



**Introduction to Resource and
Waste Management:**
Scottish Seafood Processing



Introduction to Resource and Waste Management: Scottish Seafood Processing

Businesses have adopted a linear 'take-make-use-throw away' approach in traditional manufacturing. However, the importance of transitioning to a so-called 'circular economy' is increasingly recognised - one where raw material inputs are responsibly sourced and minimised, and subsequent waste losses as well as environmental impacts, are minimised. This is seen as increasingly important if global challenges such as climate change and finite resource depletion are to be addressed.

The seafood processing sector uses large volumes of resources in their day-to-day business activities; from raw materials and packaging, through to water and energy. Making improvements towards more sustainable resources can help business reduce operating costs and improve profitability, as well as build supply chain resilience in a rapidly changing marketplace. At the same time, this will help business to reduce its environmental impact (e.g. climate change), improve its standing in the community and cushion operations where environmental legislation is concerned.

In Scotland, the Government has introduced a [Zero-Waste Plan](#) requiring a new approach by local authorities, households, consumers and businesses to reduce and manage waste across the country. To achieve this, significant action needs to be taken to more sustainably manage the use of resources.

For business, the [Waste \(Scotland\) Regulations 2012](#) came into force on the 1st January 2014. These require all businesses and organisations to separate key materials – plastic, glass, metals, paper and card for recycling; while most food businesses are also required to separate food waste for collection. In 2016, the Scottish Government (SG) published '[Making Things Last - A Circular Economy Strategy for Scotland](#)' which reaffirmed its commitment to the following targets:

- By 2025:**
 - To recycle 70% of all waste
 - Reducing waste by 15%
 - Reduce food waste by 33%

- By 2032:**
 - Meet 50% of energy heat demand from renewable sources
 - Energy efficiency as a national infrastructure priority
 - Reduce Scotland's greenhouse gas emissions by 66%

The Waste (Scotland) Regulations 2012 set out a number of provisions aimed at helping Scotland move toward the objectives and targets set out in its Zero Waste Plan, and help transition toward a circular economy. These provisions include a ban on biodegradable municipal waste going to landfill from the 1st January 2021 which is being implemented by amending the [Landfill \(Scotland\) Regulations 2003](#).

Every business should consider how they can contribute and help meet these ambitious targets. This guidance aims to highlight how seafood businesses can start to take some simple steps to improve their operating efficiency and improve their environmental credentials. Focussing on these issues and taking simple steps will help make seafood processors more environmentally proactive in the Scottish food and drink manufacturing sector.

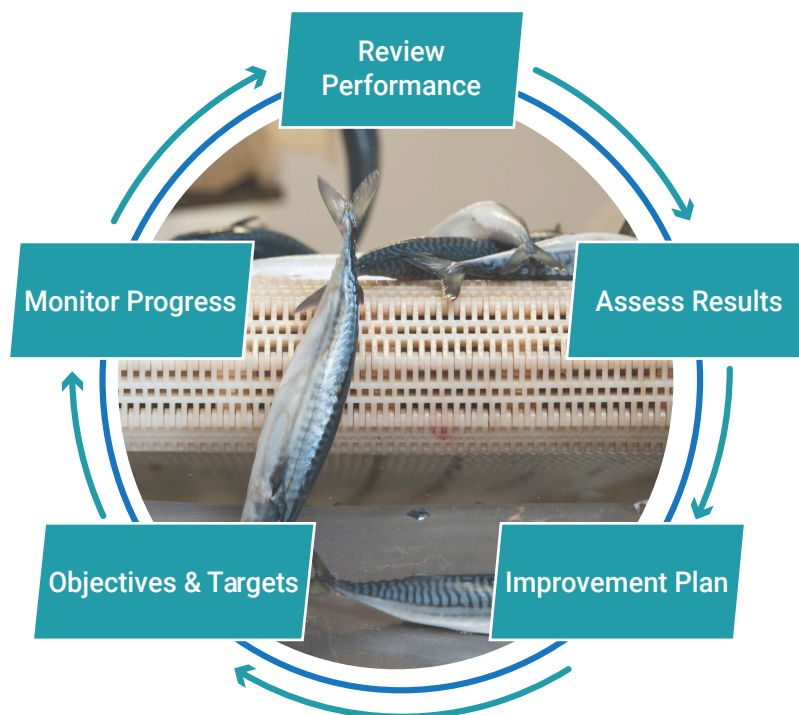
Operating Efficiency

To make improvements in the use of resources, seafood manufacturers should consider the way they source, use and store materials; and understand how and where waste occurs in their processing and wider supply chains, and be able to quantify this. The easiest way to do this is by setting up a systematic step-by-step approach to improve operating efficiency.

This will require senior business commitment and a willingness to deliver these environmental improvements. A good starting point is to appoint someone within the business to be responsible for improving resource efficiency and driving the improvement programme forward.

Firstly, businesses need to understand their costs for raw materials (e.g. water and energy) and waste management services, to identify areas where savings can be made and what actions need to be taken to reduce waste and costs.

To do this, seafood processors can take some simple steps to implement measures which will improve resource efficiency and prevent, or reduce, waste.

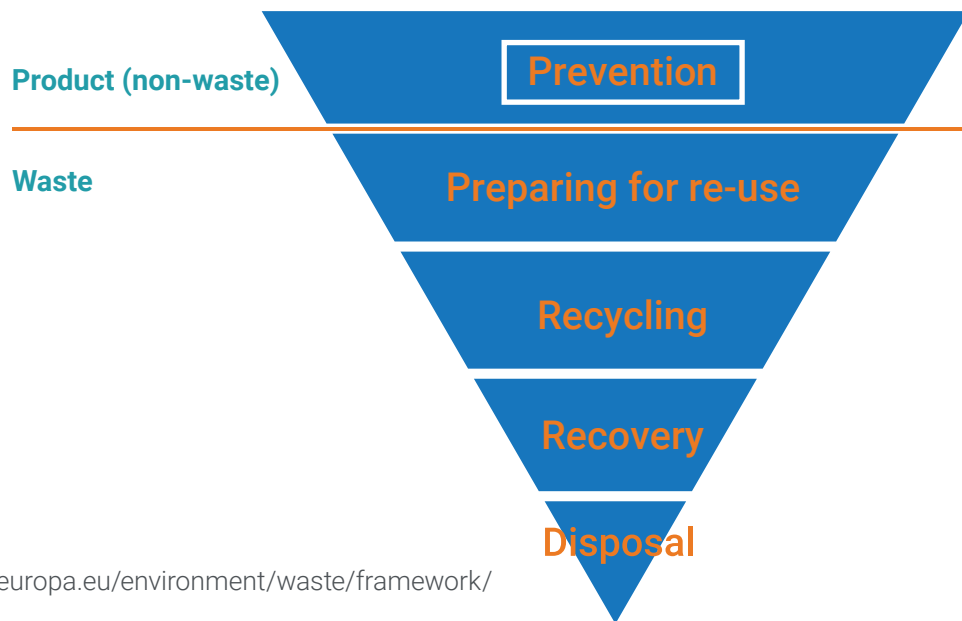


WRAP have produced a brief summary to saving waste in the fish sector here:

[Seafood sector info sheet](#)

Waste prevention and minimisation

Ideally, seafood processing activities would take place without waste production however, whenever it is produced, business should seek to apply, in priority order, the following (EU) waste management hierarchy.



Source:

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

Businesses are often not aware of how much savings can be made by reducing waste. Does your business know how much your wastes cost? To fully assess this, your business needs to know the cost of its:

- Raw materials
- Energy
- Water
- Re-working product
- Customer returns/rejections
- Labour
- Waste disposal/waste treatment

Here is a useful link giving general tips and how you could get more help to get started:

[Preventing Food Waste in Manufacturing](#)

Waste prevention and minimisation

Simple Actions:

Yield and loss control:

Wherever possible monitor production yields and losses; knowing where, when and why variances occur will allow steps to be taken to improve yields.

Line changeovers:

Planning production to minimise the number of line changes during an operating shift should save line down-time, set up wastage and maximise outputs.

Energy and water loss:

See the following sections on these topics.

Reduce packaging waste:

Steps include: rectifying faulty packing machines; storing packaging correctly; finishing one roll of film/labels before starting a new one; and removing packaging before clean downs.

Accurate weight/portion control:

Calibrate scales correctly and regularly; monitor final pack weights; and ensure product is correctly graded to avoid excessive giveaway.

Quality Improvement:

Use good quality raw materials and ingredients to minimise product quality issues. Use quality control systems to identify defects early; reduce out of specification products and product rejections.

Any quality issue will cost the business money and risks brand reputation and the loss of customers.

To help you get started Scottish businesses can apply to get a food waste audit here:

[Applying for a Food Waste Audit](#)

Packaging

All seafood processors use considerable volumes of packaging in a variety of forms. Expanded polystyrene (EPS) boxes, plastic trays, polythene bags, shrink film and pouches to cardboard boxes, pallets and tape. It is believed that up to 80% of a product's environmental impacts are influenced during the design process. However, it is essential to optimise packaging use and design, it must be able to:

- contain the product, protect and preserve it effectively
- provide ease of handling and distribution and be tamper-proof
- provide essential product information to the consumer

Choosing effective packaging which delivers all these benefits is always the main consideration. Considering the packaging life-cycle with a minimal environmental impact is often overlooked.

Simple Actions:

Effective and fit for purpose:

Under-packaged products are subject to wastage and damage in storage and distribution. Over-packaged products lead to more waste materials and are likely to increase costs. Effective packaging saves you money and means less disposal and recycling costs.

Packaging material and design:

Consider what happens after the product is used. Wherever possible:

- Use a material that the end-user can (take for) reuse, or recycle / compost.
- Try to source renewable materials to minimise adverse effects on the environment.

Handling in house:

- Assess how your packaging is stored and used in production lines; where wastage occurs and why? Identify steps you can take to reduce these losses.

You may find this sector guidance note from WRAP Useful.

[Preventing Waste in Seafood Processing](#)

Water Use

Water is a key and essential resource within most types of seafood processing. Many seafood processors use significant volumes of water during preparation, production and cleaning operations. Using water efficiently can reduce usage, offering businesses significant savings in water costs. Furthermore, minimising water use can also reduce the cost of waste water disposal. Consider four areas where assessment and savings can be made: water used in production; water used in cleaning; water used in factory amenities; and waste water effluent.

Simple Actions:

Improve housekeeping and optimise use:

Don't leave water running when not needed; reduce flow rates where possible; use flow regulators and auto shut-offs on machines which require water. Improve staff awareness and training in good water sense. Where sprays are used, fit low volume spray heads; fit hand triggers to all manual-use hoses; and use low volume devices in staff amenities.

Reduction in processing

Ensure filleting lines are not using excessive and continuous water. Flume channels should be designed for minimal flow. Where appropriate, consider opportunities to recycle water used in production. Reducing the volume of water used in production will reduce effluent volumes and waste water costs.

Maintenance

Regularly check equipment and hoses for leaks, replace worn hoses. Maintain hand-wash stations. Fix leaking taps etc. Remember that any leak is a continuous loss 24-hours a day.

Defrosting:

If water is used for defrosting raw materials, avoid systems or methods which rely on continuous flow. Consider hygienic recycling systems or systems that do not use water.

Effluent:

Sieve/filter /strain particles from waste water as soon as possible, wherever possible.

Ensure all drains are properly covered and fitted with traps to collect solids.

You can download a handy water use tracking tool from Resource Efficient Scotland here:

[Save water - monitor use](#)

Energy Use

The food and drink manufacturing sector is energy intensive, hence reductions in energy consumption have the potential to make considerable savings; reducing environmental impact by cutting energy use and carbon emissions.

The main areas of energy consumption in seafood processing are likely to be in refrigeration, processing machinery, heating and compressed air use. By regularly monitoring and recording energy consumption, a business can establish a benchmark against which it can measure energy efficiency improvements.

Simple Actions:

Preventative maintenance:

- All machinery and equipment should be regularly maintained and serviced. Scheduled preventative maintenance will enable equipment to run more energy efficiently, rather than resorting to servicing when repaired at breakdown.
- Inspection checks for leaks should be undertaken regularly on all refrigerant plant, cookers, washers and air-compressors etc. Leaks can increase energy use and will have an environmental impact.

Good housekeeping:

All machinery uses power and generates heat; which is wasting money and impacting your product. Raising staff awareness and good training helps reduce energy use. Assess lighting throughout the business; the simple installation of movement sensors for rooms/areas of infrequent use can result in significant savings. If it's not in use – turn it off!

Refrigeration Plant:

- Cold stores, freezers and chills are used in all types of seafood processing. The better the insulation, the more efficiently they operate and less energy they will consume.
- Cold stores, freezers and chills are high use areas; so make sure that good insulation is maintained; especially door seals, door curtains and damage caused by wear and tear.
- Consider fitting self-closing doors to chills and stores.
- Defrost systems: all chills freezers and cold stores should have regular and effective defrost cycles to maintain the efficiency of their cooling equipment.

Heat recovery systems:

Consider installation of heat recovery systems to reuse heat generated from compressors, refrigerators and heating boilers etc. All generate excess heat during operation and that heat is wasted energy.

Seek advice from manufacturers/professionals about the use of heat recovery systems.

Energy efficient/smart equipment: technology is moving forward rapidly; seek advice on the latest developments, for example using high-efficiency motors, energy-efficient boilers and smart refrigeration systems which can all lead to reductions in energy costs. Even switching the lighting throughout your business to modern LED fixtures can make substantial savings and even improve light quality.

A handy guide showing how to conduct an energy audit is here:

[Resource Efficient Scotland energy-audit](#)



Resource Efficient Scotland also provides advice on how you can access various sources of funding, loans and additional expert support:

[Further Support and Funding](#)

Here is a link to all the tips and guides available on the Resource Efficient Scotland Website:

[Resource Efficient Scotland tools and guides](#)

Alternatively call on 0808 808 2268

Free bespoke consultancy to help your business save energy and cut costs



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