



National Assembly for Wales  
Cynulliad Cenedlaethol Cymru

# Waste Management in Wales

This research paper updates and replaces a previous research paper of the same title, to include data up to 2006/07.

The paper examines Wales' current performance in waste management. Progress in reaching the national Waste Strategy targets is considered, and the waste hierarchy is reviewed.

March 2008



# Waste Management in Wales

Gareth Clubb

March 2008

Paper number: 08/008

© National Assembly for Wales Commission 2008

© Comisiwn Cynulliad Cenedlaethol Cymru 2008



## Executive Summary

This paper updates and replaces a research paper of the same title, published in March 2007, to include data up to 2006/07.

Waste management is a topic of considerable importance in Wales. Space for landfill – still the main waste disposal method – is running out, and European legislation requires substantial changes in the way that waste is treated. National targets for recycling have been set in order to encourage Welsh local authorities meet their landfill targets.

Many of the targets set out in the National Waste Strategy for Wales have either already been met, or are likely to be met by the target date.

The most challenging issue is the impending targets set by the Landfill Directive for 2009/10 and 2012/13. If landfill diversion continues at current rates then Welsh local authorities will be subject to Welsh Assembly Government fines of more than £7 million in 2010, and £27 million in 2013. More than one-third of the fine would be payable by two authorities (Cardiff and Rhondda Cynon Taf). These fines would be in addition to any share of infraction penalties imposed by the EU if waste management activities in Wales contribute to the UK exceeding its landfill allowances. Seven authorities would avoid paying fines.

At current rates of increase in recycling and composting, 10 local authorities will meet the 40 per cent target in 2009/10, whilst the remaining 12 will fail to meet the target. The overall recycling and composting rate will be 39 per cent by 2009/10.

In order to meet the 2020 target of 300kg of waste production per person, household waste needs to decrease by 4 per cent annually from 2006/07. A 4 per cent annual reduction in household waste arisings is also required to meet the 2009/10 target of waste per household being no greater than it was in 1997/98.

Under the *Government of Wales Act 2006*, legislative competence is being sought by the Welsh Assembly Government in the field of waste management. The Minister for Environment, Sustainability and Housing has provided illustrative examples of some of the topics that could be within the scope of the proposed Environmental Protection and Waste Management Legislative Competence Order.

The European Parliament has adopted a five-step waste hierarchy, which is a useful way of framing the environmental favourability of different waste management options. The waste hierarchy is examined in detail in this paper.



## Contents

<b>1</b>	<b>The Waste Strategy</b> .....	<b>1</b>
<b>2</b>	<b>Environmental Protection and Waste Management</b> .....	<b>3</b>
<b>3</b>	<b>Waste Targets</b> .....	<b>6</b>
<b>3.1</b>	<b>UK targets</b> .....	<b>6</b>
<b>3.2</b>	<b>Primary Wales-specific targets</b> .....	<b>12</b>
<b>3.3</b>	<b>Secondary Wales-specific targets</b> .....	<b>16</b>
<b>4</b>	<b>The Waste Hierarchy</b> .....	<b>20</b>
<b>4.1</b>	<b>Reducing consumption of unnecessary goods</b> .....	<b>21</b>
<b>4.2</b>	<b>Reducing packaging</b> .....	<b>22</b>
<b>4.3</b>	<b>Discouraging the use of certain types of single-use packaging</b> .....	<b>23</b>
<b>4.4</b>	<b>Repairing and reusing goods</b> .....	<b>23</b>
<b>4.5</b>	<b>Composting kitchen and garden waste</b> .....	<b>24</b>
<b>4.6</b>	<b>Recycling</b> .....	<b>25</b>
<b>4.7</b>	<b>Deriving all possible benefits from materials that cannot be reused or recycled</b> .....	<b>26</b>
<b>4.8</b>	<b>Landfill</b> .....	<b>27</b>
<b>4.9</b>	<b>Litter and flytipping</b> .....	<b>29</b>
	<b>Annex A</b> .....	<b>32</b>





# Waste Management in Wales

## 1 The Waste Strategy

“Waste is Wales' biggest environmental problem; a problem to which we all contribute as individuals on a daily basis. However we can also as individuals be part of the solution”<sup>1</sup>.

*Wise About Waste: The National Waste Strategy for Wales*, June 2002

The Welsh Assembly Government's strategy for dealing with waste is set out in *Wise About Waste: The National Waste Strategy for Wales*<sup>2</sup> (the Strategy). Its objective is to<sup>3</sup>:

Make Wales a model for sustainable waste management by adopting and implementing a sustainable, integrated approach to waste production, management and regulation (including litter and flytipping) that minimises the production of waste and its impact on the environment... and minimises where practicable, the use of energy from waste and landfill.

The Strategy sets out a series of targets. Some of these targets are set at a Member State level by European Commission (EC) Directives, a proportionate share of which Wales is required to achieve. The Strategy also lays out some Wales-specific targets: primary targets, over which the Welsh Assembly Government and its key partners have a direct influence, and secondary targets where the Welsh Assembly Government's influence is less.

The Strategy is set out in 12 chapters, with one appendix summarising the targets, instruments and actions proposed to deliver the policies.

- The first three chapters provide an introduction to the subject, including an overview of the situation in 2002, the legislative framework driving waste management, key principles of waste management, and the chosen policies to deliver the targets.
- Chapters four to nine are entitled 'Action'. They cover regulation and enforcement, resource management, infrastructure and market development, education, research, and the overarching strategic framework.
- The final three chapters include the actions required by different stakeholders to achieve the targets, an analysis of opportunities and challenges, and the need for a "complete review not later than five years after the publication of this strategy".

The last statement is particularly noteworthy. Although the Strategy was designed to operate from 2002 to 2012, there have been substantial changes in the field of waste management over the past five years. The Welsh Assembly Government has started the review of the Waste Strategy.

<sup>1</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, pp. v-vii, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>2</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>3</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 2, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)



In addition, the powers gained by the National Assembly for Wales in May 2007 have opened a wider range of policy options than those previously available, and some of the options that have been used by the Welsh Assembly Government to illustrate the possibilities are detailed in the next section of this paper.

## 2 Environmental Protection and Waste Management Legislative Competence Order

On 19 June 2007, the Minister for Environment, Sustainability and Housing laid a Legislative Competence Order<sup>4</sup> (LCO) – known at that time as 'Green Switch' – and gave a statement about the intentions of the Welsh Assembly Government in plenary<sup>5</sup>. The proposed LCO seeks to confer powers to enable the Assembly to pass Measures in the area of environmental protection and waste management, "based on Welsh priorities, to our Welsh timescales, and in our Welsh context"<sup>6</sup>. Although the Welsh Assembly Government already has executive and secondary legislative competence in these areas, it felt that the powers did not go far enough in enabling problems to be effectively tackled. In laying the proposed LCO, the Minister highlighted that fear of crime is generated by visible environmental problems, and noted that poorly-presented areas are less likely to attract investment and tourism. The Minister also stated that extra powers are needed in order to increase recycling rates beyond the 40 per cent target for 2010.

The National Assembly for Wales (Legislative Competence) (No. 2) Order 2007<sup>7</sup> seeks to amend the *Government of Wales Act 2006*<sup>8</sup> by inserting two new matters under field 6 (environment) of Schedule 5 to the Act. The two matters are:

- Matter 6.1: Collection, management, treatment and disposal of waste
- Matter 6.2: Environmental protection, including pollution, nuisances and hazardous substances

The explanatory memorandum<sup>9</sup> to the proposed LCO provides the following information about the scope of the proposed LCO:

13. There are three specific areas in which these powers will be used to provide the scope to tackle environmental protection and waste management issues. These areas are improving local environmental quality, where issues like litter and flytipping are everyday concerns, increasing recycling and improving waste management; and strengthening pollution controls

14. It is proposed that the two Matters are inserted under Field 6: Environment, in Schedule 5 to the Government of Wales Act 2006 to enable the Assembly to legislate on these issues by way of Assembly Measure. Matter 6.1 will enable the Assembly to bring forward Measures to increase recycling and improve sustainable waste management in Wales. Matter 6.2 will enable the Assembly to bring forward Measures to improve local environmental quality and strengthen pollution controls.

15. The principal purpose of this LCO is therefore to empower the Assembly to pass Assembly Measures under part 3 of the Government of Wales Act 2006 that will enable implementation of a package of measures to improve the environment of Wales.

<sup>4</sup> National Assembly for Wales, [National Assembly for Wales \(Legislative Competence\) \(No. 2\) Order 2007](#).

<sup>5</sup> RoP, pp.39-42, 19 June 2007.

<sup>6</sup> [http://www.assemblywales.org/rop070619qv.pdf?langoption=3&ttl=The%20Record%20\(430%2C%20kb\)](http://www.assemblywales.org/rop070619qv.pdf?langoption=3&ttl=The%20Record%20(430%2C%20kb))

<sup>7</sup> *ibid*

<sup>8</sup> National Assembly for Wales, [National Assembly for Wales \(Legislative Competence\) \(No. 2\) Order 2007](#).

<sup>9</sup> OPSI, *Government of Wales Act 2006*.

<http://www.opsi.gov.uk/ACTS/acts2006/20060032.htm>

<sup>9</sup> National Assembly for Wales, [Memorandum from the Minister for Sustainability and Rural Development: Proposal for a Government Legislative Competence Order relating to environmental protection and waste management](#).

In a letter to the Environmental Protection and Waste Management LCO Committee on 25 October 2007<sup>10</sup>, the Minister for Environment, Sustainability and Housing gave illustrative examples of topics which are judged by the Welsh Assembly Government to be within the scope of the proposed LCO, with the proviso that any future Measures will be subject to:

"rigorous impact assessment and will be constrained by the requirements of the Government of Wales Act 2006... in addition... the Assembly may not by measure alter the functions of the Minister of the Crown without the consent of the Secretary of State"<sup>11</sup>.

The examples relating to waste management are:

- Statutory recycling/composting targets – requirements on local authorities to collect and recycle/compost specified amounts of recoverable municipal waste by specified dates
- Types of waste for recycling/composting – specification of the type of recyclable material (food waste, plastics, cardboard, paper etc.) that local authorities would be required to collect as part of their duty to collect recyclable material
- Direct or variable household waste charging/incentives – the ability for local authorities to introduce direct or variable charges/incentives in relation to household waste, allow for an excess waste charge to be levied or recycling rebate to be offered
- Prohibition of the disposal of hazardous waste in household waste – controls on the disposal of hazardous household wastes, including restrictions on mixing of hazardous and non-hazardous wastes by householders, introduction of penalties for non-compliance, and requirements for hazardous household wastes to be re-used and recycled as far as possible
- Restrict landfill of wastes – restrictions on the disposal of certain wastes in landfill (eg biodegradable waste, untreated waste or recyclable waste)
- Joint municipal waste authorities – the establishment of Joint Municipal Waste Authorities to manage the collection and/or disposal of municipal waste in their areas and the establishment of a new entity or entities to manage municipal waste in Wales if necessary
- Requirements on public bodies – requirements on public sector bodies regarding use of Environmental Management Systems and reporting of environmental impacts (including the amount of waste generated, water used, energy used etc); setting of statutory targets for environmental improvements
- Waste facility capacity – reporting of annual tonnage and maximum operational capacity by facilities handling waste
- Reporting of waste production – reporting of information about the type and quantity of waste produced and how it is managed
- Welsh Assembly Government grants – requirements on 'environmental' grant conditions in all successful applications for Welsh Assembly Government grants

The following examples relating to local environmental quality also have some relevance to waste management:

---

<sup>10</sup> National Assembly for Wales, [Proposed Environmental Protection and Waste Management LCO](#), 25 October 2007

<sup>11</sup> *ibid*



- Litter/recycling at events – provision enabling local authorities to require large-scale events to have adequate facilities for recycling and adequate provision of bins for different types of waste material
- Litter from smoking – extension of the scope of the Street Litter Control Notice provisions to give local authorities the power to a) place a greater proactive responsibility on the occupiers of premises to clean up cigarette-related material dropped by smokers in the vicinity of their premises, and b) require occupiers of such premises to install appropriate disposal facilities
- Litter from cars – provision concerning default responsibility for any litter thrown from a vehicle
- Fast food litter – prevention and management of waste/litter caused by food 'on the go'
- Plastic bags and other packaging – provision to minimise waste and reduce litter from plastic bags and other packaging
- Producer responsibility for direct mail – producer responsibility requirements on companies who advertise/print/distribute direct mail sent out in Wales
- Excess packaging – further reduction of excess packaging and development of associated recycling protocols
- Returnable packaging – further provision to promote the re-use of certain packaging

The Assembly Committee considering the proposed LCO completed its deliberations with the publishing of a report in November 2007<sup>12</sup>. Among its recommendations are that the Welsh Assembly Government amend Matter 6.1 to make it clear that the minimisation or reduction of waste is covered by the LCO.

---

<sup>12</sup> National Assembly for Wales, *Proposed Environmental Protection and Waste Management LCO Committee*, <http://www.assemblywales.org/cr-ld6893-eng.pdf>

### 3 Waste Targets

There are three sets of targets laid out in the Waste Strategy:

- UK targets, where Wales must meet its share of targets set for the UK by EC Directives
- Primary Wales-specific targets, where the Welsh Assembly Government and its key partners have a direct influence over their outcome
- Secondary Wales-specific targets, where the Welsh Assembly Government's influence is less

#### 3.1 UK targets

**Target A:** *The Landfill Directive<sup>13</sup> requires the UK to limit the amount of biodegradable municipal waste (BMW) landfilled:*

- *By 2010 to no more than 75% of the BMW produced in 1995*
- *By 2013 to no more than 50% of the BMW produced in 1995*
- *By 2020 to no more than 35% of the BMW produced in 1995*

These target dates are the result of a maximum four-year derogation, permissible for those Member States that landfilled more than 80 per cent of all municipal waste in 1995<sup>14</sup>.

In Wales, the proportion of total municipal waste deemed to be biodegradable is 61 per cent<sup>15</sup>. In Scotland the proportion is 60 per cent<sup>16</sup>, in England, the proportion is 68 per cent<sup>17</sup>, and in Northern Ireland the proportion is 71 per cent<sup>18</sup>. Since the defined proportion is now fixed in each country, regardless of the actual biodegradable portion of municipal waste, Wales' target should be easier to achieve than those for Northern Ireland and England.

The lack of accurate records means that there is no definitive figure for the amount of municipal waste landfilled in any country in the UK in 1995. However, by agreement with the European Commission, the amount of waste landfillable in Wales in the 'target years' of the Landfill Directive is as shown in Table 1.

---

<sup>13</sup> European Commission, *Council Directive 1999/31/EC of 26 April 1999 on the Landfill of Waste*, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0031:EN:HTML>

<sup>14</sup> *ibid*

<sup>15</sup> OPSI, *The Landfill Allowances Scheme (Wales) Regulations 2004*, SI 2004/1490 (W.155), <http://www.opsi.gov.uk/legislation/wales/wsi2004/20041490e.htm>

<sup>16</sup> Scottish Executive, *Indicators of sustainable development for Scotland: Progress report 2004*, <http://www.scotland.gov.uk/Publications/2004/02/18983/33610>

<sup>17</sup> OPSI, *The Landfill Allowances and Trading Scheme (England) Regulations 2004*, SI 2004/3212, <http://www.opsi.gov.uk/SI/si2004/20043212.htm>

<sup>18</sup> OPSI, *The Landfill Allowances Scheme (Northern Ireland) Regulations 2004*, SI 2004/216, <http://www.opsi.gov.uk/sr/sr2004/20040416.htm>

Table 1 Landfilling allowances for Wales in Landfill Directive target years

Target date	Maximum amount of BMW landfillable in Wales (tonnes) <sup>19</sup>	Total municipal waste landfillable in Wales (tonnes) <sup>20</sup>
17 July 2010	710,000	1,164,000
17 July 2013	470,000	770,000
17 July 2020	330,000	541,000

Source: *The Landfill (Scheme Year and Maximum Landfill Amount) Regulations 2004* and Members' Research Service calculation

The landfill allowance for biodegradable municipal waste allocated to each Welsh local authority for each year until 2009/10 is shown in a letter from the Minister for Environment, Planning and Countryside to local authority Chief Executives<sup>21</sup>, available at:

[www.countryside.wales.gov.uk/fe/fileupload\\_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf](http://www.countryside.wales.gov.uk/fe/fileupload_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf)

The initial landfill allowance in 2005/06 of 1,022,000 tonnes of BMW is equivalent to 1,675,500 tonnes of total municipal waste, which is 128,000 tonnes more than the total amount landfilled in 2002/03.

If a Member State fails in its obligations to meet the landfill targets, it could be fined by the European Court of Justice. The penalty depends on "the seriousness of the infringement, its duration, and the need to ensure that the penalty itself is a deterrent to further infringements"<sup>22</sup>. If the United Kingdom fails to meet the Landfill Directive targets, the Department for Business, Enterprise and Regulatory Reform has suggested that it could face a fine of up to £0.5 million a day<sup>23</sup>. The Welsh Assembly Government has indicated that any fines levied on it will be passed on to failing authorities<sup>24</sup>.

In order to encourage local authorities to meet their targets, *The Landfill Allowances Scheme (Wales) Regulations 2004*<sup>25</sup> stipulate that a penalty of £200 per tonne will be imposed for any amount of BMW landfilled above each authority's allowance in a scheme year<sup>26</sup>. The Welsh Assembly Government has previously exercised its right to waive fines on underperforming authorities, although the former Minister for Environment, Planning and Countryside stated that fines would not be waived in future<sup>27</sup>.

This £200 per tonne fine will be in addition to any infraction penalty imposed if Wales' waste management activities cause it to contribute to a UK failure to meet the Landfill Directive's requirements. Thus, failing authorities will face a fine of £200 per tonne from the Welsh Assembly

<sup>19</sup> OPSI, *The Landfill (Scheme Year and Maximum Landfill Amount) Regulations 2004*, SI 2004/1936, <http://www.opsi.gov.uk/si/si2004/20041936.htm>

<sup>20</sup> Calculation based on the agreed proportion of BMW in municipal waste (61 per cent)

<sup>21</sup> Minister for Environment, Planning and Countryside, *The Landfill Allowance Scheme: Allocation of allowances*, 14 August 2004.

<sup>22</sup> European Commission, 2005, *Commission communication: Application of Article 228 of the EC Treaty*,

[http://www.tm.gov.lv/lv/documents/esdokumenti/ekt/sec\\_2005\\_1658\\_en.pdf](http://www.tm.gov.lv/lv/documents/esdokumenti/ekt/sec_2005_1658_en.pdf)

<sup>23</sup> DEFRA, *Final regulatory impact assessment on implementing the landfill provisions of the Waste and Emissions Trading Act 2003*, <http://bre.berr.gov.uk/regulation/documents/ria/pdf/implementinglandfill.pdf>

<sup>24</sup> Welsh Local Government Association, *WGLA co-ordinating committee: Item 7 waste management*, 31 March 2006, <http://www.wlga.gov.uk/uploads/publications/1174.pdf>

<sup>25</sup> OPSI, *The Landfill Allowances Scheme (Wales) Regulations 2004*, SI 2004/1490 (W.155), <http://www.opsi.gov.uk/legislation/wales/wsi2004/20041490e.htm>

<sup>26</sup> A scheme year is any year from present to 2019, excluding 2010 and 2013, which are 'target years'

<sup>27</sup> Carwyn Jones, Oral Evidence [201], *The Environment, Planning and Countryside Committee*, 7 February 2007, <http://www.assemblywales.org/67f87b10b45aa366078388e484d5932e.pdf>



Government, plus a proportion of the infraction penalty if Wales' waste management activities cause the UK to exceed its landfill allowance. The Welsh Local Government Association (WLGA) considers that these costs are likely to be far in excess of the £200 per tonne penalty<sup>28</sup>.

Members' Research Service has calculated a projection of the amount of waste that would be landfilled by local authorities in Wales if future waste management activities reduce the amount of waste being sent to landfill at the same rate as activity over the years 2002/03 to 2006/07 has done (see [Annex A](#)). This projection has been compared with a proportionate share<sup>29</sup> of the amount allowable by *The Landfill (Scheme Year and Maximum Landfill Amount) Regulations 2004*<sup>30</sup>.

The calculation does not take account of factors such as changing public attitudes to waste, or new recycling and composting facilities coming into operation. For this reason, and because the calculation is sensitive to the years chosen for the analysis of rate of reduction in landfill (in this case, 2002/03 and 2006/07), it should be noted that the values used in Table 2 are not forecasts, but are a projection of what could happen if recent landfilling trends were to continue until 2009/10 and 2012/13. All amounts of waste have been rounded to the nearest 500 tonnes.

On this basis, the authorities that would miss their 2009/10 and 2012/13 targets, and the possible fines levied, are shown in Table 2. The fines listed in the Table do not include any share of possible EU infraction penalties.

---

<sup>28</sup> Welsh Local Government Association, *WLGA co-ordinating committee: Item 7 waste management*, 31 March 2006, <http://www.wlga.gov.uk/uploads/publications/1174.pdf>

<sup>29</sup> A calculation was made of each local authority's share of the 2009/10 allowances, and these values were used as the basis to calculate the distribution of allowances for authorities in 2012/13

<sup>30</sup> OPSI, *The Landfill (Scheme Year and Maximum Landfill Amount) Regulations 2004*, SI 2004/1936, <http://www.opsi.gov.uk/si/si2004/20041936.htm>





Table 2 Local authorities projected to miss the 2009/10 or 2012/13 landfill targets based on the assumptions detailed in the text (authorities ranked in order of the biggest fine in 2012/13)

Local authority	Amount by which 2009/10 target would be missed (tonnes)	Amount of BMW in excess of limit (61 per cent of total municipal waste) (tonnes)	Possible fine in 2009/10 (£) <sup>31</sup>	Amount by which 2012/13 target would be missed (tonnes)	Amount of BMW in excess of limit (61 per cent of total municipal waste) (tonnes)	Possible fine in 2012/13 (£) <sup>32</sup>
Cardiff	24,000	14,500	2,900,000	53,000	32,500	6,500,000
Rhondda Cynon Taf	12,500	7,500	1,500,000	35,500	21,500	4,300,000
Powys	8,500	5,000	1,000,000	22,500	13,500	2,700,000
Gwynedd	8,000	5,000	1,000,000	19,500	12,000	2,400,000
Carmarthenshire	4,500	2,500	500,000	19,000	11,500	2,300,000
Wrexham	1,000	500	100,000	12,500	7,500	1,500,000
Pembrokeshire	500	500	100,000	12,000	7,500	1,500,000
Conwy				10,500	6,500	1,300,000
Ynys Môn	4,000	2,500	500,000	9,500	6,000	1,200,000
Vale of Glamorgan				7,000	4,500	900,000
Caerphilly				7,000	4,500	900,000
Newport				3,500	2,000	400,000
Monmouthshire				3,000	2,000	400,000
Denbighshire				2,500	1,500	300,000
Blaenau Gwent				2,000	1,500	300,000

Source: Members' Research Service calculation

The total projected fine payable by Welsh local authorities is £7.6 million in 2009/10 and £26.9 million in 2012/13. This total of £35 million is a decrease of approximately £7 million on the projected fines using 2005/06 data. Large decreases in projected liabilities have been recorded by Rhondda Cynon Taf (£1.8 million), Conwy (£1.5 million), Blaenau Gwent (£1.3 million), Cardiff (£1.1 million), Vale of Glamorgan (£1.1 million), Torfaen (£1 million), and Ynys Môn (£0.5 million). Several authorities have recorded increases in projected liabilities, although the only large increases<sup>33</sup> are those of Gwynedd (£0.8 million) and Caerphilly (£0.6 million).

Risk assessments undertaken as part of the Wales Programme for Improvement in 2003 identified that the management of waste services was a 'key risk' for 70 per cent of Welsh local authorities<sup>34</sup>.

Authorities projected to meet their targets in 2012/13, and those that have already met their 2009/10 landfill target, are shown in Table 3.

<sup>31</sup> Based on the £200 per tonne penalty outlined in OPSI, *The Landfill Allowances Scheme (Wales) Regulations 2004*, SI 2004/1490 (W.155),

<http://www.opsi.gov.uk/legislation/wales/wsi2004/20041490e.htm>

<sup>32</sup> *ibid*

<sup>33</sup> Large increases are considered here to be £0.5 million or greater

<sup>34</sup> Wales Audit Office, February 2005, *Waste management: A challenging agenda for the Welsh public sector*, p. 14, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)



Table 3 Local authorities that have already met their 2009/10 landfill target and/or that are projected to meet the 2012/13 landfill target

Local authority	Projected to meet the 2012/13 landfill target	Has already met its 2009/10 landfill target
Neath Port Talbot	√	√
Swansea	√	√
Flintshire	√	√
Bridgend	√	√
Torfaen	√	√
Ceredigion	√	√
Merthyr Tudful	√	X
Newport	X	√

Source: Local Government Data Unit Wales and Members' Research Service calculation

**Target B:** A revised Packaging Directive<sup>35</sup> (implemented by two Regulations in the UK<sup>36</sup>) set new recovery and recycling targets for packaging. By 31 December 2008, a minimum of 60 per cent of all packaging waste will need to be recovered, with recycling rates of between 55 and 80 percent. To compensate for the packaging waste that smaller businesses produce (they are exempt from the Regulations), those that must comply with the Regulations are required to recover 68 per cent of their packaging waste by the end of 2008, and this is likely to rise to 74 per cent by the end of 2010<sup>37</sup>. A consultation<sup>38</sup> closed on 30 November 2007 on recycling targets for packaging beyond 2008, and Regulations are likely to be forthcoming to codify the targets.

Disaggregated figures for Wales are not available for packaging. The UK data for packaging recovery and recycling for 2003 to 2006 are shown in Table 4.

Table 4 Packaging recycling and recovery rates, 2003 to 2006

Year	Recycling rate (per cent)	Overall recovery rate (per cent)
2003 <sup>39</sup>	47.4	53.4
2004 <sup>40</sup>	49.7	55.6
2005 <sup>41</sup>	54.4	59.9
2006 <sup>42</sup>	57.5	62.0

Source: DEFRA

<sup>35</sup> European Commission, *Directive 2004/12/EC of the European Parliament and of the Council of 11 February 2004 Amending Directive 94/62/EC on Packaging and Packaging Waste*,

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004L0012:EN:HTML>

<sup>36</sup> OPSI, *The Producer Responsibility Obligations (Packaging Waste) Regulations 2005*, SI 2005/3468,

<http://www.opsi.gov.uk/SI/si2005/20053468.htm>

OPSI, *The Packaging (Essential Requirements) Regulations 2003*, SI 2003/1941,

<http://www.opsi.gov.uk/si/si2003/20031941.htm>

<sup>37</sup> DEFRA, *New packaging waste recycling targets will deliver greater carbon benefits*, 11 February 2008,

<http://www.defra.gov.uk/news/2008/080211a.htm>

<sup>38</sup> DEFRA, *Consultation on recycling targets for packaging for 2008 and thereafter: Producer Responsibility Obligations (Packaging Waste) Regulations 2007*, October 2007,

<http://www.defra.gov.uk/corporate/consult/packaging-reg07/consultation.pdf>

<sup>39</sup> DEFRA, *Packaging and packaging waste: Data relating to 2003*,

<http://www.defra.gov.uk/Environment/waste/topics/packaging/pdf/package-waste2003.pdf>

<sup>40</sup> DEFRA, *UK packaging and packaging waste data relating to 2004*,

<http://www.defra.gov.uk/Environment/waste/topics/packaging/pdf/package-waste2004.pdf>

<sup>41</sup> DEFRA, *Packaging and packaging waste: Data relating to 2005*,

<http://www.defra.gov.uk/Environment/waste/topics/packaging/pdf/package-waste2005.pdf>

<sup>42</sup> DEFRA, *Consultation on recycling targets for packaging for 2008 and thereafter: Producer Responsibility Obligations (Packaging Waste) Regulations 2007*, October 2007,

<http://www.defra.gov.uk/corporate/consult/packaging-reg07/consultation.pdf>



The recovery rate has increased from 53.4 per cent to 62.0 per cent over three years. At this absolute rate of increase (2.87 percentage points per year), the recovery rate at the end of 2008 would be 67.7 per cent, approaching the Directive requirement of 68 per cent. The rate of increase in recovery of packaging has slowed since 2005, at which point the overall recovery rate was projected to meet the 68 per cent target.

**Target C:** *The End of Life Vehicles Directive<sup>43</sup> required that by 1 January 2006, 85 per cent of the average weight of all End of Life Vehicles should be re-used and recovered, with re-use and recycling accounting for 80 per cent. These targets are 95 per cent and 85 per cent respectively by 1 January 2015<sup>44</sup>.*

In 2002, an average of 74 per cent of each of the vehicles scrapped in Wales and England was recovered (10 per cent for re-use of parts, and 64 per cent materials recycling)<sup>45</sup>. More recent figures are not available; the Department for Business, Enterprise and Regulatory Reform has informed Members' Research Service that information for 'obligated parties operating in Wales' will be available when reporting is due under the Directive (June 2008).

---

<sup>43</sup> European Commission, *Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on End-of-Life Vehicles*,

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0053:EN:HTML>

<sup>44</sup> European Commission, *Report from the Commission to the Council and the European Parliament on the targets contained in Article 7(2)(b) of Directive 2000/53/EC on End-of-Life Vehicle*, January 2007,

[http://ec.europa.eu/environment/waste/pdf/com\\_2007\\_5\\_en.pdf](http://ec.europa.eu/environment/waste/pdf/com_2007_5_en.pdf)

<sup>45</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 126, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

### 3.2 Primary Wales-specific targets

**Target A:** *Public bodies in Wales should achieve:*

- *By 2005, a reduction in waste equivalent to 5 per cent of the 1998 arisings*
- *By 2010, a reduction in waste equivalent to 10 per cent of the 1998 arisings*

Two surveys of commercial and industrial waste have been conducted, in 1998/99 and 2002/03, from which results for Wales as a whole are extrapolated<sup>46</sup>. The waste arisings from the public sector were approximately 249,000 tonnes in 1998/99. Although the 2002/03 survey showed a reduction in arisings, the sample size from the public sector was inadequate for firm conclusions to be drawn. No information is available for years more recent than 2002/03<sup>47</sup>.

**Target B:** *Each local authority in Wales should achieve the following recycling and composting targets:*

- *By 2003/04, at least 15 per cent recycling and composting of municipal waste, with a minimum of 5 per cent composting and 5 per cent recycling*
- *By 2006/07, at least 25 per cent recycling and composting of municipal waste, with a minimum of 10 per cent composting and 10 per cent recycling*
- *By 2009/10 and beyond, at least 40 per cent recycling and composting of municipal waste, with a minimum of 15 per cent composting and 15 per cent recycling*

The progress on recycling and composting in Wales is shown in Figure 1, along with projections showing how the recycling and composting rates will increase if performance since 2002/03 is maintained.

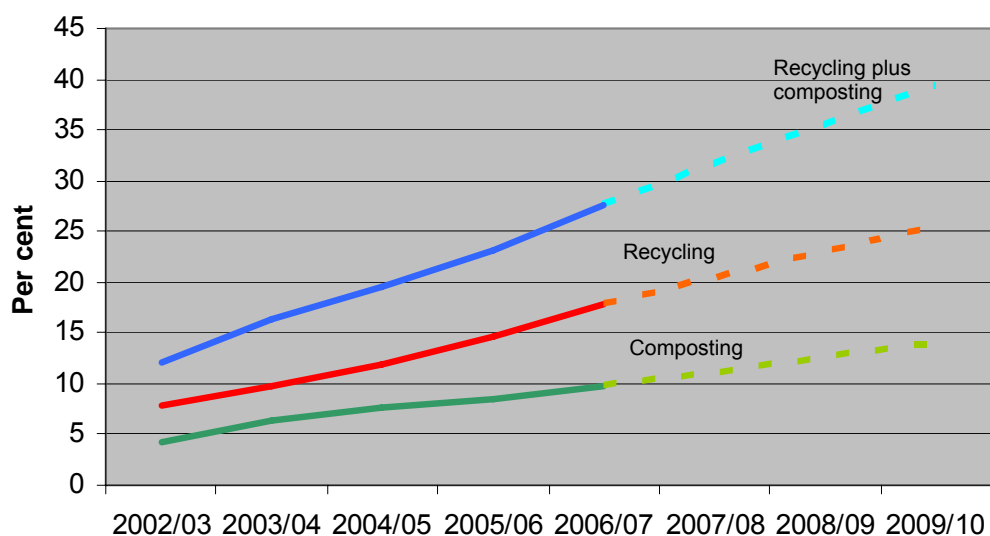


Figure 1 Recycling (red) and composting (green) rates in Wales from 2002/03 to 2006/07 (blue represents the combined recycling and composting rate), and future projection. Source: Local Government Data Unit Wales and Members' Research Service calculation

<sup>46</sup> Environment Agency Wales, *About the commercial and industrial waste survey*, <http://www.environment-agency.gov.uk/regions/wales/816243/1220048/1223323/1234874/?version=1&lang=e>

<sup>47</sup> Welsh Assembly Government, email communication with an official, 31 January 2008



In the financial year 2006/07, the recycling and composting rate was 27.6 per cent in Wales<sup>48</sup>, 28.4 per cent in Scotland<sup>49</sup>, 30.7 per cent in England<sup>50</sup>, and from April-June 2007, 33.4 per cent in Northern Ireland (provisional data)<sup>51</sup>. During the calendar year 2006, the household recycling rate in the Republic of Ireland was 22 per cent<sup>52</sup>.

In 2003/04, the target of 15 per cent recycling and composting, with a minimum contribution of 5 per cent of each, was reached overall in Wales, although some local authorities in Wales failed to meet the target<sup>53</sup>. In 2006/07, the target of 25 per cent recycling and composting was reached overall in Wales, although the 10 per cent contribution of composting was not realised (the overall contribution of composting was 9.7 per cent). The minimum recycling rate for 2009/10 (15 per cent) was reached in 2006/07. It is generally easier to divert recycle from landfill at lower levels of recycling.

If the composting rate in Wales continues to increase at its four-year average of 1.4 percentage points, the composting target for 2009/10 of 15 per cent will be missed, by 1.1 per cent. Wales Audit Office notes that there is a risk of reaching a plateau for composting rates in the short and medium term because of the time lag in developing large composting infrastructure<sup>54</sup>. The decision of the Welsh Assembly Government that home composting can be counted towards local authority targets from April 2007<sup>55</sup> should lead to a greater increase in 2007/08 than in recent years, although the classification has not satisfied the European Commission's requirements to count towards diversion of BMW from landfill.

If the recycling and composting levels increase at their four-year average rates until 2009/10, the overall recycling and composting rate of 40 per cent will not be reached, with 25.4 per cent recycling, and 13.9 per cent composting (total 39.3 per cent).

The levels of composting and recycling from 2002/03 to 2006/07 are known for each local authority in Wales. By calculating the rate of increase in composting and recycling, it is possible to project what these levels would be in 2009/10 if the increase is maintained at the four-year average. Members' Research Service's calculation does not take account of factors such as changing public attitudes to composting and recycling, new composting and recycling facilities coming into operation, or the greater difficulty likely to be faced in increasing composting and recycling rates

<sup>48</sup> Local Government Data Unit – Wales, *Dataset: Waste management – National strategic indicators*, <http://dissemination.dataunitwales.gov.uk/webview/index.jsp>

<sup>49</sup> Scottish Environment Protection Agency, *Scotland meets its landfill target*, <http://www.sepa.org.uk/news/releases/view.asp?id=591>

<sup>50</sup> DEFRA, *Municipal waste management statistics 2006/07*, <http://www.defra.gov.uk/news/2007/071106a.htm>

<sup>51</sup> Environment and Heritage Service of Northern Ireland, *Household waste summary April-June 2007*, [http://www.ehnsi.gov.uk/municipal\\_waste\\_data\\_april-june\\_07.xls\\_162kb](http://www.ehnsi.gov.uk/municipal_waste_data_april-june_07.xls_162kb)

<sup>52</sup> Irish Environmental Protection Agency, *National waste report 2006*, [http://www.epa.ie/downloads/pubs/waste/stats/epa\\_national\\_waste\\_report\\_20062.pdf](http://www.epa.ie/downloads/pubs/waste/stats/epa_national_waste_report_20062.pdf)

<sup>53</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, p. 10, February 2005, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

Failing authorities were Ynys Môn, Denbighshire, Wrexham, Carmarthenshire, Neath Port Talbot, Cardiff, Rhondda Cynon Taf, Merthyr Tudful, and Blaenau Gwent.

<sup>54</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, February 2005, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>55</sup> Welsh Assembly Government, *Progress on implementing recommendations from the EPC Committee's inquiry into meeting landfill and recycling targets*, Evidence to the Environment Planning and Countryside Committee, 7 February 2007, <http://www.assemblywales.org/8089c6dcec8c90fb99ffa80dcfd0a99.pdf>



where high proportions of recoverable materials are already being collected. The projections are shown in Table 5.

Table 5 Projected composting and recycling rate for each local authority in 2009/10 if recent increases are maintained (authorities ranked in order of the least amount recycled in 2009/10)

Local authority	Composting and recycling rate (per cent)		Rate of increase, 2002/03-2006/07 (percentage points)	Composting and recycling rate in 2009/10 if increase stays constant (per cent)	Status of projection from last year (✓ indicates an improvement; X indicates a decline)
	2002/03 <sup>56</sup>	2006/07 <sup>57</sup>			
Cardiff	9.37	19.52	2.54	27.1	✓
Merthyr Tudful	9.50	20.62	2.78	29.0	X
Carmarthenshire	13.55	25.17	2.91	33.9	X
Pembrokeshire	15.45	26.46	2.75	34.7	✓
Ynys Môn	10.80	24.65	3.46	35.0	✓
Gwynedd	11.49	25.04	3.39	35.2	X
Caerphilly	10.10	24.56	3.62	35.4	X
Blaenau Gwent	6.00	23.18	4.23	36.1	X
Conwy	16.43	27.82	2.85	36.4	✓
Rhondda Cynon Taf	10.32	26.31	4.00	38.3	✓
Denbighshire	9.19	26.11	4.23	38.8	✓
<b>WALES</b>	<b>12.07</b>	<b>27.64</b>	<b>3.89</b>	<b>39.3</b>	✓
Bridgend	15.16	29.32	3.54	39.9	✓
Torfaen	10.13	27.26	4.28	40.1	✓
Swansea	12.60	29.02	4.11	41.3	X
Neath Port Talbot	3.09	25.18	5.52	41.7	X
Newport	16.65	31.04	3.60	41.8	✓
Wrexham	13.93	30.09	4.04	42.2	✓
Vale of Glamorgan	12.36	29.63	4.32	42.6	X
Monmouthshire	11.28	31.81	5.13	47.2	X
Flintshire	12.47	33.42	5.24	49.1	✓
Powys	19.60	40.65	5.26	56.4	✓
Ceredigion	20.35	43.27	5.73	60.5	✓

Source: Local Government Data Unit Wales and Members' Research Service calculation

Ten local authorities in Wales are projected to reach the 40 per cent target by 2009/10; overall, the projection indicates that recycling rates in Wales will narrowly miss the target. Five local authorities reported increases of more than 7 percentage points in recycling rates over the previous year: Rhondda Cynon Taf (7.3), Cardiff (7.4), Ceredigion (7.7), Torfaen (10.4), and Wrexham (11.7). Five local authorities recorded increases of less than 3 percentage points, or decreases in recycling: Carmarthenshire (2.5), Swansea (1.3), Gwynedd (1.0), Merthyr Tudful

<sup>56</sup> Local Government Data Unit Wales, 2002/03 National Assembly for Wales Performance Indicators: Version 1.3, [http://www.dataunitwales.gov.uk/Documents/Data\\_Set/PIs/ADS06000\\_SpreadsheetForPublishing200203\\_eng.xls](http://www.dataunitwales.gov.uk/Documents/Data_Set/PIs/ADS06000_SpreadsheetForPublishing200203_eng.xls)

<sup>57</sup> Local Government Data Unit Wales, Dataset: Waste management – National strategic indicators, <http://dissemination.dataunitwales.gov.uk/webview/index.jsp>



(-2.0), and Caerphilly (-3.5). The projection using 2005/06 figures suggested that Merthyr Tudful and Caerphilly would both reach the 40 per cent target by 2009/10; both are now projected to miss the target. The projection has improved since last year for thirteen authorities but worsened for the remaining nine, although four of the authorities whose projection worsened are still projected to reach the 40 per cent target

**Target C:** *By 2003/04, all civic amenity sites in Wales should have installed facilities to receive and store bonded asbestos sheets, oils, paints, solvents, and fluorescent light bulbs.*

By 2006/07, six of the 22 Welsh local authorities had met the 2003/04 target. Ten authorities had no facilities for one or more of the stipulated materials. Overall, each material can be stored at more than half of all civic amenity sites in Wales (Table 6).

Table 6 Proportion of civic amenity sites with suitable provision for hazardous waste

Material	Proportion of all civic amenity sites with suitable storage facilities (per cent)	
	2005/06 <sup>58</sup>	2006/07 <sup>59</sup>
Asbestos	53.0	54.1
Oil	95.2	95.3
Paint	67.5	71.8
Solvent	65.1	70.6
Fluorescent tubes	72.3	81.2
TV/PC cathode ray tubes <sup>60</sup>	N/A	65.9

Source: Welsh Assembly Government

<sup>58</sup> Welsh Assembly Government, *CA site survey of HHW provision 2005-06*, email communication with an official, 17 January 2007

<sup>59</sup> Welsh Assembly Government, *CA site survey of HHW provision 2006-07*, email communication with an official, 31 January 2008

<sup>60</sup> Does not form part of the target, but data are now collected



### 3.3 Secondary Wales-specific targets

**Target A:** *By 2009/10 and beyond, waste arisings per household should be no greater than those in 1997/98 [1,094kg], and waste arisings per person should be less than 300kg per annum by 2020.*

The waste generated per household in Wales is shown in Table 7.

Table 7 Household waste arisings, 1996/97 to 2006/07

Year	Total household waste (tonnes) <sup>61</sup>	Number of households in Wales <sup>62</sup>	Waste per household (kg)
1996/97	1,277,000	1,174,000	1,088
1997/98	1,292,000	1,181,100	1,094
1998/99	1,330,000	1,185,800	1,122
1999/2000	1,413,000	1,190,000	1,187
2000/01	1,432,000	1,200,000	1,193
2001/02	1,456,000	1,209,300	1,204
2002/03	1,488,000	1,223,100	1,217
2003/04	1,522,000	1,235,600	1,232
2004/05	1,585,000	1,247,300	1,271
2005/06	1,542,000	1,259,800	1,224
2006/07	1,572,000	1,272,400	1,235

Source: Welsh Assembly Government and Members' Research Service calculation

In order to reach the 2009/10 target (waste arisings per household no greater than in 1997/98), waste per household needs to decrease by 4.0 per cent per year from 2006/07 (see Figure 2). Between 1997/98 and 2006/07 the amount of waste produced per household has increased by approximately 1.3 per cent per year, although the rate of increase has slowed in recent years.

<sup>61</sup> Data from 1996/97 to 2000/01 from Welsh Assembly Government, June 2002, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 33, [http://new.wales.gov.uk/topics/environmentcountryside/epg/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epg/waste_recycling/wise_about_waste_strategy?lang=en)  
Data from 2001/02 to 2006/07 from Welsh Assembly Government Statistical Directorate, 21 November 2007, *Municipal waste management survey 2006-07: Results of the survey for Wales*,

<http://new.wales.gov.uk/docrepos/40382/40382313/statistics/environment/1268249/sdr179-2007?lang=en>

<sup>62</sup> Data for 1998 from National Assembly for Wales Statistical Directorate, *1998-based population and household projections for Wales*, <http://new.wales.gov.uk/docrepos/40382/40382313/statistics/population/pop-pre2004/sb32-2001.pdf?lang=en>

Data for 1999 to 2000 from National Assembly for Wales Statistical Directorate, *Interim mid-year household estimates for Wales for 2001*, [http://newydd.cymru.gov.uk/legacy\\_en/keypubstatisticsforwales/content/publication/housing/2002/sb112-2002/sb112-2002.htm](http://newydd.cymru.gov.uk/legacy_en/keypubstatisticsforwales/content/publication/housing/2002/sb112-2002/sb112-2002.htm)

Data for 2001 to 2004 from National Assembly for Wales Statistical Directorate, *Mid-year household estimates for Wales, 2001-2004*, <http://new.wales.gov.uk/docrepos/40382/40382313/statistics/housing-2006/sdr139-2006.pdf?lang=en>

Given that the number of households in Wales increased by 6.2 per cent between 1991 and 2001

(<http://new.wales.gov.uk/docrepos/40382/40382313/statistics/housing/626489/sb12-2004.pdf?lang=en>), the number of households in 1996 and 1997 has been calculated accordingly. Given that from 2001, the number of households increased by approximately 1 per cent per year (<http://new.wales.gov.uk/docrepos/40382/40382313/statistics/housing-2006/sdr139-2006.pdf?lang=en>), the number of households in 2005 and 2006 has been calculated accordingly.



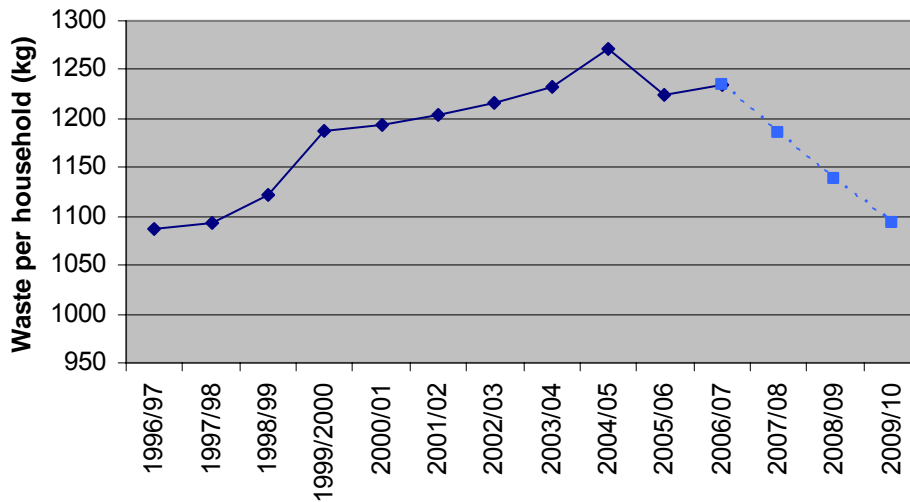


Figure 2 Waste per household in Wales, 1996/97 to 2006/07, and the trend required to meet the 2009/10 target. Source: Welsh Assembly Government and Members' Research Service calculation

Figure 3 shows the annual reduction required to meet the Welsh Assembly Government target to reduce personal waste arisings in Wales below 300kg per year by 2020. In order to reach the 2020 target, total household waste arisings must be no greater than 914,160 tonnes<sup>63</sup>; household waste needs to decrease by 4.3 per cent per year from 2006/07.

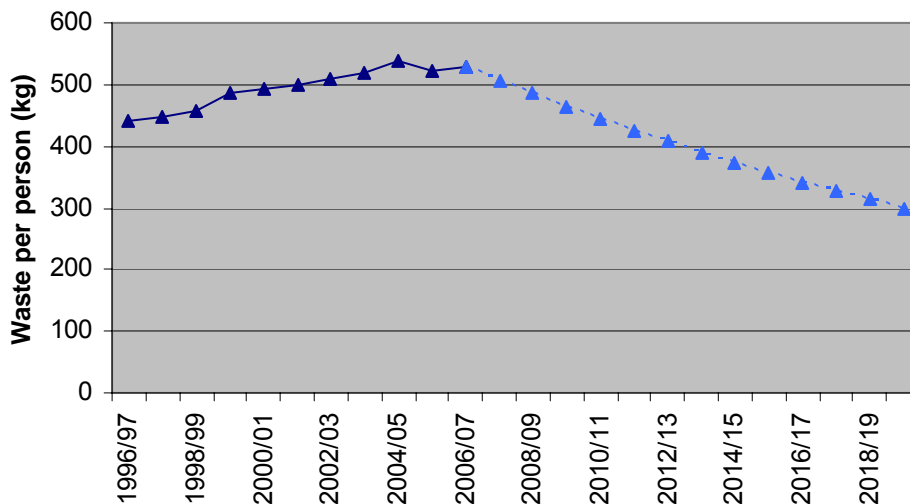


Figure 3 Waste per person in Wales, 1996/97 to 2006/07, and the trend required to meet the 2020 target. Source: Welsh Assembly Government and Members' Research Service calculation

<sup>63</sup> There is no population prediction for 2020; we have used 2021 as a surrogate. National Assembly for Wales Statistical Directorate, 1998-based population and household projections for Wales, <http://new.wales.gov.uk/docrepos/40382/40382313/statistics/population/pop-pre2004/sb32-2001.pdf?lang=en>

**Target B:** *Businesses in Wales should achieve:*

- *By 2005, a reduction in waste equivalent to 5 per cent of the 1998 arisings*
- *By 2010, a reduction in waste equivalent to 10 per cent of the 1998 arisings*

This target is measured using the total quantity of industrial and commercial waste produced<sup>64</sup>. Two surveys of commercial and industrial waste have been conducted, in 1998/99 and 2002/03, from which results for Wales as a whole are extrapolated<sup>65</sup>.

Industrial and commercial arisings were 6,130,000 tonnes in 1998/99<sup>66</sup>, and 5,272,000 tonnes in 2002/03<sup>67</sup>, a reduction of 14 per cent. The 2010 target (a reduction of 10 per cent on 1998 arisings) had already been met in 2002/03. No information is available for years more recent than 2002/03<sup>68</sup>.

**Target C:** *Less than 85 per cent of the amount of industrial and commercial waste landfilled in 1998 should be landfilled by 2005, and less than 80 per cent by 2010.*

A total of 2,431,000 tonnes of industrial and commercial waste was landfilled in 1998/99<sup>69</sup>. A total of 1,474,000 tonnes of such waste was landfilled in 2002/03<sup>70</sup>, 60.6 per cent of the 1998/99 total, which achieved both the 2005 and 2010 targets. A total of 1,413,000 tonnes of such waste was landfilled in 2006/07<sup>71</sup>, 58.1 per cent of the 1998/99 total, which achieved the 2010 target.

**Target D:** *The amount of hazardous waste generated should be reduced by at least 20 percent between 2000 and 2010.*

Hazardous waste arisings in Wales were 369,000 tonnes in 2006<sup>72</sup>, which is 52 per cent less than such arisings in 2000. The 2010 target has therefore already been exceeded.

**Target E:** *Less than 85 per cent of the amount of biodegradable industrial and commercial waste landfilled in 1998 should be landfilled by 2005, and less than 80 per cent by 2010.*

<sup>64</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 142, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>65</sup> Environment Agency Wales, *About the commercial and industrial waste survey*, <http://www.environment-agency.gov.uk/regions/wales/816243/1220048/1223323/1234874/?version=1&lang=en>

<sup>66</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 55, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>67</sup> Environment Agency Wales, *Wales commercial and industrial waste data used for graphics/charts 2002/03*, [http://www.environment-agency.gov.uk/commondata/103601/walescitablenessummary\\_1236864.xls](http://www.environment-agency.gov.uk/commondata/103601/walescitablenessummary_1236864.xls)

<sup>68</sup> Welsh Assembly Government, email communication with an official, 31 January 2008

<sup>69</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 55, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>70</sup> Environment Agency Wales, *Wales commercial and industrial waste data used for graphics/charts 2002/03*, [http://www.environment-agency.gov.uk/commondata/103601/walescitablenessummary\\_1236864.xls](http://www.environment-agency.gov.uk/commondata/103601/walescitablenessummary_1236864.xls)

<sup>71</sup> Welsh Assembly Government, email communication with an official, 31 January 2008

<sup>72</sup> Environment Agency Wales, *Trends in the production of hazardous waste in Wales*, <http://www.environment-agency.gov.uk/commondata/103196/1918034?referrer=/subjects/waste/1031954/315439/1860241/1913210/>



In 1998/99, approximately 985,000 tonnes of biodegradable industrial and commercial waste was landfilled<sup>73</sup>. The amount of such waste landfilled in 2006 was 360,000 tonnes<sup>74</sup>, 36.5 percent of the 1998/99 total. The 2010 target has already been exceeded.

**Target F:** *At least 75 per cent of construction and demolition waste should be re-used or recycled by 2005, and at least 85 per cent by 2010.*

In 1998/99, 76 per cent of construction and demolition waste was reused or recycled, with the remainder landfilled<sup>75</sup>. In 2003, 91 per cent of construction and demolition waste was reused or recycled<sup>76</sup>, and in 2005, 85 per cent of construction and demolition waste was reused or recycled<sup>77</sup>. The 2010 target has been met.

---

<sup>73</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 82, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>74</sup> Welsh Assembly Government, email communication with an official, 31 January 2008

<sup>75</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 118, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>76</sup> Smiths Gore, 2005, *Survey of the arisings and use of construction, demolition and excavation waste, quarry waste and dredging waste in Wales in 2003*

<sup>77</sup> Welsh Assembly Government, email communication with an official, 26 February 2008

## 4 The Waste Hierarchy

Although the European Parliament voted in favour of a five-tier waste hierarchy in February 2007<sup>78</sup>, the Environment Council in June 2007 decided that the hierarchy would be a 'guiding principle' rather than a 'general rule'. In particular, the Council determined that specific waste streams would not need to conform to the hierarchy "where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste"<sup>79</sup>.

The waste hierarchy<sup>80</sup> places different waste management practices in order of environmental favourability. It progresses through the following stages:

- Prevent waste production
- Reduce/minimise waste production and hazardousness
- Re-use
- Recover materials (composting and recycling)
- Recover energy
- Dispose

The Welsh Assembly Government notes that waste management techniques further up the waste hierarchy generate more direct jobs, with the possible exception of waste minimisation<sup>81</sup>. Waste minimisation does however have an indirect impact on safeguarding jobs through making business more efficient and competitive, and it also provides employment for those providing advice on waste minimisation<sup>82</sup>. The European Commission's analysis is that far more jobs are created in recycling than in incineration or landfill: 250 jobs per 10,000 tonnes of material, compared to 20 to 40 for incineration and 10 for landfill<sup>83</sup>.

The Welsh Assembly Government has a stated preference to move waste management as far up the waste hierarchy as practicable<sup>84</sup>. Waste management has started to move up the hierarchy, from an overwhelming dependence on landfill in Wales (93 per cent in 1999/2001-02<sup>85</sup>), to recycling and waste prevention. Wales Audit Office notes that Wales' waste targets cannot be met through recycling and reuse initiatives alone. Limiting the amount of waste produced in the first place is 'essential', and legislative measures will be needed to achieve these reductions<sup>86</sup>. There is some evidence that household waste minimisation activity is correlated with recycling activity<sup>87</sup>.

<sup>78</sup> European Parliament, press release, *Recycling & waste – European Parliament votes for new EU rules*, <http://www.europarl.org.uk/press/WasteFeb2007.htm>

<sup>79</sup> Presidency of the European Union, proposed text, 20 June 2007, [http://www.fenil.org/Documentos/CircularesComiteTecnico/ComiteTecnico07/CT82/anexo\\_5\\_CT8207.doc](http://www.fenil.org/Documentos/CircularesComiteTecnico/ComiteTecnico07/CT82/anexo_5_CT8207.doc)

<sup>80</sup> Welsh Assembly Government, *Waste disposal hierarchy*, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/waste\\_disposal\\_hierarchy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/waste_disposal_hierarchy?lang=en)

<sup>81</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 165, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>82</sup> *ibid*

<sup>83</sup> European Commission, *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions*, 21 December 2005, [http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005\\_0666en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2005/com2005_0666en01.pdf)

<sup>84</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 18, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>85</sup> *ibid*, p. 33

<sup>86</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, p. 23, February 2005, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>87</sup> Obara L., 2005. *Is waste minimisation a challenge too far?: The experience of household waste management and purchasing in the UK*. Cardiff University: The Centre for Business Relationships, Accountability, Sustainability and Society.

A diagram of different waste management options illustrates pathways under which smaller loops represent less wastage of both material and energy (Figure 4). Material exiting the loops altogether is the biggest wastage route, since it represents a permanent loss of energy and matter<sup>88</sup>.

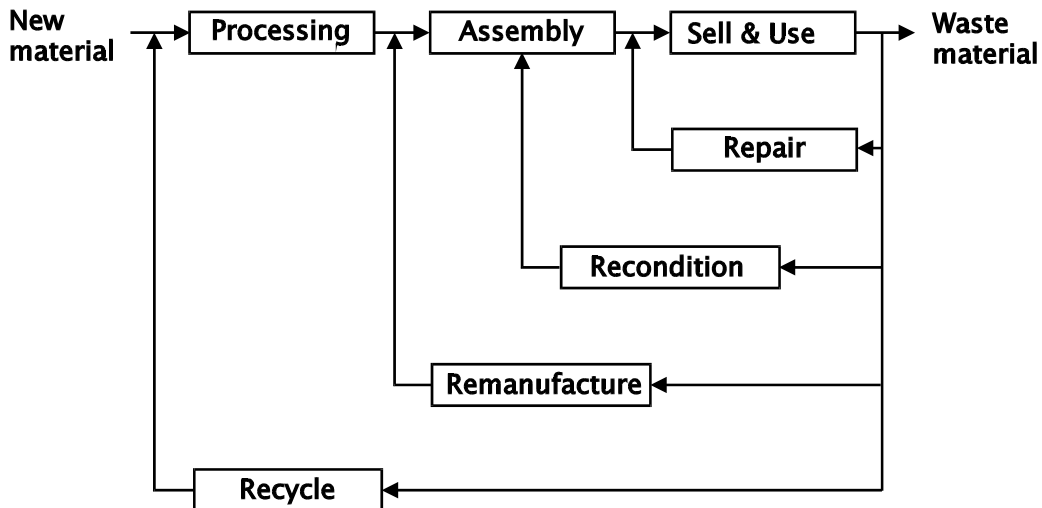


Figure 4 Reducing waste through closed loop design - repair, remanufacturing or recycling (King et al, 2005<sup>89</sup>)

Jonathon Porritt describes the situation thus<sup>90</sup>:

Linear models of resource use – *make, use and dispose* – are still dominant. Unlike the cyclical resource flows of natural systems, which result in no net accumulation of waste, human-induced resource flows *inevitably* lead to an accumulation of waste and to a build-up of entropy. Statistics that bear out the scale of this systems dilemma provide even more telling illustrations: if Americans had recycled the 32 billion cans of fizzy drinks they threw away in 2002, for example, they would have saved 435,000 tonnes of aluminium – enough to rebuild the world's entire commercial air fleet more than 1.5 times. Americans use and throw away 2.5 million plastic bottles every hour. The scale of the problem is extraordinary. More than 90 per cent of all the materials extracted to manufacture ordinary consumer products ends up as waste; only 10 per cent – and sometimes a lot less – ends up in the product itself.

The following sections describe the waste hierarchy in descending order of favourability.

#### 4.1 Reducing consumption of unnecessary goods

All products require raw materials and energy for their production, and resources to deal with their disposal, with associated environmental impacts. Unnecessary or single-use goods are

<http://www.brass.cf.ac.uk/uploads/wpwasteminchallengeLO1005.pdf>

<sup>88</sup> Notwithstanding the production of landfill gas, and the future possibility of 'landfill mining'

<sup>89</sup> King AM et al, 2005. Reducing waste: Repair, recondition, remanufacture or recycle? *Sustainable Development* 14(4), 257-267.

[http://www.remanufacturing.org.uk/pdf/Salt\\_Lake\\_City\\_v6\\_AK.doc](http://www.remanufacturing.org.uk/pdf/Salt_Lake_City_v6_AK.doc)

<sup>90</sup> Porritt J, 2007. *Capitalism as if the world matters*, p. 191. London: Earthscan Publications.

particularly wasteful where a good alternative exists. Former UK Prime Minister Tony Blair noted that "80 per cent of products [are] discarded after single use"<sup>91</sup>.

- 4 per cent of all plastic flowing into the UK household packaging sector is comprised of carrier bags, which could be replaced with reusable cotton or robust plastic bags, saving 2,100 tonnes of waste annually in Wales<sup>92</sup>. A 2003 survey indicated that 90 per cent of shoppers in the Republic of Ireland, which has a 22c levy<sup>93</sup> on carrier bags, now use long life bags<sup>94</sup>.
- Junk mail can be reduced by contacting the Mailing Preference Service<sup>95</sup>, while mail arriving for a previous owner or tenant of a dwelling can be reduced by making the source of the mail aware of the changed circumstances.
- Much packaging may be unnecessary, such as the shrink-wrapping on a swede highlighted in the waste campaign of *The Independent* newspaper<sup>96</sup>.
- Some single-use goods could be discouraged, with the use of financial instruments, where an analogous multiple-use alternative is available. Examples include single-use nappies, single-use drinks containers, single-use batteries, plastic cups and cutlery, plastic pots for single portions of milk, and paper towels. In many instances longer life products can be substituted, such as rechargeable batteries, multiple use nappies, or reusable drinks containers. In other instances, organisational change may enable long-life products to be used, such as mugs instead of disposable cups.

In 2005, the opinion of Wales Audit Office was that 'very few' local authorities had considered ways of minimising the amount of waste produced<sup>97</sup>.

## 4.2 Reducing packaging

Some goods require a minimum amount of packaging to retain their integrity. However, many commonly-purchased goods may be over-packaged – packaging has increased by 12 per cent between 1999 and 2005, and now accounts for one third of an average household's total waste<sup>98</sup>. Examples include cardboard packaging for toothpaste tubes or bags of cereal, and small packets of fruit packaged on polystyrene trays and wrapped in clingfilm. Environment Agency Wales has stated its desire for a drive on waste minimisation at source<sup>99</sup>.

<sup>91</sup> Blair T, 2004. Speech to Prince of Wales' Business and the Environment Programme, London, 14 September 2004.

<sup>92</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 70, June 2002,

[http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>93</sup> Irish Department of the Environment, Heritage and Local Government, *Plastic bags levy to be increased to 22c from 1 July next*,

[http://www.environ.ie/en/Environment/Waste/PlasticBags/News/MainBody\\_3199\\_en.htm](http://www.environ.ie/en/Environment/Waste/PlasticBags/News/MainBody_3199_en.htm)

<sup>94</sup> Irish Department of the Environment, Heritage and Local Government, 2005. *Submission from the Department of the Environment, Heritage and Local Government*. Edinburgh: Scottish Parliament Environment and Rural Development Committee.

<http://www.scottish.parliament.uk/business/committees/environment/inquiries/pb/ERD.S2.05.27.1d%20-%20DEHLG.pdf>

<sup>95</sup> Mailing Preference Service,

<http://www.mpsonline.org.uk/mpsr/>

<sup>96</sup> McCarthy M, Hickman M and Roberts G, "Campaign aims to reduce the mountains of waste", *Independent*, 22 January 2007,

<http://environment.independent.co.uk/article2175016.ece>

<sup>97</sup> Wales Audit Office, February 2005, *Waste management: A challenging agenda for the Welsh public sector*, p. 14,

[http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>98</sup> "Too much packaging? Dump it at checkout, urges Minister", *Guardian*, 14 November 2006,

<http://environment.guardian.co.uk/waste/story/0,,1947184,00.html>

<sup>99</sup> Ceri Davies, Oral Evidence [247], *Environment, Planning and Countryside Committee*, 25 January 2007,

<http://www.assemblywales.org/d7b7d3fc3d2fab4e6e1ee0549897a4a4.pdf>



Under UK law, packaging volume and weight must be limited "to the minimum adequate amount to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer"<sup>100</sup>. Ben Bradshaw, former UK Minister for Local Environment, suggested in November 2006 that consumers could remove "excessive and unnecessary" packaging in shops and leave it at the till in order to encourage retailers to reduce waste<sup>101</sup>. He also suggested that people can "complain to the supermarket manager... if that doesn't work, report the shop to the trading standards authority"<sup>102</sup>. However, public commitment to reducing packaging appears to trail political will: research indicates that people do not feel it is necessary to reduce packaging if they are readily able to recycle<sup>103</sup>.

In Germany, consumers have had the right, since 1991, to leave packaging that is surplus to requirements at the retail outlet that sold it<sup>104</sup>. In addition, retail outlets are obliged to accept, free of charge, used and emptied sales packaging returned by the consumer to any outlet stocking that particular product<sup>105</sup>.

#### 4.3 Discouraging the use of certain types of single-use packaging

There are many examples of substitutions of materials that could provide better environmental performance, such as replacing polystyrene take-away cartons with paper wrapping, selling some types of drinks in polythene sacs (as in Sweden), selling yoghurt in Tetra-Paks, or using refillable bottles. Legislation in Germany has resulted in 90 per cent of beer bottles being reused<sup>106</sup>. Financial incentives could be used in the UK to phase out packaging with poor environmental performance.

#### 4.4 Repairing and reusing goods

Reuse is a valuable means of keeping useful items out of landfill. By donating a product to a charity shop or to the community sector, rather than disposing of it when it is no longer needed, people are both supporting the charity or community organisation, and reducing the landfill of waste. Community-based organisations which reuse goods may often have a social function in providing jobs and training for disadvantaged people<sup>107</sup>. Online communities are becoming increasingly popular means of exchanging and donating useful but unwanted products<sup>108</sup>. In both these cases, reuse often takes place in close proximity to the original location of the item<sup>109</sup>.

<sup>100</sup> OPSI, *The Packaging (Essential Requirements) Regulations 2003*, SI 2003/1941, <http://www.opsi.gov.uk/si/si2003/20031941.htm>

<sup>101</sup> "Too much packaging? Dump it at checkout, urges Minister", *Guardian*, 14 November 2006, <http://environment.guardian.co.uk/waste/story/0,,1947184,00.html>

<sup>102</sup> "Waste basket: Minister backs campaign to cut packaging", *Independent*, 23 January 2007, <http://environment.independent.co.uk/article2177993.ece>

<sup>103</sup> MORI, *Public attitudes towards recycling and waste management*, September 2002, [http://www.mori.com/polls/2002/pdf/waste\\_recycling.pdf](http://www.mori.com/polls/2002/pdf/waste_recycling.pdf)

<sup>104</sup> Der Grüne Punkt, *Waste separation*, <http://www.gruener-punkt.de/en/environmental-info/waste-separation.html>

<sup>105</sup> German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, *Ordinance on the Avoidance and Recovery of Packaging Wastes*, Article 6 [http://www.bmu.bund.de/files/pdfs/allgemein/application/pdf/verpackv\\_4aenderung\\_en.pdf](http://www.bmu.bund.de/files/pdfs/allgemein/application/pdf/verpackv_4aenderung_en.pdf)

<sup>106</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 71, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>107</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 37, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>108</sup> Freecycle is a well-known example with wide subscription in Wales.

<sup>109</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 37, June 2002,

Products tend to have shorter life spans now than they did in the past<sup>110</sup>. Planned obsolescence is one way in which markets generate a demand for new sales<sup>111</sup>. Improving the lifespan of products is "one of the most obvious strategies for reducing waste and increasing material productivity"<sup>112</sup>. On average, for one tonne of waste at the consumer end of a manufactured article, there are 5 tonnes at the manufacturing stage and 20 tonnes at the site of initial resource extraction<sup>113</sup>.

Designing products for a longer life, and extending that life span through repair and reconditioning, would benefit the environment through a reduction in resource use, reduced pollution and less waste. There could also be economic benefits, since service and repair work could be carried out locally even if the item was originally imported. There are also possible disadvantages. A product designed to last longer may require greater quantities and types of materials, some of which may be less easy to recycle once the product has to be discarded. Another concern is that keeping products in service longer will mean foregoing the benefits of improved environmental performance, for example in energy efficiency, until a later date. However, this should be set against the energy used in producing the product in the first place, which can be greater than the energy used during its lifespan.

The aim is to achieve the optimal life span rather than the maximum life span for a product. A life cycle analysis is one means that can be used to evaluate an appropriate balance between longevity, design for recycling, and product use.

#### 4.5 Composting kitchen and garden waste

The proximity principle indicates that waste should be treated at source, where possible, in order to reduce the environmental impact of transporting it, and to encourage producer responsibility<sup>114</sup>. Composting is a means of reducing the 18.3 per cent of municipal waste that is comprised of garden and compostable kitchen waste<sup>115</sup>, along with some cardboard and paper; 23 per cent of households in the UK compost kitchen and garden waste<sup>116</sup>. 16 of 22 local authorities in Wales promote home composting<sup>117</sup>. According to Wales Audit Office, home composting of kitchen and garden waste is "far more cost-effective and environmentally beneficial" than its collection by local authorities<sup>118</sup>. Wales is the first country in the UK to have committed to count home composting

---

[http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>110</sup> Reisch L, 2001. Time and wealth: The role of time and temporalities for sustainable patterns of consumption. *Time and Society* 10(2/3): 367-385.

<sup>111</sup> Strausz R, 2006. *Planned Obsolescence and the Provision of Unobservable Quality*, Departmental Working Paper, Free University of Berlin,

<http://userpage.fu-berlin.de/%7Elsbester/papers/obsolescence.pdf>

<sup>112</sup> Von Weizsäcker E et al., 1997. *Factor Four*, p. 70. London: Earthscan.

<sup>113</sup> Waste Online, *Waste reduction – the first option*,

[http://www.wasteonline.org.uk/resources/WasteWatch/WASTEWORk1\\_files/page4.html](http://www.wasteonline.org.uk/resources/WasteWatch/WASTEWORk1_files/page4.html)

<sup>114</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 13, June 2002,

[http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>115</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, p. 81, June 2002,

[http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>116</sup> Recycle Now, *Welcome to the compost at home website*,

[http://www.recyclenow.com/home\\_composting/welcome.html](http://www.recyclenow.com/home_composting/welcome.html)

<sup>117</sup> WLGA, *Recycling and composting services provided by local authorities in Wales, percentage of households covered and participation rates*, Paper Tabled at Environment, Planning and Countryside Committee, 25 January 2007.

<sup>118</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, p. 26, February 2005,

[http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)



towards local authority targets<sup>119</sup>, although this will not count towards European targets for diversion of BMW from landfill.

There are many blocks of flats in Wales, as well as other dwellings that either have no garden or have a garden impractical for the placement of a compost bin. For such dwellings, an indoor wormery may be an alternative to composting.

#### 4.6 Recycling

Resources or goods that cannot be repaired or reused should be recycled. The necessity to recycle is, in part, a failure to keep resource use to a minimum, because recycling generally incurs societal costs and environmental impacts greater than those associated with reuse or reduction of waste at source.

Ideally, recycling should be source-segregated, that is, it should be sorted by whoever generated the waste, or as close to the source as possible. Segregated recycling almost invariably leads to a higher quality product than co-mingled recycling<sup>120</sup>; Wales Audit Office comments that materials are not always collected in a way that avoids contamination, limiting marketability and reducing economic value<sup>121</sup>. Although there can be increased costs associated with the superior product, these increased costs are largely associated with more employment<sup>122</sup>, because discrimination in waste sorting can best be achieved by people. Cylch notes that costs with segregated systems may actually decrease over time, as the value of collected materials increases<sup>123</sup>.

The Welsh Assembly Government considers that higher quality recyclate will be required in order for recycling systems to be economically self-sustaining<sup>124</sup>, and recommends Cylch's Cleanstream approach<sup>125</sup> as a means that "maximises the collection of clean recyclable and compostable materials from the household stream"<sup>126</sup>. The Welsh Assembly Government also encourages local authorities to partner the community sector in recycling partnerships, because it has a good track record of working with communities and encouraging good diversion rates, and because some community recycling organisations provide support for disadvantaged people<sup>127</sup>. The community sector collects recyclate at a median cost approximately one-half to one-third of that of local authorities or the private sector<sup>128</sup>.

<sup>119</sup> Welsh Assembly Government, *Progress on implementing recommendations from the EPC Committee's Inquiry into Meeting Landfill and Recycling Targets*, Evidence to the Environment Planning and Countryside Committee, 7 February 2007, <http://www.assemblywales.org/8089c6dcec8c90fb99ffa80dcfdc0a99.pdf>

<sup>120</sup> Cylch, *Cleanstream 2006*, pp. 22-24, [http://www.cylch.org/content/files/Cleanstream\\_2006.pdf](http://www.cylch.org/content/files/Cleanstream_2006.pdf)

<sup>121</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, p. 5, February 2005, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>122</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 2, pp. 165-166 and 178, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>123</sup> Cylch, *Cleanstream 2006*, p. 6,

[http://www.cylch.org/content/files/Cleanstream\\_2006.pdf](http://www.cylch.org/content/files/Cleanstream_2006.pdf)

<sup>124</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 38, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>125</sup> See Cylch, *Cleanstream 2006*,

[http://www.cylch.org/content/files/Cleanstream\\_2006.pdf](http://www.cylch.org/content/files/Cleanstream_2006.pdf)

<sup>126</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 13, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>127</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 41, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>128</sup> Welsh Assembly Government, *Survey of funding of municipal waste management kerbside collection in Wales*, August 2007, <http://www.cylch.org/content/files/RPSReport.pdf>

Civic amenity sites are approximately four times cheaper per tonne of recyclate collected than kerbside recycling<sup>129</sup>, because the associated transport costs are substantially less, and because material is sorted on-site more efficiently than most other means.

Evidence from other countries in Europe indicates that charging for the collection of household waste significantly increases the effectiveness of recycling schemes<sup>130</sup>, and reduces residual waste<sup>131</sup>. DEFRA notes that in addition to these double benefits of variable charging, "you also have savings to local authorities" because of the reduced volume of waste they deal with<sup>132</sup>. International experience suggests that variable charging for household waste can lead to increased flytipping, although such increases tend to be short-lived where schemes are well managed and enforcement is effective<sup>133</sup>. According to a report for the EC Directorate-General of the Environment<sup>134</sup>:

Most local authorities appear to take the view that any incremental change in illegal evasion is outweighed by the benefits, in terms of encouraging positive behaviour, associated with variable charging. It is also a fundamental mechanism for implementing the Polluter Pays Principle at the household level.

The Minister for Environment, Sustainability and Housing has indicated that introducing the ability for local authorities to charge for household waste collection is considered to be within the scope of the proposed LCO<sup>135</sup>.

Introducing fortnightly collection of residual domestic waste has been associated with increases in recycling; all 19 councils in England that achieved more than 40.5 per cent recycling and composting in 2005/06 run collections on a fortnightly frequency<sup>136</sup>. More information is available in a research paper produced by Members' Research Service<sup>137</sup>.

#### 4.7 Deriving all possible benefits from materials that cannot be reused or recycled

Although one of the primary objectives of the Waste Strategy is to minimise the use of energy from waste<sup>138</sup>, it also indicates that a 'limited number' of energy recovery facilities will be required in

<sup>129</sup> Wales Audit Office, email communication with an official, 26 January 2007

<sup>130</sup> National Assembly for Wales, [Decision report: Request for local authority powers for charging for residual waste to be included in a forthcoming DCLG Bill](#), 27 June 2006,

<sup>131</sup> OECD, *Instrument mixes addressing household waste*, February 2007,

[http://www.oelis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/\\$FILE/JT03221143.PDF](http://www.oelis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/$FILE/JT03221143.PDF)

<sup>132</sup> Instone D, Head of Waste Strategy, DEFRA, Oral evidence to the Select Committee on Communities and Local Government, 17 December 2007,

<http://www.publications.parliament.uk/pa/cm200708/cmselect/cmcomloc/195/7121706.htm>

<sup>133</sup> HC Deb 28 June 2006 C394W, <http://www.publications.parliament.uk/pa/cm200506/cmhansrd/cm060628/text/60628w1277.htm>

<sup>134</sup> Eunomia Research and Consulting, *Financing and incentive schemes for municipal waste management*,

[http://ec.europa.eu/environment/waste/studies/pdf/financingmunicipalwaste\\_management.pdf](http://ec.europa.eu/environment/waste/studies/pdf/financingmunicipalwaste_management.pdf)

<sup>135</sup> National Assembly for Wales, [Proposed Environmental Protection and Waste Management LCO](#), 25 October 2007

<sup>136</sup> Cranfield University and Enviro Consulting, *Health impact assessment of alternate week waste collections of biodegradable waste*, February 2007,

<http://www.enviros.com/PDF/Defra%20HIA%20Alternate%20Week%20Collections.pdf>

<sup>137</sup> National Assembly for Wales, *Fortnightly collection of residual domestic waste*, September 2007,

<http://www.assemblywales.org/fortnightlycollectionofresidualdomesticwaste.pdf>

<sup>138</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 2, June 2002,

[http://new.wales.gov.uk/topics/environmentcountryside/epg/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epg/waste_recycling/wise_about_waste_strategy?lang=en)

Wales in order to meet the requirements of European legislation<sup>139</sup>. The Welsh Assembly Government has set a number of criteria that need to be met for an energy from waste plant to be acceptable<sup>140</sup>, including a requirement that "as much recyclable and compostable material as practically possible has been removed" from the residual waste.

Energy from waste technologies include gasification, incineration, and pyrolysis<sup>141</sup>. All methods involve the combustion of waste to directly or indirectly generate electricity, or the substitution of other fuel by waste in manufacturing<sup>142</sup>. Friends of the Earth suggests that anaerobic digestion has better environmental performance than other energy from waste technologies<sup>143</sup>. The EC Waste Incineration Directive<sup>144</sup>, which applies to all energy from waste technologies, applies stringent standards on emissions<sup>145</sup>. The Environment Agency is not aware of any studies that "conclusively link adverse health outcomes to incinerator releases"<sup>146</sup>, although Greenpeace contests this conviction<sup>147</sup>.

The Welsh Assembly Government has indicated its desire for an incineration tax, in order to encourage more beneficial forms of waste management<sup>148</sup>. In Norway, a tax is levied on incinerators based on measured or estimated emissions<sup>149</sup>, which is aimed at driving emissions down.

Other countries in Europe have made greater use of incineration for waste disposal. In 1996, Austria incinerated 16 per cent of its waste, and Sweden incinerated 39 per cent<sup>150</sup>. Finland's proposed national waste plan envisages an increase in incineration of municipal waste, from 9 per cent in 2003, to 31 per cent in 2016<sup>151</sup>.

#### 4.8 Landfill

Landfilling is generally the least favourable option for dealing with waste<sup>152</sup>. The relative cheapness of landfill as a waste management option has been one of the main reasons for Wales'

<sup>139</sup> *ibid*, p. 79

<sup>140</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 18, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>141</sup> The Environment Agency has a website dedicated to waste technology: <http://www.environment-agency.gov.uk/wtd/679004/?lang=w>

<sup>142</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 85, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>143</sup> Friends of the Earth, *Dirty truths: Incineration and climate change*, [http://www.foe.co.uk/resource/briefings/dirty\\_truths.pdf](http://www.foe.co.uk/resource/briefings/dirty_truths.pdf)

<sup>144</sup> European Commission, *Directive 2000/76/EC of the European Parliament and of the Council on the Incineration of Waste*, <http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2000/L/02000L0076-20001228-en.pdf>

<sup>145</sup> The regulated emissions are nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), heavy metals, particles, and dioxins and furans. For further details, see the Directive text.

<sup>146</sup> Environment Agency, *Waste incineration in waste management strategies: Position statement*, [http://www.environment-agency.gov.uk/commondata/105385/wasteincin\\_319013.pdf](http://www.environment-agency.gov.uk/commondata/105385/wasteincin_319013.pdf)

<sup>147</sup> Greenpeace Research Laboratories, *Incineration and human health: State of knowledge of the impacts of waste incinerators on human health*, <http://www.greenpeace.to/publications/euincin.pdf>

<sup>148</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 114, June 2002, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>149</sup> OECD, *Instrument mixes addressing household waste*, February 2007,

[http://www.oilis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/\\$FILE/JT03221143.PDF](http://www.oilis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/$FILE/JT03221143.PDF)

<sup>150</sup> Institute for Prospective Technological Studies, *The incineration of waste in Europe: Issues and perspectives*, March 1999, <http://www.ejnet.org/dioxin/eur18717en.pdf>

<sup>151</sup> Finnish Environment Administration, *Valtakunnallisen jätesuunnitelman tavoitteena ehkäistä jätteen syntyä*, <http://www.ymparisto.fi/default.asp?contentid=219252&lan=fi>

<sup>152</sup> Welsh Assembly Government, *Waste disposal hierarchy*, [http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/waste\\_disposal\\_hierarchy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/waste_disposal_hierarchy?lang=en)

reliance on it in the past. It creates environmental pressure because it results in the permanent loss of material and energy resources. For example, the potential loss of resource from electrical and electronic waste in Europe has been estimated to include 2.4 million tonnes of ferrous metals, 1.2 million tonnes of plastics and 0.65 million tonnes of copper<sup>153</sup>.

Wales Audit Office notes that landfill can be unsightly, cause noxious smells and wind-blown litter, and may cause leachates to enter groundwater<sup>154</sup>. Research has established that house prices are lower near landfill sites<sup>155</sup>, making such sites particularly undesirable in the urban areas where they are most needed. Other research for the Department for Environment, Food and Rural Affairs (DEFRA) has provided some evidence that congenital anomalies (birth defects) occur slightly more often in children born to mothers living close to landfill sites, although it cannot be certain that "landfills cause or contribute to this apparent clustering of birth defects"<sup>156</sup>.

In OECD countries, 34 per cent of methane emissions come from landfill sites<sup>157</sup>; methane emissions from landfill sites account for approximately 3 per cent of UK greenhouse gas emissions<sup>158</sup>.

Landfilling should only occur for residual waste, when all other waste management options have been exhausted. The Netherlands<sup>159</sup> and Denmark<sup>160</sup> have prohibited the landfilling of waste that is suitable for incineration. Austria, Flanders in Belgium, Finland, France, Germany, Norway and Sweden also have bans on landfilling biodegradable municipal waste<sup>161</sup>. The European Parliament adopted a resolution on 13 February 2007 calling for a ban on landfilling of recyclable waste by 2020, extending to "all residual waste" except where unavoidable, by 2025<sup>162</sup>.

The amount of landfill space in Wales is decreasing faster than it is being created. At current rates, Environment Agency Wales estimates that landfill capacity will expire in 2012<sup>163</sup>. However, there is an unequal distribution of landfill capacity across Wales; on a worst case scenario, North Wales is predicted to run out of landfill capacity by 2009<sup>164</sup>. This has further implications for sustainability, as waste will need to be transported further from its site of generation<sup>165</sup>. As current

<sup>153</sup> AEA Technology, 1997. *Recovery of WEEE: Economic and Environmental Impacts*. Abingdon: AEA Technology.

<sup>154</sup> Wales Audit Office, *Waste management: A challenging agenda for the Welsh public sector*, p. 4,

[http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>155</sup> DEFRA, February 2003, *A study to estimate the disamenity costs of landfill in Great Britain*,

[http://www.defra.gov.uk/environment/waste/landfill/pdf/landfill\\_disamenity.pdf](http://www.defra.gov.uk/environment/waste/landfill/pdf/landfill_disamenity.pdf)

<sup>156</sup> Enviro Consulting, University of Birmingham, Risk and Policy Analysts Ltd., Open University and Maggie Thurgood, 2004, *Review of environmental and health effects of waste management: Municipal solid waste and other wastes*, p. 251,

<http://www.defra.gov.uk/ENVIRONMENT/WASTE/research/health/pdf/health-report.pdf>

<sup>157</sup> King AM et al, 2005. Reducing Waste: Repair, recondition, remanufacture or recycle? *Sustainable Development* 14(4), 257-267.

<sup>158</sup> Environmental Change Institute, *Carbon UK*, undated,

[http://www.hm-treasury.gov.uk/media/7/E/Carbon\\_UK\\_report\\_5.pdf](http://www.hm-treasury.gov.uk/media/7/E/Carbon_UK_report_5.pdf)

<sup>159</sup> OECD, *Instrument mixes addressing household waste*, February 2007,

[http://www.oilis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/\\$FILE/JT03221143.PDF](http://www.oilis.oecd.org/olis/2005doc.nsf/43bb6130e5e86e5fc12569fa005d004c/f8ee018fcd7f55b1c1257279004feb96/$FILE/JT03221143.PDF)

<sup>160</sup> Danish Environmental Protection Agency, *Waste 21 Appendix C: Capacity*,

[http://qlwww.mst.dk/udgiv/Publications/1999/87-7909-571-2/html/bilag03\\_eng.htm](http://qlwww.mst.dk/udgiv/Publications/1999/87-7909-571-2/html/bilag03_eng.htm)

<sup>161</sup> European Environment Agency, *Case studies on waste minimisation practices in Europe*, 2002,

[http://reports.eea.europa.eu/topic\\_report\\_2002\\_2/en/Topic\\_report\\_2-2002\\_web.pdf](http://reports.eea.europa.eu/topic_report_2002_2/en/Topic_report_2-2002_web.pdf)

<sup>162</sup> European Parliament, *European Parliament Resolution on a Thematic Strategy on the Recycling of Waste*, 13 February 2007,

[http://www.europarl.europa.eu/oeil/DownloadSP.do?id=13031&num\\_rep=6117&language=en](http://www.europarl.europa.eu/oeil/DownloadSP.do?id=13031&num_rep=6117&language=en)

<sup>163</sup> Environment Agency Wales, *Evidence to EPC Committee on Waste*, 25 January 2007,

<http://www.assemblywales.org/53eca244ea541429b95203b3d8ead4c3.pdf>

<sup>164</sup> Environment Agency Wales, *Evidence to the Environment Planning and Countryside Committee on the Wales Spatial Plan: Environmental and funding issues*,

<http://www.assemblywales.org/0fde0999d9da94cb52a35864f61ff870.pdf>

<sup>165</sup> Wales Audit Office, February 2005, *Waste management: A challenging agenda for the Welsh public sector*, p. 5,

[http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

landfill sites reach capacity, pressure increases to use new sites, with the loss of that land use for housing, leisure or agriculture. Since the change in regulations on hazardous landfill in June 2004, no Welsh landfill site has been able to accept hazardous waste<sup>166</sup>.

Landfill tax is a tax on the disposal of waste. Her Majesty's Revenue and Customs states that the aim of the tax is to encourage waste producers to produce less waste or recover value from waste<sup>167</sup>. Landfill tax for active waste<sup>168</sup> increased by £3 per tonne every year between 2004/05 and 2007/08. It will increase to £32 per tonne in April 2008<sup>169</sup>, and will thereafter increase by £8 per tonne per year until at least 2010/11<sup>170</sup>.

Gate fees for landfill currently vary between approximately £28 and £45 per tonne<sup>171</sup>. As from 1 April 2008, therefore, the cost to local authorities in Wales of disposing of a tonne of waste to landfill is approximately £69 in taxes and fees.

#### 4.9 Litter and flytipping

Below the waste hierarchy come littering and flytipping - illegal deposition of waste. The Waste Strategy notes that litter and flytipping have an impact on people's quality of life, they have important implications for tourism, and they impact on the economy of Wales through their negative effect on inward investment<sup>172</sup>. These forms of waste disposal are a problem for a number of reasons:

- They bypass regular waste management operations, which are conducted in a more efficient manner than cleansing isolated, uncontrolled items. This means that the cost of dealing with illegal waste disposal is substantially greater, per tonne, than it is for normal municipal waste disposal<sup>173</sup>. Since local authorities clean up illegal waste, council taxpayers pay for the increased cost of dealing with this waste. Expenditure on street cleansing activities by Welsh local authorities was approximately £50 million in 2005/06<sup>174</sup>.
- The illegal deposition of waste by private companies undermines legitimate waste companies, because it is cheaper for a private individual to flytip material than to dispose of it in landfill. In this way, the market becomes distorted by unfair competition.
- They pose a greater environmental threat than waste that is dealt with in a controlled manner. Incidents of flytipping frequently include the disposal of waste that is hazardous, and because they tend to be in isolated locations that may not be cleansed regularly, they

<sup>166</sup> Wales Audit Office, February 2005, *Waste management: A challenging agenda for the Welsh public sector*, p. 5, [http://www.wao.gov.uk/assets/englishdocuments/Waste\\_Management\\_Themed\\_Paper\\_9.pdf](http://www.wao.gov.uk/assets/englishdocuments/Waste_Management_Themed_Paper_9.pdf)

<sup>167</sup> HMRC, *Landfill Tax*,

[http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?nfpb=true&pageLabel=pageExcise\\_InfoGuides&id=HMCE\\_CL\\_001206&propertyType=document#P3\\_10](http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?nfpb=true&pageLabel=pageExcise_InfoGuides&id=HMCE_CL_001206&propertyType=document#P3_10)

<sup>168</sup> Active waste includes all waste not classified as 'inert', such as most household and business waste

<sup>169</sup> HMRC, *Landfill tax: Increases to rates*,

<http://www.hmrc.gov.uk/budget2007/bn61.htm>

<sup>170</sup> HM Treasury, *Budget 2007, Chapter 7: Protecting the environment*,

[http://www.hm-treasury.gov.uk/media/F/D/bud07\\_chapter7\\_273.pdf](http://www.hm-treasury.gov.uk/media/F/D/bud07_chapter7_273.pdf)

<sup>171</sup> Caerphilly County Borough Council, email communication with an official, 13 February 2007

<sup>172</sup> Welsh Assembly Government, *Wise about waste: The national waste strategy for Wales*, Part 1, p. 25, June 2002,

[http://new.wales.gov.uk/topics/environmentcountryside/epq/waste\\_recycling/wise\\_about\\_waste\\_strategy?lang=en](http://new.wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/wise_about_waste_strategy?lang=en)

<sup>173</sup> Provisional data for 2005/06 indicate average costs of disposing of municipal waste to be approximately £40 per tonne (Wales Audit Office, email communication with an official, 30 January 2007). Subtracting landfill tax, and using the lowest wage permissible by law, this expenditure per tonne would pay for roughly 3 hours' litter-picking.

<sup>174</sup> The actual figure is £34 million for 15 authorities (Wales Audit Office, email communication with an official, 26 January 2007), which has been extrapolated to 22 authorities.



are more likely to contaminate the surrounding soil and watercourses. Littering that is not cleared up becomes a contaminant of either the soil or water. Although some litter will eventually break down (organic litter over a period of a decade, some metals over the course of a century), most plastic waste takes thousands of years to degrade. Plastic waste that ends up in waterways contaminates both the waterways and, ultimately, the sea.

- Local environmental quality is often worse in the most deprived communities, and these communities are least able to tackle the problem because of its scale<sup>175</sup>.

Keep Wales Tidy has estimated drinks containers to comprise approximately 16 per cent of litter by weight in Wales<sup>176</sup>. In order to reduce the litter effect of drinks containers, Keep Wales Tidy recommends implementing a deposit system for cans and bottles, as exists in most EU countries<sup>177</sup> (the only EU countries without any form of deposit system are Cyprus, Greece, Ireland, Spain and the UK). Such a system could reduce street cleansing costs, and Keep Wales Tidy also notes that such a system could have resulted in savings of £4.5 million in local authority landfill costs in 2005/06, by removing these containers from the municipal waste stream. Updating these figures<sup>178</sup> suggests that savings in 2007/08 could be £5.4 million. A WRAP study suggests that UK councils are spending over £100 million annually on collecting and landfilling bottles made from plastic alone<sup>179</sup>. The costs of such a system would be borne by manufacturers and consumers – HM Treasury states<sup>180</sup>:

Where environmental costs are fully internalised into the price of a product or activity a reallocation of resources in the economy occurs. This is because price signals are changed so that producers and consumers face the environmental costs of goods and services. Consumers are encouraged to substitute away from outputs with higher relative prices, with demand shifting in favour of lower priced alternatives that are less environmentally damaging. Likewise, business is encouraged to restructure away from producing polluting products and from using polluting production methods.

A report for DEFRA notes that drinks container deposit schemes "appear to be a highly effective mechanism for materials recovery...they have also been shown (in the USA) to have a low direct cost per tonne of material recovered"<sup>181</sup>. A further report for DEFRA comments on the experience of deposit systems in Germany<sup>182</sup>:

In the first year after the introduction of the deposit, clear growth was recorded in the use of reusable packaging. Therefore the deposit is playing a role in keeping jobs in the reusable sector by stabilising

<sup>175</sup> Hastings et al, 2005. *Cleaning up neighbourhoods: Environmental problems and service provision in deprived areas*, <http://www.jrf.org.uk/bookshop/eBooks/1861348169.pdf>

<sup>176</sup> Keep Wales Tidy, *Papur datgan sbwriel caniau a photeli/Can and bottle litter position paper*, June 2006, <http://www.keepwalestidy.org/english/images/cansandbottles.pdf>

<sup>177</sup> The following EU countries operate deposit systems: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Romania, Slovakia, Sweden, along with Iceland (replaced with a 'recycling levy' since 1 January 2008), Switzerland, Norway (information from [www.ecccdublin.ie](http://www.ecccdublin.ie))

<sup>178</sup> An increase in landfill tax and gate fees to £69 per tonne, and municipal waste landfilled of 1,259,000 tonnes. We use the assumption that the proportion of potentially deposit-bearing materials in landfilled waste has decreased by 10.0 per cent (the increase in recycling rate between 2002/03 and 2006/07) to 6.2 per cent since 2003 (current total therefore calculated as 78,058 tonnes).

<sup>179</sup> WRAP, *UK plastic bottle recycling survey 2004*, February 2004, <http://www.wrap.org.uk/downloads/UKPlasticBottle2004.9e0ad785.pdf>

<sup>180</sup> HM Treasury, *Tax and the environment: Using economic instruments*, November 2002, <http://www.hm-treasury.gov.uk/media/3/A/adtaxenviron02-332kb.pdf>

<sup>181</sup> Enviro Consulting, *International waste prevention and reduction practice: Final report*, October 2004, <http://www.defra.gov.uk/environment/waste/wip/wastemin/enviros-wasteprevent.pdf>

<sup>182</sup> Economica Research and Consulting, *Household waste prevention policy side research programme: Final report for DEFRA*, May 2007, available from [http://www.the-environment-council.org.uk/index.php?option=com\\_docman&task=cat\\_view&gid=92&Itemid=64](http://www.the-environment-council.org.uk/index.php?option=com_docman&task=cat_view&gid=92&Itemid=64)



reusable systems. Furthermore the deposit on cans is also creating jobs amongst manufacturers of deposit-return machines and in logistics enterprises. Finally the compulsory deposit is a step towards turning people away from their “throw-away mentality”. The deposit on cans and one-way bottles is expected to put an end to the littering of streets, public places and landscape.

The packaging industry association in the UK is opposed to deposits<sup>183</sup>.

Keep Wales Tidy has estimated plastic bag litter to comprise approximately 2.7 per cent by weight of litter in Wales, with associated cleansing costs to local authorities<sup>184</sup>. Keep Wales Tidy recommends a levy as a means to tackle the problem; although such powers are not yet available to the Welsh Assembly Government, the Minister for Environment, Sustainability and Housing has assured an Assembly Committee that a levy in relation to pollutants is, in principle, within the scope of the proposed LCO<sup>185</sup>. UK retailers have agreed to reduce the environmental impact of plastic bags by 25 per cent by the end of 2008<sup>186</sup>.

---

<sup>183</sup> Industry Council for Packaging and the Environment, *Container deposit laws: The facts*, <http://www.incpen.org/pages/userdata/incp/containerFS.pdf>

<sup>184</sup> Keep Wales Tidy, *Papur datgan sbwriel bagiau plastig/Plastic bag litter position paper*, July 2006, <http://www.keepwalestidy.org/english/images/plasticbags.pdf>

<sup>185</sup> National Assembly for Wales, *Proposed Environmental Protection and Waste Management LCO*, 25 October 2007

<sup>186</sup> DEFRA, *UK retailers sign up to cut the environmental impact of carrier bags*, <http://www.defra.gov.uk/news/2007/070228a.htm>

## Annex A

Tables 9 and 10 show a projection of the amount of waste that would be landfilled by local authorities in Wales if future waste management activities reduce the amount of waste being sent to landfill at the same rate as activity over the years 2002/03 to 2006/07 has done.

Members' Research Service calculated the proportionate share of the 2009/10 allowances shown in the letter from the Minister for Environment, Planning and Countryside to local authority Chief Executives<sup>187</sup>, available at:

[www.countryside.wales.gov.uk/fe/fileupload\\_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf](http://www.countryside.wales.gov.uk/fe/fileupload_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf)

This share was used as the basis to calculate the distribution of allowances for authorities in 2012/13.

Each authority's rate of reduction in landfill between 2002/03 and 2006/07 was calculated. The analysis is sensitive to the years chosen: 2006/07 is the most recent year for which landfill data are available; information is also publicly available for the amount of waste landfilled by each local authority in 2002/03, and this year was considered to be one that allowed for improved performance in landfill diversion in recent years to be better reflected in the projections.

The rate of reduction in landfill between 2002/03 and 2006/07 was extended to both the 2009/10 and the 2012/13 targets.

The calculation was made on a compound basis. This method was chosen because the amount of waste landfilled more closely follows a curve of exponential decay than a linear decrease (for example, using a linear decrease to project the amount of waste landfilled would indicate a result of Neath Port-Talbot landfilling no waste by 2012/13).

This calculation does not take account of factors such as changing public attitudes to waste, or new recycling and composting facilities coming into operation.

Those authorities that have already met their 2009/10 landfill targets are highlighted with shading. No authority has yet met its 2012/13 target.

---

<sup>187</sup> Minister for Environment, Planning and Countryside, *The Landfill Allowance Scheme: Allocation of Allowances*, 14 August 2004.





Table 9 Landfill target for 2009/10 and projected landfill for each local authority in Wales

Local authority	Landfill (tonnes)		Annual rate of decrease, 2002/03-2006/07 (per cent) <sup>188</sup>	2009/10 target (total municipal waste <sup>189</sup> ) (tonnes)	2009/10 projection (tonnes)	Approximate difference (tonnes)
	2002/03 <sup>190</sup>	2006/07 <sup>191</sup>				
Cardiff	169,416	152,718	2.56	117,446	141,283	24,000
Rhondda Cynon Taf	98,022	93,389	1.20	77,805	90,059	12,500
Powys	53,800	53,126	0.42	43,826	52,240	8,500
Gwynedd	66,673	59,933	2.63	47,451	55,329	8,000
Carmarthenshire	81,927	71,731	3.27	60,400	64,926	4,500
Ynys Môn	42,380	36,182	3.88	28,392	32,136	4,000
Wrexham	74,522	62,672	4.24	53,831	55,038	1,000
Pembrokeshire	62,334	54,109	3.48	48,330	48,661	500
Vale of Glamorgan	53,670	44,829	4.40	41,292	39,168	-2,000
Denbighshire	48,702	36,485	6.97	31,895	29,379	-2,500
Conwy	67,434	58,818	3.36	56,230	53,086	-3,000
Monmouthshire	45,757	36,054	5.78	33,510	30,153	-3,500
Merthyr Tudful	36,536	26,419	7.79	24,185	20,716	-3,500
Blaenau Gwent	44,764	34,906	6.03	33,194	28,965	-4,000
Ceredigion	32,233	22,380	8.72	22,930	17,023	-6,000
Newport	61,480	50,152	4.96	50,339	43,048	-7,500
Torfaen	51,054	36,836	7.84	37,852	28,837	-9,000
Caerphilly	92,480	75,678	4.89	74,140	65,112	-9,000
Bridgend	56,403	41,504	7.38	44,716	32,975	-11,500
Flintshire	78,344	56,188	7.97	59,807	43,790	-16,000
Swansea	132,727	99,944	6.85	109,870	80,789	-29,000
Neath Port Talbot	96,485	54,989	13.11	66,533	36,069	-30,500
WALES	1,547,141	1,259,044	5.02	1,164,000 <sup>192</sup>	1,088,782 <sup>193</sup>	-74,000

Source: Local Government Data Unit Wales, Environment Agency Wales and Members' Research Service calculation

<sup>188</sup> Rate of increase has been rounded to two significant figures. Calculations of the projected amounts of waste landfilled use the original (unrounded) values.

<sup>189</sup> Targets from [www.countryside.wales.gov.uk/fe/fileupload\\_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf](http://www.countryside.wales.gov.uk/fe/fileupload_getfile.asp?filePathPrefix=3499&fileLanguage=e.pdf) have been increased by 63.935 per cent to account for the difference between BMW landfilled and total municipal waste landfilled

<sup>190</sup> Environment Agency Wales, *Waste management options used by unitary authority 2002/03*, [http://www.environment-agency.gov.uk/commondata/103601/walesmw1a\\_1236824.xls](http://www.environment-agency.gov.uk/commondata/103601/walesmw1a_1236824.xls)

<sup>191</sup> Local Government Data Unit Wales, *Waste management – Core set indicators 2006/07*, <http://dissemination.dataunitwales.gov.uk/webview/index.jsp>

<sup>192</sup> Rounding errors give a total target of approximately 1,163,974 tonnes

<sup>193</sup> Based on the total of local authority figures, rather than a deflation of the all-Wales total



Table 10 Landfill target for 2012/13 and projected landfill for each local authority in Wales

Local authority	Landfill (tonnes)		Annual rate of decrease, 2002/03-2006/07 (per cent) <sup>194</sup>	2012/13 target <sup>195</sup> (total municipal waste) (tonnes)	2012/13 projection (tonnes)	Approximate difference (tonnes)
	2002/03 <sup>196</sup>	2006/07 <sup>197</sup>				
Cardiff	169,416	152,718	2.56	77,746	130,706	53,000
Rhondda Cynon Taf	98,022	93,389	1.20	51,505	86,847	35,500
Powys	53,800	53,126	0.42	29,012	51,586	22,500
Gwynedd	66,673	59,933	2.63	31,411	51,079	19,500
Carmarthenshire	81,927	71,731	3.27	39,983	58,766	19,000
Wrexham	74,522	62,672	4.24	35,635	48,334	12,500
Pembrokeshire	62,334	54,109	3.48	31,993	43,761	12,000
Conwy	67,434	58,818	3.36	37,222	47,913	10,500
Ynys Môn	42,380	36,182	3.88	18,795	28,542	9,500
Vale of Glamorgan	53,670	44,829	4.40	27,334	34,222	7,000
Caerphilly	92,480	75,678	4.89	49,079	56,021	7,000
Newport	61,480	50,152	4.96	33,323	36,950	3,500
Monmouthshire	45,757	36,054	5.78	22,183	25,217	3,000
Denbighshire	48,702	36,485	6.97	21,114	23,657	2,500
Blaenau Gwent	44,764	34,906	6.03	21,947	24,036	2,000
Merthyr Tudful	36,536	26,419	7.79	16,010	16,245	0
Ceredigion	32,233	22,380	8.72	15,179	12,948	-2,000
Torfaen	51,054	36,836	7.84	25,057	22,575	-2,500
Bridgend	56,403	41,504	7.38	29,601	26,198	-3,500
Flintshire	78,344	56,188	7.97	39,590	34,127	-5,500
Swansea	132,727	99,944	6.85	72,731	65,306	-7,500
Neath Port Talbot	96,485	54,989	13.11	44,043	23,659	-20,500
<b>WALES</b>	<b>1,547,141</b>	<b>1,259,044</b>	<b>5.02</b>	<b>770,000<sup>198</sup></b>	<b>948,695<sup>199</sup></b>	<b>177,500</b>

Source: Local Government Data Unit Wales, Environment Agency Wales and Members' Research Service calculation

<sup>194</sup> Rate of increase has been rounded to two significant figures. Calculations of the projected amounts of waste landfilled use the original (unrounded) values.

<sup>195</sup> Assumes the same proportion of the total waste landfillable in Wales in 2012/13 as was allocated to each local authority for 2009/10.

<sup>196</sup> Environment Agency Wales, *Waste management options used by unitary authority 2002/03*, [http://www.environment-agency.gov.uk/commondata/103601/walesmw1a\\_1236824.xls](http://www.environment-agency.gov.uk/commondata/103601/walesmw1a_1236824.xls)

<sup>197</sup> Local Government Data Unit Wales, *Waste management – Core set indicators 2006/07*, <http://dissemination.dataunitwales.gov.uk/webview/index.jsp>

<sup>198</sup> Rounding errors give a total target of approximately 770,493 tonnes

<sup>199</sup> Based on the total of local authority figures, rather than a deflation of the all-Wales total