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Consultation Document

Towards Zero Waste One Wales: One Planet

Consultation on a Waste Prevention Programme for Wales

Date of issue: 28 March 2013

Action required: Responses by 20 June 2013

Overview

We want your views on the development of a Waste Prevention Programme. The programme covers all waste streams and its focus is on waste prevention, which involves reducing:

- The quantity of waste, including through the re-use of products or the extension of the life span of products.
- The adverse impacts of the generated waste on the environment and human health.
- The content of harmful substances in materials and products.

This programme supports 'Towards Zero Waste', the overarching waste strategy document for Wales and delivers the EU requirement for Member States to develop a Waste Prevention Programme.

These proposals seek to deliver sustainable outcomes. The key outcome for the programme is the de-coupling of waste generation from economic growth.

We want your views on the consultation document and recommend that it is read in conjunction with the Sustainability Appraisal (incorporating the Strategic Environmental Assessment (SEA), the Health Impact Assessment (HIA) and the Habitats Regulation Assessment (HRA)).

We also recommend that you refer to the supporting documents that make up the evidence base.

How to respond

You may respond in a variety of ways – by sending your written response to the address below or by email to the email address provided.

Further information and related documents

Large print, Braille and alternate language versions of this document are available on request.

Contact details

For further information:

Waste Strategy Branch
Department for Environment and
Sustainable Development
Welsh Government
Cathays Park
CF10 3NQ

Email: wastestrategy@wales.gsi.gov.uk

Telephone: 0300 0603300 or 0845 010 3300

Data Protection

How the views and information you give us will be used:

Any response you send us will be seen in full by Welsh Government staff dealing with the issues which this consultation is about. It may also be seen by other Welsh Government staff to help them plan future consultations.

The Welsh Government intends to publish a summary of the responses to this document. We may also publish responses in full. Normally, the name and address (or part of the address) of the person or organisation who sent the response are published with the response. This helps to show that the consultation was carried out properly. If you do not want your name or address published, please tell us this in writing when you send your response. We will then blank them out.

Names or addresses we blank out might still get published later, though we do not think this would happen very often. The Freedom of Information Act 2000 and the Environmental Information Regulations 2004 allow the public to ask to see information held by many public bodies, including the Welsh Government. This includes information which has not been published. However, the law also allows us to withhold information in some circumstances. If anyone asks to see information we have withheld, we will have to decide whether to release it or not. If someone has asked for their name and address not to be published, that is an important fact we would take into account. However, there might sometimes be important reasons why we would have to reveal someone's name and address, even though they have asked for them not to be published. We would get in touch with the person and ask their views before we finally decided to reveal the information.

Ministerial Foreword

The financial, social and environmental impacts of waste generation are a huge challenge, and we in Wales have made great steps to improve our waste management practices. But this is only part of the solution. The greatest benefits will come from reducing the amount of waste that we generate through our everyday activities.

Towards Zero Waste, the overarching waste strategy document for Wales, sets out the Welsh Government's high level policies and targets for the management of waste in Wales. The Waste Prevention Programme supports Towards Zero Waste by describing the outcomes, policies, targets and outline work programme to address waste prevention from businesses and households in Wales. It also delivers the EU requirement for Member States to develop waste prevention programmes.

A key objective of this programme is to break the link between waste generation and economic growth. A thriving economy with high levels of employment is the key to the wellbeing of the people of Wales and we need a healthy and abundant supply of natural resources to enable this. These are not contradictory aims – there are huge financial savings to be made through waste prevention actions and the Welsh Government will support businesses and citizens to take full advantage of them.

The average household throws away food worth £480 every year. When we look at Wales as a whole, householders produce 400,000 tonnes of food waste every year, with a financial value of £600 million per year.

We are often unsure about how to look after and repair our possessions and when we have finished with things we throw them away in the bin instead of thinking about alternatives. For example, 60% of Welsh households are storing unwanted clothing and shoes for later disposal or re-use, and this clothing could have a potential resale value of over £9,000 per tonne. Welsh households dispose of 6,000 tonnes of working electrical items, with a potential resale value of almost £15 million.

At a time when many people are struggling financially, there are lots of opportunities for people to both minimize waste and save money.

Our businesses are also responsible for producing large quantities of waste – around 3.6 million tonnes in 2007. This level of waste generation is unsustainable, particularly as the price of raw materials and goods continues to increase. Much of the cost of waste is 'hidden' in the cost of materials, energy and labour that has been used to create products or components which are then thrown away. The benefit to the bottom line of a retailer preventing a tonne of food waste is around £2,700, and of a clothes manufacturer avoiding a tonne of reject products around £27,000.

These savings add up to a huge potential across the economy.

We need to make best use of our resources by efficient processes and product design, and we should explore opportunities to offer different solutions through innovative business models.

The Welsh Government has identified some priority sectors which produce waste with a high environmental impact, and which show the potential to reduce the amount of waste they produce. We will be using the consultation period to talk to sector representatives to understand how we can support them with waste prevention, and to develop a programme for action. We will use this information to make sure that we work with the right businesses in the right way.

The construction and demolition sector, and others involved in the built environment, have a key role to play in reducing waste. We have shown our commitment to sustainable waste management at construction sites by consulting on the introduction of mandatory Site Waste Management Plans. The Waste Prevention Programme will address five key areas that were identified during the development of the Construction and Demolition Sector Plan, and we will be talking to representatives during this consultation period to get their views and decide how the Welsh Government can most successfully support waste prevention in this key sector.

The Welsh Government is committed to leading by example through its own operations and also through its procurement practices, and we will urge the wider public sector in Wales to demonstrate leadership too. We will encourage the businesses that work with us to demonstrate waste prevention, and will make it easy for our staff and the citizens that use our services to do so.

A handwritten signature in black ink, appearing to read 'Alun Davies', with a horizontal line underneath.

Alun Davies AM
Minister for Natural Resources and Food

Summary

Reason for this Consultation

The purpose of this consultation is to seek the views of interested parties on the development of a Waste Prevention Programme for businesses and householders in Wales. This programme supports 'Towards Zero Waste', the overarching waste strategy document for Wales, by describing the outcomes, policies, targets and outline work programme to address waste prevention in Wales. The EU Waste Framework Directive requires Member States to develop waste prevention programmes and mandates some of its scope and content. A key objective is to break the link between waste generation and economic growth.

We are asking:

- For suggestions on how we can help householders do even more to prevent waste and save money.
- Your views on our proposed priorities and outline programmes of work for business wastes, which we propose to take forward and develop into implementation plans.
- For your comments on the findings and conclusions of the Sustainability Appraisal.
- For any other issue relevant to the programme which you would like to raise.

The Waste Prevention Programme will also inform the recently consulted upon Food Manufacture, Service and Retail Sector Plan and also the Commercial and Industrial Sector Plan (containing all aspects of the waste hierarchy), which is currently out for consultation during the consultation of the Waste Prevention Programme.

What are the Main Issues

We are losing money and using up valuable resources by throwing too much away.

Household waste generation for 2011/12 was 1.36 million tonnes. In 2007, businesses in the industrial sectors produced 1.9 million tonnes, and those in the commercial sectors produced 1.7 million tonnes. The amount of construction and demolition waste managed away from the site of production was reported as 5.31 million tonnes in 2005/6.

The average Welsh household wastes around £480 worth of food every year; the value of unsold clothes discarded by retailers is around £27,000 per tonne; a skip produced on a construction site contains on average around £1,300 worth of products.

There are a number of waste prevention initiatives already underway in Wales, and there are many opportunities to do more by changing our behaviours.

Outline of Proposals

The Waste Prevention Programme will ensure that householders and businesses in Wales are able to reduce:

- The quantity of waste, including through the re-use of products or the extension of the life span of products.
- The adverse impacts of the generated waste on the environment and human health.
- The content of harmful substances in materials and products.

The objectives are to ensure households and businesses are able to reduce waste, while at the same time saving money.

Proposals for Household Waste

A review of existing policies and activities was undertaken to determine whether they met the outcomes in Towards Zero Waste and the requirements of the Waste Prevention Programme. The review concluded that no new actions over and above those outlined in the Municipal Sector Plan were required. The focus for the Waste Prevention Programme will therefore be on enhancing and implementing the existing actions, as described below, and on monitoring and reporting progress.

The Welsh Government is not consulting on the household waste prevention actions, but is providing an update, and seeking your views on the implementation of some of the actions previously consulted on in the Municipal Sector Plan.

Below is a description of the target and priorities and an outline of the programme of work designed to prevent household waste.

- A waste prevention target has been set for household waste as follows:
A reduction of 1.2% every year to 2050 based on 2006/7 baseline.
- Action will be targeted at food, paper, card, and plastic (primarily packaging), clothing and consumer goods (including electrical and electronic equipment and goods containing hazardous substances).
- A '4Es' model of behaviour change is being taken forward, to ensure the outcomes are consistent with the Welsh Government's commitment to sustainable development (SD). The programme, including estimated implementation dates, are as follows:
 - Engage – consumer engagement programme.
 - Food waste campaigns (2013 onwards).
 - Local campaigns, for instance on unwanted mail (2013 onwards).

- Reuse campaigns (feasibility and piloting, roll out in 2015).
- Sustainable consumption campaign focusing on electrical items and clothing (feasibility and piloting, then roll out in 2015).
- Review of household reward schemes (2013 – 2014).

- Enable:
 - Reuse and optimising lifetimes of products.
 - Reuse infrastructure development (assess feasibility 2013, implementation 2014 onwards).
 - Mandatory supporting measures for product lifetimes e.g. warranties etc (review 2017 – 2025).
 - Sustainable production, ecodesign, the provision of product service systems and optimising product lifetimes.
 - Support ecodesign through voluntary measures (2013 - 2017).
 - Mandatory Extended Producer Responsibility (EPR) measures to support consumer product information (review in 2013).
 - Mandatory Extended Producer Responsibility measures on products (review 2016 – 2017).

- Encourage:
 - Waste management services provided to householders.
 - Optimise service provision design for waste prevention (2013 – 2017).
 - Regulation on waste producers.
 - Landfill bans (assess feasibility 2013 – 2015).

- Exemplify – the public sector leading by example.
 - Public sector procurement and sustainable practices demonstrated by organisations (2013 onwards).

The demand side actions above are described in section 2 Household Waste, and the supply side actions above are described in section 3 Industrial and Commercial Waste.

Proposals for Industrial and Commercial Waste

The Welsh Government's work to date has involved reviewing existing literature and commissioning bespoke research (which we have published in the accompanying evidence base), to identify priority areas for action, and priority business sectors. We did this by:

- Identifying priority materials and products, and the sectors which generate them.
- Assessing the feasible potential for the prevention of waste among different industrial and commercial sectors.
- Undertake a high level evaluation of a range of measures / interventions which could be applied to waste prevention by assessing against a range of sustainable development criteria.

The work still to do involves:

- Elaborating on the Waste Prevention Programme by:
 - Exploring further the attitudes, behaviours, barriers and motivators associated with waste prevention within the priority business sectors in Wales.
 - Identifying the most appropriate suite of measures / interventions to lead to waste prevention.

We are using this public consultation, and a series of stakeholder engagement workshops, to ask whether you agree with our identified priorities and to help us to elaborate the programme.

Once a programme has been elaborated and finalised, the Welsh Government will be developing an implementation plan identifying suitable delivery mechanisms and agents to support the practical changes required within the business to change the process, product or business model.

Conclusions and proposals from the work to date are as follows:

- The proposed general waste prevention target for industrial waste is a reduction of 1.4% every year to 2050, based on 2006/7 baseline with further sector specific targets to be developed for our priority industry business sectors.
- The proposed waste prevention target for commercial waste is a reduction of 1.2% every year to 2050 based on 2006/7 baseline.
- Priority materials are food, paper and card and chemicals.
- The priority sectors and areas for focus identified are:
 - *Food Manufacture* - This sector is a priority because it produces almost all of the food waste – a priority waste type - from industry. It also contributes significantly to the arising of chemicals and paper and card, and generates a quarter of all industrial waste by tonnage.
 - *Accommodation and Food Services* - This is a priority because it is the second largest commercial waste generating sector in terms of total tonnage, and its contribution to segregated food waste and priority materials in the mixed fraction is very high. This sector, particularly tourism, is important to the economy.
 - *Retail and Wholesale* - Retailers and wholesalers provide a vital link between the businesses that manufacture goods and the consumer. Their product buying criteria can be used to influence the growers, manufacturers and processors and distributors who supply them. They also generate large quantities of waste from their own operations, including priority waste types.
 - *Office based services* - Most of the service sectors produce small quantities of waste individually, but have good potential to reduce the waste they generate and collectively contribute a reasonable quantity of waste to the commercial totals. It is proposed that a thematic approach to reducing paper and other typical office based wastes (such as office furniture, IT equipment, floor coverings) is taken to instigate best practice.

- Priority areas for action are:
 - Working with *large retailers*.
 - *Public administration and defence, compulsory social security; Education* - This group of sectors represent high profile public services, and therefore opportunity to show leadership in waste prevention. It is a very significant employer in Wales, and also procures goods and services from private sector businesses and individuals. It can therefore act as an exemplar in its working practices and its procurement activities. Improving the material resource efficiency of the education sector also has the benefit of engaging with children and young adults to embed sustainable behaviours at an early age.
 - Promoting *eco-innovation* in businesses in Wales.
- One area of further research is also identified by the work to date:
 - Further research into permitted industries (excluding food manufacturers), specifically Manufacture of basic metal and metal products, Manufacture of paper and paper products and Manufacture of chemicals, chemical products, pharmaceuticals etc. The Welsh Government would like to work with industry, process efficiency experts and the regulator to better understand the degree to which industry has optimised its processes. We will also review the regulator's role in monitoring the performance of permitted industry.

Specific recommendations on measures are described below.

- Primary Measures – these are measures which will directly lead to the desired outcome:
 - Eco-design.
 - Green Public Procurement.
 - Green Supply Chain (private sector, including clients).
 - Resource Efficient Business Models.
 - Reuse and repair networks.
- Enabling Measures - these support the primary measures:
 - Awareness and Guidance Documents.
 - Grants and Loans.
 - R&D promotion and development.
 - Use of Networks.
 - Taxes.
 - Legislation.
 - Training programmes.
 - Voluntary Agreements.
 - Funded business programmes.
 - Integrated Resources and Tools.
- Measures which show less promise in respect of waste prevention. These measures should not be relied on in isolation to effect change, but could be used as complementary measures (e.g. eco-labelling to inform businesses during purchasing) or be used to publicise success (e.g. awards):

- Awards.
- Eco-labelling.
- Environmental Management Systems.

Proposals for Construction and Demolition Waste

The Welsh Government's work to date has involved reviewing existing literature and commissioning bespoke research (which we have published in the accompanying evidence base) to:

- Identify priority materials generated by the construction and demolition sector.
- Determine the priority areas for action, and develop an outline programme of work.
- Undertake a high level evaluation of a range of measures / interventions which could be applied to waste prevention by assessing against a range of sustainable development criteria.

The work still to do involves:

- Elaborating on the Waste Prevention Programme by:
 - Exploring the attitudes, behaviours, barriers and motivators associated with waste prevention within the priority business sectors in Wales.
 - Identifying the most appropriate suite of measures / interventions to lead to waste prevention.

We are using this public consultation, and a stakeholder engagement workshop, to ask whether you agree with the outline programme and to help us to elaborate the programme.

Once a programme has been elaborated and finalised, the Welsh Government will be developing an implementation plan identifying suitable delivery mechanisms and agents to support the practical changes required within the business to change the process, product or business model.

Conclusions and proposals from the work to date are as follows:

- The waste prevention target for construction and demolition waste is a reduction of 1.4% every year to 2050 based on 2006/7 baseline.
- Priority materials are wood; plastic; insulation and gypsum; hazardous waste (primarily contaminated soil); metals; concrete, bricks, tiles and ceramics, bituminous substances.
- The Welsh Government has worked with stakeholders to identify the causes of environmental impact and waste generation within the sector. The outline programme of work, based on a number of key stages in the life cycle of construction products and buildings, will focus on:

- *Design of buildings and construction products*
The design of buildings and construction products impact heavily on the environmental sustainability of a construction project. One of the areas of work will focus on developing use within the sector of a range of sustainable design principles.
- *Damage to construction products in transit*
Effort will be put into packaging and transport solutions which minimise damage, and the construction industry will be encouraged and provided with clear guidance on the correct storage of materials on site.
- *Over-ordering by builders*
This issue may be solved in part by addressing damage issues, but there should also be a re-focus of ordering. There are ordering mechanisms which optimise productivity whilst avoiding waste. These should be promoted for use by construction companies. The public sector can also have a role to play in its procurement of construction projects.
- *Use of excess products generated on site*
There will inevitably be some projects which do not use all of their ordered materials, and for these cases there should be facilities available for companies to deposit these materials for use by others.
- *Demolition and refurbishment of buildings*
There is considerable scope to increase reuse and preparation for reuse of building materials and components that arise during the refurbishment and demolition of buildings. There will be a focus on raising awareness of these opportunities within the sectors and wider to their client base.

Specific recommendations on measures were:

- Primary Measures – these are measures which will directly lead to the desired outcome:
 - Eco-design.
 - Green Private Procurement & supply chain influence.
 - Green Public Procurement.
 - Resource Exchanges.
- Enabling Measures – these support the primary measures:
 - Grants and Loans.
 - Innovation Vouchers.
 - Networks.
 - Toolkits.
 - Construction Products Register.
 - Eco Labelling.
 - Guidance documents.
 - Regulation.
 - Site Waste Management Plans.
 - Standards.
 - Funded business programmes.

- Measures which should not be relied on in isolation to effect change, but could be used as supporting measures (e.g. information campaigns) or be used to publicise success (e.g. awards):
 - Awards.
 - Certification.
 - Information campaigns.

Next Steps

A series of stakeholder engagement workshops will be held in parallel to this public consultation, to help us elaborate the programme.

The final Waste Prevention Programme will be published before the deadline of 12 December 2013 and will take account of all consultation responses. A response document and a Sustainability Appraisal Post Adoption Statement will accompany the report. We will report to the European Commission that we have produced the programme.

An implementation plan to support the delivery of the programme will be developed after the programme is published. This will detail the implementation projects and any associated project-specific target and monitoring plan.

We will implement the projects in accordance with the timescales outlined in the implementation plan, and will report on progress against key indicators on the Welsh Government website.

The Consultation Questions

Please answer as many of the questions as you would like to. We have split the questions into 4 sections: household waste; industrial and commercial (business) waste; construction and demolition waste; other general and technical questions.

Questions about Household Waste

Consultation Question HW1:

We throw away a lot of food waste each year. It accounts for around a fifth of all household waste in Wales. An average household throws out £480 worth of food each year, and it rises to £680 for households with children.

Would you be interested in knowing more about reducing your food waste? We need to communicate with everyone about how they can reduce their food waste too. What do you think are the best ways for us to do that? For example, local newspapers, from a person you know in your community, through clubs such as sports clubs.

Consultation Question HW2:

There are lots of ways we can reduce how much waste we all create. It isn't just about recycling, there are lots of other ways such as:

- Thinking about the packaging we buy when we're shopping.
- Only buying as much food as we really need.
- Repairing things or getting things serviced, rather than just throwing them away.
- When we no longer want something, we can pass it onto someone else, or sell them.

Would you be interested in knowing more about the ways you can reduce your waste? How can we let you and others know about the actions they can take? Can you suggest any ways we can communicate with others to make them more aware?

Consultation Question HW3:

Packaging serves an important purpose in protecting goods and ensuring that they are delivered in good condition, but sometimes consumers feel that goods are over-packaged; and packaging also comes in a mixture of materials such as plastic, cardboard, aluminium, which can be difficult to separate and dispose of properly.

Have you got any ideas about how we can tackle this? What would help you do more to reduce this type of waste?

Questions about Industrial and Commercial Waste

Consultation Question IC1:

The proposed waste prevention targets for the industrial and commercial waste streams are:

A general reduction of 1.4% every year to 2050 based on 2006/7 baseline for industrial waste, with specific targets for the individual priority sectors

Manufacture of basic metal and metal products

Manufacture of paper and paper products

Manufacture of chemicals, chemical products, pharmaceuticals.

Food manufacture.

A reduction of 1.2% every year to 2050 based on 2006/7 baseline for commercial waste.

An implementation plan will be developed to delivery against these targets.

Do you agree with the targets that are proposed? Please give your reasons. What targets should be proposed for the priority industry sectors? Please give your reasons.

Consultation Question IC2:

We have described the priority business sectors and areas for action.

(a) Do you agree with these priorities? Please give your reasons.

(b) Is there anything else that we should consider a priority? Why is it important?

(c) Do you agree with our proposed approach of voluntary action in the first instance, with mandatory measures under review in the longer term? Please give your reasons.

Consultation Question IC3:

It is proposed that the Welsh Government and retailers will build on the success of the introduction of carrier bag charge and UK wide action through the Courtauld Commitment and other initiatives, leading to retailers taking forward actions on:

- Improving the environmental impact of their product portfolio by influencing growers, processors, manufacturers and distributors within Wales and internationally.
- Reducing the waste generated through its own activities.
- Supporting national and local initiatives such as food redistribution schemes.
- Providing clear information to consumers about the environmental performance of their products.
- Providing information and guidance on practical steps that consumers can take to reduce the impact of their products during use and at end of life.

What further actions and initiatives can be taken to enhance our current programme of work, and to support the actions above?

Consultation Question IC4:

How can the Welsh Government encourage business engagement in eco-innovation?

Consultation Question IC5:

A review of the UK wide and international evidence on the waste prevention barriers and measures specific to your sector can be found at:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

Do you agree with this evidence for your sector in Wales? If not, why not? What support does your business need to become more resource efficient and why?

Consultation question IC6:

The Welsh Government is looking at how business attitudes and behaviours can be influenced so that businesses can become more resource efficient. We are using a competency framework approach to do this.

Do you agree that a competency approach is useful to benchmark performance and underpin any interventions? If not, why not?

Do you agree that a competency framework is a useful approach to underpin and target a potential future business support programme for SMEs in Wales? If not, why not?

Questions about Construction and Demolition Waste

Consultation Question CD1:

(a) Do you agree with the outline programme on construction and demolition waste? Please give your reasons. (b) Should anything else be included in the programme? Please explain what, and the benefits it would bring.

Consultation Question CD2:

A review of UK wide and international evidence on the waste prevention barriers and measures specific to your sector can be found at:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

Do you agree with this evidence for the construction sector in Wales? If not, why not?

What support does your business need to become more resource efficient and why?

Other general and technical questions

Consultation Question G1: A Sustainability Appraisal was conducted on this programme, and is published alongside this document as part of the consultation. Do you agree with its findings and conclusions? Please give your reasons.

Consultation Question G2:

(a) Do you agree with the Welsh Government's approach to breaking the link between waste generation and economic growth, recognising the opportunities for reducing business and household costs in doing so?

(b) If not, what alternative(s) do you propose? Please give your reasons, and describe how you would propose to measure success.

Consultation Question G3:

We have asked a number of specific questions. If you would like to comment on anything else, or raise any issues which you feel we have not fully addressed, please use the space provided.

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1 Background

This section describes the vision and objectives of the programme and the context and policy framework within which this sits. It also explains the scope of the programme and defines the initiatives covered by the Waste Prevention Programme.

1.1 *Vision, Milestones and Objectives*

The following vision and milestones developed for Towards Zero Waste¹ is reflected in the accompanying sector plans. Specific objectives for waste prevention have been developed for this programme, and will provide the lead for elaborating the programme and implementing projects.

1.1.1 Vision

The Welsh Government's vision is for Wales to be a prosperous, fair and just society enjoying a sustainable environment.

A sustainable environment

We will reduce the impact of waste in Wales to within our environmental limits by focusing on reducing the ecological footprint of waste to 'One Planet' levels by 2050. This approach will reduce the impact of climate change from waste activities, achieve sustainable consumption and production, sustain our economy and manage and conserve the planet's resources.

A prosperous society

Our actions on resource efficiency and waste management will support the development of a prosperous society that:

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

A fair and just society

The sector plans and programmes 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.

¹ Towards Zero Waste, Welsh Government (2009)

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.

1.1.2 Milestones

2025 Towards Zero Waste

By 2025, there will be a significant reduction in waste (27%), and we 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'². This is needed because reducing the impact of waste in Wales to 'One Planet' levels will require big changes in the way that products and services are designed, and the actions that consumers and businesses take.

Waste prevention - Waste arisings need to be reduced significantly across all sectors in order to achieve the One Planet goal for 2050. We will move from a product orientated society, to a service orientated society where products are leased / rented with repair centres being the norm. Citizens will be empowered to 'buy smarter' and they will take responsibility for the consequences of their purchases, avoid producing waste, and reuse products as far as possible. Reuse of unwanted items will be encouraged. As far as possible, items that are discarded as waste are 'prepared for reuse' and are able to continue to be a resource and reused by others. Retailers will sell products that generate significantly less waste and the lifespan of products will be increased.

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 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. All products will use as little material as possible, with the majority of it sourced from recyclate, 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

² 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).

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 reuse 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 'upcycling'. 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.

1.1.3 Objectives

1.1.3.1 Decoupling of waste generation from economic growth

The primary objective of the Waste Prevention Programme will be to decouple economic growth from the environmental impacts of waste generation.

The Welsh Government also has the objective to ensure households and businesses are able to reduce waste, while at the same time saving money.

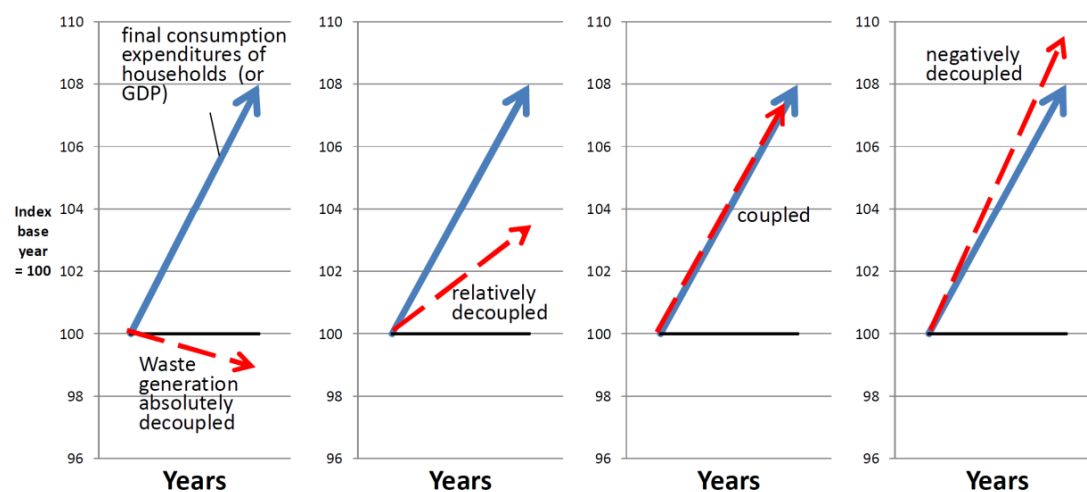
“Decoupling economic growth from the environmental impacts associated with waste generation is a key objective of the EU’s revised Waste Framework Directive (Directive 2008/98/EC). Stabilising waste generation is no longer enough, waste growth in the EU must now reverse.”

Preparing a Waste Prevention Programme. Guidance Document European Commission (2012).

The Organisation for Economic Co-operation and Development (OECD) situates decoupling as follows: “The term “decoupling” has often been used to refer to breaking the link between “environmental bads” and “economic goods.” In particular, it refers to “the relative growth rates of a pressure on the environment and of an economically relevant variable to which it is causally linked.”

Figure 1 illustrates the concept of decoupling by describing various relationships between an economic indicator (final consumption expenditure) and waste generation for household waste.

Figure 1 Examples of the relationship between final consumption expenditure and waste generation for household waste



Source: Bio Intelligence Service

The Welsh Government’s policy is that the environmental impact of waste should reach one planet levels by 2050, and that this can only be achieved through a reduction in waste generation accompanied by high recycling rates across all waste streams.

The approach that the Welsh Government has taken is to use the absolute reduction targets for each major waste stream (household, commercial, industrial, construction and demolition) as described in Towards Zero Waste. By doing so, it is virtually inevitable that decoupling, or relative decoupling, will occur. The only scenario in which decoupling would not occur would be if the economy were to contract at a rate equal to or greater than the waste reduction. The Welsh Government has policies in place to encourage growth and jobs which are designed to minimise the likelihood that the economy would contract. It is impossible to completely insulate our businesses from the global economic climate, but this programme will present businesses with opportunities to conserve natural resources, reduce costs and bring innovative solutions to the market.

Consultation Question G1:

(a) Do you agree with the Welsh Government’s approach to breaking the link between waste generation and economic growth, recognising the opportunities for reducing business and household costs in doing so?

(b) If not, what alternative(s) do you propose? Please give your reasons, and describe how you would propose to measure success.

1.2 Context

Waste has considerable environmental, social and financial implications and while waste treatment technologies have become increasingly sophisticated,

rising global consumption patterns are putting pressure on our ecosystems and waste infrastructure. Waste contains resources of which we have a limited quantity, or the supply of which is under stress through scarcity or security of supply, and a new perception of resources is key to tackling the waste problem.

Waste prevention affects, and is affected by, a wide range of stakeholders. It will only be achieved through changes in the attitude and behaviour of households and businesses and on new paradigms in industrial processes and product or service design.

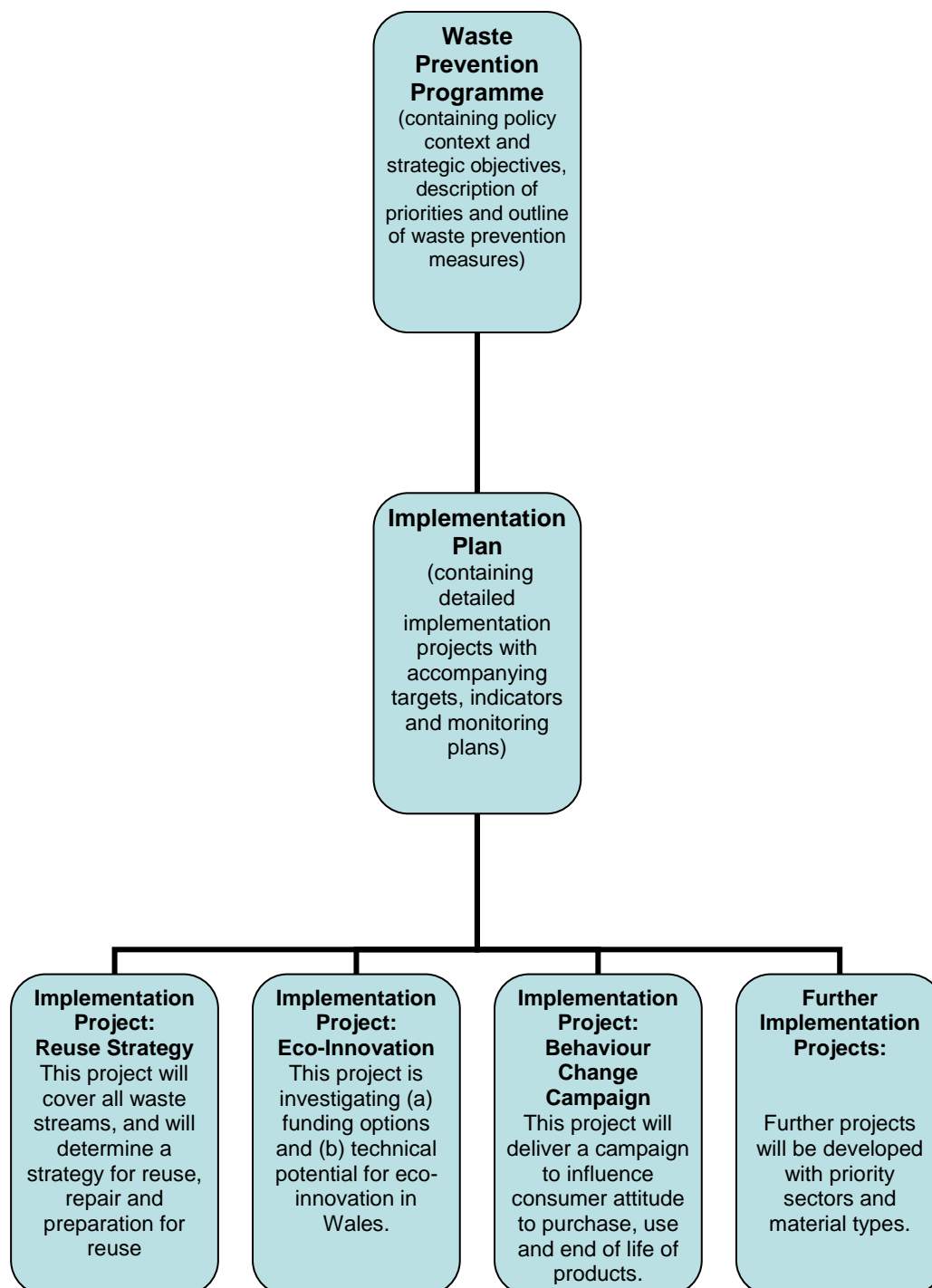
1.3 Scope, key principles and definitions

This programme is designed to meet the requirements of the Waste Framework Directive and to meet the sustainable development outcomes described in Towards Zero Waste, and this is reflective in the scope and key principles listed below.

- The programme focuses on the following waste streams: Household, Commercial, Industrial, Construction and Demolition.
- Waste prevention targets are set for each of these streams.
- The programme of work will be targeted, concentrating on the materials that have the highest environmental impact (priority materials) and the sectors within which the opportunity for waste prevention are greatest.
- A strategy and delivery projects covering reuse, repair and preparation for reuse will be developed as an implementation project to this programme. [Preparation for reuse is not a waste prevention activity, but there is considerable overlap in the delivery of direct reuse and preparation for reuse activities, and the environmental benefits are similar. They have therefore been considered together for the purpose of the implementation project].
- National level indicators to demonstrate 'decoupling' will be proposed in the consultation draft, with final indicators incorporated into the final Waste Prevention Programme, together with the high level waste prevention targets in Towards Zero Waste.
- The Waste Prevention Programme covers high level measures, but will be supported by implementation plans for each waste stream (see Figure 2). Each project or work stream contained in the plans will be accompanied by suitable targets and indicators of progress. These will reflect the nature of the action, including its focus on specific waste materials or economic sectors.
- Sustainable Development (SD) outcomes have been considered during the evidence gathering and development stages of the programme. SD outcomes will also be a key requirement in the development of separate implementation projects.
- Extended Producer Responsibility
Voluntary extended producer responsibility will be explored where appropriate in the first instance, particularly in discussion with retailers in Wales. It is not proposed to consider mandatory extended producer

responsibility in the short term until the impact of voluntary measures has been explored.

Figure 2 Content of, and relationship between, the Waste Prevention Programme and associated implementation plan and projects



The Waste Framework Directive contains definitions which are used by all Member States to ensure consistency of understanding. The following definitions are relevant to this programme.

Waste: “waste means any substance or object which the holder discards or intends or is required to discard”.

Prevention: “prevention means measures taken before a substance, material or product as become waste, that reduce:

- (a) the quantity of waste, including through the re-use of products or the extension of the life span 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: “re-use 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: “preparing for re-use” 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 re-used without any other pre-processing.

1.4 Policy Framework

The following EU Strategies and Initiatives are relevant to this programme; they are described in Annex B.

- EU Sustainable Development Strategy (SDS).
- The Thematic Strategy on Waste Prevention and Recycling.
- The Seventh Environment Action Programme (7EAP) – in development.
- Action Plan on Sustainable Industrial Policy (SIP) – Sustainable Consumption and Production (SCP).
- Resource Efficiency Roadmap.
- REACH – whereby products in the future will have less hazardous materials in them – is a key driver to reducing hazardous household waste at source.

The Waste Framework Directive

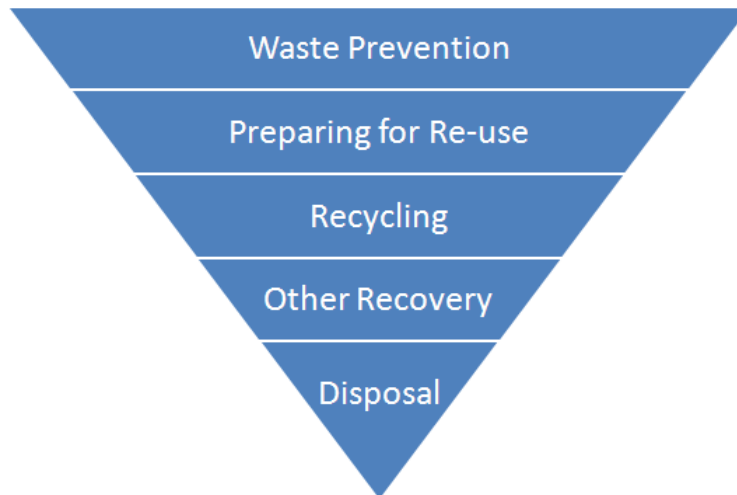
The Waste Framework Directive provides a legal framework for all EU waste legislation. Established in 1975, it has been updated periodically with the most recent revision in 2008, seeking to position the EU as a ‘recycling society’ with broad aims “to avoid waste generation and to use waste as a resource”³.

Article 3 of the Waste Framework Directive introduces the waste hierarchy, as illustrated in Figure 3, which ranks waste management options in terms of their environmental impact. Waste prevention sits at the top of the hierarchy and represents the most efficient and sustainable use of resources. Re-use,

³ Article 28, Waste Framework Directive 2008, European Parliament

where a product is used again for the same purpose for which it was originally conceived, has an important role to play because it keeps products in the productive economy for longer.

Figure 3 EU Waste Hierarchy



Source: European Commission [DG Environment]

The following key requirements for Member States with regards to waste prevention are described in Article 29 of the Waste Framework Directive and are covered by this programme of work:

- Establish waste prevention programmes by 12 December 2013.
- Set out waste prevention objectives.
- Describe existing waste prevention measures.
- Evaluate the usefulness of the examples of measures indicated in Annex IV or other appropriate measures.
- Determine appropriate specific qualitative or quantitative benchmarks for waste prevention measures.
- Take measures, as appropriate, to promote the reuse of products and preparing for reuse activities.
- Include relevant stakeholders and authorities and the general public in the elaboration of the waste prevention programmes, and provide access to it once elaborated.
- Inform the European Commission of the programme, once adopted, and of any substantial revisions to the programme.
- Review (and revise as required) waste prevention programmes at least every six years.

The European Commission is proposing to present a report on waste prevention by the end of 2014. It will propose measures, if appropriate, including waste prevention and decoupling objectives, to be achieved by 2020. Future revisions of this programme will take account of any future developments at a European level.

1.5 Evolution of this programme

This consultation has been developed by:

Assessing the existing situation, and clarifying the issue

Data and information on waste generation, business sectors and their activities, economic and demographic statistics were used to assess the current situation in Wales with regard to the waste that we generate and the reasons for its generation.

Evaluating a range of policy measures

The Welsh Government commissioned some work to evaluate a range of measures which may be applied to tackle the barriers to waste prevention.

Drawing on the experience of others

A steering group has fed its expertise into the development of this consultation, and will continue to do so through to the final programme of work. We have also drawn on the views and opinions generated during the consultation of sector plans. We propose to use this public consultation, together with focused stakeholder workshops, to inform our final programme.

Conducting a Sustainability Appraisal

We have committed to carrying out a Sustainability Appraisal on our waste plans and programme. This has been carried out independently on our behalf with the aim of highlighting any specific impacts associated with the measures that we are proposing, and to suggest ways of limiting any adverse impacts.

Consultation Question G2:

A Sustainability Appraisal was conducted on this programme, and is published alongside this document as part of the consultation. Do you agree with its findings and conclusions? Please give your reasons.

2 Household waste

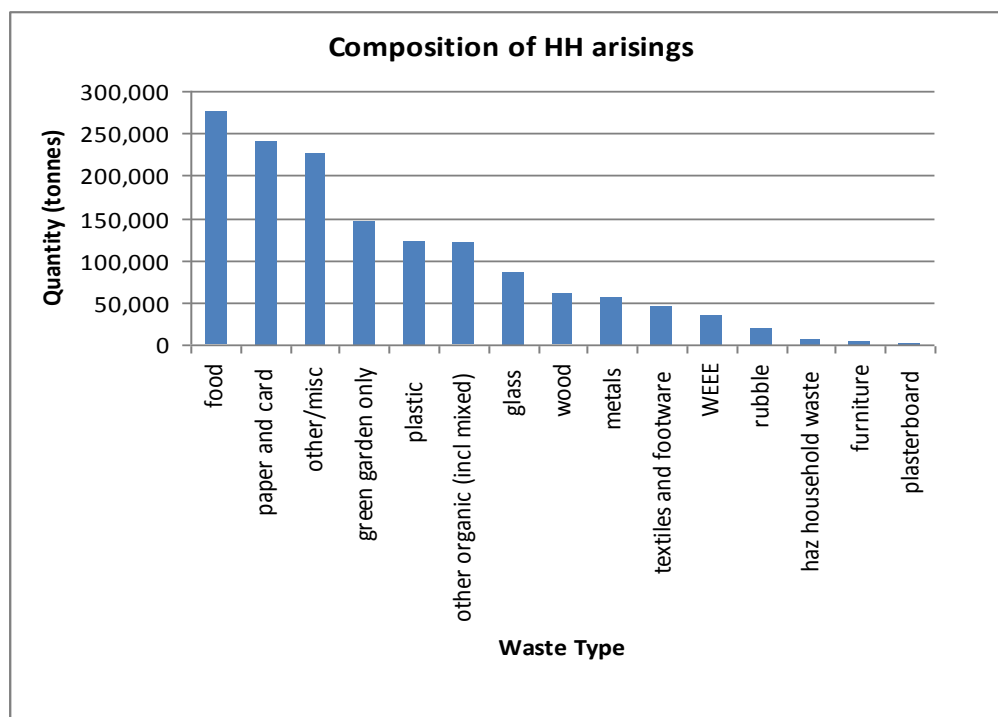
This section describes the current situation with regard to quantity and type of household waste generated in Wales, the factors that affect its generation and the waste prevention policies and initiatives that are in place. It then describes the outcome of the evaluation of measures and a proposed outline programme of work. It explains how the programme's implementation projects are being taken forward and finally outlines the proposed indicators, monitoring and progress reporting.

2.1 Assessment of the situation

2.1.1 Quantities and types of household waste

Household waste generation for 2011/12 was 1.36 million tonnes. Its estimated composition⁴ is shown in Figure 4 below:

Figure 4: Composition of household waste in Wales



Source data: Waste Data Flow

Nearly 40% of the overall household waste is food waste and paper and card waste; these fractions alone contribute over 0.5 million tonnes. Food and paper waste have been identified by the European Commission as priority materials for waste prevention.

⁴ Composition is estimated from physical analysis of residual waste carried out in 2009 and data on recycled waste as recorded on WasteDataFlow. Other/miscellaneous includes co-mingled materials as well as other items arising in small quantities. Other organic includes mixed food and garden waste and other organics.

The majority of food waste is generated as a result of consumers buying food and then not using it, with a far smaller quantity generated from left over food. This is reflected in the types of food that are discarded - food still in its packaging, raw fruit and vegetables and raw meat and fish.

Food packaging made of paper and card, such as cereal boxes and drink cartons, also contribute significantly to the total quantity of paper and card in the waste stream. The other main sources are other packaging (including that from mail order retailers), newspapers, magazines and mailed items.

Other packaging waste, composed of glass, plastic and metal, clothing and other textiles, and consumer goods are also significant in their contribution.

The environmental impact⁵ of products and their resultant waste materials was used to identify those wastes which should be the focus for greatest efforts in waste prevention. For household waste, the high impact wastes are:

- Food waste.
- Plastic (the majority of this is packaging).
- Paper (this is primarily packaging, newspapers and magazines, or mail).
- Waste Electrical and Electronic Equipment (WEEE), textiles (clothing and non-clothing), furniture and hazardous waste.
- Nappies and clinical waste (although these have little potential for reduction).

2.1.2 The impact of economic and demographic drivers on waste generation and the financial benefits of waste prevention

2.1.2.1 Financial benefit

The citizens of Wales could benefit from considerable financial savings if they were to take steps to purchase wisely and reduce waste generation.

Wasting food⁶ costs an average household £480 per year, rising to £680 per year for households with children⁷. When we look at Wales as a whole, householders produce 400,000⁸ tonnes of food waste every year, with a financial value of £600 million per year.

Households also have further opportunities to benefit financially from both supplying and purchasing second hand items. WRAP⁹ identified that many households are storing unwanted items at home. For example, 60% of Welsh households are storing unwanted clothing and shoes for later disposal or re-use, and this clothing could have a potential resale value of over £9,000 per

5 *Ecological Footprint Impact of the Welsh Waste Strategy*, Arup (2009). The Ecological Footprint was used to determine these priorities, but carbon foot printing would deliver similar results.

6 The figure here represents the food which was still edible when it was thrown away.

7 *The facts about food waste*, WRAP (2012)

8 *Love Food Hate Waste*, WRAP (2009)

9 *Evaluation of Recycling, Re-use and Repair (3R's) Consumer Behaviours*, WRAP (2012)

tonne¹⁰. WRAP also estimate that Welsh households dispose of 6,000 tonnes of working electrical items, with a potential resale value of almost £15 million¹¹.

2.1.2.2 Economic and demographic drivers

The Welsh Government commissioned an assessment of the trend in household waste generated in Wales, which can be found as a separate document within the evidence base for this programme¹².

Over the past few years, since 2006, there has been a decrease in household waste generated in Wales. However for much of this time the country has been in recession, so it is difficult to determine whether this is a trend which will continue in the future.

The researchers' forecast for future waste generation suggests that if the economy recovers as the UK Government predicts, waste generation will level off and then increase again. To reduce the possibility of this happening, it is important that policies and initiatives for waste prevention are introduced at the earliest opportunity. The report also discusses whether de-coupling is inevitable as a country's population becomes more prosperous. There is an argument that as households become wealthier, their marginal expenditure will go towards discretionary items which generate less waste. For example, the household will eat the same quantity of food but may buy from more expensive retailers or brands. They may also choose to spend on experiences such as travel, gym membership, cultural events or eating out – these do not contribute towards household waste.

2.1.3 Current policies, targets and initiatives for waste prevention

The overarching waste strategy "Towards Zero Waste" establishes the broad objectives for waste prevention. This is further elaborated on in the municipal sector Plan (MSP), which describes outline actions for Welsh Government, Local Authorities and other stakeholders for waste prevention.

The national waste prevention target for household waste has been set as follows:

A reduction of 1.2% every year to 2050 based on 2006/7 baseline.
This equates to 18,869 tonnes per annum of household waste.

The five headline actions for Welsh Government and local authorities in the MSP are:

- Influence household behaviour through service provision changes;
- Fund projects to change consumption behaviours;

10 *Valuing Our Clothes*. WRAP (2012)

11 *Realising the Reuse Value of Household WEEE*. WRAP (2012). Results adjusted for Wales based on population.

12 *Assessment of Trends in Household Waste arising in Wales*, Eunomia (2012)

- Increase reuse behaviour significantly through behaviour change campaigns;
- Work with retailers and manufacturing supply chains to ensure products and packaging create less waste at end of life;
- Participate in the development of waste prevention policies at UK and international levels.

2.2 Evaluation of suitable measures

The Welsh Government commissioned the evaluation of suitable measures to reduce household waste¹³. This section summarises the work, which can be found in the accompanying evidence base supporting this programme.

The work involved mapping existing activity and policy against:

- Its waste prevention impact.
- The measures listed in Annex IV of the revised Waste Framework Directive.
- Sustainable Development outcomes.

An outline programme of activity was drawn up to meet the waste prevention target of -1.2% (of the 2007 baseline) per annum.

This evaluation of current activity highlighted that the challenge for this Waste Prevention Programme is to identify ways to maximise the effectiveness of measures already in place, rather than find additional new measures.

Therefore, it is not proposed to introduce further measures within this plan (than are currently in the Municipal Sector Plan). Instead, this programme provides an update on how the current measures have been developed and further implemented.

2.2.1 Conceptual framework

A '4Es' model of behaviour change is being taken forward, to ensure the outcomes are consistent with the Welsh Government's commitment to sustainable development (SD), as shown in Figure 5. When applied to waste prevention the 4Es model can be characterised as follows:

Engage – measures to engage households/consumers directly in voluntary behaviour changes, for example, through communications programmes or community engagement activities.

Enable – measures and activities by stakeholders which provide services that help consumers to prevent or reduce waste, notably producers, retailers and repair and reuse organisations from the third sector, public and private sector. This includes both sustainable consumption and production innovations (such

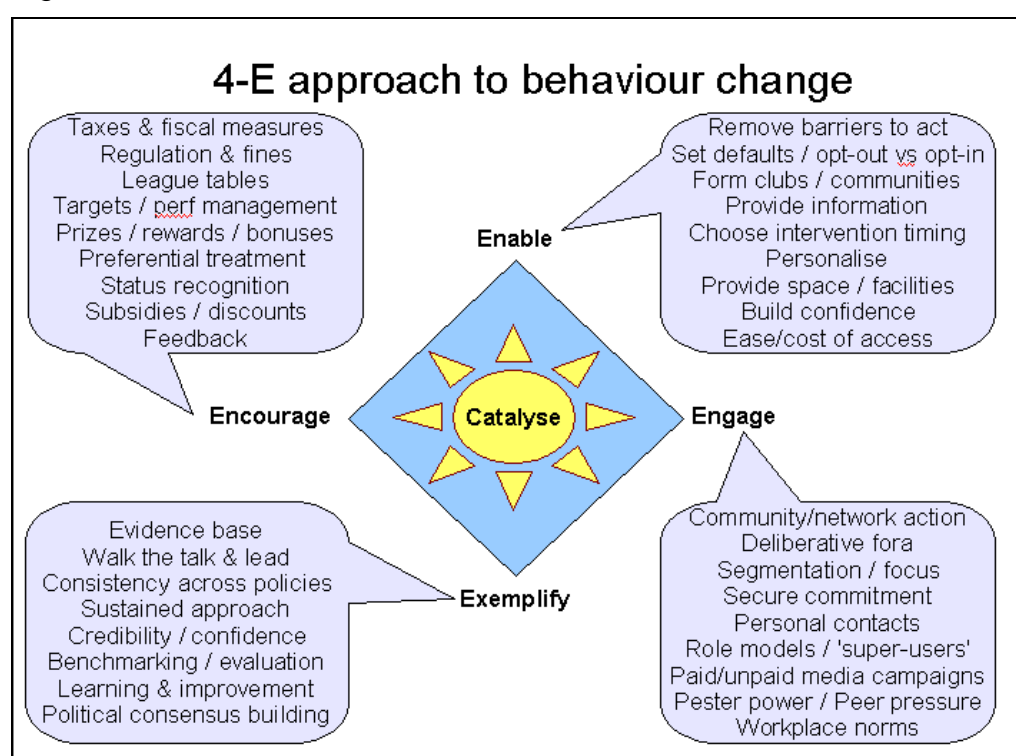
¹³ *Evaluation of current activity and outline options for a waste prevention plan* (Phase 2 report), Brook Lyndhurst (2012)

as product durability), as well as infrastructures to enable products to have a second or prolonged life.

Encourage – generally policy measures and incentives, and the activities of local authorities. This includes the configuration of waste services provided directly to the public; and financial and other incentives to reduce waste at the household end, or switch consumption to products with a lower ecological footprint.

Exemplify – monitoring impacts and sharing best practice, including demonstration projects and leading by example. Government procurement and practice is included here.

Figure 5 The 4Es model



Source: Proposals for a Sustainable Development Bill, Welsh Government (2012)

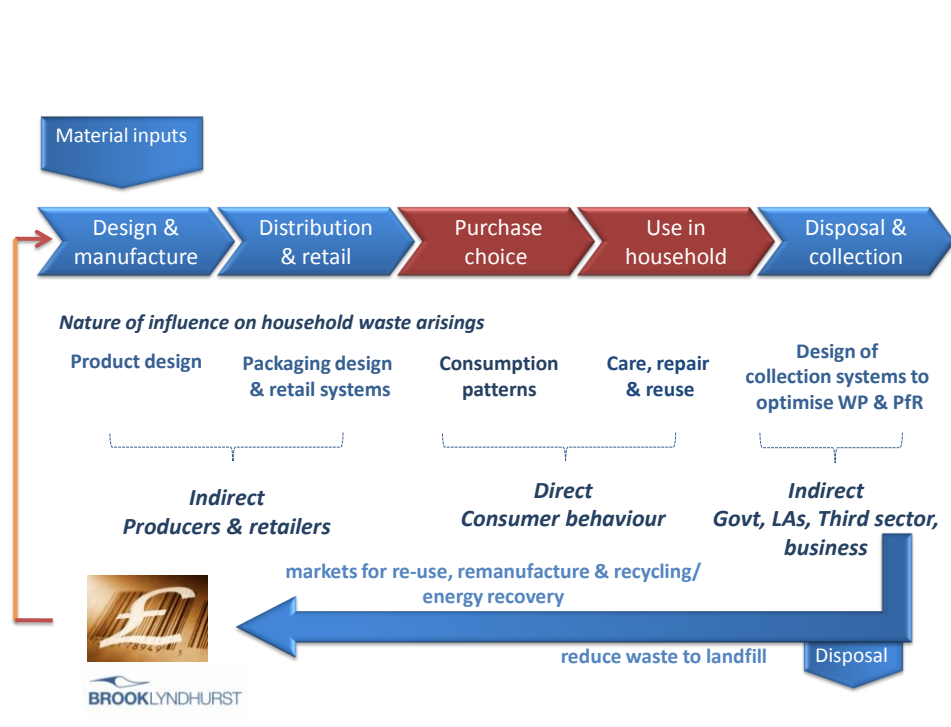
2.2.2 Outline waste prevention programme

Household waste can be prevented at different points in the supply chain. Figure 6 describes these together with the practical actions that can be taken and the key actors with influence over those actions.

In this section 2, the outline programme for household waste considers the 'demand side' actions of purchase choice, use in the household and disposal and collection.

The following section 3: 'industrial and commercial waste' considers the 'supply side' actions of design, manufacture and distribution and retail.

Figure 6 Framework of intervention points for household waste prevention



Source: Brook Lyndhurst (2012)

The outline programme and indicative timeline for the 'demand side' actions is shown in Figure 7.

Figure 7 Outline measures and indicative timeline for the programme

	2013	2014	2015	2016	2017	2025	2050
Encourage – consumer/household engagement programme							
Food waste campaigns							
Nuts and bolts local campaigns							
Reuse campaigns							
Sustainable consumption campaigns							
Household rewards							
Enable – (preparation for) reuse							
Develop infrastructure							
Mandatory supporting measures (warranties etc)							
Encourage – services provided of householders							
Optimise service provision design for waste prevention							

Key

Implementation	
Review	
Feasibility	
Pilot	

2.2.2.1 Consumer and household engagement programme

Consumer campaigns and programmes will be implemented in the short terms to offer potential for quick wins and to kick-start impetus on the wider culture change that will be needed to achieve waste prevention.

An enhanced waste prevention communications campaign is being developed. It will focus on 2 key areas:

- Communications activity to kick-start a widespread culture change which results in products and materials being seen in a new light – as valuable resources not waste. This campaign will signal the overall direction of travel - towards a zero waste and resource efficient society and also supporting jobs and wellbeing in Wales.
- ‘Products’ will be a central focus in shaping this culture change. This includes the purchase, use and reuse of consumer products, as well as preventing food waste. Different actions will be appropriate at different levels – some will require strategic action by the Welsh Government (and its partners), others will be delivered locally.

The campaign will focus on the following waste prevention work streams.

- **Food** – enhancing the current Love Food Hate Waste campaign to align with other messages on food, such as healthy eating.

Consultation Question HW1:

We throw away a lot of food waste each year. It accounts for around a fifth of all household waste in Wales. An average household throws out £480 worth of food each year, and it rises to £680 for households with children.

Would you be interested in knowing more about reducing your food waste? We need to communicate with everyone about how they can reduce their food waste too. What do you think are the best ways for us to do that? For example, local newspapers, from a person you know in your community, through clubs such as sports clubs.

- **Consuming better – ‘love stuff’ (clothing and shoes and electronic equipment).** Rethink purchases – considered purchase, care in use, and passing on instead of binning.
- **Longer product lifetimes – get the ball rolling.** Get more lifetime value out of products through small investments of money and time.
- **‘Nuts & bolts’ campaigns – say no to junk mail, composting, real nappies.**
- **Reuse and repair.**
- **Hazardous household waste** – for example, actions that householder’s can take to reduce hazardous household waste. These include only buying what is needed and making sure products are used up rather than thrown away, or buying different products with less hazardous properties (such as waste based paints, rather than solvent based paints).

Alongside these waste prevention options a Community Based Social Marketing programme is proposed to support local waste prevention and recycling behaviour projects. Community based social marketing is an alternative to information intensive campaigns. It has been shown to be effective at bringing about behaviour change. This approach involves identifying barriers to a sustainable behaviour, designing a strategy that utilises behaviour change tools, piloting the strategy with a small segment of a community, and finally, evaluating the impact of the program once it has been implemented across a community.

Consultation Question HW2:

There are lots of ways we can reduce how much waste we all create. It isn't just about recycling, there are lots of other ways such as:

- Thinking about the packaging we buy when we're shopping.
- Only buying as much food as we really need.
- Repairing things or getting things serviced, rather than just throwing them away.
- When we no longer want something, we can pass it onto someone else, or sell them.

Would you be interested in knowing more about the ways you can reduce your waste? How can we let you and others know about the actions they can take? Can you suggest any ways we can communicate with others to make them more aware?

2.2.3 Product packaging and retail innovation

Plastics, paper and card are identified as priority waste streams from households. Much of the plastic and paper and card is packaging, and so reducing the impact of packaging is a priority, and is frequently quoted as a concern to the public, and there will be a continued emphasis on optimising packaging through supply chain actions. The focus should be on right weighting, which means designing packaging which uses the minimum quantity of material possible whilst retaining the integrity of the product it contains. There has been significant progress in the packaging surrounding food products in recent years, but there is still more to do. Work will also be extended to non-food consumer goods, and to secondary and tertiary packaging used to transport and store goods. The packaging waste generated by online shopping, which has increased significantly over recent years, will also be tackled.

Consultation Question HW3:

Packaging serves an important purpose in protecting goods and ensuring that they are delivered in good condition, but sometimes consumers feel that goods are over-packaged; and packaging also comes in a mixture of materials such as plastic, cardboard, aluminium, which can be difficult to separate and dispose of properly.

Have you got any ideas about how we can tackle this? What would help you do more to reduce this type of waste?

2.2.4 Reuse infrastructure

The promotion of reuse is a key requirement of the Waste Framework Directive as it extends product life and therefore reduces the stress on primary natural resources. Work to ensure that infrastructure is in place is beginning in 2013. From 2017 there will be an assessment of the need for mandatory supporting measures (i.e. parts stocking and guarantees).

The Welsh Government is considering three options for a reuse and repair strategy, which will also consider preparation for reuse activities. A high level assessment of the environmental, social and financial costs and benefits will inform the final chosen option and supporting initiatives, which the Welsh Government will take forward.

The three options are:

- Continue current level of activity.
- Meet the current market demand.
- Meet the maximum feasible/technical potential (which requires work to develop the market beyond current maximum).

2.2.5 Services provided to households

The Collaborative Change Programme (CCP) offers all local authorities in Wales an opportunity to benefit from additional support to help each authority develop and deliver a detailed business plan setting out how it will meet the objectives and outcomes of Towards Zero Waste and the requirements of the Waste Framework Directive. This approach is not only about how authorities will achieve the higher targets and high quality recycling, but also aims to support the active sharing of good ideas and practices, that can improve efficiency in terms of cost reduction and performance. It will also assist local authorities to move towards more sustainable waste management services, including playing their part to help meet waste prevention and preparation for reuse targets.

Local authorities also have a role to play in reducing the amount of household hazardous waste by ensuring all CA sites have reception facilities for items such as mineral oil and pesticides.

2.2.6 Medium to long terms approaches

Household financial incentives will be explored further in the medium term especially in respect of rewards. Options could be pull-interventions to draw people to change. An example could involve learning and building from Defra's trials of reward and recognition schemes which will report in 2013/14.

There are no plans to introduce charges while the recent progress on recycling is maintained. Similarly, there are no plans to introduce charges to encourage waste prevention while there is progress in this area.

The Environment Strategy First Action Plan 2006 committed the Welsh

Government to scope the desirability and practicality of introducing charging for the collection and management of other types of household waste that at the moment cannot be charged for by Local Authorities, in particular the residual fraction. This scoping was carried out and the results were published as part of the evidence that supported the development of the consultation draft of Towards Zero Waste. Local Authorities already have powers under the Environmental Protection Act 1990 and the Controlled Waste Regulations 1992, to charge for the collection of bulky wastes and garden wastes from households, and for the collection and management of wastes from commercial premises.

The present Welsh Assembly Government has no plans to introduce additional powers for Local Authorities to charge for waste collection and disposal, for example to cover residual waste, beyond the current provisions. Our aim is to create a truly comprehensive recycling society where everyone can recycle wherever they are – at home, at work, at leisure or on the go. To date, the public have responded magnificently, meeting recycling targets for municipal waste for 2003-04 and 2006-07 and were very close to meeting the target for 2009-10. Also, household waste levels have reduced in recent years, even before the impacts of the economic conditions over the last two years. Whilst this progress is maintained there is no need for charging to be introduced.

2.3 Monitoring Progress

Performance will be monitored against the national waste prevention target. Indicators, including that for de-coupling, will also record progress at a strategic level. Arrangements will also be put in place to develop suitable targets and indicators for each intervention project developed during the implementation stage of this programme as appropriate.

2.3.1 Progress against the national target

The waste prevention target is an absolute reduction of 1.2% of the 2007 baseline each year to 2050.

Data for this target is reported by local authorities on the WasteDataFlow reporting system. Progress against the target will be recorded annually via the published annual monitoring report – this is a report of progress against Towards Zero Waste and associated sector plans and programmes.

2.3.2 Indicators of strategic progress

The following indicators are proposed, which will be used to monitor progress at a strategic level, including monitoring against the objective of decoupling waste generation from economic growth. They have been chosen because they are good indicators and the data is easy to collate at regular intervals.

- Waste generation per unit Gross Disposable Household Income (GDHI).
- Waste generation per household.

- Waste generation mapped against rate of employment (or 1 – unemployment).

2.3.3 Monitoring progress of individual implementation projects

There is currently a lack of comprehensive evidence on the efficacy of waste prevention measures, so by monitoring our implementation projects we will not only be able to assess progress internally but also contribute to the evidence base in the public domain.

Alongside the development of each implementation project there will be an associated monitoring plan, target or indicator(s) as appropriate. The Welsh Government will collate outputs from the monitoring plans and will report progress in its annual monitoring report, and periodically evaluate and review the impact and value for money.

3 Industrial and commercial sector

This section describes the current situation with regard to quantity and type of commercial and industrial waste generated in Wales, the factors that affect its generation and the benefits to business of waste prevention. It then describes a high level evaluation of waste prevention measures, identifies priority areas for action and an outline programme. It explains how the programme's implementation plan will be developed through consultation and stakeholder engagement and finally outlines the proposed indicators, monitoring and progress reporting.

3.1 Assessment of the situation

3.1.1 Quantities and types of industrial and commercial waste

Around 3.6 million tonnes of I&C waste were produced in 2007 (the date of the last industrial and commercial waste survey for Wales). Industry produced 1.9 million tonnes and commerce produced 1.7 million tonnes.

The environmental impact¹⁴ of products and their resultant waste materials was used to identify those wastes which should be the focus for greatest efforts in waste prevention. For industrial and commercial waste, the high impact wastes are:

- Food and putrescibles.
- Paper and card.
- Chemical waste.

In addition to these materials, some products have a high inherent financial value associated with their production. They also have high embedded impact per unit, and some also contain materials which are under supply pressure due to scarcity or security of supply. These products are:

- Clothing and non-clothing textiles.
- Electrical and electronic equipment.
- Furniture.

Industrial waste

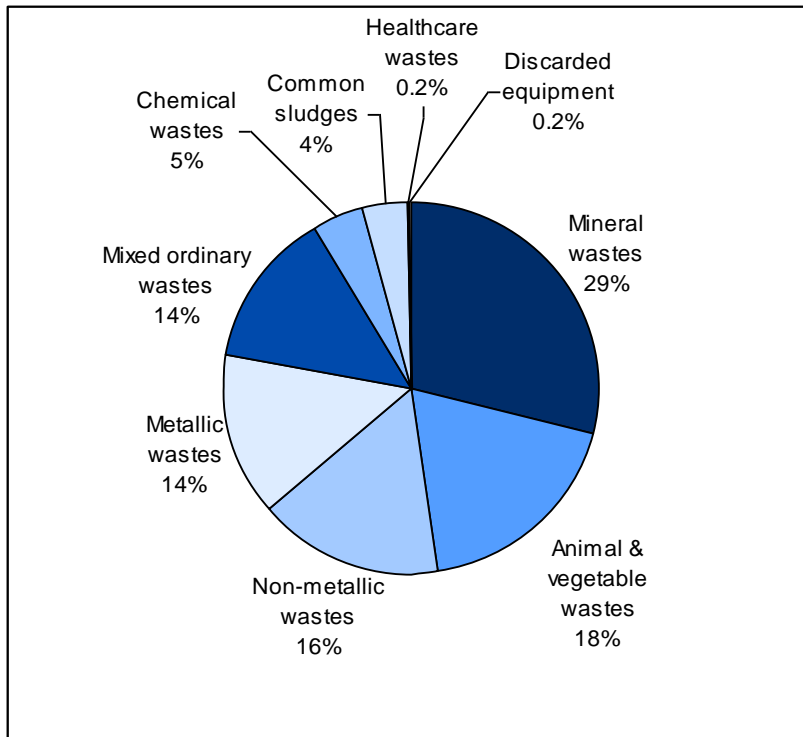
Mineral wastes, animal and vegetable wastes, non-metallic wastes¹⁵ and metallic wastes collectively account for 78% of the waste arising from industrial sectors (Figure 8). Most of the waste arises as discrete fractions, with only 14% arising as mixed waste.

¹⁴ *Ecological Footprint Impact of the Welsh Waste Strategy*, Arup (2009). The Ecological Footprint was used to determine these priorities, but carbon foot printing would deliver similar results.

¹⁵ Non-metallic wastes include glass, plastic, paper and cardboard, textiles, rubber, wood and wastes containing PCBs.

The type and quantity of industrial waste produced in Wales is highly variable and heavily influenced by the sector type. Further details of the sources of these waste types can be found in Annex C.

Figure 8: Composition of industrial waste produced in Wales (2007)



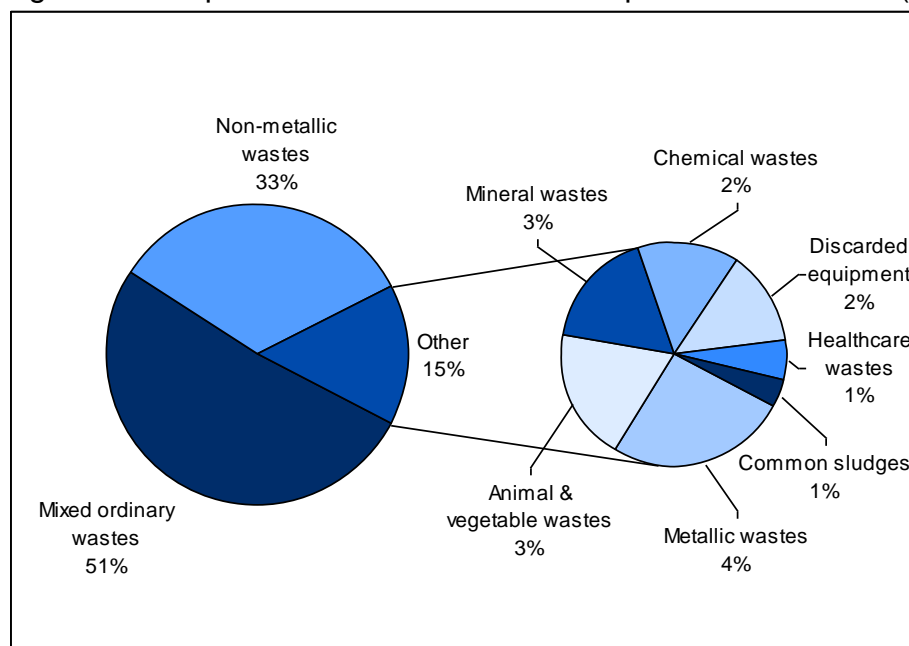
Source: Survey of Industrial and Commercial Waste in Wales 2007, Environment Agency

Commercial waste

51% of the waste arising from commerce was mixed waste, which contains valuable resources that can be recycled. 33% of the waste was non-metallic waste, and the remaining 15% consisting of the total of all other waste types. The composition of waste types generated by commercial business sectors in Wales is shown in Figure 9.

Further details of the types and sources of these waste types can be found in Annex C.

Figure 9: Composition of commercial waste produced in Wales (2007)



Source: Survey of Industrial and Commercial Waste in Wales 2007, Environment Agency Wales (2009).

3.1.2 The impact of the economy and business activity on waste generation and the benefits of waste prevention

3.1.2.1 Benefits of waste prevention

The true benefits of waste prevention are often huge, based on saving the embedded investment in raw materials, labour, production and distribution costs required to bring a product to the point in the supply chain where the decision is made not to sell it but rather consign it as waste. Waste is often perceived as a relatively small and unimportant cost to businesses because consideration is only given to the direct waste management/disposal cost (say around one hundred pounds per tonne) and not these other embedded factors, which amount to many thousands of pounds per tonne.

WRAP provided the Welsh Government with the following estimates of financial benefits to businesses in the supply chain, and to retailers, of avoiding waste for a selection of products (see Table 1).

Table 1 Benefits of waste prevention to business for a variety of product types

Product Type	Benefits of waste prevention (£ / tonne)	
	Supply Chain	Retailer
Food	1,200	2,727
Electrical & Electronic Products	4,800 – 7,100	11,000 – 13,000
Furniture	2,900	5,000
Clothing	-	27,000

Source: WRAP

The following summary of cost benefits to businesses is presented in a review of the evidence on business waste prevention, published in *Waste Management & Research*¹⁶.

A report published by WRAP in 2010 on material-saving potential of resource efficiency¹⁷ identified a range of opportunities for no- and low-cost resource efficiency savings. This was used to identify that of the total potential financial benefit to business of resource efficiency of £23 billion per annum, £17 billion is a result of waste prevention, with £1 billion a result of recycling and landfill diversion¹⁸. Further analysis shows that 70% of these shorter-term waste-prevention savings could be attributed to reduced material inputs into production processes, through the design of lighter and leaner products, while 80% comes from just four industrial sectors - chemicals and non-metallic minerals, metal manufacturing, power and utilities, and construction. Longer-term savings increased the total savings to £55 billion per annum, of which £40 billion was a result of waste. These longer term investments are more costly, but the benefits can be several orders of magnitude greater than the investment required.

Several major reports on the global benefits of resource efficiency or a 'circular economy' have been published recently¹⁹, with estimates of a global saving of \$3 trillion or more by 2030²⁰ and of savings across the EU of \$600 billion per annum by 2025²¹.

3.1.2.2 Impact of the economy and business activity on waste

It stands to reason that the size of the economy and the types of businesses will impact heavily on the types and quantities of wastes that are generated. However the lack of regularly reported, comprehensive data on waste generation makes an assessment of historic de-coupling impossible.

¹⁶ *Business Waste Prevention: a review of the evidence*. Wilson et al (2012). *Waste Management & Research*.

¹⁷ *Securing the Future: The Role of Resource Efficiency*. WRAP (2010)

¹⁸ *The Further Business Benefits of Resource Efficiency*, DEFRA (2010)

¹⁹ *A Global Redesign. Shaping the Circular Economy*. Preston F (2012). Chatham House briefing paper.

²⁰ *Resource Revolution: meeting the world's energy, materials, food and water needs*. McKinsey (2011).

²¹ *Towards the Circular Economy -Economic and business rationale for an accelerated transition*. Ellen MacArthur Foundation (2012). www.thecirculareconomy.org

Businesses are becoming increasingly influenced by rises in the cost of resources and some have responded by action, resulting in resource efficiency and waste prevention. The precision and frequency of waste data will make the future assessment of de-coupling difficult, but by working towards absolute prevention targets we can measure these through data from periodic business surveys.

3.1.3 Targets and measures for waste prevention

Sustainable Development is the central organising principle of the Welsh Government, and all policies are developed within this context. In developing initiatives, the social and financial sustainability will be assessed alongside environmental considerations.

Towards Zero Waste established the broad objectives for waste prevention and sustainable waste management. It sets out the goal of achieving “one planet living” by 2050, and the speed of travel required to get there is indicated through waste prevention and recycling targets for each waste stream.

The target for industrial waste proposed in Towards Zero Waste is a reduction of 1.4% every year to 2050 based on 2006/7 baseline. We indicated that a target would vary according to each sector.

The target for commercial waste proposed in Towards Zero Waste is a reduction of 1.2% every year to 2050 based on 2006/7 baseline. This equates to 20,129 tonnes per annum of commercial waste.

Consultation Question IC1:

The proposed waste prevention targets for the industrial and commercial waste streams are:

A general reduction of 1.4% every year to 2050 based on 2006/7 baseline for industrial waste, with specific targets for the individual priority sectors (identified in sections 3.6 and 3.7 below):

Manufacture of basic metal and metal products

Manufacture of paper and paper products

Manufacture of chemicals, chemical products, pharmaceuticals.

Food manufacture

A reduction of 1.2% every year to 2050 based on 2006/7 baseline for commercial waste.

An implementation plan will be developed to deliver against these targets

Do you agree with the targets that are proposed? Please give your reasons. What targets should be proposed for the priority industry sectors? Please give your reasons.

3.1.4 Evaluation of waste prevention measures

A piece of work has been carried out by AMEC Environment and Infrastructure Ltd²² to evaluate a range of measures which could be used to tackle waste prevention.

This identified the following measures that lead directly to waste prevention:

3.1.4.1 Eco-design

Eco-design is a strategic way of thinking about the design process, incorporating considerations around the sustainability impacts of product, processes and packaging across the entire life cycle of the product, from extraction of raw materials to disposal at end of life. Its broad ethos ensures that waste prevention and resource use is considered among a wide range of criteria and across the life cycle, thereby ensuring the best sustainability outcomes and avoiding negative unintended consequences.

Eco-design can be used to achieve waste prevention by changing the way that products are designed to reduce the amount and type of material in products (including hazardousness); improve longevity; design for reuse, remanufacture, separation and recycling.

3.1.4.2 Resource Efficient Business Models

Resource efficient business models can result in significant environmental and economic benefits, and take a number of forms including service systems, hire and leasing and incentivised return systems. New business models often require strong innovative leadership from within the business, as they are a departure from the traditional model of product manufacture and sale. The rise in the financial value of resources linked to an increase in awareness of sustainability issues, has led to innovation among a limited number of businesses, but there is a need to stimulate greater innovation if the full sustainable development benefits are to be realised.

Products with high environmental impact, including clothing and other textiles, home and workplace furniture, chemicals, and electrical and electronic equipment, have potential in the context of resource efficient business models.

3.1.4.3 Green procurement and supply chains

Supply chain measures and green procurement is an important director of change in the I&C sector, where often businesses are driven by the needs and wants of those further up the supply chain. The ability of big business and the public sector to implement top-down approaches and influence businesses in their supply chain is important in encouraging waste prevention.

An organisation's procurement can influence waste in two ways; as a tool for internal change - whereby products they choose to buy are changed (such as

²² *Evaluation of a range of Waste Prevention Initiatives for Industrial and Commercial wastes produced in Wales to support the Waste Prevention Programme*, AMEC (2013)

reductions in office paper or the use of re-usable packaging materials); or as a tool for external change whereby they influence suppliers and stakeholders²³.

3.1.5 Supporting Measures

The AMEC report also identified the following measures that could be used to support implementation of the primary measures above, either on their own or as a basket of measures:

Enabling Measures - these support the primary measures:

- Awareness and Guidance Documents.
- Grants and Loans.
- R&D promotion and development.
- Use of Networks.
- Taxes.
- Legislation.
- Training programmes.
- Voluntary Agreements.
- Funded business programmes.
- Integrated Resources and Tools.

Measures which show less promise in respect of waste prevention:

These measures should not be relied on in isolation to effect change, but could be used as complementary measures (e.g. eco-labelling to inform businesses during purchasing) or be used to publicise success (e.g. awards):

- Awards.
- Eco-labelling.
- Environmental Management Systems.

A full description of all measures is included in Annex A.

3.2 Programme Proposals

3.2.1 Priority Areas for Action and Priority Sectors

The Welsh Government has identified *priority areas for action*, and *priority sectors* for the programme proposals. These are based on the high impact materials and products identified in section 3.1.1, measures which lead directly to preventing waste in section 3.1.4, and sectors which have the greatest potential to prevent waste, either directly through its own operations or through influence over other businesses and sectors.

²³ Oakdene Hollins (2011) 'Business Waste Prevention Evidence Review'. Available from <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

3.2.1.1 Priority Areas for Action

Our priority areas for action are:

- Working with large retailers.
- Promoting Eco-innovation in Wales.
- Public sector as an exemplar.

The outline programme and indicative timeline is shown in Figure 8 below. These are the 'supply side' which also influence household waste. In the short term, we propose to continue to support eco-design through voluntary approaches. In the longer term, measures under review will be mandatory measures as part of Extended Producer Responsibility for influencing producer and retailer behaviour.

Figure 8 Outline measures and indicative timeline for the programme

	2013	2014	2015	2016	2017	2025	2050
Enable – SCP, eco-design and optimising product lifetimes							
Support eco-design through voluntary measures							
Mandatory EPR measures to support consumer product information							
Mandatory EPR measures on products							
Support for eco-innovation in Welsh businesses							
Encourage – regulation on waste producers							
Landfill bans							
Exemplify							
Public sector procurement and sustainable consumption campaigns							
Engage							
Promote the message that ‘waste prevention can save your business money’							
Changing attitudes and behaviour							

Key

Implementation	
Review	
Feasibility	
Pilot	

3.2.1.2 Priority Business Sectors

Our priority business sectors are:

- Office based services, food and accommodation, and small retailers.
- Food manufacturing sector.

The accommodation and food services sector is a priority because it is the second largest commercial waste generating sector in Wales in terms of total tonnage, and its contribution to segregated food waste and priority materials in the mixed fraction is very high. There is a significant reduction potential

within the sector, and the Welsh Government is working with the sector due to its economic importance in Wales. The financial benefit of each tonne of food waste prevented by the hospitality sector is around £1,800. The vast majority of waste generated by this sector comes from SMEs, and any programme of work will need to reflect this waste generation profile.

Office based services don't represent a single sector, but the sort of office based activities carried out in almost all of the service sectors and public sector functions, and to a lesser extent in other industry sectors. Most of the service sectors produce small quantities of waste individually, but have good potential to reduce the waste they generate and collectively contribute a reasonable quantity of waste to the commercial totals. It is proposed that a thematic approach to reducing paper and other typical office based wastes (such as office furniture, IT equipment, floor coverings and window dressings), is taken to instigate best practice.

The food manufacture sector is a priority because it produces almost all of the food waste – a priority waste type from industry. It also contributes significantly to the arising of chemicals and paper and card, and generates a quarter of all industrial waste by tonnage. Approximately 80% of the waste arises from companies with over 250 employees. Work by WRAP²⁴ suggests that waste reduction of around 10 – 15% is possible from making relatively simple, low cost changes at food manufacturing facilities, with a saving of approximately £1,200 per tonne of waste prevented.

Consultation Question IC2:

We have described priority business sectors and areas for action.

- (a) Do you agree with these priorities? Please give your reasons.
- (b) Is there anything else that we should consider a priority? Why is it important?
- (c) Do you agree with our proposed approach of voluntary action in the first instance, with mandatory measures under review in the longer term? Please give your reasons.

We have not proposed an outline programme yet for our priority business sectors. This will follow on from our stakeholder consultation exercise during this consultation period and form part of the final Waste Prevention Programme.

3.3 Working with large retailers

Retailers and wholesalers provide a vital link between the businesses that manufacture goods and the consumer. Their product buying criteria can be used to influence the growers, manufacturers and processors and distributors

²⁴ Waste arisings in the supply of food and drink to households in the UK (2010) WRAP

who supply them. They also generate large quantities of waste from their own operations, including priority waste types.

There is significant opportunity for impact reduction, and WRAP has estimated the financial value of waste prevention at the retailer stage in the life cycle (see Table 1) for a number of products. The values range from £2,727 per tonne of food waste prevented, to £27,000 per tonne of clothing.

Retailers and wholesalers have a role to play in:

- Improving the environmental impact of their product portfolio by influencing growers, processors, manufacturers and distributors within Wales and internationally through ecodesign, resource efficient business models, green procurement and green supply chains.
- Reducing the waste generated through its own activities.
- Supporting national and local initiatives such as food redistribution schemes.
- Providing clear information to consumers about the environmental performance of their products.
- Providing information and guidance on practical steps that consumers can take to reduce the impact of their products during use and at end of life.

Products with high environmental impact include clothing and other textiles, home and workplace furniture, chemicals, and electrical and electronic equipment.

3.3.1 Current initiatives

Funded activity – Sustainable Futures Directorate

To support the delivery of Towards Zero Waste and the associated sector plans, the Welsh Government funds a number of organisations to deliver specific waste prevention initiatives on its behalf.

The main delivery organisations for industrial and commercial waste are WRAP Cymru and Ecodesign Centre Wales. The directorate also funds food redistribution services, accepting surplus food from businesses and distributing it to people who need it.

WRAP Cymru is funded by the Welsh Government to deliver support to help businesses in Wales to use fewer resources and save on production and manufacturing costs, and to manage the wastes produced in an environmentally sustainable way. WRAP are funded by all four UK governments and co-ordinate UK level action where appropriate. Programmes that included action on waste prevention and resource efficiency in the retail sector during 2012/13 are:

- The Product Sustainability Forum.
- Home and Workplace Products.
- Resource Efficient Business Models and Service Delivery.
- Resource Efficient Clothing.

The Product Sustainability Forum (PSF)

The Product Sustainability Forum (PSF) provides a platform for WRAP, the Welsh Government, business and other stakeholders to:

- Provide the evidence, data and tools that help businesses and governments to prioritize their work to reduce the environmental impacts of everyday products;
- Help businesses to work together to quantify, reduce and communicate the environmental impacts of the products they make and / or sell; and,
- Test the feasibility of using this body of work to underpin any potential future voluntary agreements or actions and other policy instruments as agreed with the UK Governments.

The current focus of the forum's work is on the life cycle environmental impacts of grocery and home improvement products, and it acts as a knowledge hub to support other programmes.

Home and Workplace Products (HWP)

The purpose of this programme is to make resource efficiency an integral part of product specification and distribution for the HWP products, that offer the greatest potential for reductions in their resource impacts: particularly electrical and electronic equipment (EEE) and furniture. This objective is being delivered through:

- The Home Improvement Sector Commitment (HISC) and associated targets.
- Evidence for the prioritisation of action and consensus among stakeholders through the Product Sustainability Forum, and
- Involvement of Welsh supply chains to reduce product damage and increase product lifetimes through dissemination of information and targeted engagement.

Resource Efficient Business Models and Service Delivery

This programme is focused in three areas. It will demonstrate the case for alternative business models with a focus on high-impact products, including electrical and electronic products, clothing and furniture, and the services that use them.

Resource Efficient Clothing

This programme will make resource efficiency an integral part of the specification process for clothing by 2015, reducing the carbon, waste and water footprints across the clothing life cycle. It will encourage businesses to push for behaviours which are inherently resource-efficient as part of their consumer messaging.

This will be delivered through publishing data and resources, issuing guidance for retailers, designers and buyers, and facilitating UK-wide collective sector action involving the major players in Wales.

Courtauld Commitment

The Courtauld Commitment is a voluntary agreement between UK governments and the British retail grocery and manufacturing sectors, managed by WRAP on behalf of the UK Governments. The aim of the Commitment is to prevent food and packaging waste, and WRAP works with industry signatories to agree and implement actions that contribute towards meeting collective targets.

The targets and overall results for phase 1 and 2 (which ended in December 2012) of the Courtauld Commitment are set out below. Phase 3 is expected to be launched in spring 2013 with new targets for 2013 to 2015.

Courtauld 1 targets (5 years: 2005 to 2009):

	Target	Outcome (absolute)	Outcome (relative)
Consumer Packaging.	To design out packaging waste growth by 2008.	Achieved.	1.2 million tonnes of food and packaging waste prevented over the five years.
	To deliver absolute reductions in packaging waste by 2010.	Not achieved. Packaging levels stayed roughly the same.	
Household Food Waste.	To help reduce the amount of food the nation's householders throw away by 155,000 tonnes by 2010, against a 2008 baseline.	Achieved. 270,000t food waste avoided.	

Courtauld 2 targets and progress to date (3 years: 2010 to 2012):

Objective	The Courtauld Commitment Phase 2 targets (2009 – 12)	Year One reduction (2009-10)	Year Two cumulative reduction (2009 – 11)
Packaging – to reduce the weight, increase recycling rates and increase the recycled content of all grocery packaging, as appropriate	10%	4.7%	8.2%

Household food and drink waste – to reduce UK household food and drink waste	4%	3%	Results are not collected annually.
Supply chain product and packaging waste – to reduce traditional grocery product and packaging waste in the grocery supply chain	5%	1.2%	8.8%

Welsh Government Carrier Bag Charge

Since 1 October 2011, there has been a minimum charge of 5p on all single use carrier bags in Wales. This charge was introduced to dramatically reduce the number of carrier bags used in Wales. It affects all retailers in Wales, not just those who sell groceries.

During 2009 in Wales we took home an estimated 350 million carrier bags from the major supermarkets alone. This is a staggering 273 bags per household, and does not include the bags we pick up when shopping at high street stores and smaller shops. Single-use bags have not been around forever, but they have become part of our everyday life. The problem is that we tend to only use them once for shopping, which means they are wasted and can become a litter problem.

Since the charge was introduced in October 2011, carrier bag use in Wales has reduced by as much as 96% in some retail sectors, and a recent survey of attitudes indicated that the charge is now supported by around 70% of people in Wales.

The charge has also resulted in more money for charities and not for profit organisations as the Welsh Government has called on retailers to pass proceeds from the 5p charge onto environmental or good causes.

- Latest figures from RSPB and Keep Wales Tidy show that collectively they have already received more than £800K in donations as a direct result of the charge. This money has come from the proceeds of bag sales at major retailers including Tesco, McDonalds, Argos, Asda and Wilkinson, and RSPB and Keep Wales Tidy are just two of many good causes to benefit.
- Co-op are donating proceeds from the charge to environmental causes across Wales, and in April they pledged £75,000 to the Vincent Wildlife Trust to support a three-year project to protect Pine Martens, a rare species living on the south west Wales and in Snowdonia.

Consultation Question IC3:

It is proposed that the Welsh Government and retailers will build on the success of the introduction of carrier bag charge and UK wide action through the Courtauld Commitment and other initiatives, leading to retailers taking forward actions on

- Improving the environmental impact of their product portfolio by influencing growers, processors, manufacturers and distributors within Wales and internationally.
- Reducing the waste generated through its own activities.
- Supporting national and local initiatives such as food redistribution schemes.
- Providing clear information to consumers about the environmental performance of their products.
- Providing information and guidance on practical steps that consumers can take to reduce the impact of their products during use and at end of life.

What further actions and initiatives can be taken to enhance our current programme of work, and to support the actions above?

3.4 Promoting eco-innovation in Welsh businesses

The Welsh Government proposes to promote and encourage the implementation of eco-design among Welsh manufacturing companies serving domestic and international markets. Effort will be targeted to address resource intensive products where there is evidence that it is possible to reduce the products' impact through changes to their design. These companies will benefit commercially from producing market-leading products and in future-proofing against increases in the cost, and reduction in the availability, of input materials.

Eco-innovation means the 'introduction of new or improved product (good or service), process, organisational change or marketing solution that reduces the use of natural material resources'.

In terms of new or improved products, eco-innovation (eco-design) means 'changing the way that products are designed to reduce the amount and type of material in products (including hazardousness); improve longevity; design for reuse, separation and recycling. This includes new business models that reduce the consumption of goods through leasing, producing more durable goods and enabling repair and reuse.

Options for developing and delivering eco-innovation support may include:

- Eco-innovation Vouchers/Credits.
- Eco-innovation knowledge transfer partnerships.
- Research, Development and Innovation funding.
- Green Procurement.
- Enhanced Value Chain.

Consultation Question IC4:

How can the Welsh Government encourage businesses engagement in eco-innovation?

3.5 Public sector

The public sector is a very significant employer in Wales, and also procures goods and services from private sector businesses and individuals. It can therefore act as an exemplar in its working practices and its procurement activities. Improving the material resource efficiency of the education sector also has the benefit of engaging with children and young adults to embed sustainable behaviours at an early age.

Sustainable development is the central organising principle of the Welsh Government, and there are proposals within the Sustainable Development Bill consultation to roll out this approach across all public sector bodies in Wales. Waste prevention and resource efficiency measures adopted by public sector organisations, would demonstrate their commitment to environmental sustainability, and would send a clear signal to the workforce and suppliers that their obligations in terms of SD are taken seriously.

In Wales public procurement accounts for around 10% of GDP, therefore it could have a significant role to play in encouraging waste prevention and acting as a driver for the uptake of resource efficient products and eco-design.

Green public procurement and the use of Government buying standards and clauses in public sector contracts to encourage waste prevention is viewed as a key measure of generating external change. In fact a recent study noted that using procurement for external change is a key driver in waste prevention and one that offers the greatest potential when one or more organisation (such as a local authority) apply a common strategy.

Value Wales have developed a Sustainable Procurement Assessment Framework (SPAF) in Wales which will address environmental concerns as part of sustainable public procurement in the round.

The Welsh Government will build on this work to ensure that all public sector organisations in Wales are in a position to introduce resource efficiency and waste prevention clauses into their contracts, and will lead by example in its own procurement activities.

A separate document – the Public Sector Plan, will take forward these actions and is currently being scoped.

3.6 *Priority Business Sectors*

We propose to enhance our programme of support for businesses in Wales to incorporate resource efficiency and waste prevention into their business practices. In particular, we propose to focus on the following sectors, and with SMEs:

- SMEs in the Retail and Wholesale sector and Accommodation and Food Services.
- Office based services.
- Food manufacture.

3.6.1 Current initiatives

Funded support programme

Targeted delivery on waste prevention is funded by the Sustainable Futures directorate of the Welsh Government. The main delivery organisations for industrial and commercial waste is WRAP Cymru and Ecodesign Centre Wales.

WRAP's Programmes that included action on waste prevention and resource efficiency in these sectors during 2012/13 are:

Food and Drink Supply and Consumption

The food and drink programme is segmented into the following areas:

- Courtauld Commitment 3 (CC3) will be launched in spring 2013, signatories will be working to prevent food, drink and associated packaging waste both in the supply chain and in the home via set UK agreed targets. Support guidance and tools will be available. The Courtauld Commitment is a voluntary deal that has been in place since 2005 with phase 1, phase 2 ran from 2010 to 2012. CC3 is building on the result of the previous commitments and introducing further carbon based reduction targets.
- Hospitality and Food Service (HaFS). The overarching objective is to prevent food and packaging waste arising within the HaFS sector. Where waste does arise, the objective is to increase recycling and recovery rates, thereby reducing waste being sent to landfill. The principal route to deliver this objective across the UK is through the launch and delivery of an agreed Voluntary Agreement (VA) with the HaFS sector, and there is specific associated action in Wales including grant programmes such as recycling on the go and Hospitality and Food Service Sector grant programme.

To support the delivery of Towards Zero Waste, the Food Manufacture, Service and Retail Sector Plan has been developed and consulted on. This plan addresses waste management and material resource efficiency related to food and its associated packaging in the following three sectors:

- Food and drink manufacturing.
- Wholesale and retail.
- Services, including hospitality (e.g. restaurants, hotels, events).

The plan targets food manufacturers, retailers and the service sector to reduce and recycle more of their own food and packaging waste as well as influencing waste food and food packaging in the household and other commercial and industrial waste streams. The final plan will be further informed through this consultation and stakeholder engagement workshops.

The Business Enterprise Technology and Science directorate also support businesses on resource efficiency, environmental issues and sustainable business practices. There are also a number of European funded programmes operating in Wales, such as Innovation vouchers, Astute, Institute of Sustainable Design, WISE Network. They offer support to SMEs to incorporate resource efficiency and waste prevention into their business practices.

Business Enterprise Technology and Science Directorate support on Resource Efficiency

The Welsh Government's Directorate for Business, Enterprise, Technology and Science is responsible for delivering the economic agenda and promoting the sustainability of agriculture, fisheries and food and their associated supply chains across Wales. In addition to the Department for Business, Enterprise, Technology and Science, the Directorate also includes the Department for Rural Affairs, the Department for Tourism and Marketing and the Welsh European Funding Office.

The Economic Renewal Programme sets out the role the devolved government can play in providing the best conditions and framework to enable the private sector to grow and flourish.

Nine key sectors have been identified for support.

- Creative industries.
- Information, Communication and Technology (ICT).
- Energy and Environment.
- Advanced materials and manufacturing.
- Life Sciences.
- Financial and Professional services.
- Food and Farming.
- Construction.
- Tourism.

Individual companies have also been identified as they are economically important to the communities in which they sit, or they are key to supply chains in Wales. They are classed as Anchor and Regionally Important Companies (RICs).

The Department for Business, Enterprise, Technology and Science provide the following services to help businesses:

- Business Wales service (network of eleven offices across the country will be delivered by a consortium comprising of Business in Focus, Centre for Business, Antur Teifi, and Menter a Busnes).
- Enterprise Zones Wales.
- Wales Economic Growth Fund.
- Support for business start-up.
- Business Mentoring, Advice and guidance through the One Stop Shop (business mentoring and business Wales website).
- Entrepreneurship and Responsible business - Corporate Social Responsibility programme with Anchor and Regionally Important Companies (identified through renewal programme).
- Innovation Voucher Scheme (Managed by Enterprise Consulting).
- Academia for Business.
- Development of an Innovation Strategy for Wales.

3.6.2 Future initiatives

Business resource efficiency programme for support for SMEs

We propose to enhance our programme of support for SMEs in the retail and wholesale, and accommodation and food services sectors, along with office based services.

To do this we would like your views on what the barriers are to your business becoming more resource efficient, and what measures can be put in place to help you prevent your waste.

Consultation Question IC5:

A review of the UK wide and international evidence on the waste prevention barriers and measures specific to your sector can be found at:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

Do you agree with this evidence for your sector in Wales? If not, why not? What support does your business need to become more resource efficient and why?

We are evaluating a ‘competency framework’ approach to help develop a programme of support. This framework will help benchmark resource efficiency in businesses in Wales and target action and support.

A competency framework helps us to find out more about a business’ attitude and behaviour towards waste prevention, and may be particularly relevant to SMEs. It looks at aspects such as those in Table 2: Conceptual Framework for Categorising Behaviours.

Table 2: Conceptual Framework for Categorising Behaviours.

	Ethos	Roles and relationships	Resources	Contextual
Individual	Attitudes, values, personal norms.	Roles, habits, responsibilities, accountabilities, leadership.	Skills, knowledge, understanding, awareness, agency, tools.	Workplace environment, incentives.
Organisational	Corporate culture, group identity, share norms and values,	Corporate policies, management structures, governance.	Finances, time, skills, tools, equipment.	Business size, location, sector, market share,

	business priorities.			processes, products.
Institutional	Consumer values, social norms, political environment.	Relationships and interactions with customers, suppliers, peers, community.	Business support.	Legislation, economy, incentives.

Source: Brook Lyndhurst

In identifying the connections between the different factors in the table above, a competency framework could be developed and used in planning initiatives, to consider the motivations a particular type of initiative could capitalise upon, and which barriers it is able to overcome, and to identify other motivations that could also be harnessed and other barriers which may require addressing. We are evaluating what these interconnects are for SMEs in Wales, to develop a competency framework from which a business resource efficiency programme could be built. A 'competency' for your business could mean a measure your business has in place to help become resource efficient, such as:

- Are your staff trained in resource efficiency?
- Does your business set targets, and report and communicate resource efficiency performance?

Further details can be found as at:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

Consultation question IC6:

Do you agree that a competency approach is useful to benchmark performance and underpin any interventions? If not, why not?

Do you agree that a competency framework is a useful approach to underpin and target a potential future business support programme for SMEs in Wales? If not, why not?

Food manufacture

It is proposed that an enhanced programme be developed with this sector in Wales to build on the existing work to extend the scope beyond food and its associated packaging to incorporate all the priority materials, such as chemicals and non packaging paper and card. It will also increase the range of interventions and their associated impact. It is of interest that an estimated 37% of the food waste is generated by businesses operating with the benefit

of an environmental permit, and each permit contains a condition requiring waste minimisation plans.

3.7 Further research: Permitted Industry

A number of other areas are worthy of further investigation in the short term, and they are as follows.

The industry sectors covered in this section operate with the benefit of an Environmental Permit, which sets out conditions including the requirement for a waste minimisation plan. The industries are:

- Manufacture of basic metal and metal products.
- Manufacture of paper and paper products.
- Manufacture of chemicals, chemical products, pharmaceuticals.

A number of food manufacture also operate within the permitting regime, but the waste generation and reduction potential is well understood for this sector, and therefore the focus is on implementation rather than further research.

The true degree of resource efficiency across the breadth of activities covered by these sectors is not known. The cost and supply issues around some feedstock materials, together with the high value of the products, has driven process efficiency to a degree. The Welsh Government would like to work with industry, process efficiency experts and the regulator to better understand the degree to which industry has optimised its processes. It will also review the regulator's role in monitoring the performance of permitted industry.

3.7.1 Regulation on waste producers

The Welsh Government is considering including a number of legislative proposals intended to increase recycling and recovery in its Environment Bill. The proposals currently include landfill and incineration restrictions for certain recyclable and recoverable wastes, mandatory source segregation for recyclable and recoverable wastes; and the extension of the revised Waste Framework Directive separate collection requirement to collect glass, metal, plastic and paper to include card, food and waste.

3.7.2 Further development of the programme

The Welsh Government also proposes to develop the Waste Prevention Programme outlined above through consultation, including focused stakeholder engagement workshops. The workshops will be used to enhance our understanding of the business sectors, to explore barriers and motivations for change, to develop a framework for assessing potential impacts, value for money and feasibility of implementing waste prevention within the sectors.

3.8 Monitoring Progress

3.8.1 Progress against the national target

The proposed waste prevention target for industrial waste is an absolute reduction of 1.4% of the 2007 baseline each year to 2050. Further targets will be developed for our priority industry sectors.

For commercial waste, the proposed target is a reduction of 1.2% of the 2007 baseline each year to 2050.

Data for these targets are currently collected by periodic waste generation surveys, the most recent of which was in 2007. There is a data strategy in place which assesses the means of collecting waste data in the short, medium and long term. There will be a survey of businesses waste generated in 2012, which will report in early 2014.

3.8.2 Indicators of strategic progress

The following indicators are proposed, which will be used to monitor progress at a strategic level, particularly against the objective of decoupling waste generation from economic growth. They have been chosen because they are good indicators and the data is easy to collate at regular intervals.

- Waste generation against Gross Value added (GVA).
- Waste generation against number of employees.

3.8.3 Monitoring progress of individual implementation projects

There is currently a lack of comprehensive evidence on the efficacy of waste prevention measures, so by monitoring our implementation projects we will not only be able to assess progress internally but also contribute to the evidence base in the public domain.

Alongside the development of each implementation project there will be an associated monitoring plan, target or indicator(s) as appropriate. The Welsh Government will collate outputs from the monitoring plans and will report progress in its annual monitoring report, and periodically evaluate and review the impact and value for money.

4 Construction and demolition waste

This section describes the current situation with regard to quantity and type of construction and demolition waste generated in Wales, the factors that affect its generation and the waste prevention policies and initiatives that are in place. It then describes the high level evaluation of waste prevention measures. It provides an outline of the priority areas for action, and the benefits of carrying out waste prevention actions. It explains how the programme's implementation plan will be developed through consultation and stakeholder engagement and finally outlines the proposed indicators, monitoring and progress reporting.

4.1 Assessment of the situation

4.1.1 Quantities and types of construction and demolition waste

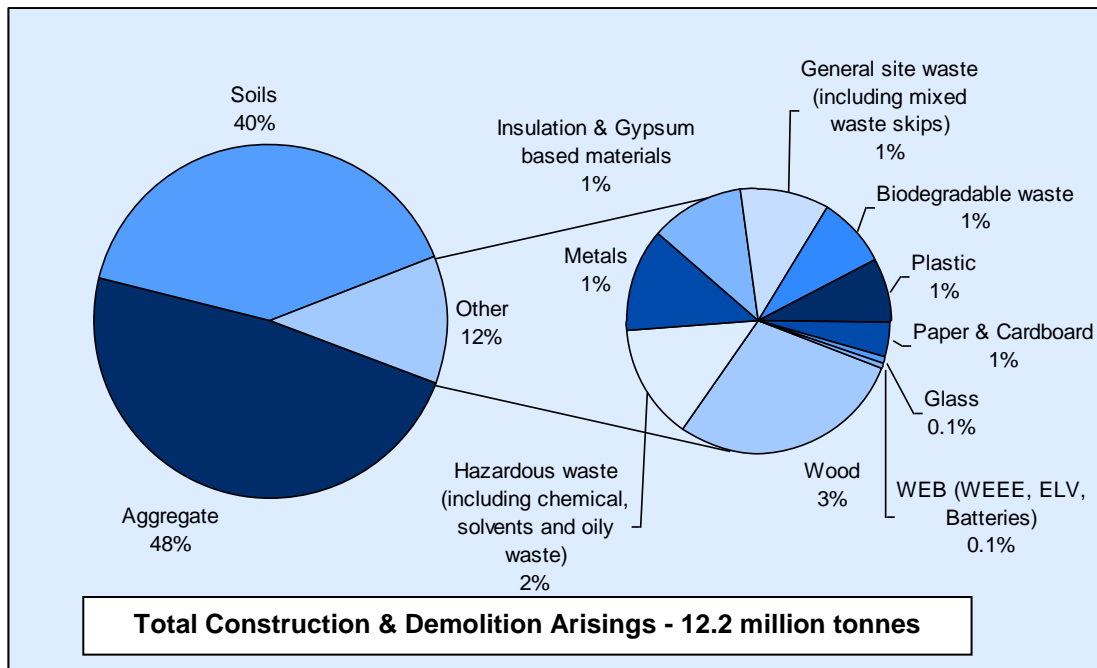
The most recent data for construction and demolition waste generated in Wales comes from a survey of waste generation carried out by Environment Agency Wales on behalf of the Welsh Government, and reflects waste arising in 2005/06.

The total amount of C&D waste arising in Wales in 2005-06 was estimated to be 12.2 million tonnes. The majority of the C&D waste arose from the Civil Engineering sector (8.0 million tonnes). The remaining sub-sectors contribute as follows: Construction (2.2 million tonnes), Demolition (1.4 million tonnes) and General Builders (431,000 tonnes) sectors.

The composition of waste arising from the C&D sector is shown in Figure 10. Aggregates²⁵ (5.856 million tonnes), such as concrete and bricks, and soils (4.897 million tonnes) account for 88% of waste arising from the sector. The remaining 12% consists of a mixture of plastic, wood, glass, metals, hazardous waste, insulation and gypsum, paper and cardboard, waste electrical and electronic equipment, end of life vehicles and batteries, biodegradable and general site waste.

²⁵ The survey defined the term aggregate as follows: Materials used in construction. Usually composed of two types: 1) primary aggregate sources such as sand, gravel, crushed stone, slag, or 2) waste produced by the C&D sector that are recycled or reused. These are termed secondary aggregates, i.e. crushed concrete. Waste Group comprises of concrete (EWC 17 01 01), bricks (EWC 17 01 02), tiles & ceramics (EWC 17 01 03), mixtures of the above (EWC 17 01 07) and bituminous mixtures (EWC 17 03 02).

Figure 10 – The composition of waste arising from the C&D sector in Wales (2005-06)



Source: Environment Agency Wales

The environmental impact²⁶ of products and their resultant waste materials was used to identify those wastes which should be the focus for greatest efforts in waste prevention. For construction and demolition waste, the high impact wastes are:

- Wood.
- Plastic.
- Insulation and gypsum.
- Hazardous waste (primarily contaminated soil).
- Metals.
- Concrete, bricks, tiles and ceramics, bituminous substances²⁷.

4.1.2 The impact of the economy and business activity on waste generation and the benefits of waste prevention

4.1.2.1 Benefits of waste prevention

The materials and construction products contained in an average skip has cost the construction company around £1,300²⁸. This includes products

²⁶ *Ecological Footprint Impact of the Welsh Waste Strategy*, Arup (2009). The Ecological Footprint was used to determine these priorities, but carbon foot printing would deliver similar results.

²⁷ These materials were combined with natural stone and rock in the C&D survey, and subsequently modelled as natural materials in the Ecological Footprinting exercise. However these are high impact materials which should be considered for waste prevention measures.

²⁸ <http://www.wrap.org.uk/content/estimating-waste>

broken in transit and storage, and products that have been over-ordered. WRAP estimates that the financial value of construction products wasted in their production and supply is approximately £250 per tonne, and the cost to builders at the construction site is around £400 per tonne.

A report by the UK Department for Business, Innovation and Skills (BIS) Low Carbon Construction Innovation & Growth Team²⁹ found that 10-15% of the materials sent to a building site end up as waste, so there is considerable opportunity for financial savings in this area.

4.1.2.2 Impact of the economy and business activity on waste

When the C&D waste survey was carried out (in 2006), the C&D sector in Wales had a turnover of £7,156 million³⁰ and employed around 110,000³¹ people, including those self-employed. 80,650 employees worked in 39,335 businesses, of which 38,580 (98%) were micro-businesses employing fewer than 10 employees; the remainder were primarily self employed builders. A significant proportion of construction employees (>60%) were low-skilled labourers³².

The Index of Construction for Wales³³ is a quarterly report produced by the Statistics for Wales team, within the Welsh Government. It shows the short-term movements in the economic output of the construction industry within Wales, which accounts for approximately 7% of the Welsh economy. Figure 11 shows the Index of Construction for Wales and for the UK from Quarter 4 2005 to Quarter 1 2012.

Construction output in Wales fell more steeply during 2008 than the UK average and has remained significantly below the UK average since that time.

²⁹ Low Carbon Construction Innovation & Growth team – Final Report (November 2010)

<http://www.bis.gov.uk/assets/biscore/business-sectors/docs/110-1266-low-carbon-construction-igt-final-report.pdf>

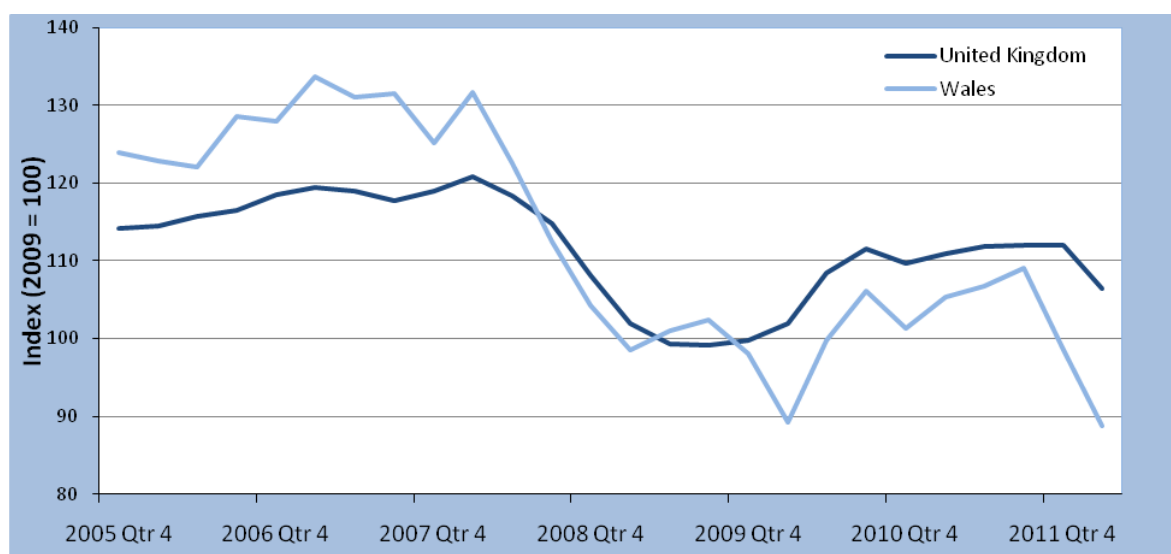
³⁰ StatsWales report on Business Structure Statistics, available from StatsWales website.

³¹ ONS. Workforce jobs by industry (SIC 2007) - seasonally adjusted.

³² LEK Consulting. Construction in the UK Economy: The Benefits of Investment. London: UK Contractors Group, 2009.

³³ Statistics for Wales. Index of production for Wales and Index of Constructon for Wales Quarter 1, 2011.

Figure 11 Index of construction for UK and Wales



Source: Stats Wales

4.1.3 Current policies, targets and initiatives for waste prevention

Sustainable Development is the central organising principle of the Welsh Government, and all policies are developed within this context. In developing initiatives, the social and financial sustainability will be assessed alongside environmental considerations.

Towards Zero Waste established the broad objectives for waste prevention and sustainable waste management. It sets out the goal of achieving “one planet living” by 2050, and the speed of travel required to get there is indicated through waste prevention and recycling targets for each waste stream.

The target for construction and demolition waste proposed in Towards Zero Waste is a reduction of 1.4% every year to 2050 of waste treated off-site based on 2006/7 baseline.

This equates to 58,600 tonnes per annum of construction and demolition waste.

To support the delivery of Towards Zero Waste, the Construction and Demolition Sector Plan was developed to help steer action within the sector and the organisations that support it.

Targeted delivery on waste prevention is funded by the Sustainable Futures directorate of the Welsh Government. The Business Enterprise Technology and Science directorate also support businesses on resource efficiency, environmental issues and sustainable business practices.

4.1.3.1 Funded activity – Sustainable Futures Directorate

To support the delivery of Towards Zero Waste and the associated sector plans, the Welsh Government funds a number of organisations to deliver specific waste prevention initiatives on its behalf.

The main delivery organisation for construction and demolition waste is Constructing Excellence in Wales (CEW), and there is a description of their work on waste prevention below. The Welsh Government support social enterprises, who have the potential to reuse or repair items from the sector. There is also collaboration with other organisations such as Ecodesign Centre Wales where appropriate.

Constructing Excellence in Wales (CEW)

Actions on waste prevention and resource efficiency within the built environment³⁴ sector during 2012/13 undertaken by CEW focused on:

- Aligning carbon reduction and waste prevention/minimisation activity within the sector.
- Increasing the use of surplus materials in construction.
- Increasing the procurement and use of materials efficient construction products in Wales.

Increasing the use of surplus materials in construction:

This programme has developed mechanisms to facilitate the use of surplus materials from one site into use at another site. Activity has centred around the development of two specific projects, a web based platform to enable industry to industry exchange of surplus materials and a feasibility to explore the establishment of a centre to redistribute surplus from one site into community use.

4.1.3.2 Support from BETS

The Welsh Government's Directorate for Business, Enterprise, Technology and Science, and its support for businesses, is described in section 3.

³⁴ The built environment includes construction and demolition, civil engineering, other building activities including refurbishment activities etc.

4.2 Programme Proposals

4.2.1 Priority Areas for Action – an outline programme

The Welsh Government has worked with stakeholders to identify the causes of environmental impact and waste generation within the sector. They reflect each step in the life cycle of a construction product.

The key areas to concentrate on are:-

4.2.1.1 Design of buildings and construction products

The design of buildings and construction products impact heavily on the environmental sustainability of a construction project. One of the areas of work will focus on developing use within the sector of the following principles for design:

- Design for reuse and recovery.
- Design for off-site construction.
- Design for materials optimisation.
- Design for waste efficient procurement.
- Value engineering (for large projects).
- Design for deconstruction and flexibility.

4.2.1.2 Damage to construction products in transit

It is estimated that on average, between 5 and 15% of materials ordered for a construction project will be 'wasted' due to damage retained during transport or incorrect storage etc. This leads to over-ordering by the construction company. Effort will be put into packaging and transport solutions which minimise damage, and the construction industry will be encouraged and provided with clear guidance on the correct storage of materials on site.

4.2.1.3 Over-ordering by builders

This issue may be solved in part by addressing damage issues, but there should also be a re-focus of ordering. There are ordering mechanisms which optimise productivity whilst avoiding waste. These should be promoted for use by construction companies. The public sector can also have a role to play in placing greater emphasis on resource efficiency and waste prevention in its procurement of construction projects, and placing less time pressure on construction projects. Time pressure is often quoted as a reason to over-order - there is often no time within the schedule to wait for additional materials to arrive on site, so to avoid penalties for over running on time the construction company will order excessive quantities of materials at the start of the project.

4.2.1.4 Use of excess products generated on site

There will inevitably be some projects which do not use all of their ordered materials, and for these cases there should be facilities available for companies to deposit these materials for use by others. There are a number of options for this material including take back and sale by the original merchant, bring sites run commercially or by social enterprises (with

associated websites for publicising available stock), and collection hubs for use by charities, social housing landlords or those on low income. There are challenges with this model in that it need to match material donation to demand, but it is promising and could have wide sustainability benefits.

4.2.1.5 Demolition and refurbishment of buildings

There is considerable scope to increase reuse and preparation for reuse of building materials and components that arise during the refurbishment and demolition of buildings. There will be a focus on raising awareness of these opportunities within the sectors and wider to their client base. As prevention is at the top of the waste hierarchy, the first stage in demolishing or refurbishing a building should be an assessment of reuse potential. This mentality is likely to have knock-on effects to improve the environmental sustainability of any resultant waste management options. Public procurement could again have a role to play in encouraging sustainable refurbishment and demolition, and in producing case studies for dissemination.

Consultation Question CD1:

(a) Do you agree with the outline programme on construction and demolition waste? Please give your reasons. (b) Should anything else be included in the programme? Please explain what, and the benefits it would bring.

4.2.2 Evaluation of waste prevention measures

A piece of work has been carried out by AMEC Environment and Infrastructure Ltd (see report published as part of the evidence base), to evaluate a range of measures which could be used to tackle waste prevention. This was a high level piece of work using existing evidence, and was not designed to produce our programme of work in this area but rather to inform the elaboration and implementation of the programme.

The report recommended that the following measures would lead directly to waste being prevented:

- Eco-design.
- Green Private Procurement & supply chain influence.
- Green Public Procurement.
- Resource Exchanges.

Enabling Measures – these support the primary measures:

- Grants and Loans.
- Innovation Vouchers.
- Networks.
- Toolkits.

- Construction Products Register.
- Eco Labelling.
- Guidance documents.
- Regulation.
- Site Waste Management Plans.
- Standards.
- Funded business programmes.
- Measures which should not be relied on in isolation to effect change, but could be used as supporting measures (e.g. information campaigns) or be used to publicise success (e.g. awards):
- Awards.
- Certification.
- Information campaigns.

A full description of all measures is included in Annex A.

4.3 Further development of the programme

The Welsh Government proposes to develop the Waste Prevention Programme for the priority areas identified above through consultation, including a stakeholder engagement workshop for the construction industry. The workshop will be used to enhance our understanding of the sector, to explore barriers and motivations for change, to develop a framework for assessing potential impacts, value for money and feasibility of implementing waste prevention within the sectors.

In order to ensure integration across Government, the programme will be developed and implemented with BETS and our delivery partners.

Consultation Question CD2:

A review of UK wide and international evidence on the waste prevention barriers and measures specific to your sector can be found at:

<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17499>

Do you agree with this evidence for the construction sector in Wales? If not, why not?

What support does your business need to become more resource efficient and why?

4.4 Monitoring Progress

4.4.1 Progress against the national target

The waste prevention target for construction and demolition waste is an absolute reduction of 1.4% every year to 2050 of waste treated off-site based on 2006/7 baseline.

Data for these targets are currently collected by periodic waste generation surveys, the most recent of which reported on waste arising in 2005/06. There is a data strategy in place which assesses the means of collecting waste data in the short, medium and long term. There will be a survey of construction and demolition businesses reporting waste generated in 2012, which will report in early 2014.

4.4.2 Indicators of strategic progress

The following indicators are proposed, which will be used to monitor progress at a strategic level, particularly against the objective of decoupling waste generation from economic growth. They have been chosen because they are good indicators and the data is easy to collate at regular intervals.

- Waste generation per unit GVA.
- Waste generation against number of employees.

4.4.3 Monitoring progress of individual implementation projects

There is currently a lack of comprehensive evidence on the efficacy of waste prevention measures, so by monitoring our implementation projects we will not only be able to assess progress internally, but also contribute to the evidence base in the public domain.

Alongside the development of each implementation project there will be an associated monitoring plan, target or indicator(s) as appropriate. The Welsh Government will collate outputs from the monitoring plans and will report progress in its annual monitoring report.

5 Next Steps

This public consultation will last for 12 weeks, during which time there is opportunity for anybody who has an interest in waste prevention to review the document and respond to the consultation questions.

A number of stakeholder events will be arranged during the consultation period, which will focus on specific priority areas. These events will explore the reason for waste generation, the barriers and motivation to business resource efficiency and waste prevention, and will develop a programme of work for industrial and commercial waste, and for construction and demolition wastes, which will overcome these barriers and result in benefits to businesses, consumers and the environment. The projects may use one, or a basket, of the measures described in Annex A.

The final Waste Prevention Programme will be published before the deadline of 12 December 2013 and will take account of all consultation responses. A response document and a Sustainability Appraisal Post Adoption Statement will accompany the report. We will report to the European Commission that we have produced the programme.

Consultation Question G3:

We have asked a number of specific questions. If you would like to comment on anything else, or raise any issues which you feel we have not fully addressed, please use the space provided.

Annex A Description of measures evaluated for the Waste Prevention Programme

The Waste Framework Directive (article 29) requires Member States to evaluate the usefulness of a range of measures for waste prevention, and suggests some measures which may be evaluated. This Annex describes the measures which the Welsh Government has evaluated to comply with this requirement.

The Waste Prevention Programme will draw on a basket of measures, and the Welsh Government will undertake stakeholder engagement for business wastes during the consultation period to assess the barriers to business for waste prevention, then match the most appropriate measure(s) to the priority sector(s) or waste types.

Below is a description of each measure and our current thinking on how they may be used, together with the UK Research on waste prevention in business sectors, to inform the stakeholder consultation exercise to achieve waste prevention in Wales. The final shape of the plan, and the application of the measures, will be described in the post-consultation, final draft of this programme.

1. The promotion and implementation of eco-design

Eco-design is a strategic way of thinking about the design process, incorporating considerations around the sustainability impacts of product, processes and packaging across the entire life cycle of the product, from extraction of raw materials to disposal at end of life. Its broad ethos ensures that waste prevention and resource use is considered among a wide range of criteria and across the life cycle, thereby ensuring the best sustainability outcomes and avoiding negative unintended consequences.

Eco-design can be used to achieve waste prevention by changing the way that products are designed to reduce the amount and type of material in products (including hazardousness); improve longevity; design for reuse, remanufacture, separation and recycling.

The Welsh Government will promote and encourage the implementation of eco-design among Welsh manufacturing companies serving domestic and international markets. Effort will be targeted to address resource intensive products where there is evidence that it is possible to reduce the products' impact through changes to their design. These companies will benefit commercially from producing market-leading products and in future-proofing, against increases in the cost, and reduction in the availability, of input materials.

The offering of environmentally sustainable products to Welsh consumers and businesses is also a priority of the Welsh Government. Work with retailers will

identify resource intensive products, investigate improvement opportunities, trial the implementation of actions and roll out information. Welsh retailers will be able to work with their suppliers to improve the environmental sustainability of their product ranges, and provide information to customers to enable them to make good purchasing choices.

As eco-design is a broad concept, its implementation typically requires a range of supporting initiatives to encourage its uptake. The Welsh Government will explore a range of initiatives to embed the principles of eco-design, including:

- Research and development.
- Information and awareness raising.
- Guidance documents.
- Toolkits.
- Design standards.
- Product specifications.
- Green procurement.
- Financial support (such as grants, loans and prizes).
- Funded business support.

2. Information, Awareness and Communications : Information campaigns

Communication and engagement plays a key role in the promotion of waste prevention, and is inherently linked to other measures such as eco-design or green procurement, where the awareness campaign plays a role in highlighting opportunities and increasing interest among the target audience.

Communications and engagement can be undertaken in very different ways, and for different purposes; the Welsh Government has considered information campaigns, toolkits and interactive resources, guidance documents, awards and networks/knowledge transfer, as options for providing information about waste prevention.

The behaviour of individuals in the consumption, use and disposal of goods and services, have significant impact on the environmental sustainability of our economy. A behaviour change campaign will be implemented which will focus on food and consumer products with a high environmental impact. Clear and precise messages will be developed which will provide consumers with the necessary information to understand the positive impact that simple changes in behaviour can have on the environment, and which also frequently save consumers money. The Welsh Government will work with local authorities, retailers and suppliers of consumer goods, and other stakeholders to deliver mutually reinforcing messages. Local delivery will support the strategic, national programme to achieve maximum impact.

Basic information or awareness raising campaigns are one of the most widespread of measures for the prevention of waste from businesses. These campaigns often have low implementation costs, but it can be difficult to assess their relative impact by a formal evaluation. There is a heavy reliance

on the audience to read, understand and act on the information provided; the recipient of information may need to access further information, guidance or support in order to make the necessary changes. The Welsh Government will work with local authorities, retailers and other organisations to develop and deliver this information.

The value of information campaigns can be in respect of them supporting other measures. The campaigns can raise general awareness of an issue, and signpost to sources of further support, tools and techniques to address the problem.

The Welsh Government will not rely on basic information campaigns for businesses and construction companies, as there is little evidence that waste prevention can be effected by information alone, but they will be used to raise awareness of specific issues, waste streams or behaviours. Messages will be developed carefully so that they have the greatest impact, and they will be delivered at the appropriate level. The Welsh Government will work with trade bodies and other organisations to develop and deliver this information; the messages will be tested on a sample of the target audience to make sure that they are fit for purpose.

3. Information, Awareness and Communications : Toolkits

Toolkits are an effective way to engender change because they don't only highlight issues by simple messages but are more interactive; at their most sophisticated, they allow the user of the tools to investigate options and develop bespoke solutions. They enable the user to focus on appropriate activities to prevent waste most effectively, and their impact can be very high.

A number of effective tools already exist to address some wastes, and the Welsh Government will maximise their use before developing new tools. An assessment will be made of the existing range of tools to determine whether they address the waste prevention priorities of Welsh businesses and consumers, whether they are user-friendly and accessible, and the potential to incorporate them into a suite of tools targeted at different target audiences, or at addressing specific wastes. Where there is a deficiency or a gap in the existing tools, the Welsh Government will work with resource efficiency and waste prevention experts to develop appropriate tools and associated materials.

Having identified or developed suitable tools, they will be hosted or signposted on publicised, easily accessible websites. An example of such a website would be the Welsh Government's Business Wales site, which provides a central hub for information and support for new and established businesses based in Wales, and those looking to invest in Wales.

4. Information, Awareness and Communications : Guidance documents

Guidance documents can be useful where there is a need to describe waste prevention activities to an audience as simple instructions. They are not as interactive as toolkits, but provide more detailed information than simple awareness raising campaigns. They are useful for tackling cross-sector issues, such as ways of preventing paper waste in office based businesses.

The Waste and Resources Action Programme (WRAP) has reviewed existing guidance documents, including the suite of documents produced under the Envirowise programme. They have consolidated guides and case studies, tools and interactive resources, into one area on their website – the Business Resource Efficiency Hub. The Welsh Government will work with WRAP to regularly review and update this information to ensure that it remains current and fit for purpose.

Similar guidance documents exist for the construction industry, and the Welsh Government will work with its delivery agents to ensure that they are accessible, current and regularly reviewed.

The Welsh Government and regulatory bodies will produce guidance documents so that businesses and individuals are clear about their responsibilities under the regulatory regimes, and to provide practical steps to ensure compliance. This will include guidance on the application of the Waste Hierarchy, which clearly indicates that waste prevention is at the top of the hierarchy.

The content of the Business Wales website and supporting information is being developed, and the Welsh Government will look to maximise the links to existing resources.

5. Information, Awareness and Communications : Awards

A number of awards schemes promote best practice in waste prevention, and can be a relatively inexpensive way of highlighting forward thinking organisations or innovative solutions to waste problems.

The Welsh Government will review its support of awards events and divert resources to measures with greater environmental benefit. Events or awards which highlight organisations or initiatives which have resulted in significant and demonstrable environmental outcomes in priority areas, may receive some support, but not to the detriment of other measures.

6. Information, Awareness and Communications : Networks and Knowledge Transfer

Groups and networks can support knowledge growth and transfer among businesses, and between academic or research organisations and businesses. Typically they cover wider sustainability issues, or waste management, rather than only waste prevention. Some are sector specific

(e.g. North West Construction Knowledge Hub in England), others are cross-sector. Geographic clusters, hubs and forums are valuable networks for exchanging information and ideas, and for gaining industry perspective (including the views of small and medium sized enterprises) on topical issues.

Through its economic renewal programme, the Welsh Government has identified key sectors for the economy of Wales and has set a vision and priorities for each, together with the creation of sector panels made up of business people from the field and academic experts. These panels, and their wider contacts, will be used to share knowledge and gain industry input and feedback.

Resource efficiency support for existing clusters and hubs in Wales could be positive, especially those supporting rural communities, linked to the development of enterprise zones and the existing economic renewal programme and innovation strategy in Wales. The Welsh Government will identify the networks that are widely used by Welsh businesses and third sector organisations, with a focus on products and associated sectors with a high resource intensity or waste production impact. It will work with those existing networks, using them as conduits for knowledge transfer on best practice for waste prevention and resource efficiency.

7. Standards, Environmental Certification and Assessment

Standards are a key initiative for waste prevention, but it is a complex area that can cover many products and processes. An example from within the construction sector is the Welsh Housing Quality Standard, which the Welsh Government intend to 'green' in future revisions, by including specifications for the use of sustainable material sand products for all refurbishments.

Certification schemes aim to standardise high quality sustainability management among business sectors. Examples from the construction sector include BREEAM, LEED and the Code for Sustainable Homes (CSH). The Code has been adopted by the Welsh Government as the preferred tool to assess how sustainable development is being implemented in new homes in Wales. These schemes aim to reduce the environmental impact both from construction and production of construction materials, and the impact due to the operation of buildings.

The most significant standard that may result in waste prevention for other businesses is ISO14001, which ensures the establishment of Environmental Management Systems within organisations. They can be used to implement waste prevention through the encouragement of wider environmental improvements, providing a methodological framework within which to implement waste prevention initiatives.

Product standards can be used to indicate that efforts have been made to improve environmental sustainability. When applied to consumer goods, they are often accompanied by a labelling scheme to influence consumer choice. They are also used by businesses and organisations as criteria in their

procurement of goods, and they can also be used by the suppliers to ensure that their products are used in a specified way (for instance in a way which generates a minimum quantity of waste). Generally, however, standards focus on the quality of the product or on safe design and use.

The Welsh Government will not develop any new standards for waste prevention, but will encourage the uptake of product standards and environmental management systems. The application of management standards such as ISO14006 standard on managing ecodesign will be promoted to suitable businesses.

8. Legislation and regulation (excluding Site Waste Management Plans)

The Welsh Government has powers to make laws on specific devolved issues, including waste management. The drafting, implementation and regulation of legislation can take a lot of time and may be costly. Therefore this is usually an option used only where a market failure has been identified and when other measures have been unsuccessful. Its advantage is that all individuals or businesses covered by the legislation must comply (i.e. there is a level playing field) and when drafted carefully the impact can be very high.

The Welsh Government are proposing two pieces of legislation that have the potential to impact on waste prevention - the Sustainable Development Bill and the Environment Bill. The white paper consulting on proposals for a Sustainable Development Bill is undergoing public consultation from 03 December 2012 until 04 March 2013. The aim of the bill would be to build on the achievements of the Welsh Government in embedding sustainable development as its central organising principle, by extending the duty to all public sector bodies.

The Welsh Government is proposing to introduce new waste management legislation through the Environment Bill that would divert significant quantities of waste from landfill and energy from waste facilities. There may be some impact on waste production as a result of this legislation, although the greatest impact is likely to be the diversion of waste to recycling operations.

Voluntary measures for waste prevention will be monitored and evaluated, and if necessary the Welsh Government will scope options for introducing legislation in the medium to longer term, such as extended producer responsibility and direct and variable charging of waste services.

The Welsh Government will continue to implement European and UK legislation, and will work with regulatory bodies to deliver outcomes for people and the environment.

Planning for waste prevention is a condition of permits for industrial processes operating with the benefit of an Environmental Permit. The Welsh Government is working with Environment Agency Wales to evaluate how the requirements of the Environmental Permitting Regime could be used to take forward waste minimisation within permitted industries in Wales. This may take the form of increased regulatory scrutiny of operators compliance with waste minimisation requirements, coupled with improved guidance or standards for obligated industry.

9. Legislation to mandate Site Waste Management Plans

Site Waste Management Plans (SWMP) legislation is a measure specific to the construction industry and its clients. The purpose of the SWMPs is to help companies in the C&D sector to think and plan to prevent, minimise and recycle the waste being produced and divert waste away from landfill. They are an important tool, which provides a framework that encourages resource efficiency and waste reduction, recycling and re-use both on-site and off-site. The Welsh Government is scoping the consultation proposals for SWMP regulations and has issued a consultation in January 2013.

Through conducting a SWMP, companies can begin to assess the true cost of waste generation. In particular, the introduction of the Landfill tax escalator and the increasing capacity of the waste management industry to recover waste have made it more cost effective to divert waste from going to landfill. The preparation of SWMPs will help the C&D sector achieve a more sustainable approach to waste management by:

- Designing out waste at the design stage, making it easier for companies to work to specification. In turn this will also reduce the potential of waste on-site;
- Improving waste management practices and making it easier to process waste and reduce at source, thus avoiding the high costs of waste disposal;
- Measuring the amount of waste produced (and benchmarking);
- Ensuring compliance with existing waste management legislation, reinforcing the Duty of Care;
- Recycling and re-use of materials, reducing primary demand for primary materials and increasing take-up of secondary / recycled C&D materials;
- Ensuring building materials are managed more efficiently, and
- Ensuring that waste is disposed of legally.

A fees and charging scheme is proposed so that effective enforcement of the legislation is possible.

10. Green Procurement and Supply Chain Initiatives

Green procurement can be used by an organisation as a measure to influence waste in two ways. It has an internal influence, changing the products or services that the organisation procures, and can also have an influence over the procedures and practices of their suppliers and stakeholders.

Green public procurement and the use of Government buying standards and clauses in public sector contracts that encourage waste prevention, is a key measure for driving change in the supply chain. Public sector contracts are very attractive to the private sector suppliers, and therefore the measure is likely to be far reaching. In Wales, Value Wales have developed a Sustainable Procurement Assessment Framework (SPAF) in Wales which will address environmental concerns as part of sustainable public procurement in the round. The Welsh Government will build on this work to ensure that all public sector organisations in Wales are in a position to introduce resource efficiency and waste prevention clauses into their contracts, and will lead by example in its own procurement activities. Monitoring the use of these clauses, and measuring their impact, will build case studies and best practice which can be shared among the public sector. Evidence of successful initiatives will also be used to inform private organisations of the benefits of green procurement.

Green procurement by the private sector has the potential to result in high levels of waste prevention, and by sharing successful procurement clauses with the private sector, the Welsh Government will be supplying businesses with a tool to improve their environmental sustainability.

Supply chain initiatives can be very effective in changing the behaviour of suppliers in line with the expectation of their customer. A number of large retailers and businesses use training, mentoring and guidance as a means of improving the environmental performance of its product portfolio, through influencing change in the procedures and practices of its suppliers. This can be highly effective as it fosters a strong working relationship between supplier and client, resources are often shared, and all parties frequently benefit from the initiative.

The Welsh Government will encourage retailers, businesses and public sector organisations to engage their supply chain to achieve sustainable development outcomes for Wales. These initiatives would support Welsh suppliers, including SMEs, to react to changes in procurement criteria.

11. Reuse and repair networks (including resource exchanges)

Reuse and repair networks are a highly effective mechanism for extending the total life of a material or product once its first owner decides not to retain it. There is potential for third sector involvement in a network, and the measure is generally viewed favourably by businesses and individuals, as there are financial and social benefits to be gained. Repair activities have been in decline in recent years, due in part to the reduction in the cost of new consumer good, but many items that are discarded could be functional with some simple repairs; repair activities should therefore be considered as an integrated part of the network.

Resource or materials exchanges are online or physical fora for the buying and selling of materials and products. There are some general exchanges

such as ebay, and also sector specific exchanges such as Recipro for the construction industry. Free exchanges such as Freecycle also offer opportunities to extend the life of products through reuse.

The Welsh Government is assessing three options for a reuse and repair network. A high level assessment of the environmental, social and financial costs and benefits will inform the final chosen option and supporting initiatives which the Welsh Government will take forward.

The three options are:

1. Continue current level of activity.
2. Meet the current market demand.
3. Meet the maximum feasible/technical potential (which requires work to develop the market beyond current maximum).

12. Products Registers

Registers of products are a popular means of monitoring and controlling the hazardous and critical materials within products, with the aim of phasing out the use of the most environmentally harmful. This is reasonably passive measure, simply providing and updating information on the products and relying on consumers and businesses to act on the information found within the registers.

An example of a product registers for businesses is the Eco-product Directory, produced by the University of Tokyo for the Asian Productivity Organization, which includes over 700 examples of products and services with improved environmental performance. Examples from the UK include the Reusable Packaging Supplier Directory produced by WRAP, and Green Book Live produced by BRE Global with a focus on construction and home improvement products.

The Welsh Government, through its communications and support programmes, will signpost to appropriate registers and directories to encourage the purchase of environmentally sustainable products.

13. Eco-labelling

Eco-labelling is not a specific waste prevention measure but one which reflect environmental sustainability more widely. The aim of eco-labels is to help consumers identify products and services that have a reduced environmental impact throughout their life cycle, from the extraction of raw materials through to production, use and disposal.

There are a large number of eco-labelling schemes and the fragmented landscape is confusing to businesses, buyers and consumers. The confusion is compounded by competing claims on what constitutes a 'green' product, and the existence of two or more competing schemes for the same sector or

product. One of the most established and widely used is the EU Eco-label, which certifies overall low environmental impact.

The Welsh Government does not feel it appropriate to develop a new eco-label for Wales specifically dealing with waste and resource issues. It will, however, monitor international schemes and advise on the most suitable for use by Welsh sectors as necessary. Due to its international use and acceptance, the EU Eco-label will be the preferred eco-label if it is proven to adequately consider waste and resource management issues.

14. Voluntary Agreements

Voluntary agreements are commonly used to encourage waste prevention. They include codes of conduct and commitments by individual companies or collaboratively by groups of companies or industry sectors. There are benefits from whole sector action in that any issues of competitive advantage is eliminated, and there can be a sharing of best practice and case studies among the participating businesses. Certain collective voluntary agreements also have the advantage of flexibility for signatories to choose the most appropriate actions for their businesses to help meet the collective target.

In Wales, the Sustainable Development Charter is a voluntary charter for businesses and organisations operating in Wales. The Charter sets out a vision of a sustainable Wales, but there is no specific reference to waste prevention. However work on resource efficiency and waste prevention by a company or organisation, would be good evidence that they are taking action in line with the vision.

Three examples of UK wide voluntary agreements which the Welsh Government has supported include:

The Courtauld Commitment : This commitment involves retailers and brands producing and selling grocery products. There are three targets on household food waste, packaging waste, and waste within the supply chain.

The Home Improvement Sector Commitment : This is a commitment for companies producing and retailing home improvement products. There are three targets on reducing packaging, reducing the amount of waste disposed of to landfill and helping consumers to recycle.

The Hospitality and Food Services Sector Commitment : This commitment involves a wide range of stakeholders offering food and hospitality, including large contract caterers, hotels, pubs, restaurants and fast food retailers, and B&Bs. There are two targets associated with this commitment , one to reduce food and associated packaging waste, and the other to increase the quantity of food and packaging being recycled, composted or treated by anaerobic digestion.

The Welsh Government will review the UK voluntary agreements to determine their impact in Wales and evaluate what further opportunities there may be to

do more. Where appropriate it will support these initiatives, including renewals of existing commitments and new deals. There is no intention to develop formal voluntary agreements for use only within Wales, but businesses will be encouraged to sign up to the Sustainable Development Charter. The Welsh Government will also work with retailers to carry out further voluntary initiatives in Wales, which will contribute to the waste prevention targets by building on their work within the UK agreements.

15. Funding and financial measures: Funded Business Support Programmes

Funded business support programmes that stimulate direct contact with industry can have huge benefits, and can be a popular delivery mechanism. However one to one business support needs considerable financial and staffing resources. It can also be difficult to convince a business to engage in a programme of support around a narrow subject area such as resource efficiency or waste prevention, as businesses don't immediately see the fit with their core activities.

The Welsh Government will investigate options for the provision of targeted support to businesses that have a high resource intensity or waste production impact. It will also look at opportunity to highlight waste prevention and resource efficiency issues through the general business support that it provides.

16. Funding and financial measures: Grants, Loans and Challenge Funds

Grants, Loans and Challenge Funds are all means of supplying funds directly to businesses in order to facilitate change. They are well supported by industry, although SMEs can find the application process, and the conditions attached to the funding application, difficult.

Grants are generally used to help a company in making a change where there is a clear environmental benefit, but there may be little or no proven financial benefit to the recipient. The recipient carries none of the financial risk in this scenario.

Loans can be useful where significant investment is needed, for instance in capital investment in new plant or in changing existing processes, but where there is demonstrable financial benefits to the recipient from the changes being proposed. Loan systems have an additional benefit to the funding body in that the investment is returned and can be used again by re-investing in the same loan scheme or in support of other initiatives.

A number of initiatives already exist at a European, UK and Wales level for which Welsh businesses are eligible. The Welsh Government will investigate the opportunities that exist for Welsh businesses to access these funds for waste prevention and resource efficiency initiatives, and will put steps in place to promote their uptake in Wales. If the existing opportunities fail to address the priorities, the Welsh Government will investigate the adaptation of existing programmes or the establishment of new programmes. There will be steps in

place to ensure that eligible Welsh organisations are aware of the opportunities offered by these initiatives, and encouraged to engage with them.

17. Funding and financial measures: Innovation Vouchers

Innovation vouchers enable organisations to access specialist support, usually in the form of consultancy advice or academic expertise. There are advantages in this scheme in that it encourages closer working between academia and industry, which benefits both parties and can lead to novel approaches and truly innovative solutions. The system also offers access to advisors who are specialists in their field, providing greater value to the recipient, whereas standard business support requires generalist knowledge.

As with the grants and loans, there are existing schemes which offer opportunities to fund resource efficiency and waste prevention action by organisations. Following the mapping of existing initiatives, if there are gaps the Welsh Government will investigate ways of supplementing them with targeted schemes.

18. Funding and financial measures: Taxes, Charges and Levies

The Silk Commission recently reported its findings on the devolution of fiscal powers. The key recommendations are that certain tax raising powers that meet the policy objectives in devolved areas (such as Land Fill, Stamp Duty and the long haul rate of Air Passenger Duty) should be devolved; and that the Welsh Government should share responsibility for income tax. There is general consensus that the recommendations should be taken forward.

The Welsh Government will investigate the opportunities for improving environmental sustainability (including impact on waste prevention), by obtaining responsibility for the taxes suggested in the report. It will also investigate the opportunities and benefits that could be derived from building on the success of the carrier bag charge, by extending to other products and packaging. There is no intention to introduce any new charges in the short term, but if they were deemed necessary after assessing the impact of voluntary measures, they may be considered in the medium to longer term.

19. The promotion of research and development

The Welsh Government supports the use of research and development to address the challenges faced by people, businesses and organisations in Wales. Its use of evidence to inform and evaluate its policies exemplifies this approach.

The Science Strategy, Science for Wales, outlines the Welsh Government's vision and direction for science in Wales. It introduces a new initiative, Star Wales, comprising funding for new academic stars and three National Research Networks in life sciences and health; low carbon, energy and

environment; and advanced engineering and materials. It also proposes a new innovation strategy, which is currently in development.

The Welsh Government also have a programme of activity linking academics with the business community – Academic Expertise for Business. Activities within the programme include:

- Information provision - Academic Expertise for Business newsletters.
- Collaborative Industrial Research.
- Commercialisation of Academic intellectual property.
- Knowledge Exchange activities.
- Knowledge Transfer Centres.
- Revenue/capital funding for Knowledge Exchange activities.
- Knowledge Transfer Partnerships.

The Welsh Government will investigate the opportunities for addressing Wales' waste and resource efficiency issues through research and development, and to forge greater links between academics with expertise in this area with the businesses that have the greatest potential to reduce their waste and resource use impact.

20. Training and education programmes

Formal and informal training has a role to play in developing the skills that people need to understand and manage resources use and minimise the production of waste. As resources become more expensive and difficult to obtain, businesses will need the skills to adapt and manage this risk. Designers of products and buildings should be equipped to meet future challenges. Our children need to understand the impact that purchasing choices can have on the environment now and in the future.

The infrastructure exists to deliver much of this training, but materials should be made available for use by educators and trainers. There will also be opportunities to use business to business mentoring and supply chain workshops, to train and up-skill our manufacturers and suppliers. The Welsh Government will investigate the opportunities for maximising the use of these training initiatives and where appropriate will develop bespoke workshops or training events, to target high impact waste types or specific business sectors.

21. Support for the development of resource efficient business models

Resource efficient business models can result in significant environmental and economic benefits, and take a number of forms including service systems, hire and leasing, and incentivised return systems. New business models often require strong innovative leadership from within the business, as they are a departure from the traditional model of product manufacture and sale. The rise in the financial value of resources linked to an increase in awareness of sustainability issues, has led to innovation among a limited number of businesses, but there is a need to stimulate greater innovation if the full sustainable development benefits are to be realised.

Products with high environmental impact, including clothing and other textiles, home and workplace furniture, chemicals, and electrical and electronic equipment, have potential in the context of resource efficient business models.

The Welsh Government will identify suitable innovations and will support manufacturers, suppliers and retailers based in Wales to develop business cases, implement changes, trial different approaches and monitor their impact. There will also be a need for changes in consumer and business purchasing behaviour away from traditional to new resource efficient models. The Welsh Government will review the evidence on consumer and business attitudes and expectation around the purchase and use of products, and will include the promotion of new business models in future behaviour change campaigns, and in its work on public and private sector procurement.

A similar suite of supporting initiatives are required to that for eco-design including research and development, guidance and tools, funded business support, financial support, and communication and behaviour change campaigns.

Annex B Policy Framework

EU Strategies and Initiatives relevant to this programme

The following extract from the EC guidelines on waste prevention programmes describe relevant initiatives at the European level.

EU Sustainable Development Strategy (SDS)

One of the key challenges highlighted in the renewed EU SDS of 2006 is to improve the management and avoid the overexploitation of natural resources. Its main targets are to avoid the generation of waste and to enhance the efficient use of natural resources.

The Thematic Strategy on Waste Prevention and Recycling

The Thematic Strategy on the Prevention and Recycling of Waste adopted in 2005 sets as long term goal for the EU to become a recycling society that seeks to avoid waste and uses waste as a resource. To this end, the Strategy sets out key actions to modernize the existing legal framework and to promote waste prevention, reuse and recycling, with waste disposal only as last resort. The Commission has published a report in January 2010 on the implementation of the Strategy highlighting the accomplished progresses and remaining challenges, notably in terms of waste prevention. This report highlights the importance of the use of economic instruments, notably to favour prevention and improved waste management in line with the waste hierarchy.

The Seventh Environment Action Programme (7EAP) – in development

The 6EAP (2002–2012) sets out the EU's key environmental objectives. One of the overall goals is to decouple resource use and waste generation from the rate of the economic growth. The programme mentions an overall reduction in the volumes of waste generated through waste prevention initiatives and a significant reduction in the quantity of waste going to disposal. It further encourages reuse and aims to reduce the level of hazard, giving preference to recovery and especially recycling, making waste disposal as safe as possible, and ensuring that waste for disposal is treated as close as possible to its source. The 7EAP is currently in preparation; one of its objectives is to implement the orientations detailed in the Roadmap on Resource Efficiency.

Action Plan on Sustainable Industrial Policy (SIP) – Sustainable Consumption and Production (SCP)

SCP is about achieving more with less. In July 2008, the European Commission adopted, through coordinated efforts of DG ENV, DG ENTR, and DG TREN, an Action Plan on SIP and on SCP to support the economic competitiveness of the EU industry through improved energy and resource efficiency, as well as an improved capacity to develop appropriate technological solutions.

Resource Efficiency Roadmap

The European Commission has set out a roadmap aimed at transforming Europe's economy into a sustainable one by 2050. The Roadmap to a resource-efficient Europe adopted in September 2011, outlines how a resource efficient growth can be achieved, identifying the economic sectors consuming most resources and suggests tools and indicators to help guide action in the EU and at international level. In particular, the roadmap states that waste has to be regarded as a resource to be fed back into the economy and a higher priority needs to be given to re-use and recycling and incentives for waste prevention and recycling have to be created. In particular, the Roadmap includes the following "aspirational targets" for waste management, to be achieved by 2020: waste generation should be reduced in absolute terms, re-use and recycling should reach the 'maximum feasible' level and be economically attractive, energy recovery should be limited to not recyclable waste and landfilling should be virtually eliminated.

Annex C Analysis of Industrial and Commercial Waste

This annex should be read in conjunction with section 3.1, and provides further detail on the types, quantities and sources of industrial and commercial waste produced in Wales.

Waste generation by business sector

Table C1 shows the sectors covered by the survey, and the quantities of waste generated by the different sectors.

TableC1: Arising of industrial waste in Wales by industry sector (2007)

Industrial Sector	<i>Quantity (thousand tonnes)</i>	<i>Percentage of total industrial waste arising (%)</i>
Manufacture of food products, beverages and tobacco products	478.69	25.2
Manufacture of basic metals, Manufacture of fabricated metal products, except machinery and equipment	391.98	20.7
Electricity, gas, steam and air conditioning supply	391.46	20.6
Manufacture of computer, electronic and optical products, Manufacture of electrical equipment, Manufacture of machinery and equipment, Manufacture of motor vehicles, trailers and semi-trailers, Manufacture of other transport equipment	179.61	9.5
Manufacture of chemicals and chemical products, Manufacture of basic pharmaceutical products and pharmaceutical preparations, Manufacture of rubber and plastic products	114.66	6.0
Manufacture of paper and paper products, Printing and reproduction of recorded media	87.92	4.6
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plating materials	79.58	4.2
Manufacture of other non-metallic mineral products	78.60	4.1
Manufacture of furniture, Other manufacturing, Repair and installation of machinery and equipment,	57.80	3.0
Water collection, treatment and supply	14.89	0.8
Manufacture of coke and refined petroleum products	11.13	0.6
Manufacture of textiles, wearing apparel, leather and related products	9.85	0.5
TOTAL	1896.17	100.0

Source: Survey of Industrial and Commercial Waste in Wales 2007, Environment Agency Wales (2009).

The waste generated by commercial sectors is shown in table C2.

Table C2: Arising of commercial waste in Wales by business sector (2007)

Business Sector	<i>Quantity (thousand tonnes)</i>	<i>Percentage of total industrial waste arising (%)</i>
Wholesale and retail trade; repair of motor vehicles and motorcycles	649.10	38.7
Accommodation and food service activities	315.30	18.8
Education	138.44	8.3
Professional, scientific and technical activities	110.43	6.6
Public administration and defence, compulsory social security	107.16	6.4
Transportation and storage	106.11	6.3
Arts, entertainment and recreation	71.51	4.3
Administrative and support service activities	61.27	3.7
Human health and social work activities	47.92	2.9
Other services	29.27	1.7
Information and communication	23.02	1.4
Financial and insurance activities	12.20	0.7
Real estate activities	5.46	0.3
Total	1677.18	100.0

Source: Survey of Industrial and Commercial Waste in Wales 2007, Environment Agency Wales (2009).

The data on industrial and commercial waste generation was collected by a survey of businesses operating in Wales, and refers to waste produced during 2007. Further details of the methodology, data and precision can be found in the survey report³⁵.

The type and quantity of industrial waste produced in Wales is highly variable and heavily influenced by the sector type – further details are in the survey report and accompanying data tables.

Hazardous waste arising from industry and commerce

The survey of industrial and commercial waste in Wales estimated that 260 thousand tonnes of hazardous waste was generated by industry and commerce during 2007.

³⁵ Survey of Industrial and Commercial Waste in Wales 2007, Environment Agency Wales (2009)

An estimated 109 thousand tonnes of hazardous waste was generated by industry sectors in Wales in 2007, accounting for 5.7% of the total industrial waste stream. Of the hazardous wastes produced by industry, **mineral wastes** account for 42 thousand tonnes with the majority of this waste being classified as “other mineral waste” and generated by the sector Manufacture of basic metals; fabricated metal products, except machinery and equipment. **Chemical wastes** such as used oils, spent solvents and chemical deposits are also significant, accounting for 41 thousand tonnes of hazardous waste generated across a range of sectors. There were also approximately 8,000 tonnes of hazardous industrial sludges and 7,000 tonnes of hazardous metallic waste. The remaining waste types accounted for a combined total of less than 11,000 tonnes of hazardous waste.

An estimated 151 thousand tonnes of hazardous waste was generated by commercial sectors in Wales in 2007, accounting for 9.0% of the total commercial waste stream. Of the hazardous wastes produced by the commercial sectors, hazardous waste contained **within the mixed waste fraction** predominates, accounting for approximately 43 thousand tonnes. **Chemical wastes** (33 thousand tonnes) and **discarded equipment**, such as discarded vehicles, batteries, Waste Electrical and Electronic Equipment (WEEE) and other equipment (24 thousand tonnes), **rubber waste** (17 thousand tonnes), **healthcare and biological wastes** (15 thousand tonnes) and **common sludges** (10 thousand tonnes), are also significant. The remaining waste types accounted for a combined total of less than 9,000 tonnes of hazardous waste.

Details of waste types within the composition: Industrial Waste

550 thousand tonnes of **mineral waste** were generated by industrial sectors in 2007. 387 thousand tonnes of this was combustion waste, with 382 thousand tonnes from energy manufacture and supply, and 5,000 tonnes from the manufacture of other non-metallic mineral products.

350 thousand tonnes of **animal and vegetable wastes** were generated by industrial sectors in 2007, with approximately 348 thousand tonnes of this generated by the industry sector that manufactures food products, beverages and tobacco products. Animal waste of food preparation and products accounted for 257 thousand tonnes, animal and vegetal wastes for 91 thousand tonnes and animal faeces, urine and manure for the remaining 2,000 tonnes.

307 thousand tonnes of **non-metallic wastes** were generated by industrial sectors in Wales in 2007, comprising the following waste types. 112 thousand tonnes of **paper and cardboard waste**, with 54 thousand tonnes generated by the industry sector Manufacture of paper and paper products, Printing and reproduction of recorded media and the remaining 58 thousand tonnes generated across all other industrial sectors. 110 thousand tonnes of **wood waste**, with 64 thousand tonnes generated by the industry sector Manufacture of wood and of products of wood and cork,

except furniture, 15 thousand tonnes from the Manufacture of furniture, and the remainder generated across all other industrial sectors.

46 thousand tonnes of **plastic waste**, with 29 thousand tonnes generated by the industry sectors Manufacture of chemicals and chemical products, Manufacture of basic pharmaceutical products and pharmaceutical preparations, Manufacture of rubber and plastic products. The remaining 17 thousand tonnes was generated across industry sectors.

33 thousand tonnes of **glass waste**, with 28 thousand tonnes generated by the industry sector Manufacture of other non-metallic mineral products. The remaining 5,000 tonnes was generated across industry sectors.

7,000 tonnes of other non-metallic waste including 4,000 tonnes of rubber waste, 3,000 tonnes of textiles, and 160 tonnes of waste containing PCBs.

267 thousand tonnes of **metallic wastes** were generated by industrial sectors in 2007, with 173 thousand tonnes generated by the sectors Manufacture of basic metals, Manufacture of fabricated metal products, except machinery and equipment. An additional 50 thousand tonnes are generated by the sectors Manufacture of computer, electronic and optical products, Manufacture of electrical equipment, Manufacture of machinery and equipment, Manufacture of motor vehicles, trailers and semi-trailers, Manufacture of other transport equipment. The remaining 44 thousand tonnes are generated across the other sectors.

256 thousand tonnes of **mixed ordinary wastes** were generated by industrial sectors in 2007, consisting of 202 thousand tonnes of mixed and undifferentiated materials, 35 thousand tonnes of household or similar waste, and 19 tonnes of sorting residue. Mixed ordinary waste was generated across all industry sectors.

Details of waste types within the composition: Commercial Waste

863 thousand tonnes of **mixed ordinary waste** was generated by commercial business sectors in 2007, consisting of the following:

565 thousand tonnes of **mixed and undifferentiated materials**. The business sectors generating the greatest quantities of mixed and undifferentiated materials were Wholesale and retail trade; repair of motor vehicles and motorcycles (217 thousand tonnes), Accommodation and food service activities (103 thousand tonnes) and Transportation and storage (49 thousand tonnes).

282 thousand tonnes of **household and similar wastes**. The business sectors generating the greatest quantities of household and similar wastes were Accommodation and food service activities (79 thousand tonnes), Education (57 thousand tonnes) and Wholesale and retail trade; repair of motor vehicles and motorcycles (48 thousand tonnes).

16 thousand tonnes of **sorting residues** generated across all business sectors.

557 thousand tonnes of **non-metallic waste** was generated by commercial business sectors in 2007, comprising the following waste types.

383 thousand tonnes of **paper and cardboard waste**, with 198 thousand tonnes generated by the sector Wholesale and retail trade; repair of motor vehicles and motorcycles and the remaining 185 thousand tonnes generated across all other business sectors.

66 thousand tonnes of **glass waste**, with 52 thousand tonnes generated by the Accommodation and food service activities sector and the remainder generated across all other business sectors.

43 thousand tonnes of **plastic waste**, with 31 thousand tonnes generated by the Wholesale and retail trade; repair of motor vehicles and motorcycles sectors and the remainder generated across all other business sectors.

31 thousand tonnes of **rubber waste**, with 24 thousand generated by the Wholesale and retail trade; repair of motor vehicles and motorcycles sectors and the remainder split between Administrative and support services activities and Transportation and storage.

30 thousand tonnes of **wood waste**, with 22 thousand tonnes generated by the Wholesale and retail trade; repair of motor vehicles and motorcycles sectors and the remainder generated across a number of other business sectors.

4,000 tonnes of **other non-metallic wastes** consisting of textiles and waste containing PCBs.