

15 November 2018

Archwilydd Cyffredinol Cymru
Auditor General for Wales

Waste Management in Wales: Municipal Recycling



WALES AUDIT OFFICE
SWYDDFA ARCHWILIO CYMRU



This report has been prepared for presentation to the National Assembly under the Government of Wales Act 2006.

The Wales Audit Office study team comprised Sian Davies, Jeremy Morgan and Andy Phillips under the direction of Matthew Mortlock.

**Wales Audit Office
24 Cathedral Road
Cardiff
CF11 9LJ**

The Auditor General is independent of the National Assembly and government. He examines and certifies the accounts of the Welsh Government and its sponsored and related public bodies, including NHS bodies. He also has the power to report to the National Assembly on the economy, efficiency and effectiveness with which those organisations have used, and may improve the use of, their resources in discharging their functions.

The Auditor General also audits local government bodies in Wales, conducts local government value for money studies and inspects for compliance with the requirements of the Local Government (Wales) Measure 2009.

The Auditor General undertakes his work using staff and other resources provided by the Wales Audit Office, which is a statutory board established for that purpose and to monitor and advise the Auditor General.

© Auditor General for Wales 2018

You may re-use this publication (not including logos) free of charge in any format or medium. If you re-use it, your re-use must be accurate and must not be in a misleading context. The material must be acknowledged as Auditor General for Wales copyright and you must give the title of this publication. Where we have identified any third party copyright material you will need to obtain permission from the copyright holders concerned before re-use.

For further information, or if you require any of our publications in an alternative format and/ or language, please contact us by telephone on 029 2032 0500, or email info@audit.wales. We welcome telephone calls in Welsh and English. You can also write to us in either Welsh or English and we will respond in the language you have used. Corresponding in Welsh will not lead to a delay.

Mae'r ddogfen hon hefyd ar gael yn Gymraeg.

Contents

	Summary report	6
	Summary	6
	Recommendations	14
1	More collaboration has helped make recycling methods more consistent and encouraged participation, although waste management service costs show surprising variation	16
	The Welsh Government believes it has largely overcome a legacy of tensions and mistrust about its recommended approach to municipal recycling, although some concerns remain	17
	The Welsh Government has made progress to encourage public participation in recycling through sharing good practice and has not, as yet, encouraged any additional financial incentives or penalties	27
	Collection systems continue to evolve but benchmarking has found that the cost of certain waste management services show surprising variation	33
	The Welsh Government believes that, if applied optimally, its Collections Blueprint offers the most cost-effective overall means of collecting waste from households	36

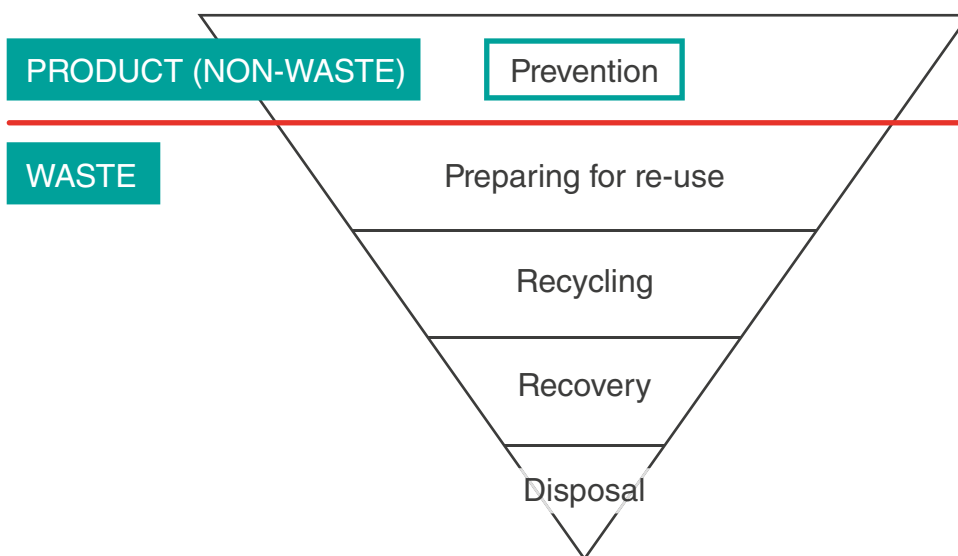
2	Weight-based statutory targets have driven a much improved recycling rate over time, but could better reflect wider sustainability considerations	42
	Weight-based statutory targets have driven a much improved recycling rate over time – to as high as 63.8% across Wales in 2016-17 – although there has been a slight decrease for 2017-18	43
	There has been an increasing focus on carbon impacts as a means of measuring the sustainability of recycling alongside simple weight-based measurement	49
	Weight-based targets have encouraged councils to recycle wastes that have a relatively small carbon impact per tonne collected	54
	The review of Towards Zero Waste provides an opportunity for the Welsh Government to revisit how recycling performance is measured and to consider the overall value for money of its support for recycling	57
	Appendices	64
	Appendix 1 – Audit methods	65
	Appendix 2 – Our assessment of progress in response to previous recommendations on recycling	66
	Appendix 3 – Councils’ collection systems and recycling performance	71
	Appendix 4 – Glossary of terms used in this report	73

Summary report

Summary

- 1 Waste management is an important and complex issue that covers a range of different but related approaches. The European Union Waste Hierarchy (Figure 1) shows that preventing the production of waste, or preparing waste for re-use, has much greater environmental benefit than recycling, which in turn has greater environmental benefits than other forms of recovery such as energy from waste. At the base of the hierarchy, with few environmental benefits is disposal by means that recovers no energy.

Figure 1 – The European Union Waste Hierarchy



Source: Directive 2008/98/EC on waste (Waste Framework Directive)¹

¹ The first Waste Framework Directive [75/442/EEC] was amended in 1991 through Directive [91/692/EEC] and again in 2008 through the Waste Directive [2008/98/EC]. Separate to these Directives, the 'Landfill Directive' [1999/31/EC] regulates waste management of landfills in the European Union.

- 2 This report, which focuses on municipal recycling, forms one of a set of three related pieces of work on waste management in Wales that will be published by the Auditor General for Wales. The other two pieces of work have considered issues relating to support for waste prevention and the procurement of residual and food waste treatment capacity.
- 3 In 2016-17, councils recycled 1.01 million tonnes of waste, disposed of 0.15 million tonnes of waste to landfill and sent 0.39 million tonnes to energy from waste facilities². Councils spent £242.5 million on their waste services in 2016-17, net of income³.
- 4 Recycling is important because it is one way to reduce the use of valuable raw resources and it has less adverse environmental impact than disposing of waste and making new replacement products. Recycling also provides the public with a visible and easy way to make a worthwhile environmental contribution.
- 5 The size of Wales' ecological footprint and levels of greenhouse gas emissions are now indicators under the **Well-Being of Future Generations (Wales) Act 2015. The Climate Change Strategy for Wales**⁴ also sets a target to reduce carbon emissions from the waste sector. In addition, the **Environment (Wales) Act 2016** includes targets to further limit greenhouse gas emissions and introduces five-yearly carbon budgets across Welsh Government departments. However, municipal waste makes up only about 5% of Wales' ecological footprint. Municipal waste recycling, even at the highest level possible, can only reduce Wales' ecological footprint by just over 1% when also taking into account the footprint of recycling activity itself. Although the overall contribution that waste management can make to reduce the ecological footprint is beneficial, it is very small in comparison with the potential for reduction from the energy, business, agriculture and transport sectors⁵.

2 Welsh Government, **StatsWales website**, accessed October 2018. The website shows 1.59 million tonnes of municipal waste was collected/generated in total in 2016-17. That figure decreased to 1.55 million tonnes in 2017-18, within which the amount recycled decreased to 0.97 million tonnes.

3 Welsh Local Government Association, **Waste Finance Data Report 2016-17**, March 2018.

4 Welsh Government, **Climate Change Strategy for Wales**, October 2010. The target is to reduce emissions from the waste sector to between 0.64 and 0.95 MtCO₂e (meaning the equivalent climate damaging impact of all emissions but expressed as mega-tonnes of carbon dioxide emissions) by 2020.

5 The Welsh Government does not have full devolved responsibility in these areas, and waste management (including municipal waste) makes up 24% of the plans that the Welsh Government has to reduce emissions within the areas of devolved responsibility. Welsh Government, **Climate Change Strategy for Wales – delivery plan for emission reduction**, October 2010.

- 6 The Welsh Government supports a ‘circular economy’⁶, based on a principle that better resource efficiency could contribute to significant financial and other benefits. The Welsh Government considers that the circular economy aligns with the well-being goals set out under the **Well-being of Future Generations (Wales) Act 2015** and with its **Towards Zero Waste** strategy (Figure 2). The Welsh Government plans to review **Towards Zero Waste** in 2018. In advance of that review, it has commissioned an evaluation of the statutory waste plan for Wales⁷, including economic benefits, against the **Well-Being of Future Generations (Wales) Act 2015**.
- 7 **Towards Zero Waste** seeks to reduce the generation of waste and set targets to improve progressively the rate of municipal waste that is prepared for reuse or recycling or for composting (known as the ‘recycling target’). The strategy charts a path towards an ambition of zero residual waste production by 2050. Residual waste is the waste that remains after recycling or composting material has been removed from the waste stream.
- 8 Through the **Waste (Wales) Measure 2010**, the Welsh Government made the recycling targets statutory for 2012-13 and beyond, giving itself the option to levy financial penalties against councils that fail to achieve them. The statutory recycling target is weight-based and has increased gradually over time. The target has been 58% since the start of 2015-16, but steps up to 64% in 2019-20, and to 70% in 2024-25.
- 9 The Welsh Government is considering increasing the recycling target to 80% in 2034-35, subject to consultation. European Union legislation already required member states to recycle 50% of household wastes by 2020⁸. Recent amendments to that legislation introduced progressive targets to recycle 55% of municipal waste by 2025, 60% by 2030 and 65% by 2035. As reflected in the main body of this report and our recommendations, simply applying ever increasing weight-based targets may not be the best way to measure recycling performance.

6 In a circular economy resources are kept in use for as long as possible, maximum value is extracted from them whilst in use, then at the end of their life materials are recovered and regenerated.

7 A suite of documents comprise the statutory waste management plan for Wales. They includes a number of sector plans and the Waste Prevention Programme.

8 Directive 2008/98/EC on waste (Waste Framework Directive) contains this target.

Figure 2 – the goals and outcomes sought from Towards Zero Waste

Goal	Outcome
A Sustainable Environment	A Sustainable Environment, where the impact of waste in Wales is reduced to within our environmental limits by 2050. This means we will take action on reducing the ecological footprint of waste in Wales to ‘one Wales: one planet’ levels through waste prevention and recycling, so that we contribute to using only our fair share of the earth’s resources.
A Prosperous Society	A Prosperous Society, with a sustainable, resource efficient economy. More ‘green jobs’ across a range of skill levels will be provided within the waste and resource management industry in Wales, and increased profit for businesses will be achieved through resource efficient practices, which are ‘future proofed’ against increasing competition for resources.
A Fair and Just Society	A Fair and Just Society, in which all citizens can achieve their full human potential and contribute to the wellbeing of Wales through actions on waste prevention, reuse and recycling.

Source: Welsh Government, **Towards Zero Waste, One Wales One Planet**, June 2010.

- 10 All councils collect recyclable resources at the kerbside. Since 2015, and as confirmed in a judicial review of the Waste (England and Wales) (Amendment) Regulations 2012, councils are required to collect paper, metal, plastic and glass separately. The Welsh Government sees this change as helping councils to collect cleaner and better sorted recyclables, meaning that more of the value of the recyclable resources can be retained when reprocessed.
- 11 However, councils can potentially claim a derogation (meaning an exemption) from the legislation for the separate kerbside collection of recyclables. A derogation may be possible if councils can demonstrate that they still meet the criteria required to produce high quality recyclables and that it is not technically, environmentally or economically practicable to change their collection methods to collect the relevant recyclables separately.
- 12 This report considers whether the Welsh Government is making good progress to promote municipal waste recycling and the efficient and effective collection of municipal waste. [Appendix 1](#) outlines our audit methods.
- 13 As part of this work we have considered the extent of action taken by the Welsh Government in response to recommendations in our February 2012 report on **Public Participation in Waste Recycling**⁹. We have also considered the action taken in response to recommendations made by the National Assembly's Environment and Sustainability Committee in its December 2014 report **Inquiry into recycling in Wales**¹⁰. [Appendix 2](#) shows that:
 - of the eight recommendations we made in **Public Participation in Waste Recycling**, two recommendations have been implemented, five have been implemented in part, with one not implemented; and
 - of the seven recommendations made by the Environment and Sustainability Committee in its report on **Recycling in Wales**, five recommendations have been implemented and two have not been implemented.

⁹ Our 2012 report detailed the various methods that councils used to collect their wastes and noted that the focus of municipal waste management was changing from the collection and disposal of household wastes to recycling. We concluded that the Welsh Government and councils were working to increase participation in recycling but that more work was needed to implement the national strategy and to persuade people to use these services.

¹⁰ The Environment and Sustainability Committee's report and recommendations covered similar themes to those in our 2012 report.

- 14 **Overall, we have concluded that more collaboration between the Welsh Government and councils has helped make recycling methods more consistent and encouraged participation, although waste management service costs show surprising variation. Weight-based statutory targets have driven a much improved recycling rate over time – to as high as 63.8% across Wales in 2016-17 – but could better reflect wider sustainability considerations. The recycling rate decreased to 62.7% in 2017-18 due in part to better quality reporting.**
- 15 The Welsh Government believes it has largely overcome a legacy of tensions and mistrust about its recommended approach to municipal recycling – the ‘Collections Blueprint’¹¹ – although some concerns remain. Since 2012, the ‘Collaborative Change Programme’ has promoted closer working between the Welsh Government and councils, although take-up of the support on offer has varied.
- 16 The number of councils adopting collection methods that the Welsh Government considers conform to its Collections Blueprint increased from three in 2011-12 to 11 in 2016-17. The Welsh Government is expecting more councils to adopt the Collections Blueprint over the next few years, but some councils are still reluctant to change their kerbside collection method for recyclables. The Welsh Government’s view is that the approach recommended by the Collections Blueprint should ensure compliance with the separate collections legislation. However, the UK government is promoting a choice of three different methods for councils in England.

11 The Collections Blueprint sets out the Welsh Government’s recommended service profile for the collection of waste from households. The Blueprint relies on the collection of recyclable resources that are presented part-segregated by residents. Those resources are then further sorted by operatives as they are collected. The Collections Blueprint provides councils with one way of complying with the legislation on kerbside collection. Welsh Government. **Municipal Sector Plan Part 1 Collections Blueprint**. March 2011.

- 17 The Welsh Government has also made progress to encourage public participation in recycling through sharing good practice. The Welsh Government has not, as yet, encouraged any additional financial incentives or penalties to encourage participation. However, it intends to reconsider the need for incentives as part of the planned refresh of the national strategy in 2018. The Welsh Government is also keen to focus more recycling effort on materials that are valuable and scarce. The Welsh Government also intends that a new behaviour change campaign will, among other things, support councils to use existing powers to sanction those who put recyclable materials in residual waste containers or contaminate containers intended for recyclable materials. Compositional analysis of residual waste shows that much recyclable material remains in waste that is destined for disposal.
- 18 Collection systems continue to evolve but benchmarking has found that the cost of certain waste management services, including the collection of various recyclables, show surprising variation. However, there are a wide range of factors that influence these costs.
- 19 The Welsh Government believes that if applied optimally, its Collections Blueprint offers the most cost-effective overall means of collecting waste from households. The Welsh Government is planning further analysis to understand better the differences in councils' reported waste collection costs and the impact where councils have adopted the Collections Blueprint. These costs have fluctuated over time and as councils have changed collection methods. In 2016-17, the median cost per household for collection of dry recyclables for councils using the Collections Blueprint compared favourably with that reported for twin-stream collections. The median cost was broadly similar to that reported for councils using the co-mingled method. The method used to collect dry recyclables might also affect costs in other service areas.
- 20 Weight-based targets for councils have driven a much-improved recycling rate, increasing from 48.5% in 2011-12 to 63.8% in 2016-17, and helped a little by a change in the way recycling is measured. Recycling in Wales exceeds the rate recorded in England, Northern Ireland and Scotland and compares favourably with countries in the European Union and estimated recycling rates elsewhere in the world. The recycling rate decreased to 62.7% in 2017-18 due in part to better quality reporting in respect of wood recycling, with 17 of the 22 councils reporting a decrease.

- 21 The recycling rate of individual councils still varies widely, although not to the same extent as other parts of the UK and 20 of the 22 Welsh councils achieved the 58% target for 2017-18 ([Appendix 3](#)). The Welsh Government continues to apply the same recycling target to all councils. Not all of the rural councils have had higher individual recycling rates than urban and valleys councils. However, until 2017-18 the combined recycling rate across rural areas had been consistently higher than for valleys areas and urban areas.
- 22 Reflecting the wider concerns about climate-changing emissions, there has been an increasing focus on carbon impacts as a means of measuring the sustainability of recycling alongside simple weight-based measurement. Recycling rubble, garden waste and wood makes a relatively small contribution to saving carbon emissions per tonne collected but, being dense and relatively easy to collect, they are mainstays of municipal waste recycling.
- 23 The Welsh Government recognises that its weight-based recycling targets have limitations, and has committed itself to review its approach. In addition to reflecting carbon impacts, a different approach could also encourage councils to recover, more efficiently, valuable and scarce materials.
- 24 The management of many recyclable resources can give rise to green jobs, economic activity and other sustainability benefits. Recent research in Wales has already highlighted these wider impacts. Nevertheless, the planned review of **Towards Zero Waste** provides an opportunity for the Welsh Government to reflect on the role of the private sector and the overall value for money of the considerable public investment in support of recycling.

Recommendations

25 As noted in [paragraph 13](#) and in [Appendix 2](#), the Welsh Government has not yet implemented in full all of the recommendations from our 2012 report or those in the Environment and Sustainability Committee's 2014 report. We consider that these recommendations remain relevant. In addition, we make the following recommendations.

Recommendations

- R1 Benchmarking work has found that the cost of certain waste management services show surprising variation ([paragraphs 1.31-1.39](#)). **The Welsh Government should work with councils to understand better the basis of the variation in spending on waste management services that are fundamentally the same and ensure that waste management costs are accounted for in a consistent way.**
- R2 The Welsh Government believes that, if applied optimally, its Collections Blueprint offers the most cost-effective overall means of collecting recyclable resources but is planning further analysis ([paragraphs 1.40-1.51](#)). **When undertaking its further analysis to understand better the reasons for differences in councils' reported costs, and the impact on costs where councils have adopted the Collections Blueprint, we recommend that the Welsh Government:**
- **explores how the cost of collecting dry recyclables may affect the overall cost of providing kerbside waste management services to households; and**
 - **compares the actual costs with the costs modelled previously as part of the Welsh Government-commissioned review of the Collections Blueprint for councils that now operate the Collections Blueprint.**

Recommendations

- R3 The Welsh Government has undertaken to consider alternatives to the current weight-based recycling targets which can better demonstrate the delivery of its ecological footprint and carbon reduction goals (paragraphs 2.38-2.45). **We recommend that the Welsh Government replace or complement the current target to recycle, compost and reuse wastes with performance measures to refocus recycling on the waste resources that have the largest impact on carbon reduction, and/or are scarce. We recognise that the Welsh Government may need to consider the affordability of data collection for any alternative means of measurement.**
- R4 In refreshing Towards Zero Waste, the Welsh Government needs to show that wider sustainability benefits sought through municipal recycling offer value and cannot be more readily attained in other ways and at lower cost including, but not necessarily limited to, other waste management interventions (paragraphs 2.52-2.53). **The Welsh Government should demonstrate in the revised waste strategy that not only is it possible to recycle a greater proportion of municipal waste, but how doing so maximises its contribution to achieving its sustainable development objectives.**

Part 1

More collaboration has helped make recycling methods more consistent and encouraged participation, although waste management service costs show surprising variation



- 1.1 This part of the report considers how the Welsh Government has worked with councils to improve relationships, implement the national waste strategy and to promote greater consistency in recycling methods. It also considers the extent of variation in the cost of waste management services, including different recycling methods.

The Welsh Government believes it has largely overcome a legacy of tensions and mistrust about its recommended approach to municipal recycling, although some concerns remain

In 2012, we reported that there were tensions and mistrust between the Welsh Government and councils about the Welsh Government's 'Collections Blueprint'

- 1.2 The Welsh Government's Collections Blueprint¹² sets out how, in the Welsh Government's opinion and if adopted by councils across Wales, high rates of high-quality recycling, significant cost savings and improved sustainable development outcomes would result. The Collections Blueprint relies on the collection of recyclable resources that are presented part-segregated by residents. Those resources are then further sorted by operatives as they are collected (Box 1).

¹² Welsh Government, **Municipal Sector Plan Part 1, Collections Blueprint**, March 2011.

Box 1 – the Welsh Government’s Collections Blueprint

The Collections Blueprint covers all aspects of a council’s waste collection service and not just the collection of dry recyclable resources. It highlights the interdependence of the various collection systems, such as kerbside dry recycling, but also the collection of food, garden, bulky, trade and residual wastes.

The Collections Blueprint relies on the collection of recyclable resources that are presented part-segregated by residents. Those resources are then further sorted by operatives as they are collected. The Welsh Government says that the Collections Blueprint should include a kerbside sort system of weekly collection of dry recyclables mixed together in a box, alongside other changes to waste collection systems, and they believe that this collection method leads to cleaner and therefore higher quality recyclables that will have a higher value. The Welsh Government has highlighted that three Welsh councils that had taken up the Blueprint – Conwy, Merthyr Tydfil and Newport – won ‘quality recognition’ awards from the UK Resource Association¹³ in 2017. It also believes that the collection of high quality recyclables is attracting businesses in the recycling industry to locate in Wales.

If taken up by more councils, the Collections Blueprint could begin to bring some consistency to waste collection methods across Wales. The Welsh Government has been keen to improve consistency because feedback from residents and from politicians is that the wide range of different collection methods operated by councils is confusing and possibly deters some residents from engaging more fully in recycling. Greater consistency could also bring opportunity for efficiencies through national branding and campaigns and collaborative procurement of receptacles, equipment, vehicles and services.

¹³ The Resource Association is a new professional advocacy body for the reprocessing and recycling industries.

1.3 At the time of our 2012 report, there were tensions between the Welsh Government and councils over the choice of collection system for recyclables. For many councils, the systems that they had invested in previously were proving successful and helping them meet recycling targets and deliver the national strategy. There were also doubts about the evidence base for the Collections Blueprint and a concern that the Welsh Government was prescribing how local services should be delivered. These issues were still evident at the time of the Environment and Sustainability Committee's inquiry into recycling in 2014. Some councils considered that the funding on which their waste services were dependent would be more secure if they changed to the Collections Blueprint, particularly given the Welsh Government's re-prioritisation of its grant funding for waste services and infrastructure. The clarification of legislation on separate collections was also a factor in some councils changing their approach.

Since 2012, the Collaborative Change Programme has promoted closer working between the Welsh Government and councils, although take-up of the support on offer has varied

1.4 In our 2012 report, we set out our view that closer and more consensual working between the Welsh Government and councils was the best way to make positive progress. Many of the recommendations that we, and subsequently the Environment and Sustainability Committee, made required the Welsh Government to work collaboratively with local government. In particular, we recommended collaborative working to design and implement an independent performance assessment of the methods used for the kerbside collection of recyclable wastes for each council. We also recommended that if a collection system did not meet the standards of this assessment, the Welsh Government and the council should agree a measured plan to achieve the performance assessment standards.

- 1.5 The Welsh Government decided that instead of agreeing with each council an assessment of its collection method, it would offer such an assessment alongside other support through its Collaborative Change Programme. Councils could then decide if they would take up this offer, and the support that they wanted from the Programme. The Programme is operated on the Welsh Government's behalf by the Waste and Resources Action Programme. To promote greater openness and collaboration between those delivering and receiving support, the Collaborative Change Programme is advised by a steering group¹⁴. The Welsh Government's recent and planned funding for the Collaborative Change Programme is £2.3 million for 2016-17, £2.5 million in 2017-18 and £2.7 million in 2018-19.
- 1.6 To date, all 22 Welsh councils have had some degree of technical support from the Collaborative Change Programme. This support ranges from very specific assistance with small areas of waste services such as participation monitoring, to the Programme's full 'business planning' package of support which models the performance of the various collection methods. Taking up the full business planning package of support on offer would deliver an outcome equivalent to that intended by our previous recommendations.
- 1.7 Despite the funding provided, Welsh Government officials have recognised that resources for the Collaborative Change Programme are limited. Councils need to undertake additional work to participate in the full business planning package and with fewer resources, some have found this increasingly difficult. Although many councils have clearly benefitted from the Programme, some criticised it as not meeting their needs and focusing too much on rolling out the Collections Blueprint. Some councils decided instead to commission their own reviews.
- 1.8 Blaenau Gwent County Borough Council and Merthyr Tydfil County Borough Council were the first two councils to complete the business-planning package of support. The councils saw mixed results after changing collection methods (**Boxes 2 and 3**).

¹⁴ The steering group for the Collaborative Change Programme includes the Welsh Government, Welsh Local Government Association, Waste and Resources Action Programme, and in the past year, the Chair of the County Surveyor's Society Waste Sub-Group.

Box 2 – waste services at Blaenau Gwent County Borough Council

Blaenau Gwent County Borough Council has struggled to consistently meet the Welsh Government's statutory national target for recycling. In 2014-15, the Council received £2 million of support under the Welsh Government's Collaborative Change Programme. In addition, the Council also allocated £3 million of funding. This support recommended a range of changes to put in place the Collections Blueprint.

However, the Council did not develop this support into a long-term, well-thought-through business plan for the improvement of its waste services. The Council implemented some changes, but it did not manage this effectively and did not undertake pilots or introduce the changes in phases. Members were also concerned that there was disquiet among some residents, and that they had not received timely and relevant performance monitoring reports. Under pressure, the Council reversed some of its changes, including reintroducing back lane collections and in some localities stopping using some new collection receptacles for recyclables.

Overlapping with the initial period of transition, the Council's recycling performance for 2015-16 declined to 48.7% – from 50.3% in 2014-15 – and compared with the statutory target of 58%. In 2016-17, the Council's recycling rate increased to 56.8%, but still short of the statutory target of 58% ([Appendix 3](#)). However, the Council has noted that it was ranked 11th in Wales in 2016-17 for kerbside dry recycling having seen improvements since moving from a co-mingled service¹.

Note:

- 1 The dry recycling rate includes all dry recycling, not just materials collected at the kerbside and some councils differ in how they classify dry – non-composted – materials as recycled or as having been prepared for re-use. Taking all dry recycling and dry re-use together, the Council was ranked 14th in Wales in 2016-17.

Source: Wales Audit Office, **Review of Waste Services – Blaenau Gwent County Borough Council**, June 2017.

Box 3 – waste services at Merthyr Tydfil County Borough Council

In January 2015, the Council replaced every household's residual waste bin with a smaller 140-litre model so that residents would be persuaded to make better use of the recycling service. In June 2015, the method of collecting recycling was also changed from a co-mingled service to the Welsh Government's recommended Collections Blueprint that includes a kerbside sort system where residents separate paper, glass and cardboard, plastic and aluminium and food waste into separate containers. The Council made these changes with the help of £2 million from the Welsh Government's Collaborative Change Programme. This funding also enabled the Council to purchase new single-pass collection vehicles, containers, a depot and new equipment.

The Council recycled, reused or composted 61.6% of its municipal waste in 2015-16, 11 percentage points more than in the previous year. In 2016-17, the Council's recycling rate had risen to 65.2% (Appendix 3).

Where it has been able to compare, the Council has identified around a £227,000 reduction in net expenditure between 2014-15 and 2016-17 from changes that it attributes to its participation in the Collaborative Change Programme, although this is due to around £383,000 of income generation not reflected in the 2014-15 figures. The Council has noted that it is also now providing food bags free of charge, at a cost of £37,453 in 2016-17. However, it has also noted that lower fleet costs in 2016-17 were assisted by the purchase of vehicles funded through the Collaborative Change Programme grant.

Source: Resource Magazine, 24 August 2016 and Wales Audit Office

The number of councils adopting what the Welsh Government classifies as its Collections Blueprint method increased from three in 2011-12 to 11 in 2016-17, and with more councils expected to follow but some still reluctant to change

- 1.9 In 2011-12, only three councils had adopted the Collections Blueprint. This number increased to 11 in 2016-17, due in part to four councils moving from other kerbside sorting methods that were not fully in line with the Blueprint (Figure 3). In addition, there are now four councils operating collection systems that only require residents to separate key elements of the waste they put for collection, and six councils have a co-mingled collection system (Appendix 3). For some councils, tensions with some residents remain as they try to change their waste collection arrangements to follow more closely the method of collection that the Welsh Government recommends.
- 1.10 Pembrokeshire and the Vale of Glamorgan councils have now announced their intentions to procure the assets and develop the infrastructure necessary to adopt the Blueprint within the next couple of years. The Welsh Government is expecting more councils to follow following preparation of their business plans.
- 1.11 Overall, the Welsh Government considers that much of the adversarial debate over collection methods has been consigned to the past, with priorities now shifting to the development of new infrastructure and markets for materials. As evidence of an improving relationship, the Welsh Government has also highlighted the way in which it has been working with councils to consider the transfer of some funding for recycling into the Revenue Support Grant (paragraph 2.51). The Welsh Government has also been working with councils to implement a new behaviour change campaign (paragraph 1.26).
- 1.12 The Welsh Government has produced statutory guidance¹⁵ on the separate collection of waste paper, metal, plastic and glass. The Waste and Resources Action Programme has indicated to us that several councils appear to have decided that they need not change their methods to comply with derogations given in the legislation on separate collections. The Welsh Government's view is that the approach recommended by the Collections Blueprint should ensure compliance with the separate collections legislation.

¹⁵ Welsh Government, **Statutory guidance on the separate collection of waste paper, metal, plastic and glass**, December 2014.

Figure 3 – comparison of the methods that councils used to collect recyclable resources, 2011-12 and 2016-17

Collection method ¹	Number of councils using method in 2011-12	Number of councils using method in 2016-17
Collections Blueprint ²	3	11
Kerbside sorted (but not fully Collections Blueprint in other areas of service) ³	5	1
Twin-stream	5	3
Multi-stream	2	1
Co-mingled	7	6

Notes:

- 1 Data is for the system predominantly used by each council during the year.
- 2 In practice, not all councils categorised as 'blueprint' operated all aspects set out in the Welsh Government's service configuration for the Collections Blueprint. For example, on collection crew level, charging for garden waste collection, free provision of food caddy liners or promotion of home composting.
- 3 The Council still shown as kerbside sorted but not fully Collections Blueprint is Torfaen County Borough Council. The Council began to move towards the Collections Blueprint in 2015-16 but has yet to change its recycling collection vehicles to those preferred in the Blueprint. The Welsh Government considers that the Council should not yet be regarded as having adopted the Blueprint for the purpose of comparison.

Source: Welsh Local Government Association.

- 1.13 In 2016, a survey by the Environment Agency¹⁶ found that most English waste collection authorities had undertaken, or had scheduled, an assessment of the need to separately collect recyclables. The Environment Agency concluded that ‘co-mingled collections... are the main collection method in England and are likely to remain so’.
- 1.14 The UK government is now seeking more consistency in kerbside recycling collections methods in England through a voluntary framework¹⁷. A choice of three methods is being promoted, as long as councils can demonstrate compliance with the separate collections legislation. Each method requires the separate collection of food. The promoted methods are multi-stream (approximating to the Welsh Government’s Collections Blueprint), twin-stream and co-mingled.
- 1.15 Natural Resources Wales is responsible for regulating the separate collections legislation across councils, private sector waste collection contractors and producers of commercial waste in Wales. However, Natural Resources Wales has not yet used its powers to require any council to submit an independent assessment of their methods for collecting recyclables¹⁸, nor has it challenged any private contractors. For councils, Natural Resources Wales considers that existing initiatives, such as recycling targets and the Collaborative Change Programme, are sufficient to secure the quality and quantity of recyclable resources. Natural Resources Wales has decided to focus its limited resources on risks in respect of waste crime and on compliance with environmental permits¹⁹.

¹⁶ Environment Agency, **Waste collection authority separate collection arrangements: survey results, Version 1**, January 2016.

¹⁷ Waste and Resources Action Programme, **A Framework for Greater Consistency in Household Recycling in England**, September 2016.

¹⁸ This is the assessment of the compliance of methods for collecting recyclables under the ‘TEEP’ assessment provisions of the Waste (England and Wales) (Amendment) Regulations 2012.

¹⁹ Separate collections is one of a number of waste regimes for which Natural Resources Wales is the regulating authority but where it may not necessarily proactively require information from operators. The responsibility to comply lies with the operator and Natural Resources Wales will intervene where it has evidence that indicates a problem.

1.16 The Scottish Government, with the backing of the Confederation of Scottish Local Authorities and Zero Waste Scotland, has developed a different approach to maximise the capture, and to promote the consistent collection, of high quality recyclable resources (Box 4). Unlike the Welsh Government's Collections Blueprint, the recycling charter does not prescribe from the outset specific details regarding vehicles and equipment. Nor does it set out the specific method by which kerbside collection is to be undertaken. Instead, the charter sets common performance aims and says that 'over time, we will establish common collection systems, as appropriate, for paper, card, glass, plastics, metals, food and other commonly recycled materials deemed feasible'. The charter also promises that 'we will eradicate discrepancies on what can and cannot be recycled in different localities'.

Box 4 – the Scottish Household Recycling Charter

In Scotland, collaborative working by the Scottish Government, the Confederation of Scottish Local Authorities and Zero Waste Scotland has resulted in the Scottish Household Recycling Charter which was launched in November 2015. Councils are invited to sign up for this voluntary charter which has been set up to promote more consistent recycling across the country. The charter recommends the adoption of recycling methods where glass and paper are collected in separate streams, and metals and plastics are co-collected in a third stream. Food waste may be collected separately, or co-mingled with garden waste depending on the onward treatment method, while residual waste is collected separately.

Councils signing up to the charter can apply for funding from the Scottish Government to help carry out service changes to align with the charter. By May 2017, 25 of the 32 Scottish councils had the approval of their elected members to sign the charter.

The Welsh Government has made progress to encourage public participation in recycling through sharing good practice and has not, as yet, encouraged any additional financial incentives or penalties

- 1.17 We noted in our 2012 report that increasing public participation, so that more effective use is made of existing services and infrastructure rather than developing more facilities, was a route to increased recycling and higher efficiency. In our view, this conclusion remains pertinent, as pressures on capital funding increase and councils rationalise their waste recycling facilities.
- 1.18 In signposting councils towards good practice on encouraging public participation, the Welsh Government relies heavily upon published information from the Waste and Resources Action Programme²⁰. This guidance is widely used. However, despite the potential benefits, there is often an additional cost for councils if they apply the guidance correctly. In looking to cut the cost of monitoring public participation in recycling, some councils simply measure domestic refuse bin 'set-out' rate rather than participation²¹ or do not measure participation over a sufficiently long period for the results to be valid in support of their wider decision making.
- 1.19 The Welsh Government has not established specific performance indicators for participation as we recommended previously, and use of the method of measuring participation in the guidance is voluntary. We agree with the Welsh Government that a single council-wide measure of participation would only be of limited use. Guidance²² is right to suggest that understanding the level of activity within council wards, districts or collection rounds allows more targeted interventions. However, establishing greater consistency of approach would provide a better basis for comparison between council areas and to support improvement.

20 This information includes guidance on household food waste collections, household waste prevention, improving the quality of dry recyclables and on partnership working.

21 'Set-out rate' is the proportion of households that put out recycling or food waste on one collection opportunity. 'Participation rate', as defined in Waste and Resources Action Programme guidance, is an observed measure of the proportion of households that take part in recycling at least once in the defined period. Participation rate is calculated over three collection opportunities because many households do not put out their container each time, normally because it is not full or they forget.

22 The Waste and Resources Action Programme has produced a range of guidance for councils on increasing participation, including for deprived areas, transient populations, immigrant communities and different types of accommodation, for example, on developing performance indicators for recycling participation in flats.

- 1.20 In 2016, the Welsh Government decided to allocate the resources for the Waste Awareness Wales function, previously delivered by the Welsh Local Government Association, to the Waste and Resources Action Programme. The Waste and Resources Action Programme now has the role to deliver communication and behaviour change projects on behalf of the Welsh Government. The Welsh Local Government Association's Waste Awareness Wales good practice portal previously provided a site for councils to exchange good practice and their experiences. The Waste and Resources Action Programme has set up a widely accessible hub for the exchange of good practice together with a website containing useful waste management guidance notes for councils.
- 1.21 On behalf of the Welsh Government, the Waste and Resources Action Programme has also supported councils in the sale of some recycled resources to re-processors. This is a useful initiative that can support councils to realise the value of recyclable resources in a difficult and often fluctuating market. In July 2017, the Waste and Resources Action Programme reported that it had supported nine Welsh councils with material marketing with a net benefit of £1.4 million²³. The Waste and Resources Action Programme acknowledged that most of this benefit was from two councils that previously had no income from their recyclables. They also recognised that support for brokerage of recyclables is an area needing further development at a national level.
- 1.22 The Waste and Resources Action Programme has also developed national campaigns for recycling and waste reduction (**Box 5**). However, the Welsh Government has not yet acted on the National Assembly Environment and Sustainability Committee's recommendation to commission research on the relationship between waste reduction, income and ability of councils to meet the recycling targets in 2019-20 and 2024-25. Although the Welsh Government initially accepted this recommendation, it noted that there would be costs associated and officials have now questioned the general feasibility of the research that the Committee was suggesting. The Welsh Government has pointed to the progress that has already been made in respect of the 64% target for 2019-20 and the positive trajectory towards the 70% target for 2024-25 (**Appendix 3**). It has funded research on the costs and benefits of setting a new statutory target of 80% (**paragraph 9**) but we consider that the scope of that research may still fall short of meeting the Committee's intentions.

²³ As reported to the Welsh Government's Ministerial Programme Board.

Box 5 – Love Food; Hate Waste campaign and Recycle for Wales

Love Food Hate Waste is a campaign delivered across the UK by the Waste and Resources Action Programme. The campaign aims to raise awareness of the need to reduce food waste by doing some easy practical everyday things in the home. Preventing food waste saves money and benefits the environment.

Recycle for Wales is the national recycling campaign for Wales. Supported and funded by the Welsh Government, and adopted locally by councils and other partners, the campaign aims to encourage consumers to recycle more things more often from all around the home. Recycle for Wales' website provides links to recycling information at all councils.

- 1.23 We also recommended previously that the Welsh Government 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 wastes sufficiently in response to persuasion and education. The Welsh Government considers that it has not needed to take this action because of the good progress councils have made to date to increase recycling. So far, the Welsh Government has preferred instead to rely on influencing public participation through awareness campaigns and the services offered to households.
- 1.24 We recognised that incentives or penalties should only be introduced in the event that other measures have failed to deliver the necessary improvement in recycling performance. In 2017, the Welsh Government consulted on new powers²⁴ to use fixed penalty notices, and extended producer responsibility, to increase recycling. In particular, councils need to meet the 70% recycling target by 2024-25, and the Welsh Government is considering increasing this target to 80% in 2034-35, with an aspiration in **Towards Zero Waste** that in 2049-50, the recycling target will be 100%.

²⁴ Welsh Government (consultation document), **Taking Forward Wales' Sustainable Management of Natural Resources**, June 2017.

- 1.25 The Welsh Government is reconsidering the need for incentives as part of the planned refresh of the national strategy in 2018. However, the Welsh Government will not be legislating for any additional enforcement provisions on the public in the medium-term. It considers that existing legislation is sufficient to achieve its objectives.
- 1.26 The Welsh Government is working with councils to develop a new behaviour change campaign. The campaign has three key parts: national and local level communications; ensuring councils all provide services that can take advantage of increased recycling, especially at the kerbside; and supporting councils to use existing powers in section 46 of the Environmental Protection Act 1990 to sanction those who put recyclable materials in residual waste containers or contaminate containers intended for recyclable materials. The use of these powers for this purpose has not yet been tested in the courts.
- 1.27 Compositional analysis from 2015 has shown that 48.9% of kerbside collected residual waste was widely recyclable and 59.4% was biodegradable. Food waste was the biggest contributor, but this analysis by the Waste and Resources Action Programme also highlighted the amount of other potentially recyclable wastes in the residual waste stream (Figure 4). It noted that there were particular opportunities for improved capture rates for textiles, non-ferrous metals and dense plastic.

Figure 4 – the composition of kerbside collected residual waste for the main recyclable resources (2015 analysis)

Type of recyclable material	% of kerbside residual waste
Food waste	24.8
Dense plastic	7.5
Textiles	5.6
Recyclable paper	4.3
Recyclable card	3.5
Garden waste	2.7
Glass	2.6
Ferrous metal	1.9
Non-ferrous metal	1.3
Waste electrical and electronic equipment	1.3

Note: not all of the total material of these types will actually have been recyclable.

Source: Waste and Resources Action Programme, **National Municipal Waste Compositional Analysis in Wales**, June 2016.

- 1.28 The Welsh Government is keen to focus more recycling effort on textiles, non-ferrous metals and plastic. This is because these materials, in addition to waste electrical and electronic equipment, are valuable and in some cases scarce. They also have a significant effect on the carbon footprint of waste. In addition to capturing more of these recyclables, the use of incentives for high recycling communities and possibly fixed financial penalties for households where recyclables are not adequately separated for collection, might be a way of improving the quality and therefore value of recyclable resources. However, quality will also depend on the collection method. Preventing contamination by non-recyclable wastes or from recyclable materials placed in the wrong collection stream helps to give cleaner and better separated recyclable resources and the highest possible income for councils.
- 1.29 The Welsh Government and councils are currently prioritising food waste recycling because residual waste still contains much food waste. In addition, food waste left in residual waste can cause amenity problems for householders, particularly as councils seek to reduce further the frequency of residual waste collections.
- 1.30 In accordance with a recommendation of the Environment and Sustainability Committee, the Welsh Government has commissioned a report²⁵ on the amount of waste collected for recycling but subsequently rejected due to contamination together with the destination of recyclable resources from all collection methods. The Waste and Resources Action Programme has also developed a website that shows the public the destination of recyclable resources (myrecyclingwales.org.uk). This information may help to dispel some perceptions that recyclable wastes are discarded rather than used as a resource.

²⁵ Eunomia, **Recycling Destinations Data Review**, March 2016.

Collection systems continue to evolve but benchmarking has found that the cost of certain waste management services show surprising variation

- 1.31 Our 2012 report noted that councils' recycling performance typically improved in steps as they rolled out new initiatives. Any comparison of performance and costs was difficult because improvements happened at different times due to local needs and many other factors. In some cases where councils have adopted the Collections Blueprint since 2012 – notably in Merthyr Tydfil and Blaenau Gwent (**Boxes 2 and 3**) – service changes have been introduced in a short time period.
- 1.32 Improvements to, and changes in, collection systems have continued since 2012 amid increased financial pressures. Nevertheless, the majority of councils are now at a similar point in the development of their kerbside waste collection services to allow for some meaningful comparison of costs and performance. With the success of diverting wastes to recycling there is less residual waste for councils to collect, and all councils have moved to fortnightly or three-weekly collections. Conwy County Borough Council has moved to a four-weekly collection following a pilot. Councils' costs for residual waste collection, as reported by the Welsh Local Government Association, have reduced from £99.1 million in 2012-13 to £84.7 million in 2016-17.
- 1.33 Torfaen and Cardiff are examples where the local councils have issued smaller capacity residual waste bins. Trials across the UK have demonstrated that these 'skinny bins' can prompt residents to separate more of their household wastes for recycling, with recycling rates increasing by perhaps four percentage points. Reducing the frequency of collection and size of residual waste bins saves money once systems normalise and capital replacement costs are covered, potentially allowing more funds to be used for recycling. The Welsh Government's Collections Blueprint suggests both of these changes for councils, giving specific suggestions for bin sizes, collection frequency and a range of other service changes. Both initiatives also appear to heighten awareness of waste issues and can promote waste prevention, although such changes can also irritate some residents and lead to a perception of a reduced service.

- 1.34 In addition, councils provide household waste recycling centres and arrangements to collect trade wastes, only differing in whether they also provide some specific collection services like healthcare collections and nappy recycling. Household waste recycling centres provide councils with cost-efficient waste collection and a ready means of diverting waste from landfill disposal into recycling. They also provide residents with an alternative to kerbside recycling, particularly with more restrictions on the type and quantity of waste that can be collected at the kerbside. Waste collected at household waste recycling centres accounts for around one third of Wales' recycling rate.
- 1.35 In the past few years, councils have also reduced the number of these sites, closing sites that were unable to divert at least 70% of waste received into recycling or reuse. A potential problem that results from the accessibility of household waste recycling centres is that residents cross county boundaries to use the nearest site, which distorts the amount of waste apparently arising within a council area and can affect their recycling performance. Some councils are asking for proof of residence before allowing use of their sites. Misuse of these sites by traders seeking free disposal of their wastes is also a problem. Approaches vary but, increasingly, councils are seeking opportunities to raise income through customer charges such as charging traders to deposit rubble.
- 1.36 The Welsh Government's Collections Blueprint specifies that cost information on councils using the Collections Blueprint will be published each year to 'allow the public to gauge if they are getting value for money'. The Welsh Local Government Association summarises waste service cost data in an annual Waste Finance Data Report. However, these reports do not offer a view on value for money and are not in a format that helps the public to assess value for money.
- 1.37 Over recent years, we have facilitated benchmarking work on behalf of the County Surveyor's Society that has looked at different aspects of councils' waste management services. That benchmarking, alongside other figures reported by the Welsh Local Government Association, has highlighted some surprising variation in costs. For example:

- **Food waste:**
 - the cost per household ranged from £13.02 to £39.87 in 2013-14 and with a median cost of £23.51. By 2014-15, the median cost had reduced to £22.09 per household but wide variation remained.
 - councils were typically collecting between 1kg and 2kg of food waste per household per week in 2013-14 and 2014-15.
- **Garden waste:**
 - in 2015-16, reported costs for kerbside collection ranged from £3 to £42 per household.
- **Household waste recycling centres:**
 - in 2015-16, councils' costs for household waste recycling centres ranged from £8 to £53 per household and £34 to £243 per tonne of waste received.
 - the proportion of the total waste arising in a council area that was handled through these centres ranged from 14% to 43% in 2015-16.
 - diversion to recycling of the waste collected at these centres ranged from 57% to 87% per council in 2015-16.

1.38 The reasons for variations in costs have not always been clear. A wide range of factors including service efficiency, demographics and income generation²⁶ will also influence net service costs and benchmarking has not sought to adjust for these factors. There may also be other factors, such as commitments to long-term waste management contracts and access to waste treatment infrastructure, that impact on the costs reported.

1.39 **Paragraphs 1.43-1.51** consider councils' reported costs in more detail for 2016-17. We focus in that section on kerbside dry recycling and the overall cost of household waste services. The Welsh Local Government Association's annual waste finance reports provide further analysis on the breakdown in councils' costs.

²⁶ The Auditor General's November 2016 report on **Charging for services and generating income by local authorities** included an analysis of council's approach to charging and income from waste services. We also held a seminar in 2016 featuring the experiences of Wirral, Denbighshire and Monmouthshire councils in charging for garden waste collection. A common trend was a significant dip in recycling performance when charges were introduced, but some recovery in the following years.

The Welsh Government believes that, if applied optimally, its Collections Blueprint offers the most cost-effective overall means of collecting waste from households

A previous Welsh Government commissioned review concluded that the Collections Blueprint can provide a lower cost solution than other collection systems, but leads to a similar recycling rate

- 1.40 The Welsh Government has implemented the Environment and Sustainability Committee's recommendation for an independent review²⁷ of the Collections Blueprint ([Appendix 2](#)). The Committee had noted that 'the Welsh Government is convinced that its Collections Blueprint offers the best pathway to delivering higher recycling rates, better quality recyclables and greater efficiency'. However, it also noted that 'this conviction was not shared by many local authorities', adding that 'at present, no single method of collecting recyclable resources from householders offers a clear lead in performance, cost or efficiency'. To support the review, the Welsh Government established a Technical Advisory Group, consisting of representatives from the Welsh Government, councils and the Welsh Local Government Association. Methods used for the review were also overseen by an external peer reviewer.
- 1.41 The peer reviewer noted the limitations of the evidence available, and particularly that there were very few literature sources to draw from that considered the relative performance of the Collections Blueprint. However, the review presented some evidence to show that the Collections Blueprint could provide lower overall service costs and a similar recycling performance when compared with other collection methods. The review drew on reported cost data for the collection of dry recyclables up until 2013-14 when only five councils operated to the Collections Blueprint. The cost data for the collection of other recyclables was based on modelling and the work also sought to take account of other factors that could influence local costs to compare on a like-for-like basis. The peer reviewer commented that 'dry recycling costs alone have been used to evaluate overall value for money'.

²⁷ Eunomia, [Review of the Welsh Government Collections Blueprint](#), March 2016.

1.42 While there are different opinions, some council waste managers have been critical of the review, highlighting the limited amount of empirical evidence used and that the modelling is highly sensitive to the assumptions applied. We have not sought to form our own view on the evidence base for the review's findings, but such concerns remain a factor in persuading some councils of the merits of the Collections Blueprint approach. The Welsh Local Government Association has also highlighted that the review did not take account of the potential negative impact on public participation in recycling from changing collecting methods, if only in the short-term. In the experience of Blaenau Gwent County Borough Council since the review was carried out (**Box 2**), this impact could also have been mitigated by better change management arrangements.

The Welsh Government is planning further analysis to understand better the differences in councils' reported waste collection costs and the impact where councils have adopted the Collections Blueprint

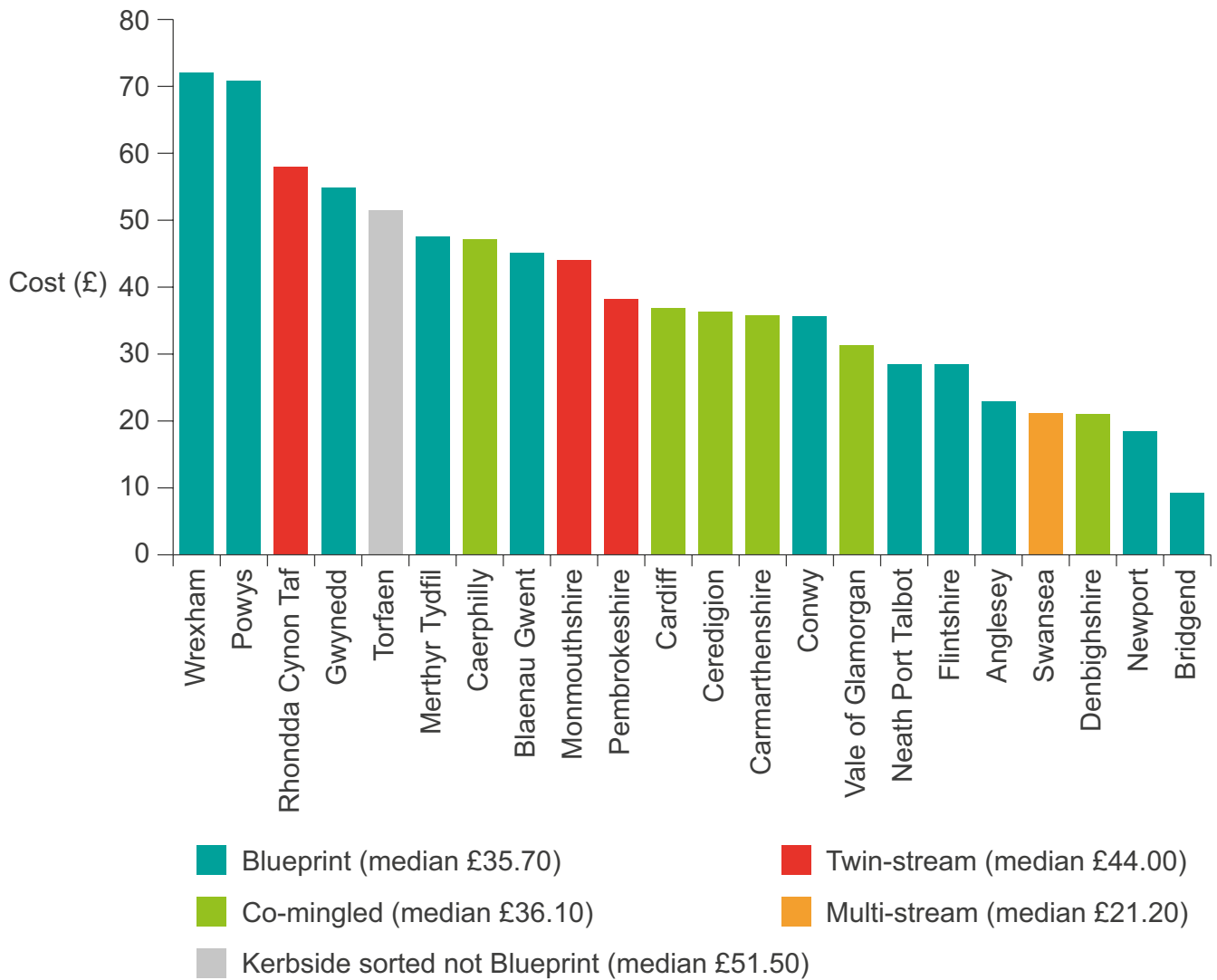
1.43 The Welsh Government is working with the Waste and Resources Action Programme through the Collaborative Change Programme to monitor the impacts of recent service changes. Through this work, the Welsh Government has indicated to us that it now intends to report an analysis of the financial, and other, changes that councils have seen since the adoption of the Collections Blueprint. It will consider operational factors influencing costs and income from selling materials. The Welsh Government intends that this work will inform a revision of the Collections Blueprint. We highlighted the need for such analysis during our discussions with Welsh Government officials in the preparation of this report.

1.44 We compared councils' actual reported costs for the kerbside collection of dry recyclables in 2016-17, focusing on the median cost for each of five collection methods used. The data includes the costs of collection, transfer and treatment and income from the sale of recyclables. The limited sample size for some categories of collection system means that the findings of this analysis are indicative only. The Welsh Local Government Association's annual waste finance reports provide further analysis of these costs and we have not sought to take account of the factors that the Welsh Government intends to consider in the work it is undertaking.

- 1.45 **Figure 5** shows that the median cost per household for the Collections Blueprint councils compared favourably with that reported for twin-stream collections. The median cost was broadly similar to that reported for councils using the co-mingled method. The range for the Collections Blueprint councils saw Wrexham report costs nearly eight times higher than Bridgend. For councils using co-mingled collections the range of costs was just over two-fold, and less again for the three councils using a twin-stream collection method.
- 1.46 The reasons for the range in costs for councils using the Collections Blueprint merit further consideration. For example, there is no obvious relationship between the reported costs and whether councils are classified as rural, valleys or urban. However, it is clear that some councils that already reported relatively low costs before moving onto the Collections Blueprint, continued to do so afterwards. Similarly, as some higher cost councils have adopted the Blueprint more recently, they have maintained relatively high reported costs thereafter. This is part of the reason why the median cost of collection for Collections Blueprint councils increased in cash terms from £12.85 per household in 2010-11 (two councils) to £42.66 in 2015-16 (11 councils), before then dropping back to the £35.70 reported for 2016-17²⁸.
- 1.47 While we looked back at the trend in median costs over recent years, the changes in councils' collection methods complicate the picture. These changes have not generally occurred in single stages of implementation at the turn of a financial year, meaning that the annual costs can, in practice, cover more than one method and there may also be additional one-off costs associated with transition.

28 Bridgend County Borough Council and Newport City Council were the first councils to begin to operate the Collections Blueprint from 2010-11. They were joined in 2011-12 by Conwy County Borough Council, and by Powys County Council and Isle of Anglesey County Council in 2012-13 and 2013-14 respectively. Six more councils have since changed methods and were classified by the Welsh Government as Collections Blueprint in 2015-16 and 2016-17 (Figure 3).

Figure 5 – cost per household for dry recycling kerbside collection for councils in 2016-17, and the median cost per collection method^{1, 2, 3}



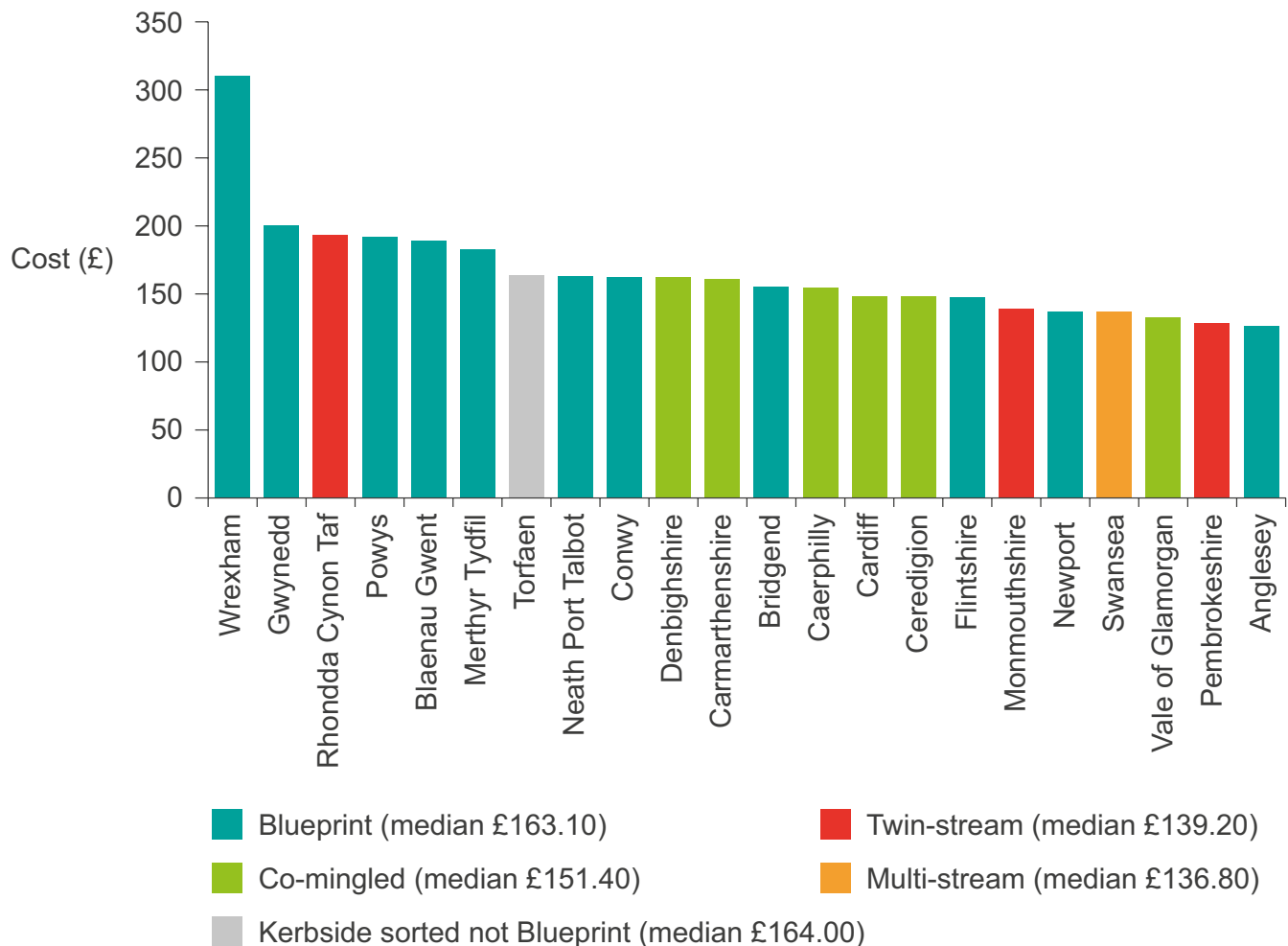
Notes:

- 1 There can be variation within each method of collection. For example, with councils operating the Collections Blueprint where there are differences such as in collection crew size and in customer charges.
- 2 Other factors may have more influence over the cost of delivering household waste services than the choice of collection method, including any one-off costs. An example is the Private Finance Initiative used to deliver waste services in Wrexham County Borough Council and the fact that the Council changed its recycling fleet in 2016-17.
- 3 The median value lies at the midpoint of a frequency distribution of observed values, such that there is an equal probability of a value falling above or below it. Using the median value is a good way to analyse data with a small sample size and high variability.

Source: Welsh Local Government Association, **Waste Finance Data Report 2016-17**, March 2018.

- 1.48 While there is a lack of conclusive evidence, it is also possible that the choice of method used to collect dry recyclables at the kerbside has some impact on the cost of other services. In particular, arrangements for recycling collection rounds may affect the cost of food and garden wastes collections, and kerbside recycling is also likely to affect the use of household waste recycling centres. Restricting the frequency and the capacity of residual waste collection, under the Collections Blueprint or otherwise, is known to often lead to less residual waste and more recyclables.
- 1.49 The Welsh Local Government Association defines household waste service cost as the 'aggregated total of cost associated with kerbside dry recycling, kerbside food waste, kerbside green waste, household waste recycling centres, bring sites and residual waste'. Each element includes costs of collection, transfer, treatment and disposal of waste. Costs associated with trade waste, trade recycling, and clinical waste, bulky waste, procurement of waste treatment, other municipal solid waste and awareness raising costs are not included. Income is included to better reflect the net costs of services.
- 1.50 **Figure 6** shows that seven of the 11 councils with the highest cost to provide waste services to each household in 2016-17 were all using the Collections Blueprint. Of the 11 councils with the lowest costs only four were on the Collections Blueprint. Four of the six councils changing to Collections Blueprint in 2015-16 reported a reduction in costs in 2016-17, while other councils that have used this method for some years noted increased costs in 2016-17. The costs for councils using other methods of collection either reduced, or were relatively stable.
- 1.51 Further analysis is required to consider the impact of transitional costs and other factors, including the costs prior to transition or the impact of contract prices for waste services. Many councils have, or will shortly, transition from landfill disposal of their residual wastes to treatment at energy from waste facilities. As these changes play-out and landfill taxation is no longer paid and the Welsh Government's subsidies are applied, the cost of residual waste treatment for many councils will be slightly less expensive than at present.

Figure 6 – cost per household for councils’ household waste services in 2016-17 and the median cost per household collection method^{1, 2, 3}



Notes:

- 1 There can be variation within each method of collection. For example, with councils operating the Collections Blueprint where there are differences such as in collection crew size and in customer charges.
- 2 Other factors may have more influence over the cost of delivering household waste services than the choice of collection method, including any one-off costs. An example is the Private Finance Initiative used to deliver waste services in Wrexham County Borough Council and the fact that the Council changed its recycling fleet in 2016-17.
- 3 The median value lies at the midpoint of a frequency distribution of observed values, such that there is an equal probability of a value falling above or below it. Using the median value is a good way to analyse data with a small sample size and high variability.

Source: Welsh Local Government Association, **Waste Finance Data Report 2016-17**, March 2018.

Part 2

Weight-based statutory targets have driven a much improved recycling rate over time, but could better reflect wider sustainability considerations



- 2.1 This part of the report considers the overall trends in recycling performance. However, it also explores the limitations of using a weight-based target for municipal waste that is prepared for reuse, recycling or composting (the 'recycling target'), and how carbon measurement is becoming an increasingly important measure of sustainable waste management. The final sections consider issues arising for the Welsh Government in its planned review of the national waste strategy **Towards Zero Waste**.

Weight-based statutory targets have driven a much improved recycling rate over time – to as high as 63.8% across Wales in 2016-17 – although there has been a slight decrease for 2017-18

The recycling rate increased steadily to 63.8% in 2016-17, helped a little by a change in measurement from 2012-13, but decreased to 62.7% in 2017-18 due in part to better quality reporting

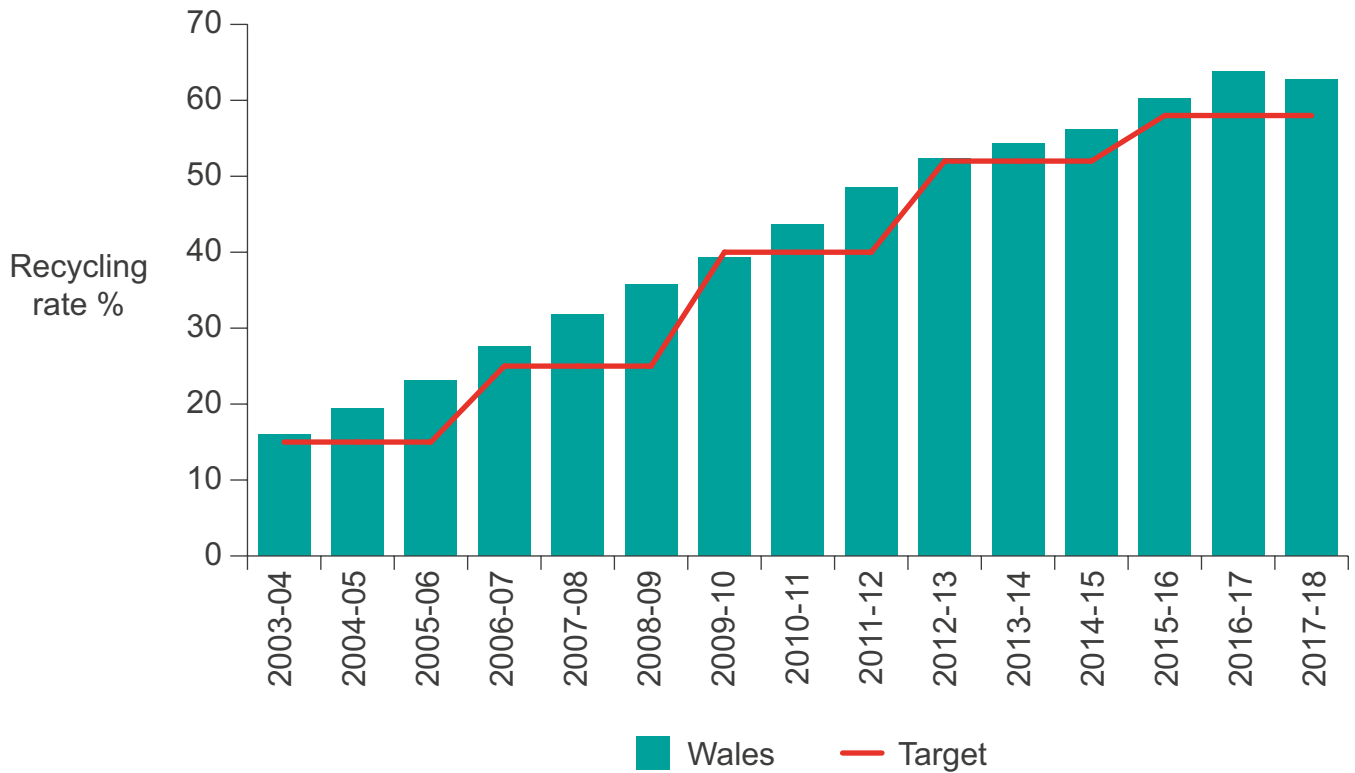
- 2.2 The recycling rate is a weight-based measure that sets the weight of recycled wastes against the overall weight of council collected municipal wastes, and it became a statutory target in Wales from 2012-13. This simple means of assessing progress has allowed both the measurement of municipal recycling in Wales and reporting against European Union requirements in the Waste Framework Directive. A weight-based recycling target is shared by all countries in the European Union, and more widely, and has helped to drive increased recycling rates. However, a weight-based target provides no direct measure of sustainability and does not specifically prioritise the recycling of wastes that have the most effect in reducing Wales' carbon footprint. In addition, a weight-based recycling target does not prioritise recycling of resources that are valuable because they are particularly scarce, and these targets can even have the opposite effect.

- 2.3 In 2011-12, Wales' recycling rate was 48.5% and, for the first time, the amount of waste sent for reuse, recycling or composting exceeded the amount disposed to landfill. Councils had achieved increased recycling through the provision of new services such as kerbside recycling collections and the separate collection of food waste. Councils also improved waste collection infrastructure, such as through upgrading civic amenity waste sites to become household waste recycling centres.
- 2.4 From 2012-13, the Welsh Government changed the way that it calculates the recycling target to include rubble, incinerator residues, plasterboard and waste from beach cleaning. However, the new definition meant that recyclables collected but subsequently stockpiled and not actually sent for processing, did not count in the recycling rate until they were processed. The net effect of the new definition was to increase the recycling rate for Wales in 2012-13 from 50.4%, under the old definition, to 52.3%. Twenty councils saw an increase of up to 4.8 percentage points but the recycling rate decreased for two councils, by up to 1.9 percentage points.
- 2.5 Wales recycles a high percentage of municipal waste, with 63.8% of municipal waste reused, recycled or composted in 2016-17 (Figure 7). Recycling in Wales exceeds the rate recorded in England, Northern Ireland and Scotland²⁹ and compares favourably with countries in the European Union and estimated recycling rates elsewhere in the world³⁰. Benchmarking work has shown that recycling of commercial wastes collected by councils has also improved from just under 16% in 2011-12, to 45.3% in 2016-17.

²⁹ In England, Northern Ireland and Scotland recycling is measured using the household waste recycling rate, a measure that excludes some of the components that are included in the municipal waste recycling rate in Wales. Data for 2016 is the most recent available and shows the household waste recycling rates to be: England (44.9%); Northern Ireland (43%); Scotland (42.8%); Wales (57.3%).

³⁰ In December 2017, the consultants Eunomia estimated that Wales is currently ranked fourth in the world for the weight of municipal waste recycled. When they compared on a 'like-for-like' basis with other countries the recycling rate for Wales was reduced by 12 percentage points to 52.2% (to exclude rubble and incinerator bottom ash and adjusting for contamination during collection). Eunomia also adjusted the recycling rates for other countries. Eunomia, **Recycling; who really leads the world? Identifying the world's best municipal waste recyclers**, March 2017 report updated with 2016-17 data in late 2017.

Figure 7 – municipal waste recycling rates from 2003-04 to 2017-18



Note: changes to the definition of municipal waste meant that from 2012-13, rubble, incinerator residues, plasterboard and waste from beach cleaning were included. In addition, data for years prior to 2012-13 are based on waste collected for disposal/treatment. Data for 2012-13 onwards are based on waste sent for disposal/treatment.

Source: Based on data reported in the Welsh Government's, **Statistical First Release, Local Authority Municipal Waste Management, 2017-18**, October 2018.

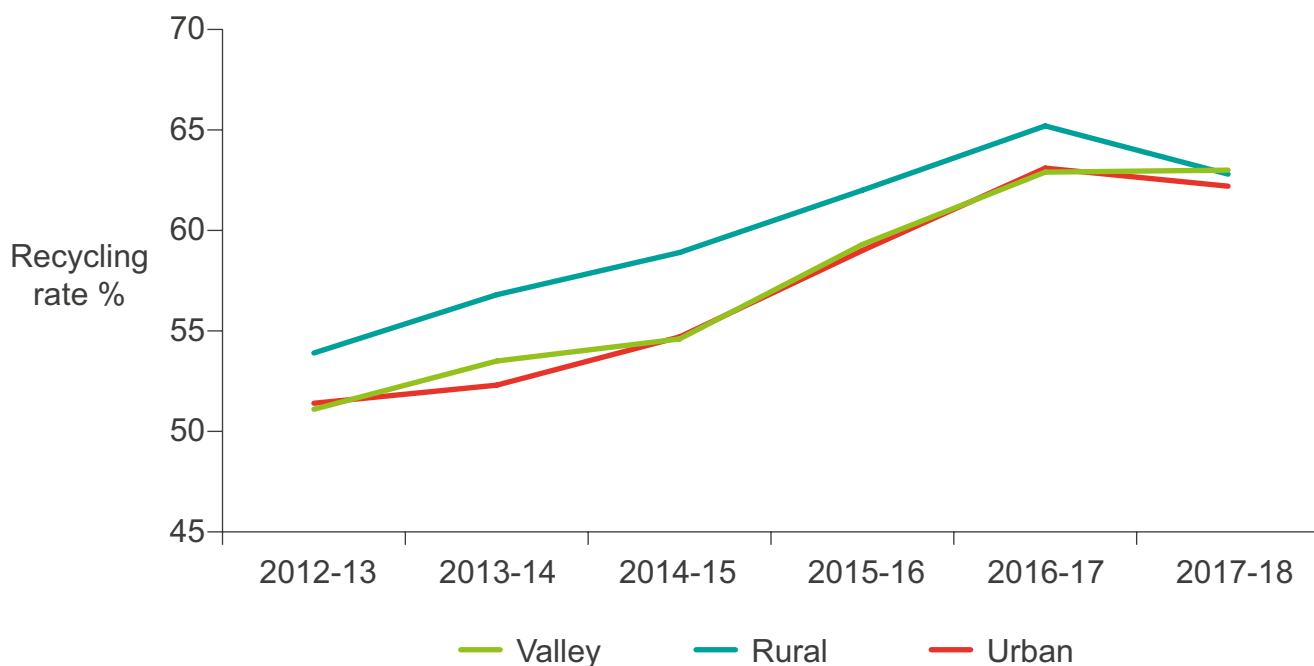
- 2.6 In October 2018, the Welsh Government published the latest recycling data for 2017-18. It shows that for the first time over the past two decades, there was a small year-on-year decrease to 62.7%. The decrease has been attributed to a combination of complex factors but including the improved accuracy of reporting in respect of wood recycling.
- 2.7 Overall, 20 of the 22 Welsh councils met or exceeded the statutory recycling target of 58% for 2017-18. The recycling rates varied from 56.0% in Blaenau Gwent to 72.2% in the Isle of Anglesey ([Appendix 3](#)). By contrast, nine councils failed to meet the 52% recycling target in 2012-13, the first year that this target became statutory. Councils' recycling rates in other parts of the UK vary to a greater extent than in Wales.
- 2.8 Of the 22 councils, 17 reported a decrease in their recycling rate for 2017-18. Pembrokeshire and Ceredigion councils saw the largest decreases. Ceredigion had previously recorded the highest rate of all councils in 2016-17 (70.1%) but saw this reduce to 63.7% in 2017-18, still above the statutory target and the Wales average. The recycling rate in Pembrokeshire fell from 65.3% to 57.0%. Bridgend County Borough Council reported the largest increase, from 57.9% to 68.6%. The increase has been attributed to changes in the Council's kerbside collection scheme.
- 2.9 Progress in improving the recycling rate at individual councils can fluctuate, even for those with generally good recycling rates. A recycling rate that is marginally less than the previous year may not necessarily indicate a performance problem. Performance changes could be due, for example, to service changes, seasonal issues, and the reprioritisation of resources. However, Blaenau Gwent County Borough Council has not achieved the recycling target in five of the six years since the target became statutory. The Council also failed to meet the target six times between 2003-04 and 2012-13.
- 2.10 The Welsh Government has the option to levy financial penalties on councils that fail to meet the target. There had been 20 instances where councils had failed to meet recycling targets between 2012-13 and 2016-17. In practice, levying a financial penalty may simply impact on councils' available resources to support improvement. For the first time, the Welsh Government levied a £77,800 fine on Blaenau Gwent County Borough Council for its failure to meet the 2016-17 target.

The Welsh Government continues to apply the same recycling target to all councils, but until 2017-18 the combined recycling rate across rural areas had been consistently higher than for valleys areas and urban areas

- 2.11 Our 2012 report considered that national plans for recycling did not take sufficient account of local geographical, compositional and socio-economic differences. Rural councils achieved a combined recycling rate that was consistently higher than valleys councils, by as much as seven percentage points in 2009-10, and a few points higher than urban councils.
- 2.12 Many physical, social and economic factors can act as barriers to recycling. The Waste and Resources Action Programme has undertaken some work that pointed towards a link between higher deprivation in urban areas and the likelihood of lower recycling rates. Whether residents have gardens and can produce a large quantity of organic garden wastes for recycling may also be part of the reason for the higher recycling rates observed historically by rural councils, and particularly over valleys councils.
- 2.13 We recommended previously that the Welsh Government analyse the recycling rates for councils to determine if there is a significant difference in the performance of predominately urban, valleys and rural local councils. We also recommended that the Welsh Government use this analysis together with socio-economic differences when setting future recycling targets and redirect and target support for any councils shown by the analysis to be disadvantaged.
- 2.14 In responding to these recommendations, the Welsh Government considered provisional recycling data for the 2015 calendar year only. That data showed rural recycling to be 60%, urban recycling 58% and valleys recycling 57%. The Welsh Government's conclusion was that a range of three percentage points was not a significant difference between these recycling rates. The Welsh Government has also noted not all of the rural councils have higher individual recycling rates than urban and valleys councils. The Welsh Government considers that it has implemented the recommendation and does not need to take any further action by considering variable recycling targets or targeting support, but says that it will review its approach if the gap widens.

2.15 In each of the five years from April 2012 to March 2017, rural councils maintained the highest combined recycling rate (Figure 8). In 2013-14, rural councils achieved a combined recycling rate that was 4.4 percentage points more than either urban or valleys councils. Similarly, in 2014-15, this difference was 4.3 percentage points. However, the gap closed gradually in 2015-16 and 2016-17 and the latest data for 2017-18 shows a different picture, with the combined rate for valleys councils marginally higher than for rural and urban councils. The factors that contributed to the overall decrease across Wales impacted rural councils more than other councils but some of these factors may only be temporary.

Figure 8 – combined municipal recycling rate for rural, valleys and urban councils in Wales from 2012-13 to 2017-18



Note: Rural councils are: Carmarthenshire, Ceredigion, Conwy, Denbighshire, Gwynedd, Isle of Anglesey, Monmouthshire, Pembrokeshire, Powys, and the Vale of Glamorgan. Valleys councils are: Blaenau Gwent, Bridgend, Caerphilly, Merthyr, Neath Port Talbot, Rhondda Cynon Taf, and Torfaen. Urban councils are: Cardiff, Flintshire, Newport, Swansea, and Wrexham.

Source: Welsh Government, [StatsWales website - National Strategic Indicators datasets, Reuse/recycling/composting rates by local authority and year](#), accessed October 2018.

There has been an increasing focus on carbon impacts as a means of measuring the sustainability of recycling alongside simple weight-based measurement

- 2.16 Reducing the amount of waste that arises is by far the best way to reduce the climate damaging carbon impact of waste management. However, diverting waste from landfill disposal and treating it by other means, such as by increasing recycling or using energy from waste, also reduces its carbon impact.
- 2.17 Modelling³¹ undertaken for the Welsh Government to explore the carbon impact of collecting recyclables suggests that kerbside sorted collection systems used can give 'a relatively significant climate change benefit in comparison to the equivalent performance of co-mingled systems'. Researchers attribute these benefits to higher quality recycled paper and glass, and less transportation impacts, from kerbside sorted recycling collections.
- 2.18 Several leading expert bodies on waste management have promoted different ways of measuring carbon impact as a means of assessing the sustainability of recycling. In particular, the Waste and Resources Action Programme suggests using weight and carbon targets together and, since 2013, Scotland has also used the 'Carbon Metric' to assess councils' carbon footprint from waste, including the impact of recycling.
- 2.19 Eunomia produces an annual Recycling Carbon Index for all UK councils although it only quantifies the carbon impact of recycling. This means that a council that generates high volumes of waste, but achieves a high recycling rate, would rank higher than a council with a similar recycling rate from a lower overall volume of waste. By contrast, the Scottish Carbon Metric considers the whole-life impacts of waste³².

31 The Waste and Resources Action Programme and Eunomia, **The Climate Change Impacts of Recycling Services in Wales**, September 2016.

32 Zero Waste Scotland provides a good example of the benefits of recycling waste with high embodied carbon. Zero Waste Scotland has calculated a carbon factor for each material type, expressing the embodied carbon emissions as kg CO₂eq per tonne of material. Using their Carbon Metric calculations, Zero Waste Scotland showed that every tonne of plastic bottles that is recycled saves 3.2 tonnes of embodied carbon emissions, whereas the same weight of rubble saves just 16 kilograms of embodied carbon emissions. The carbon benefit of recycling a product is the amount of these embodied emissions that are 'saved' by preventing the need to produce new products.

2.20 Over recent years, the Recycling Carbon Index has shown that Wales already achieves the greatest carbon saving per head of population from municipal recycling in the UK. In 2016-17, the 94kg per person carbon saving calculated for Wales was 36% greater than for England and 24% greater than for Northern Ireland. Nevertheless, there is still scope to recycle more of the waste resources that have the highest carbon benefit.

2.21 **Figure 9** compares the performance of the seven leading Welsh councils for recycling in 2016-17 to their ranking among Welsh councils in the Recycling Carbon Index. The comparison highlights some clear differences in relative performance using the two measures. In 2015-16, only two of the five best performing Welsh councils in the carbon index used a kerbside sorted method for collecting recyclables but in 2016-17 all of the top five did so. In both 2015-16 and 2016-17, four of the five worst performing councils in the index used either a co-mingled or multi-stream method. The exception is Blaenau Gwent County Borough Council, which moved from a twin-stream method to kerbside sorted collection during 2015-16 (**Box 2**).

Figure 9 – ranked performance in 2016-17 of the top seven Welsh councils for recycling compared with their Carbon Index rating

Council	Rank for recycling target 2016-17 (out of 22)	Rank in Carbon Index 2016-17 (out of 22)
Ceredigion	1	6
Wrexham	2	8
Monmouthshire	3	14
Flintshire	4	9
Carmarthenshire	5	11
Isle of Anglesey	6	3
Caerphilly	7	19

Source: Wales Audit Office comparison using data from the Welsh Government's **Statistical Bulletin October 2017** and Eunomia's **Recycling Carbon Index 2016-17**.

2.22 Waste management consultants Ricardo Energy & Environment have also suggested measuring the carbon contribution of waste services and have produced a carbon league table. Although different from the Scottish Carbon Metric in certain respects, the carbon league table also looks beyond recycling activity alone to provide a more holistic view of the carbon performance and overall 'environmental strength' of a council's waste services. Ricardo Energy & Environment have noted that high recycling levels do not determine overall carbon performance and that weight-based measurement has encouraged councils to 'chase' certain heavier waste materials, in particular garden waste, despite arguably marginal environmental benefits³³. The Welsh Government has noted that for Wales, compositional analyses of the waste collected by local authorities in 2003, 2009 and 2015 did not suggest an increase in the overall amount of garden waste collected when also adjusting for population growth.

2.23 In June 2015, Ricardo Energy & Environment ranked the performance of UK councils against both their recycling rate, and their position on the carbon league table. Using data from 2013-14, their analysis found that:

- reliance on landfill disposal has a big impact in producing a considerable amount of carbon emissions, but energy from waste has negligible impact on carbon. So, from the perspective of carbon emissions, a shift from landfill to energy from waste as a means of waste disposal is a good thing.
- many of the councils with the highest recycling rate did not perform well on the carbon league table because of the materials they recycle.
- Denbighshire County Council was the only Welsh council in the UK top ten when ranked in terms of carbon benefit. The Council ranked third highest, and achieved this with an overall carbon benefit of 270 kg CO₂ equivalent per tonne. The Council was also fourth-ranked in terms of recycling rate. By comparison, Monmouthshire County Council was fifth highest for recycling rate, but its carbon benefit was ranked 31st.

33 Ricardo Energy & Environment, **Which local authorities would be the winners and losers if we moved to a carbon league table rather than the traditional recycling % table?** Article in Recycling and Waste World, June 2015.

- 2.24 The carbon impacts of various wastes are a result of the different processes that are undertaken to gain, use and then to dispose of each waste. For example, the processing required to extract and to manufacture metals, plastic and textiles means that a lot of carbon emissions are generated during this stage. This means that these materials have high embodied carbon, and replacing them requires the same investment of processing and leads to the same generation of carbon emissions. For these materials, therefore, recycling is good because it avoids repeating the extraction and manufacturing stages of production. In addition, for some of these materials, for example some metal resources like copper, or plastics because they are derived from oil, there is only a finite amount of the resource available.
- 2.25 But waste materials also have a carbon impact at the end of their use, as a consequence of their disposal. Unless composted by householders or burnt in garden bonfires, before councils began to collect separately food and garden waste it would have gone to landfill with other residual wastes where it would have a significant carbon impact. Since 2004, councils have had to meet legislation³⁴ that requires a progressive reduction in the amount of biodegradable wastes, including food and garden waste, which they can dispose to landfill.
- 2.26 Councils can also include as recycled, other organic wastes from non-household sources such as grass cuttings and leaves that they 'collect' from municipal parks and gardens, and this includes clearing some organic materials from highways. Since the definition was amended in 2012-13, organic wastes collected during beach cleaning are also counted towards the recycling target if composted.

³⁴ The Landfill Allowances Scheme (Wales) Regulations 2004 were introduced in response to the Landfill Directive Council Directive 1999/31/EC. There are other legislative drivers to discourage disposal of green waste to landfill, such as the duty of care under the Environmental Protection Act 1990 (section 34).

- 2.27 Invariably, and with exception of issues like highway safety and amenity, plant wastes such as leaves and clippings would pose less of a potential to harm the environment if they could be left uncollected and for the natural decomposition processes of the carbon cycle to take place. The reality is that councils will often need to clear plant wastes for reasons such as amenity³⁵, and small scale composting has for years provided a means of managing these wastes. However, by collecting and bulking up garden wastes into the composting ‘windrows’ frequently used by councils, inadequate aeration could increase the risk of releasing significant concentrations of greenhouse gases, especially methane and nitrous oxide, to the atmosphere³⁶. Both of these gases are a far more potent greenhouse gas than carbon dioxide. Were councils to dispose of garden waste by incinerating it at energy from waste facilities, treatment in this way would not count towards recycling targets³⁷.
- 2.28 By far the most preferable environmental option for food waste is for householders and businesses to minimise its production. This is because every tonne of food waste that is produced creates the equivalent of four tonnes of greenhouse gas emissions. But preventing food waste can save more than 53 times more carbon emissions than recycling that same waste. As a more environmentally preferable option to landfill, councils now send the food waste that they collect for treatment by anaerobic digestion where the methane that is generated during treatment is captured and burnt to generate some electricity. The potential carbon impact of food waste is reduced significantly when it is treated by anaerobic digestion³⁸.

35 There are advantages to removing organic material for amenity and potentially some health reasons as decomposing organic material can provide harbourage for pests. However, there are sometimes disadvantages, for example, removing seaweed from sand beaches is known to promote wind-blown erosion.

36 The Welsh Government has noted that there is a similar risk of this happening in home compost bins.

37 Incinerating food waste is also technically possible, but can be inefficient and operationally difficult due to water content.

38 The carbon benefit of anaerobic digestion and energy from waste is linked to the carbon intensity of the grid electricity that they are replacing. As the grid continues to decarbonise, the carbon benefits of anaerobic digestion and energy from waste will decline and eventually they will be net emitters of carbon.

2.29 Recycling glass using closed-loop methods that maintain its value is worthwhile because although a considerable amount of energy is used in glass re-melting, making new glass takes even more energy. However, if disposed to landfill, glass is inert so causes no real environmental harm other than possibly some amenity issues. The justification for recycling on the basis of preserving raw resources is not as strong as for other materials, although there are still concerns about the supply of sand and the environmental impact of its extraction. It is also far more preferable to keep glass out of the waste stream and to reuse rather than recycle it, although reuse of glass containers is currently under-developed. There are statutory targets for the recycling of glass packaging under the EU's Packaging Waste Directive.

Weight-based targets have encouraged councils to recycle wastes that have a relatively small carbon impact per tonne collected

2.30 In our 2012 report, we noted that some councils were 'not taking account of the sustainability objectives underpinning the national strategy' and that 'targets, and the threat of financial penalties means some have tried to meet their landfill allowance and recycling targets by any means without being specifically concerned with sustainability'. The Environment and Sustainability Committee recommended in 2014 that the Welsh Government 'investigate whether weight-based targets are having any unintended impact on reducing the ecological footprint of waste', and to do this by the end of 2015. The Welsh Government has not yet implemented this recommendation, although its evaluation of the Wales waste plan has reported more generally on reductions in the ecological footprint of all wastes and the landfilling of waste in the period 2010 to 2015.

2.31 Recycling rubble, garden waste and wood makes a relatively small contribution to saving carbon emissions. But, together with some other wastes, these are mainstays of municipal waste recycling in Wales, as has also been seen elsewhere in the UK. To indicate the point, **Figure 10** shows how garden waste, rubble, wood, incinerator bottom ash and glass recycling contributed to councils' overall recycling performance in 2016-17. These wastes accounted for just over half of Wales' recycling rate of 63.8% in that year.

Figure 10 – the contribution that garden waste, rubble, glass and incinerator bottom ash made to Wales’ recycling performance in 2016-17

Material recycled	Percentage points in Wales recycling rate	Range in percentage points contributed to individual councils’ recycling rates
Garden waste ¹	11.4	4.0 to 19.4
Wood ²	4.2	0.0 to 6.4
Rubble ³	9.2	2.0 to 20.6
Glass	5.1	3.7 to 8.1
Incinerator bottom ash (including metals) ⁴	6.1	1.0 to 9.3
Total	36.0	26.4 to 46.5

Notes:

- 1 Our estimate is based on separately collected garden waste and assuming that garden waste makes up 75% of any mixed garden and food waste collected. Some councils have suggested a slightly lower percentage split as part of recent benchmarking work. The 75% assumption is based on figures reported by the Waste and Resources Action Programme for a sample of weekly mixed collections in **Performance analysis of mixed food and garden waste collection schemes**, February 2010. The proportion of food waste in fortnightly mixed collections was higher.
- 2 At 0.0%, Denbighshire County Council separately collects wood from recycling parks. However, this material is used as biomass fuel and does not therefore count towards the recycling rate.
- 3 The contribution that rubble (collected as a percentage of waste arising from recycling and residual sources) makes to the recycling rate is very slightly different to our figures because it is based on what is sent for recycling in the scheme year and includes aggregate recovered from street sweepings.
- 4 Individual councils are gradually transitioning to energy from waste facilities.

Source: Wales Audit Office analysis of WasteDataFlow data.

- 2.32 The examples of garden waste, rubble, wood, glass and incinerator bottom ash show that, within the limitations of the Welsh Government's recycling target, there are some incentives for councils to recycle certain readily available wastes that have a relatively small carbon impact per tonne collected. For individual councils, these wastes accounted for between two-fifths and just over two-thirds of their recycling rates in 2016-17.
- 2.33 The contribution that rubble has made to Wales' recycling performance has steadily increased since its inclusion in the measurement of the recycling rate. In 2012-13, rubble accounted for 4.4 percentage points within the overall recycling rate of 52.3%. In 2016-17, rubble accounted for 9.2 percentage points within the overall recycling rate of 63.8%. However, construction waste cannot be counted under the new EU targets and definition of municipal waste.
- 2.34 The amount of incinerator bottom ash sent for recycling had been increasing as councils increase their use of energy from waste facilities. Bottom ash can be recycled into building materials and metal is also recovered. Unlike in England, the Welsh Government allows bottom ash from energy from waste to be included in its recycling target although this cannot be included in figures returned to the European Union or in the calculation of the UK recycling rate. The Waste and Resources Action Programme anticipates that bottom ash will eventually increase recycling rates by perhaps seven or eight percentage points. However, the Welsh Government has reported that a drop in incinerator bottom ash reported as recycled, at least in the short-term, was one of the factors contributing to the decrease in the overall Wales recycling rate in 2017-18.
- 2.35 The separate collection of garden waste from their domestic kerbside waste collection rounds is now a routine activity for all councils in Wales with the exception of Powys County Council and some councils still collect mixed garden and food waste. Meanwhile, with about 25% of garden wastes brought by residents to household waste recycling centres, councils do not have to fund the collection of this waste.
- 2.36 Charging for the kerbside collection of garden wastes is suggested in the Welsh Government's Collections Blueprint and is beginning to happen across Wales. For these reasons, the separate collection of garden waste and central composting offers councils a relatively easy improvement to their recycling performance, with waste that is both dense and with a reduced cost of collection and treatment. The strong promotion of kerbside garden waste collection in response to the need to raise recycling performance has meant that, in our experience since 2012, councils now give less prominence to home composting.

2.37 In the case of glass, the ability of a council to gain recycled material to contribute to the overall municipal recycling rate may depend on competition from the private sector for collection from non-household sources. It could also depend on the availability of bring banks and the extent of their use by traders. However, estimates of the overall amount of glass in the municipal waste stream across Wales suggest that some councils may be collecting and recycling a high proportion of the glass available.

The review of Towards Zero Waste provides an opportunity for the Welsh Government to revisit how recycling performance is measured and to consider the overall value for money of its support for recycling

The Welsh Government recognises the limitations of weight-based targets and is committed to reviewing its approach

2.38 While acknowledging the limitations of a weight-based target, the Welsh Government has so far considered that there is no better option to replace the current approach. The Welsh Government has been concerned that moving to a carbon recycling target might give rise to the unintended consequence of councils 'chasing' wastes with high embodied carbon for recycling rather than prioritising their prevention.

2.39 The Environment and Sustainability Committee's 2014 inquiry into recycling noted that a weight-based approach could have the unintentional impact of discouraging waste reduction. For example, the Committee noted that if waste prevention becomes more successful, as the national strategy is seeking, smaller quantities of wastes will be presented for councils to collect. Recycling rates could decrease if waste prevention disproportionately focused on materials that would otherwise have become waste and been recycled, rather than reducing all types of waste by the same proportion. A reduction in the amount of waste available for recycling could also have a negative impact on the income that councils gain from their sale. The Committee sought an analysis of the relationship between recycling and waste prevention, and the possible effects of this on council's recycling performance. The Welsh Government has not progressed this recommendation pending its refresh of **Towards Zero Waste** in 2018.

- 2.40 In reviewing **Towards Zero Waste**, the Welsh Government has set itself an objective to explore afresh whether there are any realistic alternatives to weight-based targets which can better demonstrate the delivery of its ecological footprint and carbon reduction goals³⁹.
- 2.41 It might be feasible, for example, to create a carbon target for recycling that is relative to the total amount of waste generated, or alternately material specific carbon targets. Carbon measurement is likely to need a better ongoing understanding of the composition of residual waste, and this would come at some additional cost, although such analysis should also inform efforts to improve waste capture. A different approach to recycling targets could have the potential to recognise more clearly the value of materials that have a finite supply such as copper, or materials relying on oil extraction such as plastics. As noted in [paragraph 1.28](#), the Welsh Government is keen to focus more recycling effort on such materials.
- 2.42 In March 2017, the Welsh Government announced its intention to consult on raising the municipal waste recycling target to 80% in 2034-35, with Ministers also declaring the intention for Wales to be the best recycling nation in the world. The Welsh Government could simply continue to push on with higher targets of the same type, and **Towards Zero Waste** already sets an ‘aspirational’ weight-based recycling target of 100% to be achieved by 2050. Understandably, the Welsh Government wants to retain an indicator for recycling that both councils and the public can comprehend and, in the short-term at least, will still need to report against EU-defined targets. But rather than merely measuring what is easy to measure, focusing performance measurement on quality as well as, or instead of, quantity could engender greater awareness and support from the public and would provide a better fit with wider sustainable development objectives.

³⁹ As also reflected for example in the requirements of the **Environment (Wales) Act 2016** and the indicators established under the **Well-being of Future Generations (Wales) Act 2015**.

- 2.43 For many recyclable resources, the green jobs, economic activity, and other sustainability benefits that are sought from their management are not necessarily reliant on them being part of a recycling target. There are wider benefits and other reasons that could lead councils to continue to collect and send for treatment many recyclable waste resources. As such, residents might see little change to their visible waste collection services. Outside of a recycling target, councils might collect and pass some wastes to commercial re-processors not because they offer an easy way of attaining higher recycling performance, but because these wastes need to be managed for other reasons, such as compliance with legislation to avoid landfill disposal, to lessen contamination of recyclable waste streams, or for amenity considerations like fly tipping. In this way, councils could focus their recycling activity more on the material that best deliver the aims of national waste strategy.
- 2.44 For example, outside of recession there is clearly a viable market for rubble recycling as secondary aggregates and in reuse, and each year the commercial sector successfully manages several million tonnes of demolition waste without the need for a statutory target. High value scarce waste resources like metals are also readily recycled within the private sector without statutory targets, with the scrap industry creating jobs and economic activity due to commercial viability derived from market demand for these resources.
- 2.45 As with the food wastes collected by councils, garden wastes can also be treated to produce compost products for which there is a ready high demand. **Box 6** shows that if funding support for council collection and for gate fees is maintained, treating garden and food wastes is already commercial viable. In addition, estimates of the value of preventing the emission of greenhouse gases highlight the wider financial benefits that could accrue from the anaerobic digestion of food waste alone.

Box 6 – commercial viability of treating food and garden wastes

Food waste can be recycled by anaerobic digestion and this produces valuable products such as natural fertilizers. Methane-based gas is also generated and captured, and this is used as a renewable fuel and to generate electricity. By 2020, the Welsh Government says that anaerobic digestion of food wastes will prevent the emission of 660,000 tonnes of climate damaging carbon dioxide emissions.

Garden wastes are commercially composted to produce compost and soil improvers. If produced to the appropriate standard these outputs are classed as a product rather than a waste, and can be used freely within the open market.

The Welsh Government says that ‘that there are ample markets for this material, with more than two million tonnes of identified potential demand... Current indications are that potential demand will significantly exceed supply’.

Source: Welsh Government, **Collections, Infrastructure and Markets Sector Plan**, July 2012.

The review of Towards Zero Waste provides an opportunity to reflect more generally on the role of the private sector and the overall value for money of the public investment in support of recycling

- 2.46 We recommended in our 2012 report that the Welsh Government and councils 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. We also recommended that the Welsh Government should work closely with councils 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.
- 2.47 These recommendations recognised that there was an opportunity to put the private sector recycling industry more in control of securing the high quality recyclables that they need for their treatment processes and to gain the highest income from resale of resources. Pressure from the private sector, including through their contracts with councils, can help drive up both the quality and quantity of recycled resources and more fully realise their income potential.

- 2.48 As yet, the Welsh Government has chosen not to introduce statutory targets, incentives or legislation to steer the private sector towards the outcomes sought in the national strategy. However, businesses that put packaging on the market have to meet packaging recycling targets under EU and UK legislation⁴⁰. Progress to increase the quantity and quality of recycling across the private sector has so far successfully relied on voluntary commitments from industry and the demand pressure for materials created in resource markets. The Environment (Wales) Act 2016 now includes new powers for the Welsh Government to regulate aspects of recycling in the private sector. These new powers provide opportunities to more closely align the regulation of councils with the private sector, require the separation of certain key types of recyclable wastes by commercial businesses, and to make even more use of market forces.
- 2.49 Late in 2017, waste markets were affected when the Chinese administration announced that it was not going to accept imports of poor quality recyclable materials during 2018, and with further restrictions to follow. For Welsh councils, the impact is currently unclear, but potentially significant as China is by far the largest market for the paper and for plastic wastes they collect. In a recent report on the recycling obligation system as laid out by the Producer Responsibility (Packaging Waste) Regulations, the National Audit Office noted that the action taken by the Chinese authorities could lead to a dip or decline in recycling performance if alternative markets cannot be found to replace capacity⁴¹.
- 2.50 Since 2001-02, at the beginning of its sustainable waste management programme, we estimate that the Welsh Government has spent around £4 billion on municipal waste services in the round. This expenditure includes specific waste management grant funding and costs met through the local government Revenue Support Grant. In responding to issues raised by the National Assembly's Public Accounts Committee following publication of our 2012 report, the Welsh Government recognised that there was more to be done to see how recycling targets could be met at a lesser cost and by driving further value for money benefits alongside better environmental outcomes.

⁴⁰ As set under the EU Packaging Waste Directive and associated UK regulations.

⁴¹ National Audit Office, **The packaging recycling obligations**, July 2018.

2.51 In 2015, the Welsh Government commissioned a review of the Sustainable Waste Management Grant. This grant, has since been superseded by the Single Revenue Grant which brought together grant funding for a wider range of environment-related work⁴². In 2015-16, the Single Revenue Grant contributed about £59 million to council waste services, or approximately 26% of their overall net expenditure of £228 million with most of the remainder met by councils' Revenue Support Grant⁴³. However, the review of the Sustainable Waste Management Grant did not arrive at any clear overall conclusions about value for money (Box 7).

Box 7 – value for money of the Sustainable Waste Management Grant

The review of the Sustainable Waste Management Grant set out to explore whether councils had used the funding effectively to provide value for money and meet wider waste policy objectives.

The review questioned whether all of the grant funding had been spent on achieving Welsh Government policy priorities. It also noted that the broad range of activities supported by the grant funding made it difficult to attribute outcomes to the investment. But the review also concluded that the ongoing need for funding did not in itself indicate that it represented value for money.

The review also showed that in 2013-14, the average cost for a council per tonne of recyclable waste managed was £104.82. In stark comparison, the same cost for English councils was just £50.64. This finding does not provide reassurance about efficient spending by Welsh councils on recycling services.

The review recognised that carbon savings do not represent the entire benefit associated with recycling services in Wales. However, it did not quantify wider benefits through, for example, more efficient use of scarce resources, increased resource security, job creation and social benefits. For 2013-14, the review found that the value of carbon savings from recycling was equivalent to £11.94 per household in Wales. The total value of these savings equated to just 22.8% of the annual grant funding.

Source: Enomia, **Review of the Sustainable Waste Management Grant**, September 2015.

⁴² From 2018-19, much of the waste element of the Single Revenue Grant has been transferred into the Revenue Support Grant settlement for councils. The Welsh Government has used the remainder to re-establish a stand-alone Sustainable Waste Management Grant with a total value of £18.2 million.

⁴³ From the Welsh Local Government Association's, Waste Finance Data Report 2015-16, January 2017. The net expenditure also includes funding raised by councils mainly through Council Tax.

- 2.52 That recycling is generally beneficial is not disputed and the Welsh Government is widely promoting what it sees as the significant potential economic and other benefits of moving to a 'circular economy'. However, there is on-going pressure on public funds and there have been sizeable reductions over several years to the Welsh Government's waste budget. In refreshing *Towards Zero Waste* and prioritising future expenditure, the Welsh Government needs to be able to demonstrate that not only is it possible to recycle more municipal waste, but that the quantifiable returns make it worth doing this above other ways of achieving its sustainable development objectives.
- 2.53 For example, there are other options for managing waste, including waste prevention and, increasingly, the use of waste treatment technologies such as energy from waste. These options offer waste management solutions that can be of significantly less cost than landfill, and particularly as landfill taxation is avoided. In 2016-17, council recycling services prevented the emission of 287,500 tonnes of carbon⁴⁴, but the same carbon saving could potentially be delivered at less cost by actions other than recycling.
- 2.54 While the Welsh Government has not yet published an overall assessment of its progress against the key outcomes that it sought through **Towards Zero Waste** (Figure 2 on page 9), there is evidence available about benefits from municipal recycling and wider waste management. For example, in January 2017, the Welsh Government published a report⁴⁵ which highlighted around £465 million of output and £104 million of gross value added from the municipal waste sector in 2015-16, with the sector supporting just over 4,400 employment opportunities. The report also pointed to how the output from the sector impacts on the wider Welsh economy.
- 2.55 The Welsh Government is also undertaking a detailed review of its Wales Waste Plan. The evaluation work undertaken has included consideration of the contribution of the Plan to the goals of the Well-being of Future Generation (Wales) Act 2015 and its alignment with the Act, even though the Act was not in place when the Plan was developed. The evaluation has highlighted some limitations in the data available to facilitate a fuller assessment. However, it has included, for example, a specific analysis of the economic contribution made by Sustainable Waste Management Grant funding and consideration of the economic impact from carbon reduction.

44 Eunomia, **Recycling Carbon Index**, Autumn 2018.

45 Welsh Government, **A study of Employment in the Municipal Waste Sector in Wales**, January 2017.

Appendices

Appendix 1 – Audit methods

Appendix 2 – Our assessment of progress in response to previous recommendations on recycling

Appendix 3 – Councils' collection systems and recycling performance

Appendix 4 – Glossary of terms used in this report



Appendix 1 – Audit methods

To inform this report, we obtained data from verified sources such as WasteDataFlow, StatsWales Bulletins issued by the Welsh Government, and from the National Strategic Indicator set.

We also sourced additional data on costs and performance from reports to the Ministerial Programme Board for waste management on behalf of the councils represented on the All Wales Waste Management Benchmarking Group and the County Surveyor's Society Waste Sub-Group. Wales Audit Office staff have facilitated the preparation of those reports as part of work commissioned on behalf of these groups. That benchmarking work has focused on different elements of councils' waste management services each year and we have drawn on the most recently collected data in each case.

In addition, we researched papers published by waste management consultancies including Eunomia and Ricardo-AEA. We also obtained financial and other information from the Welsh Local Government Association, Zero Waste Scotland, and from Natural Resources Wales.

We spoke with Welsh Government waste management officials, as well as seeking the views of:

- the Welsh Local Government Association;
- Natural Resources Wales;
- the Chartered Institution of Wastes Management;
- the County Surveyors Society – the representative body for local authority waste managers in Wales;
- the Waste Resources and Action Programme; and
- the Environmental Services Association – a professional organisation representing the UK's waste and secondary resources industry.

Appendix 2 – Our assessment of progress in response to previous recommendations on recycling

As part of our work we have considered the action that the Welsh Government has undertaken to implement the recommendations in our previous February 2012 report on **Public Participation in Waste Recycling**. Similarly, we have considered the action taken in response to recommendations made by the National Assembly's Environment and Sustainability Committee in its 2014 report on **Recycling in Wales**.

Where we state below that a recommendation is 'implemented in part' we mean that the Welsh Government has already given some consideration to the requirements of this recommendation and has taken some action, but not all actions required by the recommendation have been implemented. Where we state below that a recommendation is 'not implemented' there may have been some early consideration, but without substantive progress.

Recommendations of the Auditor General's 2012 study **Public Participation in Waste Recycling**

Previous recommendation	Status
<p>Recommendation 1</p> <p>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 should:</p> <ul style="list-style-type: none">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; andc build consensus by agreeing the criteria and standards underpinning the assessment with key stakeholders.	Implemented in part

Previous recommendation	Status
<p>Recommendation 2</p> <p>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.</p>	<p>Implemented in part</p>
<p>Recommendation 3</p> <p>We recommend that the Welsh Government should analyse the combined recycling and composting rates for Welsh local authorities to determine if there is significant difference in the performance of predominately urban, valleys 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.</p>	<p>Implemented in part</p>
<p>Recommendation 4</p> <p>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.</p>	<p>Implemented</p>
<p>Recommendation 5</p> <p>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.</p>	<p>Implemented</p>
<p>Recommendation 6</p> <p>We recommend that in partnership with local authorities, the Welsh Government should develop consistent performance indicators to measure public participation in recycling.</p>	<p>Not implemented</p>

Previous recommendation	Status
<p>Recommendation 7</p> <p>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.</p>	<p>Implemented in part</p>
<p>Recommendation 8</p> <p>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.</p>	<p>Implemented in part</p>

Recommendations of the Environment and Sustainability Committee's 2014 inquiry into **Recycling in Wales**

Previous recommendation	Status
<p>Recommendation 1</p> <p>We recommend that the Welsh Government commissions an independent review of the 'Collections Blueprint' and the evidence it is based upon. In commissioning this review, the Government should:</p> <ul style="list-style-type: none"> • ensure that the Welsh Local Government Association is involved in establishing the terms of reference and selecting the reviewer; • include an analysis of the latest data on reject rates and destination of recyclates from all collection methods; and • complete the review by the end of March 2016 so that it can inform the approach taken by local authorities to achieving the 2019-20 target of 64%. 	<p>Implemented</p>
<p>Recommendation 2</p> <p>We recommend that the Welsh Government encourages collaboration between local authorities when renewing contracts for providing householder receptacles for recyclable waste.</p>	<p>Implemented</p>
<p>Recommendation 3</p> <p>We recommend that the Welsh Government works with local authorities to make information on the destination of waste collected from householders publicly available.</p>	<p>Implemented</p>
<p>Recommendation 4</p> <p>We recommend that the Welsh Government investigates weight-based targets and whether they are having any unintended impact on reducing the ecological footprint of waste. This should be completed by the end of 2015.</p>	<p>Not implemented</p>

Previous recommendation	Status
<p>Recommendation 5</p> <p>We recommend that the Welsh Government commissions research into the relationship between projections for waste reduction, local authority income from waste; and the ability of local authorities to meet their recycling targets in the period to 2019/20 and then to 2024/25. This should be completed by the end of March 2016.</p>	<p>Not implemented</p>
<p>Recommendation 6</p> <p>We recommend that the Welsh Government investigates the case for resourcing a national 'broker' for the sale of recyclates from local authorities across Wales. The Government should publish its findings by the end of December 2015.</p>	<p>Implemented</p>
<p>Recommendation 7</p> <p>We recommend that the Welsh Government considers the merits of investing in a national campaign to help drive higher rates of recycling including to promote understanding of the need to reduce the ecological footprint of waste and the importance of other measures, particularly waste reduction.</p>	<p>Implemented</p>

Appendix 3 – Councils’ collection systems and recycling performance

Figure 11 – the main collection system currently used at each council together with their recycling performance between 2012-13 and 2017-18

Council	Collection method for recyclables ¹	Recycling rate (%) ²					
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Blaenau Gwent	B	51.2	54.8	50.3	48.7	56.8	56.0
Bridgend	B	57.1	56.5	57.1	59.0	57.9	68.6
Caerphilly	CM	57.1	57.6	54.6	61.9	65.5	66.7
Cardiff	CM	52.2	49.7	53.4	58.2	58.1	58.3
Carmarthenshire	CM	53.8	55.7	59.6	63.5	66.2	63.6
Ceredigion	CM	53.6	58.4	61.6	68.1	70.1	63.7
Conwy	B	56.4	56.3	59.1	59.7	62.6	63.7
Denbighshire	CM	58.0	63.2	65.9	62.4	64.7	64.2
Flintshire	B	54.9	55.1	55.0	58.5	68.2	67.6
Gwynedd	B	51.2	54.0	55.1	58.7	61.1	60.3
Isle of Anglesey	B	55.2	54.4	55.2	59.5	65.8	72.2
Merthyr	B	49.1	48.2	51.2	61.6	65.2	62.7
Monmouthshire	TS	55.5	62.9	63.2	61.9	68.7	65.8
Neath Port Talbot	B	48.3	54.0	58.1	58.3	62.8	60.5
Newport	B	49.2	51.7	52.0	57.1	61.4	59.8
Pembrokeshire	TS	53.1	60.3	65.4	64.9	65.3	57.0
Powys	B	50.9	52.5	52.1	59.1	65.2	60.4
Rhondda Cynon Taf	TS	46.2	49.3	53.8	60.5	64.4	61.3
Swansea	MS	47.9	52.8	56.7	59.5	63.7	63.3
Torfaen	NB	47.1	52.3	52.7	57.4	63.6	60.6
Vale of Glamorgan	CM	54.5	54.8	56.0	64.5	65.3	63.2
Wrexham	B	52.8	54.7	56.4	62.3	68.7	65.4
Wales rate		52.3	54.3	56.2	60.2	63.8	62.7
The Welsh Government’s statutory recycling target		52.0	52.0	52.0	58.0	58.0	58.0
Range – lowest to highest recycling rate		11.8	15.0	15.6	19.4	13.3	16.2

Notes:

- 1 Co-mingled single stream (CM), multi-streamed methods (MS), Twin-stream (TS), Kerbside sorted Collections Blueprint (B), Non-Blueprint kerbside sort (NB). Data is for 2016-17.
- 2 Figures in bold for individual councils denote a failure to achieve the recycling target.

Source: recycling rates are from the Welsh Government's Statistical Bulletins published annually between 2013 and 2018 and collection methods are from the Welsh Local Government **Association Waste Finance Data Report 2015-16**, January 2017.

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 household waste recycling centres, supermarket car parks and similar locations.

Capture rate – the total quantity of a recoverable waste that is diverted for reuse or recycling as a percentage of the total quantity of the recoverable waste generated.

Carbon footprint – the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

Climate change – a large-scale, long-term shift in the planet’s weather patterns or average temperatures.

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).

Collections Blueprint – the Collections Blueprint is the Welsh Government’s recommended service profile for the collection of waste from households. Recyclable resources are presented part-segregated by residents, and then further sorted as they are collected.

Co-mingled collection – also known as ‘single-stream’ recycling, and involves the collection of recyclable materials in a single compartment vehicle with the sorting of these materials occurring at a separate facility.

Commercial waste – waste generated from premises used wholly or mainly for the purposes of a trade or business. The Controlled Waste (England and Wales) Regulations 2012 list wastes that should be treated as commercial waste.

Composting – an aerobic, biological process in which organic wastes, such as garden and food 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, plastics, card and paper and Tetrapaks. Excludes food and garden waste.

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 carbon footprint – a carbon emission equivalent that calculates 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.

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, and 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 household waste recycling centres.

Household waste recycling centres – sites provided by a council for their residents, and sometimes traders, for the recycling and disposal of municipal waste including bulky items such as beds, cookers and garden waste.

Kerbside sorted collection – the sorting of recyclable materials at the kerbside into different compartments of a specialist collection vehicle (includes collections for recyclables by kerbside sorting that are not compliant with the Collections Blueprint).

Food waste – this term refers to the food derived 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 there are no available voids, the practice of land raising is sometimes carried out, where waste is deposited above ground and the landscape is contoured.

Municipal waste – meaning in this report 'local authority municipal waste' and referring to household (typically about 85%) and non-household waste (about 15%) that is collected and disposed of by councils. It includes regular household collections, specific recycling collections, special collections of bulky items, waste received at civic amenity sites and waste collected from non-household sources (e.g. rubble, incinerator residues, matter from beach cleansing and plasterboard). Local authority municipal waste excludes abandoned vehicles.

Recycling – 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 processes.

Re-processor – a person who carries out one or more activities of recovery or recycling.

Residual waste – 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).

Reuse/Recycling/Composting Rate (Statutory target definition) –

percentage of local authority municipal waste generated that is recycled, reused or composted, calculated at time of distribution to landfill or recycling/composting contractors. This is, therefore, based on the amount of waste sent for reuse, recycling or composting, rather than collected for the purpose of being reused, recycled or composted.

Twin/multi-stream collection – residents are provided with two (or more, as there are lots of variations) recycling containers to place different materials, typically paper and card in one and plastics, glass and cans in the other. These materials are kept separate but collected (usually) on one vehicle which has two chambers.

Waste arising – the amount of waste generated in a given locality over a given period of time.

Waste 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.

Waste 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.

Windrow composting – the production of compost by piling organic matter or biodegradable waste in long rows. Windrow composting is used for processing garden waste, such as grass cuttings, pruning and leaves in either an open air environment or within large covered areas where the material can break down in the presence of oxygen.

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).

Wales Audit Office

24 Cathedral Road

Cardiff CF11 9LJ

Tel: 029 2032 0500

Fax: 029 2032 0600

Textphone: 029 2032 0660

We welcome telephone calls in
Welsh and English.

E-mail: info@audit.wales

Website: www.audit.wales

Swyddfa Archwilio Cymru

24 Heol y Gadeirlan

Caerdydd CF11 9LJ

Ffôn: 029 2032 0500

Ffacs: 029 2032 0600

Ffôn Testun: 029 2032 0660

Rydym yn croesawu galwadau
ffôn yn Gymraeg a Saesneg.

E-bost: post@archwilio.cymru

Gwefan: www.archwilio.cymru