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Public Participation in Waste Recycling



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In relation to the Welsh Government, I have prepared this report for presentation to the National Assembly under the Government of Wales Act 2006. In relation to local government bodies, I have prepared and published it in accordance with the Public Audit (Wales) Act 2004.

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**Report presented by the Auditor General for Wales to the
National Assembly for Wales on 16 February 2012**



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Summary

- 1** In May 2009, the Welsh Government revealed its vision for sustainability, entitled *One Wales: One Planet*. In launching the vision, the then First Minister for Wales, Rt. Hon Rhodri Morgan AM, stated: '*Climate change is the clearest example that our current lifestyles are unsustainable, but wherever we look – the amount of waste we generate, the amount we travel – we know that we are living beyond the environment's means to sustain us.*' In *One Wales: One Planet*, the Welsh Government sets out how recycling can contribute to this vision by reducing resource use and helping to establish a low carbon, low waste economy.
- 2** Managing the waste we generate contributes about 15 per cent¹ to Wales' ecological footprint². Local authority collected municipal waste ('municipal waste')³ makes up around five per cent of Wales' ecological footprint.
- 3** Improving waste management therefore has a comparatively small impact in helping to mitigate climate change and in reducing the inefficient use of resources that have increased the ecological footprint to an unsustainable level. Nevertheless, there are good reasons, as follows, why it is worth managing waste more effectively and as a part of the Welsh Government's extensive and challenging proposals to mitigate the future effects of climate change.
 - a** The Stern Review⁴ showed that on a global scale, reducing landfill disposal, and reusing and recycling more could help to cut harmful greenhouse gas emissions from waste by half, and greatly reduce the cost of managing wastes.
 - b** We need to optimise both waste recycling and waste reduction if we are to live within the resources of one planet.
 - c** There is a track record established by the Welsh Government and local authorities of meeting environmentally driven performance targets for waste management, and a future of further targets. Recent research⁵ suggests that the willingness of citizens to behave in a way that benefits the environment requires approaches that are mutually reinforcing. Radical lifestyle changes may be unlikely to happen but there is scope to challenge wasteful habitual behaviours; to encourage take up of greener products and services and in removing external barriers. By encouraging the public to participate in recycling, it can help to embed the importance of good environmental behaviour, making citizens more receptive to future changes and a more sustainable lifestyle⁶.

¹ *Wales Ecological Footprint - Scenarios to 2020*, SEI 2008.

² The term 'ecological footprint' is explained in Appendix 4.

³ Municipal waste includes household waste and waste from other sources. However, it also includes wastes, similar in nature and composition to household waste, that are generated by businesses but not collected by local authorities. Using the term 'Local Authority Collected Municipal Waste' clarifies that this means household waste and business waste where collected by the local authority.

⁴ Stern Review on the Economics of Climate Change, HM Treasury, October 2006. This review states that the waste industry emits 3 per cent of the UK's greenhouse gases, three-quarters of which could be cut at negative cost and the remaining quarter at a cost of £5 per tonne of CO₂ equivalent emitted.

⁵ *Understanding and influencing behaviours: a review of social research, economics and policy making in Defra*, Discussion paper, February 2010.

⁶ *A framework for pro-environmental behaviours*, Defra, 2008. This report identified waste minimisation and recycling is a priority when establishing a framework.



- 4 Modern local authority waste management services bear little resemblance to the limited service provision of 10 years ago, which concentrated on the collection and disposal of waste. There were few variations to this simple process. Teams of operatives loaded refuse onto a fleet of waste vehicles before taking it to a landfill site for burial. During the past 10 years or so, driven by waste targets and the increasing cost of landfill, governmental funding and customer expectations, local authorities have tried new approaches and introduced a huge variation in service provision.
- 5 Increasingly, waste is becoming a resource that has considerable value because it can be re-processed and used again. The value of this waste is lost when it is discarded, such as in a landfill site, and there are additional costs associated with the environmental damage caused by disposal. Waste prevention is the best environmental option but when waste is produced, recycling is a resource-friendly alternative to protect natural resources. Compared with the processes required to use natural resources, recycling contributes only about a half of the impact on the ecological footprint. Achieving a reduction in the ecological footprint to 'one planet' level needs both recycling and waste prevention to happen in parallel.
- 6 The Government of Wales Act 1998 gave the National Assembly a statutory duty to promote sustainable development, and this duty was transferred to Welsh Ministers in 2006⁷. In 2009, the Welsh Government made sustainable development the central organising principle for all policies and strategies to implement its overarching sustainability strategy *One Wales: One Planet*. Local authorities also help to implement the policies and strategies that stem from this higher-level strategy. The Welsh Government published its first national waste strategy *Wise about Waste* in 2002, replacing it with its second strategy, *Towards Zero Waste* in June 2010. This new strategy aims to build on growing public involvement and ownership of waste management issues.
- 7 The main targets arising from the revised strategy are for local authorities to achieve a recycling target of 70 per cent by 2024-25 that combines preparing waste for re-use, recycling and composting, and for Wales to operate to the principle of 'zero waste'⁸, by 2050. This is an ambitious strategy, driven by the Welsh Government's duty to promote sustainability and for local authorities to have regard to sustainability in improving their services⁹. There are also intermediate targets for preparing for reuse, recycling and composting of 52 per cent in 2012-13, 58 per cent in 2015-16 and 64 per cent in 2019-20. The recycling rate for municipal waste in Wales during 2009-10 was 39.3 per cent, against the Welsh Government's target of 40 per cent. In 2010-11, this rate had increased to 43.6 per cent. **Appendix 1** shows the municipal waste recycling rates since 2003-04 for each local authority, set against the Welsh Government's targets for 2003-04, 2006-07 and 2009-10.
- 8 Local authorities have a key role to play in reducing the impacts from waste. The European Union has also set very challenging targets¹⁰ in the Landfill Directive to reduce the amount of biodegradable waste that landfill sites can accept. Targets are needed because

7 Government of Wales Act 2006.

8 Zero waste is explained in the glossary of terms in Appendix 4.

9 *Local Government (Wales) Measure 2009*, section 2. Duties are also explained in *Sustainable development local authority duties and responsibilities report* by PriceWaterhouseCoopers for the Welsh Local Government Association, May 2011.

10 The European Union Landfill Directive (1999/31/EC).

biodegradable wastes decompose and release liquids that can pollute watercourses and greenhouse gas emissions that contribute to global warming¹¹. The Directive includes targets to reduce landfill disposal of biodegradable waste produced in 1995 to 50 per cent by 2013 and to 35 per cent by 2020. The United Kingdom has already met the 2010 target to reduce landfill disposal to 75 per cent of this level.

9 To ensure that the United Kingdom complies with the European Union legislation, the Welsh Government has set each local authority an annual landfill allowance for biodegradable municipal waste. If an authority exceeds its allowance, it faces financial penalties from the Welsh Government. In addition, if the overall performance of the United Kingdom fails to meet the European Union landfill diversion targets, the Government will face considerable financial penalties¹². The Welsh Government has indicated that should this happen it will, in addition, require local authorities that did not meet their targets to pay for a share of these penalties. Recycling targets for local authorities were not statutory, but this has changed for 2012¹³, with additional financial penalties for local authorities that fail to achieve progressively more demanding targets.

10 In the six years since the Audit Commission in Wales reported on the issue of waste management¹⁴, local authorities have made steady progress in meeting targets for waste. Local authorities now provide a range of facilities and services that give residents the opportunity to reuse, recycle and compost more of their wastes.

11 For many residents, recycling takes its place alongside the other demands of modern life, but for some there is little willingness to engage in this issue. Public participation in recycling is voluntary, with few incentives and fewer penalties. The Welsh Government could review this approach if persuasion and education prove insufficient, although the use of penalties is a sensitive political issue. The challenge for the Welsh Government in partnership with local authorities is considerable, to increase understanding, confront perceptions and change the behaviour of residents. Moreover, this challenge comes at a time of mounting economic pressures for all. Experience elsewhere, such as in national campaigns for road safety and healthy living, demonstrate that changing public behaviour is a difficult and long-term campaign and one in which Welsh Government and local authorities will have to develop or engage the experience and capacity necessary to deliver the required results.

12 Our review assessed whether the Welsh Government and local authorities are doing enough to maximise public participation in recycling. We found that, although the rate of public participation in recycling is increasing, there remain substantial barriers to both the implementation of the national strategy and the measurement of performance that will hinder further longer-term improvements.

11 A damaging consequence of global warming is climate change, and this is one of the most obvious symptoms of unsustainable development.

12 There are significant daily and infraction financial penalties for member states that do not comply with the EU Landfill Directive. In 2011, the Welsh Government also introduced financial penalties for local authorities that do not meet its recycling targets.

13 Waste (Wales) Measure 2010.

14 *Waste Management – a challenging agenda for the Welsh public sector*: Themed Paper No. 9, Audit Commission in Wales, March 2005.



Recycling features prominently in the ambitious national vision for sustainability and the Welsh Government and local authorities are working to overcome the barriers to increasing participation

- 13** The Welsh Government has recognised the need to prioritise recycling in its ambitious vision for sustainability and is developing more focus on waste prevention. Recycling is a tangible way to raise awareness of environmental issues, encourage the public to accept, and begin to participate in some of the changes needed for sustainable development. But recycling alone is not enough. The Welsh Government knows that if the amount of waste produced increases at one per cent per year, even at 70 per cent, recycling will only reduce the ecological footprint of municipal waste by at most, eight per cent¹⁵. If, as Welsh Government believe has already happened, the growth in municipal waste has ceased, then recycling could reduce the ecological footprint of municipal waste by up to 23 per cent by 2024-25. This reduction falls far short of the 44 per cent targeted by 2025. To meet the Welsh Government's aspirations of One Planet Living 'within the life of a generation' the footprint of waste will need to be reduced by 75 per cent. At best, recycling alone could deliver less than a third of this outcome.
- 14** Controlling the growth of waste produced is therefore vital to the success of waste strategy but history shows that this is difficult. Evidence gained from the Arup research points strongly to the need for the Welsh Government to focus its influence on waste prevention together with the sustainable production and consumption of resources. We acknowledge that this has begun in parallel with the progress made on recycling. However, much more is required because local authorities, although understanding the importance of waste prevention, remain fixated on recycling targets and do not clearly recognise their role in reducing waste.
- 15** In addition, local authorities are facing a number of barriers to increasing public participation and full co-operation in recycling. These difficulties include struggling with the complex, ambitious and long-term nature of Welsh Government plans to promote sustainability. Consideration of sustainability as a mainstream issue and a key factor in decision-making is still a relatively new concept for local authorities.
- 16** The Welsh Government's leadership, and in particular the clarity, timeliness and prescriptive style of communication about sustainable recycling, has left some local authorities confused and disengaged. There is still some doubt about the relative effectiveness and the sustainability of recyclable waste collection methods and the Welsh Government has not yet convinced all local authorities that its plans for collection of recyclable wastes are appropriate or practicable.
- 17** The Welsh Government and some local authorities still have conflicting views about how best to provide recycling services for the public. In particular, the Welsh Government contends that to make the best use of waste resources and to be sustainable, the collection crew should sort recyclable wastes as far as possible at the kerbside. Invariably, the consequence of this view is that local authorities will expect residents to segregate their recyclable wastes according to basic material type before it is collected. Local authority operatives then further sort these wastes at the kerbside, and place them in a compartmentalised collection vehicle.

¹⁵ *Ecological footprint impacts of the Welsh waste strategy*, Arup for Welsh Government, May 2009. This research paper by environmental consultants Arup modelled the effects of recycling under different waste growth scenarios and sets out the contributions that both recycling and waste prevention must make in achieving zero waste within the Welsh Government's aim of 'within the life of a generation'.

The Welsh Government dislikes methods of collection where 'dry'¹⁶ recyclable waste is 'co-mingled' together in a single receptacle, preferring methods where residents segregate recyclables, for example into one or more box that allows some separation into the different types of material ready for the local authority to sort further at the kerbside into different compartments of the collection vehicle.

- 18** The main debate is whether the ease of use for co-mingled collection systems outweighs any sustainability issues resulting from the quality of the waste collected and the requirement to sort this mechanically at a Materials Recovery Facility¹⁷. The Welsh Government has concluded that only kerbside sorting can consistently produce the quality of waste material needed to make the best use of recyclable resources. Some local authorities and private sector contractors dispute this assertion, saying that modern materials recovery facilities can now mechanically sort partly separated recyclable wastes into products of sufficient quality from co-mingled collections, and at similar cost. If disagreement over recyclable waste collection methods continues, there is a risk that it will inhibit further progress in achieving recycling objectives. Working together and optimising collection systems can provide the Welsh Government and local authorities with improved sustainability and help to maintain the momentum of public participation.

- 19** Local authorities are also concerned that national plans do not take sufficient account of local circumstances, such as local variation in the different materials found in waste or possible differences in socio-economic and geographical factors. They fear that the Welsh Government might still use funding constraints and new legislative powers to direct local authorities to use only the methods for

recycling that they believe support the national strategy. The Welsh Government is calling for much more consistent waste collection services across Wales, as it believes it has conclusive evidence that this will provide better sustainability and value for money. But some local authorities do not agree and some are concerned that, as waste and recycling collection systems are already established, this drive for consistency is late and is likely to be disruptive for their waste services and for the public.

Local authorities are providing a wide range of recycling services but more work is needed to persuade people to use these services

- 20** Local authorities already provide a wide range of recycling services but they need to do more to persuade people to participate in recycling. Traditional ways of allowing the public to participate have served local authorities well by creating momentum for recycling. To increase public participation, local authorities have provided civic amenity and recycling sites: recycling 'bring banks', kerbside dry waste recycling, organic and, more recently, food waste collections. Nevertheless, even within these established methods, there is further scope to improve the amount and quality of wastes recycled.
- 21** Between 2000-01 and 2009-10, the Welsh Government invested some £360 million of specific grants for local authority waste services. This specific funding is in addition to the revenue support grant that local authorities can determine how to prioritise across its local services, including waste services. In 2009-10, the Welsh Government provided around £230 million, or about 85 per cent of the total cost of local authority waste services. Council taxation and some small contributions from income and charging provided the remaining £44 million.

¹⁶ The term 'dry recyclable wastes' is explained in the glossary in Appendix 4.

¹⁷ The term 'materials recovery facility' is explained in the glossary in Appendix 4.



Central funding from the Welsh Government has allowed local authorities to introduce many new services that have added to the momentum of increasing public participation. However, although the Welsh Government has recently indicated likely grant funding for the next ten years, economic constraints mean that there is still some uncertainty about central funding, particularly beyond the Welsh Government's three-year budget horizon. The possibility of future funding constraints is a barrier to increasing participation because the maintenance and expansion of most recycling activities is reliant on funding at this level. In addition, the Welsh Government has not undertaken robust assessments of whether local authorities have used that funding to provide value for money or meet strategic objectives.

- 22** To sustain the momentum of increasing recycling, local authorities will need a stronger focus on increasing the amount of recyclable waste collected from those that already participate and to target those that are less willing or able to participate. However, to do so, local authorities need robust and comprehensive information that shows why some residents participate and why others do not, or do so only in a limited way.

Weaknesses in information gathering, use and sharing are inhibiting efforts to increase participation

- 23** We found that there are weaknesses in information gathering, use and sharing, which inhibit the efforts of local authorities to increase participation. In particular, the measurement of public participation in recycling schemes is often weak because there is insufficient detail, or measurement is too infrequent. While most local authorities measure public participation, many recognise that their measurements are not good enough to be of much use.
- 24** Only a few local authorities align data and information on public participation with other important performance measures. We found that by considering the different types of data and information together, the value of monitoring public participation increased significantly. However, only about half of local authorities take full advantage of the information available to them to improve the performance of their recycling services.
- 25** It was clear from our work that local authorities could learn more effectively from the existing guidance provided by research organisations working for the Welsh Government, from better use of their own performance information and through sharing good practice. However, guidance is currently fragmented, and sometimes out of date. All local authorities told us that there should be more shared learning and use of good practice about increasing public participation. The Welsh Government could gather and share guidance and good practice that local authorities need more effectively to help them to persuade people to recycle at the level that the national strategy and targets require.

Recommendations

- 26** The Welsh Government has set an ambitious change agenda in *Towards Zero Waste*. The following recommendations for the Welsh Government and local authorities should help to maintain the momentum of performance by allowing the public to participate more in sustainable waste management activities.
- 27** In delivering the recommendations, we consider that the Welsh Government and local authorities should seek a more consensual route that builds understanding, acknowledges and respects local circumstances and allows more flexibility in the means of achieving the outcomes sought in *Towards Zero Waste*. It is also important that Welsh Government and local authorities work much more effectively together to build trust and to be more receptive to the changes that are required. In addition, local authority waste managers need to become more aware that the Welsh Government prioritises waste prevention and that recycling policy can help to take this priority forward.
- 28** There are many barriers to the further development of local authority kerbside collection systems for recyclable wastes. Arbitration from a suitably informed body that is capable of providing an independent and objective assessment of the need for change, can draw a line under past differences and re-engage local authorities with the Welsh Government and the national strategy:
- R1** **We recommend that the Welsh Government and local authorities should work together much more effectively to ensure that there is an independent performance assessment of the methods used for the kerbside collection of recyclable wastes at every local authority. In particular, the Welsh Government and Welsh Local Government Association (WLGA) should:**
- a** form a Board or similar body capable of designing and implementing an independent and objective assessment;
 - b** ensure the assessment follows good practice and takes account of all aspects of sustainability; and
 - c** build consensus by agreeing the criteria and standards underpinning the assessment with key stakeholders.
- R2** **We recommend that if a local authority's collection system does not meet the standards of this assessment, the Welsh Government and the local authority should agree a measured plan to achieve the performance assessment standards and timescale.**
- 29** We consider that there is evidence that the Welsh Government's current 'one-size-fits-all' approach to sustainable waste management targets may not be equitable. A mix of different factors could mean that some local authorities have an advantage and others, some disadvantage in meeting the current waste management targets.
- R3** **We recommend that the Welsh Government should analyse the combined recycling and composting rates for Welsh local authorities to determine if there is a significant difference in the performance of predominantly urban, valley and rural local authorities. The Welsh Government should use this analysis together with socio-economic differences when setting future recycling targets. The Welsh Government should redirect and target support for any local authorities shown by the analysis to be disadvantaged.**
- 30** Our work has identified the need to clarify, consolidate and better signpost the guidance available to local authorities on increasing public participation and to fill knowledge gaps



by providing new information and guidance.

R4 We recommend that the Welsh Government should coordinate and signpost local authorities to the information and guidance that they need to develop capacity to increase public participation in recycling, and so that they can manage the progress of recycling initiatives through better engagement of the public and stakeholders.

R5 We recommend that the Welsh Government should set up a system that captures good practice and disseminates the shared learning with local authorities on improving recycling performance through public participation. Local authorities should more actively seek, and make better use of, good practice in improving their waste management services.

31 We found that local authorities used a variety of methods for monitoring public participation, both in measuring the frequency of participation and the amount of recyclable waste presented for collection. This can lead to poor quality data and information on the performance of collection systems and inefficient use of resources in targeting campaigns to increase recycling:

R6 We recommend that in partnership with local authorities, the Welsh Government should develop consistent performance indicators to measure public participation in recycling.

32 An aim of waste policy across the United Kingdom is to raise the value of waste to become a useful resource that is in demand. In recent years, recyclable waste was exported to China and other developing countries that needed resources. Market forces in the United Kingdom are now reacting with new and improved waste separation technologies that promise high quality

waste resources and at much lower cost. For local authorities offering the public the convenience of a collection system that relies on a materials recovery facility, this could mean lower costs and better quality recyclable wastes for reprocessing.

R7 We recommend that the Welsh Government and local authorities should more closely engage the private sector to gain a more complete understanding of the way that market forces and technological advances are changing the recycling industry. The Welsh Government should work closely with local authorities to consider targets, incentives and legislation to steer the private sector towards the optimum outcomes of sustainability, value for money and public acceptability for municipal recycling.

33 It is unlikely that 'pay as you throw' or financial penalties and incentives are currently a suitable means of increasing participation in recycling. This is because there are still aspects of local authority service delivery that can increase recycling along with better awareness and education campaigns. However, the future use of financial penalties and incentives cannot be discounted particularly as recycling targets get much more challenging.

R8 We recommend that the Welsh Government should create contingency plans in readiness to apply financial incentives or penalties on the public if they do not reduce the waste they produce, reuse, recycle or compost their waste sufficiently in response to persuasion and education. However, the Welsh Government should take this course of action only if all other means of meeting EU waste diversion targets or key sustainable waste management outcomes of *One Wales: One Planet* have failed.

Part 1 - Recycling features prominently in the national vision for sustainability and the Welsh Government and local authorities are working to overcome the barriers to increasing participation

1.1 This part of the report discusses the ways in which recycling fits within the national framework for sustainability. The part also provides some insight on how local authorities are working to implement the strategy.

The Welsh Government has recognised the need to prioritise recycling in its ambitious vision for sustainability

1.2 The Welsh Government's strategy, *Towards Zero Waste* stretches the planning horizon in Wales for waste management to 2050. The strategy is an example of detailed and long-term sustainability planning for waste management.

1.3 The Welsh Government has recognised the need to plan for sustainability over such a long period and it knows the changes required are considerable. *Towards Zero Waste* sets targets for local authorities to increase recycling of municipal waste to 70 per cent by 2025. However, recycling targets are just intermediate steps on the journey towards the Welsh Government's aspiration of zero waste. Wales is not alone in targeting zero waste. The Scottish Government launched a Zero Waste Plan in June 2010 and at the same time; the Department of Environment, Food and Rural Affairs commenced a review that aims to take England towards a zero waste economy. To support these changes and to involve citizens and stakeholders from the

public, commercial and voluntary sectors, the Welsh Government is producing a series of waste sector plans¹⁸ that aim to more clearly set out expectations and promote the inclusive and wide ranging actions required for success.

1.4 Options for managing wastes can be ranked in order of their environmental impact¹⁹, a hierarchy that is increasingly validated by better methods of assessing the ecological footprint of waste activities. For the past decade, waste strategies have taken regard of this hierarchy, but there is considerable debate about how to assess the relative sustainability of the various methods of waste handling. One of those debates is about how to achieve 'closed loop recycling' – where recycling leads to the recreation of similar articles rather than a degradation to lower grade objects.

1.5 **Exhibit 1** shows a summary of the waste hierarchy, headed by the option with least environmental impact, which is to reduce the amount of waste produced.

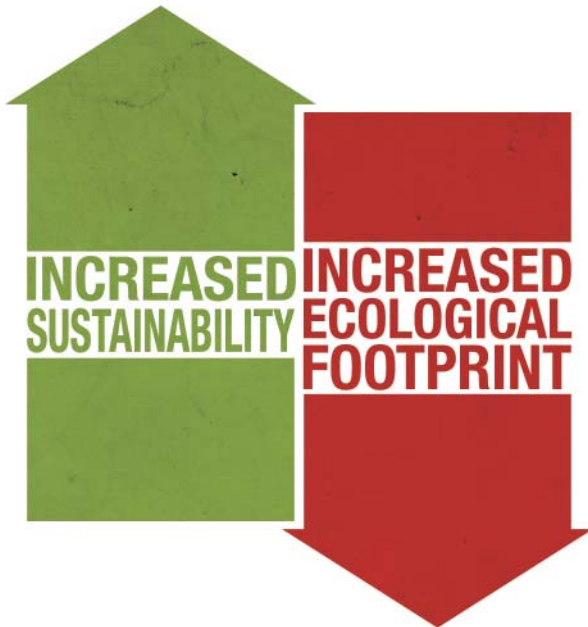
1.6 Preventing the generation of waste through waste reduction and the preparation of articles so that they can be re-used by extending their lifespan must become a much greater part of the management of municipal wastes if zero waste is to become a reality. Current levels of public awareness of waste and environmental issues do not reflect this need. There is a theory that recycling may reinforce attitudes of 'ethical consumerism' and promote a 'throw-away society' where it is acceptable to buy what you like and then throw it away, so long

¹⁸ The Municipal Sector Plan was published in March 2011 and is the first of a series of plans underpinning *Towards Zero Waste*.

¹⁹ The waste hierarchy provides guidance on environmental impact but there are exceptions. Notably, the best means of dealing with waste asbestos is landfill and it is often better to incinerate wood waste. The hierarchy was revised from April 2011, notably to clarify that some waste recovery options should be prioritised above disposal.



Exhibit 1 - Relationship of the waste hierarchy to sustainability and the ecological footprint of waste



Waste prevention	to produce less waste including by improving product design and longevity, reducing packaging and less consumerism
Preparation for re-use	ensuring that where possible, articles are used again by their original user or someone else, maybe with some repairing
Recycling	re-processing waste materials to remake the same or different articles
Other recovery	for example, energy from waste facilities that meet stringent energy efficiency criteria. None currently exist in Wales
Disposal	wastes that are not re-processed and are discarded that may be treated to make disposal more acceptable or to liberate energy

as your waste is recycled. The public may not readily accept that they need to create less waste after believing that recycling was their key contribution to sustainability.

- 1.7** The Welsh Government is increasingly emphasising the importance of reusing articles that could otherwise be disposed of as waste. Although only a small part of the overall strategy, it is encouraging that preparing goods for re-use features much more prominently in *Towards Zero Waste* and the *Municipal Waste Sector Plan* than in the previous national strategy. Preparing articles for reuse by repairing or reconditioning is a more sustainable activity than recycling or composting. It makes use of them without reprocessing, with a very low contribution to the ecological footprint. However, there is, yet, insufficient focus on encouraging both public and other stakeholder participation in waste reduction and re-use initiatives.

- 1.8** We acknowledge that the waste sector plans should see progressively more action on waste reduction and re-use, and that already there is some progress with waste prevention in parallel with recycling initiatives. Local authorities that have moved to fortnightly residual waste collections, reduced the size of residual waste bins and introduced separate food waste recycling collections are likely to have also reduced the amount of waste they collect.
- 1.9** We also consider that the contribution made by social enterprises such as FRAME (see [Exhibit 2](#)) in providing re-use and other waste initiatives is understated and could be enhanced.

Exhibit 2 - Some local authorities already run small re-use schemes

Pembrokeshire County Council operates a successful partnership with FRAME, a voluntary sector organisation, for the collection and re-use and recycling of furniture and other household items that also provides employment opportunities for disadvantaged persons.

1.10 Following consultation with local authorities and other stakeholders about the Municipal Sector Plan, the Welsh Government decided not to set a target to promote sustainability by limiting residual waste. In addition, the target set by the Welsh Government for recycling and composting also includes preparing waste for re-use. We consider that by doing this, the Welsh Government is missing an opportunity to promote waste re-use operations. Several local authorities told us that the Welsh Government's strategy might be neglecting re-use and waste reduction in comparison with recycling. Some local authorities may not appreciate that changes to waste and recycling systems, such as changing to fortnightly collections of residual waste and using smaller bins, can also reduce waste. We also found in our survey that local authorities were keen to progress waste prevention measures, but were unsure how Welsh Government saw their contribution to this priority. This situation is likely to persist until Welsh Government more clearly sets out²⁰ the roles and responsibilities for all of the stakeholders that need to become involved in reducing waste.

1.11 *Towards Zero Waste* retains the strategic focus on recycling that was evident in *Wise about Waste*, with statutory recycling targets for local authorities that rely on diverting as much of the total municipal waste that is produced as possible into recycling. In comparison, waste prevention is about reducing that amount of waste that enters the municipal waste stream. Waste prevention has considerably greater benefit to the ecological footprint than even the best recycling methods. This is why waste prevention is a far more important strategic objective for the Welsh Government if it is to achieve its outcome in *One Wales: One Planet* of reducing the ecological footprint by 75 per cent within the life of a generation. *Towards Zero Waste* places greater emphasis on the need for both waste recycling and prevention than the previous national strategy. However, Welsh Government's proposed actions to deliver waste prevention remain vague, as does the contribution from each action towards achievement of the outcome sought.

1.12 At most, recycling can only deliver a small part of this very challenging reduction in the ecological footprint. Research²¹ for the Welsh Government explored two scenarios. If waste volume increases at one per cent per year, even at 70 per cent, recycling will only reduce the ecological footprint of municipal waste by at most, eight per cent. If the growth in municipal waste has ceased, as Welsh Government believe has happened, then a recycling rate of 70 per cent could reduce the ecological footprint of municipal waste by up to 23 per cent by 2024-25. Both of these outcomes fall far short of the 44 per cent reduction targeted by 2025. In order to achieve this target, local authorities also need to play their part in influencing the public to reduce the amount of waste they produce.

²⁰ Welsh Government is proposing to clarify roles and responsibilities, together with more detailed action plans for waste prevention during 2012.

²¹ *Ecological footprint Impacts of the Welsh Waste Strategy*, (Revision A) Arup, May 2009



1.13 This research highlights the importance of controlling the growth for waste produced. History shows that this is difficult, with a rising trend in waste arising per person. A reduction²² in waste arising has occurred since 2005, and this was enough to achieve the waste reduction target set in the previous national waste strategy. However, the Welsh Government cannot demonstrate the reason for this reduction. In particular, it is not clear if, or by how much, the national waste strategy may have contributed to this change. If 2005 was the point when waste prevention policies began to turn the tide on waste growth, then this is encouraging because it suggests a 'decoupling' of growth from expenditure. Decoupling of waste growth from economic activity is a key requirement if this trend is to continue, but the reduced growth observed since 2005 may be a result of many factors. Particularly since about 2008, the amount of waste produced will be influenced by the effects of the economic recession as production and consumer demand reduces. We acknowledge the difficulties that the Welsh Government has in understanding the reasons for the fluctuation in waste produced each year, but we consider that this understanding is a missing key component in designing actions to reduce waste. In addition, we consider that to extrapolate national waste strategy for the next forty years based on the past few years is at best, speculative.

1.14 The Welsh Government acknowledges²³ that after 2025, and even with recycling continuing at 70 per cent, further progress is reliant on waste prevention, sustainable production and consumption. The Welsh Government has set a target to meet this objective and to reduce

household waste by 1.2 per cent per year until 2050. However, they say that the target is an aspiration for sharing between central and local government, retail and manufacturing sectors and consumers. With household waste arising in 2009-10 greater than in 1997-98, the Welsh Government's record of progress with waste prevention suggests that this objective is very ambitious and its strategy remains relatively undeveloped in this area. In addition, recent research²⁴ for the Department for Environment, Food and Rural Affairs concludes that by 2013 the amount of household waste arising in England will begin to grow again, and that within a couple of years the rate of growth in household waste arising would increase to over one per cent, and be around 1.25 per cent in 2020.

1.15 In [Appendix 2](#), we show the comparatively limited impact of recycling on the ecological footprint of municipal waste. Wales needs to urgently also pursue waste reduction and reuse if it is to meet the objective set out in *One Wales: One Planet*.

1.16 The Welsh Government and many local authorities identify that there is also a substantial role for business and retailers in helping to reduce the ecological footprint, including changing packaging, to reduce and recycle more waste. The Welsh Government is tackling this challenge²⁵ but unlike the public sector, targets for the commercial sector are voluntary. This is because the commercial sector, driven by economic reasons and legislation, has made good progress so far in reducing and recycling wastes.

22 Municipal waste arising in Wales has reduced year on year since 2004-05, an overall reduction of 15.9 per cent.

23 *Municipal Sector Plan*, The Welsh Government, March 2011.

24 Household waste projection (ARIMA) Autoregressive Integrated Moving Average model. *The Economics of Waste and Waste Policy*. Waste Economics Team, Defra, June 2011.

25 The Welsh Government is developing sector plans for the commercial and industrial sector, service and retail sector for collection and disposal and for public sector procurement.

Many local authorities are encountering a number of difficulties in implementing the Welsh Government's strategy

Many local authorities are struggling with the complexity and ambitious nature of the Welsh Government's plans

- 1.17** *Towards Zero Waste* sets out an ambitious and principled strategic approach to achieving more sustainable waste management. We surveyed local authorities on public participation in recycling and found that almost all say they are either committed in full or partly committed to delivering the outcomes they think that the strategy is seeking. The results of this survey are summarised in [Appendix 3](#).
- 1.18** Local authorities need to understand *Towards Zero Waste* if they are to persuade the public to participate in their schemes and behave more sustainably. We found that some local authorities do not fully understand why the Welsh Government believes so strongly that sustainability needs to become the main driver of change. The Welsh Government has invested considerably in communicating the rationale for their proposed changes to waste strategy, but quite a few local authorities remain unreceptive to making changes where they do not fully understand or agree with the reasons given. Local authorities are also not used to such a long planning horizon for waste management.
- 1.19** The Welsh Government's preference for more sustainable ways of managing waste such as kerbside sorted collection of recyclables, demonstrates commitment to its statutory duty to promote sustainability. However, the Welsh Government's commendable aims for sustainability face a reality check because they rely upon local authorities and the public to deliver change. Local authorities do not share the same duty²⁶ for sustainability and are confused by different interpretations of sustainability, but must deliver services in a way that takes account of local choice. In addition the vital link between sustainable waste management and environmental impact is weakened because a significant sector of the public remain sceptical about climate change, or feel powerless to begin tackling such a worldwide issue.
- 1.20** The Welsh Government is facing a considerable challenge to lead local authorities towards greater sustainability. *Towards Zero Waste* sets out the Welsh Government's interpretation of sustainable waste management and aims to inform stakeholders and the public so that there is a better understanding of environmental issues and willingness to behave more sustainably.
- 1.21** In translating national waste strategy into operational plans, some local authorities have an interpretation that is too narrow and seems not to take full account of the sustainability objectives underpinning the national strategy. Welsh Government and European Union Directive targets, and the threat of financial penalties, has meant that some have tried to meet their landfill allowance and recycling targets by any means²⁷ without being specifically concerned with sustainability²⁸.

²⁶ Welsh Government has indicated that a The Sustainable Development (Wales) Bill, due after 2012, will provide for the establishment of an independent body to embed sustainable development as the central organising principle in all actions across Government and all public bodies in Wales.

²⁷ Some local authorities have collected leaves from highways, grass cuttings or have even dredged waterways to gain additional materials to increase their recycling rate. These materials would not normally be collected or be considered in sustainable waste management plans.

²⁸ United Kingdom translated the European Union waste targets into legislation in 2002. This was before the Welsh Government had clarified its sustainability duty in the policy document 'Starting to Live Differently' in 2004.



Some local authorities appear not to see waste management as a part of a bigger picture for sustainability and the outcome sought in *One Wales: One Planet* or that the national strategy relies on different strands of waste services complementing each other. We consider that this complex interrelationship is a reason why the subjective review of a part of overall service delivery can lead the Welsh Government and local authorities to draw different conclusions.

- 1.22** Setting the right outcome measures is essential if the Welsh Government expects local authorities to optimise sustainability in their activities and to persuade the public to participate in recycling schemes. However, after announcing the choice of the ecological footprint as the 'primary indicator' in *Towards Zero Waste*, the Welsh Government did not offer a means of measuring this footprint. The use of the ecological footprint also provides an incomplete measure of sustainability because it does not address the impact on biodiversity or assess social impact. In addition, quite a large reduction in the production of certain wastes only slightly reduces the ecological footprint.

Welsh Government has made a considerable effort to communicate the messages but some local authorities remain confused and disengaged

- 1.23** Since 2007, Welsh Government has made a considerable effort to communicate with, and to involve, local authorities and the other stakeholders needed to deliver the national waste strategy. We acknowledge that the absence of compelling evidence in several key areas during the development of strategy has adversely affected the acceptance by some local authorities of the changes proposed. Welsh Government achieved

some clarification of the current position in publishing *Towards Zero Waste* in June 2010 and the Municipal Sector Plan in March 2011. However, the emergence of different but often inconclusive information continues to both reinforce, but also undermine, the evidence for the strategy. We consider that it has become almost impossible to make an objective assessment of the relevant facts. We found the responses from local authorities to the changes proposed by the Welsh Government ranged from acceptance and compliance with varying degrees of understanding, through a desire to comply but with some challenge, to disengagement, outright protest and rejection.

- 1.24** The Welsh Government acknowledges that some of their communications with certain local authorities were ineffective. There are several examples where communications between the Welsh Government and some local authorities have led to considerable frustration for all involved. In particular, some local authorities believe that the Welsh Government has given them either insufficient or confusing guidance about waste collection and treatment processes. They have particular concerns about the style, timeliness and clarity of communications from the Welsh Government.
- 1.25** The Welsh Government believes that given the rapid development of waste technologies and sustainability assessment methods, it provided the best advice possible. We consider that this is likely, but also recognise that local authorities needed to make progress to meet waste targets. The Welsh Government has supported waste activities such as co-mingled recycling collection systems and in-vessel composting²⁹, but not waste incineration. However, plans to deliver *Towards Zero Waste* show that the Welsh Government has changed priorities and

²⁹ See glossary in Appendix 4 for explanation of this term.

now considers that the kerbside sort of dry recyclables delivers the best sustainable outcomes, and that anaerobic digestion delivers better greenhouse gas reductions than in-vessel composting. For residual waste, the Welsh Government now favours energy from waste plants. Further to this change in its preferred approach, the Welsh Government is prepared to exercise tighter funding controls for initiatives that do not follow national policy. We discuss the consequences of these changes in the next part of the report.

1.26 The Welsh Government acknowledges that the style of its recent communications³⁰ with local authorities on waste strategy was more prescriptive. It says that this approach was necessary because there is an urgent need to make better progress with sustainability and achieve greater value for money in an era with less funding. It holds that some local authorities seem unable or unwilling to understand the principles of sustainable waste management. However, we found that the reluctance of local authorities was more likely to be because of disagreement with the Welsh Government's assertions about value for money or sustainability, or that their recycling systems were working well and did not need to be changed. We also identified a reluctance to receive central direction for locally delivered services.

1.27 Poor communication about the need for change and how this can be managed has contributed to entrenched views and an unhealthy standoff between the Welsh Government and some local authorities. The Welsh Government acknowledges this position and expresses the desire to improve relationships for the benefit of future partnership working. Local authorities will also need to approach the partnership with

a keener desire to understand and to work together. Without establishing trust and a pragmatic approach on both sides, there is little prospect of resolution. The longer this situation persists the greater the risk that the public will question the leadership of these important changes. Bad press coverage can easily discredit even good ideas, leading to reduced public confidence and participation in recycling schemes. If the Welsh Government and local authorities allow this to occur, it will be very difficult to retrieve the position.

The Welsh Government has not convinced all local authorities that its plans for collection of recyclable wastes are appropriate

There is still some doubt about the effectiveness of the various recyclable waste collection methods

1.28 Translation of *Towards Zero Waste* into local authority plans is proving difficult because some authorities do not agree, in particular, with one of the Welsh Government's key policy proposals. The Welsh Government has a strong preference for the kerbside sorting method of collecting recyclable wastes. (See **Exhibit 3** for a description of collection methods.) This preference is based on the Welsh Government's view that greater sustainability offered by kerbside sorting will also deliver a reduced ecological footprint, lower cost and is capable of matching other forms of collection in terms of acceptance and participation.

1.29 The Welsh Government has also concluded that other ways of collecting recyclable wastes will not deliver recyclable products of sufficient quality and that the potential resource value of recyclable waste will not be achieved. They also believe that costs will be higher for other methods of collection, because of the need for an additional process stage to separate the wastes. Some local authorities challenge

³⁰ Ministerial foreword to the Municipal Sector Plan Part 1 (draft) issued for consultation in June 2010. This document was published in March 2011 with a revised foreword.



Exhibit 3 - Summary of kerbside collection systems

Method of collection	Description	Main advantages and disadvantages
Co-mingled	<p>In its simplest 'single-stream' form, this involves the householder segregating dry recyclable materials (such as cans, glass, plastic, paper) into a single container for collection in a waste vehicle that has only a single compartment for all types of dry recyclable wastes.</p> <p>A materials recovery facility sorts these dry recyclable wastes ready to be taken to a waste re processing operation.</p> <p>Even in 'single stream' co-mingling, food and garden waste is segregated by residents and collected separately.</p>	<ul style="list-style-type: none"> • Quick and easy to collect. • Simple for residents to use. • Easy storage before collection. • Suits many types of accommodation. • Can use existing vehicles. • Lower 'street scene' impact. • Can mean lower quality recyclable wastes. • Relies on the availability of a materials recovery facility.
Two stream co-mingled	<p>Residents are provided with two recycling containers and are asked to place different materials in each container, typically paper/card (fibre) in one and plastics, glass and cans (containers) in the other. These materials are kept separate but collected on one vehicle, which has two chambers.</p>	<ul style="list-style-type: none"> • Improved material quality and value (paper and card separate from other materials, particularly glass). • Vehicles may be more expensive. • Residents need to segregate some wastes. • Relies on the availability of waste transfer and materials recovery facilities.
Kerbside sort	<p>Usually involves the sorting of materials by residents into a number of containers but always involves collection into several different compartments of a specialist collection vehicle.</p>	<ul style="list-style-type: none"> • High quality recyclable wastes. • No materials recovery facility required. • Promotes good environmental behaviour. • Can rely more on residents. • Low productivity collection rounds (with associated costs?). • Traffic disruption. • Specialised vehicles. • 'Street scene' impacts. • Difficult for some types of accommodation.

Source: Wales Audit Office literature review of relevant research, in particular the Waste and Resources Action Programme, 'Choosing the right recycling collection system' June 2009.

this evidence from the Welsh Government. We have found that the picture remains insufficiently clear to be able to make firm conclusions.



Collection operatives for Newport Wastesavers hand sort recyclable wastes into separate compartments in a kerbside sort collection vehicle.

Photograph by: Newport City Council

1.30 The debate about the relative merits of the different ways of collecting recyclable wastes has many facets. Central to this debate is whether the apparent ease of use of co-mingled collection systems outweighs what some believe are higher cost and lower sustainability that results from the quality of the waste collected and the requirement to sort it mechanically at a materials recovery facility. Of the 22 local authorities in Wales, nine used a co-mingled method for collecting recyclable wastes at the kerbside during 2009-10. Of these, five³¹ used the less complicated 'single-stream' co-mingled collection method.

1.31 Local authorities recognise that changing the specification of a recycling contract usually provides an opportunity for a step-change in recycling rate, regardless of the type of collection system used. There are several prominent examples of co-mingled collections contributing to a local authorities' excellent recycling rate. Denbighshire County Council, the local authority with the highest recycling rate in Wales in 2010-11 at 55.1 per cent, uses a 'co-mingled' method of collecting and sorting recyclable wastes³². The recent success of some local authorities in encouraging residents to participate in a simple and easy-to-use co-mingled collection system for recyclable wastes is influencing others to follow. **Case Study 1** shows the rapid success of a recently introduced co-mingled collection scheme at Caerphilly County Borough Council.

1.32 The Welsh Government gives examples of success with kerbside-sorted recycling methods that they contend have similar or slightly lower cost, are as attractive to users and could be more sustainable when compared to co-mingled systems. **Case Study 2** shows a private sector provider of kerbside-sorted recycling that has operated with success in Somerset, and was recently appointed by Bridgend County Borough Council to provide recycling and waste services. Increasingly, the Welsh Government uses the recycling system as provided by this company as an example of the direction local authorities in Wales should follow.

31 Data source was Welsh Government and reflects the position on 14 January 2011. Subsequent changes are possible. During 2009-10 dry recyclable wastes were co-mingled in a single receptacle in Ceredigion County Council, Caerphilly County Borough Council, Denbighshire County Council, Cardiff Council and Merthyr Tydfil County Borough Council.

32 In 2010-11, three of the top four local authorities with the highest re-use, recycling and composting rates operated co-mingled collection systems.



Case Study 1 - Caerphilly County Borough Council changes to collection systems to increase public participation and the amount of waste recycled

In 2007-08, Caerphilly County Borough Council had one of the lowest recycling rates in Wales at just 26.9 per cent. The local authority changed collection from a weekly kerbside sorted to a weekly co-mingled system. In 2009-10, the local authority had the fourth highest recycling performance in Wales at 44 per cent, well above the Welsh Government target of 40 per cent and the all-Wales recycling rate of 39.3 per cent. In 2010-11, the local authority's performance further improved to 51 per cent. Public satisfaction with recycling services also increased to 94.2 per cent, its highest level.

Case Study 2 - The proportion of waste recycled increased significantly, when Bridgend County Borough Council changed waste contractor³³

With only 31 per cent of waste recycled, Bridgend County Borough Council had one of the worst recycling rates in Wales in 2009-10 and failed to meet the Welsh Government's target to recycle 40 per cent of municipal wastes. The Council's contractors operated a kerbside sorted collection system for recycling, but as it only included paper, glass and textiles, with food waste collected from around 11,000 properties, performance was poor.

In April 2010, the Council awarded a new waste management and recycling contract to a private sector company. The company also operates a kerbside sort collection system but this now includes enhanced weekly recycling collecting paper, cans, glass, textiles and plastics, a kitchen waste service and a fortnightly residual waste collection service. During 2010-11, 46.1 per cent of municipal waste was recycled giving Bridgend County Borough Council the seventh highest recycling rate in Wales.



Many local authorities operating co-mingled or twin-stream collections for recyclable wastes use refuse freighter with a split hopper because they provide the flexibility needed for different types of recyclables, for different rounds and offer efficiency and large capacity.

Photograph by: Andy Phillips (Wales Audit Office)

1.33 The Welsh Government believes that the rapid success of recently introduced co-mingled collection schemes may be due to significant improvements in service provision rather than because of the type of collection system. However, the success of Bridgend suggests this effect might not be limited to the introduction of co-mingled collection systems.

1.34 Several local authorities operating co-mingled collection systems for recycling remain very reluctant to change to kerbside sorting. They do not believe there is compelling evidence that kerbside sorting will improve performance against recycling targets, or that this method of collection will cost less and will be preferred by residents. On the contrary, several local authorities have recently changed to co-mingled collections because other local authorities that have

³³ Improved regulation of waste accepted at civic amenity facilities has also helped Bridgend County Borough Council to reduce the amount of municipal waste requiring disposal.

changed have seen a significant increase in recycling rates, and residents have told them that simple-to-use co-mingled recycling is what they want.

1.35 The Welsh Government is still trying to provide conclusive evidence about the relative merits of different ways of collecting recyclable wastes³⁴. Although some research appears to favour increasingly kerbside sorting, this evidence has yet to convince several local authorities providing successful co-mingled collection systems that they should change to kerbside sorting. In addition, some local authorities consider that research modelling, rather than operational trials, does not provide convincing evidence.

1.36 In 2009, the Waste and Resources Action Programme³⁵, voiced its support for kerbside-sorted collection systems for recyclable wastes, although its view is that ultimately the choice should depend on local circumstances (Exhibit 4)³⁶.

Exhibit 4 - The Waste and Resources Action Programme has a preference for kerbside-sorted recyclable waste collection systems

The Waste and Resources Action Programme considered recyclable waste collection systems in terms of material quality, net cost, acceptability to residents and health and safety issues, and found:

'There is no simple answer, and certainly no one-size-fits-all solution. Local authorities have to make choices that are right for their local circumstances...the choice of collection system should be based on: quality of the materials, cost efficiency, cost effectiveness and public acceptability.'

However, the Waste and Resources Action Programme concludes that *'kerbside sort collections should be preferred where they are practical and should be in the majority of local authority areas'*.

1.37 The Waste and Resources Action Programme believes that kerbside-sort systems have the potential to give the most reliable stream of quality materials and can have a lower net cost than other collection systems. The Waste and Resources Action Programme also believes that local authorities using a kerbside-sort system can collect similar quantities of waste as co-mingled systems.

1.38 The Waste and Resources Action Programme suggests that it is not so much the collection method but the size of bins and the frequency of collections that is the main influence on the amount of waste that the public put out for recycling. This may outweigh any difference in the recycling rates attributable to collection methods. It also highlights that by measuring recycling by quantity the focus for local authorities has been to collect as much recyclable waste as they can, and with less regard to quality. The Waste and Resources Action Programme also found that 87 per cent of householders they surveyed³⁷ who were already sorting their recyclable wastes into different containers ready for the local authority to collect said that they did not mind doing this. If true and the residents in this research had experienced both kerbside sort and co-mingled systems, then it appears that the public are prepared to do more than some local authorities believe.

1.39 The Welsh Government recently commissioned a report³⁸ on the relative sustainability of co-mingled and kerbside-sorted collection methods. The report found that kerbside sorting currently offers marginally better financial and environmental benefits than other collection methods, but as recycling increases, these advantages should

³⁴ Welsh Government has advised Wales Audit Office that it has asked Eunomia to remodel its recent analysis to reflect recent commercial market changes.

³⁵ The Waste and Resources Action Programme is a not for profit company backed by public funding, including from the Welsh Government that has a vision of a world without waste, where resources are used sustainably.

³⁶ *Choosing the right recycling collection system*: Paper published by the Waste and Resources Action Programme, June 2009.

³⁷ From a survey undertaken by the Waste and Resources Action Programme. *Choosing the right collection system*, June 2009.

³⁸ *Kerbside collection options: Wales: Report for the Waste and Resources Action Programme and the Welsh Government*. Eunomia Research and Consulting, Resource Futures and HCW Consultants, January 2011.



further increase. At first sight, this report provides a strong endorsement for kerbside sorting, particularly in the future. However, the report contains several significant caveats including caution about the robustness of the assumptions used in modelling for this research. In particular, the consultants were concerned that there was only limited and anecdotal data from waste re-processors and limited information about the fate of materials collected, for comparing cost and on the environmental benefits of recycling. Undeniably, the report sheds greater light on the complex issues associated with collection system choice but the authors state that it 'cannot prove that one collection system is universally better than another'. The authors also say that the report is not likely to resolve a debate so long-standing and often polarised as that between supporters of co-mingled and kerbside sort collections.

1.40 There are extreme examples of both collection methods. Some co-mingled collection systems operate with methods and facilities that are outdated, increasing the likelihood that recyclable materials could become contaminated, which could reduce their resource value. There are also examples of modern kerbside-sort collection systems where residents enthusiastically segregate their wastes. An extreme example we found is in operation in Kamikatsu, Japan where residents are pursuing 'zero waste' by composting food waste and segregating their remaining household waste into 34 different categories. In the United Kingdom, Newcastle-under-Lyme Borough Council asks residents to segregate their household wastes into nine separate collection containers for collection (see [Case Study 3](#)).

1.41 Results indicate the scheme is working beyond expectation and with many residents supportive and willing participants. The Council's success is likely to be due to a complex mix of factors such as partnership working with the Waste and Resources Action Programme to promote awareness and education, and not solely the number of containers provided. However, press reports such as the one in [Case Study 3](#) show that some residents think Newcastle-under-Lyme Borough Council's approach to recycling is over-burdensome and does not adequately consider their convenience or the impact on the street scene. In reality, there will always be residents that resist change, but bad press can distort the perceived balance with residents that embrace change. It is clear from the increased recycling rates and customer satisfaction that the majority of residents have supported the new service.

Case Study 3 - Newcastle-under-Lyme Borough Council kerbside recycling

A Newcastle-under-Lyme resident interviewed by the BBC said: *'I'm all for recycling, I think it's a really good idea. I think the Council here has just gone a step too far really. It can be a bit of a nightmare because everything you use you think 'does this need to be recycled?' And if it does then it needs to be washed and then put in the correct bag and it's beyond a joke.'*

A separate article appeared on 24 April 2010 in the Mail Online, headed: *'The nine bin nightmare: Families forced to follow the green zealots' new recycling diktats.'*

The Council hoped that the scheme would boost recycling rates to 50 per cent by 2015. It found that by offering this collection system and using existing enforcement provisions, the recycling rate doubled to 55 per cent after just two months.

1.42 **Case Study 3** demonstrates that issues from even a minority of residents who believe that their acceptability threshold is breached, when fuelled by popular media, could have a negative effect on public participation. However, proactive awareness campaigns and the use of effective education can help to reverse this.

The Welsh Government and some local authorities have conflicting views about the performance of materials recovery facilities used to separate wastes collected in a co-mingled form

- 1.43** Contamination resulting from poor separation of recyclable waste significantly reduces its value as a resource for re-processing. It limits the scope for ‘closed-loop recycling’ making the process far less sustainable. There is little doubt that until recently, the operation of materials recovery facilities offered only limited capacity to separate co-mingled wastes effectively.
- 1.44** Operators of materials recovery facilities, waste processors and re-processors are, however, increasingly equipped with modern technology to separate further the wastes they receive from local authorities. **Case Study 4** shows that some waste re-processors may now be able to achieve successful closed-loop recycling from waste stock with levels of contamination that were previously prohibitive. The Welsh Government has also recently provided £1.7 million of grant assistance to develop this technology at Shotton³⁹.

Case Study 4 - Modern materials recovery facilities may now be able to supply recycled waste products of a quality that meets the requirements of waste re-processors and can support closed-loop recycling

Technological developments mean that some modern materials recovery facilities have improved their processes to increase recyclable material extraction rates and thereby reduced contamination to lower levels than was previously possible, generally below two per cent.

Modern materials recovery facilities operate as manufacturing businesses and must supply materials to waste re-processors at the required quality. Materials recovery facilities receiving contaminated recyclable wastes from local authorities operating a co-mingled collection will draw attention to the need to improve the quality. Contamination for paper and glass processors is more serious than for steel, aluminium or plastic processors that can achieve a good level of quality from most modern materials recovery facilities. Glass recycling is most seriously affected by the presence of fibres from paper or textiles. Modern materials recovery facilities can separate different types of glass but the best means of managing paper is to collect it separately. If this is achieved, many modern materials recovery facilities are capable of supplying materials to waste re-processors for closed-loop recycling.

Adjusting the speed of the process can also improve the quality of the material from a materials recovery facility. Actions taken to increase quality by mechanical means are likely to slow the process and increase processing costs. Operators of materials recovery facilities seek a balance that meets the quality needed for re-processing, but at a cost that is commercially viable.

Materials recovery facilities produce materials to a set quality standard and cost. There is no business benefit for the facility to increase the quality of the output as long as it meets the minimum standard required by the re-processor.

³⁹ The materials recovery facility operated by UPM Shotton began operating in early 2011. UPM say that the facility will sort dry recyclables, such as plastic bottles, cardboard, newspapers, magazines and metals for closed loop recycling, and enable the mill to source high-quality paper from co-mingled sources. Investment has been supported by the Welsh Government, with a £1.7 million Single Investment Fund grant.



The choice of collection system for recyclable wastes can have an impact on the streetscene and acceptability for residents. Here, bagged plastic wastes awaiting collection blow across a residential street. Images like this can deter the public from recycling.

Photograph by: Andy Phillips (Wales Audit Office)

1.45 Those who do not support the use of materials recovery facilities say that the waste rejection rates are unacceptably high due to contamination arising during collection and poor separation at these facilities. However, these concerns are likely to be based on the outdated materials recovery facilities currently used by some local authorities, rather than plants with more modern capability that are becoming available to Welsh local authorities. The Welsh Government is also concerned that waste is rejected during processing after it has left the materials recovery facility. It claims that this waste is 'hidden' because local authority recycling targets are calculated before this stage. Some loss of resource quality is also

inevitable in processing as certain wastes degrade. An example is paper recycling, where re-processing shortens paper fibres after about six cycles and disposal is inevitable. Householders may also put out wastes that cannot be accepted in kerbside sort systems, and this is manually separated by collection operatives and is left uncollected at the kerbside for residents to dispose as residual waste.

1.46 However, if the best re-processors do not reject unacceptably high levels of waste due to contamination, there would have to be other arguments against co-mingled waste taken to these modern facilities. Recent research for the Welsh Government (see [Exhibit 5](#) below) also shows that after taking into account any differences in the amount of waste rejected after collection, different collection systems yield similar amounts of waste for recycling.

Exhibit 5 - Recent research for the Welsh Government on the amount of recyclables from different collection systems

Recent research for the Welsh Government compared the amount of recyclables gained from co-mingled, twin-stream and kerbside sort collection systems. It found only a small difference in the amount of waste that could be recycled by the different collection systems:

'Our analysis suggests that co-mingled and two-stream collection systems could be expected to achieve higher yields of collected dry recyclables, relative to kerbside sorting. However, when material rejected at the materials recovery facility, by secondary processors and by reprocessors is taken into account, differences in the tonnage actually recycled between the systems appear to be marginal.'

Source: *Kerbside collection options: Wales, report for the Waste and Resources Action Programme and the Welsh Government, January 2011. Eunomia Research and Consulting website 21 February 2011.*

1.47 Commercial markets quickly adapt to customer requirements and have a strong influence on the cost of recycling. With more modern materials recovery facilities already built by the private sector, capacity to sort wastes has increased significantly and the market for recyclable waste from local authorities is very competitive. This means that local authorities typically paying £30 per tonne or more to a materials recovery facility operator are now able to negotiate far lower costs. Many local authorities now receive income, perhaps around £30 per tonne, from their materials recovery facility contractor. The effect of market forces is already significantly reducing costs for those local authorities⁴⁰ able to gain the true value of their waste resources. For Denbighshire County Council, this change in the commercial market means annual savings of over £0.5 million for the local authority. However, the ability of local authorities to do this can depend on contractual ties. Raising the value of waste as a resource is fundamental to the success of *Towards Zero Waste* but is not yet a part of comparison made by the Welsh Government of the cost of co-mingling with other types of collection.

1.48 The national and international markets for recycled resources have fluctuated considerably over the past few years in response to resource demand and processing capacity. Accelerating resource efficiency by creating stable and efficient markets for recycled materials and recyclable resources is the mission of the Waste and Resources Action Programme, but markets remain fragile. Undeniably, resource demand influences the income that local authorities can receive for the recyclable wastes that they collect, regardless of collection method used.



The waste industry says that modern materials recovery facilities can provide high quality recyclable resources. The photograph is of the materials recovery facility operated by Biffa Waste Services at Trafford Park, Manchester that processes plastics, aluminium, steel, paper and card.

Photograph by: Biffa Waste Services

1.49 The Welsh Government highlights that many contracts recently let in England involve kerbside sorted recycling methods. However, with such a changing market, choices made perhaps several years ago by English local authorities may not provide a good indication of how Welsh local authorities should now change. Evidence from a comparison with England reveals a conclusive picture about the collection methods used by the best local authorities for recycling. Of the 10 local authorities with the highest recycling rate for 2010-11, including six already above 60 per cent, only one local authority used a kerbside sorted collection system⁴¹. Seven of the top 10 local authorities used a co-mingled collection and two used a twin stream collection, with both methods involving mechanical sorting of waste at a materials recovery facility.

⁴⁰ *Comparing the cost of alternative waste treatment options - Review of gate fees.* Waste Resources and Action Programme, July 2011.

⁴¹ Defra figures, November 2011. The highest recycling rate for 2010-11, at 65.79 per cent, was achieved by Rochford District Council. The highest performing local authority using a kerbside sort collection system was Cotswold District Council, in fifth place at 60.41 per cent, although about half of the recycling rate was achieved by collecting garden wastes.



1.50 There is also concern that waste re-processors export rejected waste materials to third world countries where labour is cheaper. Research for the Welsh Government indicated that for most of these recycling plants 'maintaining a consistent and accurate picture of input material and product stream quality is not essential to their businesses'⁴². This suggests that the quality of recyclable materials received by these organisations is not a barrier to their objectives for recycling. Exporting waste for landfill is clearly very undesirable and there are legal and moral arguments against doing this. However, to export for recycling in other countries can make environmental as well as business sense. Exporting recyclable wastes for re-processing will increase the carbon footprint when compared to similar methods of processing in the United Kingdom, but for many waste types, the increase can still be less than landfill and use of new resources. Research⁴³ by the Waste and Resources Action Programme demonstrates that exporting recovered material for re-processing can be environmentally sustainable although the research acknowledges that it is still preferable to treat waste without export.

1.51 The need to export waste is likely to be an indication of underdeveloped waste treatment infrastructure and continuing uncertainty about the value of waste resources in the United Kingdom. Recent capital investment by the private sector may help to reverse this position.

1.52 The complexity of the audit trail and regulation of the international movement of recyclable material currently obscure the evidence about rejection rates at re-processors and the export of this waste. Illustrations of rejection rates

provided by the Welsh Government are based on the treatment facilities currently in use by Welsh local authorities, rather than projections from the commercial sector of the capability of modern facilities only just coming on-stream.

1.53 Some members of the public are convinced that recycling is pointless because they think it 'gets put in landfill sites anyway'. Incorrect perceptions exist and could tarnish further the image of waste management in the UK. These misconceptions can attract negative media and provide easy pickings for those looking to discredit sustainable waste management. Bad press like this could stall the momentum of public participation.

The national plans strongly favour kerbside-sorted collection methods but the call for consistency is late and will be disruptive

1.54 Most local authorities have contractual obligations and facilities, plant or vehicles on lease agreements, and changing to a more consistent method of collecting recyclable and residual waste across Wales comes at a time when funding is likely to become a significant barrier. In particular, the transition could be difficult and expensive. There is also a risk that it ignores the views of residents and could confuse and alienate members of the public who are currently prepared to participate.

1.55 The Welsh Government says that consistent service delivery promises to give residents a more equal opportunity to reuse, recycle and compost their wastes and has already proposed⁴⁴ a standardised recycling model that it says will deliver the greatest sustainability. The Welsh Government says that changes will be phased, in recognition of operational difficulties.

⁴² *Kerbside Collections Options: Wales Eunomia Research & Consulting, Resource Futures and HCW Consultants for the Waste and Resources Action Programme and the Welsh Government, January 2011.*

⁴³ *CO₂ impacts of transporting the UK's recovered paper and plastic bottles to China, Waste and Resources Action Programme, August 2008.*

⁴⁴ *Municipal Waste Sector Plan (Part 1) consultation, Welsh Government, March 2011.*

- 1.56** We consider that, in general, consistency is a sound principle, but the Welsh Government should have taken firmer leadership some years ago when they funded local authorities to expand their recycling services. After the Welsh Government published *Wise about Waste*, it set up several trials with local authorities, which should have helped to clarify the way forward. There is little evidence that these trials identified good practice or prompted the Welsh Government to seek consistency in local authority recycling services.
- 1.57** The Welsh Government can use funding constraints to discourage local authorities from continuing to operate methods of recycling that are inconsistent with *Towards Zero Waste*. The Wales Audit Office has already recommended⁴⁵ using grant aid to support and promote sustainable development. The Welsh Government also has enhanced its regulatory powers⁴⁶ to enforce changes for recycling and other aspects of waste management.
- 1.58** Withdrawal of Welsh Government funding for collection methods that it believes are insufficiently sustainable or not cost effective could force many local authorities with co-mingled and twin-stream collection systems to change. The recent additional restrictions in the use of grant funding⁴⁷ are an example of this. However, for some local authorities, this restriction was confirmation that the Welsh Government had already decided policy before the evidence comparing the relative sustainability of collection systems was available.
- 1.59** Recent consultation on the draft Municipal Sector Plan clearly indicated the concerns that many local authorities have about prescription and forcing changes to collection systems through legislative or financial instruments. While not ruling out the future use of legislative and financial instruments for this purpose, we are encouraged that the Welsh Government has recognised this concern and now wishes to progress in collaboration with local authorities. This provides an opportunity that the Welsh Government and local authorities must take to resolve their issues about recycling, to develop greater mutual trust and to place their partnership on a firmer footing in readiness for the greater challenges of the future.
- Working together and optimising collection systems can provide the Welsh Government and local authorities with improved sustainability and also help to maintain the momentum of public participation**
- 1.60** Many local authorities doubt that they can achieve the more challenging waste targets from 2016, which require recycling of more than 58 per cent of municipal waste. Many local authorities are struggling to develop medium to long-term waste implementation plans. Most recognise that public participation will become increasingly important, but few have any real plans to increase it.
- 1.61** The Welsh Government is increasingly aware of the tension that exists with some local authorities over its support for kerbside-sorted collections. After consulting local authorities, the Welsh Government has also recently recognised that it needs to explain more clearly its preferred policy on collections for recycling. In this admission,

⁴⁵ Report by the Auditor General for Wales, *Sustainable development and business decision making in the Welsh Assembly Government*, January 2010.

⁴⁶ Waste (Wales) Measure 2010.

⁴⁷ The Welsh Government recently specified that Regional Capital Access Funds 'may not be spent on capital items associated with kerbside collection approaches that are based on sorting in Materials Recycling Facilities'. In addition, the Sustainable Waste Management Grant for 2011-12 cannot be used for 'dirty materials recovery facilities, where recyclables are removed from residual mixed wastes that have not had any prior sorting'.



the Welsh Government acknowledges that it has not clearly communicated the relative sustainability of different collection systems. Sustainability, as a guiding consideration, includes environmental, social, and economic aspects leading to long-term solutions and efficiencies. Local authorities must consider environmental impact in context with the other factors that will make a collection system more sustainable, such as value for money and ease of use. It is the mix and balance of these factors that should determine the local authority's choice of collection system.

1.62 We agree that most local authorities will need to change at least in some way to improve performance and reflect emerging good practice. If evidence clearly shows that the sustainability or value offered by certain collection systems is unacceptable, then the Welsh Government should work with local authorities to explore the viability of changes in an appropriate timeframe. We suggest that the need for change in recycling services should be established only by an independent, objective and comprehensive assessment of all of the key factors. If change is needed, it must be carried out in a realistic period and through partnership between the Welsh Government and local authorities⁴⁸.

1.63 Many local authorities have already operated a system between full kerbside sort and single stream co-mingled collections. All but five local authorities have already extended the segregation of wastes. This evidence provides an opportunity to explore collections that are partly segregated at source as a short-term transitional step for local authorities that co-mingle. The Waste and Resources Action

Programme acknowledges that 'twin-stream' collections can provide many of the benefits of kerbside-sorted collections, particularly in the short term. The advantages include only a marginally greater carbon footprint than kerbside sorting⁴⁹, market prices that can be higher than co-mingled wastes because recyclable materials are cleaner and the opportunity to sell some material direct to re-processors. In addition, conversion of existing materials recovery facilities to sort mechanically partly segregated waste streams collected by existing vehicles is a relatively easy and cost-effective change.

1.64 This approach can allow local authorities where the need is shown, to begin the change to more sustainable and better value collection methods without risking an adverse impact on public participation. With funds shrinking, transitional arrangements that are sensitive to local authority constraints but preserve the momentum of recycling should be attractive. Later changes might include a phased movement towards kerbside-sorted collection systems if clear proof emerges of overall benefit⁵⁰.

1.65 We consider that as market forces react to the increasing value of recyclable waste by improving waste separation methods, the overall benefit of the different types of modern and efficient collection systems could become too close to call. This scenario seems realistic and looking to the near future, we consider that the critical issue could be optimising the effectiveness of a collection system rather than the choice of system. Several local authorities have recently piloted research⁵¹ for the Welsh Government that has concluded

⁴⁸ Emerging from the Welsh Government at the time of report drafting was an encouraging proposal for a Collaborative Change Programme. The aim is for the Welsh Government and local authorities to work together to meet waste targets and sustainability outcomes and to produce business plans with financial details of how each local authority will achieve the 70 per cent recycling target.

⁴⁹ A life cycle analysis undertaken by the Waste and Resources Action Programme found that kerbside-sorted collections had the lowest global warming potential, with both types of co-mingling having a higher impact because of the rate of rejection of contaminated wastes. However, twin-stream co-mingled systems perform only slightly less well than kerbside sorting. In addition, the cost of operating a fortnightly twin-stream collection approaches that of a kerbside-sorted system.

⁵⁰ Clear proof of overall benefit of a collection system should be determined by the assessment recommended in our Recommendation 1.

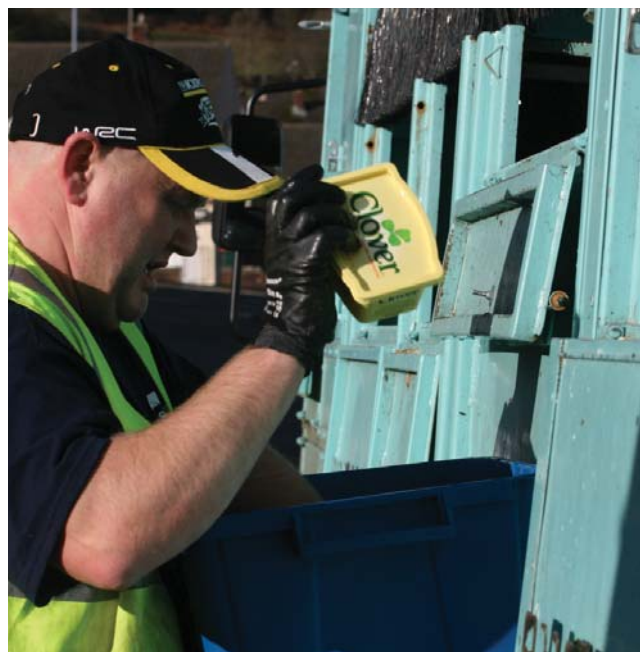
⁵¹ Joint Improvement and Efficiency Programme (JIMPE) reviews of waste services sponsored by the Welsh Government and the Welsh Local Government Association at Pembrokeshire County Council and Vale of Glamorgan County Borough Council.

in favour of co-mingling. In addition, Cardiff Council, with over 11 per cent of the municipal waste produced in Wales has chosen to continue to co-mingle. This is because their detailed assessment could not discriminate on the grounds of performance against waste targets or on sustainability, but clearly favoured co-mingling on grounds of cost and ease of use. Waste benchmarking undertaken across Wales in 2011 also indicates that both cost and waste quality can be closely comparable regardless of collection system used. Agreement for local authorities to move forward with any method of collection that meets realistic output-led performance criteria could re-engage and energise local authorities.

1.66 Faced with very similar waste management challenges in England, the Department for Environment, Food and Rural Affairs is adopting a more flexible approach than the Welsh Government. This approach highlights the need for local authorities to choose the best methods for recycling in their locality, and gives priority to recycling systems that promote easy public participation. The Department for Environment, Food and Rural Affairs acknowledges many of the same issues that exist in Wales. However, policy recognises there are different routes to achieving the outcomes sought⁵².

1.67 We are encouraged that the Welsh Government is now considering supporting local authorities that need to change their collection system through a more gradual process, over perhaps 10 years, towards their recommended service profile for the collection of waste⁵³. This is the Welsh Government's 'Collections Blueprint' that they say will deliver more efficient, sustainable waste collection services at the lowest cost possible. We do

not know if schemes designed to replicate this blueprint will achieve these aims, or if the blueprint is the best option for local authorities. However, the way that many local authorities request residents to present their wastes is already quite close to the blueprint. For local authorities that do not presently kerbside sort recyclable waste, the significant difference in the collection's blueprint approach is the use of a specialised kerbside sort vehicle and crew to sort waste at the point of collection. Local authorities that co-mingle or ask residents to segregate their wastes into more than a single stream using bags or boxes, use larger refuse freighters to take recyclables for final mechanical sorting. This affords little opportunity to reject non-compliant wastes from the collection process.



Manual sorting makes kerbside sorted collections much slower than other ways of collecting recyclable wastes. Sorting helps to ensure high quality resources because non-compliant wastes are not accepted, as these wastes are left for residents to dispose.

Photograph by: Newport City Council

⁵² *Government review of waste policy in England 2011*, Defra, June 2011.

⁵³ The Welsh Government proposed the Collaborative Change Programme in the Collections Blueprint supplement of the Municipal Sector Plan, published 10 March 2011.



1.68 Welsh Government says that Bridgend County Borough Council follows the collections blueprint but many types of waste remain ‘co-mingled’ for later mechanical sorting at a depot. **Case Study 5** shows the collection system operated with recent success at Bridgend County Borough Council. Local authorities concerned that adopting the collections blueprint will require wholesale changes to their collection rounds can find some reassurance here that residents may encounter relatively little change and will not be required to segregate all of their wastes.

1.69 We consider that the Welsh Government and local authorities should, through the Collaborative Change Programme, show more flexibility to support collection systems that will deliver the outcomes sought, but not necessarily conform exactly to the detail of the blueprint. We also consider that showing flexibility can strengthen the partnership between Welsh Government and local authorities. This is because building engagement, sharing the ownership of issues and progressing through consensus is a vital part of achieving sustainable development.

The national plans do not take sufficient account of local geographical, compositional or socio-economic differences

1.70 There is a range of local issues that complicate the translation of the national strategic vision into practical realities. **Exhibit 6** shows that as an average of annual figures between 2001-02 and 2010-11, rural local authorities have consistently maintained a combined recycling and composting rate that is approximately five per cent higher than valley local authorities, and about two per cent higher than urban local authorities⁵⁴.

Case Study 5 - Bridgend County Borough Council's kerbside sorted collection system

Bridgend County Borough Council operates a kerbside sorted collection system that asks residents to segregate recyclable wastes into four different containers:

Blue re-usable sack:

Plastic bottles including milk, drink, shampoo bottles, food containers including yoghurt pots, margarine tubs, plastic cups, non-black food trays, punnets, aerosols (empty), foil trays and containers, food tins, drink cans.

First black box:

Paper, newspaper and magazines, telephone directories (including Yellow Pages), catalogues, shredded paper, junk mail and envelopes.

Second black box:

Flattened cardboard boxes, egg boxes (cardboard), card, waxed cardboard drinks cartons (tetra packs), glass bottles and jars.

Brown food waste bin:

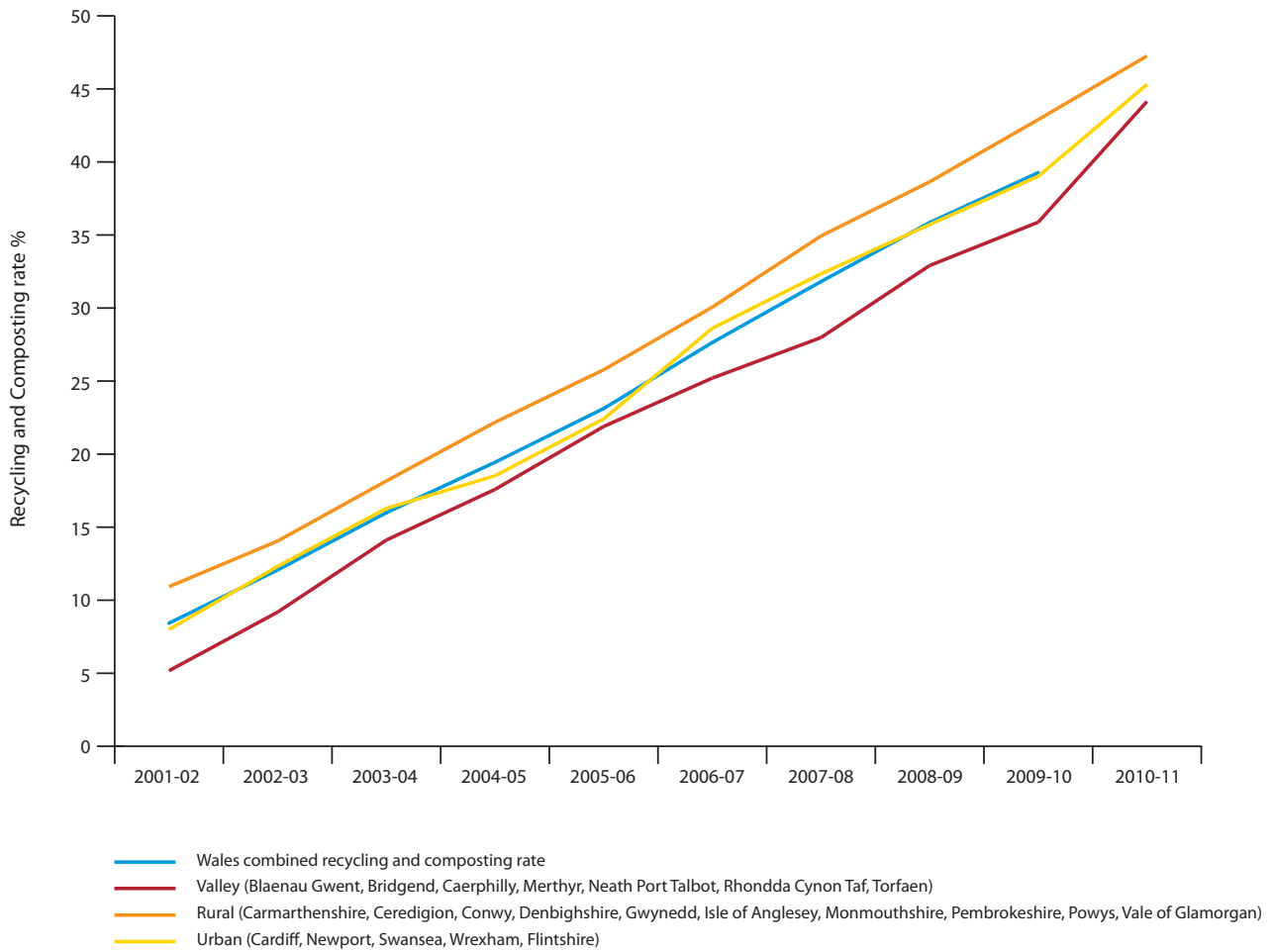
Cooked and uncooked food, meat, fish, bones.

1.71 This analysis suggests that local authorities in rural areas of Wales had a better likelihood of achieving recycling targets than either urban or valley local authorities. We can speculate that the reason may be the types and quantities of waste collected in rural areas, the consequence of social and community factors or perhaps some other factors. The Waste and Resources Action Programme has also concluded⁵⁵ that the more urban an area is, the poorer its recycling rate is likely to be. Whilst the reasons are unclear, they nonetheless point to the need for the Welsh Government to understand the differences and to take more account of local variation when forming national plans.

⁵⁴ Data for 2010-11 suggests that rural recycling rates are still higher than urban or valley rates, but for 2010-11, the difference has narrowed.

⁵⁵ 'Social Deprivation Affects Recycling Rates', Waste Resources and Action Programme article www.recycling-guide.org.uk, 8 January 2010.

Exhibit 6 - Comparison of the rate of recycling and composting in rural, valley and urban areas of Wales from 2001-02 to 2010-11



Source of data: Wastedataflow



- 1.72** The composition of waste also varies with location, and local authorities need to tailor their planning to their local circumstances. This requires reliable baseline information on the proportion and parts of municipal waste that can be recycled, a mix that can vary widely from a national analysis of composition.
- 1.73** Some local authorities believe that the challenges faced by different authorities in achieving waste targets varies considerably and the current blanket approach to waste target compliance does not recognise these inequalities. The Welsh Government recently consulted on proposed food waste recycling targets. However, after better information on the composition of waste in each county became available, the Welsh Government realised that for some local authorities, not enough food waste was present to achieve the proposed target. Consequently, the Welsh Government noted the strength of opposition from local authorities to the introduction of a food waste recycling target, and retracted their proposal.
- 1.74** In England, the recent review of waste policy⁵⁶ has determined that individual local authorities will be able to decide the amount and most suitable methods for recycling in their area. The EU waste diversion targets remain and the target in the Waste Framework Directive to recycle at least 50 per cent of household waste by 2020. However, both of these targets apply to the United Kingdom and there is some concern⁵⁷ that England will rely upon the rest of the United Kingdom to achieve these targets. The recent approach in England to targets for recycling is in contrast to the Welsh Government approach, which recently introduced statutory recycling targets and a target-led approach continues to predominate.
- 1.75** Many physical, social and economic factors can act as barriers to participation. Housing type can be a physical barrier because of lack of space to store wastes before collection and difficulties, particularly for occupants of flats or terraced housing lacking rear access, associated with moving waste bins to the point of collection. For many residents, there is little choice but to store their waste bins at the front of their house, an impact on visual amenity that affects the street scene and concerns local authorities seeking tourism. Increasing the number of waste storage receptacles and the time between collections exacerbates this problem. However, in most instances the convenience of wheeled bins is practicable and favoured by the majority of residents. In many urban areas, home composting is not practicable because of the absence of gardens.
- 1.76** Most local authorities provide residents with household waste recycling sites, but in very rural areas residents may need to travel considerable distances. These residents are also least likely to benefit from kerbside recycling. Local authorities will need to provide opportunities for all residents to recycle, and also to reuse goods and secure maximum public participation. Only a few local authorities sharing rural boundaries promote the use of their recycling facilities by residents from neighbouring counties, and there is scope here for more collaboration.
- 1.77** Deprivation is likely to be a factor that affects recycling, but research suggests that it may only be one of several contributing factors. In 2003-04, the Department of Environment, Food and Rural Affairs reviewed the impact of deprivation on recycling in England⁵⁸, but found only a weak relationship that may

⁵⁶ *Government review of waste policy in England*, Department of Environment, Food and Rural Affairs, June 2011.

⁵⁷ Friends of the Earth resource use campaigner Julian Kirby, Waste Management World web article 'Recycling targets needed in England too', 5 May 2011.

⁵⁸ *Review of targets for recycling and composting of household waste and their interaction with other targets*: Department of Environment, Food and Rural Affairs, July 2005.

apply to just a few local authorities. For the majority of local authorities there was no direct correlation between deprivation and recycling rates. However, the most deprived local authority areas were very unlikely to have a recycling rate in excess of 10 per cent whereas a few of the least deprived areas achieved a recycling rate in excess of 25 per cent. The high deprivation/low recycling group was characterised by inner-city areas with a low composting rate and recycling rates, and low funding to improve recycling. Conversely, the low deprivation/high recycling group tended to be rural local authorities that recycle and compost in excess of 20 per cent.

1.78 In more recent research⁵⁹, the Waste and Resources Action Programme found that the more deprived an area is, the lower its recycling rate is likely to be. The study found that socio-economic and geographical factors could attribute as much as 25 per cent of the differential in recycling rates between councils. This differential seemed most marked when comparing the most prosperous and most deprived areas. The Welsh Government told us that they have undertaken an analysis⁶⁰ for Wales that explored if a relationship exists between socio-demographic factors and recycling. They said that they did not observe any correlation between these factors.

1.79 In setting out the aims of *Towards Zero Waste*, the Landfill Allowance and new recycling targets, the Welsh Government makes no adjustment for socio-economic, geographical or other local demographic factors. This gives the impression that the Welsh Government is of the view that local authorities have an equal chance of achieving a level of performance that meets or exceeds the Welsh

Government's target for recycling. In reality, recycling is reliant on a complex interaction of local factors and opportunities, even some that are not directly related to waste management. For example, research⁶¹ shows that the overall opinion of residents towards their council and its services was a significant factor in the recycling rate. It is unsurprising that local authorities facing widely different challenges achieve different recycling rates, much as they do in other service areas.

1.80 It appears that there is a need for further research into social groupings and related factors like the differences in culture, acceptance and behaviour of various socio-economic groupings. Currently, housing types or the level of deprivation within an area seems to link many of these factors that influence public participation. However, this analysis may be insufficiently refined and may give spurious and misleading results.

59 'Social Deprivation Affects Recycling Rates', Waste and Resources Action Programme article www.recycling-guide.org.uk, 8 January 2010.

60 Welsh Government used an analysis that compared recycling for ACORN groups 4 and 5

61 *Capital Ambition Improving Recycling Rates in London*, RSe Consulting, February 2009. This research found a correlation between overall customer satisfaction with a council and recycling rates.



Part 2 - Local authorities are providing a wide range of recycling services but more work is needed to persuade people to use these services

2.1 This part of the report shows how local authorities have increased their rate of recycling over the past decade. Considerable funding provided by the Welsh Government has helped local authorities to establish services and infrastructure and to generate real momentum. Increasing public participation in recycling is now the key to sustaining this momentum.

Traditional ways of allowing the public to participate have served local authorities well by creating momentum for recycling

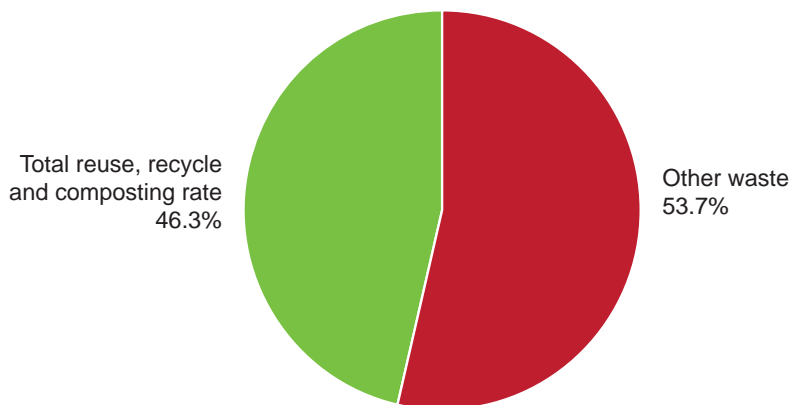
2.2 Local authorities have made good progress with municipal recycling and compost schemes. Although in 2009-10, recycling rates for Welsh local authorities varied from about 29 per cent to over 51 per cent, the overall recycling rate for Wales was 39.3 per cent. This recycling rate was just below the 40 per cent rate targeted by the Welsh Government, but is comparable with both England and Scotland. In 2010-11, the recycling rates for Welsh local authorities varied from about 35 per cent to over 55 per cent, and the overall recycling rate for Wales had increased to 43.6 per cent. We have used the example of Pembrokeshire County Council during the first six months of 2010-11 to illustrate the typical components that make up local authority recycling performance ([Exhibit 7](#)).

2.3 Since 2000-01, the Welsh Government has invested £360.3 million of specific waste grants in local authority waste services in addition to the Revenue Support Grant. This additional funding has allowed local waste services to develop but many are dependent on this funding. Waste re-use, recycling and composting have increased from just seven per cent in 2000-01 primarily because local authorities provided opportunities for waste re-use, recycling and composting, and persuaded the public of the need to recycle and participate voluntarily.

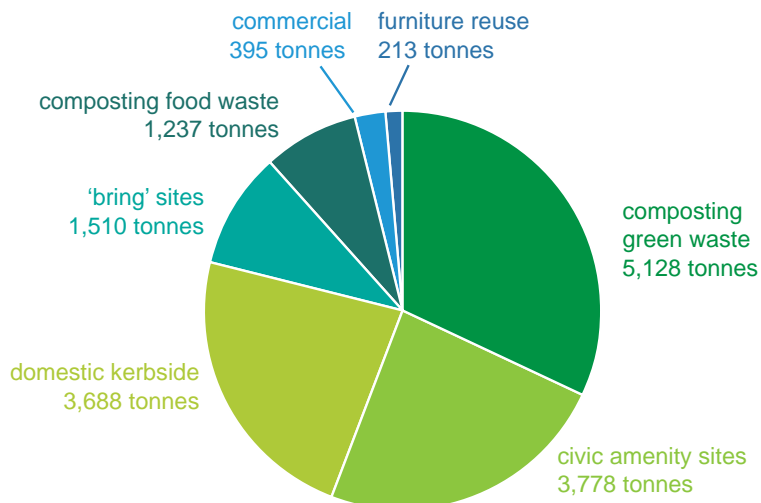
2.4 Increases in the recycling rate that each local authority has achieved are due to the developments in service delivery. Initially, recycling was not widely practiced by residents but early changes to civic amenity sites allowed recycling to start. Kerbside recycling followed the introduction of civic amenity sites and for the first time local authorities collected recyclable wastes and, for some, green garden wastes. The effect of introducing new initiatives is to increase rapidly the collection of recyclable wastes and to persuade more people to participate. As the capacity of each initiative is optimised, the rate with which performance improves begins to slow. This leads to 'steps' in the recycling rate. Each local authority achieves these steps at different times, which has made comparison of performance very difficult.

Exhibit 7 - The charts show how the recycling rate for Pembrokeshire was made up in the first six months of 2010-11

Pembrokeshire County Council reused, recycled and composted 15,920 tonnes of waste in the first six months of 2010-11. This is equivalent to 46.3 per cent of all municipal waste collected during the period.



How that 46.3% of waste that is reused, recycled and composted is made up





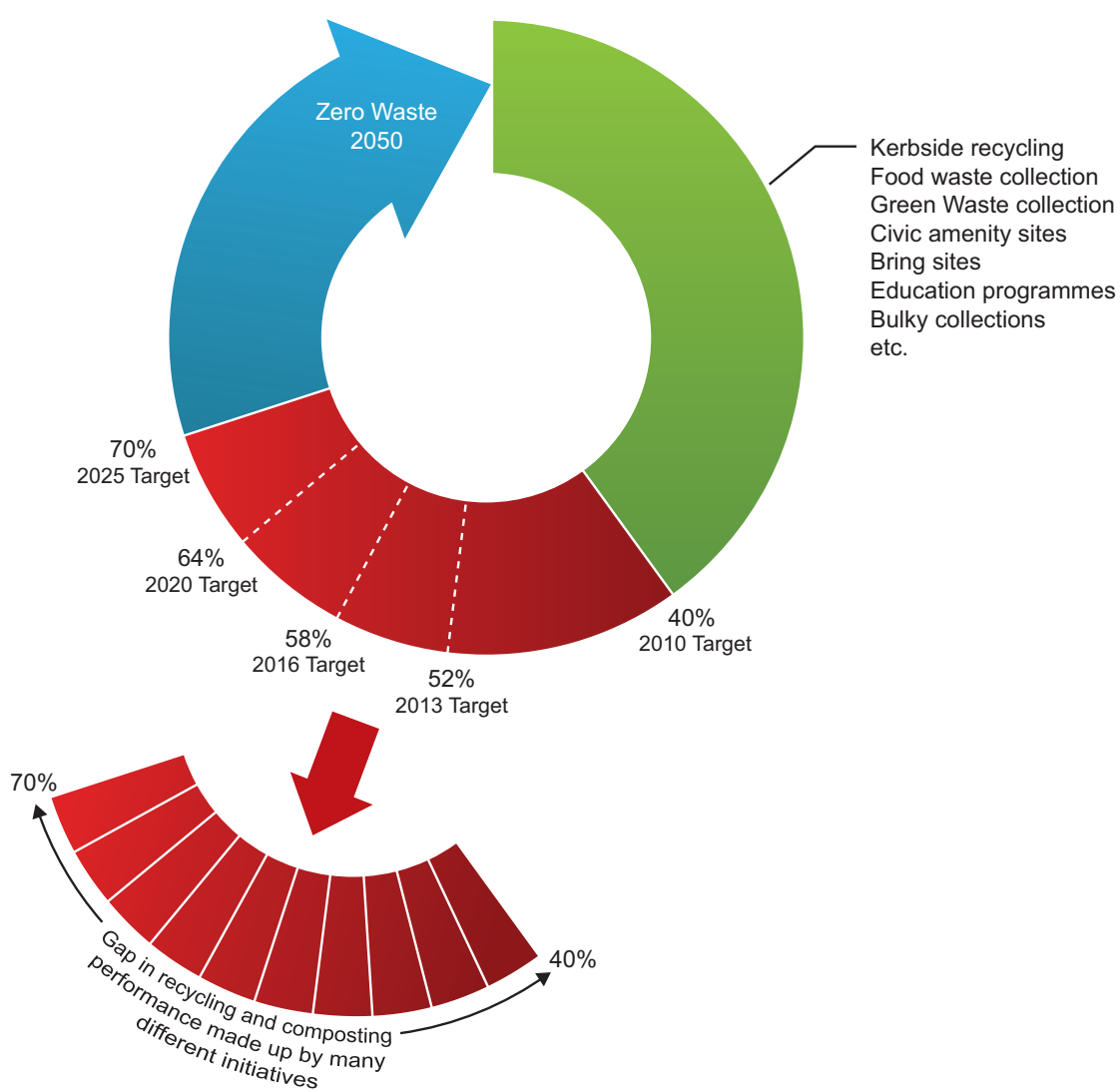
- 2.5** If local authorities are to achieve the more challenging targets in the European Union Directive and *Towards Zero Waste*, they must sustain the momentum of increasing recycling and composting, and reuse more wastes. This sustained increase will be difficult for local authorities because many have already made most of the necessary physical changes by providing recycling facilities and offering enhanced waste management services. Smaller incremental changes are still possible, but most of the more significant changes are already in place. Persuading more people to take part in recycling is therefore a priority.
- 2.6** The success of the Welsh Government's recycling aims is also dependent on the amount of recyclable waste that waste management services capture. This means that those participating must progressively recycle a larger proportion of their waste as targets get more challenging. Research for the Welsh Government⁶² calculated that to achieve 70 per cent recycling, capture rates for many types of waste would need to be in excess of 80 per cent or even more of waste arising. This very ambitious aim relies upon voluntary public participation.
- 2.7** **Exhibit 8** demonstrates the progress that local authorities have made so far and the challenges ahead. Most local authorities have already exploited much of the potential of civic amenity sites, household waste recycling centres and bring sites. Kerbside collection of recyclable waste is also established for all local authorities, with the collection of dry recyclables, food wastes, bulky wastes and, for some, green garden wastes. Local authorities now need to continue the momentum of recycling to 70 per cent, a target that the Welsh Government has set for 2024-25. Local authorities must also maintain this recycling rate as waste prevention campaigns take effect and less waste is generated making recycling more difficult. However, traditional ways of providing recycling services and promoting participation provide only limited scope to continue this momentum.
- 2.8** In **Exhibit 8**, the red segment represents the next challenge for local authorities. This is a target-driven period for waste management services, with both the Welsh Government recycling targets and the Landfill Allowance challenging local authority waste managers. **Part 3** of this report covers in more detail at how local authorities can identify and make these incremental improvements.
- 2.9** The rest of this Part of the report describes some of the traditional methods that local authorities have used to increase public participation and the impacts that these methods have had.
- Local authorities are successfully using civic amenity sites and recycling bring banks to increase public participation but there is further scope to improve their use**
- 2.10** Civic amenity sites provided the public with one of the first opportunities to recycle their waste and these sites have helped local authorities to improve recycling performance. Local authorities can increase recycling by improving civic amenity and household recycling centres with relatively low investment when compared to other options. An analysis⁶³ of 113 civic amenity sites in England indicated two main ways to increase the diversion of wastes to recycling and re-use. Improvements to site infrastructure increase the range of opportunities to recycle and reuse wastes. In addition, 'people' factors, such as efficient staff at sites, incentivised site contractors and accessibility to sites help to increase the efficiency of waste segregation.

⁶² *Future Direction for Municipal Waste Management in Wales*, Annexe 2, Eunomia, October 2007.

⁶³ *National Assessment of Civic Amenity Sites*, Network Recycling, Future West, 2004.

Exhibit 8 - Shows the journey local authorities need to make to achieve the Welsh Government's recycling targets and eventually, zero waste

The green segment represents how current recycling arrangements have delivered targets to date. The red segment represents the next challenge for local authorities during the target-driven period to achieve 70% recycling by 2025. The blue segment represents the remaining challenge to achieve 'zero waste' by 2050.





2.11 Benchmarking⁶⁴ shows that, on average, the annual provision of civic amenity and household recycling centres costs each local authority about £27 per household and that these sites take almost 16 per cent of the total amount of municipal waste arising each year. On average, these sites divert by re-use, recycling and composting about 66 per cent of the waste accepted. Where sites are efficient and have high public use and waste throughput, they remain a cost-effective means of re-use and recycling. Further improvement of civic amenity and household recycling centres must be a priority for local authorities if they are to use all means available to sustain the momentum of recycling.

2.12 Many local authorities have developed partnerships with the community and private sector to provide more opportunities for recycling. Particularly for very rural areas where kerbside collection of recyclable waste may be prohibitively expensive, community recycling through 'bring' sites can collect good quantities of segregated and uncontaminated waste for both recycling and re-use. Recycling 'bring banks' are also commonly placed in easy-to-access locations such as supermarket car parks in partnership with the private sector. The clever use of incentives and rewards for communities can help to encourage public participation as well as reducing operational costs. However, although commercially operated bring sites promote recycling, take waste that would otherwise have entered the municipal waste stream and be counted in local authority recycling targets.



Household waste recycling centres, when operated effectively, can provide a wide range of cost-effective opportunities for the public to recycle.

Photograph by: Andy Phillips (Wales Audit Office)

Organic waste services have contributed significantly to improving waste performance

2.13 For around 10 years, residents have participated by giving their organic waste to local authorities for treatment by composting. Municipal composting schemes routinely take green garden wastes from civic amenity and recycling centres, kerbside collections and from parks and municipal grounds. Careful treatment of organic wastes allows the compost produced to attain horticultural standards⁶⁵, although in the past contamination and poor treatment meant that much of the product was only of use as a lesser quality soil conditioner. Better controls and accreditation are helping to develop a market for the compost, increasing value and conserving natural peat-based compost. Replacing the use of peat-based composts with waste derived compost is an example of

⁶⁴ All Wales Waste Management Benchmarking Group, 2009-2010 data. Includes green and inert wastes.

⁶⁵ PAS 100 is the British Standards Institution specification for compost.

sustainable waste management, because it reduces the carbon footprint. This is a good example of sustainable waste management and demonstrates the value of composting to the public.

- 2.14** In response to widespread concern that unsustainable composting processes producing low-quality products could make up a large part of waste targets, the EU is introducing changes to improve sustainability and ensure that products are useful. The Welsh Government's interpretation of these changes means that for waste to be 'recycled' the recovery process it goes through must change the waste into a product, material or substance that is a useful resource⁶⁶. New quality criteria must be satisfied for food and other organic wastes to qualify as 'recycled'. This is important for local authorities, as the new definition and associated qualifying criteria also apply in meeting EU landfill and the Welsh Government's recycling targets.
- 2.15** Composting is important in diverting biodegradable wastes from landfill and reduces pollution and greenhouse gas emissions. Composting has typically made up just over one third of total recycling performance, making a significant contribution towards waste targets. **Exhibit 7** shows this contribution for Pembrokeshire County Council, and is typical for a rural local authority.
- 2.16** All organic materials decompose and release liquid and gaseous emissions but basic composting windrows and compost heaps do not capture these emissions. More advanced in-vessel composting units both accelerate decomposition and allow meat and other food scraps to be safely treated⁶⁷.
- 2.17** Under *Wise about Waste*, the Welsh Government did not lead local authorities away from considering in-vessel composting and mechanical biological treatment⁶⁸. These two methods of waste treatment were extensively promoted during this period by the waste industry. The Welsh Government provided grant funding for the development of in-vessel composting facilities and several local authorities⁶⁹ now operate these facilities. There are also examples where local authorities had begun to procure mechanical biological treatment infrastructure. However, the Welsh Government has since reassessed the sustainability of in-vessel composting and mechanical biological treatment and does not now favour either waste treatment process. The Welsh Government's current view is that anaerobic digestion, with the greenhouse gas reduction possible with this process, provides a more sustainable alternative. This is an example where some local authorities, keen to meet targets and to put infrastructure in place, pressed ahead with waste treatment solutions before the Welsh Government was clear about the best methods to use.
- 2.18** The sustainability of collecting green wastes from the kerbside for composting is widely debated because of the additional use of vehicles, although it can boost recycling targets. In past years, some local authorities have bolstered composting targets by collecting wastes, such as leaves from parkland or dredging from lakes that could count towards waste targets. We consider that this approach misses the point of sustainable waste management and is a symptom of target chasing.

66 Revised Waste Framework Directive Article 3(17), amended November 2008. This new interpretation is also used in the Municipal Sector Plan.

67 Control, through animal by-products legislation, of infection risk for food-borne pathogens that could pass into compost.

68 Mechanical biological treatment is a process similar to composting that accelerates the decomposition of wastes.

69 Carmarthenshire County Council operates an in-vessel composting unit that the Welsh Government helped to fund with Landfill Tax credits.



Central funding has contributed to many new services but the effectiveness of some new services and the future of this funding are unclear

Significant central investment has contributed to many new waste services and further momentum in increasing public participation

2.21 The Welsh Government has allowed local authorities to use central funding to establish a wide range of waste services and approaches to encouraging participation in recycling. Local authorities have developed approaches that they believe meet local circumstances and residents are most likely to favour. They have worked with their residents to establish the recycling services that are acceptable, cost effective and capable of meeting the Welsh Government's targets.

2.22 For most local authorities, investment applied in this way has led to increased public participation. Re-use, recycling and composting schemes of all types have gathered considerable momentum and have significantly improved recycling performance.

2.23 Exhibit 9 shows that initially re-use, recycling and composting increased rapidly as the Welsh Government applied more funding. Local authorities used this early funding to improve facilities such as civic amenity and recycling sites. Sites were able to accept more and a wider range of wastes and it became easier for the public to segregate wastes. Some local authorities, particularly in rural areas, also extended their network of 'bring sites'. By 2004-05, most local authorities had upgraded civic amenity sites to household waste recycling centres.



Local authorities that collect garden wastes at the kerbside can boost their recycling performance. The sustainability of collecting garden wastes is questionable, but home composting does not count directly towards Welsh Government recycling targets.

Photograph by: Andy Phillips (Wales Audit Office)

2.19 Home composting is widely promoted by local authorities with support from the Welsh Government. However, waste diverted to home composting does not count directly towards waste targets, thereby missing the opportunity to embrace an activity that is so obviously sustainable.

2.20 In *Towards Zero Waste*, waste reduction has become a more prominent part of national strategy. Home composting does not prevent the generation of waste but the Welsh Government recognises its importance as a way of using wastes beneficially and reducing the impact on natural resources. Home composting also reduces the amount of waste that local authorities would otherwise have to collect and helps to encourage good environmental behaviour. These benefits may provide some comfort for the local authorities that have invested heavily in home composting.

Exhibit 9 - Graph showing how the rate of re-use, recycling and composting has responded to Sustainable Waste Management Grant funding



2.24 By 2004-05, most local authorities recognised that to increase performance they would need to collect recyclable wastes from residents. Central funding from the Welsh Government has allowed all local authorities to provide kerbside recycling services and increase their recycling rates. This was a step in performance, with residents and some traders, receiving the service in increasing numbers with a wider range of materials collected.

2.25 The continuation of kerbside recycling is reliant on high levels of funding because of the cost to local authorities of human resources, vehicles and infrastructure and equipment. Its introduction marks the point at which local

authorities could no longer sustain their waste services without significant additional funding from the Welsh Government.

2.26 Kerbside recycling is successfully undertaken using several different approaches. We have already discussed in some detail the relative merits of these different approaches. **Case Studies 6 and 7** shows examples of different kerbside recycling schemes that use either the co-mingled or the kerbside-sorted collection method. In the case of Denbighshire County Council, Caerphilly County Borough Council and Bridgend County Borough Council, the different approaches taken are all currently performing well and exceeding waste targets.



Case Study 6 - Examples of successful co-mingled recycling schemes

Denbighshire County Council provides a co-mingled recycling collection service. The local authority believes that by making the recycling collection as simple and easy to use as possible they will achieve the maximum participation. Public satisfaction with the service is high and at 52 per cent, the local authority had the highest recycling rate in Wales in 2009-10. In 2010-11, this recycling rate increased to about 55 per cent. Critics claim that this does not reflect the reject rate at reprocessing plants but the local authority says this is about two-nine per cent, with an average of around five per cent and that they have always declared the rate of waste rejection in Wastedataflow. However, changes in materials recovery facilities and re-processing technology, particularly better separation of paper, means that yield of targeted wastes are increasing. Non-target materials within the waste stream cause contamination, but the local authority says that this is due to a poor level of public awareness about the wastes that can be recycled. With only very low investment in education for householders, the local authority says that there is scope to further increase the recycling rate through education campaigns.

Caerphilly County Borough Council has tried to increase recycling by trialling several methods and combinations of collection services and frequencies over the past six years. The current co-mingled service has produced the highest performance to date with 51.4 per cent of municipal waste recycled in 2010-11. Like Denbighshire, recycling performance is likely to improve and contamination may reduce if the current modest investment in education is increased.

Case Study 7 - Examples of successful kerbside-sorted recycling schemes

Newport City Council has provided a weekly source-segregated, kerbside-sort collection service for dry recyclables for several years. Newport City Council works in partnership with Newport Wastesavers, a voluntary sector organisation, to collect recyclable wastes. The local authority has exceeded the Welsh average recycling rate since 2006-07, although in 2009-10 recycling performance dipped just below the Welsh average. The local authority has now developed food waste recycling and will continue to review the current recycling collection systems to maintain the momentum of recycling. The local authority says that it intends to consider all options including co-mingled collections.

Bridgend County Borough Council has a private sector contractor to provide a weekly collection of food and kerbside-sorted recyclables and fortnightly residual waste. The local authority increased the frequency of food and recycling collection, reduced the frequency of residual collections and implemented a communications plan that provided a high level of public awareness of the new service including prior to rollout and continuing over the next 12 months and beyond. Although the previous contract was for kerbside-sorted collections, it was limited to glass, paper and textiles and a food waste collection to 11,000 properties. The new service, which includes collection of the full range of recyclable waste, has improved performance significantly from 31 per cent in 2009-10 to 46.1 per cent in 2010-11.

2.27 These examples point to funding as a driver for performance but it is the use of funding and pragmatic decision-making that determines if local authorities realise their full potential to improve. Some local authorities have made better progress with kerbside recycling than others. There are examples, such as Denbighshire County Council and Bridgend County Borough Council, where the recycling rate has improved significantly without significant additional investment.

2.28 Over the past few years, progressively smaller landfill allowances have forced local authorities to divert more biodegradable waste from landfill. Local authorities have begun to collect domestic food wastes as a part of the kerbside collection. This strategy has not only led to higher recycling rates but, by taking potentially noxious and contaminating food wastes from the residual waste stream, has allowed fortnightly collections of residual waste. Removing food waste from the residual waste stream unlocks potential for

greater recycling by reducing the chances of contamination from foodstuffs. Local authorities have found the introduction of food waste collections a challenging step because, initially, many householders found the segregation of food wastes unsightly and repellent. Overcoming this reluctance has proved an important step in persuading the public to sort and clean their recyclable wastes so that closed-loop recycling can happen.

2.29 Food waste collections are boosting recycling levels for almost all local authorities. Together with other initiatives where small gains in recycling are still possible, food waste recycling can help to keep the recycling rate from prematurely slowing down. For many local authorities food waste recycling together with other complementary service enhancements such as weekly collection and bin liners, can mean an increase in their recycling rate from about 35 per cent to about 50 per cent. The Welsh Government is currently supporting local authorities in procuring the treatment capacity needed to process food waste.

2.30 The Welsh Government has calculated⁷⁰ that the total cost of providing waste services in Wales during 2009-10 was about £274 million. Through allocation of Sustainable Waste Management Grant, Revenue Support Grant and Regional Capital Access Funds, the Welsh Government funds about 84 per cent of this total. Local authorities, primarily through Council Tax, meet the remaining cost with a small contribution from income gained from trade, bulky and green waste collections and from selling recycled materials and compost. **Exhibit 10** shows how local authority waste services are funded.

2.31 The Welsh Government has provided Sustainable Waste Management Grant for local authorities. This grant has increased significantly since it began in 2001-02 and, including grant allocated for 2010-11, the Welsh Government will have allocated £330.5 million to local authorities through this funding stream. The Welsh Government has also made additional awards of £8 million Supplementary Credit Approvals, £19.5 million from the Regional Capital Access Fund and a further £2.4 million of discretionary grants. Grant funding for waste management during the period from 2001-02 to 2010-11 will total £360.3 million. **Exhibit 11** shows Sustainable Waste Management Grant funding for local authority waste services between 2001-02 and 2010-11.

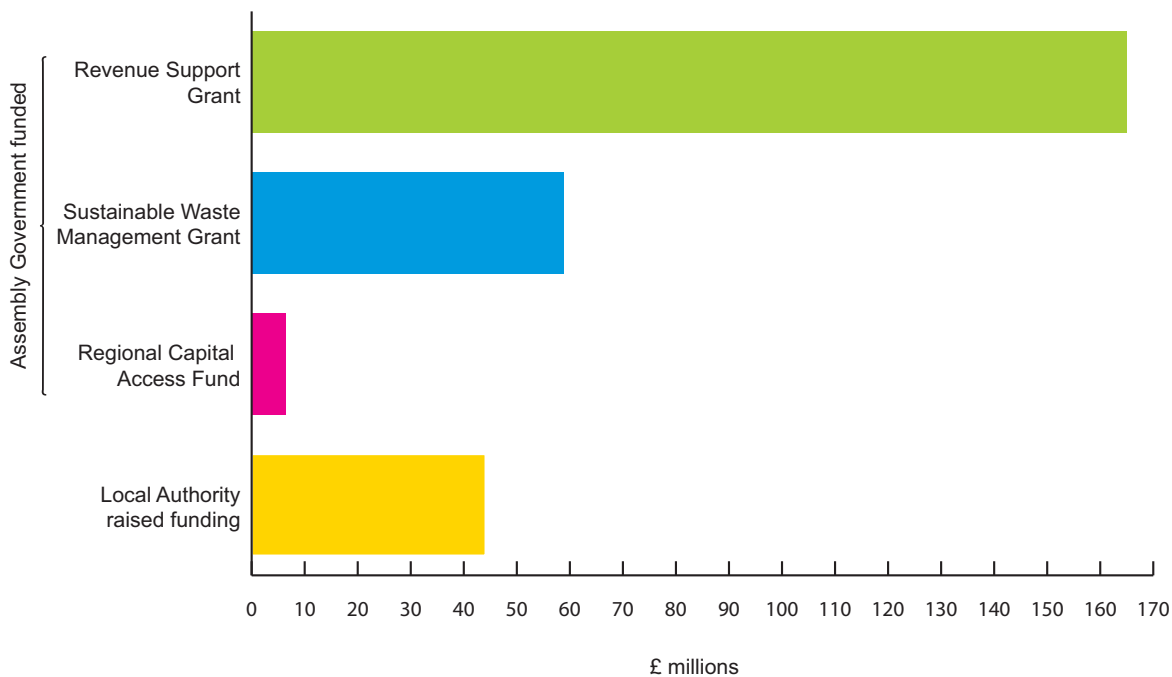
2.32 Local authorities are clear that their ability to provide enhanced recycling services depends on the Welsh Government funding. There is little doubt that the rate of recycling has increased rapidly since the Welsh Government introduced the Sustainable Waste Management Grant, and the increase in the rate of recycling has been closely related to funding level. However, although funding from the Welsh Government is at an all-time high, **Exhibit 9** suggests diminishing returns in the last few years. A new approach is required for the future, one less dominated by spending but with a better understanding of market opportunities and customer preferences.

⁷⁰ *Municipal Sector Plan (part 1)*, Published by the Welsh Government, March 2011.



Exhibit 10 - Funding of waste management services during 2009-10

Graph showing how the municipal waste service for Wales is funded



Source: *Waste Sector Plan (Part One)*, Welsh Government, March 2011

Uncertainty about future central funding of waste schemes is hindering planning

2.33 The Welsh Government is introducing *Towards Zero Waste* at a time when local authorities are under unprecedented financial pressures. Many of the waste services provided by local authorities depend on the Welsh Government's continued funding.

2.34 The Welsh Government's budget⁷¹ indicates a real terms reduction in the Environment, Sustainability and Housing revenue budget of about 10 per cent between 2010-11 and 2013-14. The Welsh Government's draft budget shows that revenue spending on waste management faces a sharper reduction than the average for the department, suggesting that it is not a high budget priority. In real terms, which take into account likely inflation, the reduction in revenue budget is £10.8 million, or 12.7 per cent until the end of 2013-14. **Exhibit 12** shows this reduction in revenue budget.

⁷¹ Welsh Government budget issued February 2011. For public sector spending and budgets, 'real terms' is calculated using HM Treasury GDP Deflators. The Welsh Government department delivering waste management has reduced since 2010-11, with fewer responsibilities and a smaller budget than before.

Exhibit 11 - Welsh Government grant funding of waste management services from 2001-02 until 2010-11

Assembly Government funding to local authorities via the Sustainable Waste Management Grant

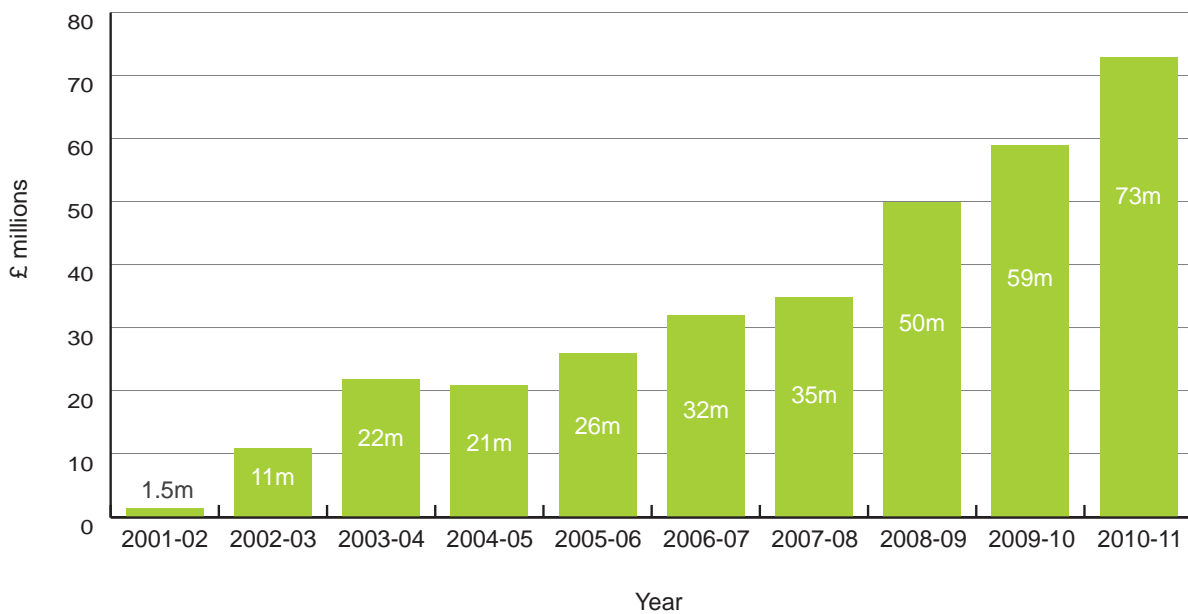
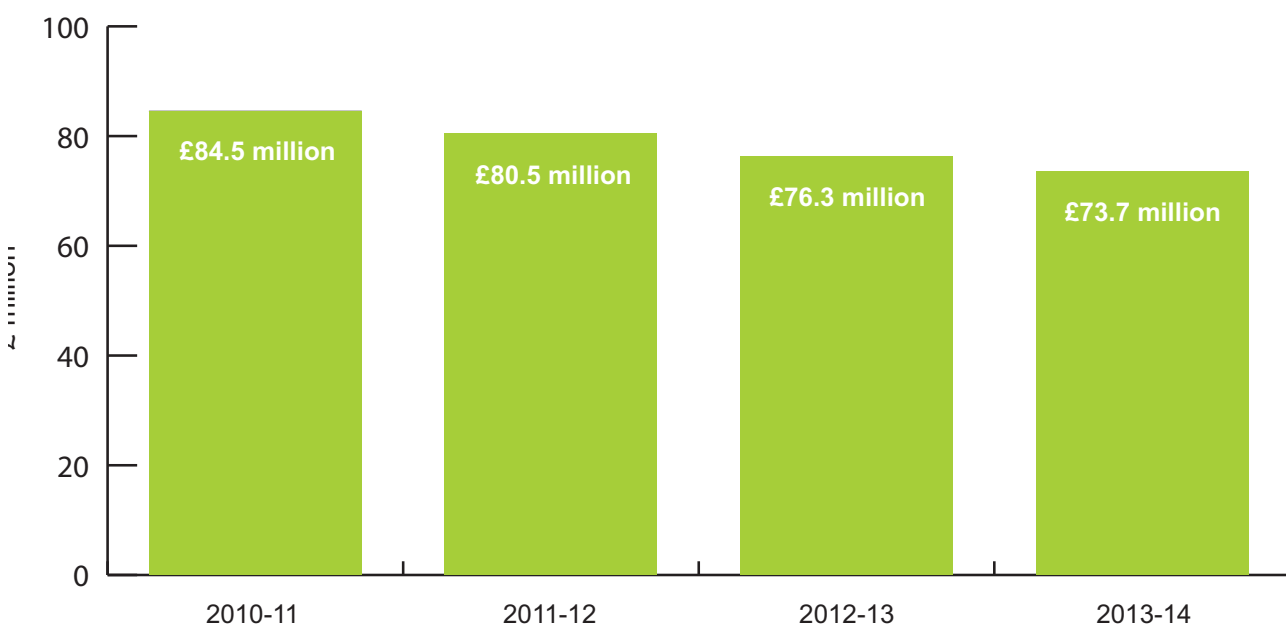


Exhibit 12 - Welsh Government's revenue budget for waste strategy and waste procurement programme in real terms (2010-11 prices)⁷²



⁷² This chart shows the Welsh Government's revenue budget for waste strategy and waste procurement programme 2010-11 to 2013-14 in real terms. To adjust for inflation in order to compare between years, we have used the Treasury GDP deflators to convert budgets in future years into 2010-11 prices.



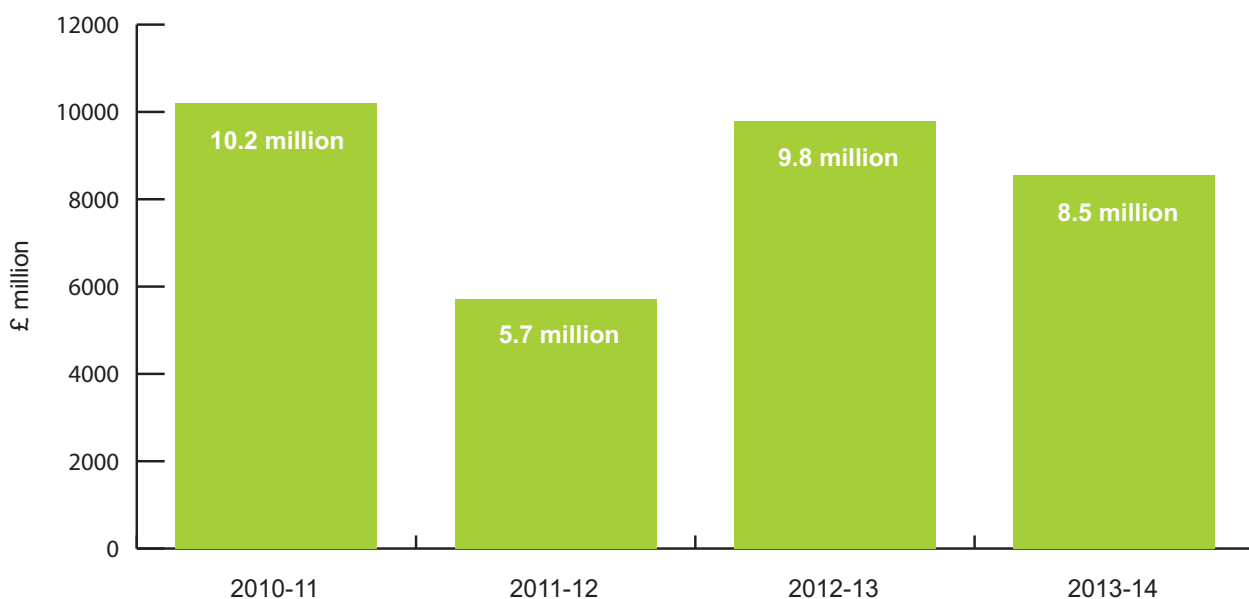
2.35 The Welsh Government has also almost halved the waste strategy and waste procurement capital budget for 2011-12 and the budget for 2013-14 is 16.7 per cent lower, in real terms, than 2010-11. Nonetheless, budget plans align with commitments to local authorities procuring waste treatment capacity that will support achievement of recycling targets. **Exhibit 13** shows this cumulative reduction in capital budget.

2.36 Within these budget changes, the Welsh Government has recently proposed limiting the reduction in the total allocation of Sustainable Waste Management Grant provided for local authorities to just £1 million per year, shielding local authorities from more significant cuts by this route. Although not guaranteed, the Welsh Government has also provided each local

authority with an indication of Sustainable Waste Management Grant allocation for the next 10 years.

2.37 Local authorities are to face funding cuts on all sides with a reduction in the annual settlement from the Welsh Government and reductions in Sustainable Waste Management Grant. Fixed assets, permanent employee contracts and supplier contracts make up a large part of waste service costs. This gives only limited scope for many local authorities to achieve large efficiencies in the short term without cutting services. Large cuts in capital budgets inhibit the ability to upgrade waste infrastructure such as household waste recycling centres or food and residual waste treatment facilities.

Exhibit 13 - Welsh Government's planned capital budget for the waste strategy and waste procurement programme in real terms (2010-11 prices)



Note: This chart shows the Welsh Government's capital budget for waste strategy and waste procurement programme 2010-11 to 2013-14 in real terms. To adjust for inflation in order to compare between years, we have used the Treasury GDP deflators to convert budgets in future years into 2010-11 prices.

2.38 The Welsh Government has indicated⁷³ that regardless of the impact of the spending review on local authorities and on Sustainable Waste Management Grant, the waste targets proposed in the sector plan will not vary and financial penalties will apply to these new statutory targets as well as the European Union diversion targets. Local authorities consider this approach does not take account of their financial circumstances. The outcome of the 2010 budget review also highlights a fundamental issue for waste management. The Welsh Government did not make clear the duration of this grant or whether it might reduce in future years. If the Welsh Government significantly reduces its funding, there is more chance of local authorities failing to meet European Union waste targets, which could mean large fines – an outcome that could be more costly than the investment saved.

2.39 Wales now has a national waste strategy that requires local authorities to meet recycling targets that are well in excess of European Union needs. The Welsh Local Government Association has estimated that the additional cost of Wales meeting the 70 per cent recycling target in *Towards Zero Waste* compared with a target of 60 per cent is £31 million⁷⁴. The Waste and Resources Action Programme provides some recent estimation of the savings they consider are possible if *Towards Zero Waste* is implemented. Unsurprisingly, most of these savings are in avoided landfill costs and in reducing the production of wastes. This data predicts savings for municipal waste of £18 million by 2025 and almost £40 million by 2050, compared with 2010.

The Welsh Government has not made sufficient checks to ensure that local authorities have used funding to provide value for money or meet strategic objectives

2.40 The Welsh Government has not undertaken detailed scrutiny of its spending on local authority waste services since the introduction of Sustainable Waste Management Grant⁷⁵. Nor has it formally tested the alignment of local authority recycling services with national strategy. The Welsh Government supported the peer review of local authority waste services that the WLGA led during 2005 to 2007. This review provided a clear indication of activities and made recommendations to improve services at each local authority. It gave the Welsh Government the opportunity to intervene to improve alignment with national strategy at that time, but it did not take decisive action. The Welsh Government should have ensured better stewardship and governance, by guiding expenditure towards the objectives in the national strategy and by closely monitoring value for money, as these are also important features of sustainable development.

2.41 The Welsh Government has commended the progress that local authorities have made so far to achieve recycling and composting targets and in trying to meet strategic objectives. Press statements from the Welsh Government are invariably positive about the performance of local authorities. These endorsements suggest that the Welsh Government gave local authorities significant freedom to spend on activities that enabled them to meet waste targets. There was little obvious steer for local authorities from the Welsh Government regarding the choices they made, so long as performance improved.

⁷³ County Surveyors Society (Wales) Waste Group meeting, 4 October 2010.

⁷⁴ Welsh Local Government Association briefing on the Waste (Wales) Measure to the National Assembly for Wales Legislation Committee No. 4, 30 September 2010.

⁷⁵ Wales Audit Office certifies that Sustainable Waste Management Grant allocated to local authorities is allocated to eligible areas of expenditure. The Wales Audit Office or other appointed auditors only undertake a limited amount of risk-based auditing of local authority performance.



2.42 In June 2010, after about three years of difficult discussion with local authorities and other stakeholders, the Welsh Government published *Towards Zero Waste*. This overarching waste strategy sets out the objectives for sustainable waste management and links waste management with *One Wales: One Planet*. However, it was not until March 2011⁷⁶ that the Welsh Government confirmed how it wanted local authorities to implement these objectives. In the absence of earlier intervention, local authorities have continued investing in the belief that the established way of meeting waste and recycling targets was acceptable. If, as the Minister said⁷⁷, the Welsh Government will be more prescriptive to ensure the implementation of *Towards Zero Waste*, it would seem unfair to hold local authorities to task for the method of their achievement to date.

A stronger focus on public participation and targeting specific groups will be vital to sustaining momentum in the future

More focus on public participation will be important to sustaining momentum in the near future

2.43 Municipal waste recycling relies on the public to volunteer their support. Wales has resisted the more direct methods of engendering participation through compulsory recycling or 'pay as you throw' schemes⁷⁸. It also seems increasingly unlikely that the Welsh Government will introduce incentive schemes or a balance of enforcement and incentives. Local authorities must appeal to the public and

persuade them to recycle much more if Wales is to make good progress towards some very challenging future targets.

2.44 We believe that with existing levels of public participation and waste extraction in kerbside dry recycling and food waste collections, recycling performance can reach about 50 per cent. For some local authorities, the rate at which recycling is increasing has slowed during 2009-10. For five local authorities, the amount of waste recycled during 2009-10 was less than in the previous year, although only two local authorities recycled less in 2010-11 than in 2009-10. In addition, our survey showed some local authorities concerned that they would not hit recycling targets above 52 per cent⁷⁹. We consider that this could suggest a loss of momentum at about 50 per cent and a risk that the rate of recycling will plateau and fall short of the 70 per cent target for 2024-25 unless local authorities re-focus more attention on increasing public participation.

2.45 Conversely, if local authorities can improve the level of public participation, this could delay any performance plateau and higher targets are more achievable. The Welsh Government has indicated that the bottom ash residues arising from energy from waste plants and some other wastes previously excluded from targets may soon be included. If so, the effect is to reduce the 70 per cent recycling target to about 63 per cent for those local authorities using energy from waste plants. **Exhibit 14** shows that without a significant increase in public participation, local authorities may still miss this target. However, if the momentum is maintained through high participation then local authorities that can achieve around 50 per cent recycling after food waste collection, have a performance gap of about 13 per cent to make up.

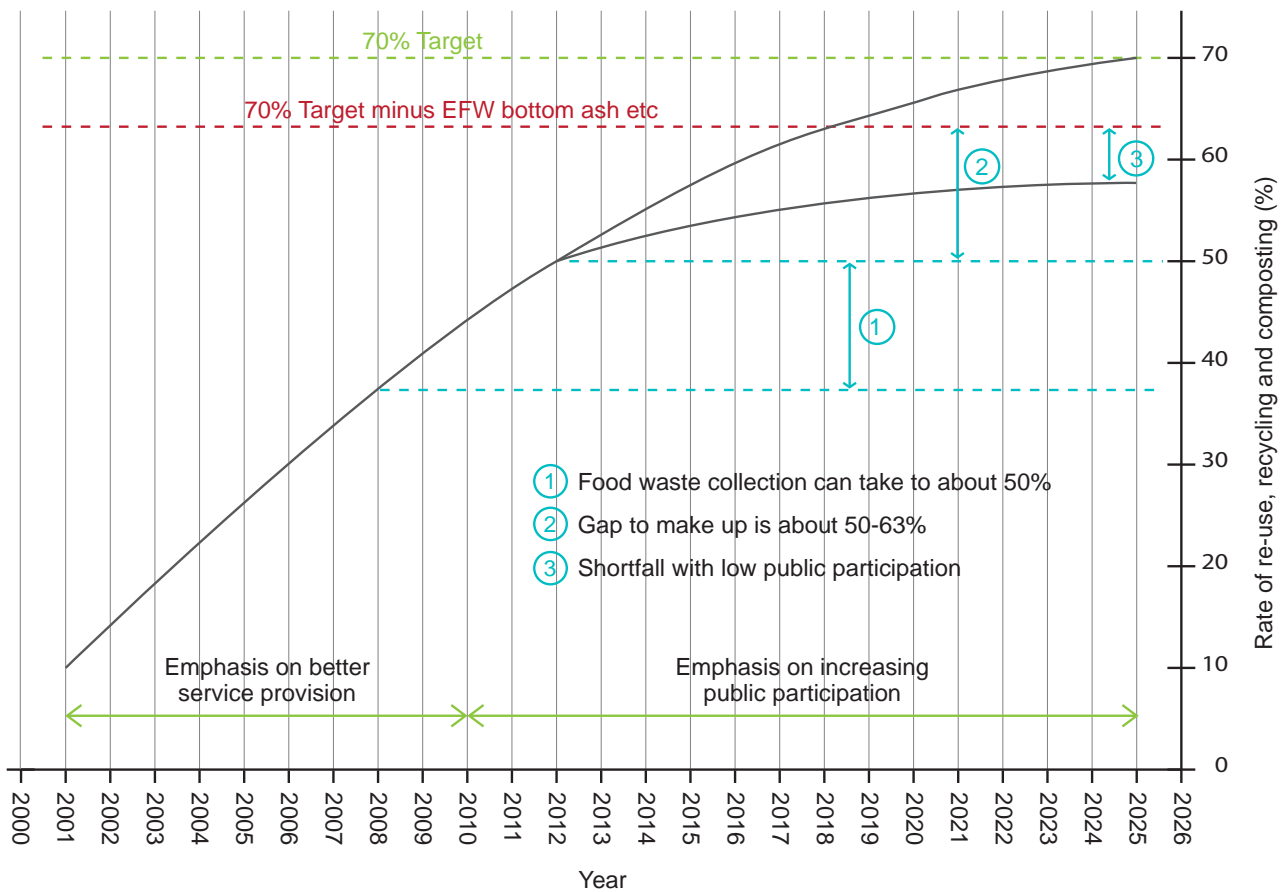
⁷⁶ *Municipal Sector Plan (part 1)*, published by the Welsh Government, March 2011.

⁷⁷ Ministerial foreword to the draft *Municipal Sector Plan (Part 1)* June 2010.

⁷⁸ Direct and Variable Charging for household waste is currently not proposed in Wales. In England, the Government has instructed local authorities not to make these charges.

⁷⁹ Wales Audit Office review in August 2010 indicated that seven of 22 local authorities were not confident of achieving waste targets in excess of 52 per cent, a further nine only to 58 per cent and only six say they should reach all recycling targets up to 70 per cent.

Exhibit 14 - Schematic diagram showing waste targets and the impact of public participation on the rate of re-use, recycling and composting





2.46 By maximising the use of the full range of recycling services provided and maximising participation, we consider that most local authorities should bridge this gap. The Welsh Government need to acknowledge that there will be local differences that require more support for some local authorities to meet the recycling target, but overall for Wales we consider that the ambitious 70 per cent target is achievable.

Targeting of specific groups would help local authorities ensure momentum continues in the long term

2.47 Most local authorities are starting to appreciate the need to increase public participation. We found that, with doubts about central funding and uncertainty over waste strategy, local authorities had plans in various stages of development but had not focused on increasing public participation. Some local authorities told us that refocusing their activities on public participation would be a huge task. They have experience of providing services for the public, including the physical infrastructure that has allowed recycling rates to improve so far. However, they now face a different challenge and local authorities need to become much more informed about the preferences of residents, their tolerances and the changes that they are prepared to accept. Few local authorities have enough of this information to target the areas that will bring the greatest improvements in public participation.

2.48 One local authority that has already benefitted from targeting a specific group of residents is Cardiff Council (see [Case Study 8](#)). The capital has a high percentage of student dwellings concentrated in areas of the city next to the main university facilities. Measurement of participation showed that the rate of recycling was low in these areas and that this was principally due to students living



Multi-occupied housing can present a particular challenge for local authority waste and recycling services. The reasons for this typically include the transient nature of tenure, ownership of issues within such communities and obstacles to effective communication.

Photograph by: Andy Phillips (Wales Audit Office)

in multi-occupied houses. Consequently, the street cleansing required in these areas was higher than in other areas because students put refuse bags out on the wrong days and allowed bins to overflow.

2.49 All local authorities have had some engagement with residents during the development of recycling services, but to meet higher waste targets and achieve the Welsh Government's vision for sustainable waste management they need to do much more. Where waste infrastructure is not in place the transition to the new approach will be slower and all authorities face capacity constraints as funding cuts bite harder. The environment for change is not ideal, and the appetite to take on yet another large challenge is only limited. The Welsh Government needs to appreciate these factors in working with local authorities to deliver change.

Case Study 8 - Cardiff Council focus on students to help improve recycling and street cleanliness

In 2010-11, Cardiff Council targeted 27 streets with high student occupancy and introduced a policy of zero tolerance towards overflowing bins, bins or bags put out on the wrong day and residual waste contamination of recyclables. The local authority followed a targeted education campaign with strict enforcement including the use of fines. The local authority provides the Students Union and student organisations with a wide range of information at the start of term. Information on the requirements was provided to all households and this was supported with door-to-door education.

The education campaign and strong enforcement resulted in visibly marked improvements in the recycling and waste presentation in the area. This led to improvements in the local environmental quality and reduced street litter. The local authority published this education and enforcement initiative widely in the student media and as a result, streets surrounding the targeted area also improved.

Results indicate that the amount of recycling in these streets has increased. In addition, because there is no room in the residual bin and no overflow is allowed, students are forced to recycle, the streets are cleaner, and there is less fly tipping.

2.50 We think that it is realistic to assume that some members of the public will not recycle even if local authorities succeed in minimising the barriers and provide the best possible collection systems. If local authorities reach this point, the Welsh Government may wish to consider forms of financial incentive or penalties to increase recycling⁸⁰. Although at present, the introduction of financial incentives such as 'pay as you throw' appear politically unpalatable the Welsh Government and local authorities may have to reconsider this approach. In particular, this scenario may arise if the public do not reduce the waste they produce, reuse, recycle or compost sufficiently in response to persuasion and education. Maximising the full range of recycling services provided, for example for the different types of plastic, will give more opportunities for those who want to recycle. This is as important, and probably more cost effective, as trying to convince those fervently object to begin recycling.

⁸⁰ Welsh Government commissioned the report *Direct and Variable Charging for Residual Waste from Householders*, 2008. This report provides an analysis of options and likely impacts.



Part 3 - Weaknesses in information gathering, use and sharing are inhibiting efforts to increase participation



The measurement of public participation is often weak. This means that local authorities cannot efficiently target their efforts to persuade more residents to begin to recycle, or for those already recycling, to do more.

Photograph by: Martin Gibson (Wales Audit Office)

3.1 This part of the report shows that although most local authorities collect some information on why residents recycle, monitoring is often basic and patchy. This means that their decisions about how best to increase sustainable recycling are poorly informed. There is also only limited use of guidance and sharing of good practice on recycling.

The measurement of public participation in recycling schemes is weak

Local authorities are measuring public participation but not with sufficient detail or frequency

Most local authorities are now measuring public participation

3.2 Measuring the extent of public participation is essential if local authorities intend to improve their recycling rates by targeting their work. It is also important that in increasing recycling, participation support sustainability. We found that most, but surprisingly not all local authorities, undertake some form of measurement of public participation. The method for measuring participation can vary considerably from the most basic, occasional counting of boxes, bins or bags put out by residents, to far more in-depth, and regular recording of the participation details of individual households and streets.

3.3 Some local authorities have good measures of public participation and are building up a map showing the levels and types of recyclable wastes that residents put out for collection by area. Local authority officers make visits to discuss recycling with householders, and these campaigns are targeted where they can have the maximum effect on increasing the recycling rate.

3.4 Another method of measuring participation is to weigh the waste gathered during collection rounds for recyclables. The weight of waste collected on each round is divided by the number of households to obtain the average weight of waste recycled per household. Local authorities can target low performing rounds for improvement. However, measuring in this way is not detailed enough to identify pockets of low performance that occur within rounds.

3.5 In some local authorities, the drivers on recycling rounds or officers that have only basic skills in this area measure public participation. Although most local authorities face problems in measuring participation, some local authorities are developing good practice. Neath Port Talbot County Borough Council is developing a map-based information system to provide accurate information on recycling participation, performance and areas to target to improve the recycling rate (see [Case Study 9](#)).

Case Study 9 - Neath Port Talbot County Borough Council's improvements in measuring public participation

Neath Port Talbot County Borough Council is developing a map-based information system that shows how much waste each household, individual streets and area recycle. The system will enable targeting of households, streets or areas where there is either no or little participation in recycling. Combining this information with data from compositional analysis will enable the local authority to build up a very accurate picture of the actions needed and the locations to target.

The system also means that follow-up doorstep interviews will be more informed and effective as they can concentrate on identifying and taking action where it is needed.

Most local authorities recognise that their measurements are not good enough

3.6 Local authorities need reliable data and information to establish a baseline position from which to plan, make the most effective and efficient use of resources and to manage performance. Poor information is likely to lead to poor decisions about the actions that should be taken to improve recycling performance and risk wasting resources.

3.7 Flawed measurement and analysis of public participation levels are widespread issues for local authorities. Few local authorities believe that their methods are sufficiently effective. Most local authority waste managers are beginning to appreciate the need to improve the measurement of public participation in recycling and that it will require time, resources and the appropriate skills.

3.8 Even with only basic monitoring of public participation in recycling, the evidence points to a wide range of participation levels across Wales. Closer analysis of this variation, both within a local authority area and between local authorities, has the potential to identify good practice and the many factors that are affecting levels of public participation.

3.9 Measurement needs to identify those that do not recycle from those that already recycle but could do much more and identify the barriers to recycling. The strategy required to educate a resident who is already recycling to do this more effectively is very different from the approach needed to persuade a resident to start recycling. Measurement can also identify residents that participate in a way that supports closed-loop recycling, by reducing contamination and providing clean, high quality recyclable wastes.



- 3.10** In our survey (see [Appendix 3](#)) and subsequent interviews with waste managers at all of the local authorities in Wales we found that measurement of public participation is often limited to basic drive-by ‘click’ surveys that count the households that place recycling bags, boxes or bins out for collection. ‘Door-stepping’, where collection operatives talk to residents about recycling is the most common type of action local authorities currently take to monitor and increase public participation. Door-stepping seeks to gather information on the factors affecting low participation rates and to persuade householders to participate more. This simplistic approach does not allow for variations in the type, quality or quantity of recyclable wastes placed within each bag, box or bin. In addition, door-stepping and click surveys can give poor and often misleading information and may miss the differences in household size, and will not show that many households also recycle at civic amenity and recycling centres. Unless public participation is monitored correctly and supported by other information, the results can cause more problems than benefit.
- 3.11** We found that the methods and effectiveness of door-stepping vary considerably between local authorities. Where door-stepping is carried out well by trained and qualified people with a clear understanding of what they are trying to do, it can successfully identify service delivery problems and lead to actions to rectify as well as encourage householders to increase their participation. However, when undertaken less effectively door-stepping can provide misleading information and alienate householders. It is not uncommon for more simplistic door-stepping to record public participation recycling levels of over 95 per cent, a rate that bears no resemblance to recorded collection weights or compositional analysis of the recyclable waste that remains uncollected.
- 3.12** We found examples where door-stepping campaigns led to increased participation levels, but performance soon reverted to the previous level. This suggests a more prolonged and co-ordinated campaign of action is needed to sustain increased participation levels. [Case study 10](#) shows that Conwy County Borough Council found that door-stepping campaigns made no lasting difference to their recycling rate. However, the local authority achieved a long-term improvement in the recycling rate and a much cleaner environment by co-ordinating education, cleansing and enforcement.
- 3.13** Most local authorities told us that they plan to improve the way that they monitor public participation. On further investigation, we found that waste managers were unsure how to initiate improvement, did not know where they could find guidance and generally lacked the confidence and skills required to address this non-technical waste management issue. Waste managers also stressed that their departments were already very busy striving to maximise service provision at a time of increasing resource constraints and there are capacity issues.
- 3.14** We concluded that for many local authority waste managers, strategic change, and in particular changes to unfamiliar areas of work, was difficult. Of the local authorities that had started the transition to optimise public participation in recycling schemes, we also noted the catalysing effect and fresh perspective that officers without a technical waste management background had brought.

Case Study 10 - Conwy County Borough Council's door-stepping campaign to improve recycling levels

There was very little recycling on the Tre Cwm housing estate and problems of litter, fly tipping and waste not being presented for collection in the waste containers provided. The problems became so bad that the local authority had to provide an extra collection round.

Conwy County Borough Council carried out a major campaign to persuade local residents to manage wastes correctly and to recycle more waste. Initiatives included meeting local councillors, Police and Communities First managers; attending community meetings; leaflets to every household; providing skips for bulky waste; a door-stepping campaign; delivery of new recycling bags and boxes, and repairing or replacing damaged bins; installing a new plastic recycling bank, and stopping the collection of waste where it was not held in the waste containers provided. However, despite these considerable efforts there was little improvement.

The local authority then enforced the waste requirements with leaflets to all households and the presence of recycling officers and enforcement staff to monitor collection days. The local authority also collected evidence from litter and fly-tipping sites sending six warning letters and issuing four fixed-penalty notices.

The result was to increase significantly the recycling rate on the estate and for the streets to be cleaner. The local authority led a combined and sustained effort using a range of different services and used a '1950s style' advertisement campaign with the message 'Everybody's doing it' to achieve success.

The experience of Conwy County Borough Council is that a joined-up effort can be effective for problem areas. Providing information and facilities may not work on its own and enforcement was the key factor that ensured the project was successful. However, this joined-up approach can be costly.

There is wide variation in the frequency with which local authorities measure participation

- 3.15** Local authorities measure public participation in recycling at widely different frequencies ranging from not at all to weekly monitoring. Once the local authority knows the participation level of an area, they must continue to monitor at regular intervals to assess changes in performance and see if their actions are having the desired effect. Long-term monitoring can identify changes in participation levels due to education campaigns or other initiatives, and target actions to reinforce messages. Our survey (in [Appendix 3](#)) found that only six local authorities consider that they monitor participation with sufficient frequency.
- 3.16** The local authorities that do not frequently monitor public participation include those that do not see the need to because they already have high performing recycling services. A prominent example of this is Denbighshire County Council, which operates a successful co-mingled collection system for recyclable wastes. However, local authorities operating co-mingled collection systems are criticised by the Welsh Government for what they understand to be a high level of contamination and subsequent rejection of wastes collected. We found that the local authorities that do not frequently monitor public participation also spend comparatively little on educating the public to segregate recyclable wastes from residual waste. Low-level investment to educate the public about recycling may be a reason for some of the contamination in co-mingled collection services. Collection operatives on a kerbside sorted collection round can make a quick visual assessment of contamination at the kerbside, and may leave some wastes behind with a note for the resident.



However, assessing contamination is difficult for co-mingled collections using wheeled bins, because it is difficult for collection operatives to see contaminated waste placed in a bin or to retrieve waste when bins are mechanically lifted and emptied into a recycling freighter vehicle.

Only a few local authorities align data and information on public participation with other important performance measures

- 3.17** Data and information on public participation come from four basic sources, as follows.
- a** The number of individual households that put recyclable wastes out for kerbside collection by the local authority. This is the 'put-out' rate and can be measured for individual households, streets, collection rounds or a local area.
 - b** The weight of recyclable waste collected by the local authority service by kerbside collection. This can be measured for individual households, streets, collection rounds or a local area.
 - c** The quality of recyclable waste collected in terms of cleanliness, contamination and as a resource for closed-loop recycling.
 - d** The compositional analysis of municipal waste (or preferably, household waste), at as local a level as practical.
- 3.18** The most accurate and beneficial measurements of public participation come from combining data and information from these sources. Combining this information can give local authorities and the Welsh Government vital information about the quantity and quality of recyclable material that remain in household waste. In addition,

shrewd data analysis can help local authorities to identify the location of wastes that could be recycled. Local authorities can then target these areas to minimise their generation or to divert them into re-use or recycling schemes. Analysis can also determine the type of material that householders are discarding and identify the reasons for disposal rather than recycling so that local authorities take action to rectify the problem. An example was the actions taken by local authorities in response to the large amount of plastic bottles in the residual waste stream. Local authorities identifying this issue have introduced plastic recycling at the kerbside and educational campaigns to advise householders that plastic bottles are recyclable. With many changes happening to local authority kerbside recycling systems over the years the public may not realise that items previously not collected are now recyclable.

- 3.19** We found that few local authorities analysed data and information using these key aspects of monitoring public participation. This was because local authorities could not dedicate the necessary resources to undertake this level of analysis and there is a lack of readily available guidance or good practice on how best to do this.
- 3.20** In 2010, a national waste compositional analysis was carried out and each local authority has information relating to both the authority area and the national figure. Dispute about how representative the sample areas used within each local authority were has led some waste managers to consider that this information is unreliable. Nonetheless, the information gives a good snapshot of the general level of recyclable material that remains within the residual waste stream.

Variation between local authorities in the composition of waste that remains in the residual waste stream may be due to a range of factors, such as differences in local service delivery geography, demographics, socio-economic and ethnic factors. We looked at this issue earlier, in Part Two of the report.

3.21 Compositional analysis can provide very useful especially when combined with information on participation and the weight of recyclable wastes collected. However, the data and information must be up to date. Local authorities can combine data and information to determine, for example:

- a** if any specific waste types are present in higher proportions in the local residual waste stream than in the national analysis;
- b** if there is, in general, a higher level of all types of potentially recyclable materials; or
- c** if public education needs to increase because there is a higher than expected amount of a certain type of contamination.

3.22 For local authorities, this level of analysis gives a good indication of the most effective sector of society to target with campaigns and other actions to increase the effectiveness of recycling. Many local authorities currently apply a 'blanket approach' when considering households when a more sophisticated approach that allows for variations in the age, size, behaviour and preference of family members would promote the recycling message more effectively.

3.23 From 2002, when *Wise about Waste* was published and the first recycling targets set, the Welsh Government and other sources of guidance and good practice have encouraged local authorities to provide educational awareness campaigns to promote recycling.



Better understanding of the composition of household waste has allowed local authorities to target recycling initiatives towards capturing specific wastes. In particular, all local authorities now collect food waste at the kerbside.

Photograph by: Martin Gibson (Wales Audit Office)

We found that recycling officers from most authorities have made routine educational visits to schools to promote recycling to children. In theory, encouraging children instils in them at an early age the principles of recycling and, in turn, they will influence the adults and siblings at home to recycle. Unfortunately, despite best intentions and the resources used in this promotion over the years, we can find no evidence that school talks make any real difference to recycling rates.

3.24 Only about half of local authorities take full advantage of the available information to improve the performance of their recycling services. Once local authorities have gathered information on public participation, they need to use that information to improve the effectiveness of their services and increase the recycling rate. Our findings suggest that



most local authorities take only some of the actions they should when receiving reports on public participation. In many instances, the actions taken are not steered by even the basic information gained from monitoring and the result is the application of generalised solutions when tailored approaches are needed. Many local authorities default to door-stepping campaigns carried out by untrained operatives and the information they gain can be inaccurate. Reports based on this information will mislead decision makers and squander resources, whereas more careful monitoring and analysis can give very different outcomes and can identify areas for improvement.

3.25 A similar situation exists with the revision of waste management plans. We found that some local authorities made very few changes to existing plans even though they held information that could lead to improved public participation and performance. If reporting and planning do not respond to new information then old ways will perpetuate. This problem may again be because waste managers, under capacity pressures, have delegated the monitoring of public participation to junior staff and feedback processes are ineffective. The Isle of Anglesey County Council is one of the few local authorities that have appreciated that monitoring public participation needs specialist skills, and has successfully engaged a marketing company to provide this data and information. This approach helps to ensure that reports to members in Isle of Anglesey County Council contain good quality findings and that service decisions are informed.

Local authorities could learn more effectively from existing guidance, their own performance information and through sharing good practice

Most local authorities report and share their progress in some form, but few focus on public participation

3.26 Waste management is now an established part of corporate reporting frameworks. The reports that local authority waste managers provide to their members tend to focus on changes to service delivery and headline performance indicators for recycling. Rarely does a report to members concentrate on the issue of increasing public participation. Typical examples of a report to members might feature the increase in provision of services offered; increasing the range of materials collected for recycling; changes in the method of collection; or a reduction in the frequency of residual collections to every fortnight. Waste managers are keen to report this success to members. Each substantive initiative that local authorities introduce can give a step-change in recycling rate as the new scheme picks up the momentum of recycling. Performance builds as a series of steps and plateaus and reports to members punctuate this process.

3.27 If local authorities report the detailed outcome of monitoring of public participation to their members, they risk losing the performance messages amid the complexity. Over-simplified reports risk failing to adequately inform long-term planning. Most local authorities are not good at long-term planning, but in delivering *Towards Zero Waste*, they will need to develop long-term plans. Very few local authorities had long-term waste plans

showing how initiatives to increase public participation would help them meet waste targets after the next few years.

- 3.28** **Case study 11** shows how Bridgend County Borough Council used a detailed communications plan prior to the launch of a new refuse and recycling scheme. The plan is continuing to enhance public participation and increase the amount of waste recycled by households.

Case Study 11 - Bridgend County Borough Council's communications plan

Bridgend County Borough Council has developed a comprehensive communications plan introduced four months prior to the new collection contract. The plan provides householders with information on changes but also has a long-term programme setting out the education and awareness actions for the following 12 months. This aims to maintain momentum in recycling by increasing the number of residents recycling and the amount of recyclable waste put out for collection by each household. The new contract also has incentives for the contractor to maximise recycling and composting.

The case study shows how a well-planned programme of education and promotion can help to maximise public participation and increase the amount of recyclables collected at individual households. The plan includes a wide range of different initiatives applied over a long period.

Local authorities offering residents a co-mingled collection for recyclable wastes could also benefit as this type of plan can increase both the quality and quantity of recyclables.

- 3.29** Very few local authorities report to the public on public participation in recycling, although we identified an example where private sector experience from a media company is helping a local authority report to the public to better effect.

- 3.30** Negative media reporting, such as stories about recyclable materials ending up on landfill sites or the exportation of hazardous wastes to the third world, can influence the public's perception and reduce their commitment to recycling. In Part one, we referred to the damage that negative media coverage can do. It is therefore vital that local authorities manage public reporting carefully. The Welsh Government should support local authorities to become more customer focused and make sure that the public is routinely consulted, and informed of, the progress of recycling initiatives.

- 3.31** In the absence of national measures of public participation, some local authorities have developed local performance indicators. Such indicators help to provide a focus for reports to members. There is also scope to enhance reporting by including comparative information sourced from Wastedataflow⁸¹ and from waste benchmarking. Including this information can add substance to reporting although neither source has developed robust measures for public participation.

All local authorities consider that there should be more shared learning and use of good practice about increasing public participation

- 3.32** Waste managers have faced a steep learning curve and there is no sign that this pace of development is about to reduce. In Wales, the 22 unitary local authorities each operate a separate waste management service. Local authorities engage in regional groups and benchmarking meetings. However, there is no overarching structure to provide up-to-date guidance or to help disseminate good practice. Consequently, most local authorities meet similar barriers in the development of their waste services and seek to overcome these with little help from the experience or skills available elsewhere.

⁸¹ Wastedataflow is the web based system for municipal waste data reporting by UK local authorities to government. The system went live on 30 April 2004.



3.33 Many local authorities told us that they find available information on public participation produced by organisations such as the Waste and Resources Action Programme both complex and fragmented. There is a wide range of academic research from social scientists about changing behaviour⁸² and customer preference for waste and other campaigns where the learning may usefully transfer. However, it is difficult for local authorities to follow the progress of this developing area of waste management research and to catch up with the latest ideas that could help them improve their recycling services.

3.34 The main sources of guidance on recycling for local authorities are Waste Awareness Wales which is a Welsh Government sponsored organisation, and the Waste and Resources Action Programme, also part funded by the Welsh Government but operating across the United Kingdom. Several local authorities told us that they were unclear about the roles of Waste Awareness Wales and the Waste and Resources Action Programme or why the Welsh Government has not rationalised arrangements for providing guidance and best practice.

3.35 The WLGA told us that Waste Awareness Wales and Waste and Resources Action Programme work closely together to try to ensure there is no duplication of roles or resources. In addition, we were advised that Waste Awareness Wales undertake a wide range of duties for local authorities including officer meetings, training, responding to enquiries and providing media and communication resources including for the local authority collaborative procurement of waste treatment facilities. Officers from Waste

Awareness Wales work regionally, meeting local authority representatives several times each year and provide the Innovation Grant funding to three local authorities. It was therefore surprising that local authorities did not make more use of these resources. In the case of Waste Awareness Wales, many local authorities had gained from the Love Food – Hate Waste⁸³ campaign but most had seen little other benefit. In particular, local authorities say that Waste Awareness Wales has had only limited impact in improving the sharing of information or in increasing public participation. The Waste and Resources Action Programme has developed its guidance to reflect recent research, field trials and assessments. However, we found that local authorities did not use this more recent guidance. This may be because the Waste and Resources Action Programme does not have the remit from the Welsh Government to work directly with Welsh local authorities or that local authorities are unaware of updates to guidance. Either way, the result is that many local authorities are continuing with outdated ways of monitoring and increasing public participation in recycling when more effective and efficient ways exist.

3.36 New research can challenge traditional thinking on recycling and in particular about the sustainability of the manner in which the public participate. However, the Welsh Government does not effectively co-ordinate this guidance, keep it up to date or make good practice from Wales and other countries more easily available to local authorities. The Welsh Government is missing an opportunity to instil the information that can help waste managers to design recycling services so that the public can participate in the most effective and sustainable way.

⁸² The most significant example of this is the paper *'Barriers to Recycling at Home'* produced for the Waste and Resource Action Programme, August 2008

⁸³ The Waste and Resources Action Programme's *Love Food – Hate Waste* campaign aims to raise awareness of the need to reduce the amount of food thrown away.

3.37 We consider that the Welsh Government could set up a system that records the good practice and useful experiences of local authorities in improving recycling performance through increasing public participation. Examples of what such a system could show might include:

- a** the nature of the problem addressed (for example, low participation was a result of geographic or social factors, etc);
- b** the actions undertaken to address this issue and how this fits with plans;
- c** the effect the actions had on recycling performance;
- d** a review of the other impacts of the actions (for example cost effectiveness, reductions in ecological footprint and wider impact on sustainable development); and
- e** unit costs, such as cost per household, could provide a means of calculating the cost of actions against the anticipated performance gains.

3.38 We think that local authorities would benefit from a system that promotes shared learning and the capture and use of good practice. The Welsh Government or a contractor working on their behalf could manage the system. There is also scope to use existing good practice portals, such as the Good Practice Wales portal⁸⁴ or the Waste Improvement Network portal⁸⁵. There is also an opportunity to extend the scope of the All Wales Waste Management Benchmarking Group, as all local authorities already support this group.

3.39 Some local authorities are sharing what they have learned about public participation with other authorities through meetings of recycling officers, but this area of partnership working that needs more development. In particular, we suggest that Welsh Government establishes a national system that provides easy access to shared learning and experiences about and public participation in recycling.

3.40 **Case Study 12** from Wrexham County Borough Council and earlier reference to the information mapping undertaken by Neath Port Talbot County Borough Council, are examples of good practice in development. A system for capturing and sharing this good practice can collate these and other examples from Wales and wider, building to provide a bigger picture of how local authorities can tackle specific areas to increase public participation. The system could increase effectiveness and, by helping local authorities avoid repeating the mistakes that others have made, it could save resources.

Case Study 12 - Waste Awareness Wales awards of financial support to improve public participation

In 2010, Waste Awareness Wales awarded financial support to four local authorities to carry out research into various ways of improving participation.

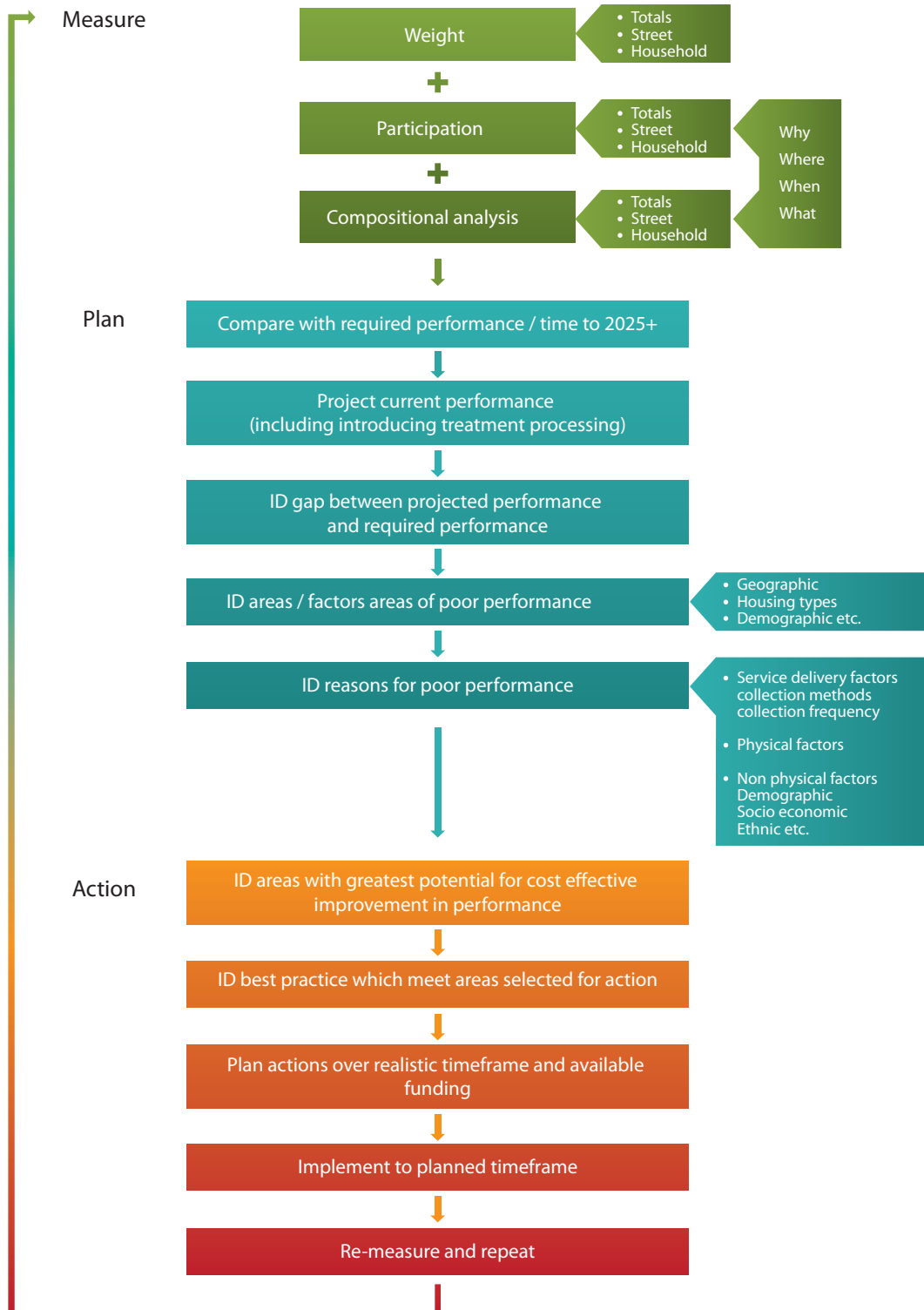
Wrexham County Borough Council received an innovation grant for £36,000 from Waste Awareness Wales to undertake a project to improve recycling rates in flats. This work will identify why recycling levels are low in flats. This information will allow the local authority to take specific actions to tackle problem areas and work with householders in order to improve significantly the performance in this housing type.

⁸⁴ Good Practice Wales portal - www.goodpracticewales.com

⁸⁵ Waste Improvement Network portal - www.win.org.uk



Exhibit 15 - Schematic diagram showing how local authorities can make effective plans that use monitoring information, local factors and good practice



3.41 Exhibit 15 shows how local authorities can use their monitoring information together with an analysis of local factors that affect performance, to target the areas of greatest potential improvement. Local authorities are also able to inform their choice of actions through the use of good practice and comparison with other similar local authorities.

3.42 Our work with local authorities has identified several areas where there is currently good practice and other examples of initiatives that, with careful development, will provide good practice for others to follow. Most of the examples of good practice that we found concentrate on the geographical groupings of housing types or household types, such as multi-occupied rented accommodation for students.

3.43 With local authorities in other parts of the United Kingdom facing similar challenges in increasing public participation in recycling, there will be many other examples of good practice outside Wales. Local authorities should also look overseas for examples and particularly to other European Union countries because they too must meet the requirements of European Union waste legislation. Many European countries are significantly ahead of the United Kingdom in terms of meeting waste targets, the provision of waste facilities and also public ownership and accountability for waste issues.



Appendix 1 – Municipal waste reuse/recycling/composting rates by local authority

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Blaenau Gwent	14.2	17.5	19.8	23.2	17.2	23.3	29.2	35.2
Bridgend	15.3	17.4	25.7	29.3	33.0	34.6	31.1	46.1
Caerphilly	19.3	27.0	28.1	24.6	26.9	32.3	44.0	51.4
Merthyr Tydfil	13.6	15.5	22.6	20.6	24.2	29.9	34.4	35.2
Neath Port Talbot	10.0	16.0	21.1	25.2	27.6	32.5	34.4	41.3
Rhondda Cynon Taf	10.8	14.7	19.1	26.3	31.5	35.3	34.7	41.4
Torfaen	15.6	15.1	16.8	27.3	35.5	42.5	43.3	42.4
Carmarthenshire	13.6	20.4	22.7	25.2	26.6	33.9	40.2	43.1
Ceredigion	26.4	32.8	35.6	43.3	46.6	47.1	47.1	49.5
Conwy	17.9	18.9	23.9	27.8	40.4	42.9	41.3	41.8
Denbighshire	13.1	15.4	21.8	26.1	28.7	31.7	51.0	55.1
Gwynedd	17.1	21.6	24.0	25.0	31.6	35.0	41.3	44.0
Isle of Anglesey	12.9	15.3	19.8	24.7	35.0	44.0	49.3	54.1
Monmouthshire	15.9	24.2	28.0	31.8	35.0	38.8	41.3	48.3
Pembrokeshire	15.5	16.4	21.1	26.5	30.3	35.1	40.8	45.1
Powys	28.0	33.8	35.3	40.7	41.2	40.4	38.8	36.6
The Vale of Glamorgan	21.1	22.9	25.5	29.6	33.8	37.5	37.9	40.4
Cardiff	14.2	11.0	12.1	19.5	26.8	35.1	39.2	42.0
Flintshire	16.0	19.7	26.7	33.4	32.8	37.9	40.6	42.6
Newport	19.6	25.4	27.1	31.0	35.1	36.6	38.9	43.7
Swansea	19.8	21.7	27.7	29.0	30.1	31.6	34.5	40.5
Wrexham	11.8	14.8	18.4	30.1	36.9	37.4	41.9	47.3
Wales	16.0	19.4	23.1	27.6	31.8	35.8	39.3	43.6
Welsh Government target	15.0			25.0			40.0	

Notes

1 Local authority municipal waste excludes rubble, incinerator residues, matter from beach cleansing, plasterboard and abandoned vehicles.

2 Figures in bold represent failure to meet Welsh Government targets set for 2003-04, 2006-07 or 2009-10.

3 The table is divided into three groups of local authorities based on geographic characteristics: valleys, rural and urban.

Source: WasteDataFlow

Appendix 2 – Ecological Footprint impact of the Welsh Waste Strategy

Synopsis of part of the report produced by Arup for the Welsh Government in May 2009

The Welsh Government is aspiring to achieve 'One Planet Living' within one generation and to achieve this, Wales needs a 75 per cent reduction in its ecological footprint by 2050. The Welsh Government has chosen the ecological footprint as the headline indicator of progress with One Planet Wales strategies.

The ecological footprint is the main accepted methodology used to highlight the impacts of consumption in the context of the planet's ecological limits. The ecological footprint methodology calculates the land area needed to feed, provide resources and produce energy for people together with the area needed to absorb the pollution and waste generated as a result of their consumption activities. The impact of waste generation is not a 'traditional' ecological footprint category. This is because the ecological footprint takes a consumer perspective, calculating the impact of resource consumption. Therefore, the 'ecological footprint of waste' measures the embodied footprint impacts of materials in the waste stream.

From 1996-2001, there has been a steady increase in the ecological footprint of municipal waste generated in Wales. This growth stabilised from 2001-2005 due to the increased rate of recycling. Beyond 2005 and with optimum recycling the total impact on the ecological footprint is predicted to decrease to below 1996 levels.

What is the consequence of different waste management activities on the ecological footprint?

Recycling – In almost all situations recycling (and this includes composting) is preferable to burning waste or sending it to landfill. This is because the collection and use of recycled materials replaces the need for new materials that are usually more energy intensive to extract and use than their recycled equivalent. Recycling non-ferrous metals and paper can significantly reduce the impact on the ecological footprint.

However, the reduction that recycling makes to the ecological footprint varies widely and is dependent upon the method of reprocessing. Recovering and reusing materials for their original use, and 'closed-loop' recycling, can make the greatest reduction in the ecological footprint. The method of recycling makes some difference to the ecological footprint, and particularly so when recycling plastic, glass and paper. For greatest reduction in the ecological footprint, these materials need to be recycled in closed-loop recycling systems. Lesser recycling systems can have a negative impact on the ecological footprint that is greater than the ecological footprint of using new resources.

By far, the best environmental option is to prevent the production of waste. Not producing waste has a direct impact on reducing the consumption of new resources, so the impact on the ecological footprint will be zero. Avoiding producing any sort of waste is important, but avoiding the production of kitchen waste is very significant in reducing the ecological footprint, as the impact on the ecological footprint remains very high even after composting



food waste. When waste is produced, a high level of recycling is the best way of at least making some reduction in the ecological footprint of waste.

Incineration – Even with recovery of energy and heat, incineration has a greater negative impact on the ecological footprint than recycling for almost all materials.

Landfill – The disposal of waste to landfill prevents both the recovery of materials and much of the energy within wastes. Biodegradable waste will also generate methane and carbon dioxide emissions, both greenhouse gases, as it decomposes in a landfill site. Combining these impacts with the energy required to spread the waste at the landfill site provides an increase in the ecological footprint for all materials sent to landfill. However, for materials such as plastics, landfill is preferable to incineration as it avoids the carbon emissions generated in burning this waste.

What can the national strategy ‘Towards Zero Waste’ achieve in terms of reducing the ecological footprint of waste?

Arup modelled both ‘minimum’ and ‘maximum’ recycling scenarios, in other words the ‘worst’ and ‘best’ methods of recycling. All forms of recycling can reduce the ecological footprint when compared to the impact that would occur if all municipal wastes were disposed to landfill. Data for 2007 was used as a baseline for modelling.

Initially, Arup modelled using growth at one per cent per annum. At the request of Welsh Government, Arup also modelled at zero per cent growth. Welsh Government believes that this more closely predicts the amount of municipal waste that will be produced in Wales until 2050.

Arup’s analysis demonstrates that focussing only on waste recycling will not be sufficient to reduce the ecological footprint to sustainable levels.

The contribution waste management can make to Wales’ waste related ecological footprint is small in comparison to the embodied footprint⁸⁶ held within the materials themselves as they enter the waste streams.

Specifically the results for municipal waste demonstrate that through recycling alone:

- a** At one per cent per year growth in waste arising, the total impact of waste arising will only be reduced by between four and eight per cent by 2024-25.
- b** At zero per cent growth per year in waste arising, the total impact of waste arising will only be reduced by between 20 and 23 per cent by 2024-25.
- c** To reduce the ecological footprint to the target in One Planet Living requires a total 44 per cent reduction in the ecological footprint of municipal waste by 2025:
 - this is about seven times the reduction in footprint achieved with recycling at one per cent per year growth in waste arising; and
 - this is about twice the reduction in footprint achieved with recycling at zero per cent per year growth in waste arising.
- d** The growth in municipal waste arising has a very significant effect on the ecological footprint.
- e** For recycling, the difference in impact on the ecological footprint between the ‘minimum’ and ‘maximum’ recycling scenarios is very small.

⁸⁶ The term ‘embodied footprint’ is explained in the glossary in Appendix 4.

- f To reduce the ecological footprint to the sustainable level targeted in One Planet Living requires a total 75 per cent reduction in the ecological footprint of municipal waste ‘within one generation’:
 - after 2024-25, with recycling at 70 per cent, Arup say ‘almost all further reduction in the ecological footprint will need to be achieved through waste minimisation activities’.

Arup demonstrate that to achieve more than the limited reduction in the ecological footprint that can be possible through recycling, much more is needed to improve the environmental performance of products and their supply chains. A step change in waste minimisation activity is required in parallel with achieving, and maintaining, recycling at 70 per cent.

If municipal waste grows at one per cent per year, Arup reached the following conclusion.

‘Although the (Welsh Government’s) proposed municipal waste management policies are challenging and forward thinking (eg, 70 per cent recycling of waste by 2024-25) they have a relatively small impact on the ecological footprint of the waste stream. This promotes the concept that recycling is not that environmentally positive but just some degree less environmentally damaging than not recycling. The amount is dependent on the materials being recycled, the proximity of reprocessing facilities, the amount of contamination in the waste stream and the recycling process used. The small reduction in impact demonstrated is due to many materials having a high embodied footprint impact associated with their manufacture. Through recycling or recovering energy from waste a proportion of the embodied impact can be recovered however, the reduction in impact is limited. Indeed, these results highlight that there would be huge benefits focusing on waste avoidance through

minimisation strategies and activities.

If waste is not produced then it will prevent the entire associated embodied ecological footprint and will provide the most effective means to reduce the overall impact.’

Welsh Government acknowledges the Arup conclusions and they told us that to achieve further reduction in the ecological footprint, waste needs to be viewed as part of a wider approach to improving the environmental performance of products and their supply chains. This means that a step change in waste minimisation activity needs to be implemented in parallel with valuable efforts to increase recycling. This will require waste management policy to be fully informed by the concept of sustainable consumption and production. To achieve this will not be easy but it is essential if Wales is to reduce its ecological footprint to sustainable levels.



Appendix 3 – Summary of the Wales Audit Office survey of local authorities on the recycling of municipal waste

The Wales Audit Office surveyed each of the 22 Welsh local authorities on the level of public participation in the recycling of municipal waste. We undertook the first stage of this survey in June 2010 using email questionnaire and survey software. The survey comprised questions on:

- objectives and priorities for recycling;
- whether the local authority considered that the Welsh Government's future recycling targets, and the objective of 'zero waste' were likely to be achieved;
- availability and use of information on public participation on recycling from measurement and analysis;
- recycling performance and available budget; and
- current initiatives and plans to improve recycling performance.

We followed-up the return of our questionnaire with detailed interviews, held during July and August 2010, with the waste managers and recycling officers at each local authority. In this Appendix, we provide a high-level summary of our findings from this survey and the evaluative conclusions that we have drawn. For some of the questions we explored in the survey, not every local authority provided a response.

Local authority survey – summary of the main the issues identified in our survey and follow up interviews

Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
<p>1 Are the Welsh Government and local authorities doing enough to maximise public participation in recycling and composting?</p>	3	12	6	<p>Most local authorities appreciate the need to do more to increase public participation but have not made this the focus of their plans for recycling services.</p> <p>Some local authorities are targeting specific groups in their local population or geographical areas to improve the level of recycling, but often such practice is isolated; is uncoordinated by an overall plan or clear aims; and, in the main, good practice is not shared.</p>	<ul style="list-style-type: none"> Local authority plans to increase recycling are in varying stages of development, primarily because the Welsh Government was consulting on the Municipal Sector Plan that sets out the expectations for service delivery and funding plans for local authorities. Local authorities have to manage any tensions between what the public wants from its services alongside the emerging requirements of the Welsh Government. Local authorities see the refocus on public participation in recycling as a significant task, and in addition to their statutory duty to improve service delivery. Many local authorities recognise that they need to target specific areas to get better public participation in recycling. The data and information available to inform local authorities' efforts to target particular groups or areas is basic and may be unreliable and, as a result, generally not used to inform initiatives to improve public participation.



Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
<p>2 Has the Welsh public sector agreed what local authority recycling services can achieve to help to deliver the new national waste strategy 'Towards Zero Waste'?</p>	1		21	<p>Local authorities only partially agree that the set of outcomes sought by the Welsh Government is appropriate.</p>	<ul style="list-style-type: none"> Local authorities assume that if they meet the Welsh Government's waste targets they will also reduce the carbon, and therefore, ecological footprint of municipal waste in their area. However, many local authorities do not understand how their recycling services can contribute towards the aim for increased sustainability that the Welsh Government is seeking in its waste strategy. Some local authorities doubt that meeting the Welsh Government's recycling targets is the best way of reducing the ecological footprint and being sustainable. The ability to achieve the intended outcome of increased sustainability and a significant reduction in the ecological footprint of municipal waste, particularly the later outcomes, is dependent on external factors that local authorities have little control over. Several local authorities referred to waste prevention as an example that is largely outside their control. Local authorities recognise the need to maximise public participation in recycling to achieve the outcomes that the Welsh Government is seeking increased for sustainability and to reduce the ecological footprint of municipal waste. Although most local authorities recognise the need for sustainability and reduced carbon footprint, they say that cost is their primary consideration particularly given the current financial constraints.

Question	Answer			Summary	Detailed conclusions
	Yes	No	In Part		
3 Was there appropriate consultation to inform the setting of the overall aims and means of delivering the national waste strategy?	8	2	12	Many local authorities consider the consultation on the overall aims of the strategy and how they can deliver their part in it was flawed. Some local authorities also consider that the Welsh Government dismissed contrary evidence without explanation; cherry picked supporting elements; and did not listen.	<ul style="list-style-type: none"> • Many local authorities say that the prescriptive approach that Welsh Government adopted towards local authorities and their recycling services limited their ability to respond to local choice. Many local authorities also believed that the Welsh Government's intervention was too late because they have already invested in recycling and composting schemes. • Local authorities perceive that the Welsh Government has a track record of changing policy without sufficient evidence. • Local authorities said that their objective of improving services to meet local public demand may conflict with the Welsh Government's waste strategy.



Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
<p>4 Are all relevant organisations and stakeholders committed to delivering the overall aims of the national waste strategy 'Towards Zero Waste'?</p>	12	2	8	<p>Almost all local authorities are committed to delivering, at least in part, what they understand are the overall aims of the national waste strategy.</p> <p>Even though Welsh Government policy is becoming clearer, there are recent examples of more local authorities choosing co-mingled collection systems for recyclable wastes and others are considering this move.</p> <p>Some local authorities consider that the Welsh Government has unrealistic expectations for their recycling services.</p>	<ul style="list-style-type: none"> • Many local authorities do not identify, understand or prioritise the overall aims sought by the Welsh Government as cost and service provision are the drivers for almost all local authorities. • Local authorities are concerned at the inflexibility of the means of delivering recycling services sought by the Welsh Government and they say that this makes it more difficult to deliver local solutions. • Public feedback and cost efficiency is driving decisions on recycling collection systems for some local authorities, rather than Welsh Government policy. • Some local authorities have undertaken an analysis of the sustainability of collection options and, for some, this analysis supports co-mingled or twin-stream systems. • Some local authorities consider that the Welsh Government's target for each local authority to reuse, recycle or compost 70 per cent of waste by 2024-25 is unrealistic. This is because these local authorities say that there is an insufficient amount of waste of the types and quality that can be recycled in their municipal waste stream, even if sufficiently high public participation rates could be maintained. • Although some local authorities recognise that they need to do more to increase waste re-use, they do not know how to achieve this objective. • Most local authorities consider that the Welsh Government is not ensuring sufficient progress from industry to help minimise waste.

Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
5 Are the intended aims of the national waste strategy SMART ⁸⁷ ?				Most local authorities thought, incorrectly, that waste targets rather than improved sustainability measured by a reduction in the ecological footprint of waste, are the aim of national waste strategy. This assumption skewed the responses received but serves to illustrate how local authorities can think - they focus on the measure rather than the outcome.	<ul style="list-style-type: none"> The reason why the Welsh Government's sustainability messages and evidence are not accepted by some local authorities may be that they do not clearly understand the overall aims of the national waste strategy. Targets are clear to most local authorities, and these are time bound. Some local authorities believe that only the short and medium term targets that the Welsh Government has set in the national waste strategy are realistic and achievable.
6 Is the Welsh public sector taking actions that are consistent with the aims of national waste strategy?	10	3	8	Early progress of local authorities to take action is encouraging but there is a lack of adequate planning to deliver later targets.	<ul style="list-style-type: none"> Local authority plans extending past the short-medium term are undeveloped or speculative. Local authorities claim that their planning and ability to take future actions is dependent on funding from the Welsh Government.

⁸⁷ SMART is an acronym for 'Specific, Measurable, Achievable, Relevant, Time-bound', which is widely used as a check list of the desirable characteristics of aims, objectives or targets.



Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
7 Does the Welsh public sector have appropriate plans that set out how they will achieve the aims of national waste strategy?	6	3	13	Few local authorities have set out and approved plans to deliver waste targets to reuse, recycle or compost 70 per cent of waste, but plans rarely aligned waste targets with the aims for sustainability in the national waste strategy.	<ul style="list-style-type: none"> Most local authorities do not have the accurate underpinning data and information to be able to plan to 2024-25 when the Welsh Government has set them a target to recycle 70 per cent of municipal waste. Many local authorities are waiting for the Welsh Government and their own organisation to confirm future funding before developing their waste strategies and plans. Some local authorities have approved waste strategies but others have very poorly developed plans other than short-term implementation programmes.
8 Is the Welsh public sector taking appropriate action to deliver these waste plans?	16	2	4	Local authorities have a wide range of different approaches to planning to meet recycling targets, from almost no plans to well developed plans.	<ul style="list-style-type: none"> All local authorities are taking action aimed to deliver waste targets. All authorities have at least some basic implementation plans. We found that the adequacy of local authority planning does not appear to be related directly to performance, as some with high recycling performance lack plans, particularly at a strategic level.
9 Is the Welsh public sector taking appropriate action outside of these plans?	5	1	15	Most local authorities are involving other stakeholders in delivering their plans for recycling and composting, although many know that they need to do more.	<ul style="list-style-type: none"> Plans between local authorities and stakeholders include collaboration with other public sector organisations, private and third sector bodies.

Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
<p>10 Is the Welsh public sector effectively measuring, reporting and acting upon information regarding progress towards achieving these outcomes?</p>	1	8	12	<p>Most, but by no means all, local authorities are measuring public participation in recycling but very few think that what they currently do is effective.</p> <p>The best systems for measuring public participation in recycling combine robust monitoring information with other interrelated factors such as compositional analysis and social grouping.</p>	<ul style="list-style-type: none"> • Measurement does not provide the data and information needed to improve performance because it does not specifically point to a target area where good practice can be applied. • A few local authorities are achieving good performance in respect of recycling, with only low levels of monitoring and some broader education campaigns. However, this may be because their collection system offers ease of use, conveniently sized containers and appropriate frequency of collection. • There are examples of local authorities measuring participation to prove to the Welsh Government that their approach is appropriate for their local community. • The methods available to local authorities to achieve outcomes are limited, and they claim that little good practice exists.



Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
<p>11 Is the Welsh public sector effectively measuring progress towards the aims of national waste strategy?</p>	4	4	14	<p>Most local authorities undertake some measurement of public participation in recycling and this shows a wide range of participation levels.</p> <p>Measuring public participation in recycling at collection round level is not detailed enough, as pockets of low participation occur within rounds.</p>	<ul style="list-style-type: none"> Local authorities persist in using only a basic assessment of participation even though they know the results are often poor. This is because basic measurement does not identify those participating that could do more or provide sufficient information to inform targeting of recycling campaigns towards the areas of greatest need. Local authorities use a wide range of different approaches to identify areas of low participation but say they have insufficient capacity for detailed analysis, and rely on help from external partners. Recycling systems that are easy for the public to use, tend to get higher participation rates and sometimes without much promotion. Local authorities consider that there is a relationship between public participation in recycling and the local demographics. Many local authorities consider that 'door stepping' and basic click surveys give poor information unless supported by other information or approaches such as enforcement. The local authorities that have developed measurements of public participation that are more advanced have built up a map of the households that recycle and what is recycled. This more advanced information allows the local authorities to more accurately target groups that are less willing to recycle.

Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	In Part		
12 Are the measurements of household recycling accurate?	2	4	15	The current methods that most local authorities use to measure public participation in recycling waste are poor because they are simplistic and lack detail.	<ul style="list-style-type: none"> Most local authorities use only basic measures of public participation and this is holding back their ability to target accurately initiatives to increase participation. The few local authorities that have developed more advanced measures of public participation consider that they have a much better understanding of customers and are more able to target with efficiency.
13 Are the measurements frequent enough?	6	12	4	Local authorities measure public participation at very different frequencies, ranging from not at all to continuous monitoring.	<ul style="list-style-type: none"> Most local authorities consider that they need to monitor far more frequently if they are to gain a sufficient understanding to be able to improve public participation. The local authorities that do not frequently monitor public participation include those that do not see the need because they already have high performing recycling services.
14 Is the Welsh public sector effectively reporting progress towards the aims of national waste strategy?	12	3	4	Most local authorities consider that the reports they make to their members and to the public on the progress towards higher recycling rate are effective.	<ul style="list-style-type: none"> The focus of local authority reporting is on target compliance and how recycling and composting schemes are contributing to this. Reporting recycling levels and progress against targets can be to local authority members and to the media, but there is considerable variation in frequency and in detail. Only a few local authorities report on public participation in recycling, and then this is mainly to their senior managers and members rather than to the public. A few local authorities have an unfavourable relationship with the media about recycling.



Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	Partial		
15 Do appropriate people receive this information on the progress of recycling initiatives?	8	1	11	Less than half of the local authorities make comprehensive reports on progress towards waste outcomes to the appropriate audience.	<ul style="list-style-type: none"> • Most local authorities report progress towards waste targets to their members and senior officers, but little detail is reported on public participation in recycling. • Local authorities do not have national performance indicators or waste reporting systems for public participation, but some have local performance indicators. • Public reporting on participation issues is limited, but there are a few examples of good reporting, innovation and where private sector experience is helping local authorities
16 Does the Welsh public sector take appropriate action as a result of information on the progress of recycling initiative, and does each stakeholder take appropriate action as a result of their own information?	8	7	5	Most local authorities take some but not all of the action they should when receiving reports on the performance of recycling initiatives.	<ul style="list-style-type: none"> • Local authorities use information from reports to make action plans to improve service delivery, but the poor data and information currently available on public participation in recycling is a barrier to effective planning and initiation of improvement actions. • The poor data and information available to local authorities means that they cannot influence or empower the stakeholders necessary to achieve better public participation.
17 Does reporting result in improvements to local authority recycling plans?	9	6	6	Only about half of local authorities take full advantage of the information contained in reports to improve the performance of waste services.	<ul style="list-style-type: none"> • Some local authorities make good use of data and information and make many of the improvements that reports suggest. • Some local authorities make few changes to existing plans even though new information could be found that could lead to improved performance. • The lack of quality information on public participation limits the improvements that many local authorities can introduce in this area.

Question	Answer			Summary	Detailed conclusions drawn from survey results and follow-up detailed interviews
	Yes	No	Partial		
18 Does each stakeholder take appropriate action as a result of other stakeholders' information (such as shared learning and good practice)?	0	2	19	All local authorities consider that there should be more shared learning and use of good practice.	<ul style="list-style-type: none"> • More information on good practice is needed to help increase public participation in recycling. • Local authorities have a lack of awareness of where current help and guidance on how to increase public participation can be obtained. • Some local authorities are sharing what they have learned about public participation with their stakeholders, but this area of partnership working is under developed.



Appendix 4 – Glossary of terms used in this report

Anaerobic digestion - A biological process where biodegradable wastes, such as food waste, is encouraged to break down in the absence of oxygen in an enclosed vessel. It produces carbon dioxide, methane (which can be used as a fuel to generate renewable energy) and solids/liquors known as digestate which can be used as fertiliser.

Bring site - Recycling point where the public can bring material for recycling, for example bottle and can banks. They are generally located at civic amenity sites, supermarket car parks and similar locations.

Civic amenity site - Site provided by the local authority for disposal of household waste including bulky items such as beds, cookers and garden waste as well as recyclables, free of charge.

Closed loop recycling - Recycling where recycled materials are being used continually for the same purpose, for example a glass bottle recycled into new glass product rather than downgraded (for example being used as an aggregate).

Composting - An aerobic, biological process in which organic wastes, such as garden and kitchen waste, are converted into a stable granular material which can be applied to land to improve soil structure and enrich the nutrient content of the soil.

Dry recyclable wastes – Municipal waste that typically includes glass bottles, cans, tins and foil, plastic bottles, card and paper and Tetra paks.

Ecological footprint - The ecological footprint methodology calculates the land area needed to feed, provide resource, produce energy and absorb the pollution (and waste) generated by our supply chains.

Embodied footprint - Gives a consumer perspective, calculating the impact of resource consumption and the environmental consequences of what people buy, use and then throw away, with those consequences considered throughout the supply chain.

Energy from waste - Technologies include anaerobic digestion, direct combustion (incineration), use of secondary recovered fuel (an output from mechanical and biological treatment processes), pyrolysis and gasification. Any given technology is more beneficial if heat and electricity can be recovered. The Waste Framework Directive considers that energy efficient waste incineration (where waste is used principally as a fuel or other means to generate electricity) is a recovery activity provided it complies with certain criteria, which includes energy efficiency.

Global hectares - One global hectare is equal to one hectare of biologically productive space with world average productivity. Global hectares are the unit of measurement for ecological foot printing.

Greenhouse gas emissions - Emissions that contribute to climate change via the 'greenhouse' effect when their atmospheric concentrations exceed certain levels. They include emissions of Carbon Dioxide, Methane, Nitrous oxide, Hydrofluorocarbons, Perfluorocarbons and Sulphur Hexafluoride.

Household waste - Includes waste from household collection rounds (waste within Schedule 1 of the Controlled Waste Regulations 1992), waste from services such as street sweeping, bulky waste collection, hazardous household waste collection, litter collections, household clinical waste collection and separate garden waste collection (waste within

Schedule 2 of the Controlled Waste Regulations 1992), waste from civic amenity sites and wastes separately collected for recycling or composting through bring/drop off schemes, kerbside schemes and at civic amenity sites.

In-vessel composting - An industrial form of composting biodegradable waste that occurs in an enclosed aerobic bio-reactor in which air flow and temperature can be controlled.

Kitchen waste - This term refers to the organic component of household waste e.g. vegetable peelings, tea bags, banana skins.

Landfill sites - Any areas of land in which waste is deposited. Landfill sites are often located in disused mines or quarries. In areas where they are limited or no ready-made voids exist, the practice of landraising is sometimes carried out, where waste is deposited above ground and the landscape is contoured.

Materials recovery facility (or MRF) - A facility where recyclable materials that are collected from households are sorted into different types (for example plastics, cardboard, paper, metal) using a mixture of manual and automated methods. When the materials have been sorted they are sent to reprocessors and manufacturers where they are used to create new products.

Municipal waste - For the purpose of this report, municipal waste means waste as collected by local authorities. It includes household waste and any other wastes collected by a Waste Collection Authority, or its agents, such as municipal parks and gardens waste, beach cleansing waste, commercial or industrial waste and waste resulting from the clearance of fly-tipped materials. Waste Collection Authority is a local authority charged with the collection of waste from each household in its area on a regular basis. They can also collect, if requested, commercial and industrial wastes from the private sector.

Open loop recycling - Where the product of recycling replaces something else, e.g. glass is recycled into aggregate, which replaces virgin aggregate.

Producer responsibility - A 'producer responsibility' approach is intended to require producers who put goods or materials onto the market to be more responsible for these products or materials when they become waste. In some cases, producers will also be asked to reduce the level of hazardous substances in their products and to increase the use of recycled materials and design products for recyclability.

Recycling - Involves the reprocessing of wastes, either into the same product or a different one. Many non-hazardous industrial wastes such as paper, glass, cardboard, plastics and scrap metals can be recycled. Hazardous wastes such as solvents can also be recycled by specialist companies, or by in-house equipment.

Reduction - Reducing waste is a priority from the manufacturing process by optimum use of raw (and secondary) materials and recirculation processes. It can be cost effective, both in terms of lower disposal costs, reduced demand for raw materials and in terms of energy costs. Householders can reduce waste e.g. by home composting, reusing products and buying goods with reduced packaging.

Reprocessor - A person who carries out one or more activities of recovery or recycling.

Residual waste - Term used for waste that remains after recycling or composting material has been removed from the waste stream.

Resource efficiency - Managing raw materials, energy and water in order to minimise waste and thereby reduce cost.

Reuse - Using a product again for the same or different use perhaps after some repairing or reconditioning (preparing for reuse).



Sustainability appraisal - Single appraisal tool which provides for the systematic identification and evaluation of the economic, social and environmental impacts of a proposal.

Third sector organisations - Refers to voluntary and community groups, social enterprises, charities, co-operatives and mutuals.

Treatment - Physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery.

Waste arisings - The amount of waste generated in a given locality over a given period of time.

Waste hierarchy - Sets out the order in which options for waste management should be considered based on environmental impact. It is a useful framework that has become a cornerstone of sustainable waste management.

Zero waste - 'Zero Waste is a goal that is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use. Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water or air that are a threat to planetary, human, animal or plant health.' (Zero Waste International Alliance www.zwia.org).

Appendix 5 – Audit methods

Literature review

We have reviewed a wide range of documents, including:

- Welsh Government policy, strategy and research and guidance documents relevant to recycling;
 - relevant research and guidance from many other sources, including from: the Waste and Resources Action Programme, Department for Environment, Food and Rural Affairs, Friends of the Earth, Environment Agency and the European Environment Agency; and
 - reports, produced by consultants on behalf of the Welsh Government or other organisations, on recycling, the ecological footprint of waste or sustainable development.
- The potential effects of location, types of residence and tenure and socio-demographic factors.
 - The considerations for achieving behavioural change and higher voluntary public participation in recycling. In addition, we surveyed to test the views of over 150 Wales Audit Office employees about their recycling preferences.
 - Good practice and the wide range of experiences of comparable organisations delivering recycling services and from the perspective of private sector and the third sector.
 - How the media can influence public participation in recycling.

Our review of the literature addressed the following themes:

- Headline comparison of the strategic approaches chosen for Wales and England and how this is shaping the opportunities and expectations for citizens wishing to recycle their wastes.
- The technical aspects of designing and implementing recycling services, including performance management, monitoring and more efficient use of resources through targeting.
- Documentation identifying the constraints to higher recycling rates and potential ways forward.
- The sustainability impacts of the options available for recycling.

Data and statistics

We have examined and drawn from various statistics about reuse, recycling and composting of local authority collected municipal waste, including the national strategic performance indicators produced by the Welsh Government to monitor progress towards national recycling targets. We have also used local authority data submitted to Wastedataflow, the national database for local authority data returns on waste management.

Other data sources we used included the waste benchmarking data undertaken on behalf of the County Surveyor's Society Waste Group by the Welsh Local Government Association. We used this benchmarking data in comparing service costs. The Welsh Government also provided a summary of expenditure on waste management from central, local and grant sources since 2001-02.



When calculating real terms trends in the Welsh Government's budgeted expenditure for waste management between 2010-11 and 2013-14, we used HM Treasury GDP Deflators.

Survey of local authorities

The Wales Audit Office surveyed each of the 22 Welsh local authorities on the level of public participation in the recycling of household waste. We describe our audit methods in [Appendix 3](#) together with a summary of the results from this survey.

Interviews

We conducted interviews with staff from the Welsh Government's Waste Strategy Branch throughout the course of our work. Meetings held with the Welsh Government during the early stages of this work helped to shape the scope of the study. We also met the Welsh Government during our fieldwork and in particular, to explore our lines of enquiry and seek explanations about the Welsh Government's policies and information.

In the latter part of 2010, we conducted interviews with the waste managers and recycling officers at each of the 22 Welsh local authorities, to follow-up and probe the results from our survey of local authorities.

Visits to waste management and recycling facilities

We visited some waste management and recycling facilities, as listed below. Notably, we visited a modern materials recovery facility in Manchester and gained additional interview evidences from a similar modern facility in Flintshire. Both facilities claim high quality recycling performance.

The facilities visited were:

- Lamby Way materials recovery facility in Cardiff, operated by Cardiff Council;

- Trafford Park materials recovery facility in Manchester, operated by Biffa Waste Services;
- Bryn Lane recycling and composting facility in Wrexham, operated by Wrexham County Borough Council;
- Penhesgyn in-vessel composting facility, Isle of Anglesey County Council;
- Materials Recovery and Energy Centre in Swansea, operated by Neath Port Talbot Waste Management Co. Ltd; and
- Wormtech Waste Recycling Services near Caldicot, Gwent.

Our 'Study Reference Group'

We assembled a virtual Study Reference Group as an expert panel to use as a 'sounding board' to test our findings and emerging recommendations. The Group comprised waste service practitioners, private and third sector advisers, as well as those undertaking waste specific or waste related social research. They represented the following organisations:

- Newport City Council - an urban local authority with an established kerbside sorted collection service for recyclable wastes;
- Pembrokeshire County Council - a rural local authority operating a co-mingled collection service for recyclable wastes;
- Caerphilly County Borough Council - a valley local authority operating a co-mingled collection service for recyclable wastes;
- City and County of Swansea – an urban local authority with an established twin-stream collection service for recyclable wastes;

- Welsh Local Government Association - representing all 22 local authorities in Wales and working with the Welsh Government in the Waste Improvement Programme, Waste Awareness Wales and in the Collaborative Change Programme;
- Waste and Resources Action Programme - a leading source of waste management research and guidance for local authorities and in their role of advising local authorities in the Collaborative Change Programme;
- Centre for Business Relationships, Accountability, Sustainability and Society at Cardiff University - providing an independent view of waste policy and sustainability;
- CYLCH Community Recycling Network - as promoters of a high recycling society;
- Plan B Management Solutions - from the commercial sector and a contractor to the Welsh Government in the Joint Improvement and Efficiency Programme that preceded the Collaborative Change Programme; and
- Audit Commission – as a public audit body able to compare our study with waste services and national waste policy in England.