



Report

How much food and drink waste is there in Scotland?

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Acknowledgements

This report reflects detailed discussions by a steering group composed of SEPA, Scottish Government, and Zero Waste Scotland in early 2016, as well as a growing body of evidence from elsewhere in the UK and around the world. Zero Waste Scotland would also like to thank WRAP for sharing their experience of the challenges inherent in creating robust food waste estimates, and their direct input into developing the estimates of household food waste presented here.

1 Total food and drink waste

An estimated 1.35 million tonnes of food and drink waste was disposed of in Scotland in 2013. This covers solid and liquid waste arising from households and solid waste arising from “commercial and industrial” sectors, which includes the public sector.

Food and drink waste matters for both our shared environment and for our economy. Food and drink accounts for approximately 20% of Scotland’s carbon footprint from consumption¹. And when food is wasted, so too is the energy (and associated carbon emissions) that went into growing, harvesting, transporting, processing, and preparing it. We also lose the money spent on all these things – meaning businesses are less efficient and competitive than they could be, and that householders have spent money unnecessarily. Food and drink waste sent to landfill produces carbon dioxide and other greenhouse gases when it decomposes, and managing food waste is also expensive for businesses, local authorities, and, ultimately, customers and taxpayers.

A key headline split is between household food and drink waste, estimated at 600,000 tonnes, and commercial and industrial food and drink waste, estimated at 740,000 tonnes. However, our food supply chains are linked all the way from the farm to our plate, and decisions by everyone along the way can affect how and where food and drink waste occurs. Everyone has a part to play in reducing food and drink waste in Scotland.

The estimate for commercial and industrial waste in 2013 may be subject to amendment as evidence improves. Fresh insight and innovative methods are currently being developed in Scotland, the rest of the UK, in Europe, and internationally. In contrast we would expect any changes to household estimates to be minor, as this is a more established area of measurement in Scotland.

The current estimate excludes pre-farm gate waste and disposal of liquid waste from commercial and industrial premises, for which too little evidence is currently available. Improving evidence on this, and associated carbon emissions, is identified as a priority in Scotland’s *Making Things Last* strategy.

Our current estimate excludes material that is not legally classified as waste. This includes food and drink waste managed “on site” at commercial premises (for example via an on-site anaerobic digester which generates energy and potentially other byproducts like fertilizer). It also includes organic material arising from food and drink manufacture which leaves the food supply chain but can be used productively elsewhere and which is legally classified as “by-product” or “co-product”, not waste, and is also excluded from estimates of food and drink waste in Scotland. This includes food and drink waste that ends up as animal feed.

Scottish Government has set an ambitious target to reduce food and drink waste by 33% by 2025 compared to a 2013 baseline. The prevention target is set on a per capita basis, in line with the food waste prevention target in the UN’s sustainable development goals. As a percentage target, it will not become either easier or harder to achieve if the 2013 baseline is revised in future as evidence improves.

Estimates on food and drink waste in this report are based on a “best available evidence” approach. Different sources have been used for different parts of the estimate, and data quality thus has varying levels of confidence attached. This is indicated where appropriate. All figures in the report are given to two significant figures unless otherwise stated. Greater technical detail on how the numbers were calculated is given in a separate report.

¹ Based on analysis of UK emissions in 2005. See Williams, AG, et al, 2010, *Greenhouse gas emissions from UK food and drink consumption by systems LCA: current and possible futures*, LCA-Food 2010: VII international conference on Life Cycle Assessment in the agri-food sector, 22 to 24 September, 2010.

2 Household food and drink waste

In 2014 Scottish households threw away 600,000 tonnes of food and drink waste. 390,000 tonnes of this was managed by local authorities, either in residual household waste or as a separate food waste collection. An estimated 140,000 tonnes was disposed of down the drain, and 71,000 tonnes was either composted or fed to animals.

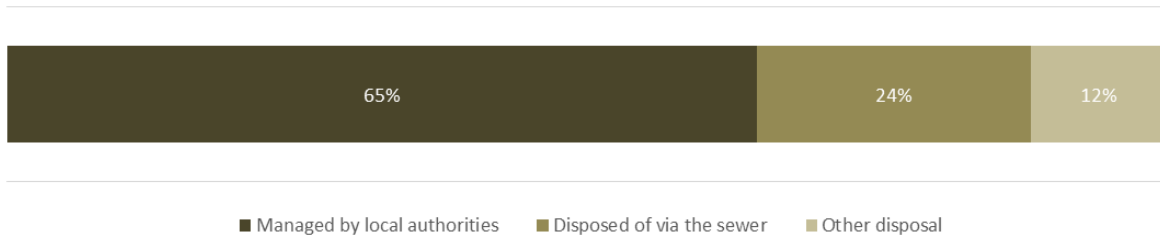


Figure 2.1 The breakdown of household food and drink waste by disposal route

60% of household food waste was classed as avoidable, consisting of items that could have been eaten if they had been managed differently on their journey through the home. The financial cost of buying this food which was ultimately thrown away was £1.1 billion a year, an average of £460 per household. Avoidable food waste generated 1.6 million tonnes of carbon dioxide equivalent, 2.1% of Scotland's total carbon footprint. Food that was wasted represents around 20% of all food purchased in Scotland by weight, and avoidable food waste represents around 12% of all food purchased.



Figure 2.2 The breakdown of household food and drink waste by avoidability

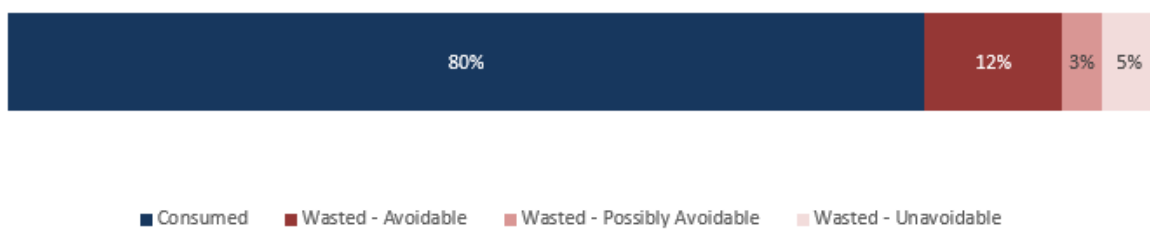


Figure 2.3 Food and drink waste contrasted with all food and drink purchases.

Greater detail on Scottish household food waste (for 2014) can be found in a separate report. The 2014 household figures were adjusted slightly to generate a 2013 Scottish baseline, matching the commercial and industrial waste data.

2.1 How do household food waste collections fit in?

Over 1.5 million Scottish households now have access to a food waste collection², and in spring 2016, more households reported throwing food waste into a separate collection than into a residual waste bin for the first time³. Food waste collections are a key part of meeting Scotland’s environmental targets, and in delivering a sustainable green economy.

Dedicated household food waste collections are good news for the environment, and for local authority finances. Food waste sent to landfill emits carbon dioxide and methane as it decomposes. And every tonne not sent to landfill saves local authorities money. Even if Scotland eliminated avoidable food waste entirely, food waste collections will always have a place handling unavoidable food waste such as peel, skins, bones and so on.

However the environmental and financial benefits of food waste prevention are even greater – which is why Scottish Government’s new target is focused on prevention.

3 Commercial and industrial food and drink waste

3.1 Current evidence

An estimated 740,000 tonnes of solid food and drink waste were produced in commercial and industrial sectors in 2013. Unlike household waste, food and drink waste disposed to sewer is not included in this estimate, which is based on SEPA’s waste data returns. SEPA data for 2013 shows food and drink waste arising in the following sectors:



Figure 3.1 Food and drink waste proportions by weight by sector in the SEPA waste data. “Commerce” is a broad category, covering both commercial and public sector organisations.

Some additional detail on the “commerce” category is suggested by a number of studies undertaken in 2011. These studies visited selected sites in specific sectors and were not designed to give a comprehensive picture, and we would not expect an exact fit with the SEPA data from two years later for a number of reasons. Nonetheless, earlier work gives useful insight into where larger amounts of food and drink waste may be generated. We suspect the relative contributions of these sectors will be broadly accurate, and this is how the data is presented here. No study was conducted on “other” sectors, and this figure represents the difference between the top-level SEPA figures, and the individual total for sub-sector estimates.

² As of September 2015

³ Zero Waste Scotland’s Household Food Waste Behaviours Tracker, fieldwork conducted February-March 2016, with a sample of 1,100 adults via an online panel methodology, unpublished

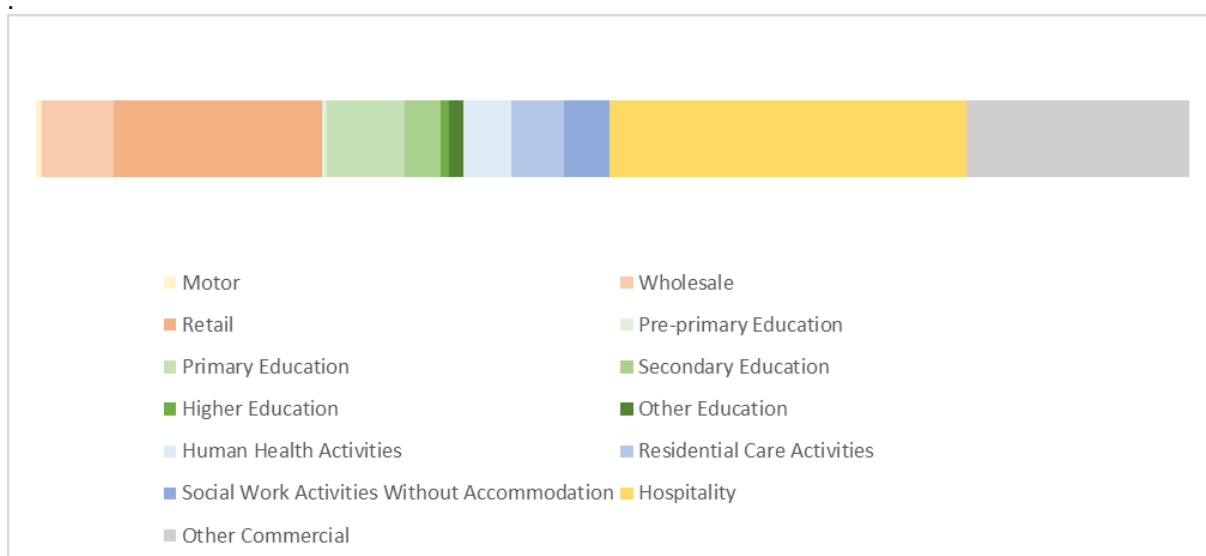


Figure 3.2 Food and drink waste proportions for “commercial” waste only. Exact percentages are not shown, reflecting the lack of precision in the estimates, and this breakdown should be seen as indicative only.

In broad terms, hospitality accounts for around 7% of all commercial and industrial food and drink waste in our baseline, education for around 3%, health and social care for around 3%. (Relative to all food and drink waste, these percentages are 4%, 2% and 2% respectively).

In terms of causes and solutions of food waste, it is worth noting that food waste in these contexts is likely to be from catering contexts, and there may commonalities, notwithstanding the very different sectors. This could also be true for food waste in other catering contexts, including manufacturing premises or offices. Wholesale and retail account for around 6% of the commercial and industrial food and drink waste total in the estimate here (or around 3% of all food and drink waste).

The “avoidable” and “unavoidable” distinction made around household food waste also makes logical sense in the context of hospitality and catering waste.

The distinction has been applied to food and drink manufacturing waste at the UK level, where 56% of food and drink waste was estimated to be avoidable. It is unclear how applicable this split might be to Scotland, which has a different sector structure. In the context of manufacturing the term “unavoidable” food waste may also be confusing – while this material may not be suitable for human consumption, it may be possible to use it productively in other industrial processes as a byproduct, with it thus ceasing to be waste.

3.2 Areas where evidence will improve in future

Commercial and industrial food and drink waste estimates are expected to improve in future.

The main potential areas where the evidence is expected to improve in relation to materials in the baseline, are in the area of food and drink manufacturing, and relate to:

- If sites are not consistent in how material is being classified for SEPA reporting purposes. In particular, it is expected emerging EU guidance will count material destined for animal feed as non-waste, but it is not clear all sites approach this in the same way currently. Currently this may be the cause of an over-estimate.
- If some waste codes (which record waste by type) which our original baselining study classified as “food and drink” waste contains large amounts of non-food material (e.g. soil,

stones, or water associated with food preparation and processing – this has recently been shown to be the case at UK level⁴). Currently this may be the cause of an over-estimate.

Zero Waste Scotland and SEPA will keep emerging evidence and best practice in these areas under review.

Significant elements of food and drink waste for which no estimate is yet available are:

- Pre-farm gate waste, though very provisional estimates by experts suggest it could be in the region of 140,000 to 270,000 tonnes, based on scaling from studies elsewhere. Confidence in this estimate is low, and it may over- or under-estimate the problem. We also anticipate significant variation from year to year.
- Liquid food and drink waste disposal from commercial and industrial premises. No study has quantified this to date. This means commercial and industrial waste data excludes an element of food and drink waste that is counted for households, meaning the relative household contribution may appear slightly greater than it in fact is.

Scotland's *Making Things Last* strategy commits to improving the evidence in relation to these two areas, and work is already underway to provide more robust evidence in these challenging areas. This work is linked to the commitment in *Making Things Last* to better understand the carbon impacts of these waste streams.

As evidence improves, we will update our measurement techniques, and, where appropriate, the 2013 baseline. Baseline changes will not make the target either easier or harder to achieve, as it is set in percentage terms, relative to the baseline.

3.3 Exclusions from the target and baseline

Our estimate excludes material that is not legally classified as waste.

This includes food and drink waste managed “on site” (for example via an on-site anaerobic digester which generates energy and potentially other byproducts like fertilizer). Quantifying this in future will however be useful as were this material to move to off-site treatment in future (or international definitions of food waste bring this in scope), it could become relevant to national waste measurements. And in an on-site context, reducing the amount of this material arising can still give economic and environmental gains, regardless of any formal contribution to Scotland's food and drink waste prevention target.

Organic material arising from food and drink manufacture which leaves the food supply chain but can be used productively elsewhere is legally classified as “by-product” or “co-product”, not waste, and is also excluded from estimates of food and drink waste in Scotland. This includes food and drink waste that ends up as animal feed. In some cases understanding this material is relevant to future measurement of change, as changing market conditions may result in some material currently used as byproducts or coproducts being treated as waste, or vice versa, which will effect measurement of change against Scotland's food waste prevention target.

⁴ Parfitt, J, et al, for WRAP, 2016, *Quantification of food surplus, waste and related materials in the grocery supply chain*, WRAP

4 Scotland's food and drink waste prevention target

Scottish Government has set an ambitious target to reduce food and drink waste by 33% by 2025 compared to a 2013 baseline:

“To reduce all food waste arising in Scotland by 33% by 2025 and work with industry to reduce on-farm losses of edible produce”

This is a strict food waste prevention target, and so increasing food waste collections and recycling will not contribute towards it – although they will still contribute to Scotland's other resource efficiency goals and give significant carbon savings.

The prevention target is set on a per capita basis, in line with the food waste prevention target in the UN's sustainable development goals⁵.

If the target is achieved, it would mean Scotland producing around 460,000 tonnes less of food and drink waste in 2025 against the current baseline, compared to a situation where food and drink waste grew in line with expected population growth, though this tonnage amount may change (up or down) if baseline estimates are revised.

As this document highlights, some elements of the 2013 baseline may be reviewed as evidence in this area improves. If appropriate this may mean updates are made to the 2013 baseline. This will not make the target either easier or harder to achieve as it is defined relative to the baseline.

⁵ Sustainable development Goal 12 includes the target: “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses”

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