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Towards Zero Waste

One Wales: One Planet

The Overarching Waste Strategy
Document for Wales
June 2010

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Ministerial Foreword

I am delighted to present the Welsh Assembly Government's revised overarching waste strategy document for Wales - 'Towards Zero Waste'. It describes at a high level how we will deal with waste in Wales to produce benefits for not only the environment, but also for our economy and social wellbeing. The strategy document details high level outcomes, policies and targets, and forms part of a suite of documents that together comprise the national waste management plan for Wales. Detailed delivery actions will be provided in 'sector plans' and other papers as necessary. Collectively this approach will make a significant contribution to achieving our vision of a sustainable Wales that we have set out in our Sustainable Development Scheme One Wales: One Planet.

The overall approach laid out in this strategy document has been integrated and tested under the Welsh Assembly Government's 'policy gateway' process.

At its time of production Wise About Waste, the first national waste strategy for Wales, published in 2002, was bold and ambitious in comparison to where we started from. Environmental, economic and social imperatives now require us to go further and to be even more challenging and ambitious. The environmental consequences of our unsustainable use of resources have been brought sharply to our attention, our economy depends upon a secure supply of affordable resources which is under threat, and social justice is threatened when the environment deteriorates and resources become limited. The need to do more to tackle waste has never been so important.

We received over 94 responses to our consultation on the draft overarching waste strategy document. In addition, 114 people provided detailed comments at the consultation events we held, in Swansea, Llandudno and Aberystwyth and young people commented on our young people's version. I would like to thank everyone who responded. Your comments have strongly influenced the final document. In particular, there was strong support for:

- The overall goals,
- The need for waste reduction as a priority action, and
- The recognition of the importance of behaviour change.

Towards Zero Waste provides us with the opportunity to confirm that the outcomes that we are aiming to achieve are:

- A sustainable environment, where the impact of waste in Wales is reduced to within our environmental limits by 2050. This means that waste production and management will only be at 'One Planet' levels.
- A prosperous society, with a sustainable, resource efficient economy.
- 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.

In order to achieve these outcomes we have set two challenging milestones:

2025: Towards zero waste

2025 is an intermediate step on the way towards 'zero waste', which we define as an aspirational end point where all waste that is produced is reused or recycled as a resource, without the need for any landfill or energy recovery. By 2025, we will have significantly reduced waste and will manage any waste that is produced in a way that makes the most of our valuable resources. This will mean that we will maximise recycling, minimise the amount of residual waste produced and landfill as close to zero waste as possible.

2050: Achieving zero waste

By 2050 we will as a minimum reduce the impact of waste in Wales to within our environmental limits (which we define as one Wales: one planet levels of waste, roughly 65 % less waste than we produce now), aiming to phase out residual waste through enhanced actions on waste prevention and sustainable consumption and production and ensuring that all waste that is produced is reused or recycled.

Behaviour change is the key. We now need people to rethink why they are producing so much waste in the first place. We need to consider what we buy, use and throwaway. We need to think about whether we really need some things in the first place and be more selective about what and how much we consume. We need to think about keeping the products we buy for longer and reusing them or passing them on when we no longer want or need them. We also need a truly comprehensive recycling society, where everyone can recycle where ever they are - at home, at leisure or at work.

We will need the co-operation of companies who provide goods and the packaging that protects them. A good example of this is the excellent progress that has been made in cutting the use of single trip carrier bags. It is heart-warming to see how many people have taken this on board voluntarily. But more needs to be done.

We will support Welsh businesses to take up the significant opportunities to save money by reducing waste. We will encourage them to eco-design their products and packaging. This should help to create the competitive edge in an ever demanding market place where green purchasing and supply chain improvements are now an important business imperative.

Towards Zero Waste is of course about managing waste better and reducing waste but it is also about putting sustainable development at the heart of government. And for me, having sustainable development as a central organising principle is not just about reducing our carbon footprint - important as that is. It is about the long-term well-being of the people in Wales and being a government and country which values things like fairness and social justice and where we can look future generations in the eye about the decisions we make today which affect the communities they live in, the jobs they will have and the sort of society they will grow up in.

This new overarching waste strategy document is bold and ambitious. It sets out our goals for 2050, and outlines how we propose to achieve them. We want Wales to lead by example. Together with the detailed actions of the new sector plans, the new strategy document will build on the foundations set by Wise About Waste, and will take us towards a truly sustainable approach to managing our waste.

Jane Davidson AM
Minister for Environment, Sustainability and Housing


to raise the stakes

Part 1: Setting the scene

The purpose

Towards Zero Waste is the new overarching waste strategy document for Wales. It sets out how the Welsh Assembly Government will build on the successes achieved through Wise About Waste - The National Waste Strategy for Wales (2002). It sets out a long term framework for resource efficiency and waste management between now and 2050. It identifies the outcomes we wish to achieve, sets high level targets and lays out our general approach to delivering these targets and other key actions.

The strategy document explains our role in the Assembly Government's commitment to see Wales using only its fair share of the earth's resources within the lifetime of a generation[1] and how we will reduce our impact on climate change. It also shows how we will make the most of the opportunities there are in resource efficiency and waste management to contribute towards a sustainable future for Wales.

We are mindful of our obligations under EU and UK law, especially in relation to the statutory duty to produce a waste management plan for Wales that includes coverage of hazardous, packaging and biodegradable waste. This strategy document identifies high level outcomes, policies and targets, and forms part of a suite of documents that comprise the national waste management plan for Wales. Detailed delivery actions will be provided in 'sector plans' and other papers as necessary. The approach to the development of the sector plans is explained later in this document. Where new policies and actions have yet to be developed, Wise About Waste is still relevant, except where policies, targets and actions have been specifically updated.

The revised EU Waste Framework Directive requires that EU Members States must by 12 December 2010 bring into force the laws, regulations and administrative provisions necessary to comply with the Directive. This strategy document looks forward and has been developed with the requirements of the new Directive in mind, but it is possible that specific parts of it and associated supporting documents will need to be revisited to see if any revisions to particular policies are needed as a result of the transposition of the Directive into UK law.

Furthermore, the Assembly Government's Sustainable Development Scheme confirms that sustainable development is our central organising principle, so that all our policies and programmes help us achieve the vision of a sustainable Wales that we have set out in the Scheme. In particular, the key principles that underpin this approach, and which underpin this strategy, are:

- **Long-term:** ensuring that all decisions promote the long term, sustainable wellbeing of people and communities, and do not promote short term fixes that will continue to lock us into unsustainable patterns and lifestyles;
- **Integration:** ensuring that all decisions take full account of, and where possible fully integrate, the various social, economic and environmental outcomes that are being sought;

[1] One Wales: One Planet: A new sustainable development scheme for Wales.

- **Involvement:** engaging with, and involving, the people and communities that will be affected by decisions, so that working in partnership for sustainable development becomes part and parcel of the way we work.

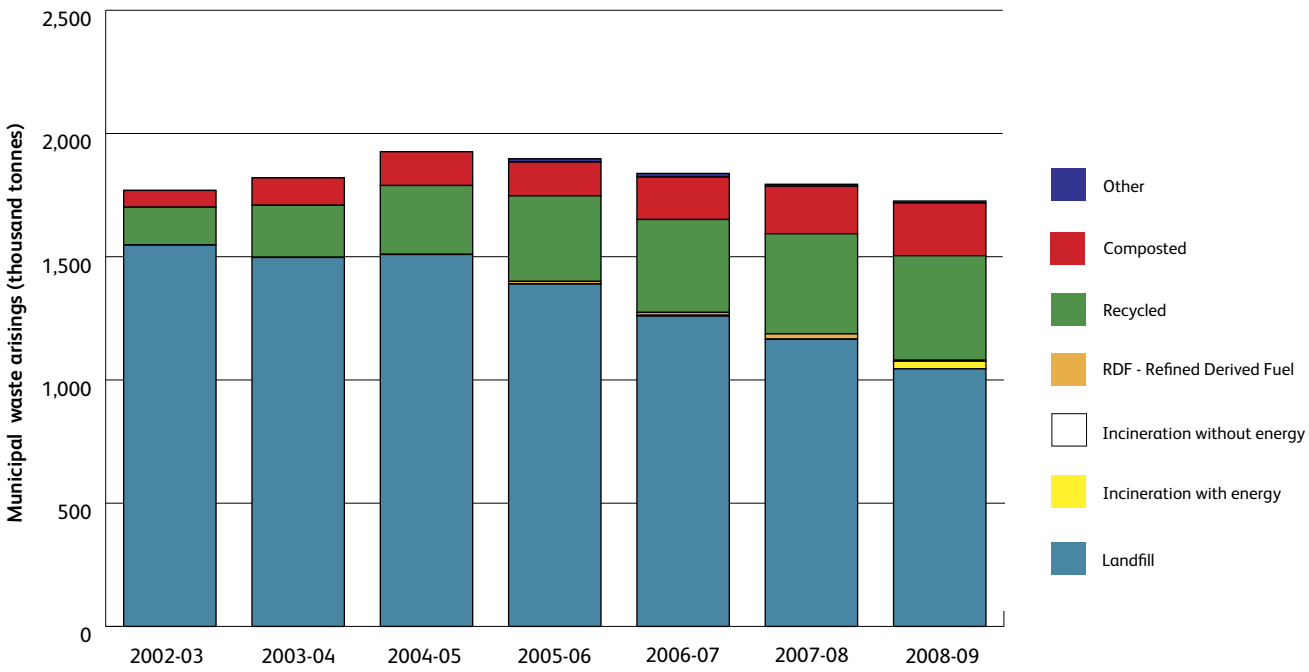
The current suite of documents that overall comprise the formal waste management plan for Wales are detailed in Appendix 1.

What has already been achieved?

We have come a long way since Wise About Waste - The National Waste Strategy for Wales, was published in 2002. Wise About Waste set a progressive and challenging programme for managing our waste, and we have achieved a great deal.

Figure 1 - Municipal waste management in Wales

(Source WasteDataFlow)



For **municipal waste**[2] the achievements include:

- A year on year decline in waste arisings since 2004/05 and a substantial increase in the amount of municipal waste being reused recycled and composted (Figure 1).
- We have met the municipal waste recycling/composting targets for 2003/04 (15 %) and 2006/07 (25 %).
- Meeting two years early our target to landfill less than 0.710 million tonnes of biodegradable municipal waste by 2010.

[2] Throughout this document 'Municipal waste' means municipal waste collected by local authorities.

For **commercial and industrial (C&I) waste** the achievements include:

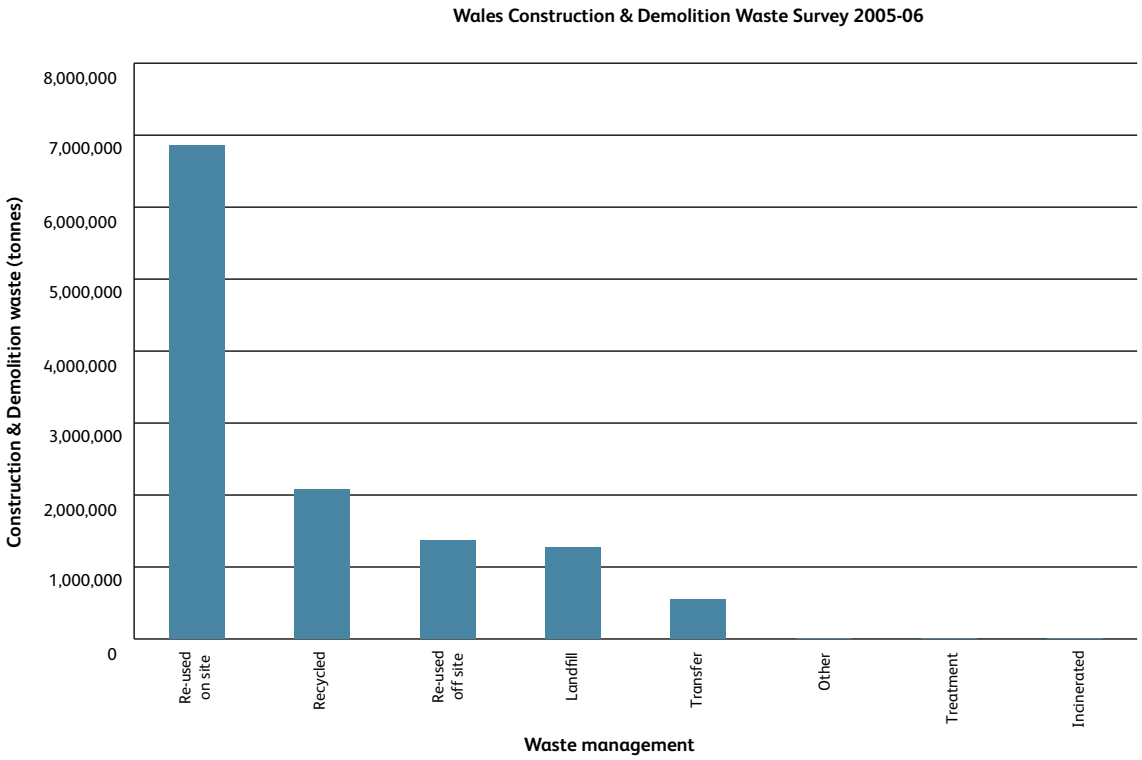
- Being on course to meet the 2010 target to achieve a reduction in C&I waste produced equivalent to at least 10 % of the 1998 arisings figure (the 2007 figure is 13 % less than the figure for 1998/99).
- Being on course to meet and exceed the 2010 target to reduce the amount of C&I waste sent to landfill to less than 80 % of that landfilled in 1998/9 (the 2007 figure for the amount of C&I waste landfilled is 57 % of the 1998/99 landfill figure).
- Being on course to meet and exceed the 2010 target to reduce the amount of biodegradable C&I waste going to landfill to 80 % of that landfilled in 1998 (the 2007 figure for the amount of biodegradable C&I waste landfilled is 44 % of the 1998/99 landfill figure).

For **construction and demolition waste** the achievements include:

- Meeting our reuse/recycling target for construction and demolition waste of at least 85 % by 2010 (the reuse/recycling rate for 2005/06 was 85 %).

Figure 2 - Waste management of construction and demolition waste

(Source: Wales Construction and Demolition Waste Survey 2005-06)



For **hazardous waste** the achievements include:

- Being on course to exceed the 2010 target to reduce the amount of hazardous waste generated by at least 20 % compared with 2000 (for wastes classified as special in 2000). The 242,000 tonnes[3] of hazardous waste produced in 2008 represents a 33 % reduction in the amount produced in 2000 (365,000 tonnes)[4].
- Achieving a substantial reduction in the landfilling of hazardous waste produced in Wales with 46 % landfilled in 2000 and 10 % landfilled in 2008.

For **packaging waste** the achievements (at an overall UK level) include:

- Around 65 % of packaging waste in the UK in 2008 was recovered[5] compared to around 27 % of packaging waste that was recovered in 1998[6].

Further details on the types and quantities of wastes currently produced in Wales, and how they are managed, (including progress against targets set in Wise About Waste) are provided in the Waste Strategy Progress Report (2002-2008) that is published at the same time as this strategy document, and will also be provided in the sector plans.

The challenges we are facing and links to other Assembly Government strategies

We are facing many new and enhanced challenges; this overarching strategy document explains our approach to addressing them. The challenges we are facing are described below.

Sustainability

The goal of sustainable development is to 'enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations'.[7] In Wales, sustainable development means enhancing the economic, social and environmental wellbeing of people and communities, achieving a better quality of life for our own and future generations:

- In ways which promote social justice and equality of opportunity; and
- In ways which enhance the natural and cultural environment and respect its limits - using only our fair share of the earth's resources and sustaining our cultural legacy.

Sustainable development is the process by which we reach the goal of sustainability.

We want to make sure that Wales leads the way in sustainable waste management and that our plans are every bit as challenging and progressive as those in **Wise About Waste**.

A detailed sustainability appraisal (SA) that incorporated a Strategic Environmental Assessment (SEA) was carried out alongside, and to inform, the development of this strategy document.

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[3] Excluding bilge water.
[4] Changes in classification from Special to Hazardous Waste in 2005 resulted in more waste being classified as hazardous rather than special.
[5] Environment Agency National Waste Packaging Database.
[6] Defra e-Digest of Environmental Statistics, March 2006.
[7] One Wales: One Planet: A new sustainable development scheme for Wales.

The SA post adoption statement accompanies this document[8]. This highlights how the SEA/SA has influenced and informed the drafting of the strategy document and maximised the sustainability benefits that can be derived from it.

One Wales: One Planet: The Sustainable Development Scheme of the Welsh Assembly Government

The Welsh Assembly Government is proud that sustainable development is a core principle within its founding statute. We are one of the few administrations in the world to have a distinctive statutory duty in relation to sustainable development. This duty, under the Government of Wales Act 2006 (Section 79), requires Welsh Ministers to make a scheme setting out how they propose, in the exercise of their functions, to promote sustainable development.

Through our One Wales Programme for Government we are committed to developing a strong and confident nation: living communities that fully reflect our rich and diverse culture, creating a fair and just society within a sustainable environment - generating a healthy future for all, ensuring opportunities for learning for life, and underpinned by the creation of a prosperous society.

Ecological footprint and 'one Wales: one planet'

Ecological footprinting measures the impacts of how we consume things and compares it to what the planet can cope with. It calculates how much land is needed to feed, produce energy and absorb the pollution and waste generated by our supply chains. Sustainability requires us to live within the planet's environmental limits. This can be summarised as 'one Wales: one planet' as we are currently using three planets worth of resources, instead of the one available to us. This is covered further in part 3.

Wales' ecological footprint is a headline indicator of sustainable development in the Sustainable Development Scheme.

Climate change

We will also reduce the greenhouse gas emissions produced through improved waste management. There are two types of emissions:

- **Direct** emissions which come mainly from emissions of landfill gas from landfill sites, and transport associated with waste management.

[8] Post Adoption Statement http://wales.gov.uk/consultations/environmentandcountryside/wastestrategy/;jsessionid=WhhyLh7Pd8PyJnbgtmmH5kysKyQJ1s1m94zJvxxpZSMDL69G71W6!-897520699?lang=en.

One Wales: One Planet the Sustainable Development Scheme for Wales states:

We will reduce our greenhouse gas emissions by 3 % a year from 2011 in those areas where we have devolved competence. This target will apply to all direct emissions and emissions from electricity consumption except those from heavy industry and electricity generation.

The Climate Change Act places the UK target to reduce greenhouse gases by at least 80 % by 2050 into statute. It also establishes a system of 5 year carbon budgets for the UK. The UK Government set the level of the first 3 budgets (2008-12; 2013-17; and 2018-22) in 2009.

Together our target for making annual reductions in those areas that we can directly control; and the UK targets and budgets for longer term across the board reductions, will drive action to reduce greenhouse gas emissions.

- **Indirect** emissions, which are associated with the emissions from the manufacturing processes and associated transport. These are sometimes also referred to as 'embedded' emissions.

We take both types of emissions into account when we look at the ecological footprint of waste management. It is estimated that just over half of the ecological footprint relates to carbon emissions.[9] How we manage our waste can help reduce both of these.

We will also take account of the need to adapt to climate change, including the location of waste facilities, the potential for waste composition to change and the potential need to increase the frequency of biodegradable waste collection.

[9] REAP software tool (2008), SEI.

Stern review

The 2006 Stern Review on the economics of climate change stated that waste is currently responsible for emitting 1.4 billion tonnes of carbon dioxide-equivalent climate change-causing emissions, half of which comes from landfill sites. The waste industry is responsible for 3 % of the UK's emissions of gases that cause global warming.

The report said half of these emissions could be cut by 2020 at relatively low cost. Three-quarters of these emission cuts could be achieved at negative cost, with the remaining quarter at a cost of £5 per tonne of CO_2 equivalent emissions.

The review concluded that 'Reusing and recycling lead to less resources being required to produce new goods and a reduction in associated emissions. Technologies such as energy-recovering incinerators also help to reduce emissions.'

Environment strategy

Published in March 2006, the Environment Strategy for Wales sets out the Assembly Government's long term vision for the environment in Wales. It included an aspiration that there would be 'no additional landfill for municipal waste in Wales by 2026.' The strategy lists four waste related outcomes:

- The use of alternative materials, secondary and recycled aggregates is maximised where possible in the construction industry.
- Businesses produce well designed products that require fewer resources in their production, use and end of life, which create minimal waste and are easily reused or recycled.
- Appropriate waste management facilities are in place to minimise the amount of waste going to landfill.
- Reduce, reuse and recycle are universally accepted in government, business, industry and home life.

Assembly Government strategies and action plans that this strategy must comply, and link, with include:

- One Wales Delivery Plan 2007-2011
- Starting to Live Differently - The Wales Sustainable Development Scheme and Sustainable Development Action Plan 2004 - 2007
- One Wales: One Planet, a new Sustainable Development Scheme for Wales, May 2009
- Environment Strategy for Wales, 2006
- Climate Change Strategy - high level policy statement, January 2009
- Capturing the Potential: A Green Jobs Strategy for Wales, July 2009
- One Wales: Connecting the Nation - The Wales Transport Strategy, 2008
- One Wales: Connecting the Nation: The Wales Freight Strategy May 2008
- Welsh Assembly Government Integration Tool, 2002
- People, Places, Futures - The Wales Spatial Plan Update 2008
- Planning Policy Wales, 2002
- Creating Sustainable Places, 2005
- Making the Connections: Delivering better services in Wales, 2004 and Delivering the Connections: From vision to action, 2005
- A shared Responsibility - Local Government's contribution to improving people's lives - A Policy Statement from the Welsh Assembly Government, 2007
- Wales: A Vibrant Economy, 2005 - The Welsh Assembly Government's Strategic Framework for Economic Development
- Social Enterprise Strategy for Wales June 2005
- The Third Dimension: A strategic action plan for the voluntary sector scheme, 2008
- The Social Enterprise Action Plan for Wales 2009
- The Learning Country 2: Delivering the Promise, 2006
- Race Equality Scheme 2005-2008
- Iaith Pawb: A National Action Plan for a Bilingual Wales, 2003
- The Strategy for Older People in Wales, 2003
- Mineral Planning Policy Wales, 2000
- Better Health, Better Wales 1998
- Quality of Food Strategy, Task and Finish Group Report, December 2007
- Bioenergy Action Plan for Wales (February 2009)

A more complete list of relevant strategies and plans is provided in the Strategic Environment Assessment that forms part of the Sustainability Appraisal that is available on the Welsh Assembly Government website.

Security of resources

We need to ensure we have enough resources, at an affordable price, to sustain our economy and way of life. By using resources more efficiently through waste prevention and high reuse and recycling rates, material security is improved and dependence on primary resources from outside the UK is reduced.

Case study: Copper

Copper is a geologically rare resource. Its principal uses are in construction, electrical and communication infrastructure, domestic and industrial equipment and transport. As with most metals, copper exploitation has occurred only recently; only 2.5 % was extracted before 1900. Most of the metal now resides in cabling, motors electrical generators and appliances. While electrical transmission lines and transformers are used for decades, small but significant quantities exist as 'hibernating stock': a resource previously consumed for technological purposes but no longer used. Examples include copper residing in obsolete cell phones, televisions, VCRs and computers. A 2004 study in Connecticut found the ratio of in-use copper to hibernating copper was 13:1. On average, each household had 1.1kg of hibernating copper.

Of the copper deposited worldwide, almost 99 % is potentially reusable. However, reclaiming copper from items which have been discarded is not easy as they are often deposited without regard for reuse. Nevertheless, around 40 % of the world's discarded copper is recycled. If every human predicted to be alive in 2100 were provided with 170kg of copper (North America's per-capita average), 1.7 billion tonnes of the metal would be needed, well exceeding the current estimate for world reserves of 1.6 billion tonnes.

Historically low, copper prices are already starting to rise. Between 2000 and 2008 the price quadrupled to $8,000 a tonne. If prices grow further, efficiency of usage and ease of recoverability will be incentivised. Substitution with iron, aluminium and magnesium is also starting to become economic as during the last copper price surge in the 1960s.

Source: Resource Efficiency Knowledge Transfer Network publication 'Material Security - Ensuring resource availability for the UK Economy'

Legislation

European Legislation

We have to comply with European legislation under our membership of the European Union and its associated treaties. The main legal instruments driving our policies are:

Waste Framework Directive (2008/98/EC)

The EU Waste Framework Directive lays down measures to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste, and by reducing the overall impacts of, and improving the efficiency of, resource use. Revisions to the Waste Framework Directive (2008/98/EC) were adopted in December 2008 and will need to be implemented by December 2010.

The revised Directive includes requirements for member states to:

- Apply the waste hierarchy in waste management legislation and policy (Figure 3).
- Promote the high quality recycling of waste materials as part of the overall aim to make the EU a 'recycling society'.
- Ensure that separate collection is set up for at least the following: paper, metal, plastic and glass by 2015.
- Prepare for reuse and the recycling of waste materials such as at least paper, metal, plastic and glass from households shall be increased to a minimum of overall 50 % by weight by 2020.
- Prepare for reuse, recycling and other material recovery of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight in 2020.
- Establish an integrated and adequate network of waste disposal installations and installations for the recovery of mixed household waste.
- Ensure that waste management is carried out without endangering human health and without harming the environment.
- Establish waste management plans.
- Establish Waste Prevention Programmes describing existing prevention measures, evaluating the usefulness of other measures and determine benchmarks for measurement of adopted prevention measures.

The Welsh Assembly Government will ensure that the Directive is fully transposed in Wales by the required deadline of 12 December 2010.

Waste Framework Directive and the Waste Hierarchy

Article 4 of the Waste Framework Directive states that the following waste hierarchy shall be applied as a priority order in waste prevention and management legislation and policy

a) Prevention

b) Preparing for reuse

c) Recycling

d) Other recovery - e.g. energy recovery, and

e) Disposal

Definitions

Prevention means measures taken before a substance, material or product has become waste that reduces:

a) The quantity of waste, including through the reuse of products or the extension of the lifespan of products

b) The adverse impacts of the generated waste on the environment and human health, or

c) The content of harmful substances in materials and products.

Reuse means any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

Preparing for Reuse means checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be reused without any other re-processing.

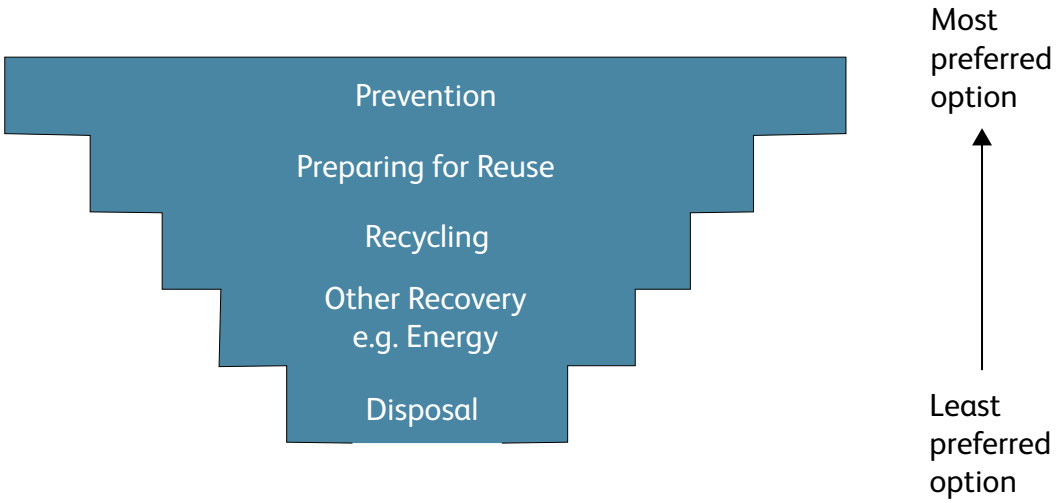
Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.

Treatment means recovery or disposal operations, including preparation prior to recovery or disposal.

Recovery operations (including energy recovery) means any operation the principle result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.

Disposal means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy.

Figure 3: The waste hierarchy



The Landfill Directive (1999/31/EC)

Key requirements of this directive are:

- A substantial reduction in the amount of biodegradable waste (BMW) sent to landfill:
  - By 2010 to reduce BMW to 75 % of that produced in 1995
  - By 2013 to reduce BMW to 50 % of that produced in 1995
  - By 2020 to reduce BMW to 35 % of that produced in 1995
- The treatment of all wastes prior to landfill.

Following discussions with the European Commission the UK has decided that it has been using a too narrow definition of municipal waste (only waste collected by local authorities). It is planned to change this to include all waste from households, and all wastes of a similar nature and composition to wastes from households, whoever collects it. As a result, the definition will be extended to cover most commercial waste.

This decision was made after the draft of Towards Zero Waste was launched for consultation. The term 'municipal' in the consultation applied only to municipal wastes collected by local authorities. This strategy document now refers to 'municipal waste collected by local authorities', and to 'commercial waste' for the municipal waste not collected by local authorities. Final decisions on terminology will be decided following consultation.

The Packaging and Packaging Waste Directive (94/62/EC)

The key requirements of this Directive are that it:

- Sets minimum targets of 60 % recovery, 55 % recycling and 15 % -60 % recycling of each material (varying according to specific material type) to be met by 31st December 2008.
- Requires, where appropriate, the encouragement of the use of recycled packaging materials in the manufacturing of packaging and other products as well as encouragement of reuse of packaging.
- Requires that all packaging placed on the market complies with the 'essential requirements' listed in the Directive, which includes the requirements that:
  - Packaging shall be manufactured so that the packaging volume and weight be limited to the minimum amount adequate to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer.
  - Packaging shall be designed, produced and commercialised in such a way as to permit its reuse or recovery, including recycling, and to minimise its impact on the environment when packaging waste or residues from packaging waste management operations are disposed of.

Other Directives

There are a number of other EU Waste Directives that are relevant, and a non exhaustive list includes:

- Waste electrical and electronic equipment (2002/96/EC)
- Batteries and accumulators (2006/66/EC)
- End of life vehicles (2000/53/EC)

National Assembly for Wales legislation

The National Assembly for Wales (Legislative Competence) (Environment) Order 2010 has conferred the National Assembly for Wales with legislative competence to make primary legislation (known as Assembly 'Measures') in respect of waste. The power to make Measures relating to waste is contained in section 93 of the Government of Wales Act 2006 (c.32) and the National Assembly for Wales' competence to legislate in these areas is found in Matters 6.1 and 6.2 in Field 6 of Schedule 5 to the Government of Wales Act 2006. Matters 6.1 and 6.2 were added to Schedule 5 by the National Assembly for Wales (Legislative Competence) (Environment) Order 2010.

The proposed Waste (Wales) Measure 2010 was laid before the National Assembly for Wales on 22 February 2010. The proposed Measure makes provision to reduce the amount of waste and litter in Wales whilst also providing a more effective system of waste management. A summary of the proposals contained in each part of the proposed Measure is provided over page.

The proposed Measure provides a power to enable the Welsh Ministers to make regulations requiring retailers to apply the net proceeds of revenues raised from the sale of single use carrier bags to specific environmental purposes or bodies. The power contained in the proposed Measure will only be used if voluntary arrangements with retailers, in relation to how they use the proceeds from the sale of single use carrier bags, are not satisfactory. The proposed Measure will complement the Welsh Assembly Government's policy on single use carrier bags.

The proposed Measure sets statutory targets for the percentage of municipal waste material to be recycled, prepared for reuse and composted as well as making local authorities liable to pay penalties in the event that they fail to meet these targets. The proposed Measure also enables the Welsh Ministers to establish other targets in relation to the prevention, reduction, collection, management, treatment or disposal of waste; and impose penalties for non-compliance with such targets.

The proposed Measure provides the Welsh Ministers with a power to ban or restrict the disposal of specified kinds of waste to landfill.

The proposed Measure provides the Welsh Ministers with the power to establish Site Waste Management Plans in relation to works involving construction and demolition in Wales. In particular, the proposed Measure provides a power for the Welsh Ministers to make provision for a fees and charging scheme in relation to Site Waste Management Plans.

Key principles

Other key principles drawn on in the development of this strategy document, and which the Assembly Government expects to be applied by those making decisions in respect of waste in Wales (including in respect of the development and delivery of the sector plans), are:

Protection of human health and the environment

Waste management must be carried out without endangering human health, without harming the environment and, in particular:

(a) Without risk to water, air, soil, plants or animals;

(b) Without causing a nuisance through noise or odours; and

(c) Without adversely affecting the countryside or places of special interest.

In particular, appropriate techniques must be developed for the treatment and final disposal of hazardous substances in order to meet the above requirements.

The draft strategy for consultation was subject to a Health Impact Assessment which is available on the Welsh Assembly Government website.

Information on the general technical requirements for the management of wastes are provided on the Environment Agency's web site[10].

[10] http://www.environment-agency.gov.uk/business/topics/waste/.

Application of the waste hierarchy

The waste hierarchy will be applied by the Assembly Government as an order of priority in legislation and policy unless, for specific waste streams, departing from this hierarchy is justified by life cycle thinking on the overall impacts of the generation and management of such waste. The Assembly Government has applied this principle in its prioritisation of provisions contained in the Proposed Waste (Wales) Measure 2010. The proposed Measure 2010 makes provision in Wales to reduce the amount of waste and litter, increase recycling and reduce landfill.

The waste hierarchy should be applied by everyone else in Wales making waste management decisions, unless a life cycle assessment guides otherwise. It should be noted that the waste hierarchy is not absolute, and does not mean that all waste should be reduced or recycled where it is not practical to do so, nor does it necessarily mean absolutely zero landfill or energy from waste where this is not practical.

Polluter-pays

The polluter-pays principle is a guiding principle at European and international levels and also in Wales. The waste producer and the waste holder should manage the waste in a way that guarantees a high level of protection of the environment and human health. In accordance with the polluter-pays principle, the costs of waste management shall be borne by the original waste producer or by the current or previous waste holders. The polluter-pays principle extends to the costs of waste management being be borne partly or wholly by the producer of the product from which the waste came and the distributors of such product potentially sharing these costs.

Extended producer responsibility

The revised Waste Framework Directive introduces the principle of 'extended producer responsibility'. Producer responsibility means that anyone who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has a responsibility for the waste that remains after those products have been used, as well as for the subsequent management of the waste and financial responsibility for such activities. This may include an acceptance of returned products and may include the obligation to provide publicly available information as to the extent to which the product is re-usable and recyclable.

By extending producer responsibility, producers need to meet the full costs of sustainable waste management for their products. We anticipate that this would incentivise (through increased cost of waste management) using less materials or the use of materials that are easier to recycle instead. Extended producer responsibility includes the encouragement of the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production. The concept of extended producer responsibility will be explored further within the relevant sector plans.

Proximity principle

The Waste Framework Directive also establishes the principle of 'proximity' within the context of the requirement for member states to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed municipal waste collected from private households, including where such collection also covers such waste from other producers, taking into account best available techniques.

The Directive requires that the network shall enable waste to be disposed of, or the wastes referred to in the preceding paragraph to be recovered, in one of the nearest appropriate installations, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health.

The proximity principle also links to the Directive's requirement that the network shall be designed to enable Member States to move towards the aim of self-sufficiency in waste disposal as well as in the recovery of waste referred to above, taking into account geographical circumstances or the need for specialised installations for certain types of waste. The Directive also makes it clear that each Member State does not have to possess the full range of final recovery facilities within that Member State.

This principle must be applied in Wales when decisions are taken on the siting of appropriate waste facilities.

Precautionary principle

The precautionary principle will be applied by the Assembly government and should be used by all waste related decision makers in the management of risk in Wales.

Precaution should be applied where scientific evidence is insufficient, inconclusive or uncertain and where there are indications through preliminary objective scientific evaluation that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the chosen level of protection (further guidance is provided in the 'Communication from the Commission on the Precautionary Principle'[11]).

Equality of opportunity

It is a key principle of the Assembly Government that we afford the opportunity to all the citizens of Wales to contribute to waste prevention, reuse and recycling, irrespective of where they live, their health, mobility and personal circumstances. This principle should be applied across Wales, particularly by local authorities in the provision of waste collection services from households.

[11] 19 COM (2000) 1 final.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Part 2: Overview and implementation

This section describes the structure and purpose of our overarching strategy document and other delivery documents that will form part of our overall waste management plan for Wales.

There are five different types of document that build on and take further our policies, targets and actions contained in Wise About Waste (2002), together with a comprehensive summary of progress so far and the current situation in respect of waste production and management in Wales:

- Our high level strategy document 'Towards Zero Waste'
- Delivery documents called 'sector plans'
- A communications plan
- A supporting evidence base
- Waste Strategy Progress Report 2002-2008.

Another key part of our approach is working within Government, both the Welsh Assembly Government, and where we do not directly have the powers, by working with the UK and European Governments.

Towards Zero Waste

Our overarching strategy document, 'Towards Zero Waste', is a long term framework which describes the social, economic and environmental outcomes that we will aim to achieve and our contribution towards a sustainable future. It also details our high level policies, targets and principles. It is supported by an evidence base[12], and implemented through sector plans and by working within Government. Figure 4, on page 26, describes this approach in more detail.

Sector plans

Sector plans are the implementation plans for the strategy. They will describe the role of the sector, the Assembly Government and others in delivering the outcomes, targets and policies in Towards Zero Waste. They will be developed with sector representatives to make sure they can be achieved and will be living, flexible documents that will be placed on the Welsh Assembly Government website.

They will:

- Define what the sector plan will cover and what and who is included in that sector.
- Outline the current performance of the sector, including providing details of the types, quantities and source of waste.
- Describe how the principles, outcomes, policies and targets laid out in Towards Zero Waste apply to the sector.

[12] Evidence Base www.wales.gov.uk/environmentandcountryside.

- Identify the general technical requirements for the management of wastes produced by that sector (including waste legislation covering that sector).
- Set sector specific objectives and develop the mechanisms, targets and policies to achieve them.
- Identify any special arrangements for particular wastes.
- Contain a detailed action plan, defining the roles and responsibilities of the sector, the Assembly Government and others.
- Contain indicators to measure and monitor progress.
- Explain where the actions of one sector may affect those of another and how these linkages will be managed.

The plans will be evidence based and linked to best practice case studies.

We will develop a rolling programme of sector plans on a priority basis and the following sector plans will be developed first:

- Municipal waste collected by local authorities
- Collection, infrastructure and markets
- Construction and demolition
- Retail including wholesale, food manufacturers and hospitality (with a focus on food waste and it this will also address packaging in detail)
- Subsequent specific sector plans will include the public sector and agriculture and there will also be a sector plan covering the remaining commercial and industrial waste sectors.

All plans will address packaging, hazardous waste and biodegradable wastes as well as the priority materials identified later in this strategy.

The collection, infrastructure and markets plan will include coverage of:

- Existing waste collection schemes and major disposal and recovery installations, including any special arrangements for waste oils, hazardous waste or waste streams addressed by specific EU legislation;
- An assessment of the need for new collection schemes, the closure of existing waste installations, additional waste installation infrastructure required to ensure an integrated and adequate network of disposal and recovery installations, and, if necessary, the investments related thereto;

- Sufficient information on the location criteria for site identification and on the capacity of future disposal or major recovery installations, if necessary;
- General waste management policies, including planned waste management technologies and methods, or policies for waste posing specific management problems.

The sector plans will be subject to sustainability appraisal/strategic environmental assessment (SEA) in the same way that this strategy has been. They will be subject to separate consultation.

Progress Report

Further details on the types and quantities of wastes currently produced in Wales, and how they are managed, and progress against targets and actions set in Wise About Waste are provided in the Waste Strategy Progress Report (2002-2008) that is published at the same time as this strategy.

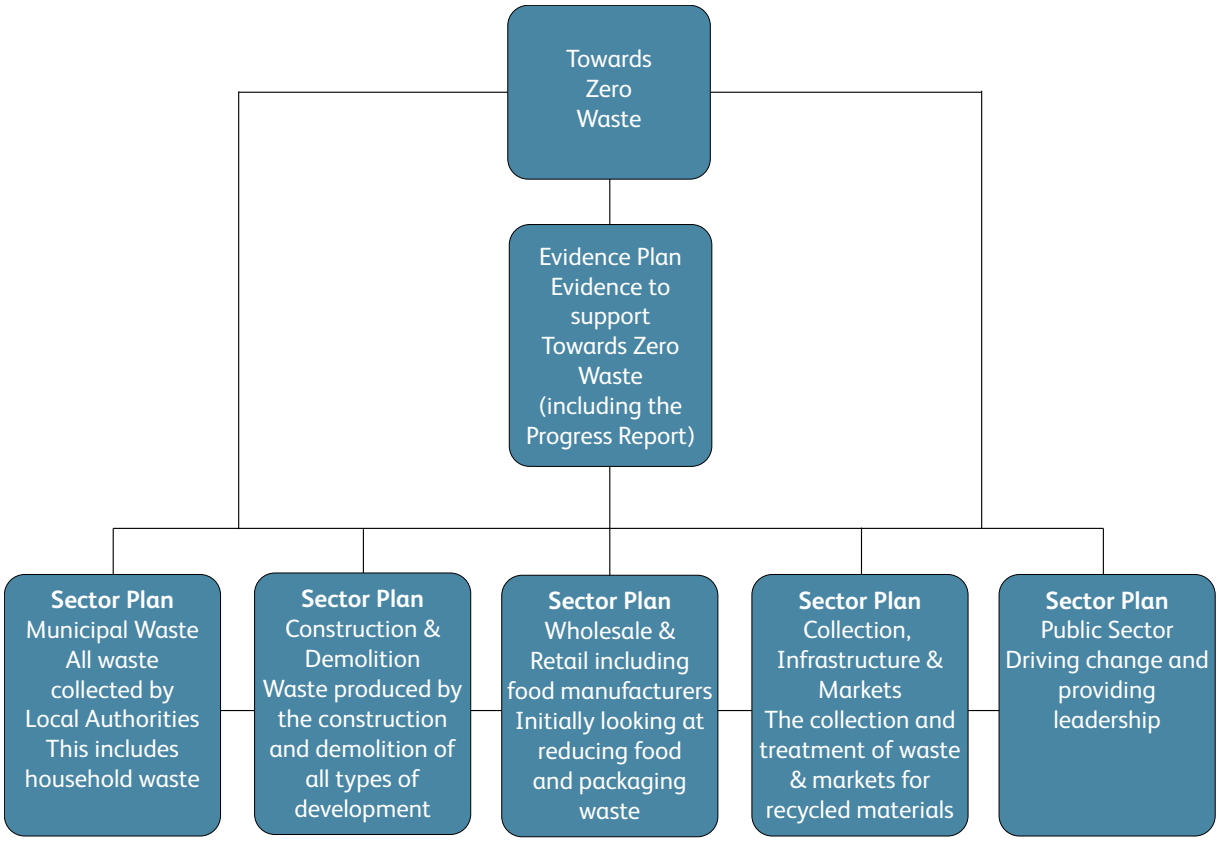
Communications plan

A communications plan is being developed which will set out the approach to promoting behaviour change. There will be one overarching plan, with the details of specific communications actions contained in each of the sector plans. This will be developed closely with the delivery bodies and stakeholders to ensure consistent and co-ordinated messages on waste, and that national and local communication is aligned. This will include any necessary messages in respect of legislation.

Evidence base

The evidence base is made up of all the supporting documentation which helped us to write this strategy document. The documents are available to view and download on the Welsh Assembly Government website.

Figure 4 - Strategy framework structure



What it means for you

Our strategy is ambitious and challenging, but achievable. It involves every section of society and it is important we all play our part.

Businesses need to prevent or reduce waste through product and packaging design and the way they use materials and services, and take responsibility for the impact of their supply chains. Welsh business should ensure their products will not become future legacy[13] wastes. They also need to source separate their recyclable and biodegradable wastes, including the wastes produced by their customers on their premises, and regard them as a quality resource. They need to ensure that the products they produce are easy to reuse and recycle. Producers need to share responsibility for waste and recycling.

Communities (whether urban, rural or valley) need to reduce waste as far as possible, deliver clean, separated recyclates, for collection by local authorities, and start thinking of waste as resources and so help create local jobs. We also need to change behaviour so that we meet our targets.

The **public sector** has an important part to play, recognising the significant proportion of the Welsh population that works in the sector and the influence that its procurement activity can have on supply chains. People need to be able to recycle wherever they work, rest and play and they should have access to sustainable products in all localities managed by the public sector.

[13] Legacy wastes - are materials, which are often hazardous, for example asbestos, that it is not currently feasible to recover or recycle and therefore cannot be returned into the chain of utility. The only option is disposal, and this is likely to continue to be the case in the future if that material continues to be used in the present way. In order for waste not to become legacy waste the original product needs to be redesigned so that it can be recovered and reused. In the meantime, new treatment methodologies need to be developed wherever possible to avoid these materials being sent for disposal.

Government has a vital role to play in leading and ensuring that clear messages are presented. The Welsh Assembly Government needs to consider how businesses that preserve resources, rather than waste them, can be incentivised.

Local authorities need to support the most beneficial alternatives to landfills and encourage systems that treat waste as a resource. They also have a role to play in respect of the engagement of their citizens and communities.

The **waste management sector** needs to help ensure that the right infrastructure and facilities are in place. These facilities need to be as sustainable as possible. Markets need to be developed so that recyclates become economic opportunities. Reprocessors also have a key role to play.

The **third sector**[14] has a distinctive role to play in implementing the revised waste strategy in Wales, as part of the waste management sector. The third sector promotes areas of sustainable development that sometimes get overlooked. It is important that environmental and economic gains achieved through higher recycling and resource efficiency are achieved in tandem with social gains. These include the creation of training and employment opportunities for the socially excluded, including those with learning difficulties and other disadvantages.

The regulatory bodies[15] protect human and animal health and the environment from the mismanagement of waste and enforce and ensure compliance with waste and waste related legislation. They have a key role to play in ensuring a level playing field and that the law is adequately enforced to protect human and animal

[14] Third sector - this refers to organisations including voluntary and community groups, social enterprises, charities, cooperatives and mutuals.

[15] Key regulatory bodies include the Environment Agency, the State Veterinary Service and the Local Authority Environment Protection, Development Planning and Trading Standards functions (the latter enforcing the Packaging Essential Requirements Regulations that serve to eliminate over packaging of goods).

health, and the environment. Information on the general technical requirements for the management of wastes are provided on the Environment Agency's web site[16].

Other Governments - where the Assembly Government does not have devolved powers, or the necessary degree of direct influence, we will work closely with the UK and European Governments to make sure our interests are represented and to encourage the adoption of policies and actions that will help us deliver the targets and outcomes proposed in this strategy.

[16] **http://www.environment-agency.gov.uk/business/topics/waste/.**

Part 3: Towards Zero Waste outcomes: building a sustainable future

This section describes the outcomes that we are seeking to achieve in our overarching strategy document and the supporting sector plans. Whilst meeting our EU obligations enshrined in legislation, we are seeking to go further in accordance with our sustainable development goals Building a sustainable future as described in the 'One Wales - a progressive agenda for the government of Wales' agreement (One Wales) will be fundamental to our approach. This means we will consider the environmental, social and economic implications of our actions and decisions. The key outcomes of Towards Zero Waste, as derived from One Wales are:

A Sustainable Environment, where the impact of waste in Wales is reduced to within our environmental limits[17] 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.

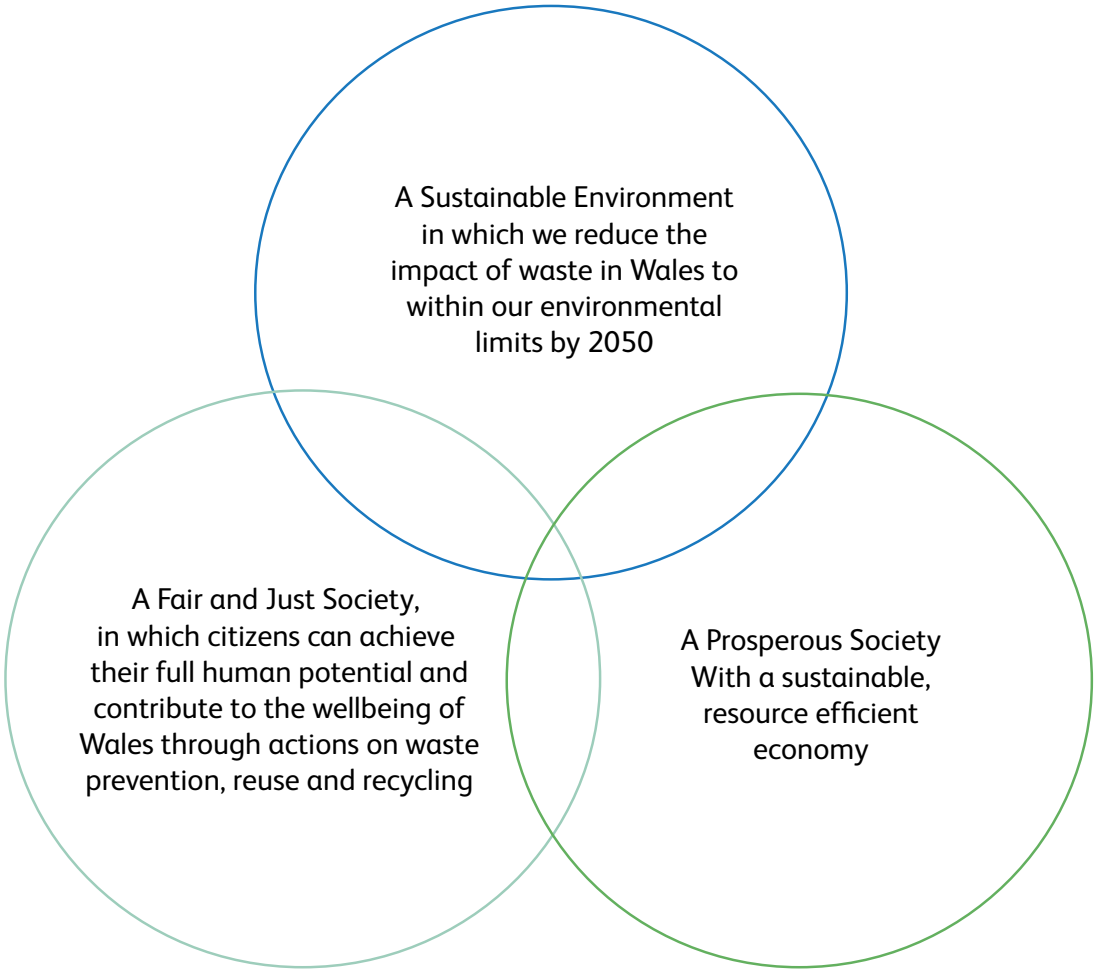
A Prosperous Society, with a sustainable, resource efficient economy. More 'green jobs' across a range of skill levels will be provided within the waste and resource management industry in Wales, and increased profit for businesses will be achieved through resource efficient practices, which are 'future proofed' against increasing competition for resources.

A Fair and Just Society, 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.

What we mean by each of these outcomes is described in more detail over page.

[17] Environmental Limits - 'Our Vision of a Sustainable Wales is one where Wales: lives within its environmental limits, using only its fair share of the earth's resources so that our ecological footprint is reduced to the global average availability of resources, and we are resilient to the impacts of climate change' (Source: One Wales: One Planet: A new sustainable development scheme for Wales).

Figure 5 - Towards zero waste outcomes - building a sustainable future



Case study: ' Presteigne Zero Waste Community Project'

The Presteigne Zero Waste Community pilot project combines all of our environmental, social and economic outcomes. The householders and businesses of Presteigne and Norton will pilot an approach to resource management that will demonstrate how Zero Waste could be achieved.

It is based on the idea of 'slow recycling', which involves a detailed kerbside sort undertaken by a 'milkman' style recycler working with just 250 properties per day. This is to maximise participation and recycling rates and optimise the quality of recyclate retrieved.

It will also involve an exploration into zero waste - a focus on reducing the amount of waste generated within the community - by looking at the reasons why householders and businesses produce the waste they do, and suggesting alternatives so that the waste is not produced in the first place. A localised recycling and reprocessing hub will also be developed so that the economic value of the recyclates are retained in the local community where possible.

A Sustainable Environment

The Assembly Government's 'One Wales' document describes a sustainable environment as one where we reduce the impacts of climate change, achieve sustainable consumption and production, support rural development and improve the local environment.

Towards Zero Waste shows how we will reduce the impact of waste in Wales to within our environmental limits by focussing on reducing the ecological footprint of waste to 'one Wales: one planet' levels by 2050. This approach will reduce the impact of climate change from waste activities, achieve sustainable consumption and production, help sustain our economy and manage and conserve the planet's resources.

What is ecological footprinting and 'one Wales: one planet'?

Ecological footprinting measures the impacts of how we consume things and compares it to what the planet can cope with. It calculates how much land is needed to feed, produce energy and absorb the pollution and waste generated by our supply chains. Sustainability requires us to live within the planet's environmental limits.

The Welsh Assembly Government is using ecological footprinting as a way to measure if it is meeting its sustainable development commitments. The Assembly Government proposes that:

'Within the lifetime of a generation we want to see Wales using only its fair share of the earth's resources, and where our ecological footprint is reduced to the global average availability of resources - 1.88 global hectares per person' [1].

To achieve this goal over a generation, we will need to reduce by two thirds the total resources we currently use to sustain our lifestyles.

This is summarised as 'one Wales: one planet' as we are currently using three planets worth of resources, instead of the one available to us. Recent research[2] has estimated that waste generation contributes 15% to Wales' ecological footprint.

[1] One Wales: One Planet: A new sustainable development scheme for Wales
[2] SEI (2008) Wales Ecological Footprint - Scenarios to 2020

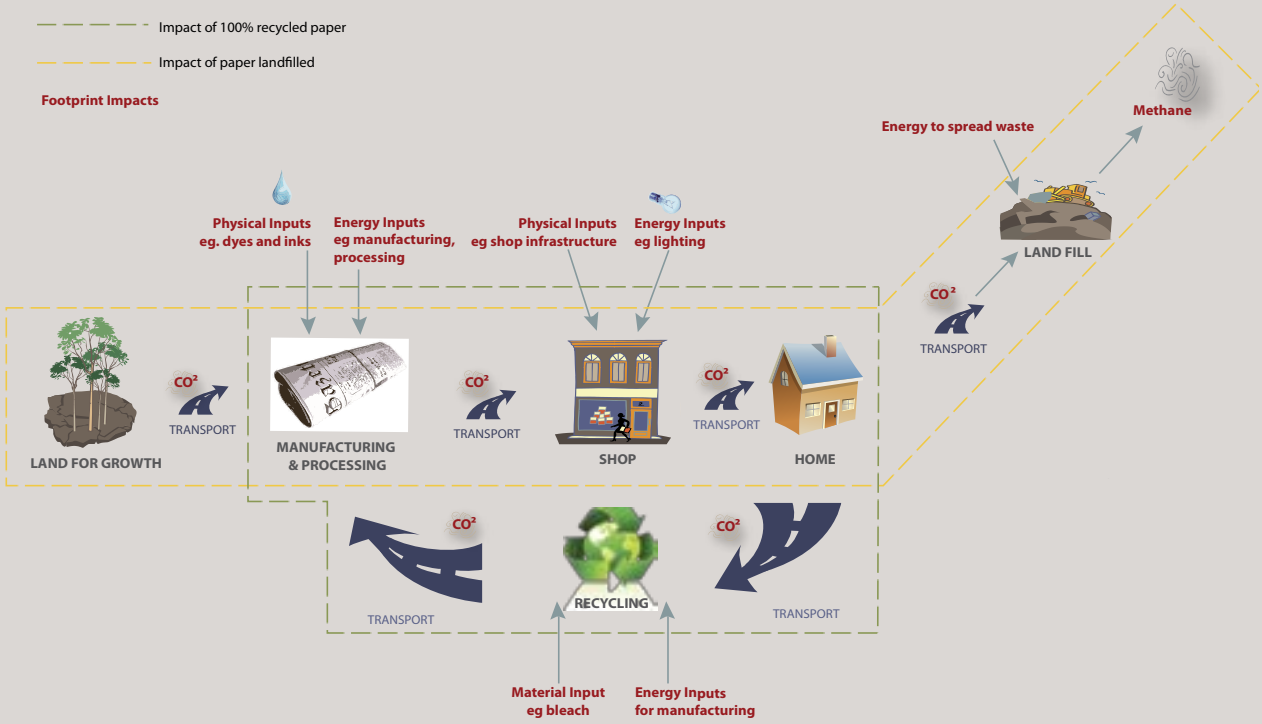
What is the ecological footprint of waste?

The ecological footprint of waste is different to the ecological footprint of Wales described on the previous page.

The ecological footprint of waste shows the environmental consequences of what people in Wales buy, use and then throwaway. It takes into account the impact of products produced in other countries but consumed in Wales. The ecological footprint of waste also includes what is achieved through recovering materials and recycling them into new products as well as any energy recovered from the waste stream. The diagram below shows what environmental impacts are captured in the ecological footprint of waste paper.

In our strategy, we are measuring the ecological footprint of waste, and putting in place actions that will reduce this to 'one Wales: one planet' levels.

Figure 6 - The ecological footprint of paper waste (Source: Arup)



Why have we chosen the ecological footprint of waste to measure progress towards living within our environmental limits?

We have chosen the ecological footprint of waste as our primary indicator for measuring whether we are living within our environmental limits. This is because it helps us understand:

1. Resource use, by comparing the amount of resources we use - both in producing products from virgin materials, and also how much can be displaced through recycling or energy recovery - to how much the planet can cope with.

DID YOU KNOW…?

Every tonne of steel packaging recycled makes the following environmental savings:

- 1.5 tonnes of iron ore
- 0.5 tonnes of coal
- 0.5 tonnes of the water required in production
- 75 % of the energy needed to make steel from virgin material
- 1.28 tonnes of solid waste
- Reduction in air emissions by 86 %
- Reduction in water pollution by 76 %.

(Source: WasteOnline - http:www.wasteonline.org.uk/resources/InformationSheets/metals.htm)

2. The impact of waste on climate change and how it's managed, by measuring both direct and indirect greenhouse gas emissions.

DID YOU KNOW…?

Recycling one tonne of aluminium saves about the same amount of carbon dioxide (CO_2) as taking a small car off the road for a year.

(source: Alupro http://www.alupro.org.uk/facts-and-figures.html)

It is estimated that just over half of the ecological footprint of waste relates to carbon emissions[18].

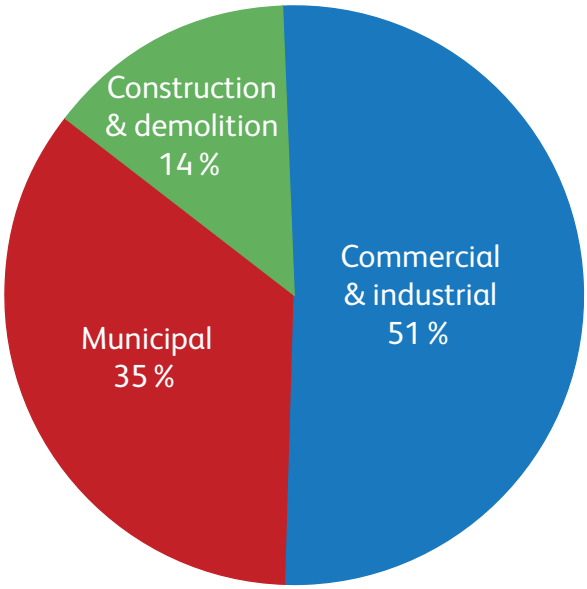
[18] REAP Software tool (2008) Stockholm Environmental Institute.

What is the ecological footprint of waste in Wales?

In 2007 waste management in Wales generated an impact of approximately 4,180,000 global hectares (gha). Global hectares are the way that our ecological footprint is measured. This is the equivalent of 2.7 planets[19].

To reduce the impact of waste in Wales to within our environment limits - one Wales: one planet levels - we need to reduce the ecological footprint of waste by 75 % by 2050.

Figure 7 - Ecological footprint of waste across all sectors



What actions will reduce the ecological footprint of Waste to one Wales: one planet levels?

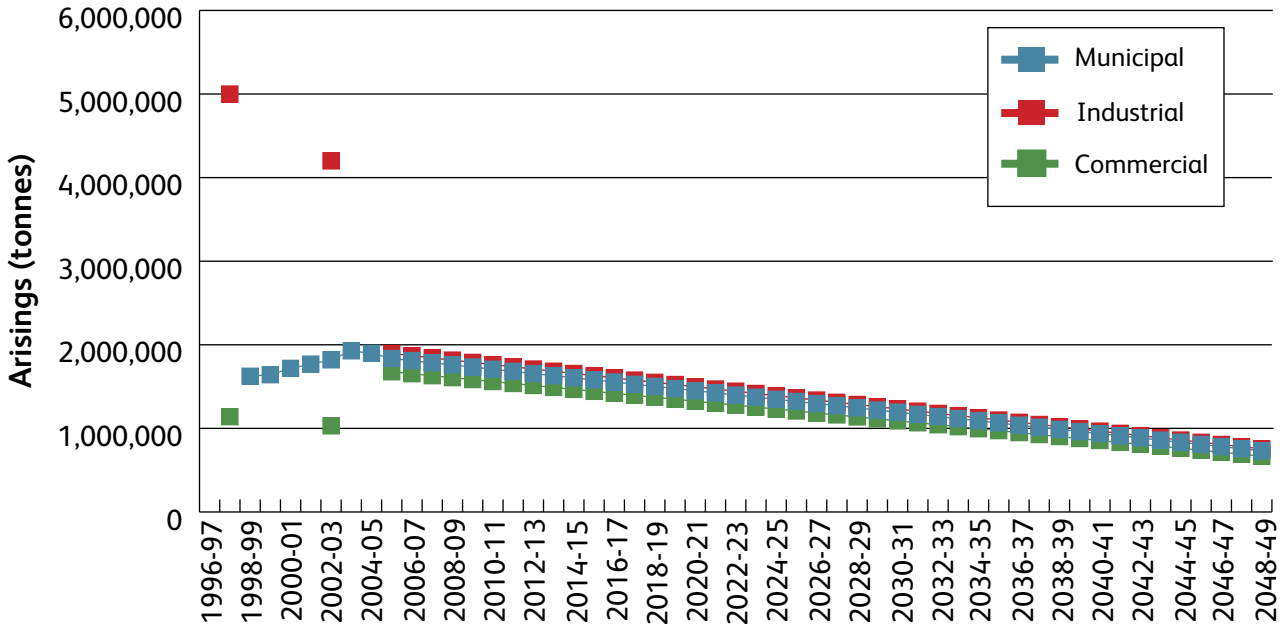
To reduce Wales' ecological footprint of waste to 'one Wales: one planet' levels:

We need to focus on waste prevention, and more sustainable ways of consuming and producing.

Waste prevention is the best way of reducing the ecological footprint of waste in Wales. To achieve one Wales: one planet levels by 2050 we need to reduce our waste arisings across all sectors by around 1.5 % each year from now to 2050. Figure 8 below shows our current trends in producing waste against what is needed to reach one Wales: one planet levels.

[19] Ecological Footprint impacts of the Welsh Waste Strategy ARUP Report.

Figure 8 - Waste prevention trends needed to meet 'one Wales: one planet' levels of waste



For commercial and industrial waste, data is collected through surveys. These were undertaken in 1998, 2003 and 2007 and the dots in Figure 8 represent waste arisings at those points in time. It is not possible to infer trends between those survey dates.

Data on municipal waste collected by local authorities is obtained quarterly using an electronic web based system called WasteDataFlow, and it is possible to show more detail on trends in waste arisings for municipal waste. It is also important to note that in Figure 8 an annual reduction of 1.5 % on a 2006-07 baseline has been applied to each waste stream for simplicity, but this does not reflect the actual target that will be set in the sector plans (the proposed waste reduction targets for each waste stream are presented later, and are shown graphically in Appendix 2).

Where waste is produced, we need to focus on very high levels of recycling, and make sure that it is the right type of recycling.

Where waste is produced, the best way of reducing the ecological footprint of waste is to recycle in a closed loop[20] and to concentrate on recycling the materials which will reduce the footprint the most (see text box over page). Part 4 details the waste recycling and other waste management targets that have been set to support this outcome.

To achieve closed loop recycling (especially for paper, glass and textiles) the right collection system needs to be in place so that the recyclate is not contaminated. For household waste this is best achieved through kerbside sort whereby recyclable materials are sorted at the kerbside into different containers or compartments on a collection vehicle.

[20] 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.

What type of recycling reduces the ecological footprint most?

After waste prevention and preparing for reuse, the best way to reduce the ecological footprint of our waste is by recycling. Recycling some materials - especially paper and metals - has greater benefits than others:

- Recycling paper and card will significantly reduce our footprint by between 82 % and 94 % per tonne (depending on the type of recycling).
- Recycling non ferrous metal will significantly reduce our footprint by between 79 % and 85 % (depending on the type of recycling).
- Recycling ferrous metals will significantly reduce our footprint by between 36 % and 52 % (depending on the type of recycling).

The type of recycling used will also affect how much we can reduce our ecological footprint by.

Closed loop recycling is much better for the environment than open loop recycling. In some cases, for example glass and plastic, open loop recycling can be more damaging to the environment

- Closed loop recycling of dense plastics will reduce the footprint by 60 %, whereas open loop recycling will increase the footprint by 28 %.

- Closed loop recycling of plastic film will reduce footprint by 47 % and open loop recycling will increase the footprint by 27 %.
- Glass has one of the lowest ecological footprints per tonne. Open loop recycling will increase the footprint.

Source - Ecological Footprint impacts of the Wales Waste Strategy ARUP report

Measuring and Monitoring Progress

We will measure and monitor our progress towards a sustainable environment through the indicators below:

Indicators	
Ecological Footprint of Waste	We will evaluate the ecological footprint of waste in Wales periodically (at least every five years).
Climate change	We will investigate ways of monitoring and measuring the direct emissions of greenhouse gas from the waste sector in Wales.
Waste management	We will measure waste arisings, management, disposal and capacity across all sectors to monitor progress against the waste prevention and management targets and progress towards the establishment of an integrated and adequate network of recovery and disposal facilities. We will improve information on the destination of recyclates and how they are managed (i.e. whether by closed or open loop).
Eco-design	We will monitor the progress and outcomes of eco-design activity of Welsh companies that receive support from the Assembly Government, using key environment performance indicators.

A Prosperous Society

The Assembly Government's One Wales document describes a prosperous society as one with a strong and enterprising economy and full employment based on quality jobs. It is one where everyone has the opportunity to achieve a reasonable standard of living, no matter where they live or what they do and where people are equipped with the skills they need, at all levels, to enable them to make the best possible contribution to the economy and their communities, and to fulfil their individual potential.

Towards Zero Waste shows how our actions on resource efficiency and waste management will support the development of a sustainable, resource efficient economy that:

- Provides more 'green' jobs within the waste and resource management industry across a range of skill levels in Wales and increases the number of high skilled, high value green jobs.
- Is resilient against future competing demands including, rising costs of, and security of supply of global material resources, saving money and maintaining or increasing profit through more efficient resource management.

What does a sustainable, resource efficient economy look like?

Around 10,000 people are currently employed in the waste management industry in Wales[1]. The workforce is spread across the public sector, private sector, SMEs and social enterprises. The recycling workforce has increased substantially over the past two decades, and employment in waste collection, treatment and disposal has increased too.

By taking forward the actions and target in this strategy, there is an enormous opportunity to develop more skills and increase employment further within Wales.

Increasing Employment - It is estimated that employment within the waste management industry in the UK will increase by around 5,000 between 2006 and 2014[1]. Skilled trade occupations will account for the majority of this increase (+53 % on 2006 levels) while drivers and plant operatives will increase by around 30 %.

Data from the European Commission shows that the waste management sector for the EU-25 amounts to 1.2 to 1.5 million jobs. Recycling 100,000 tonnes of waste can create up to 250 jobs as opposed to 20-40 in the case of incineration and approximately 10 landfilling[2].

Skills and capacity building - Skills will be needed in areas that include the design, development, installation, operation and maintenance of process plant. Also, to achieve the significant levels of waste reduction required, Wales will need more expertise in lifecycle assessment and design, creative industries, clean technologies and processes and environmental management and monitoring[1].

Wales will need to build capacity to deliver waste related skills and training.

[1] Source: Energy and Sector Skills - Sector Skills agreement S1 and 2 report waste management industry - March 2007

[2] Source: data highlighted by the European Commission, under the framework of the EU Recycling Thematic Strategy (2005) - taken from 'Municipal Waste in Europe ACR+ Association of Cities and Regions for Recycling and Sustainable Resource management

Measuring and monitoring progress

We will measure and monitor our progress in contributing to a prosperous society through the following indicators:

Indicators	
Employment and job type	We will monitor and measure the number of people employed in the waste management industry in Wales, the type of jobs they are employed in, and the sector in which they are employed.
Skill levels and Training	**Skills** We will measure skill levels in the Waste Management sector. Developing a skilled workforce for the changing nature of waste management facilities is a key part of Sector Plans. **Training** We will explore the possibilities for measuring and monitoring the number and type of training courses that are available which are suitable for the changing industry, together with the uptake of training places and qualifications achieved.
Resource use and efficiency	We will explore the possibilities for measuring and monitoring the amount of energy (electricity and fuel) generated by the anaerobic digestion of waste.

Further Actions

We will undertake research to quantify the economic impact and further number and types of green jobs that will be created through the actions in our strategy.

We will work closely with Department for Children, Education, Life-Long Learning and Skills (DCELLS), the Energy and Utility (EU) Skills Council and others to assess the skills gap in the resource efficiency and waste management industry and ensure that the specific qualifications and skills needed are given full support in each of our sector plans.

A Fair and Just Society

The Assembly Government's One Wales document describes a fair and just society as one where all citizens are empowered to determine their own lives and to shape the communities in which they live, and where everyone achieves their full human potential and can live free from poverty, discrimination, fear or abuse.

The sector plans will implement the targets, actions and policies in Towards Zero Waste in a manner in which citizens can, through actions on waste prevention, reuse and recycling:

- Achieve their full human potential
- Enrich their communities
- Contribute towards the wellbeing of Wales
- Improve their local environment
- Actively improve the quality of their life.

There will be equality of opportunity for all citizens of Wales to contribute to waste prevention, reuse and recycling irrespective of where they live, their health and ability, mobility or personal circumstances.

What does a Fair and Just Society look like?

Waste management and resource efficiency has a big role to play in a fair and just society.

Full human potential - There are many opportunities in waste management and resource efficiency to increase employment, through recycling and waste prevention activities. There are also many opportunities for increasing employability through these activities.

Contribute to the wellbeing of Wales through an improved local environment and enriched communities which are empowered to shape their services - Such a society engages all citizens. Citizens can contribute to a resource efficient society and therefore contribute to the reduction in waste production in the local community and ultimately Wales as a whole. The waste management sector needs to ensure that the community has access to separate recycling and reuse facilities and the community needs to actively use these. By producing less waste, citizens can help create a more pleasant local environment. Local communities should be involved in how recyclates are used, and the recyclates are then used for the benefit of the local community, leading to a greater sense of community and social cohesion and wellbeing.

Equality of opportunity - To ensure equality of opportunity, the level of recycling services and targets set across all local authorities should be equal. It is a key principle of the Assembly Government that we afford the opportunity to all the citizens of Wales to contribute to waste prevention, reuse and recycling, irrespective of where they live, their health, mobility and personal circumstances.

DID YOU KNOW…?

In the recently published, Living in Wales survey for 2007, over 30 % of people surveyed said they would pay more for products made from recycled material and over 50 % said that they bought goods because they used less energy.

Measuring and monitoring progress

We will measure and monitor our progress in developing a fair and just society through the following indicators:

Indicators	
Contribution to the wellbeing of Wales through an improved local environment and enriched communities which are empowered to shape their services	We will measure community satisfaction of involvement in waste services and activities, through the 'Living in Wales Survey'.
Full human potential	**Increased employment** The number of jobs will be measured as in 'A Prosperous Society' above. **Increased employability** We will also investigate ways of measuring and monitoring the potential for increasing employability through waste prevention, reuse and recycling activities.
Equality of opportunity	**Level of recycling services** We will investigate in the municipal sector plan ways of measuring the level of recycling facilities services provided across all local authorities to ensure equality of service. **Access to jobs** We will monitor the gender and ethnic diversity of the waste management sector. **Access to knowledge and understanding** We will measure citizens' access to knowledge and understanding of resource efficiency and waste management through Waste Awareness Wales surveys.

Part 4: Implementing the outcomes: our milestones, targets and priorities

To implement our outcomes, we are working towards two key milestones. These are:

2025: Towards zero waste

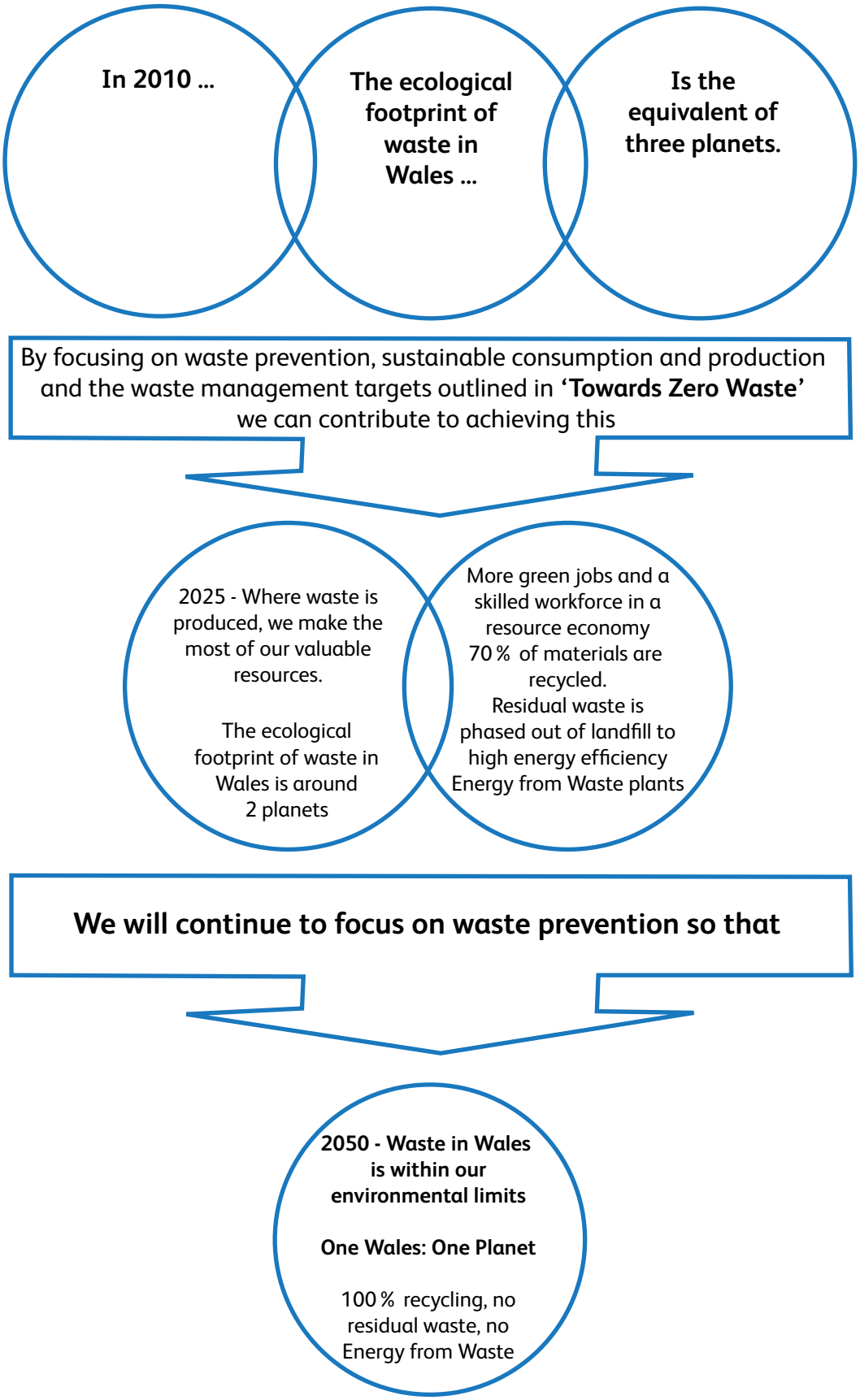
2025 is an intermediate step on the way towards 'zero waste', which we define as an aspirational end point where all waste that is produced is reused or recycled as a resource, without the need for any landfill or energy recovery. By 2025, we will have significantly reduced waste through actions on sustainable consumption and production and will manage any waste that is produced in a way that makes the most of our valuable resources. This will mean that we will maximise recycling and minimise the amount of residual waste produced, and eliminate landfill as far as possible.

2050: Achieving zero waste

As a minimum, we will reduce the impact of waste in Wales to within our environmental limits (which we define as 'one Wales: one planet' levels of waste, roughly 65 % less waste than we produce now), aiming to phase out residual waste through actions on waste prevention and sustainable consumption and production so that the only waste that is produced is reused or recycled as a resource (thus meeting the aspirations of the 'zero waste' philosophy).

A further description of these milestones (along with the specific targets, policies and actions) is provided below. Figure 9 shows how they link together to achieve our outcomes.

Figure 9 - Towards zero waste - milestones



2025: Towards Zero Waste

By 2025, we will have made a significant reduction in waste (27 %), and will manage any waste that is produced in a way that makes the most of our valuable resources. This means maximising recycling and minimising the amount of residual waste produced, and achieving as close to zero landfill as possible.

This is an intermediate step on the way to our 2050 target of achieving zero waste and 'living within our environmental limits'. This is needed because reducing the impact of waste in Wales to 'one Wales: one planet' levels will require big changes in the way that products and services are designed, and the actions that consumers and businesses take.

Towards Zero Waste means that:

- Waste will be reduced significantly
- There will be a strong economy in resource management
- Residual waste will be minimised
- Landfill will be eliminated as far as possible
- Legacy wastes will be tackled.

Waste prevention

We need to reduce our waste arisings by around 1.5 % (of the 2007 baseline) each year across all sectors in order to achieve our one planet goal for 2050.

What is waste prevention?

The **Waste Framework Directive** defines waste prevention as

'Measures taken before a substance, material or product has become waste, that reduce the quantity of waste, including through re-use of products or the extension of lifespan of products the adverse impacts of generated waste on the environment and human health or the content of harmful substances in materials and products'.

The OECD (Organisation for Economic Co-operation and Development) breaks down waste prevention into three components:

Strict avoidance involves the complete prevention of waste generation by virtual elimination of hazardous substances, or by reducing material or energy intensity in production, consumption and distribution.

Reduction at source involves minimising the use of hazardous substances and/or minimising material or energy consumption.

Product reuse involves the multiple use of a product in its original form, for its original or alternative purpose, with or without reconditioning. This includes refurbishment and repair. Reuse is important, and is the part of the waste hierarchy most often overlooked. Not only does it move material use up the waste hierarchy, but it also provides social and economic benefits to Welsh communities, such as opportunities for jobs and increasing skills.

The Waste Framework Directive requires member states to give first priority to the adoption of prevention measures, and they must draw up **Waste Prevention Plans** by December 12, 2013 (Article 29). They shall also take 'measures, as appropriate, to promote the reuse of products and preparing for reuse activities, notably by encouraging the establishment and support of reuse and repair networks, the use of economic instruments, procurement criteria, quantitative objectives and other measures (Article 11, paragraph 1).

DID YOU KNOW…?

In 2008-09, 4,142 tonnes were reused via community recycling organisations in Wales - this included 2,856 tonnes of furniture.

(Source: Cylch Let's Prove It Report 2009)

90 % of all products are waste within six months of purchase.

(Source: Environment Agency MEP report).

What Activities Prevent Waste?

Wherever waste is produced, there are ways to reduce it by using sustainable consumption and production (SCP). SCP is finding the best way to consume and produce things so that resources are not wasted or cause air or water pollution or the degradation of land. Ways that reduce consumption or make production less wasteful will help to reduce Wales' ecological footprint the most. Where waste cannot be avoided, the next best option is to reuse.

What we consume (the amount and type of products we buy and the services we use, along with their supply chains) has an impact on the environment - from the amount of energy used to the pollution created. When a product is thrown away as waste, the amount of raw material and energy it takes to make and transport the product is also thrown away.

The things we can do to reduce the impact, and reach one Wales: one planet levels are:

1. **Changing the way that products are designed by using eco-design**

Eco-design minimises the impact of a product or service over its life cycle by:

- **Designing to reduce the amount and type of materials in products**.
- **Improving the longevity of products** - many products are designed for a short life span and are meant to be thrown away. Electronic equipment, particularly computers and mobile phones, are designed with 'inbuilt obsolescence' and are difficult or impossible to repair or upgrade with new parts. By changing the way that these types of products are designed it will be possible to increase the lifespan so that they can be used and upgraded in the future. Increased product leasing my also help this.
- **Designing for reuse** - many products are currently designed so that they are used once and then disposed of. However some types of materials or products could be designed so that they can be reused a number of times. For example, many retailers use reusable packaging e.g. crates and cages to transport produce from their distribution centres to the shop floor. Reuse is better than disposal because it avoids the using new virgin materials to replace the product. It is better than recycling because it avoids using energy to clean and re-manufacture the original product.
- **Designing for waste separation and recycling** - eventually all products reach a point where they cannot continue to be used, even if they can be repaired or updated. If products are not designed so that they can be easily dismantled and the different materials separated, it may not be possible to reuse or recycle the various parts. However if we think about the whole lifecycle when the product is being designed, it is possible to design with recycling in mind.

2. Evaluating production processes to make them more resource efficient

The types of materials used during manufacture will be considered. Those, such as hazardous waste, which are hard to manage or which cannot be recycled, will be discontinued, and replaced with other materials (unless they are critical to the nation).

3. Green procurement and greening supply chains

Moving to more sustainable procurement activities will reduce how much waste is generated. Large businesses can use their purchasing power to have a powerful influence over their suppliers. Also by using environmental demands, institutions can shift markets and influence design and durability. This is green procurement. By understanding where an organisation has the most environmental impact, they can they can use green procurement to make the most significant reduction in their environmental impact. This is particularly relevant to retailers and manufacturers. By looking at their supply chains they can identify where there can reduce the impact of their production. This will then reduce the impact per tonne of waste they generate. Tools are available for analysing these impacts.

4. Changing our lifestyles and behaviour

There needs to be a significant behavioural change to achieve the levels of waste prevention needed, and this means us all being challenged and accepting that challenge, including accepting the need for changes. For example, this may include the fortnightly collection of residual refuse, and considering whether it is fair that people can throw away as much waste as they want without paying extra for its disposal. Actions to achieve this will be considered in more detail in the sector plans.

5. Encouraging reuse through

- Using reuse services such as donating unwanted items to charity shops.
- Developing Freecycle and other similar groups and local exchanges.
- Supporting schemes that involve ‘reusable’ products instead of disposable products.
- Improving reuse facilities at recycling centres.
- By increasing the skills needed for refurbishment within the jobs market, the reuse and refurbishment of products can grow.
- Improving the collection methods and services for large, reusable items.
- Local authority departments (in particular social services and housing) purchasing reused furniture for their clients.

Targets and priorities for waste prevention[21]

Household Waste	
Waste Prevention Target	Waste prevention is the best way of reducing the ecological footprint of waste in Wales. To achieve 'one Wales: one planet' levels by 2050 we need to reduce our waste arisings across all sectors by around 1.5 % (of the 2007 baseline) each year. In our municipal sector plan we will consult on a waste prevention target for household waste of 1.2 % (of the 2006-07 baseline) each year[22].
Household hazardous waste	Developing a pathway to zero hazardous household waste will be a key action for the municipal sector plan.
Packaging waste	Reducing packaging will be a key action for the municipal sector plan and the retail sector plan.
Priority Materials	Reducing our waste arisings overall is very important. However, there are some materials which, if waste prevention action is focussed on them, will reduce our ecological footprint sooner. For household waste, these are • Food waste • Plastic • Paper WEEE (waste electronic and electrical equipment), batteries, oil, clinical waste, hazardous items, textiles, shoes, wood, nappies, carpet, furniture also have a combined high impact on our ecological footprint.

[21] These targets were determined from the evidence base used to support the development of the strategy, and which was presented as part of the consultation on Towards Zero Waste. Modelling of options included the use of an ecological footprint tool (REAP) and a life cycle assessment tool (WRATE).

[22] The waste prevention targets will be recalculated periodically to evaluate if the desired outcome of achieving one Wales: one planet levels of waste is being achieved. This is because the actual reduction in the ecological footprint of waste will also depend on the type of material avoided, and its overall management.

DID YOU KNOW…?

Food Waste

- UK households waste 8.3 million tonnes of food and drink every year, of which 5.3 million tonnes could have been avoidable (edible in the vast majority of situations).
- If we stopped wasting all this avoidable food, it would save the equivalent of 20 million tonnes of carbon dioxide equivalents - the equivalent of removing 1 in 4 cars off UK roads (2.4% of UK emissions).

(Source: WRAP study on 'Household Food and Drink Waste in the UK' 2009)

Commercial and Industrial Waste	
Waste Prevention Target	Waste prevention is the best way of reducing the ecological footprint of waste in Wales. To achieve 'one Wales: one planet' levels by 2050 we need to reduce our waste arisings across all sectors by around 1.5 % (of the 2007 baseline) each year. In our sector plans we will consult on annual waste prevention targets of 1.2 % for commercial and around 1.4 % for industrial waste (in each case this will be an annual percentage reduction of the 2006-07 baseline; for industrial waste the target will vary according to each sector).
Hazardous waste	Developing a pathway to zero hazardous waste will be a key action for each sector plan.
Packaging waste	Reducing packaging will be a key action for the retail sector plan.
Priority Materials	Reducing our waste arisings overall is very important. However, there are some materials which, if waste prevention action is focussed on them, will reduce our ecological footprint sooner. For commercial and industrial waste these are: • Food - food waste generates over 30 % of the total ecological footprint impact of commercial and industrial waste in Wales. Working with food producers, food retailers (such as supermarkets and restaurants) and food industries such as hospital catering facilities to reduce food waste will result in the largest reduction in ecological footprint from this sector. • Paper and card - paper and card also has a large ecological footprint impact in terms of commercial and industrial waste (15 % of the total). • Chemicals - chemical waste represents 12 % of the total ecological footprint impact but only 4 % of the total tonnage of waste.

Case study: Ecodesign

Orangebox is a UK market leader in the R&D, manufacture and service of seating for the commercial environment. They were supported by the Welsh Assembly Government funded Ecodesign Centre (EDC) to enable them to design out waste from their UK leading ARA chair. The chair was designed to incorporate environmental features, including product light weighting through a mono-material backing unit, improved assembly and disassembly time for refurbishment or recycling of the chair and improved overall resource efficiency.

This has enabled Orangebox to become the first European company in their sector to achieve Cradle to Cradle accreditation. They also set up an in-house recycling centre, diverting large volumes of waste material from landfill.

Construction and Demolition Waste	
Waste Prevention Target	Waste prevention is the best way of reducing the ecological footprint of waste in Wales. To achieve one Wales: one planet levels by 2050 we need to reduce our waste arisings across all sectors by around 1.5% (of the 2005 baseline) each year. In our construction and demolition sector plan we will consult on an annual waste prevention target of 1.4% (based in a 2006/07 baseline) for the construction and demolition waste managed off site.
Hazardous waste	Developing options for minimising hazardous waste will be a key action for the construction and demolition sector plan.
Packaging waste	Reducing packaging waste will be a key action for the construction and demolition sector plan.
Priority Materials	Reducing our waste arisings overall is very important. The construction and demolition sector plan will focus on reducing our waste arisings, with specific emphasis on the priority materials which will reduce our ecological footprint the most. For construction and demolition the priority wastes are: • Wood • Plastic • Metal • Insulation and gypsum • Hazardous waste.

Further Research

Commercial and Industrial waste trends are closely aligned with economic trends. Through our sector plans we will work to set targets to reduce growth in waste streams in line with business as usual trends.

We propose to undertake further research on indicators to further measure household waste prevention.

A strong economy in resource management

This means that recyclates will be collected and managed with supply to Welsh manufacturing in mind. There will be strong markets for recyclates in place in the local economy and the benefits of recycling will remain, as far as possible, within the local community.

To achieve this we will need:

High levels of clean recyclates to drive the market

This means that all sectors in Wales will be recycling at least 70 % of their waste - this includes businesses, households and the public sector.

The recyclates will also need to be separated out at source so they are not contaminated and are of a high quality. This is achieved most sustainably by 'source separation' - where each material is collected separately. We need an effective collection system for source separation across all sectors.

In particular, we will look at the mixed element of commercial and industrial waste that is currently sent to landfill. 'Mixed' waste in this context is the waste that is not segregated and which contains a mixture of wastes very similar in composition to household wastes. The vast majority of this 'mixed' waste could and should be recycled, but is currently landfilled.

A big change in recycling is needed across all sectors to achieve a recycling rate of 70 % or higher by 2025. There is good evidence that businesses and public sector bodies can very rapidly exceed 70 % recycling levels once they make the commitment and the necessary collection services can be secured.

DID YOU KNOW…?

In a recent study of landfilled mixed commercial and industrial waste commissioned by the Environment Agency Wales, it was estimated that Welsh businesses threw away waste worth £30 million pounds in 2005 - around half a million tonnes of potentially recyclable material went to landfill. If this mixed waste had been separated at source, up to 77 per cent could have been reused, recycled or composted. These are materials and products 'left over' from out of date manufacturing techniques which cannot be easily recycled, and the only way of managing them is to dispose of them.

Cardboard boxes and containers are the largest component of the business waste making up 15 % (or 100,000 tonnes) of the total. Kitchen waste made up 13 % (90,000 tonnes).

(Source: Determination of Biodegradability of Mixed Commercial and Industrial waste Landfilled in Wales - SLR)

Case study - Grays Waste Management

Grays Waste Management collects waste from around 600 companies across North Wales including Stena Line Ferries, Vion Foods and Anglesey Aluminum. The company currently recovers between 50 and 60 per cent of the waste it collects including wood, plastic, glass, paper, electrical products and scrap metal, and sells on these recovered materials to a variety of end users including wood chip factory, Kronospan, and the UPM paper mill in Shotton.

Since WRAP established a presence in Wales in 2007, it has worked closely with Grays on a number of projects including setting up a source-segregated waste collection for businesses. Through funding provided by WRAP, the company was able to purchase the necessary containers to store various types of waste, as well as the vehicles that were needed to transport the waste from participating businesses.

This innovative scheme demonstrates that source separation of commercial waste can be implemented through simple measures. Less waste is ultimately sent to landfill if the amount of waste created at the front of the supply chain is reduced. In addition, source separation saves time and energy associated with the recovery process of non-segregated waste. Initiatives such as this help businesses to fulfil their environmental obligations whilst also saving money and valuable resources.

The right kind of recycling facilities

All recycling operations will be 'closed loop' to achieve the best environmental benefits. Far better information will be provided on the destination of recyclate and how the recyclate is managed.

We also want recycling facilities that accept recyclates depending on the material they are rather than the sector they come from. By treating the same type of material in the same type of facility, we can achieve economies of scale at a local level, reducing waste management costs for both businesses and local authorities. However, the right level of infrastructure has to be in place and this will be addressed in the sector plan for collections, infrastructure and markets.

Case study: Plastics Sorting Ltd, Plastic Reprocessing Plant

Plastics Sorting Ltd is an example of closed loop recycling, and how the economic benefits of recyclate can be retained in a local economy. Closed loop recycling means that products are recycled back into their original product - for example, bottles are re-melted or cleaned and made into more bottles.

The project will develop a 24 thousand tonne capacity reprocessing plant for collected plastic bottles. This will provide two local manufacturers with high-quality product - replacing the need for expensive imports of virgin material and will employ 20 people when fully operational. Cleanstream Group CIC have been operating kerbside recycling collections in Wales for many years, to enable the collection of clean recyclates which can be used by reprocessing plant such as this.

Closed loop recycling can ensure a stable market for collected materials and that much more material (and its economic value) is retained in the Welsh and UK economy.

Strong markets for recyclates and anaerobic digestion digestate

We will work closely with businesses in Wales to make sure that the right market is created for recyclate and digestate from anaerobic digestion plants and this will be addressed in our sector plans.

Residual waste will be minimised

Substantially less residual waste will be produced than at present, and it will be phased out of landfill sites to high efficiency energy from waste plants.

Landfill will be eliminated as far as possible

To reduce Wales' greenhouse gas emissions and make the most of our valuable resources we need to divert waste from landfill. The best way to treat most wastes diverted from landfill is for them to be recycled. In particular, diverting food waste to anaerobic digestion, and waste paper, card and metals from landfill sites to recycling will have the greatest benefits. Landfilling of all wastes will be phased out as far as possible in the period up to 2025. There will be a particular focus on reducing the amount of biodegradable waste landfilled in order to reduce emissions of methane, a greenhouse gas 23 times more potent than carbon dioxide.

The Committee on Climate Change 2008 stated that 'anaerobic digestion has significant potential to reduce greenhouse gas emissions'… and 'the use of AD is strongly recommended for source segregated food waste - the technology produces both biogas and digestate'.

Reducing the impacts of landfill facilities

Landfill sites contribute to a large amount of greenhouse gas emissions. We will investigate further the emissions from operational and closed sites and work with our partners to find out whether emissions can be reduced even more.

Legacy wastes will be tackled

There will be some materials and products which cannot be easily recycled, and the only way of managing them is to dispose of them. Alternative ways of treating these will be found, and efforts will be made to ensure that products are redesigned so that they do not become problematic legacy wastes in the future.

Targets and priorities for reuse, recycling and landfill reduction

Commercial and Industrial Waste	2015/16	2019/20	2024/25
Commercial waste recycled	57 %	67 %	70 %
Industrial waste recycled	63 % [23]	67 %	70 %
Packaging waste	Reusing and recycling packaging will be key actions for the retail sector plan and the collection, infrastructure and markets sector plan. This will include making packaging more recyclable.		
Landfill of biodegradable waste	Further reducing the landfilling of biodegradable wastes will be a key aim of each sector plan.		
Priority Materials	Our collection, infrastructure and markets sector plan will also concentrate on the following areas for action • Diverting food waste from landfill to anaerobic digestion plants • Recycling paper and card rather than landfilling it • Recycling metals		
Further Actions	We will also explore in our sector plans the feasibility of setting • Separate recycling targets for our priority materials • 'Preparing for reuse' targets. Our sector plans will also develop ways of phasing out hazardous waste from landfill in the medium term.		

DID YOU KNOW…?

Recycling aluminum is 20 times more energy efficient than making it from the raw material, bauxite. The drinks can you give for recycling today is often made into a new can, filled and put back on the shelf in just six weeks. Aluminum can be recycled over and over again without loss of quality. 75 % of all the aluminum ever produced is still in use.

(Source: Alupro website http://www.alupro.org.uk/facts-and-figures.html)

[23] Industrial waste has higher recycling currently. Future Recycling and Landfill Diversion Targets for Wales, Eunomia, 2009.

Construction and Demolition Waste	2015/16	2019/20
The preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight.	-	Increased to a minimum of 90 % by weight.
Landfill	50 % of the amount of C&D waste produced in Wales that was landfilled in the 2007 baseline	75 % of the amount of C&D waste produced in Wales that was landfilled in the 2007 baseline
Packaging waste	Reusing and recycling packaging will be key actions for the construction and demolition sector plan. This will include making packaging more recyclable.	
Landfill of biodegradable waste	Further reducing the landfilling of biodegradable wastes will be a key aim of each sector plan.	
Priority Materials	We will also plan to have separate recycling targets for our priority materials in our sector plans.	
Further Actions	Reducing the quantity of waste to landfill towards zero will be a key objective throughout the sector plan.	

The Waste Framework Directive sets a target that by 2020, the preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight.

Municipal Waste collected by local authorities	09/10	12/13	15/16	19/20	24/25
Minimum levels of preparing for reuse and recycling/composting (or AD) for municipal waste. **We will consult on proposed minimum levels of composting (or AD) of source separated food waste from kitchens in our municipal sector plan.**	40 %	52 %	58 %	64 %	70 %
Minimum proportion of preparing for reuse/recycling/ composting that must come from source separation[24].	80 %	80 %	80 %	80 %	80 %
Maximum level of landfill of municipal waste.	-	-	-	10 %	5 %
Maximum level of energy from waste of municipal waste for individual local authorities.	-	-	42 %	36 %	30 %
Minimum levels of preparing for reuse (excluding WEEE). **We propose to undertake research to build on this target in the municipal sector plan.**	-	0.4 %	0.6 %	0.8 %	1.0 %

[24] 'source separation' means recyclables collected separately at source from kerbside, bring and/or CA sites; it excludes recyclables separated out from mixed residual waste.

Municipal Waste collected by local authorities (continued)	09/10	12/13	15/16	19/20	24/25
Packaging waste	Reusing and recycling packaging will be key actions for the municipal sector plan, the retail sector plan and the collection, infrastructure and markets sector plan. This will include making packaging more recyclable.				
Landfill of biodegradable waste	Further reducing the landfilling of biodegradable wastes will be a key aim of each sector plan.				
Priority materials	Our collection, infrastructure and markets sector plan will concentrate on the following areas for action: • Diverting food waste from landfill to anaerobic digestion plants • Diverting paper and card from landfill to recycling • Diverting metals from landfill to recycling Our sector plans will also develop ways of phasing out household hazardous waste from landfill in the medium term.				

Case study - Procurement Programme

The Assembly Government has earmarked £26 million of new funding for the anaerobic digestion of separately collected food waste from households. This new money will go to local authorities across Wales to help them develop anaerobic digestion plants as an alternative to landfill.

The Waste Framework Directive sets a target that by 2020 the preparing for reuse and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight.

2050: Achieving Zero Waste

By 2050, we will have reduced the impact of waste in Wales to within our environmental limits. Residual waste will have been eliminated and any waste that is produced will all be recycled. This means that the ecological footprint of waste in Wales will be at one Wales: one planet levels. It will be achieved by continuing and enhancing our current efforts on:

Achieving one planet levels of waste - 'Living within our environmental limits'

Greater effort will be made to challenge waste at all stages of its production, with all products designed to minimise waste at end of life and during production. All products will use as little material as possible, with the majority of it sourced from recyclate - ensuring a continual loop of the use of resources, with as few virgin resources used as possible. Resources will be highly valued to a level that none will be wasted.

Aiming to phase out residual waste and achieve 'zero waste' through ensuring that all waste is reused or recycled

Any waste that is produced, will be reused, recycled, composted (for green waste) or anaerobically digested (for food waste). All products and packaging will be designed for disassembly and re-use or recycling, and the collection services and facilities to recycle all of the material will be in place. All recycling operations will be 'closed loop', or employ 'up-cycling'. As far as possible, recyclate will be used directly in Welsh manufacturing processes.

This means there will be far less need for residual waste treatment facilities such as energy from waste plants with the number and/or capacity required progressively reducing from 2025 to 2050.

Part 5: Delivery

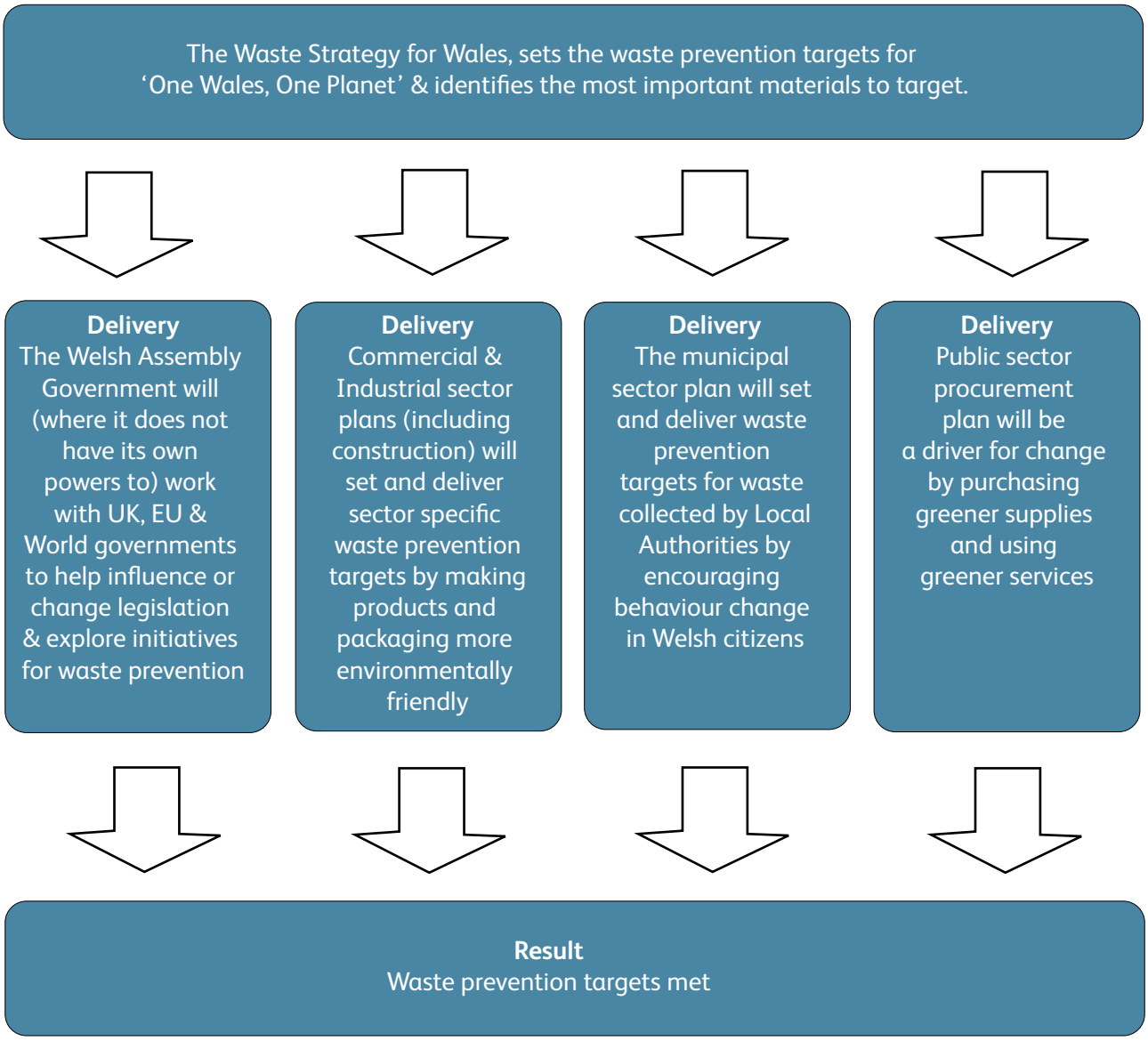
This section describes the activities that we will undertake to achieve our outcomes and how we will implement the targets, actions and policies in further detail in respect of both the 2025 and 2050 milestones. It includes what will be delivered for our two key milestones:

- In our sector plans
- Within the Assembly Government
- By working with others

Waste prevention targets

We will take the following approach to deliver the waste prevention targets.

Figure 10 - Delivery of waste prevention targets



In our Sector Plans

The sector plans will consider the following ways of achieving and implementing waste prevention:

- Using ecodesign techniques to change the way that products are designed.
- Evaluating production processes to make them more resource efficient.
- Evaluating the capacity to undertake green procurement and to green supply chains.
- Working with industry to deal with legacy wastes and ensure that hazardous waste is designed out of products and processes as far as possible.
- Evaluating ways to encourage source separation as a way to drive waste prevention behaviour as well as to deliver high quality recyclate.
- Evaluating ways to encourage sustainable construction practices to prevent, minimise and manage waste responsibly.
- Changing lifestyles and behaviour.

These will be achieved through:

- Education and awareness raising campaigns. These play a big role in encouraging people to buy better quality, durable and functional goods, as well as second hand and buying fewer products in general.
- Advice and support for businesses.
- Evaluating the role in waste prevention of the provision by local authorities of household waste collection services. There needs to be significant behavioural change to achieve the levels of waste prevention needed, and this means us all being challenged and accepting that challenge, including accepting the need for changes.

- Sector commitments and targets.
- Promoting zero waste strategies.
- Consideration of appropriate levers and instruments.

Spatial Plan

We will also ensure that our sector plans taken into account the varying needs of different areas of Wales, especially in relation to rural, urban and valley areas. Particular attention will be paid to the needs of small businesses.

Within the Assembly Government

The public sector

The public sector in Wales is a major instrument for change. We will work to ensure that all public sector bodies and services funded by the Assembly Government adopt sustainable waste management practices.

Procurement and the public sector waste minimisation campaign

Through a change in public sector procurement, we are aiming to drive change, by greening supply chains. Relevant departments within the Assembly Governments will work together to develop a Public Sector Plan. This will encourage waste reduction, high quality recycling, product leasing and reuse as conditions of public sector grants. We will build on the current public sector waste minimisation campaign to ensure that the tools and support that are available are taken up by all public sectors.

Leadership by the Assembly

It is important that the Assembly Government shows how to lead the way, and we will support waste reduction and recycling at all Assembly Government offices, buildings and events, and Assembly Government sponsored events. We will ensure that all Assembly Government grants require recipients to take active steps to meet waste reduction and recycling targets.

We also want Wales to take a lead on the world stage to promote sustainable consumption and production and 'one Wales: one planet'. We propose to hold an international conference on waste reduction in Wales.

Key features of the Assembly Government's in-house environmental performance in respect of waste during 2008-09 are summarised as follows. The changes quoted are against performance in 2007-08.

- 20 % reduction in paper consumption.
- 83 % of paper from recycled sources.
- All publications produced on recycled paper.
- 5.4 % decrease in waste arisings from the estate.
- 59 % of all waste sent for recycling.
- Green Dragon Level 5 system extended to 8 offices.

Working with the UK and European (EU) Governments

Some of the tools needed to achieve waste prevention, to the levels required, are not currently within the scope of the Assembly Government. We will work closely with the UK and EU Government's to ensure producers take more responsibility for their products and product design.

Other schemes and regulation

We will also work with the UK and European Governments to explore initiatives such as compulsory take back schemes, laws defining minimum recycled content and secondary material utilisation rate requirements, eco-efficiency standards and restrictions and bans on the disposal of specific materials and products across the UK and Europe.

Integrated product policy

Companies within the commercial and industrial sector involved in product design, manufacture and processing activities have numerous opportunities to reduce waste. This is because the design of a product and the materials used has a significant impact on the total amount of commercial & industrial and municipal waste produced. We will work with the EU and UK Governments to demonstrate support for integrated product policy.

Reuse, recycling and landfill reduction targets

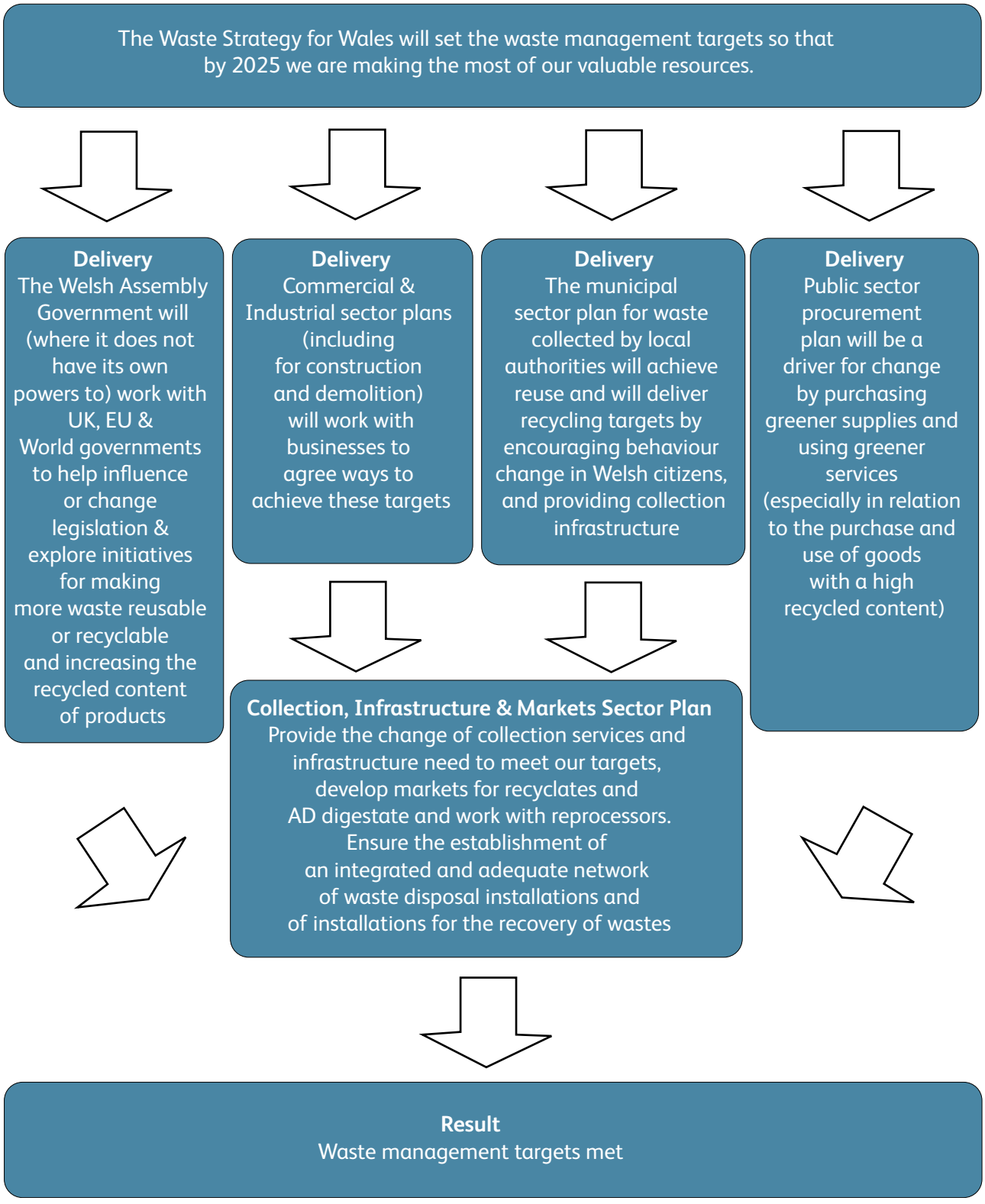
We will take the following approach to deliver the waste reuse and recycling and landfill reduction targets.

In our Sector Plans

The sector plans will consider the following ways of achieving and implementing our reuse and recycling and landfill reduction targets.

- Developing the right kind of waste collection systems
- Enhancing household recycling services and the level of households that participate.
- Ensuring greater consistency in the types and range of recyclable materials collected by local authorities across Wales, in order to result in a greater degree of understanding of what can be recycled and less confusion amongst householders.
- Identifying more clearly where recyclate ends up and how it is utilised (for example whether by closed or open loop systems) and ensuring that all contaminants and rejects that are landfilled are properly identified and accounted for.
- Developing more efficient and effective services. There will be a focus on value for money and the potential for efficiency savings through improved collection systems, joint procurement of equipment, and contracts, for the management of recyclate. During the development of the municipal sector plan, the Assembly Government will discuss with local authorities and the Welsh Local Government Association (WLGA), issues around demonstrating value for money, as well as best practice in service delivery, and will consider the options. This may include benchmarking with the private and third sectors.
- Developing an efficient and effective collection mechanism for clean, source separated recyclates for the mixed element of commercial and industrial waste that achieves the most sustainable outcomes.

Figure 11 - Delivery of reuse, recycling and landfill reduction targets



Establishing and developing the required infrastructure and markets for recyclate

The strategy will require large-scale changes to the infrastructure of waste management facilities in Wales.

We will need adequate markets for the recyclate and to work closely with the reprocessors, the waste industry, local authorities, the community sector and others to develop the infrastructure and capacity needed in Wales as far as possible. We will ensure that steps are taken to link markets in Wales back to collection systems, ensuring that closed loop systems and quality are paramount.

Our sector plans will:

- Identify and develop markets within Wales for the recyclate and anaerobic digestion digestate.
- Identify the supply of high quality recyclate feedstock in Wales and ensure that the reprocessing infrastructure and collection systems are designed to serve the requirements of the Welsh markets as far as is practicable.
- Assess the infrastructure requirements arising from the recycling and waste management targets across all sectors, and provide mechanisms for implementing them.
- Develop mechanisms for promoting closed loop recycling facilities in Wales.
- Develop mechanisms for promoting recycling facilities that accept recyclates depending on the material they are rather than the sector they come from - to achieve economies of scale.
- Ensure capacity for residual waste treatment and the most sustainable type of residual waste treatment.
- Ensure that the waste infrastructure in Wales is as sustainable as possible, and that facilities are seen as valuable and desirable assets by the local communities that surround them.

Reducing the impacts of landfill facilities

Landfill sites contribute to greenhouse gas emissions. In the sector plans we will develop a programme of work to reduce the greenhouse gas emissions from operational and closed landfill sites. We will also work with our partners to find out if these can be reduced even more.

Working within the Assembly and the UK and European Governments

We will continue to work within the Assembly and with the UK and European Governments on supporting strategies, legislation and other policy instruments (such as producer responsibility and the landfill tax) to support our strategy.

Other Commitments

Spatial Plan

We will also ensure that the sector plans take account of the varying needs of different areas of Wales, especially in relation to rural, urban and valley areas. Particular attention will be paid to the needs of small businesses.

For municipal waste collected by local authorities, we will ensure that the varying needs of different communities are taken into account and that service provision is tailored for those with special needs, as is already custom and practice in most local authorities.

The plans will also build on the regional waste plans and will integrate with the delivery of the Wales Spatial Plan area strategies. Attention will be paid to spatial differences in the distribution of key business sectors and their potential differing needs for waste infrastructure.

Activity already being undertaken

Activity already being undertaken in support of the delivery of the policies, targets and outcomes in this strategy are detailed in the Waste Strategy Progress Report (2002-2008). This is available on the Welsh Assembly Government website.

Appendix 1

Compliance with EU Directives requiring waste plans

We are mindful of our obligations under EU and UK law, especially in relation to the statutory duty to produce a waste management plan for Wales that should include specific coverage of hazardous and packaging waste, and measures to reduce the landfill of biodegradable waste.

Towards Zero Waste is our overarching waste strategy document and identifies high level outcomes, policies and targets. It forms part of a suite of documents that comprise the national waste management plan for Wales as required under various EU Directives and the National Waste Strategy for Wales as required under UK legislation. Detailed delivery actions will be provided in 'sector plans' and other papers as necessary. The approach to the development of the sector plans is explained in this document. Where new policies and actions have yet to be developed, Wise About Waste is still relevant, except where policies, targets and actions have been updated.

The revised EU Waste Framework Directive requires that EU Members States must bring into force the laws, regulations and administrative provisions necessary to comply with the Directive by 12 December 2010. Towards Zero Waste has been developed with the requirements of the new Directive in mind but it is possible that specific parts of it and associated supporting documents will need to be revisited to see if any revisions to particular policies are needed as a result of the transposition of the Directive.

The documents that currently form part of the waste plan/strategy for Wales are:

- Towards Zero Waste (with revised policies, outcomes sought and targets)
- Waste Strategy Progress Report 2002-2008
- Wise About Waste (in respect of policies, targets and actions described therein that are still on going, with the exception of the policies, targets and actions that have been superseded by those in Towards Zero Waste
- Technical Advice Note 21 (Waste) - for development planning policies associated with waste
- Regional Waste Plans for North, South West and South East Wales
- Local Development Plans.

Towards Zero Waste and its associated documents listed above together implements for Wales the requirements within the Framework Directive on Waste, and associated Directives to produce waste management plans. These form the national level documents of a tiered system of waste planning in Wales, which together satisfies the requirements of the various Directives. At the local level, there are development plan documents that cover land use planning aspects of waste management.

The requirement for waste management plans in these Directives is partly transposed by section 44A of the Environmental Protection Act 1990 (inserted by the Environment Act 1995). Section 44A requires the Welsh Ministers to produce, and modify from time to time, a national waste strategy in respect of Wales. The UK's transposition of the revised Waste Framework

Directive will require amendments to UK legislation, and a Defra/Welsh Assembly Government consultation has already been undertaken.

Towards Zero Waste and its associated documents are together also a plan for dealing with biodegradable waste diverted from landfill in Wales, as required Article 5 of by the Landfill Directive (1999/31/EC). The suite of documents also meets the requirements of Article 14 of the Packaging and Packaging Waste Directive (94/62/EC).

There is a particular requirement in the Waste Framework Directive for the waste management plan to identify suitable disposal sites or installations. Technical Advice Note (TAN) 21 Waste sets out relevant national policies for waste management facilities, including location criteria to inform local planning policy and planning decisions.

TAN21 identifies the need for Regional Waste Plans to be produced. These set out detailed location criteria for waste facilities, including in particular regional scale facilities. Local planning authorities in Wales are obliged under the Environmental Permitting (England and Wales) Regulations 2007 to produce detailed policies in respect of suitable disposal sites or installations for waste management purposes when producing local development documents. These documents must have regard to national policies and to this strategy.

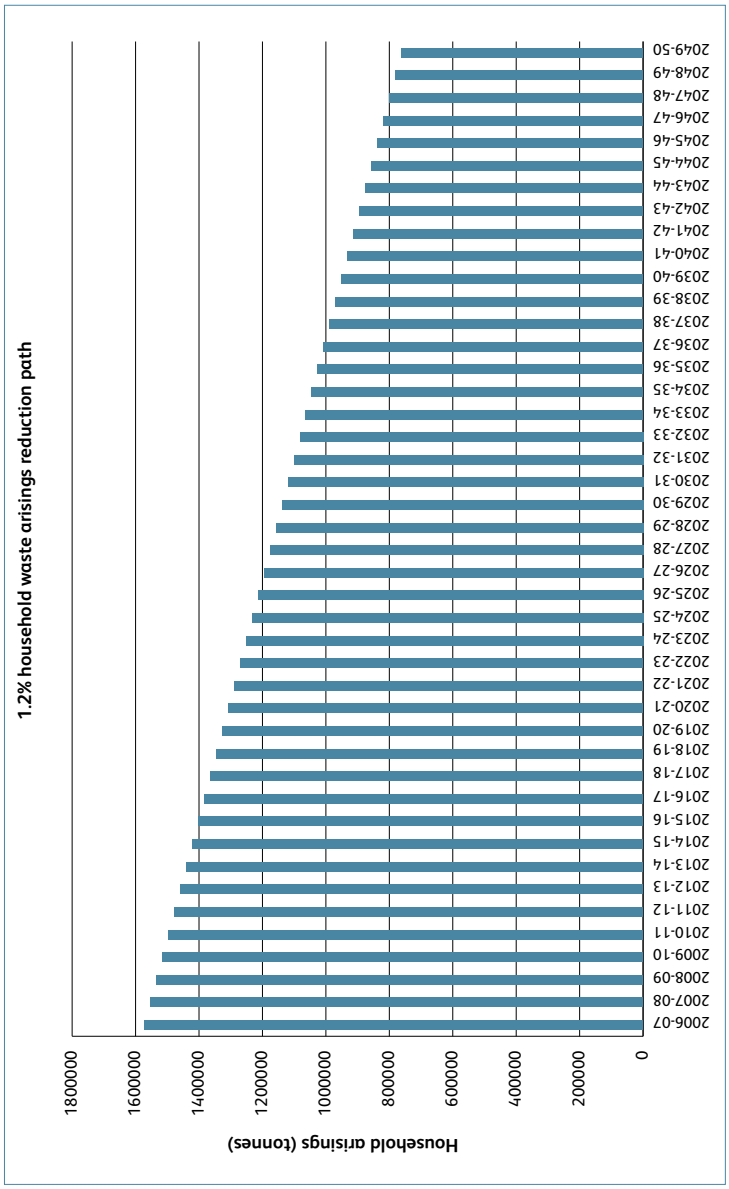
TAN 21 provides that local planning authorities should, among other things, identify in development plan documents sites and areas suitable for new or enhanced waste management facilities for the waste management needs of their areas, and, in particular, allocate sites to support the pattern of waste management facilities set out in the Regional Waste Plan (in accordance with the broad locations identified Regional Waste Plan).

In terms of overall policy and objectives Towards Zero Waste replaces the previous Waste Strategy for Wales (**Wise about Waste 2002**), although a number of the actions and targets in Wise About Waste are still in existence and still form part of our overall waste management plan for Wales until superseded by the sector plans.

Appendix 2

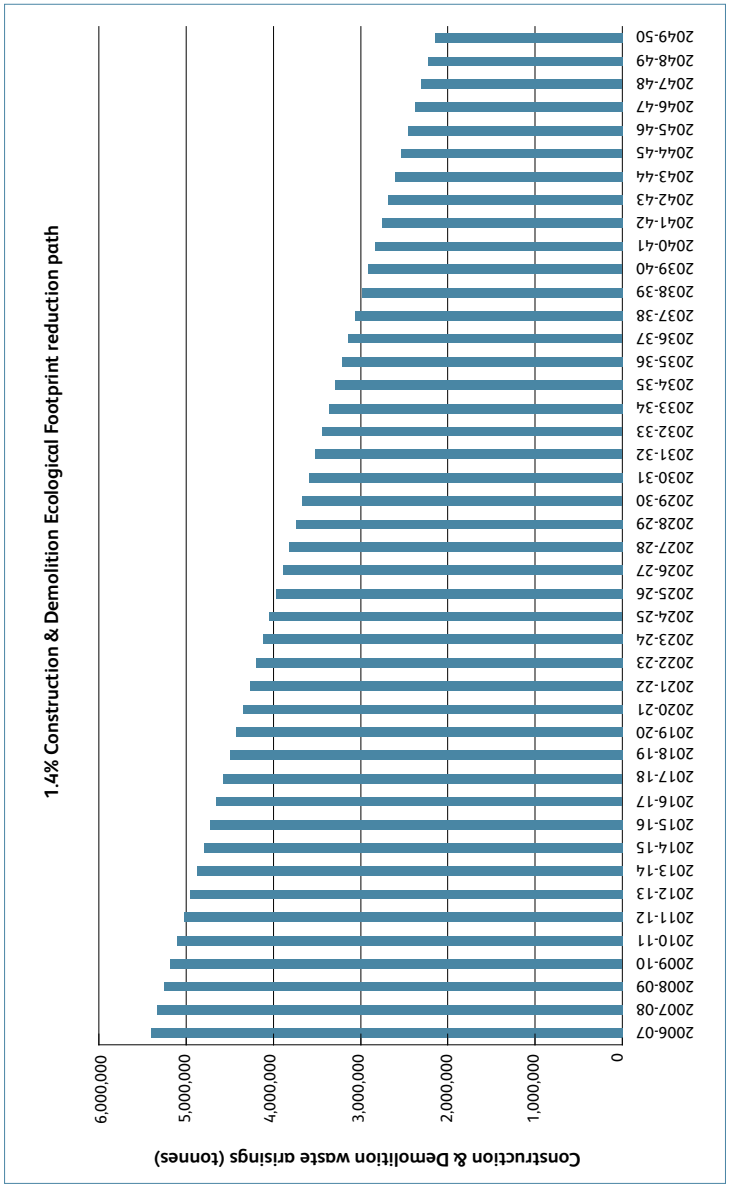
The impact of the proposed waste prevention targets for specific waste streams

Household Waste



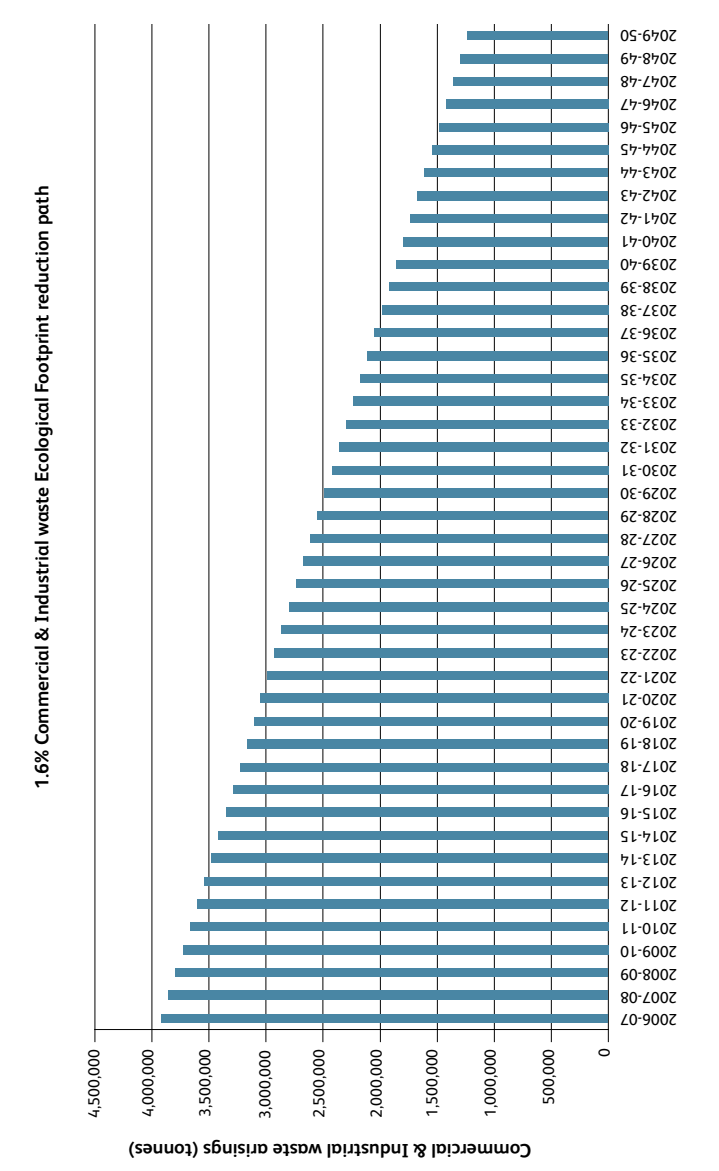
Tonnage Reduction	Tonnes arising	Year on year % reduction	1.2% reduction
	1,572,420	100 %	2006-07
18,869	1,553,551	98.8 %	2007-08
18,869	1,534,682	97.6 %	2008-09
18,869	1,515,813	96.4 %	2009-10
18,869	1,496,944	95.2 %	2010-11
18,869	1,478,075	94.0 %	2011-12
18,869	1,459,206	92.8 %	2012-13
18,869	1,440,336	91.6 %	2013-14
18,869	1,421,467	90.4 %	2014-15
18,869	1,402,598	89.2 %	2015-16
18,869	1,383,729	88.0 %	2016-17
18,869	1,364,860	86.8 %	2017-18
18,869	1,345,991	85.6 %	2018-19
18,869	1,327,122	84.4 %	2019-20
18,869	1,308,253	83.2 %	2020-21
18,869	1,289,384	82.0 %	2021-22
18,869	1,270,515	80.8 %	2022-23
18,869	1,251,646	79.6 %	2023-24
18,869	1,232,777	78.4 %	2024-25
18,869	1,213,908	77.2 %	2025-26
18,869	1,195,039	76.0 %	2026-27
18,869	1,176,170	74.8 %	2027-28
18,869	1,157,301	73.6 %	2028-29
18,869	1,138,432	72.4 %	2029-30
18,869	1,119,563	71.2 %	2030-31
18,869	1,100,694	70.0 %	2031-32
18,869	1,081,825	68.8 %	2032-33
18,869	1,062,956	67.6 %	2033-34
18,869	1,044,087	66.4 %	2034-35
18,869	1,025,218	65.2 %	2035-36
18,869	1,006,349	64.0 %	2036-37
18,869	987,480	62.8 %	2037-38
18,869	968,611	61.6 %	2038-39
18,869	949,742	60.4 %	2039-40
18,869	930,872	59.2 %	2040-41
18,869	912,003	58.0 %	2041-42
18,869	893,134	56.8 %	2042-43
18,869	874,265	55.6 %	2043-44
18,869	855,396	54.4 %	2044-45
18,869	836,527	53.2 %	2045-46
18,869	817,658	52.0 %	2046-47
18,869	798,789	50.8 %	2047-48
18,869	779,920	49.6 %	2048-49
18,869	761,051	48.4 %	2049-50

Construction and Demolition



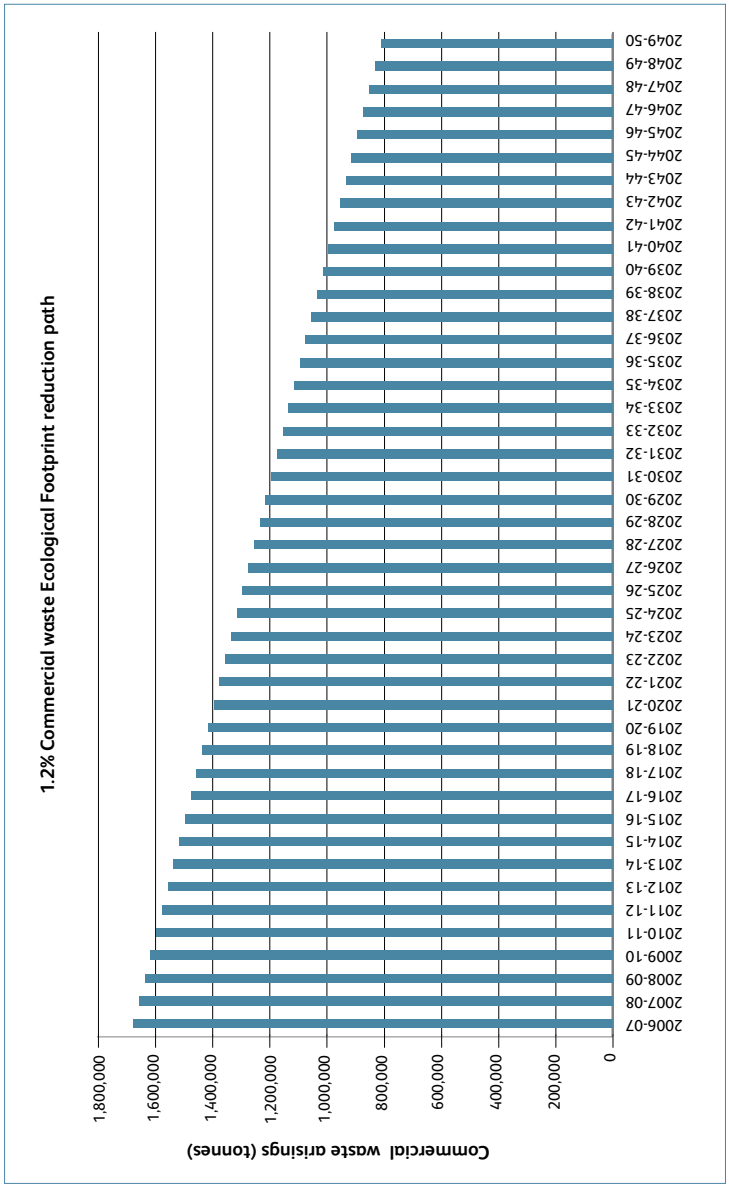
Tonnage Reduction	Tonnes arising	Year on year % reduction	1.4% reduction
	5,407,231	100 %	2006-07
75,701	5,331,530	98.6 %	2007-08
75,701	5,255,829	97.2 %	2008-09
75,701	5,180,127	95.8 %	2009-10
75,701	5,104,426	94.4 %	2010-11
75,701	5,028,725	93.0 %	2011-12
75,701	4,953,024	91.6 %	2012-13
75,701	4,877,322	90.2 %	2013-14
75,701	4,801,621	88.8 %	2014-15
75,701	4,725,920	87.4 %	2015-16
75,701	4,650,219	86.0 %	2016-17
75,701	4,574,517	84.6 %	2017-18
75,701	4,498,816	83.2 %	2018-19
75,701	4,423,115	81.8 %	2019-20
75,701	4,347,414	80.4 %	2020-21
75,701	4,271,712	79.0 %	2021-22
75,701	4,196,011	77.6 %	2022-23
75,701	4,120,310	76.2 %	2023-24
75,701	4,044,609	74.8 %	2024-25
75,701	3,968,908	73.4 %	2025-26
75,701	3,893,206	72.0 %	2026-27
75,701	3,817,505	70.6 %	2027-28
75,701	3,741,804	69.2 %	2028-29
75,701	3,666,103	67.8 %	2029-30
75,701	3,590,401	66.4 %	2030-31
75,701	3,514,700	65.0 %	2031-32
75,701	3,438,999	63.6 %	2032-33
75,701	3,363,298	62.2 %	2033-34
75,701	3,287,596	60.8 %	2034-35
75,701	3,211,895	59.4 %	2035-36
75,701	3,136,194	58.0 %	2036-37
75,701	3,060,493	56.6 %	2037-38
75,701	2,984,792	55.2 %	2038-39
75,701	2,909,090	53.8 %	2039-40
75,701	2,833,389	52.4 %	2040-41
75,701	2,757,688	51.0 %	2041-42
75,701	2,681,987	49.6 %	2042-43
75,701	2,606,285	48.2 %	2043-44
75,701	2,530,584	46.8 %	2044-45
75,701	2,454,883	45.4 %	2045-46
75,701	2,379,182	44.0 %	2046-47
75,701	2,303,480	42.6 %	2047-48
75,701	2,227,779	41.2 %	2048-49
75,701	2,152,078	39.8 %	2049-50

Commercial and Industrial



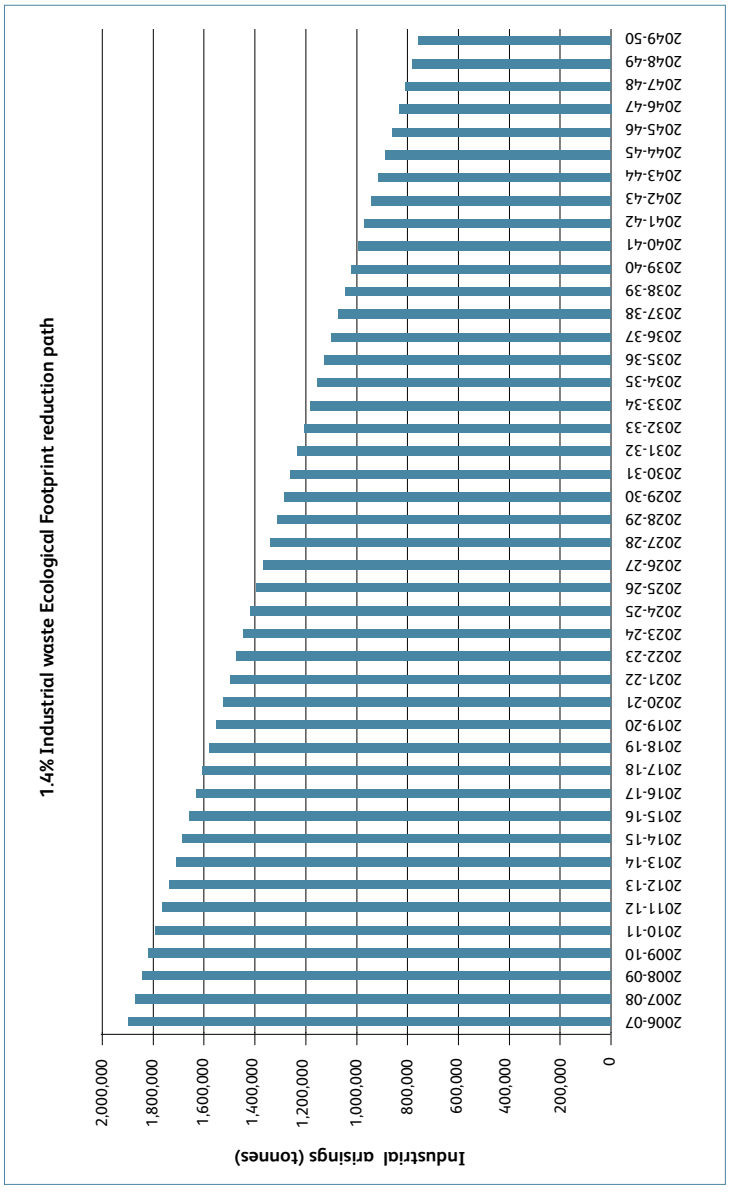
Tonnage Reduction	Tonnes arising	Year on year % reduction	1.6% reduction
	3,918,000	100 %	2006-07
	3,855,312	98.4 %	2007-08
	3,792,624	96.8 %	2008-09
	3,729,936	95.2 %	2009-10
	3,667,248	93.6 %	2010-11
	3,604,560	92.0 %	2011-12
	3,541,872	90.4 %	2012-13
	3,479,184	88.8 %	2013-14
	3,416,496	87.2 %	2014-15
	3,353,808	85.6 %	2015-16
	3,291,120	84.0 %	2016-17
	3,228,432	82.4 %	2017-18
	3,165,744	80.8 %	2018-19
	3,103,056	79.2 %	2019-20
	3,052,122	77.9 %	2020-21
	2,989,434	76.3 %	2021-22
	2,926,746	74.7 %	2022-23
	2,864,058	73.1 %	2023-24
	2,801,370	71.5 %	2024-25
	2,738,682	69.9 %	2025-26
	2,675,994	68.3 %	2026-27
	2,613,306	66.7 %	2027-28
	2,550,618	65.1 %	2028-29
	2,487,930	63.5 %	2029-30
	2,425,242	61.9 %	2030-31
	2,362,554	60.3 %	2031-32
	2,299,866	58.7 %	2032-33
	2,237,178	57.1 %	2033-34
	2,174,490	55.5 %	2034-35
	2,111,802	53.9 %	2035-36
	2,049,114	52.3 %	2036-37
	1,986,426	50.7 %	2037-38
	1,923,738	49.1 %	2038-39
	1,861,050	47.5 %	2039-40
	1,798,362	45.9 %	2040-41
	1,735,674	44.3 %	2041-42
	1,672,986	42.7 %	2042-43
	1,610,298	41.1 %	2043-44
	1,547,610	39.5 %	2044-45
	1,484,922	37.9 %	2045-46
	1,422,234	36.3 %	2046-47
	1,359,546	34.7 %	2047-48
	1,296,858	33.1 %	2048-49
	1,234,170	31.5 %	2049-50

Commercial



Tonnage Reduction	Tonnes arising	Year on year % reduction	1.2% reduction
	1,677,440	100 %	2006-07
20,129	1,657,311	98.8 %	2007-08
20,129	1,637,181	97.6 %	2008-09
20,129	1,617,052	96.4 %	2009-10
20,129	1,596,923	95.2 %	2010-11
20,129	1,576,794	94.0 %	2011-12
20,129	1,556,664	92.8 %	2012-13
20,129	1,536,535	91.6 %	2013-14
20,129	1,516,406	90.4 %	2014-15
20,129	1,496,276	89.2 %	2015-16
20,129	1,476,147	88.0 %	2016-17
20,129	1,456,018	86.8 %	2017-18
20,129	1,435,889	85.6 %	2018-19
20,129	1,415,759	84.4 %	2019-20
20,129	1,395,630	83.2 %	2020-21
20,129	1,375,501	82.0 %	2021-22
20,129	1,355,372	80.8 %	2022-23
20,129	1,335,242	79.6 %	2023-24
20,129	1,315,113	78.4 %	2024-25
20,129	1,294,984	77.2 %	2025-26
20,129	1,274,854	76.0 %	2026-27
20,129	1,254,725	74.8 %	2027-28
20,129	1,234,596	73.6 %	2028-29
20,129	1,214,467	72.4 %	2029-30
20,129	1,194,337	71.2 %	2030-31
20,129	1,174,208	70.0 %	2031-32
20,129	1,154,079	68.8 %	2032-33
20,129	1,133,949	67.6 %	2033-34
20,129	1,113,820	66.4 %	2034-35
20,129	1,093,691	65.2 %	2035-36
20,129	1,073,562	64.0 %	2036-37
20,129	1,053,432	62.8 %	2037-38
20,129	1,033,303	61.6 %	2038-39
20,129	1,013,174	60.4 %	2039-40
20,129	993,044	59.2 %	2040-41
20,129	972,915	58.0 %	2041-42
20,129	952,786	56.8 %	2042-43
20,129	932,657	55.6 %	2043-44
20,129	912,527	54.4 %	2044-45
20,129	892,398	53.2 %	2045-46
20,129	872,269	52.0 %	2046-47
20,129	852,140	50.8 %	2047-48
20,129	832,010	49.6 %	2048-49
20,129	811,881	48.4 %	2049-50

Industrial

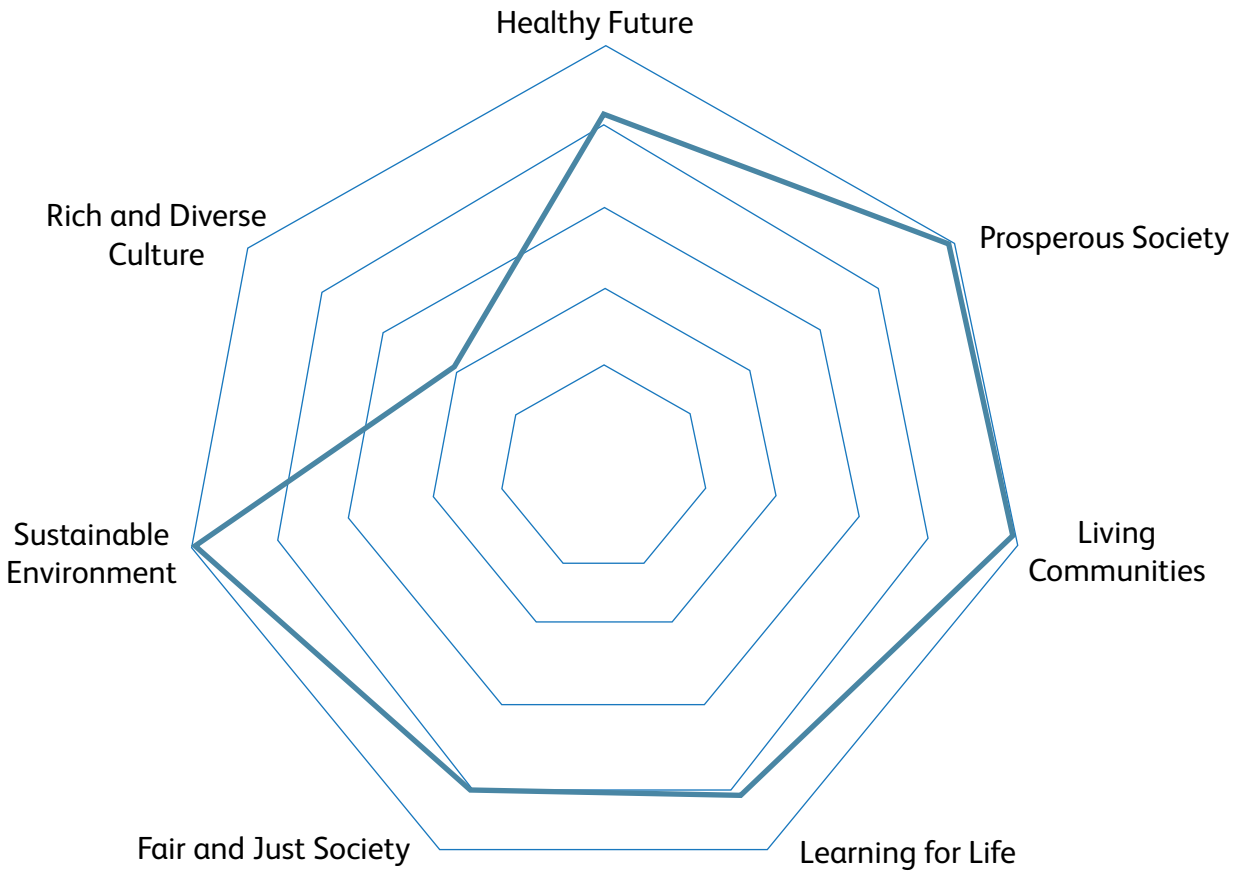


Tonnage Reduction	Tonnes arising	Year on year % reduction	1.4% reduction
	1,896,170	100 %	2006-07
26,546	1,869,624	98.6 %	2007-08
26,546	1,843,077	97.2 %	2008-09
26,546	1,816,531	95.8 %	2009-10
26,546	1,789,984	94.4 %	2010-11
26,546	1,763,438	93.0 %	2011-12
26,546	1,736,892	91.6 %	2012-13
26,546	1,710,345	90.2 %	2013-14
26,546	1,683,799	88.8 %	2014-15
26,546	1,657,253	87.4 %	2015-16
26,546	1,630,706	86.0 %	2016-17
26,546	1,604,160	84.6 %	2017-18
26,546	1,577,613	83.2 %	2018-19
26,546	1,551,067	81.8 %	2019-20
26,546	1,524,521	80.4 %	2020-21
26,546	1,497,974	79.0 %	2021-22
26,546	1,471,428	77.6 %	2022-23
26,546	1,444,882	76.2 %	2023-24
26,546	1,418,335	74.8 %	2024-25
26,546	1,391,789	73.4 %	2025-26
26,546	1,365,242	72.0 %	2026-27
26,546	1,338,696	70.6 %	2027-28
26,546	1,312,150	69.2 %	2028-29
26,546	1,285,603	67.8 %	2029-30
26,546	1,259,057	66.4 %	2030-31
26,546	1,232,511	65.0 %	2031-32
26,546	1,205,964	63.6 %	2032-33
26,546	1,179,418	62.2 %	2033-34
26,546	1,152,871	60.8 %	2034-35
26,546	1,126,325	59.4 %	2035-36
26,546	1,099,779	58.0 %	2036-37
26,546	1,073,232	56.6 %	2037-38
26,546	1,046,686	55.2 %	2038-39
26,546	1,020,139	53.8 %	2039-40
26,546	993,593	52.4 %	2040-41
26,546	967,047	51.0 %	2041-42
26,546	940,500	49.6 %	2042-43
26,546	913,954	48.2 %	2043-44
26,546	887,408	46.8 %	2044-45
26,546	860,861	45.4 %	2045-46
26,546	834,315	44.0 %	2046-47
26,546	807,768	42.6 %	2047-48
26,546	781,222	41.2 %	2048-49
26,546	754,676	39.8 %	2049-50

Appendix 3

One Wales policy gateway tool - summary sheet

The results below show the agreed outcomes of the Assembly Government's policy gateway tool for the draft Wales Waste Strategy.



One Wales	Score
Healthy Future	4 (Fair)
Prosperous Society	5 (Good)
Living Communities	5 (Good)
Learning for Life	4 (Fair)
Fair and Just Society	4 (Fair)
Sustainable Environment	5 (Good)
Rich and Diverse Culture	2 (Neutral)

Summary Comments

The gateway process involved representatives from DESH, DCELLS, DRA&H, Finance, DPH&HP, DHSS, DPSP, and external representatives. Those representatives agree that this is an accurate overview of their collective comments.

• A Sustainable Environment

The main aim of the Wales Waste Strategy is to ensure that waste is reduced and that which is produced is managed in the most sustainable manner. The strategy therefore contributes strongly in this area, including to the prudent use of resources and minimisation, climate change, reducing pollution and alternative energy sources. The strategy has clear commitments to reducing the waste contribution to Wales' ecological footprint and the reduction of greenhouse gas emissions.

• A Prosperous Society

The strategy has a strong focus on embedding sustainable development throughout and this is reflected in the 'good score'. In particular, it recognises the contribution and strong linkages that this strategy makes to the Green Jobs strategy. This is a growing sector in the economy providing opportunities for jobs in many disciplines, business development and efficiency of existing businesses.

• Living Communities

The strategy contributes to lowering barriers to employment by proving jobs at many levels, ensuring access to services, supporting volunteering and promoting lower carbon modes of transport.

• A Healthy Future

The strategy ensures that a waste management infrastructure is developed and that this is developed in the best manner. The Health Impact Assessment of the draft strategy has shown that there are no significant health risks associated with the proposals and that the cleaner technologies being proposed could improve it. It was recognised that communication is vital to improve public perceptions (and therefore improve well-being). The strategy also recognises that there is a need for skills and training in order to ensure the development of this emerging sector and the people employed in it. Other areas discussed included Eco-schools, the role of colleges and door-stepping.

• A Fair and Just Society

The strategy links most strongly to 'A Fair & Just Society' through the work of the Third Sector - many of which support disadvantaged people. In addition to this the strategy seeks to ensure that good, appropriate services and facilities are provided throughout Wales.

- **A Rich and Diverse Culture**

It was felt that the strategy could contribute with regards to protecting the landscape but would have a neutral impact in most of the other areas.

The strategy also reflects differences across Wales in the context of the Wales Spatial Plan by ensuring that the varying needs of different areas of Wales are taken into account, especially in relation to rural, urban and valley areas. Particular attention will be paid to the needs of small businesses. We will work closely with local authorities and the waste management industry (including social enterprises) to develop the type and capacity of infrastructure needed, taking account of different spatial needs in accordance with the Wales Spatial Plan Area Strategies, and the needs for waste infrastructure identified in the three Regional Waste Plans.


televisions
setiau teledu

Glossary

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

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

Biowaste - This includes biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants.

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

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

Commercial and industrial waste - Commercial waste is waste arising from any premises which are used wholly or mainly for trade, business, sport recreation or entertainment, excluding household and industrial waste. Industrial waste is waste from any factory and from any premises occupied by an industry (excluding mines and quarries).

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

Construction and demolition waste - Consists of all waste originating from construction, renovation and demolition activities, such as rubble, bricks and tiles.

Eco design - A strategic design management process that is concerned with minimising the impact of the life cycle of products and services. Approaches include life cycle analysis, design for disassembly and reducing the negative impact of a product on the environment (for example by removing hazardous chemicals or materials without compromising the design).

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.

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.

Freecycle - Freecycle groups match people who have things they want to get rid of with people who can use them. The main goal is to keep usable items out of landfills.

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

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

Hazardous waste - This is waste that may be harmful to human health or the environment. Examples of hazardous wastes include asbestos, some chemical wastes, some healthcare wastes, electrical equipment containing hazardous components such as cathode ray tubes or lead solder, fluorescent light tubes, lead-acid batteries and oily sludges.

Household waste - Includes waste from household collection rounds (waste within Schedule 1 of the Controlled Waste Regulations 1992), waste from services such as street sweeping, bulky waste collection, hazardous household waste collection, litter collections, household clinical waste collection and separate garden waste collection (waste within Schedule 2 of the Controlled Waste Regulations 1992), waste from civic amenity sites and wastes separately collected for recycling or composting through bring/drop off schemes, kerbside schemes and at civic amenity sites.

Intergovernmental panel on climate change - Established to provide the decision-makers and others interested in climate change with an objective source of information about climate change.

Integrated product policy - All products cause environmental degradation in some way, whether from their manufacturing, use or disposal. Integrated product policy, currently under discussion in EU, seeks to minimise these by looking at all phases of a product's life-cycle and taking action where it is most effective.

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

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

Legacy waste - Legacy wastes, which are often hazardous - for example asbestos, are materials that it is not currently feasible to recover or recycle and therefore cannot be returned into the chain of utility. The only option is disposal, and this is likely to continue to be the case in the future if that material continues to be used in the present way. In order for waste not to become legacy waste the original product needs to be redesigned so that it can be recovered and reused. In the meantime, new treatment methodologies need to be developed wherever possible to avoid these materials being sent for disposal.

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

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

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

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

Reduction - Achieving as much waste reduction as a priority waste action. It can be accomplished within a manufacturing process involving the review of production processes to optimise utilisation 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 energy costs. It can be carried out by householders through actions, such as home composting, reusing products and buying goods with reduced packaging.

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

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

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

Reuse - Using a produce again for the same or different use.

Site waste management plan (SWMP) - A tool to help the construction and demolition sector to improve on their management of waste at their place of work. It is a plan that details the amount and type of waste produced on a construction site and how it will be reused, recycled and disposed of, by doing so, will help to improve resource efficiency within the industry. The requirement for a SWMP is mandatory in England since April 2008. The Assembly Government has explored options for SWMP Regulations in Wales and will be consulting on draft regulations later this year.

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

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

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

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

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

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