefit to society.

Current initiatives

6.55 The Landfill Directive sets challenging targets for the UK to reduce the amount of biodegradable municipal waste sent to landfill (see paragraph 4.20). In England this is achieved through the use of LATS (see paragraphs 4.29-4.30) and in Wales through LAS (see paragraph 4.31). However, LAS/LATS only apply to the municipal waste collected by local authorities, and a significant amount of biodegradable waste going to landfill is not controlled by any current legislative provision. This needs addressing in order to meet the targets in the Landfill Directive. The initiatives mentioned above under wood, food and green wastes are also relevant here.

Non-segregated wastes

6.56 The Eunomia research included a comparison of the costs and benefits of bans on the various waste types with and without a requirement to sort. The category of "Non-segregated waste" was considered to be equivalent to bans on individual waste types accompanied by a requirement to sort.

[46] Assumed to include all residual municipal and commercial waste still being landfilled, most of the residual industrial waste being landfilled and a significant proportion of construction and demolition waste being landfilled. Assumes that no bans on individual waste types are implemented.

6.57 Where bans were accompanied by a requirement to sort, the total quantity of waste diverted from landfill was found to increase significantly. The increases were greatest for glass, metals, paper/card and WEEE.

6.58 The research concluded that a requirement to sort would give more certainty to a ban and so would result in significant environmental benefits which far outstrip the additional cost of that requirement. This additional certainty would also be expected to increase investor confidence in the provision of the relevant infrastructure.

6.59 As explained in paragraph 4.19, the Landfill Directive contains a requirement for waste to be treated prior to landfilling. In England and Wales the sorting of waste into separate types for the purpose of recycling one or more of them is considered to fulfil this requirement.

Conclusions

6.60 There remain gaps in our evidence, particularly on the costs of alternatives to landfill. But from the evidence presented in this document, Defra and the Welsh Assembly Government believe there is a good case for considering bringing in landfill restrictions on the following:

- biodegradable wastes: food, green waste, paper/card, wood and textiles
- metals

The affordability in public finances terms of introducing restrictions would need to be carefully considered before a decision to proceed with any form of restriction could be taken. It will also be important to assess clearly the likely impact of landfill bans for different materials in the context of the full package of instruments in place to deliver our waste objectives, and to identify what additional net benefit a ban would add in combination with or instead of other instruments, including the impact on businesses.

6.61 There is also a case for considering possible landfill restrictions on glass and plastics even though the research results are not so positive.

6.62 For glass, the Eunomia research found that at the lower confidence limit a landfill ban accompanied by a requirement to sort could result in a net cost to society. However Eunomia noted that the costs of enforcement and communications of bans would be spread across all the waste types covered therefore they considered it would be worth including glass if a number of waste types were to be banned.

6.63 For plastics, the Eunomia research found a large net cost where a landfill ban was accompanied by a requirement to sort; however there were large GHG savings from such a ban.

6.64 Comments are welcomed on the case for landfill bans on the above waste types, including glass and plastics.

Chapter 7: Policy options

7.1 This chapter outlines the policy options currently under consideration by Government and asks for views on a number of related consultation questions. It should be recognised that the purpose of this consultation is to fulfil the commitment to consider the case for landfill bans. However, the Government recognises that there may be other ways of securing the objectives in this consultation and therefore wishes to ensure that other potential options are adequately considered. Consultees may wish to comment on any other measures not included here that might deliver the objectives of this consultation.

7.2 It is also recognised that these options are intended to meet the objectives in the England Waste Strategy 2007. They are not designed to meet other requirements emanating from the revised Waste Framework Directive or the landfill diversion targets in the Landfill Directive. However, there are some links between the options below and the provisions of the revised Waste Framework Directive and the parallel consultation on municipal waste diversion. In considering the responses to this consultation on the options below Government will analyse them in tandem with the responses to the separate consultation on these other provisions insofar as they are relevant. Clearly any option chosen to restrict landfilling of certain wastes will need to be consistent with the provisions of other legislative requirements and complement them to the extent necessary.

7.3 This chapter also considers the practicalities of introducing landfill bans, including lead-in times and the requirement for new infrastructure to be developed to deal with the diverted waste. It also considers how bans would be enforced. Comments are invited on these issues.

Outline of policy options

7.4 The following options for diverting biodegradable and recyclable wastes from landfill are under consideration in this consultation. Further details of the costs and benefits of each option can be found in the accompanying Consultation Stage Impact Assessment. It should be noted that different wastes may lend themselves more readily to one or another of the options and comments on this are sought in the responses.

Summary of policy options

- **Do nothing**
- **Introduce landfill bans either a) on their own or b) accompanied by a requirement to sort**
- **Introduce a sorting or tougher pre-treatment requirement but without a landfill ban**
- **Introduce producer responsibility systems linked to recycling targets (this could also be done as an accompaniment to a landfill ban)**

Option 0: Do nothing

7.5 This option would rely on existing policy instruments such as landfill tax and LATS and LAS (if retained following the separate consultation on the definition of municipal waste).

Option 1a: Landfill bans without a sorting requirement

7.6 This option would introduce bans on the landfilling of some or all of the candidate waste types at some future date(s). No other new measures would be proposed to influence the fate of the wastes banned from landfill.

Option 1b: Landfill bans accompanied by a sorting requirement

7.7 This option would require the sorting of some or all of the candidate waste types coupled with a ban on landfilling them. This option is thus similar to a combination of option 1a above and option 3 below. However, the impact of 'sorting' accompanied by a landfill ban may provide a clearer signal to producers and others over the extent of the restrictions, achieve higher rates of diversion from landfill and provide greater certainty for the development of alternative waste treatment infrastructure, compared with a sorting requirement alone (option 2 below).

7.8 It is important to recognise that the 'sorting' requirement would apply to the relevant waste types irrespective of whether they are destined for landfill or not. The requirement to sort would therefore be likely have an impact on the nature of the wastes going to other waste treatments, such as energy for waste plants.

Option 2: Sorting and pre-treatment

7.9 This option could be introduced either on its own or, in the form of option 1b, as an accompaniment to a landfill ban. The obligation to sort would need to be defined in terms of:

(a) who the onus would fall on. In the case of business waste the onus would be placed either on the waste producer alone or a shared responsibility between the producer and another party acting on behalf of the producer such as the waste management contractor or local authority. In the case of household waste the intention is that any obligation to sort would fall primarily on the waste collection authority and not the householder, and

(b) the extent to which restricted wastes need to be kept separate both from other wastes (that will not be restricted from landfill) and from each other. Any requirement to sort under options 1b or 3 that is put forward will seek to maximise attainment of the landfill ban and maximise resource efficiency.

7.10 Any requirement to sort will also need to be consistent with the requirements of the range of measures on waste recovery and separate collection under the revised WFD. Any requirement to sort will also partly depend on the nature of the waste type to be restricted and the preferred way of dealing with it once diverted from landfill that delivers the best outcome for people and the environment.

7.11 This option may lead to lower diversion of wastes from landfill compared with a requirement to sort accompanied by a ban. Accordingly the costs associated with sorting under this option will also be lower than sorting under option 1b.

7.12 As with option 1b it is important to recognise that the 'sorting' requirement would apply to the relevant waste types irrespective of whether they are destined for landfill or not. The requirement to sort would therefore be likely have an impact on the nature of the wastes going to other waste treatments, such as energy for waste plants.

7.13 Article 10(1) of the revised WFD requires that Member States take the necessary measures to ensure that waste undergoes recovery operations, in accordance with Article 4 (which sets out the waste hierarchy) and Article 13 (which requires that waste management is carried out without endangering human health or the environment).

7.14 Article 10(2) requires that where necessary to comply with 10(1) and to facilitate or improve recovery, waste shall be collected separately if technically, environmentally and economically practicable and shall not be mixed with other waste or other material with different properties.

7.15 Article 11(1) of the revised WFD requires separate collections to be set up by 2015 for at least paper, metal, plastic and glass. The Government's view is that both

kerbside sorted collection and co-mingled collection have a role to play in different circumstances, but ensuring the right quality of recyclates is paramount. The Welsh Assembly Government reserves its position on the matter and may adopt a different policy following the consultation on its new Waste Strategy and on sector plans for municipal waste. The Stage One Consultation on the Transposition of the revised WFD asked a number of questions on the practicalities of the requirement to set up separate collections including whether and how they could be achieved. Comments received on these issues will be taken into account in the current consultation where relevant.

Option 3: Producer Responsibility

7.16 Producer responsibility in the UK is a policy tool that is an extension of the "polluter pays" principle, and is aimed at ensuring that businesses who place products on the market take responsibility for those products once they have reached the end of their life. Schemes can be either voluntary or mandatory. This option could be introduced either on its own or as an accompaniment to a landfill ban.

7.17 This option would place an obligation on the producers of particular products to set up schemes for the recovery and recycling of specified waste types. The UK already has producer responsibility requirements for packaging, WEEE, ELV and batteries. Costs could be spread across the whole supply chain and would be based on the tonnage of product placed on the market. The scheme would introduce progressive recycling targets for each type of waste. This option lends itself to manufactured materials that become waste such as plastics, paper, textiles and WEEE but not to some other wastes like food and green (garden) waste.

7.18 As with some existing producer responsibility obligations, a “de minimis” threshold could be applied to businesses on criteria of turnover and/or amount of product placed on the market, depending on how the scheme is designed and the structure of the market.

7.19 Article 8 of the revised WFD introduces discretionary provisions on extended producer responsibility intended to strengthen the re-use, prevention and recycling and other recovery of waste. The Stage One Consultation on the Transposition of the revised WFD asked whether there are any specific waste streams which should be the subject of a producer responsibility scheme under Article 8, and if so what the economic and environmental costs and benefits of such regimes would be. Responses on that issue will be taken into account as part of this consultation.

Practical issues arising from the introduction of landfill bans

7.20 Adoption of any of the options for bringing about the diversion of candidate waste streams from landfill will merit in-depth consideration of the practical effects of the restriction, and their enforcement. In respect of the lead option on the

introduction of bans with or without a sorting requirement the principal issues are discussed below.

Alternatives to landfilling

7.21 The Government wishes that wastes that are restricted from landfill find their way to alternative recovery or disposal routes that deliver the best overall environmental outcome, and not the next cheapest alternative option to landfill. The fate of wastes restricted from landfill will largely be driven by the waste hierarchy in the revised Waste Framework Directive. The waste hierarchy obligations will be introduced in advance of any landfill restriction and will therefore have a significant impact on the alternatives to landfill. Work is underway through WRAP to develop a 'matrix' of preferred options for different types of waste as a basis for guidance on implementing the waste hierarchy. Furthermore waste plans will need to be reviewed to take account of these changes so that adequate priority can be given to alternative facilities.

7.22 As the preferred options to landfill are identified it will be important to develop the necessary infrastructure that delivers the best overall environmental outcome and provides sufficient capacity in time for the introduction any ban.

7.23 In England there are already systems in place to support the development of waste infrastructure such as Private Finance Initiative (PFI) funding. An infrastructure data project is to be undertaken that will provide better mapping of the capacity and distribution of current waste management facilities. Improvements are also taking place on quantifying the arisings of both municipal and other commercial and industrial waste. These initiatives will thus provide a much improved picture on the total waste produced and the current capacity for dealing with it and will therefore allow better quantification of the nature and capacity requirements for new or improved infrastructure.

7.24 In Wales, the Welsh Assembly Government is developing a Collection, Infrastructure and Markets Sector Plan as part of the delivery of its new Waste Strategy, *Towards Zero Waste*. This will focus on Welsh markets for recyclate and compost/AD digestate and then ensure that the necessary infrastructure and collection systems are in place to serve those markets, with a focus on the collection and use of quality waste materials. There is already work underway to improve capacity data of existing permitted and exempt waste facilities. This will be matched up with industrial and commercial waste production data obtained by Environment Agency Wales for 2007, together with existing compositional analysis data for municipal and mixed industrial and commercial waste. There is already support in place for the development of infrastructure for municipal waste in the form of the Food Waste and Residual Waste Treatment Procurement Programmes. In addition, with Welsh Assembly funding WRAP are providing capital funding support for the

recycling of industrial and commercial waste, with a particular focus on the AD of food waste.

Lead-in times

7.25 Introducing any of the policy options above is likely to require a lead-in period to enable local authorities and industry to make the necessary adjustments to their practices and for alternative infrastructure to develop. The Government's aim in providing lead-in times for landfill bans would be to strike the right balance between making an environmental improvement by way of lower GHG emissions and providing certainty of the change to come on one hand with the need to allow the development of alternative infrastructure and procedures on the other.

7.26 As discussed above the time taken to develop sufficient alternative waste management routes and capacity will be integral to determining the lead-in time to the introduction of bans. Green Alliance identified lead-in times for the introduction of landfill bans in their case studies of periods between 2 and 12 years (see paragraph 5.14).

7.27 Eunomia suggested that it would be difficult to implement landfill restrictions in less than five years, particularly in the case of waste types which would rely significantly on treatment infrastructure (food, wood and garden waste). In the case of a ban on the whole category of biodegradable wastes Eunomia suggested a lead-in time of 7-10 years would be more appropriate in England because of the large amount of material covered and pressures on the planning system. They added that it would be desirable for recycling levels to have already reached a good level before implementing bans to allow for resource efficiency gains from recycling, composting or anaerobic digestion to be fully realised.

7.28 Lead-in times are likely to vary across the devolved administrations. Wales has forged ahead with the collection of food waste from households (51% of households currently have the service, with c.100% planned by 2012/13) and there is also an active procurement programme for the provision of facilities to treat food waste collected by local authorities. In addition a number of merchant food waste treatment plants are planned or under consideration across Wales. These plants need sufficient feedstock and it is likely that the household waste stream alone will not provide sufficient feedstock. The Welsh Assembly Government considers that a ban on the landfilling of food waste in Wales could be introduced feasibly by 2015, and that this would give sufficient lead-in time for the necessary facilities to be developed.

7.29 Comments are therefore sought on the appropriate lead-in times for the introduction of the four options considered in this consultation.

Enforcement of landfill bans

7.30 The other key consideration for landfill bans relates to the practical enforcement of them in a way that provides the confidence for those investing in waste infrastructure that banned wastes will be kept out of landfill and diverted to appropriate alternative facilities.

7.31 In this respect landfill bans are not new. The Landfill Directive has already banned the landfilling of liquids, certain hazardous wastes, whole and shredded tyres etc. The experience in bringing about the largely successful diversion of these wastes will provide valuable guidance to the measures needed to impose further bans. These will need to be an appropriate mixture of some 'hard' measures such as potential new offences, use or extension of existing systems such as visual inspection of wastes at landfill sites, the Duty of Care or where appropriate testing and softer measures such as guidance and 'regulatory positions' on particular wastes streams particularly where a pragmatic approach is needed in the early stages of any ban. Previous experience has shown partnership groups between industry, the regulator and Government have helped significantly in indentifying problems and capacity issues in the lead up to bans and in monitoring their subsequent implementation.

Consultation questions

For each of the candidate waste types listed in Chapter 6 that you have an interest in, please consider the following questions:

1. **Given the evidence available, do you think there is a case for a landfill ban on this waste type?**

2. **What would be the practical difficulties and issues in implementing a landfill ban on this waste type?**

3. **If you support a ban on this type of waste what should the lead-in time be for a ban on this waste type, to allow time for the necessary infrastructure to develop?**

4. **If you do not support a ban on this waste type, do you think other measures should be used to divert it from landfill and if so what would they be? (Please consider the alternative options listed in paragraphs 7.8 -7.17 and any other possibilities)**

5. **There may be other possible approaches to improve resource efficiency and reduce GHG emissions from this waste type (for example encouraging manufacturers and retailers to move away from using materials that are hard to recover or recycle). We would welcome observations and suggestions for each waste type.**

6. **In addition to the above we invite comments on the costs and benefits detailed in the Consultation Stage Impact Assessment. In particular we would welcome information/views concerning three issues: (i) the likely impacts of the policy options in light of changes already occurring from existing instruments; (ii) the assumptions on the diversion rates assumed from different policy options; and (iii) the impact of the policy options on the efficiency of recycling markets – whether the unit cost estimates are reasonable and whether the implementation of the options would lower unit costs over time.**