

ZERO WASTE

**SAFEGUARDING SCOTLAND'S RESOURCES:
BLUEPRINT FOR A MORE RESOURCE
EFFICIENT AND CIRCULAR ECONOMY**

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MINISTERIAL FOREWORD



Safeguarding Scotland's Resources is the Scottish Government's programme to reduce waste and create a more productive and circular economy. It forms part of the Government **Zero Waste** agenda and our economic strategy.

If we keep on consuming on current trends we will need to extract 75% more raw materials in the next 25 years. Most of these are finite resources, and even those that can be renewed have limits on what can be used sustainably.

This situation and the path we are on is clearly unsustainable, not just for our environment, but for our future economic prosperity too. So the actions we are committing to in this programme are designed to safeguard our prosperity by helping Scotland use our planet's precious resources more efficiently.

Our focus is on making an immediate impact – driving deep changes to how we produce and consume products and packaging. The centrepiece of this is the **Resource Efficient Scotland** programme, which we established in April. This unique service for businesses and public bodies brings together advice and expertise on using of energy, water, and raw materials more efficiently - making it easier for them to get the help they need.

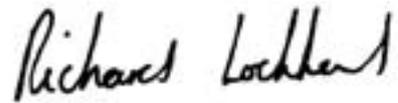
The benefits of taking action today are clear: potentially £2.9bn of savings to businesses and organisations in Scotland from straightforward resource efficiency measures. Eradicating these costs will not only help our economy today, it will make us more competitive in the longer term and increase our resilience to future resource pressures. It is clear to me that the economies which will prosper in the years to come will be those that adapt most quickly and decisively in switching to low carbon and resource efficient systems.

Resource Efficient Scotland will also work strategically, extending collective agreements with key industry sectors and working to change the way we design and use products and services – taking steps to move Scotland towards a **circular economy** where nothing is wasted.

This programme also includes actions around individual behaviours: including promoting product repair and reuse and introducing a charge to encourage carrier bag reuse, with the money raised going to good causes.

We were grateful for the many responses to our consultation. They gave broad support for our proposals and demonstrated the importance of this programme across business and industry.

This programme is an important step, but its success will depend on how businesses and individuals respond to the challenges we face and the opportunities we want to create. In launching this new programme, we want to galvanise people behind our zero waste vision and to work with us to make it a reality.

A handwritten signature in black ink that reads "Richard Lochhead". The signature is written in a cursive style with a large initial 'R'.

Richard Lochhead
Cabinet Secretary for Rural Affairs and the Environment
October 2013

EXECUTIVE SUMMARY

'Safeguarding Scotland's resources - building a more efficient and circular economy' is our programme to reduce waste and deliver economic and environmental benefits – to position Scotland to respond to major global pressures and opportunities.

Global trends



WWF- One planet living

If everyone lived like the average European, we would need **3 planets to live on.....**

...**3 billion new wealthier consumers by 2050, fuelling demand on precious resources.....**



Projected demand growth- 2030

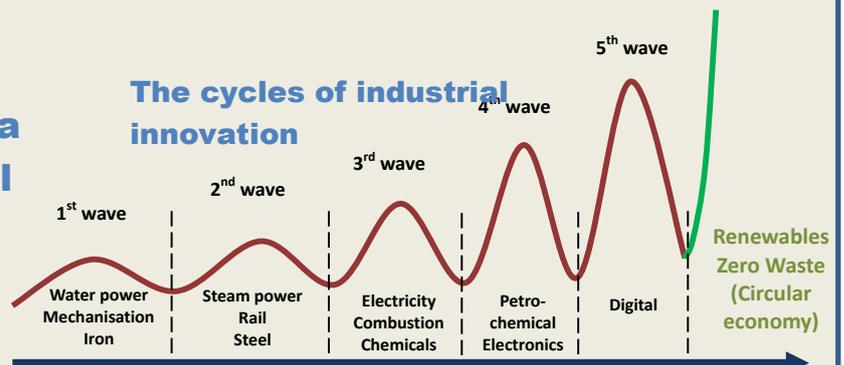
... demand for materials increasing. Will need **75% more raw materials in the next 25 years.**

... a century of commodity price reductions wiped out-outlook **higher price volatility for industry, business and customers**



Zero waste is about **reinventing waste as a resource and financial asset to our economy...**

The cycles of industrial innovation



Our current model of production and consumption is not as efficient as it could be. Few products are designed with reuse in mind, and we produce large quantities of waste materials, energy and water.

This programme aims to make today's model of production and consumption more **resource efficient** (doing more with less, and minimising waste), while also laying the foundations for a more circular model of resource use: **a circular economy**.

In a circular economy, we keep **products** and **materials** in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate new products and materials at the end of each service life. This requires a shift in the traditional production-consumption approach: designing for disassembly or remanufacturing and useable by-products, and designing out wasted energy, materials and pollution.

The **overall aim** of this programme is to prevent waste, increase resource efficiency and enable a shift towards a more circular economy.

Our **target is to reduce Scotland's waste by 7% by 2017** from 2011 levels, and we want to achieve a **15% reduction by 2025**.

Issues on this scale require an economy-wide approach, so the following (including new and continuing activities) are for Zero Waste Scotland, SEPA and the Enterprise Agencies, working closely with business, local authorities and others.

Helping businesses use resources more efficiently:

- Primarily through Resource Efficient Scotland, established earlier this year, bringing together expertise on managing energy, water and materials to make it easier for businesses and organisations access support and make savings (Action 1).
- Enabling collective action in priority sectors through voluntary agreements (Action 2).
- Establishing Resource Efficiency Pledges to build momentum and help Scottish companies take the credit for their actions (Action 3).
- Preventing construction wastes (Action 4).
- Developing information and tools for businesses to help them make resource efficiency savings (Actions 5 and 6).

Stimulating innovation and business opportunities in reuse, refurbishment and remanufacturing:

- Engaging with business and establishing an early adopter network of companies to help share good practice (Action 7).
- Extending a loan fund to support reprocessing and remanufacturing (Action 8).
- Harnessing public procurement to stimulate innovation (Action 9).
- Gathering evidence on the opportunities for Scotland from a deep shift towards a more circular economy (Action 10).

- Increasing the supply and demand for quality reusable items (Action 11).
- Supporting the growth of refurbishment and remanufacturing businesses and investigating the viability of alternative business models/services (Action 12).

Promoting **sustainable product design**:

- including via Resource Efficient Scotland support and facilitating business collaboration through the Product Sustainability Forum (Action 13).

Improving **producer responsibility** and reducing the impacts of **packaging**:

- Looking at future options for producer responsibility systems for end-of life products (Action 14).
- Trialling innovative collection of small waste electronic and electrical equipment to capture valuable materials and expand reuse (Action 15).
- Evaluate the „Recycle and Reward’ pilots of deposit return and reverse vending systems and examine the feasibility of a national deposit-return scheme to reduce litter and improve recycling (Action 16).

Improving **information on materials**:

- Understanding how materials, including critical materials, move through our economy to help business and government identify opportunities and adapt to constraints (Action 17).

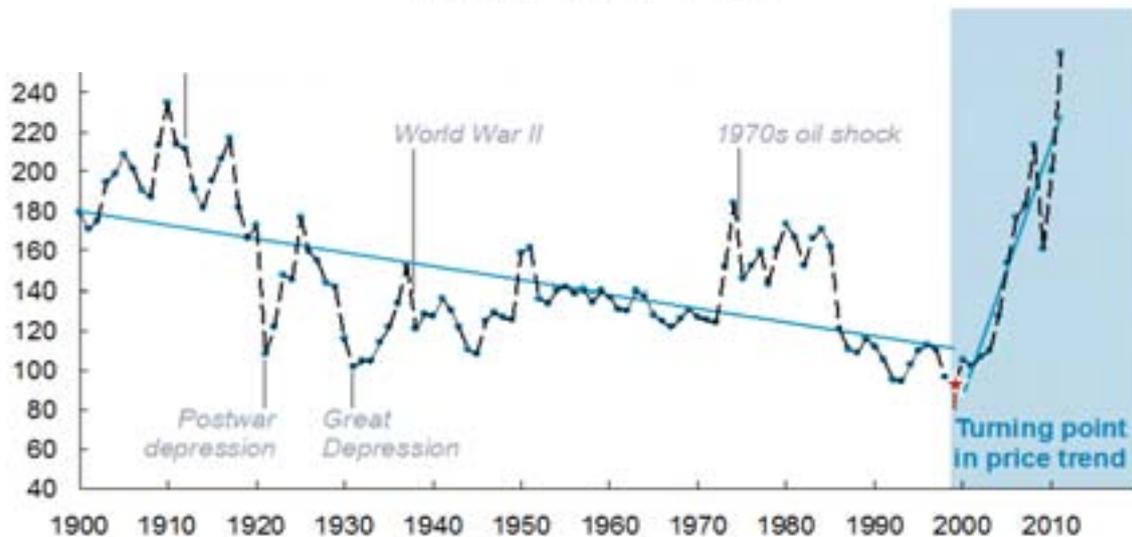
Stimulating a culture of resource efficiency by **influencing behaviour**:

- Targeting public engagement to support this programme. And supporting teachers to equip school leavers with the relevant skills (Action 18).
- Continuing to promote community action to prevent waste (Action 19).
- Requiring retailers to charge for carrier bags from October 2014 to reduce the number of bags used in Scotland – promoting reuse and reducing litter; with a voluntary agreement that net proceeds will be donated to charitable good causes, including for waste and litter prevention (Action 20).

1. INTRODUCTION

We are experiencing a period of intense resource stress, driven by the scale and speed of demand growth from emerging economies and a decade of tight commodity markets. Whether or not resources are actually running out, the outlook is one of supply disruptions, volatile prices, accelerated environmental degradation and rising political tensions and protectionism over access to resources.

McKinsey Commodity Price Index (years 1999 - 2001 = 100)¹



¹ Based on arithmetic average of 4 commodity subindices: food, nonfood agricultural items, metals, and energy; 2011 prices based on average of first 8 months of 2011

Figure 1

Our **Zero Waste Plan** set out a new vision to shape Scotland's approach to waste: wasting as little as possible and recognising that every item and material we use, either natural or manufactured, is a resource which has a value. It is an economic strategy and a resource strategy - not simply a waste strategy.

This new programme fulfils our commitment in the Zero Waste Plan to develop a waste prevention plan aimed at reducing the amount of waste we produce in Scotland, and encouraging reuse wherever possible - meeting our responsibility under the European Waste Framework Directive¹ to produce such a plan by the end of 2013.

¹ <http://ec.europa.eu/environment/waste/framework/>

2. AN ECONOMIC AND ENVIRONMENTAL IMPERATIVE

Our **Government Economic Strategy**² emphasises the importance of resource efficiency to boost the productivity, competitiveness and resilience of our economy. A recent study³ also indicated that straightforward resource efficiency measures could mean more than **£2.9 billion** worth of potential savings to the Scottish economy.

Beyond efficiency savings, there are wider opportunities to stimulate innovation in remanufacturing, and increasingly sophisticated forms of product refurbishment and reuse. The long-term goal is enabling a shift toward designing out wasted materials, energy and pollution, and designing in reassembly or remanufacturing and useable by-products.

Resource Efficiency and a Circular Economy

Resource efficiency means using the least amount of resources (energy, water and materials) to maximum effect - cutting overheads and improving productivity by creating more with less. Helping to use the Earth's limited resources in a sustainable manner while minimising impacts on the environment.

In a **circular economy**, we keep **products** and **materials** in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate new products and materials at the end of each service life.

The circular economy requires a shift in the traditional production-consumption paradigm: design in disassembly or remanufacturing and useable by-products, and design out wasted energy, materials and pollution.

The **circular economy** provides a useful blueprint for using resources more efficiently and productively (Figure 4, page 11).

Figure 2

A series of recent reports by the Ellen MacArthur Foundation on creating **circular economies** concluded that a profound shift in product design and retail could lead to **benefits of \$2 trillion (£1.3 trillion) globally**⁴. Getting our approach right could sizeable new opportunities for innovation, investment and job creation in Scotland, including opportunities to energise manufacturing. Figure 3 summarises the economic opportunities and resource pressures.

² <http://www.scotland.gov.uk/Publications/2011/09/13091128/0>

³ [http://www.wrap.org.uk/sites/files/wrap/Final%20Report%20EVA128_SEI%20\(1\)%20JB%20SC%20JB3.pdf](http://www.wrap.org.uk/sites/files/wrap/Final%20Report%20EVA128_SEI%20(1)%20JB%20SC%20JB3.pdf)

⁴ Toward the circular economy: economic and business rationale for an accelerated transition, volume 1 and 2. <http://www.ellenmacarthurfoundation.org/business/reports>

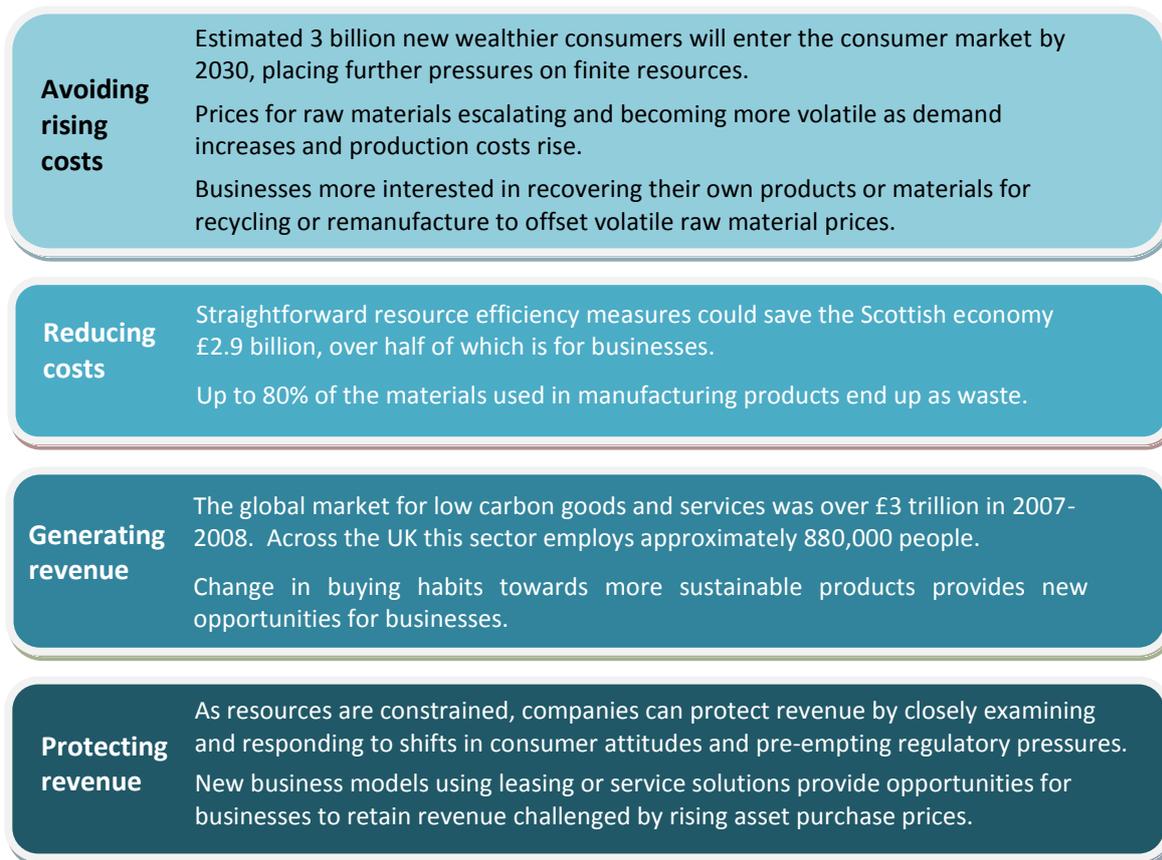


Figure 3 Economic concerns and opportunities

The overall thrust of these proposals is therefore to improve Scotland's economic competitiveness, create new business opportunities and reduce our environmental impact by using our resources more efficiently, while laying the foundations for a more circular model of resource use (Figure 3).

Issues on this scale require an economy-wide approach, so this programme identifies actions for Zero Waste Scotland, SEPA and the Enterprise Agencies, working closely with business, local authorities and others.

3. MORE THAN JUST MATERIALS

Using resources more efficiently and productively isn't simply about materials; many of the most effective actions to prevent waste also deliver benefits for recycling or energy efficiency.

This programme will therefore complement existing measures to boost recycling and our **Energy Efficiency Action Plan**⁵ and our District Heating Action Plan⁶.

Harnessing the resource value of waste will also help Scotland's transition toward a low carbon economy⁷. For example, preventing glass or plastic waste can be four times more beneficial (in carbon terms) than recycling.

⁵ <http://www.scotland.gov.uk/Publications/2010/10/07142301/0>

⁶ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/resources/Publications/DHAP>

4. OUR AIM

This programme will support our Zero Waste and sustainable economic growth priorities by:

Preventing waste, increasing resource efficiency and enabling a shift towards a more circular economy

To support this overall aim, the programme will focus on the following objectives:

- helping businesses use resources more efficiently (**Actions 1-6**);
- stimulating innovation and business opportunities in the reuse, refurbishment and remanufacturing sectors (**Actions 7-12**);
- promoting sustainable product design (**Action 13**);
- improving Producer Responsibility and reducing the impacts of packaging (**Actions 14-16**);
- improving access to information on materials and their significance to our economy or to businesses (**Action 17**);
- stimulating a culture of resource efficiency, influencing behaviour through awareness raising, education and skills development (**Actions 18-20**).

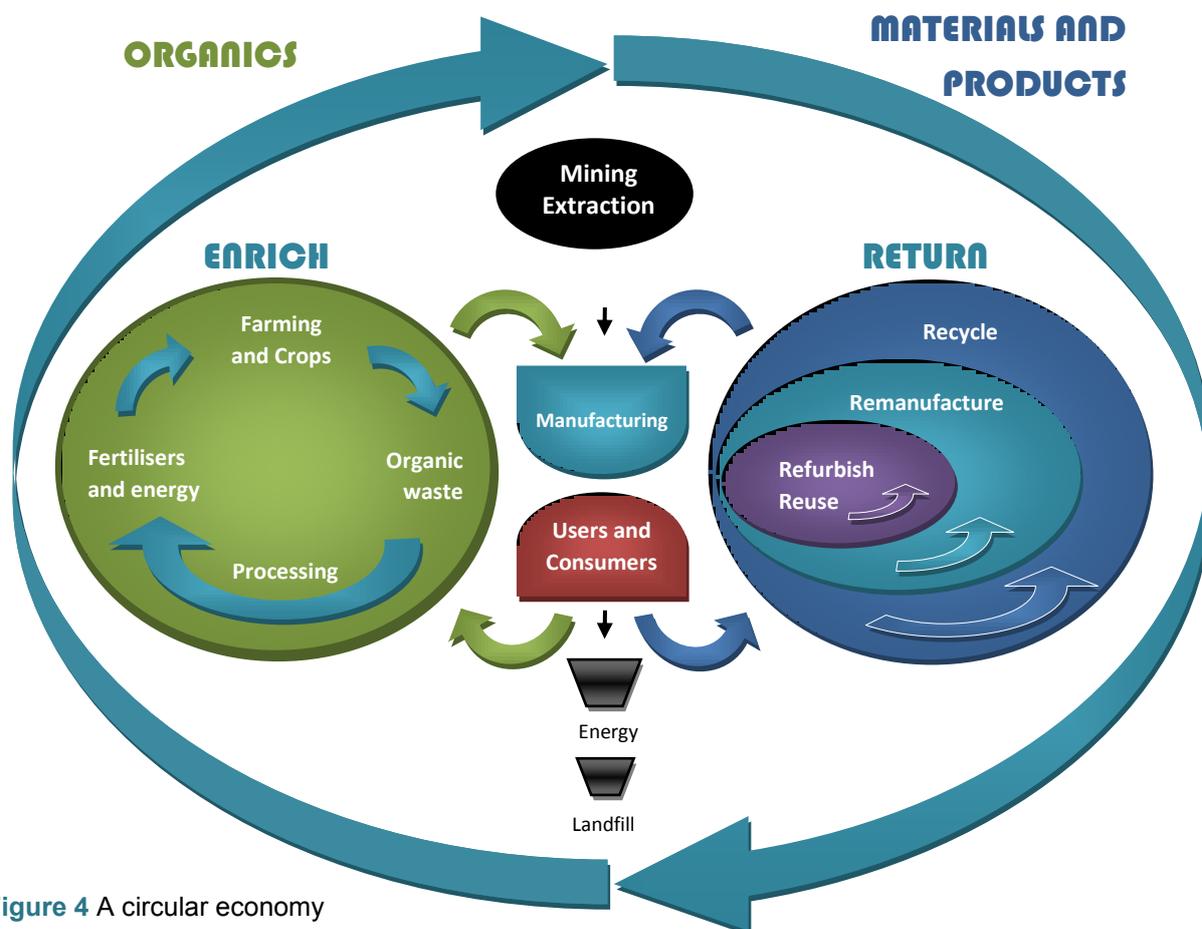


Figure 4 A circular economy

⁷ <http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/lowcarbon/lces>

5. MEASURING SUCCESS

Our overall measure of success will be a reduction in the weight of waste generated, referred to as waste arising.

Our target is to reduce waste arising by 7% by 2017 against the 2011 baseline of 13.24 million tonnes. Our longer term vision is to achieve a 15% reduction by 2025.

We will also monitor the progress of individual actions and track key indicators to judge the success of the programme as a whole, including:

- The **total amount of waste produced by sectors** - household; commerce and industry; and construction and demolition.
- The **amount of waste produced by sectors per unit of GVA.**
- The **carbon impact of waste** - the whole-life impacts of waste including the benefits of prevention and recycling.

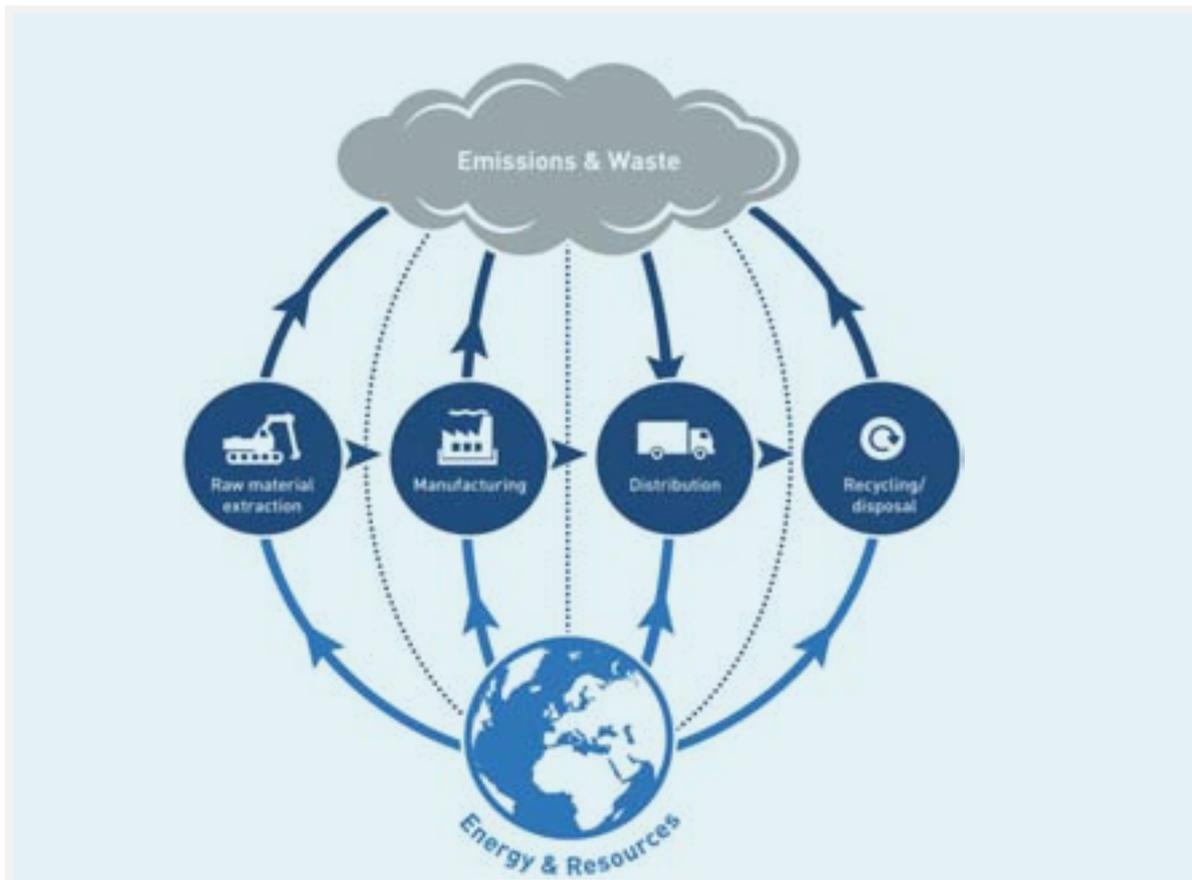


Figure 5 The carbon impact of waste

We will also investigate other measures of resource use, including the **total amount of raw materials used**, and the **amount of raw materials used per unit of gross domestic product or gross value added**. This further work on measures will include establishing better information on the levels of Reuse, Repair, and Remanufacturing within the economy. These will help us to understand the success of this programme, and the wider Zero Waste Plan, in decoupling waste from economic growth.

6. OUR ACTIONS

6.1 BUSINESS RESOURCE EFFICIENCY

Objective

To help organisations and businesses across Scotland increase their competitiveness and sustainability by using raw materials, water and energy more efficiently, and generating less waste.

Why this is a priority

The estimated £2.9 billion potential savings to the Scottish economy from resource efficiency measures can help drive productivity gains and give Scottish companies a competitive advantage in the global market place.

Action 1 – Resource Efficient Scotland

Our new Resource Efficient Scotland programme brings together expertise on managing energy, water and materials costs. The new service makes it easier for businesses and organisations to access practical, on-the-ground support to use resources more efficiently making savings and improving competitiveness.

Its comprehensive advice and support service includes a helpline, web based tools, training materials, workshops and one to one on-site support.

Alongside this core service, Resource Efficient Scotland provides sector-focused activities targeting the biggest potential savings. It will help public bodies, including the Scottish Government, lead by example on resource efficiency.

And it is working to support business innovation in design of products and services for a low carbon, circular economy.

Action 2 - Voluntary agreements with business

We will work to ensure that UK wide voluntary agreements with key business sectors work well for Scotland. Existing agreements include the Courtauld Commitment⁸ (supermarkets and major food & drink brands); Hospitality and Food Service Agreement⁹; and the Federation House Commitment¹⁰ (food & drink manufacturers).

Through Resource Efficient Scotland, we will monitor and report on progress, work to extend existing agreements to encompass energy & water use, and actively pursue new agreements.

⁸ <http://www.wrap.org.uk/content/courtauld-commitment-3>

⁹ <http://www.wrap.org.uk/content/hospitality-and-food-service-agreement-3>

¹⁰ <http://www.fhc2020.co.uk/fhc/cms/>

Action 3 – Resource Efficiency Pledge

We want to see proactive companies in Scotland gain recognition through pledging their commitment to zero waste and resource efficiency.

Resource Efficient Scotland will develop a new public pledge system with a menu of actions, such as waste prevention planning, energy monitoring, staff training, adopting sustainable procurement, and reporting on achievements. Companies working with Resource Efficient Scotland will be encouraged to sign up and will be supported to take action.

Action 4 – Preventing construction wastes

Construction and demolition waste represents around 44% of total waste produced in Scotland¹¹. It is estimated that the construction industry could save over £170 million a year¹² through the consistent use of Site Waste Management Plans to reduce the waste created during projects.

Resource Efficient Scotland will work with the construction industry to encourage prevention, reuse and recycling of construction wastes through:

- seeking collective action on resource efficiency with the sector;
- promoting good practice across the construction industry, including the use of Site Waste Management Plans;
- building on evaluation of Site Waste Management Planning to develop and trial Resource Management Plans to encompass the design stage of construction and the wider benefits of resource efficiency.

Action 5- Better information for businesses

Resource Efficient Scotland and SEPA will work to develop data and tools to help businesses become more resource efficient:

- We are committed to moving to electronic waste data systems which will improve data quality. SEPA is committed to supporting and promoting the use of the Electronic Duty of Care system being developed for the UK by the Environment Agency.
- SEPA and Resource Efficient Scotland will develop tools for businesses to assess their resource use.

Action 6 - Resource Utilisation Assessments

SEPA will develop the use of Resource Utilisation Assessments for businesses with the greatest potential environmental impact. For example, through guidance, training and focus on resource utilisation during inspections - in line with the principles of better regulation.

¹¹http://www.sepa.org.uk/waste/waste_data/commercial_industrial_waste/construction_demolition.aspx

¹²<http://www.zerowastescotland.org.uk/content/scottish-companies-could-save-%C2%A3236-billion-year-reducing-waste-costs>

6.2 STIMULATING INNOVATION AND BUSINESS OPPORTUNITIES

Objective

To create the business and market conditions so that innovative business can harness reuse, refurbishment and remanufacturing opportunities.

Why this is important

Significant expansion in the levels of remanufacturing, and sophisticated reuse or refurbishment services, have the potential to transform our economy. The remanufacturing sector has expanded by 15% in North America in the last 2 years, and generates \$11.7 billion in exports¹³. In the UK the total value of remanufacturing activities has been estimated at £2.4 billion with associated carbon savings of 10 million tonnes CO₂ equivalents per annum¹⁴.

Action 7- Business engagement and an early adopter network

We will work with the enterprise agencies and Resource Efficient Scotland to encourage the development of an early adopter network of companies to help share good practice. The emphasis will be on companies that have adopted innovative approaches to resource efficiency and are operating or introducing business models to enable them to retain ownership or control of their products.

This will be complimented by a wide programme of business engagement on the opportunities and barriers, to support the transition to a more circular economy which will inform development of future policy and business support.

Action 8- A loan fund to support reprocessing and remanufacturing

In 2012 we launched the Scottish Plastics Loan Fund, run by Scottish Enterprise with the support of Zero Waste Scotland, to encourage investment in recycling and reprocessing plastics. We are in the process of increasing the fund to £3.8 million and considering widening its scope to support reprocessing and remanufacturing of other materials and products, such as textiles and Waste Electrical and Electronic Equipment.

Action 9 - Public procurement to stimulate innovation

We will gather evidence to support the smarter use of public procurement to encourage innovation and growth in refurbishment and remanufacturing. Our forthcoming Procurement Reform Bill will include powers to enable this type of action.

This is complements existing actions to:

- roll out sustainable procurement training to over 300 key buyers across the wider public sector in Scotland;
- embedding sustainable procurement and zero waste advice and support into The Procurement Journey (best practice guidance);
- a Resource Efficient Scotland-led project to improve environmental performance across the Scottish Government Estate.

¹³ <http://www.usitc.gov/publications/332/pub4356.pdf>

¹⁴ [A snapshot of the UK Remanufacturing Industry - Centre for Reuse and Remanufacturing 2009](#)

Action 10 - Evidence gathering

We will work with the enterprise agencies, Zero Waste Scotland, SEPA and others to better understand the full breadth of the opportunities from a deep shift towards a more circular economy - including more sustainable product design, adoption of new business models, and a significant expansion in the levels of remanufacturing and reuse services. This work will inform future policies, market development and business support work.

Action 11 – Reuse supply and demand

Zero Waste Scotland will work to increase the supply and demand for quality reusable items by:

- Working with Local Authorities and others to support pilots of collection systems for reusable items, including recycling centres and kerbside.
- Working with businesses to identify and stimulate development in refurbishment and repair infrastructure in Scotland'.
- Working with the community sector to further develop the Revolve network and reuse shops.
- Continuing to support the Reuse Hotline helping people donate items for reuse.
- Raising awareness of households and businesses of how they can source reused items.

Action 12 – Remanufacturing and new business models

Resource Efficient Scotland will support the growth of Scotland's refurbishment and remanufacturing businesses by:

- Investigating the role of standards and accreditation in ensuring consumer and business confidence in remanufactured products - helping develop new systems where required.
- Supporting businesses to develop new approaches to retaining ownership or control over their products, so that they are returned without creating waste.
- Investigating the viability of alternative business models for consumer products, which could help replace some purchases with leasing or hiring (leading to products being returned to the manufacturer).
- Investigating the provision of a knowledge hub or centre of excellence to support the emerging remanufacturing sector in Scotland.
- SEPA will ensure environmental regulations are applied consistently to create a level playing field and support innovation in the remanufacturing sector. SEPA will develop guidance on the regulatory requirements for remanufacturing activities.

6.3 SUSTAINABLE PRODUCT DESIGN

Objective

To stimulate innovation in the design and manufacture of products and packaging - to engender a shift towards design for longevity, reassembly or remanufacturing and useable by-products, designing out wasted energy, materials and pollution.

Why this is important

Around 80% of a product’s lifetime environmental impact is decided by its design. Design determines the quantity of different materials used and how easily products can be reused, repaired or recycled. As pressures on global resources increase, it is becoming clear that certain materials are of critical importance to Scotland’s economy^{15 16}.

While many products are designed and manufactured outside Scotland, we will work with Scottish manufacturers, design professions, and educators to raise awareness of this issue and “cradle to cradle” design opportunities. We will also work to raise public understanding of the importance of key resources to help consumers make more informed choices.

Action 13 – Sustainable design
<p>We will promote sustainable design of products, including:</p> <ul style="list-style-type: none">• Resource Efficient Scotland support for business innovation in design of products for a low carbon, circular economy through guidance, training and events;• supporting the work of the Product Sustainability Forum¹⁷ helping businesses and others work together to improve the environmental performance of products;• promoting the case for sustainable design in EU legislation and policies, such as the EcoDesign Directive¹⁸ and the Eco-innovation Action Plan¹⁹;• looking at further and higher education provision on sustainable design, both through the Green Growth Group and through research by Strategic Forum partners into Low Carbon Opportunities and Skills Implications;• Scottish Government, Zero Waste Scotland, SEPA and the Enterprise Agencies will work together to examine what more can be done to increase the resource efficiency of products made or sold in Scotland.

¹⁵http://www.sepa.org.uk/science_and_research/idoc.ashx?docid=d55199dc-1ba7-4297-9365-3ddb40e0a078&version=-1

¹⁶<http://scotland.gov.uk/Publications/2009/08/18161245/0>

¹⁷<http://www.wrap.org.uk/content/product-sustainability-forum>

¹⁸http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/index_en.htm

¹⁹http://ec.europa.eu/environment/ecoap/about-action-plan/objectives-methodology/7-priority-actions/index_en.htm

6.4 PRODUCER RESPONSIBILITY AND PACKAGING

Objective

To monitor and review producer responsibility to ensure that the systems support a deep transition in resource management across all actors in the supply chain. And to support innovation in the collection of packaging, focusing initially on deposit return and reverse vending schemes.

Why this is important

Legislation across the EU requires producers and retailers in some sectors to take responsibility for their products at the end of their use, by promoting the recycling and recovery of:

- packaging,
- waste electrical and electronic equipment (WEEE),
- end-of-life motor vehicles, and
- batteries.

These schemes have been effective in increasing recycling rates, although they do not place as much emphasis on reducing resource use or on reuse.

Many countries run **deposit return schemes** which regularly achieve return rates of over 80%. Consumers pay a deposit which is returned when they return the item for reuse or recycling. Alternatively, „reverse vending’ schemes can provide an incentive for recycling certain types of containers, e.g. through money-off vouchers. Schemes of this kind directly cut the use of virgin resources by improving the level and quality of recycling and sometimes reuse. They can also have a significant impact on litter.

Action 14 – Producer responsibility for end-of-life products

To support the development of future action on producer responsibility Zero Waste Scotland will:

- engage with retailers, manufacturers and others about how the existing UK-wide producer responsibility scheme for packaging might be cost-effectively improved to better support recycling in Scotland and explore possible alternative approaches to achieve similar outcomes;
- look at potential to introduce producer responsibility measures for other key products considering the social, environmental and economic evidence for such actions.

Action 15 – Small waste electronic and electrical equipment (WEEE)

Small **waste electronic and electrical items** contain valuable but potentially hazardous materials and can also have a high reuse value. Zero Waste Scotland and WRAP will work with Local Authorities and businesses to undertake collection trials for small WEEE, using reverse logistics and collection hubs to inform future activities.

Action 16 – Recycle and Reward schemes

Zero Waste Scotland will evaluate its „Recycle and Reward’ pilots of deposit-return and reverse vending systems

Building on the results of the pilots, the Scottish Government will work with local government, businesses and industry to examine the feasibility of a national deposit-return scheme to reduce the litter and accelerate Scotland’s progress towards becoming a zero waste nation.

6.5 UNDERSTANDING THE MOVEMENT OF MATERIALS IN OUR ECONOMY

Objective

To develop a better understanding of the movement of materials through our economy to help government, its agencies and businesses maximise the value of materials and maintain access to those materials that are critical to our economy, industry and manufacturing.

Why this is important

Many products made and consumed in Scotland contain **critical materials** - materials which are critical to the products we rely on which may face supply risks due to scarcity or significant price rises. A recent report identified a list of 12 materials critical to the Scottish Economy²⁰, including rare earth elements, indium, lithium, copper, phosphorous and tin.

Along with these risks, come opportunities: to develop substitute materials; to design products so that materials can eventually be recovered; and to develop collection, sorting and processing infrastructure for recovery. For example, it is estimated that the UK’s electrical equipment waste over the last decade contained around £5billion gold, £1billion silver and £1billion palladium, very little of which is recovered.

Action 17 – Tracking materials

Scottish Government, Scottish Enterprise, Highlands & Islands Enterprise, SEPA and Zero Waste Scotland will work together to better understand the movement of materials, including critical materials, through our economy. Access to this information will help industry and businesses adapt early to any potential constraints and opportunities. This will build on the data work already underway as part of the Waste Data Strategy and include research to identify the materials that are critical to Scotland’s key industry sectors.

²⁰ [“Raw Materials Critical to the Scottish Economy”](#) (2011), SNIFFER

6.6 CREATING A CULTURE OF RESOURCE EFFICIENCY

Objective

To bring about a culture of resource efficiency at home and at work - influencing behaviour through awareness raising, education and skills development.

Why this is important

We will all need to make changes to how we use and reuse materials, both at home and at work if we are to achieve the step-change in resource efficiency we are targeting. All of the actions in this document have a role, but engagement, making change easy, and maximising the use of local authority collections are also crucial if more efficient use of resources is to become part of everyday life - a social norm.

Action 18 – Public engagement and education

Scottish Government and Zero Waste Scotland will target our engagement and communications to support this programme, in line with the overall approach set out in Low Carbon Scotland: A Behaviours Framework²¹ - in particular behaviours on waste prevention, reuse and recycling.

We and Zero Waste Scotland will work with Education Scotland to maximise opportunities for learning and teaching about resource efficiency and the circular economy within Curriculum for Excellence and lifelong learning - building effective partnership working with Eco-Schools Scotland, John Muir Trust, Learning for Sustainability Scotland and others supporting sustainable development education.

Zero Waste Scotland and Education Scotland are also working with the **Ellen MacArthur Foundation** to build a strategic agenda for change and support professional learning programmes to ensure that practitioners have the skills, knowledge and confidence to develop effective learning and teaching approaches in relation to the circular economy.

Action 19 – Community action

Communities play a vital role in leading change. We will continue to promote community action to prevent waste through:

- Climate Challenge Fund support for community-led waste prevention to help reduce carbon emissions.
- Zero Waste Scotland's Volunteer and Community Advocate programme;
- Zero Waste Scotland support for intensive approaches to community engagement, evaluating their impacts and sharing outcomes to inform future priorities. This will include a community-led demonstration project to explore how intensive engagement in a defined area can impact on recycling and waste prevention.

Action 20 – Carrier Bags

We will require retailers to charge for carrier bags from October 2014 to reduce the number of bags used in Scotland – promoting reuse and reducing litter. We will negotiate a voluntary agreement that net proceeds will be donated to good causes, a proportion of which will be for waste and litter prevention.

²¹ <http://www.scotland.gov.uk/Publications/2013/03/8172>

ANNEX 1 - DEFINITIONS

Waste Prevention – defined in European Law as:

Measures taken before a substance material or product has become waste, that reduce:

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

Zero Waste – a concept that relates to waste materials, and encompasses waste prevention, reuse, remanufacturing, recycling, and energy recovery. The focus is on reducing waste however also obtaining the maximum value from waste materials generated so that they can be usefully returned to the economy.

Circular Economy – again relates primarily to materials, and provides an alternative to the current linear model of consumption where virgin materials are extracted, used in manufacturing before being discarded as waste. It includes activities which contribute to zero waste, but there is greater focus is on the flow and ownership of materials in the economy, in order to keep materials in use for as long as possible. A circular economy also requires that water and energy come from renewable resources and that biological materials, such as food waste, are returned to the soil.

Resource Efficiency – wider than just materials, and also covers efficient use of water and energy. The concept is about using the least amount of resources (energy, water and materials) to maximum effect - cutting overheads and improving productivity by creating more with less.

Sustainable Resource Use – covers all environmental resources, encompassing where resources come from and whether they are being used sustainably – i.e. the use of resource today does not limit the use of resources in the future. For natural resources, this means ensuring our use of resources is within the Earth's capacity to renew. Extraction and use of materials is conducted as efficiently as possible and products are reused to their maximum potential.



The Scottish
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Riaghaltas na h-Alba

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