
Overview of Waste in the UK Hospitality and Food Service Sector



An overview of waste in the UK hospitality and food service sector



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Front cover photography: WRAP image library

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Executive summary

The cost of food being wasted in the UK from the UK Hospitality and Food Service (HaFS) sector is estimated at £2.5 billion per year in 2011, rising to £3.0 billion per year by 2016. This report draws together a number of pieces of research and highlights the opportunities to reduce waste and save money.

Key findings in the UK HaFS sector:

- **The total amount of waste, including food, packaging and other 'non-food' waste, produced each year** at HaFS outlets is **2.87¹ million tonnes**, of which **46% is recycled**, sent to Anaerobic Digestion (AD) or composted.
- **Of this, 920,000 tonnes of food** is wasted at outlets each year, 75% of which is avoidable and could have been eaten.
- **40% of food that is wasted is carbohydrates**, including potato, bread, pasta and rice. Reduced wastage in carbohydrates would have a significant impact on the total amount of food being wasted.
- The amount of food that is wasted each year in the UK is equivalent to **1.3 billion meals**, or **one in six of the 8 billion meals served each year**.
- On average **21% of food waste arises from spoilage; 45% from food preparation** and **34% from consumer plates**.
- **12% of all food waste is recycled**.
- **1.3 million tonnes of packaging (for food and drink as well as other non-food items used within HaFS) and 0.66 million tonnes of other 'non-food' wastes** are also discarded, that includes items such as disposable kitchen paper and newspapers.
- **62% of packaging and other 'non-food' waste is recycled**. The highest level of recycling is for glass and cardboard.
- **56% of packaging and other 'non-food' waste that is thrown away could have been readily recycled**.

In addition to this a further **130,000 tonnes of food waste** is generated from the preparation of ready to serve food items and meals for the HaFS sector, at food manufacturing sites.

What are the opportunities for my HaFS business?

Significant opportunities exist across the HaFS sector to reduce costs through a combination of waste prevention and increased recycling. Read this report to find out how you could realise the benefits for your business.

- **Significant scope for cost savings:** the annual cost of food waste is over £2.5 billion (including the labour cost to prepare, cook and serve wasted food, and the cost of ingredients, energy, water, transport, administration and waste management). This is equivalent to a quarter of the total UK HaFS sector annual food procurement budget for the year 2011.
- **Small changes make a big difference:** a 5% reduction in food waste by the end of 2015 has the potential to save the sector a total of £250 million over two years.
- **There are considerable opportunities to recycle more.** Even though waste disposal costs continue to rise, significant quantities of recyclable materials are still not recycled, including glass containers, cardboard, plastic bottles and cans. There

¹ Any differences in totals in following tables is due to rounding

are also considerable opportunities to increase the recovery of food waste through diversion into AD or composting.

- **Environmental benefits:** preventing avoidable food waste has the potential to reduce greenhouse gas emissions by **2.7 million tonnes** (CO₂ equivalent), whilst diverting all recyclable packaging and other 'non-food' wastes currently thrown away has the potential to reduce greenhouse gas emissions by **0.4 million tonnes** (CO₂ equivalent).
- **Hospitality and Food Service Agreement:** In June 2012, WRAP, supported by all UK Governments, launched the Hospitality and Food Service Agreement. This Agreement focuses on preventing food and associated packaging waste by 5% and increasing recycling rates to 70% or over through collaborative sector action. With strong support from the sector it is helping to embed action further and faster so that the financial and environmental benefits as outlined in this report can be realised. Visit <http://www.wrap.org.uk/category/sector/hospitality-and-food-service> for more information.

Table E 1 highlights the scope of savings associated with food waste, ranked in descending order of tonnes arising, with the restaurant, pub and education the top three subsectors. The total costs associated with all food being wasted are greatest within restaurant, pub and hotel subsectors.

Table E 1: The quantity and cost of food being wasted by the UK HaFS by subsector in 2012 (WRAP, 2013a)

| Sub sector | Number of outlets with food service | Total food waste | Cost total food waste ² | Total cost ² |
|----------------------------------|-------------------------------------|-------------------|------------------------------------|-------------------------|
| | | (thousand tonnes) | (£/tonne) | (£ millions) |
| Restaurants | 40,958 | 199 | 3,500 | 682 |
| Pubs | 45,087 | 173 | 2,100 | 357 |
| Education | 34,744 | 123 | 2,100 | 250 |
| Healthcare | 19,257 | 121 | 1,900 | 230 |
| Hotels | 45,763 | 79 | 4,000 | 318 |
| Quick Service Restaurants (QSRs) | 31,450 | 76 | 3,500 | 277 |
| Services | 2,029 | 68 | 1,700 | 112 |
| Leisure | 9,255 | 60 | 4,000 | 241 |
| Staff catering | 7,172 | 21 | 2,200 | 44 |
| UK HaFS total | 235,715 | 920 | N/A | 2,511 |

Source: Caterlyst 2012 estimates

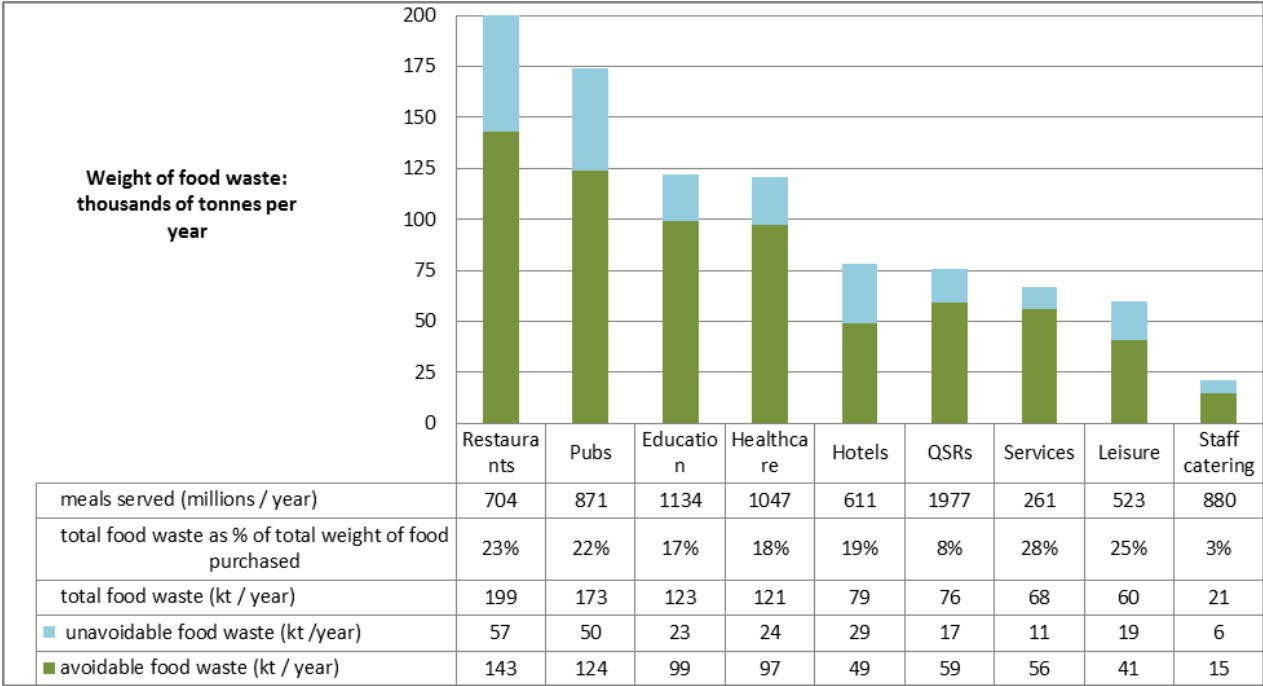
Figure E 1 shows the amount of avoidable and unavoidable food being wasted by subsector and puts this within the context of the 8 billion meals served by HaFS outlets in the UK each year. Overall, the weight of food waste across the HaFS sector is equivalent to throwing away one in every six meals served. In restaurants, pubs, services and leisure the proportion of food waste is over 20% of the weight of food purchased, equivalent to around one in five meals being wasted. Lower wastage rates are associated with Quick Service Restaurants

² Costs estimated for 2011

(QSRs) and staff catering, where lighter meals are served and/or where snacks and 'grab and go'³ catering is more prevalent

Differences in levels of waste also relate to the use of ready-to-serve meals and pre-prepared ingredients, in which case more of the waste is generated further up the supply chain. For instance, the supply chain waste associated with QSR is estimated to be equivalent to approximately a third of food waste discarded at QSR outlets.

Figure E 1: Amount of food being wasted across the UK by subsector (WRAP, 2013a and 2013b)



This report summarises findings from a number of pieces of research by WRAP, for which further details can be found within the references at the end of this report:

- Waste in the UK Hospitality and Food Service Sector (WRAP 2013a):** this research looked in-depth at the waste being generated within the cost sector (education, staff catering, healthcare, services) and leisure across the UK. It included compositional analysis of waste arisings, their disposal routes, as well as waste prevention, further recycling and other saving opportunities for each subsector. This research also updated previous waste estimates for research undertaken on the UK HaFS profit sector (including restaurants, pubs, hotels and QSRs).
- The True Cost of Food Waste within Hospitality and Food Service Sector (WRAP 2013b):** this research identified the cost of food being wasted, including the cost of labour to prepare, cook and serve wasted food, and the cost of ingredients, energy, water, transport, administration, and waste management.
- Where Food Waste arises within the UK Hospitality and Food Service Sector: spoilage, preparation and plate waste (WRAP 2013c):** this research looked at the point at which food is wasted from spoilage, food preparation and from consumers' plates in different types of commercial kitchens and identified the actions that would most significantly reduce food being wasted.

³ Note: a 'grab and go' provision could have resulted in less of the food waste being captured by the waste reviews conducted as part of this research as food waste may be disposed of away from the main catering outlet.

This report also summarises the priorities for each subsector including waste prevention opportunities and tips on how to start reducing waste and saving money.

Data is also available broken down by nation: England, Scotland, Wales and Northern Ireland; for more detail refer to Appendices 3 and 4.

The Waste (Scotland) Regulations come into force on January 1 2014, after which all organisations and businesses in the country will be legally required to recycle plastic, metal, glass, paper and card. Additionally, the regulations will mean that any food business that produces more than 50kg of food waste each week must present it for separate collection, which will then extend to all food businesses producing 5kg or more of food waste each week from January 1 2016. However, food businesses in rural areas may be exempt from the food waste regulations. Advice on the changes to Scotland's Waste Regulations, coming into force can be found at: <http://www.resourceefficientscotland.com/regulations>

Packaging plays a vital role in protecting and preserving food and drink throughout the supply chain and keeping it fresher for longer. However, the amount of packaging used around products used by the HaFS, as in other sectors, is about getting the balance of product protection verses packaging use right (packaging optimisation). This then has a huge benefit throughout the supply chain, reducing the amount of packaging produced, product damage, raw material used, operational costs, energy consumption, greenhouse gas emissions and ultimately the cost of managing waste.

Data limitations

HaFS waste estimates have been compiled from waste reviews and surveys conducted by two HaFS research studies carried out in 2011 and 2013, in combination with other relevant datasets collected between 2009 and 2012. Outlets from all nine HaFS subsectors were represented in the combined dataset, which that included samples from 480 premises across England, Scotland and Wales.

All estimates presented in this summary report are subject to uncertainties. These relate to sampling error (i.e. the problem of trying to represent a large and varied sector based on a limited number of samples), uncertainties in extrapolating annual waste arisings from outlets based on 'snapshot' samples (typically a week's worth of waste), the extent to which samples successfully captured all HaFS waste arisings, and variation in methodology between different studies.

Key factors influencing the level of variability include:

- variability in the type and size of outlets within each of the nine subsectors;
- the type of service provision and the extent to which it varied within each subsector;
- the portion sizes; and
- the seasonality and other fluctuations in demand and the extent to which this was captured in the process of estimating annual waste arisings from samples taken over a week.

Due to the complexity and nature of the calculations and the variety of data sources used it is not possible to provide confidence limits. Totals in tables may not add up due to rounding error.

Data sources used to compile estimates relate to surveys carried out at different times and may not always reflect current practices. For example, none of the restaurants sampled in 2009 and 2010 sent food waste to composting or to AD. This position has changed since then and there are some restaurants that send food waste to composting or AD.

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Glossary of key terms

| | |
|-------------------------------|---|
| Avoidable food waste | Food thrown away that was, at some point prior to disposal, edible (e.g. slices of bread, apples, meat) and could have been eaten if it had been better portioned, managed, stored and/or prepared. 'Avoidable' food waste also includes some otherwise acceptable food items that have not been eaten because of consumer preference, such as bread crusts and jacket potato skins. |
| Unavoidable food waste | Waste arising from food preparation that is not, and has not been, edible under normal circumstances (e.g. meat bones, egg shells, pineapple skin, tea bags). |
| AD | Anaerobic Digestion, a natural process by which micro-organisms break down organic matter in the <i>absence</i> of oxygen, AD produces biogas, which can be used as gas or burned to generate electricity, and digestate (a nitrogen-rich fertiliser). |
| Composting | Composting is a natural process by which micro-organisms break down organic matter in the <i>presence</i> of oxygen, producing compost that can provide nutrients and organic matter to the soil. In the context of HaFS food waste, composting will mainly be 'In-Vessel Composting' (IVC) where decomposition is controlled within a closed container. |
| HaFS | Hospitality and Food Service: this include within its scope hospitality and food service businesses operating within private and public sectors, and contract caterers. The sector can be classified in different ways; this report uses nine subsectors characterised in Horizons (2012): healthcare, education, staff catering, services, restaurants, quick service restaurants, hotels, pubs and leisure. |
| HaFSA | The Hospitality and Food Service Agreement is a voluntary agreement to support the HaFS sector in reducing waste and recycling more. It has two targets focusing on waste prevention and waste management. The targets are owned WRAP and collectively delivered by signatories. WRAP is delivering this Agreement across the UK through its national programmes. |
| Other waste | Non-food waste that is not packaging. |
| Outlet | A place where food and/or drink is available for sale to consumers. There may be multiple outlets on a single site. Examples include multiple QSRs and cafés at a hospital site. For wholesalers/distributors, an outlet is a depot from which food and drink products are supplied to the HaFS sector. |
| SDU | Sink Disposal Unit, a technology used in kitchens to dispose of food waste to sewer: also referred to as food waste macerators, waste disposal units or waste grinders. Commonly used in larger commercial kitchens. |

Acknowledgements

The research used in this report was a collaborative effort between those conducting the research and different parts of the UK HaFS sector across England, Scotland and Wales. We would like to thank those involved for your help with this valuable piece of work.

1.0 Waste in the UK HaFS Sector

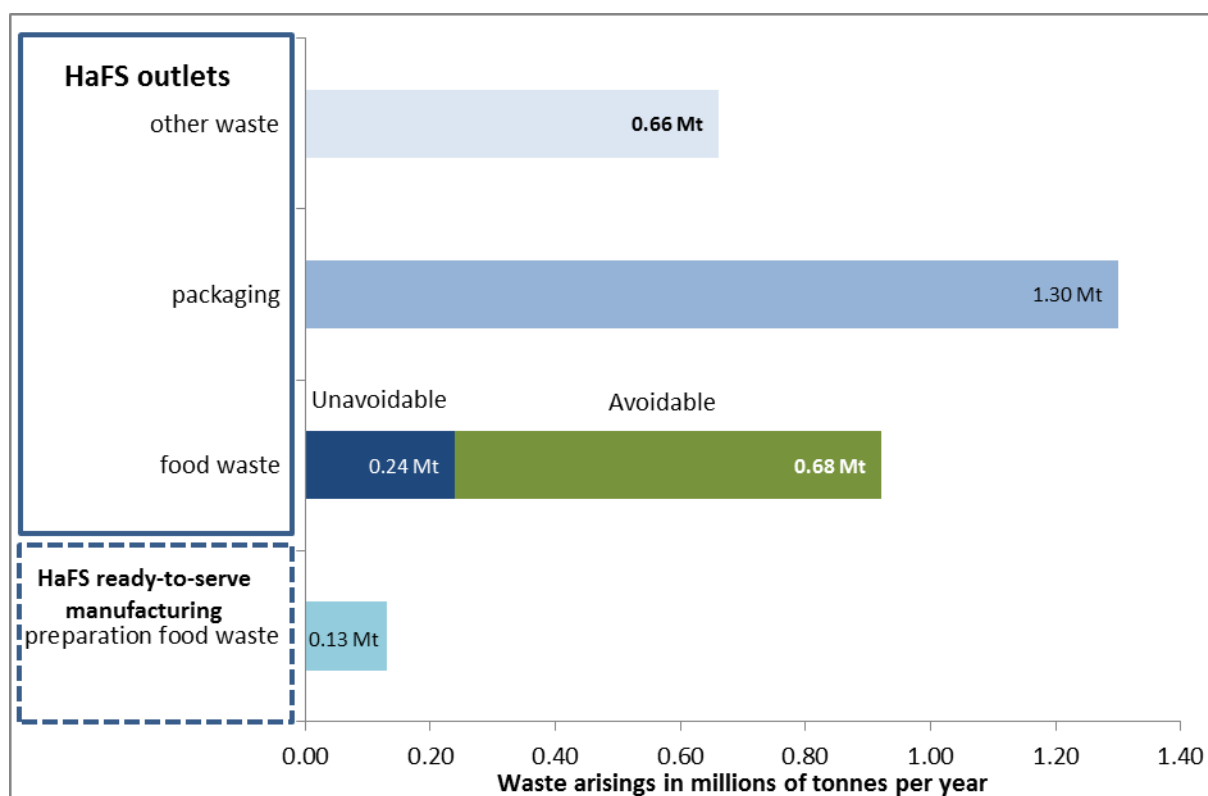
Overview

UK HaFS outlets produce a total of almost **3 million tonnes of waste per year**, consisting of packaging (1.3 million tonnes), food waste (0.92 million tonnes), and other 'non-food' wastes (referred to simply as 'other wastes' in this report) that includes disposables such as kitchen paper (0.66 million tonnes).

In addition, an estimated **130,000 tonnes of food is wasted from the preparation of ready to serve** food items and meals at HaFS manufacturing sites. Read-to-serve includes sandwiches, soups, sauces and pre-prepared meals. This information is summarised in Figure 1.1.

The amount of food that is wasted each year in the UK is equivalent to **1.3 billion meals**, or throwing away one in every six of the 8 billion meals served each year. This takes account of differences in the average weight of a typical meal served across the nine different UK HaFS subsectors.

Figure 1.1: Total waste (millions of tonnes per year) in UK HaFS sector (WRAP, 2013a)



The overall rate of all waste to recycling, AD or composting is estimated to be 46%. Key points include:

- The recycling rate of just food waste is 12%.
- The recycling rate of just packaging and other 'non-food' wastes is 62%.
- More food waste is currently disposed of via Sink Disposal Units (SDUs) (140,000 tonnes per year) than is sent to composting or AD (110,000 tonnes per year).

Methodology

The HaFS sector can be defined as outlets that sell food and drinks for immediate consumption outside of the home. There are nine major HaFS subsectors as defined by Horizons⁴: staff catering, healthcare, education, services, restaurants, QSRs, pubs, hotels and leisure.

The results summarised in this report were based on detailed research carried out by WRAP that focused on total waste arisings within the HaFS, characterisation of waste composition and estimation of the costs of food waste. Full details of the methods used to collect these data can be found in the technical reports relating to these studies (WRAP 2011, 2013a, 2013b).

Waste arisings estimates and composition

Two main studies were carried out by WRAP in order to estimate waste arisings in the UK HaFS: one for the profit sector (WRAP 2011) and the second for the cost sector (WRAP 2013a). Main features of the research methodology relating to the cost sector work were:

- telephone survey to recruit HaFS outlets for waste sampling and to collect background data on the type of HaFS provision, waste management and waste prevention practices;
- negotiation with HaFS outlets to secure waste samples and to gain consent to divert SDU food wastes into research bins where appropriate;
- waste sorting of samples obtained from HaFS outlets at central sorting sites during which tonnes of waste was hand sorted; and
- follow-up visits with a selection of outlets and stakeholders to discuss findings and explore waste prevention opportunities.

The 2011 study, covering outlets at restaurants, pubs, hotels and QSR used a similar methodology, but did not collect data on food waste diverted into SDUs. The estimates contained within the 2011 report have been updated in the most recent report (WRAP 2013a).

The True Cost of Food Waste within Hospitality and Food Service Sector (WRAP 2013b): this research integrated HaFS cost data with the food waste estimates obtained from the above studies. The methodology comprised 5 main steps:

- estimation of yield loss for each of the nine subsectors by comparing the weight of total purchased food and with food waste estimates;
- estimation of the total subsector costs associated with each of the main cost elements: labour, food procurement, utilities, waste management and administration;
- estimation of the total cost of food waste in each of the nine subsectors;
- estimation of cost per meal of food waste in each of the nine subsectors; and
- estimation of cost per tonne of food waste in each of the nine subsectors.

Data limitations

⁴ Horizons FS Limited, a supplier of market data and analysis for the UK HaFS sector

HaFS waste estimates have been compiled from waste reviews and surveys conducted by two HaFS research studies carried out in 2011 and 2013, in combination with other relevant datasets collected between 2009 and 2012. Outlets from all nine HaFS subsectors were represented in the combined dataset, which that included samples from 480 premises across England, Scotland and Wales.

All estimates presented in this summary report are subject to uncertainties. These relate to sampling error (i.e. the problem of trying to represent a large and varied sector based on a limited number of samples), uncertainties in extrapolating annual waste arisings from outlets based on 'snapshot' samples (typically a week's worth of waste), the extent to which samples successfully captured all HaFS waste arisings, and variation in methodology between different studies.

Key factors influencing the level of variability include:

- variability in the type and size of outlets within each of the nine subsectors;
- the type of service provision and the extent to which it varied within each subsector;
- the portion sizes; and
- the seasonality and other fluctuations in demand and the extent to which this was captured in the process of estimating annual waste arisings from samples taken over a week.

Due to the complexity and nature of the calculations and the variety of data sources used it is not possible to provide confidence limits. Totals in tables may not add up due to rounding error.

Data sources used to compile estimates relate to surveys carried out at different times and may not always reflect current practices. For example, none of the restaurants sampled in 2009 and 2010 sent food waste to composting or to AD. This position has changed since then and there are some restaurants that send food waste to composting or AD.

Food waste at HaFS outlets

The HaFS sector can be defined as outlets that sell food and drinks for immediate consumption outside of the home. There are nine major HaFS subsectors as defined by Horizons⁵: staff catering, healthcare, education, services, restaurants, QSRs, pubs, hotels and leisure.

The amount of food that is wasted is influenced by a number of factors, such as: the amount of on-site food preparation, over-production of meals, menu choice and the extent to which consumers leave food uneaten. A summary of the main subsectors is included in Appendix 1. There are also summary sheets detailing information on waste and recycling for each of the nine subsectors.

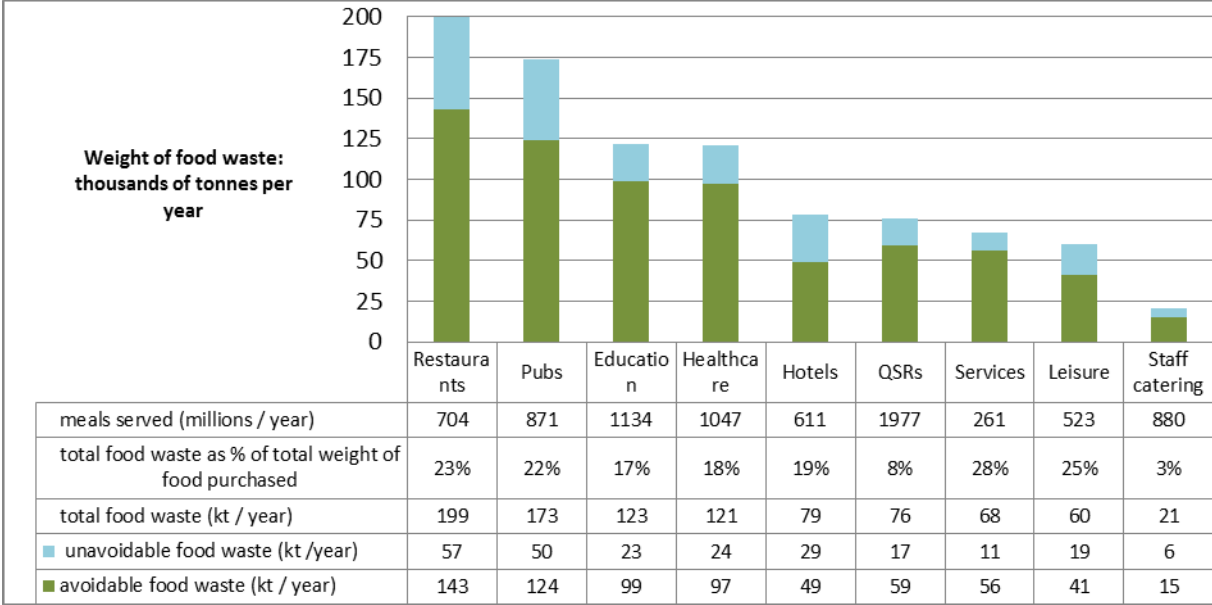
Figure 1.2 shows the amount of food being wasted by subsector. In restaurants, pubs, services and leisure the proportion of food waste is over 20% of the weight of food purchased, indicating around one in five potential meals are wasted. Lower wastage rates are associated with QSR and staff catering, where lighter meals are served and/or where

⁵ Horizons FS Limited, a supplier of market data and analysis for the UK HaFS sector

snacks and 'grab and go'⁶ catering is more prevalent. Overall, the weight of food waste is equivalent to throwing away one in every six meals served.

Differences in levels of waste also relate to the use of ready-to-serve meals and pre-prepared ingredients, in which case more of the waste is generated further up the supply chain. For instance, the supply chain waste associated with QSR is estimated to be equivalent to approximately a third of food waste discarded at QSR outlets.

Figure 1.2: Amount of food being wasted across the UK by subsector (WRAP, 2013a and 2013b)

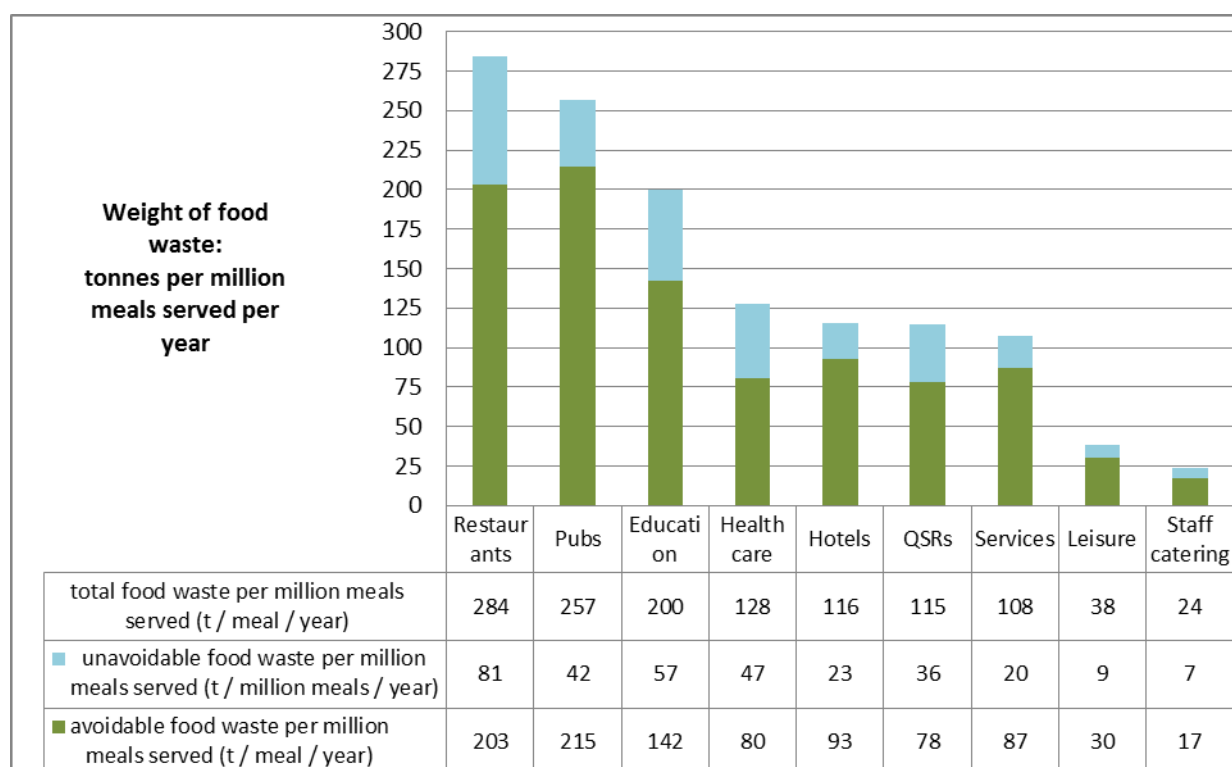


Conversely, those subsectors that are more likely to 'cook and serve' (e.g. some restaurants) may have higher wastage rates as they produce more food preparation waste on-site.

Figure 1.3 compares the amount of food waste produced per million meals served, by subsector. This comparison allows the relative difference in 'size' of subsectors to be taken into account. It shows that overall QSR and staff catering have the lowest amount of food being wasted per meal, whereas restaurants and pubs have relatively high rates.

⁶ Note: a 'grab and go' provision could have resulted in less of the food waste being captured by the waste reviews conducted as part of this research as food waste may be disposed of away from the main catering outlet.

Figure 1.3: Amount of food being wasted, per million meals served by subsector (WRAP, 2013a and 2013b)



The cost of food being wasted

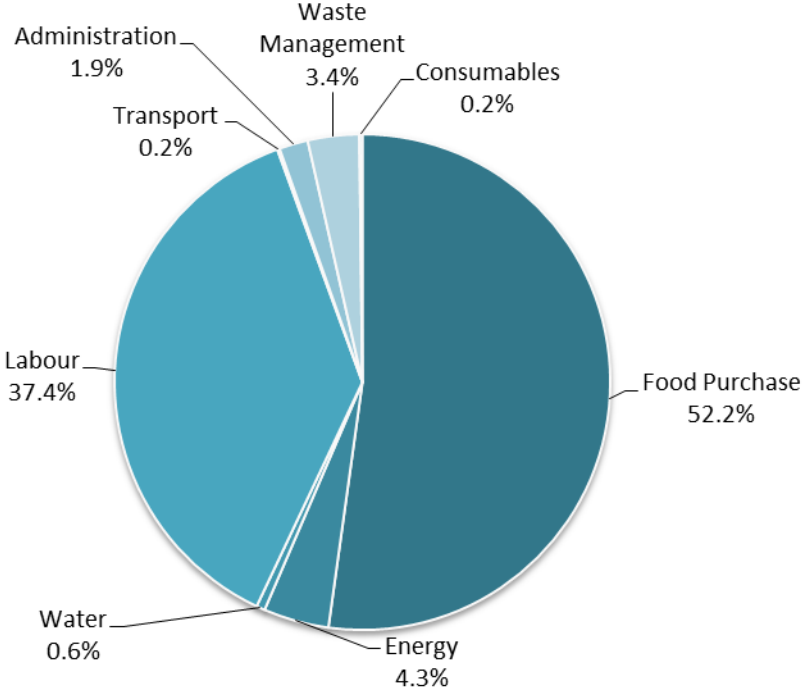
The total cost of outlet food being wasted in the UK HaFS industry for 2011 is estimated at over £2.5 billion; three subsectors; restaurants, pubs and hotels, account for 54% of this financial cost.

Table 1.1: The cost of food being wasted by each HaFS subsector in the UK (WRAP, 2013a and 2013b)

| Sub sector | Total food waste | Total food waste cost per tonne | Total cost |
|----------------------|-------------------|---------------------------------|--------------|
| | (thousand tonnes) | (£/tonne) | (£ million) |
| Restaurants | 199 | 3,500 | 682 |
| Pubs | 173 | 2,100 | 357 |
| Education | 123 | 2,100 | 250 |
| Healthcare | 121 | 1,900 | 230 |
| Hotels | 79 | 4,000 | 318 |
| QSR | 76 | 3,500 | 277 |
| Services | 68 | 1,700 | 112 |
| Leisure | 60 | 4,000 | 241 |
| Staff catering | 21 | 2,200 | 44 |
| UK HaFS total | 920 | 2,800 | 2,511 |

Figure 1.4 shows the breakdown of the £2.5 billion by cost element, highlighting that food purchases (£1,340m) and labour (£960m) account for over 90% of the costs associated with food waste. Despite the significance of the other cost elements, waste management is typically the only consideration when assessing the cost of food waste, whereas this study estimates that it represents just over 3% of the total food waste cost.

Figure 1.4: Estimated total cost of food waste by cost element⁷ centre (WRAP, 2013b)



There is significant variation between the subsectors in terms of the average cost per tonne of food waste and cost associated with each meal, as shown in Table 1.2 below. This is due to factors such as:

- variation in the average price per meal of food purchases at sector level;
- variation in the weight of an average meal in each sector;
- level of in-house food preparation undertaken; and
- variation in the level of avoidable food waste generated per meal.

The per-tonne cost of total food waste is less than the per-tonne cost of avoidable food waste since avoidable food waste comprises only the high value food intended for human consumption. Total food waste comprises both avoidable and unavoidable food waste, and the latter is the low value, inedible portion of food.

The relevant subsector figures should be used when calculating the costs associated with food waste from an individual HaFS outlet. It can be seen that the cost of total food waste, when taking into account all the elements, is significant, **ranging from £1,700 to £4,000 per tonne** depending on the subsector and whether the food being wasted could have been eaten. There will, of course, be significant variation around these average values, given the variety of different HaFS provision within each subsector.

⁷ Labour refers to the house labour costs associated with the preparation and cooking of food destined to be wasted; administration refers to the invoicing costs associated with the purchase of food destined to be wasted.

Table 1.2: Summary of the estimated average cost of food being wasted (WRAP, 2013b)

| Subsector | Average cost per meal | Average cost of avoidable food waste | Average cost of total food waste |
|------------------------|-----------------------|--------------------------------------|----------------------------------|
| | (£/meal) | (£/tonne) | (£/tonne) |
| Restaurants | 0.97 | 4,800 | 3,500 |
| Pubs | 0.41 | 2,900 | 2,100 |
| Education | 0.22 | 2,500 | 2,100 |
| Healthcare | 0.22 | 2,400 | 1,900 |
| Hotels | 0.52 | 6,300 | 4,000 |
| QSRs | 0.14 | 4,500 | 3,500 |
| Services | 0.43 | 2,000 | 1,700 |
| Leisure | 0.46 | 5,800 | 4,000 |
| Staff catering | 0.05 | 3,000 | 2,200 |
| UK HaFS average | 0.38 | 3,700 | 2,800 |

The composition of food waste

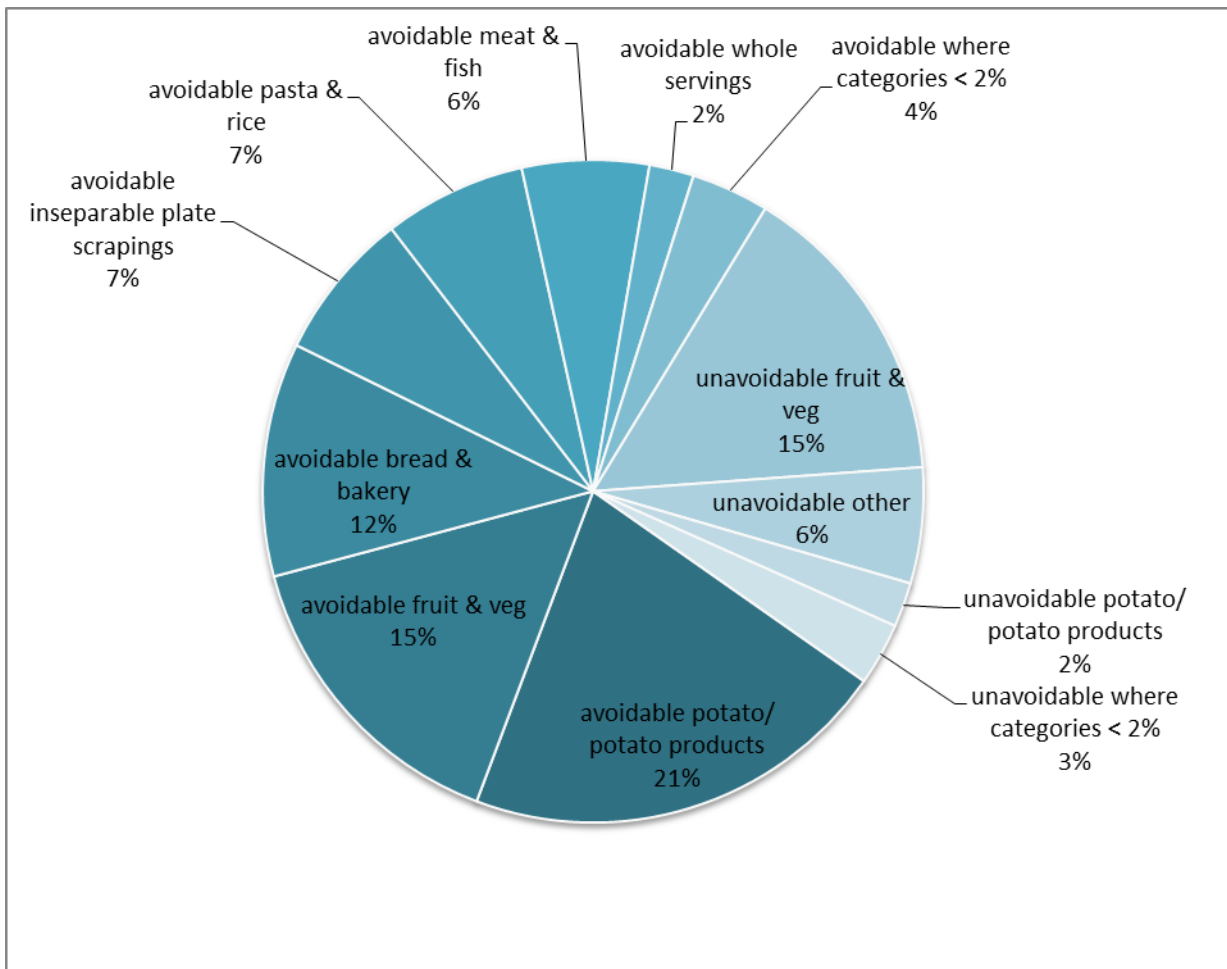
The composition of food that is wasted by the HaFS sector was compiled from research conducted between 2009 and 2012, as outlined in the methodology section. The average composition of food waste is summarised for HaFS as a whole in Figure 1.5.

Key findings on the composition of food being wasted include:

- 40% of all food waste is associated with 'carbohydrate foods', including the following avoidable categories:
 - potato and potato products (21%);
 - bread and bakery (12%); and
 - pasta/rice (7%).
- The higher value food types account for a lower proportion of avoidable food waste, for example:
 - fruit and vegetable⁸ food waste (15%); and
 - meat/fish (6%).
- The quarter of all food waste that is unavoidable mainly consists of fruit and vegetable peelings.

⁸ Potatoes are not included within the vegetable category

Figure 1.5: Average composition of food being wasted in the HaFS sector (WRAP, 2013a)



Composition of food wasted, tonnes per year

| Avoidable food waste | | | | | | | |
|----------------------------------|-----------------------|--------------------------|---------------------------------------|------------------------|-----------------------|--------------------------|---------------------------------|
| avoidable potato/potato products | avoidable fruit & veg | avoidable bread & bakery | avoidable inseparable plate scrapings | avoidable pasta & rice | avoidable meat & fish | avoidable whole servings | avoidable where categories < 2% |
| 193,000 | 139,000 | 105,000 | 67,000 | 64,000 | 57,000 | 20,000 | 35,000 |

| Unavoidable food waste | | | |
|-------------------------|-------------------|------------------------------------|-----------------------------------|
| unavoidable fruit & veg | unavoidable other | unavoidable potato/potato products | unavoidable where categories < 2% |
| 139,000 | 52,000 | 20,000 | 28,000 |

Note: Figures are rounded to the nearest 1,000 tonnes.

There are key food types to target within each subsector as shown in Table 1.3. Carbohydrates are a high priority across all subsectors, with wasted potatoes and potato products a significant component of food being wasted. Action to reduce these food types being wasted could have a significant impact in reducing the total amount of food being wasted. Higher value food types are also wasted across the HaFS.

Table 1.3: Summary of priority food types to target in waste prevention (WRAP, 2013a)

| Subsector | carbohydrates | | | fruit and vegetables | meat and fish | whole servings/sandwiches | unavoidable / prep. waste |
|----------------|--------------------------|------------|--------------|----------------------|---------------|---------------------------|---------------------------|
| | potatoes/potato products | pasta/rice | bread/bakery | | | | |
| Restaurants | * | | | * | * | | * |
| QSRs | * | | * | | * | | |
| Pubs | * | | | * | * | | * |
| Hotels | * | | | * | | | * |
| Leisure | * | | * | | | | * |
| Staff catering | | | * | | | * | |
| Healthcare | * | | | | | | |
| Education | * | * | | * | | * | |
| Services | * | * | | | * | | |

Why take action on food waste?

With the cost of outlet food waste across the HaFS sector estimated at £2.5 billion, even modest food waste prevention can help to save money and improve margins. For example, a 5% reduction in food waste over a two year period could save the sector £250 million.

As shown in Table 1.4, the greenhouse gas implications of food waste are also considerable. The carbon dioxide (CO₂) equivalent emissions 'from farm-to-fork' associated with food that is wasted is 3.6 million tonnes, of which 2.7 million tonnes CO₂ equivalent per year is associated with avoidable food waste. The scale of impact of avoidable food waste is similar to all direct emissions from energy use in UK hotels, pubs and clubs⁹.

Table 1.4: Impacts of food being wasted by the UK HaFS sector (WRAP, 2013a)

⁹ Carbon Trust (2007) Sector Overview CTV013 Hospitality: Saving energy without compromising service Carbon Trust; London.

| | |
|---|----------------------------|
| Total amount of food waste | 0.92 million tonnes |
| Total food purchases by the UK HaFS sector in 2011 | £10.1 billion |
| Total annual cost to the sector of food waste | £2.5 billion |
| Greenhouse gas emissions (tonnes CO ₂ equivalent per year) associated with total food waste | 3.6 million tonnes |
| Greenhouse gas emissions (tonnes CO ₂ equivalent per year) associated with total <u>avoidable</u> food waste | 2.7 million tonnes |

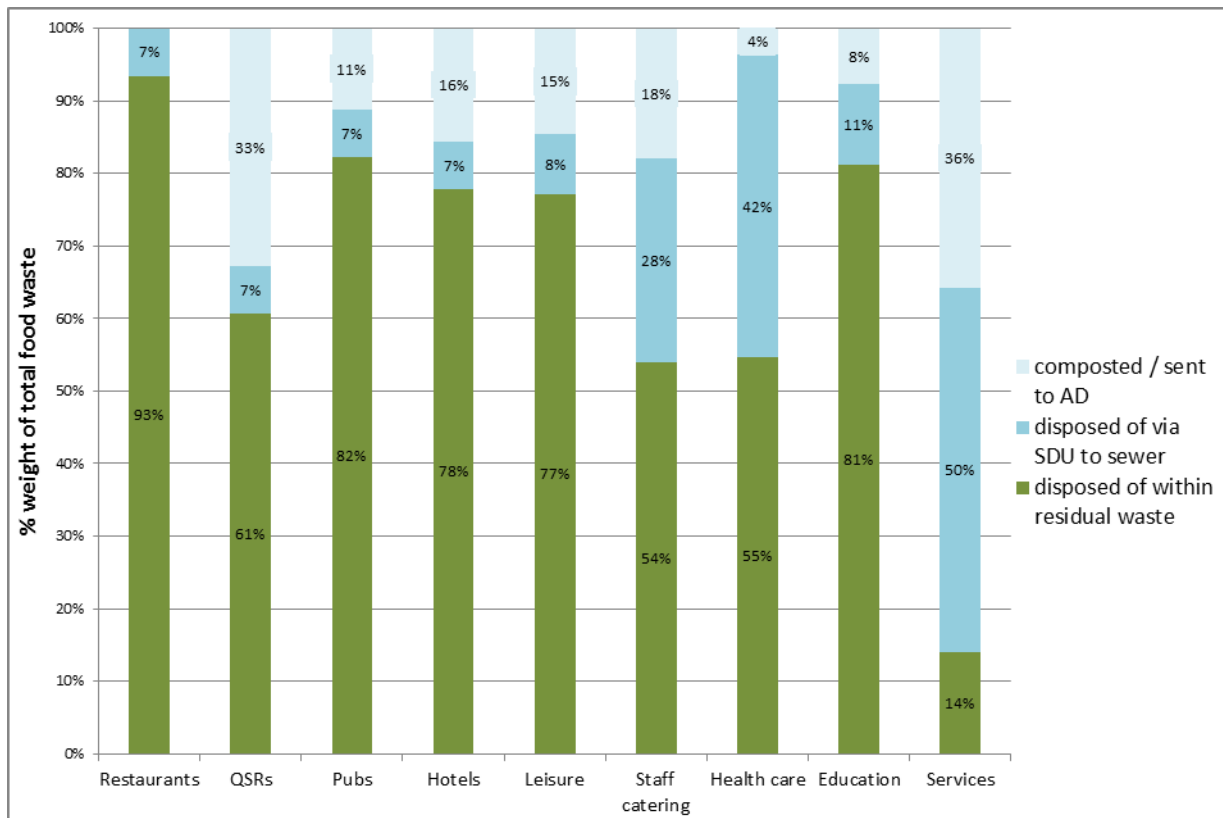
The potential benefits to the environment as well as saving money from preventing food being waste are substantial. For food waste that cannot be prevented, such as unavoidable food waste associated with preparation, the next best option, in terms of cost savings and environmental impact, is to divert from landfill (or SDU) to AD or composting.

Management of food waste

The management of food waste varies significantly by subsector, but all subsectors can do more to divert food waste away from landfill as shown in Figure 1.6.

Where food waste cannot be prevented, increased diversion into AD or composting and away from disposal (including SDUs) is the priority across the whole sector. The proportion of food waste diverted to composting or AD is highest in QSR and services at 33% to 36% respectively. Education, pubs and restaurant subsectors dispose of more than 80% of their food waste in residual waste bins, which mostly ends up in landfill or at energy from waste facilities. Disposal of food waste via SDUs is highest within healthcare (42% of food waste), staff catering (28%) and services (50%). For other subsectors, less than 10% of food waste is disposed of food waste via SDUs.

Figure 1.6: Management of food waste by subsector for UK HaFS (WRAP, 2013a)

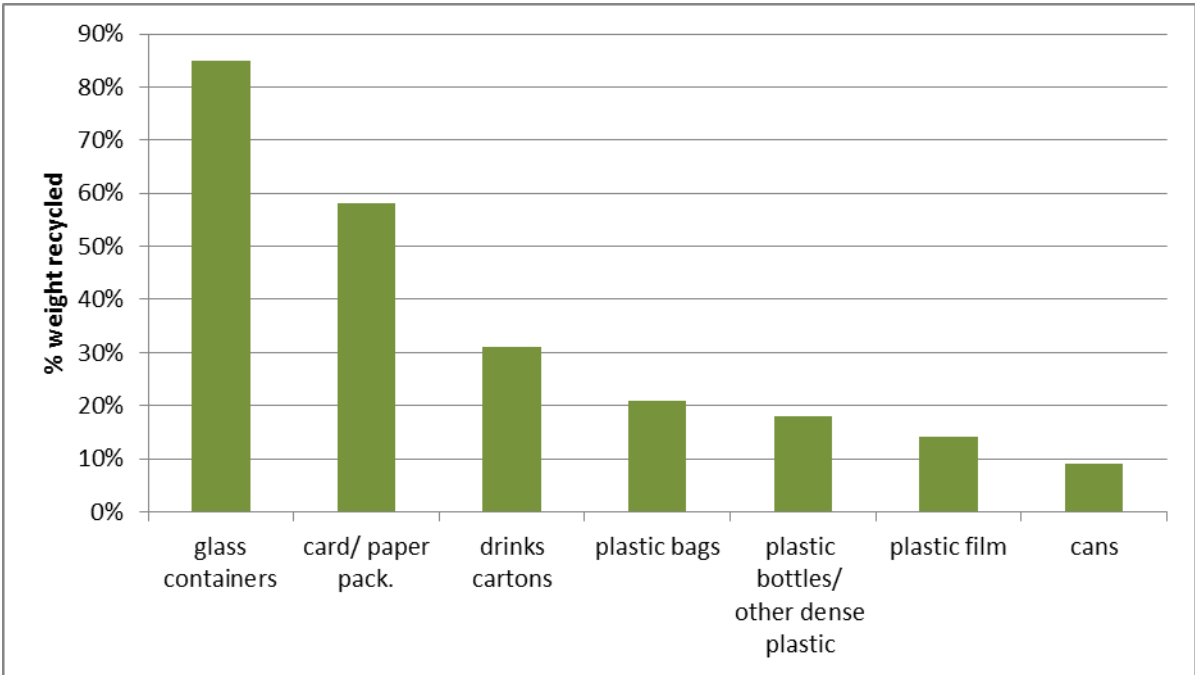


Packaging and 'other wastes' at HaFS outlets

An estimated 1.3 million tonnes of packaging is used by UK HaFS outlets each year, including packaging around food, drink, cleaning products and other HaFS supplies. Of this, 61% is glass packaging, used mainly in pubs, restaurants and hotels. Of the 1.3 million tonnes of packaging, 66% is recycled, with container glass and card / paper packaging achieving the highest recycling rates, as shown in Figure 1.7. In total 420,000 tonnes of packaging waste is disposed of to landfill, of which, 80% consists of recyclable materials such as glass, cardboard and plastic bottles.

In addition to this 'Other' wastes, amount to a total 0.66 million tonnes, includes kitchen towels, disposable cups, newspapers and office paper. A summary of packaging and other wastes by each UK nation is presented in Appendix 4.

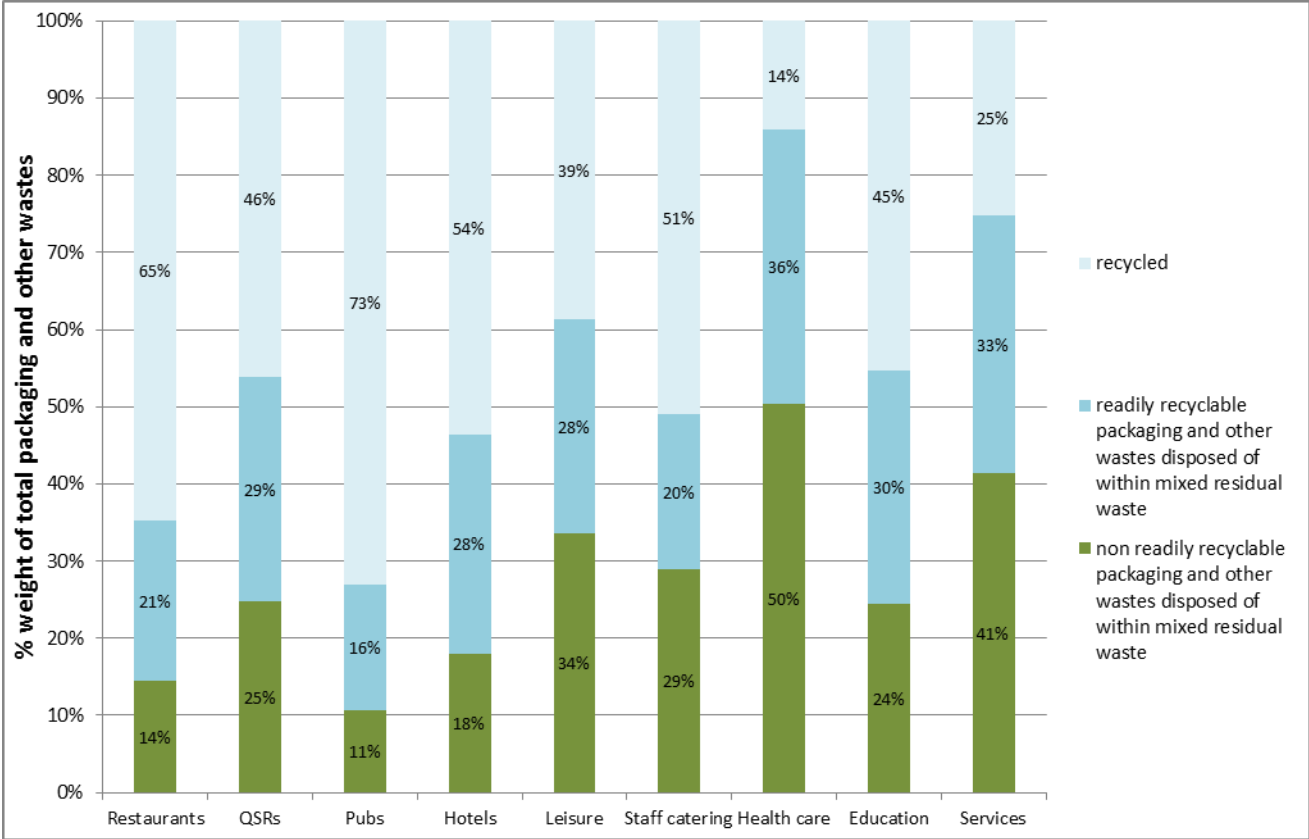
Figure 1.7: Recycling rates for packaging materials used within UK HaFS (WRAP, 2013a)



Recyclable packaging and 'other wastes'

Taken together 1.22 million tonnes of packaging and 'other wastes' are recycled each year of which glass accounts for approximately 50%. Of the remaining packaging and 'other wastes' currently disposed of to landfill 56% of the weight comprises materials that can be readily recycled. If all of these materials were recycled, the amount of such wastes recycled by the sector would be increased from 62% to 84%. Figure 1.8 shows a breakdown of management of packaging and other wastes by HaFS subsector.

Figure 1.8: Management of packaging and other wastes in the UK by HaFS subsector (WRAP, 2013a)



In hotels, restaurants and pubs, 36% of the weight of the readily recyclable materials disposed of consists of glass containers and bottles, with cardboard accounting for 29% (see Figure 1.9).

In the other subsectors (healthcare, services, leisure, education, QSR and staff catering, see Figure 1.11) where less glass packaging is generally used, most of the weight of readily recyclable material comprises of plastic bottles, metals and cardboard. At education outlets, drinks cartons (associated with school milk and other drinks e.g. juice cartons) also represent a higher quantity of packaging.

Figure 1.9: Pubs, restaurants and hotels: profile of readily recyclable packaging and other wastes currently thrown away (WRAP, 2013a).

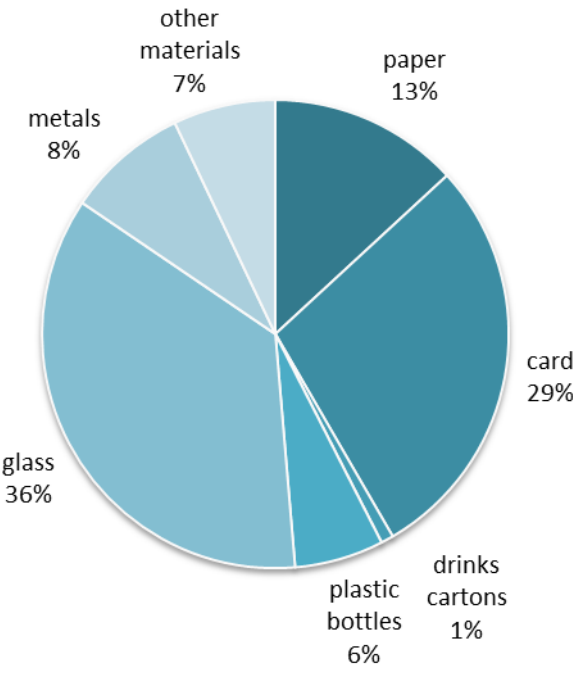
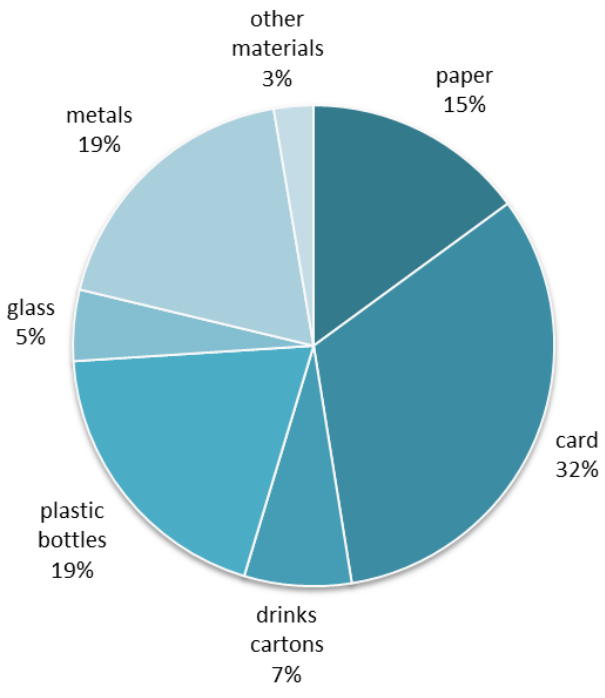


Figure 1.10: Other HaFS: profile of readily recyclable packaging and other wastes currently thrown away (WRAP, 2013a).

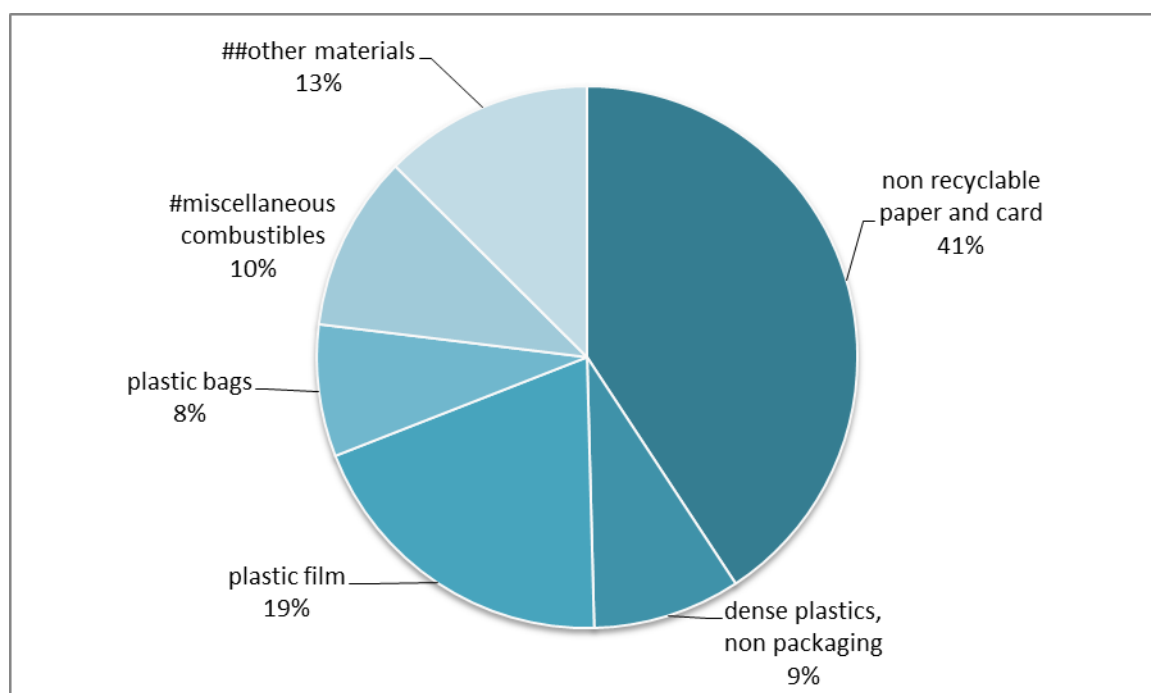


Non-readily recyclable - packaging and other wastes

Only 16% of the 1.9 million tonnes of total packaging and other wastes are not readily recyclable. A breakdown of this is given in Figure 1.11. Many of these materials are common to all HaFS subsectors and include:

- non-readily recyclable paper and card (e.g. disposable hand towels, kitchen towels associated with kitchen hygiene and/or cleaning);
- food contact packaging and less readily recyclable plastics (e.g. plastic film around food products, food trays that may have food residue); and
- disposable HaFS products (e.g. kitchen gloves, plates, cups and catering headgear).

Figure 1.11: UK HaFS profile of non-readily recyclable packaging and other wastes disposed of in mixed residual waste bins (WRAP, 2013a).



Notes:

- # 'miscellaneous combustible' materials include wood and composite packaging materials that could not be clearly allocated into an appropriate material category but were combustible.
- ## 'other materials' mainly comprise 'fines' (material too small to sort, falling through the 10mm screen), non-packaging glass and small quantities of rubble / building maintenance materials.

Why take action on packaging and other wastes?

Packaging plays a vital role in protecting and preserving food and drink throughout the supply chain. However, the amount of packaging used around products used by the HaFS, as in other sectors, is about getting the balance of product protection verses packaging use just right (packaging optimisation). This then has a huge benefit throughout the supply chain, reducing the amount of packaging produced, product damage, raw material used, operational costs, energy consumption, greenhouse gas emissions and ultimately the cost of managing waste. Table 1.5 highlights the estimated impacts of packing within the HaFS sector, from this research.

Table 1.5: Impact of packaging and other waste arising in the HaFS sector (WRAP, 2013a and 2013b)

| | |
|---|---|
| <p>Total cost of food packaging used by UK HaFS per year (figures in £): with glass included This is approximately 5% (7%) of HaFS annual food procurement cost</p> | <p>£500 (£700) million / year</p> |
| <p>Greenhouse gas savings associated with recycling all readily recyclable packaging and other wastes currently disposed of to landfill</p> | <p>0.4 million tonnes CO₂ equivalent / year</p> |

One of the potential benefits of packaging optimisation for some larger businesses is that PRN (Packaging Recovery Note) costs could be reduced and ultimately there is less packaging to dispose of.

Packaging initiatives should also consider design for the use of recycled content, re-use and recyclability and applying learning's from for example the 2012 Olympic legacy¹⁰. Guidance has been produced by WRAP on designing packaging for recyclability and case studies for plastics packaging and plastic bottles. These can be found from this link <http://www.wrap.org.uk/category/materials-and-products/plastics>.

All parts of the HaFS sector can also do more to recycle the packaging that they use, particularly for material where recycling infrastructure is widely available. Across the UK this includes: container glass, cans, plastic bottles and cardboard. If all of these materials were recycled, the amount of such wastes recycled by the sector would increase from 62% to 84%.

The priority materials to increase recycling rates of for each subsector are indicated in Table 1.6 below, where red is a high priority, orange a medium priority and green a lower priority.

- Cardboard is a priority for all, accounting for more than 15% of all readily recyclable materials within each subsector.
- Increased glass recycling is a priority in the subsectors that serve alcoholic drinks: restaurants, pubs and hotels.
- Hotels and QSRs in particular should also target newspapers, magazines and other paper.

¹⁰ <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/mr-catering-packaging-and-consumables.pdf>

Table 1.6: Priority materials to divert recyclable materials from residual disposal in the UK HaFS sector (WRAP, 2013a)

| Subsector | Newspapers, magazines & other paper | Cardboard (corrugated and carton board) | Drinks cartons | Glass containers | Metal cans | Plastic bottles |
|----------------|-------------------------------------|---|----------------|------------------|------------|-----------------|
| Restaurants | | Red | | Red | | |
| QSR | Red | Red | | | Green | |
| Pubs | Green | Amber | | Red | | |
| Hotels | Red | Red | | Red | | |
| Leisure | Amber | Red | | | Green | Green |
| Staff catering | Amber | Red | | | Red | Red |
| Healthcare | | Red | | | Red | Red |
| Education | | Red | Amber | | Green | Red |
| Services | | Amber | | | Red | Red |

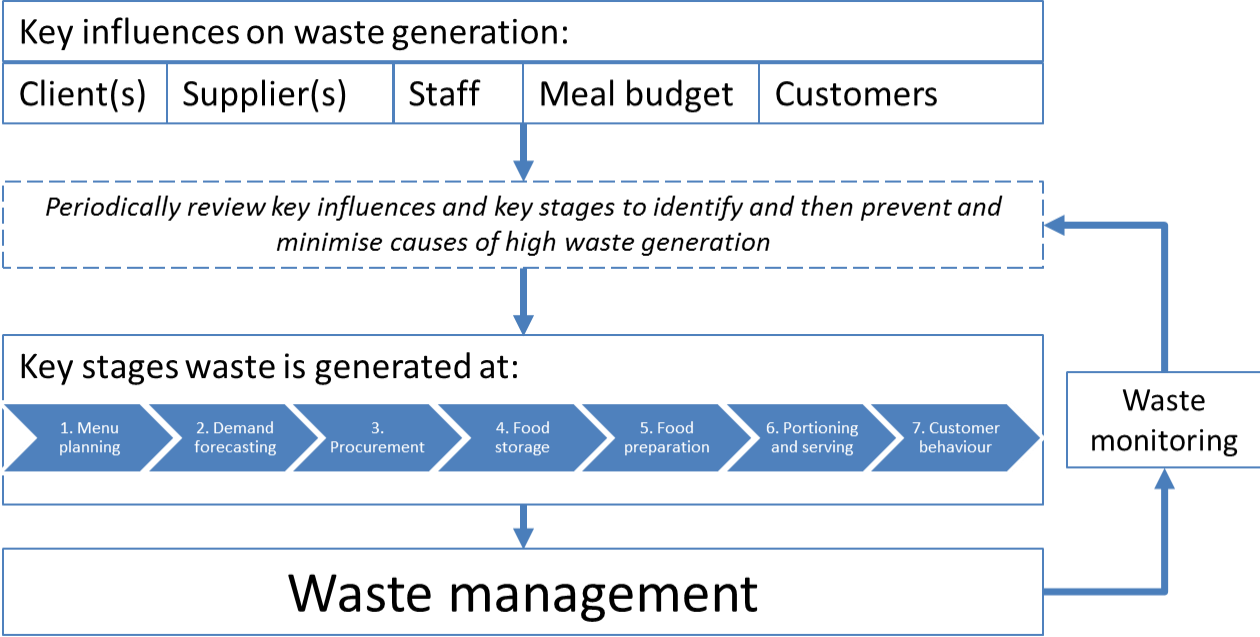
% weight of all readily recyclables: Green = 10-15%, Amber = 15-20%, Red = >20%.

2.0 Waste Prevention Opportunities

Implementing waste prevention within HaFS will have to consider a number of areas, from menu planning through to consumption. On average across the whole HaFS sector 21% of food waste arises from spoilage; 45% from food preparation and 34% from consumer plates. These ratios vary, due to different kitchen operations and how much food is brought in pre-prepared.

Figure 2.1 shows how clients, suppliers, staff, budget and consumers all have an influence on waste. Waste has the potential to be generated at each of the key stages of meal production, and the crucial part of waste monitoring is to determine where and why waste is generated, so that priorities can be identified and then targeted to reduce waste arising. In addition to these key stages of waste generation, further influences relate to the overall layout of the kitchen, the facilities and the available space, as sites with more constrained space are more likely to rely on pre-prepared foods.

Figure 2.1: The waste monitoring 'feedback loop'

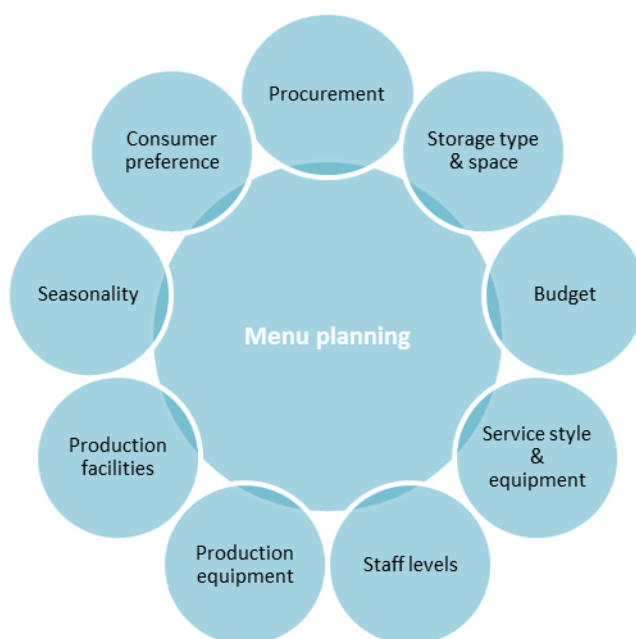


This section describes each of the key stages of HaFS and the opportunities there are to reduce waste. It is likely a combination of activities that are tailored to the needs of your specific HaFS business will be most effective in reducing waste. The cost effectiveness of the different interventions discussed in this section should be carefully monitored to ensure they are delivering the expected outcomes.

1. Menu Planning

Menu planning is of central importance to reducing food being wasted, and is driven by many different operational decisions. A wide enough range of menu items must be offered to satisfy consumers whilst at the same time minimising the waste associated with the less popular choices. If mistakes are made, unserved food may have to be wasted. Menus may have to be changed to keep them new and appealing, especially in some subsectors where the same consumers may eat at the same outlet on a regular basis. Indeed, within these settings contract caterers are likely to be contractually obliged to vary menus (see 'client influences at outlets operated by contract caterers'). Figure 2.2 depicts the nine key influences that drive menu planning, although some will often have more bearing than others (e.g. budget).

Figure 2.2: Potential HaFS influences that drive menu planning



Menu rotations

Many HaFS outlets, such as those in the education and healthcare subsectors, rotate the meals offered on their menus every few weeks or so, and the rotation itself may be changed (cycled) three or four times annually, often reflecting the season to allow for use of more seasonal ingredients. Although menu rotation is important, it may inadvertently cause waste as HaFS staff may have less opportunity to optimise their efficiency in preparing a single menu as menus change.

Menu planning in 12 steps

Careful menu planning and review is an extremely important component in the avoidance of food being wasted. Table 2.1 gives an example of the process, as used by a hospital catering manager when designing a new menu. Beyond the 12 steps identified in this healthcare sector example, wider considerations include the speed of food service at an outlet, the disposable income of consumers and seasonality in food preferences.

Table 2.1: Twelve steps to waste prevention through menu planning

| Step | Activity | Step | Activity |
|------|--|------|---------------------------------------|
| 1 | Assess consumer group | 7 | Make any changes |
| 2 | Consider budget and resources | 8 | Trial the menu |
| 3 | Consider menu policies | 9 | Review the trial |
| 4 | Decide on menu structure | 10 | Implement the menu |
| 5 | Write the menu | 11 | Monitor waste and satisfaction levels |
| 6 | Undertake menu analysis – nutrition and cost | 12 | Review the menu |

Menu planning: waste reduction opportunities

- Carefully monitor uptake of different menu types and cycles, and link this with waste monitoring data. Ask for consumer feedback. Use all this to inform menu planning and compare wastage rates across different menu types and cycles to minimise the amount of food being wasted.
- Where it does not compromise food safety, plan to use surplus food as part of your menu. For example, surplus vegetables can be used to make soup.

Case study

A Didcot secondary school has managed to reduce food waste by switching from kitchen staff serving pupils to a self-service system. This required cooperation between the client (the school) and the catering firm. Kitchen staff spent a period of time observing what students chose, in what quantities, the difference between the age groups and genders, and what was left on the plate at the end of the meal. Following this initial observation period, the menus were adapted according to what pupils ate; resulting in some food items being completely removed from the menu. This led to a 50% reduction in waste from the kitchen, as a result of both less food waste being left on the plate and better stock management in the kitchen.

2. Demand Forecasting

Most HaFS businesses do not aim to produce more food than they can sell. But equally, there may be reluctance to under-produce food, particularly where there is a risk of running out or there are financial penalties within catering contracts. Management of peak times can be made easier in QSR outlets serving items such as sandwiches, if items that are most likely to be in high demand are ready to be served, with 'make to order' used for specials and for consumers during less busy periods. Potatoes, pasta and rice are examples of foods that can require a time to prepare but which may be unsuitable for use during a later service period if they were prepared too early on. If the operator gets a forecast wrong on these items and cooks too much, they could end up as food waste.

Information Technology (IT) systems are available to forecast demand, based on historical sales data, captured electronically from the point of sale. As well as predicting the number of portions needed for a given meal, these technologies can be used to order new supplies and control portion size. They can even take into account weather forecasts so that demand for items such as salads can be more accurately predicted.

Factors to account for when demand forecasting can include:

- size of HaFS operation;
- size of menu;
- predictability of consumer numbers (which may vary on different days of the week);
- predictability of consumer preferences;
- the weather; and
- local and national events.

Pre-selection of meals

The more unpredictable the numbers and preferences of consumers, the harder it is to reduce waste. The quantities of food prepared may tend towards over-provision in response to pressure to offer enough portions and variety of menu choices to satisfy consumers – and perhaps clients, in the case of some contract caterers.

In schools as well as residential sites such as hospitals and prisons, the consumer base can be relatively predictable. In contrast, most restaurants, pubs, QSR and leisure outlets have to cope with more variable numbers of consumers. The exception to this is hotels that serve breakfasts to their overnight guests, as uptake is highly predictable.

Where the consumer base is relatively predictable, menu options could be pre-selected/ordered as far forward as possible. This practice is known as 'cook-to-order'. Such pre-ordering helps reduce the waste associated with inaccurate demand forecasting but timing is all important:

- if the timing is too late, and the HaFS operator doesn't have time to plan; but
- if the timing is too early, the pre-selected meal may be left uneaten; for example if a hospital patient places their order in the morning but is discharged before lunch.

Demand forecasting: waste reduction opportunities

- It may sometimes be possible to ask consumers to pre-select meals. If not, the next best option is to start monitoring consumer numbers as well as waste; over time a pattern of demand and wastage may become apparent.
- Cutting the lead time needed to prepare an item may offset the problems of unexpected surges in demand. Food that can be prepared in minutes rather than hours allows operators greater responsiveness and flexibility. For example, some healthcare outlets tackle the problem of high patient turnaround by cutting lead times through the procurement of pre-prepared meals. These pre-prepared meals are delivered into healthcare sites. The 'cook-freeze' or 'cook-chill' systems enable patients to make their menu choices on the ward and a few minutes prior to service (food is heated on the ward), and allows a fast response to changes in patient numbers. Any portions left over can be stored in freezers for a following day's service rather than having to be wasted.

3. Procurement of food

The procurement of food, ingredients and other supplies is a key influence on waste generation at HaFS outlets.

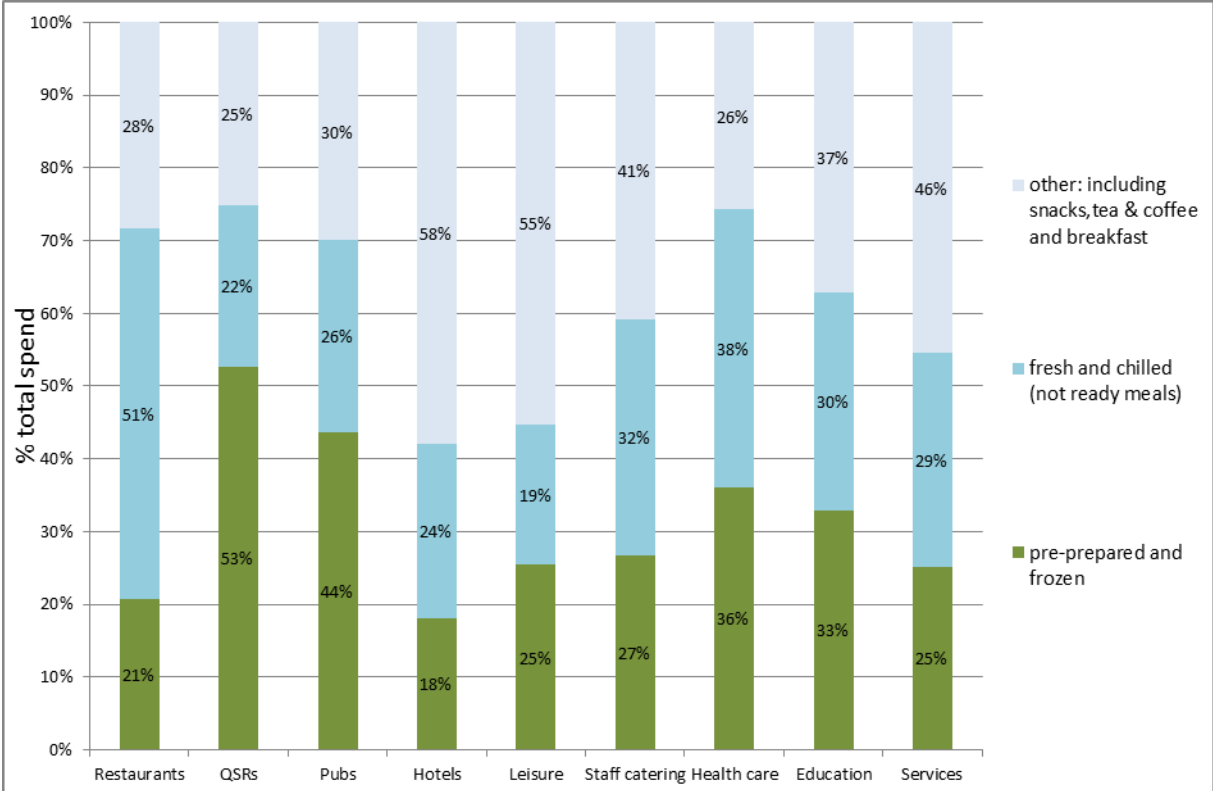
Temperature class

The temperature class of delivered food products is critical in determining the length of time items can be stored before they are cooked and served. Outlets may prefer to buy chilled supplies for their perceived quality and taste, but if these are over-ordered because of inaccurate demand forecasting this is likely to increase waste. Frozen ingredients may offer a

greater flexibility, but some outlets lack freezer space and have to order chilled equivalents or prepare their own.

Figure 2.3 shows that the proportion that outlets spend on each temperature class of food varies markedly across all the HaFS subsectors. QSRs emphasis on pre-prepared and frozen ingredients tends to result in lower on-site waste and more waste generated further up the supply chain, per meal, than other subsectors that procure a higher proportion of fresh and chilled products.

Figure 2.3: Proportion of total food procurement budget spent by the UK HaFS subsectors split by temperature class of food¹¹ (Horizons, 2011)



Delivery size and frequency

The scale of procurement has a significant influence on whether or not products can be purchased in the most appropriate pack sizes, delivered at the right frequency and at the right price. The “Just In Time” (JIT) delivery model, whereby supplies arrive more often and in smaller batch sizes, can allow HaFS outlets to better respond to fluctuating consumer demand. But rising transport costs and carbon impacts may weigh against this, and suppliers may incentivise caterers to place bulk orders by specifying ‘minimum order quantities’, and may offer rates that decrease as the order amount increases.

¹¹ Horizons Report (2011)

Procurement of food: waste reduction opportunities

- Wholesalers need to maintain flexibility to their consumers who prefer 'split' or 'part' loads, whilst outlet operators can develop better policies towards how they place orders and the quantities that they require.
- The biggest food service businesses have more influence to change supplier behaviour and to reduce waste. For instance, Sodexo require their suppliers to provide information on the weight and type of packaging (split by primary, secondary and tertiary) material across more than 7,000 individual line items. In this way they are able to identify areas for packaging optimisation.

Packaging

As mentioned in *'Taking action on packaging and other wastes'* packaging plays a vital role in protecting and preserving food and drink throughout the supply chain.

The materials that are most frequently used within the HaFS sector are corrugate and carton board, as well as glass. The initial focus should be to look at identifying the opportunities to optimise packaging in these materials. Whenever optimisation is considered it is important to ensure that product protection and product quality is maintained. In many cases packaging optimisation opportunities would need to involve the suppliers/food and drink manufacturers where decisions on packaging specifications are made. There are many examples of the packaging optimisations initiatives that have been delivered by food and drink manufacturers through the Courtauld Commitment; visit www.wrap.org.uk/category/initiatives/courtauld-commitment to find out more.

Initiatives could include:

- glass bottle optimisation;
- review of corrugate and carton board specification;
- use of reusable packaging.

Many suppliers offer products in bulk packaging formats, which can result in less packaging per unit of product. Examples of this include catering sized packs for flour, tomatoes, baked beans, rice, pasta, and milk supplied in pergals (a box containing a plastic bladder of milk). But bulk packs may only be appropriate for products used regularly at larger outlets where the chance of spoilage is minimal and storage space is available.

Other ways to reduce the carbon impact of packaging can be to increase the recycled content of packaging. Two protocols are available from WRAP that can be used to calculate the recycled content within packaging, the glass one can be found here <http://rgcc.wrap.org.uk/> and the one for plastics packaging here www.wrap.org.uk/content/recycled-content-protocol-plastic-packaging.

It is also worth noting that green glass can have a much higher recycled content than clear glass and therefore where glass packaging is being sourced from the UK, if green is an option this can help lower the carbon impact.

Packaging: optimisation opportunities

Wholesalers and suppliers delivering to HaFS outlets may be able to optimise the packaging associated with their products while also minimising product waste, for example:

- use of returnable and re-usable transit packaging;
- use of re-usable primary packaging (e.g. refillable drinks containers); and
- optimisation of packaging (optimising the weight whilst taking into account other factors such as the strength of the packaging which if decreased past a certain point may result in more spoilage waste). Initiatives could include glass bottle optimisation and reviewing corrugated and carton board specification.

4. Food storage and stock management

How food supplies and ingredients are stored and whether or not waste results at this stage will relate to a range of factors including the temperature class of the stored food, the level of stock and how well it is managed. The integrity and design of packaging is also important as highlighted in the fresher for longer initiative¹².

The temperature and humidity at which ingredients are stored is especially important. If refrigeration and freezer equipment is of poor quality it may result in reduced shelf life and greater quantities of waste. Close monitoring of stock also involves consideration of the extent to which shorter shelf life stock, such as sandwiches, may have to be discounted in order to sell.

Stock rotation and control is also critical to ensure that more recent deliveries are not used before existing stock. Items closer to approaching the end of their shelf-life in terms of 'use by' dates should be used first to avoid being wasted. A related problem is the management of part used ingredients. Simple tagging and reminder systems may be used to prompt their use in preference to taking unopened items from storage.

To reduce the spoilage associated with 'use by' date expiry, most food operations understand the principle of 'First-in, First-out' which encourages the use of older ingredients before newer ones. For instance, food items may be stored in racks which ensure those with the least remaining shelf-life are the easiest for staff to access (see Figure 2.4).

¹² <http://england.lovefoodhatewaste.com/content/fresher-longer-0>

Figure 2.4: An example of a rack system at a HaFS outlet (WRAP, 2013a)



Managing stock: waste reduction opportunities

By careful management of stock at outlets the amount of food being wasted can be reduced, particularly in relation to perishable ingredients. Of course, minimising inventory can be difficult if suppliers encourage their consumers to order in bulk or delivery costs are high.

5. Food preparation

How a meal is prepared has a profound impact on the type and volume of waste arising at a HaFS outlet. In more 'traditional' kitchens, meals are made from scratch using raw ingredients ('cook-serve'). But on-site preparation result in larger quantities of unavoidable waste such as vegetable peelings and off-cuts. Many outlets now serve meals derived from components prepared further up in the supply chain ('pre-preparation'). Sometimes the products form the building blocks of meals; sometimes they are ready-to-serve. The items often come frozen to preserve shelf-life.

Both methods can be in practice at the same HaFS outlet. For example, a staff restaurant may serve some pre-prepared items (e.g. ready-to-heat frozen potato chips or meat pies) while preparing other products (e.g. rolls and sandwiches) on-site.

Advantages of pre-prepared menu items:

- less preparation food waste at the outlet;
- can have a longer shelf life than the equivalent fresh item;
- less energy and water use at the outlet if it can be stored at ambient temperature;
- less time required at the food preparation and cooking stages;
- often simpler cooking methods;
- can allow greater flexibility and faster response to unpredictable consumer demand;
- waste arising earlier in the supply chain offers economies of scale to manufacturers, who may consider food redistribution or recycling;

- manufacturing processes up-stream in the supply chain in general are more automated than in HaFS kitchens which can mean less mistakes in preparation and therefore less waste; and
- lower transportation costs per meal.

Disadvantages of pre-prepared menu items:

- can be more packaging per meal;
- can have a perceived lower food quality and freshness;
- can be more expensive;
- higher energy costs if stored chilled or frozen;
- less flexibility in options for reuse;
- they may have minimum order quantities; and
- can reduce the potential to use the local supply chain.

Preparing meals: waste reduction opportunity

Where it is appropriate to the style of HaFS provision at a site, operators may want to consider procuring part of their menu in pre-prepared format in order to reduce overall food waste associated with meal preparation.

6. Portioning and serving

If the aim of demand forecasting is to minimise unsold food waste in a HaFS operation, minimisation of plate waste is the goal of portion control. A serving must be big enough to ensure the consumer leaves satisfied. If too much food is served this will likely end up in the bin and, even though the meal has been paid for by the consumer, it represents an avoidable financial cost to the HaFS business.

Many operators rely on their skill, experience and familiarity with the appetites and tastes of their consumers to judge portion sizes.

Accurate portion control is especially difficult where food is served on self-service buffets. Operators have to balance choice and quality to satisfy clients and customers and to minimise waste. Experience of customers' tastes and trials of new approaches will help to reduce waste.

In certain catering situations, such as at staff restaurant, it might be possible to reduce waste if buffets were able to stock fewer items towards the end of service than at the beginning. This would require mutual agreement between the client business and contract caterer. At other sorts of premises that provide buffets, such as at restaurants, provision of fewer items towards the end of service is likely to be more difficult to implement. Another consideration is the use of smaller plate sizes for buffets which has been shown to reduce food waste¹³. Customers of course still have the option to return to the buffet on multiple occasions if wanted.

¹³ <http://www.inudgeyou.com/inudgeyou-conducts-nudge-experiment-reducing-food-waste-by-26/>

Portioning and serving: waste reduction opportunities

The following techniques may help:

- measure and monitor the amount of plate waste which will help you determine whether portion sizes are right or whether they are creating unnecessary waste;
- standardised serving spoons or plates for different portion sizes;
- use weight-based recipes so the right quantity of food is cooked for the number of servings required;
- use reduced plate sizes for buffets as this has been shown to reduce waste;
- use a pictorial representation of a portion as a basis for serving (within sight of where meals are served), which is often more effective than description.

7. Consumer and staff behaviour

The activities of both staff and consumers can affect the volume and nature of waste, especially plate waste, once meals have been served to consumers.

Consumer behaviour

Recent research from WRAP *Love Food Hate Waste* on plate waste¹⁴ showed that people who leave food don't feel a sense of ownership or responsibility about the food they leave. They also consider that the amount of food they get is out of their control and many people won't ask for anything different. Consumers are looking to the operators to provide them with solutions.

Consumer behaviour: waste reduction opportunities

Enable your consumers to choose by what they want:

- offering refills or different portion sizes for consumers to choose from;
- making it clear to consumers on what is included with the meal (e.g. garnishes) and provide 'sides' as options so they can build their own meal up; and
- WRAP's Love Food Hate Waste campaign has carried out research into the behaviours, attitudes and barriers for consumers around the food wasted when eating away from home. As a result there is a Resource Pack which can be used to work with your consumers to reduce plate waste.

In addition, sometimes it might be possible to offer consumers smaller portions at first, but allow them to return for 'seconds' if they want. This is something practised by the facilities management company and contract caterer ISS. In Denmark the company clearly communicates to guests that they can serve themselves twice if they want to.

Doggy bags/boxes are another way to help reduce plate waste. This is the encouragement of consumers by outlet staff to take away uneaten portions in doggy bags or suitable containers to be eaten later, where appropriate. Further advice on using doggy bags and boxes is available in Appendix 5.

¹⁴ http://www.wrap.org.uk/sites/files/wrap/UK%20LFHWHospitalityResourcePack_0.pdf

Staff behaviour

Staff behaviour is a key area in which food waste can be positively influenced. Good communication with staff on the objectives of reducing food waste and increasing recycling is very important, as then they can convey such information to consumers and promote waste prevention activity.

Staff behaviour: waste prevention opportunities

Making staff aware of all the key areas of waste generation and the associated opportunities to reduce will encourage them to help tackle it. This includes both consumer facing and back of house opportunities as appropriate. It could include training staff to cover areas such as promotion of the use of doggy bags/boxes, awareness of surplus food redistribution and correct portioning so that food is not inadvertently wasted.

8. Contract management

Client constraints may exert a significant influence on the amount and composition of food waste at HaFS outlets that are operated by contract caterers. This influence has the potential to reduce waste. Where contract caterers provide the food service, it must conform to criteria set out by their clients on whose premises the food is served. These criteria may include:

- quality;
- cost;
- food safety;
- nutritional value;
- range of choice;
- frequency of service;
- local sourcing;
- sustainability; and
- approved suppliers.

Consumers at these sites (e.g. employees, school pupils, or service users) might have different demands and preferences to those stipulated by the client of the contract caterer. This misalignment between client and consumers may be a significant contributory factor to food being wasted.

There is a growing demand for freshly-prepared produce which favours shorter-shelf life chilled items, e.g. salads. This could lead to food waste – particularly at schools, prisons and defence sites – where there may be an understandable requirement to offer healthier options, such as fruit or salads. One option to reduce food waste would be to work with the clientele to find out what the popular choices are in this category and favour those.

Client influences: waste prevention opportunities

Although more and more catering contracts include the need to consider sustainability and resource efficiency, these considerations are may be seen as a secondary importance. Public and private sector clients can insist on reducing waste in the terms of any contract, for example through the use of model procurement clauses. They can also work in partnership with their caterers to start monitoring waste and reduce it as well as to increase recycling rates.

WRAP have developed a procurement toolkit for clients of catering and food services as well as waste management services. It includes model wording for tendering contracts at both the Pre-Qualification Questionnaire (PPQ) and Invitation to Tender (ITT) stage, as well as model wording for your service brief. Utilising these model procurement clauses will help ensure that catering, food service and waste management contracts have an emphasis on reducing and monitoring waste. For more information please visit: <http://www.wrap.org.uk/content/fm-client-procurement-toolkit-0>

9. Waste monitoring

Waste monitoring is the first crucial step in unlocking the potential benefits of waste prevention. Put simply, if waste is not monitored, then it cannot be managed effectively. All waste streams should be recorded, where practicable, including the use of SDUs.

Businesses that are successful in wasting less food regularly use waste monitoring data to fine-tune menus, tackle over-portioning and improve demand forecasting, as well as to motivate and train staff.

Waste monitoring helps a HaFS operation to identify where the waste arises:

- **Spoilage food waste:** the food waste that has to be thrown away due to the use by date being exceeded or it being damaged
- **Preparation waste:** keeping an eye on preparation waste could reveal inefficient practices and cooking mistakes. How much of the food material disposed of during preparation was really unavoidable?
- **Unservd food** - edible food that was cooked and thrown away because it was surplus to requirements. It can represent a significant financial loss to the HaFS operation.
- **Plate waste:** understanding why all the food was not eaten? Were they given too much or was there some other issue with the food? Ask for feedback from consumers.

The waste monitoring data is only of use when fed back to those managing the HaFS operation. There are also challenges to efforts to measure and act upon waste data:

- monitoring systems may be vulnerable to under-reporting if staff are penalised, or think they might be penalised, for poor performance;
- the use of SDUs can cause underestimation of the true scale of total waste if they are not included in the monitoring system; or
- unless weighed at point of arising, the true scale of food waste may be hidden if the material is mixed in with mixed residual waste arisings (as often occurs at larger or co-located sites).

Waste monitoring: waste reduction opportunities

Some larger food service businesses with multiple outlets indirectly monitor waste via cost control and management reporting systems. Many of these organisations implement key performance indicators, for instance, 'percentage cost of catering against catering sales'. Assuming other factors can be excluded (e.g. rising supply or staff costs), an increase in costs at a particular site may signal a rise in waste that can then be addressed.

Ideally, waste should be measured directly (via direct weighing or volume conversion) wherever possible. There are a number of free tools available to help with measure waste such as Unilever's mobile app Wise up on Waste and WRAP's Online Resource Centre with downloadable tracking sheets. Both these tools and other tools coming onto the market will help you to easily measure waste and identify where you can make savings.

One example of the benefits waste monitoring can bring include is at Intel's corporate cafeterias in Oregon, USA, where kitchen (pre-consumer) food waste was cut by 47% following the introduction of a formal waste monitoring system.

Similarly, the 'Trim Trax' system, developed by Compass Group, is a waste monitoring approach in that waste streams are collected and measured by the catering department.

The danger of silo thinking

A lack of interaction within and communication between different stages of HaFS activity can hinder a joined up approach. For example, those responsible for waste management (such as waste or facilities managers) may not communicate waste data or waste management issues directly to HaFS managers. At the same time, food service operators may believe that waste is not their responsibility.

The use of SDUs

The use of SDUs poses a challenge to waste monitoring. SDUs are used throughout the HaFS sector, but their use seems to be more common in the healthcare, services and staff catering subsectors. While they have particular operational advantages, e.g. they are rapid, convenient and hygienic; they also have drawbacks which include:

- the volume and composition of waste disposed of via SDUs may be 'invisible' to operators;
- the subsequent lack of awareness of the waste may hamper efforts to reduce waste;
- additional electricity, water and sewerage costs; and
- compliance with regulation. For example The Waste (Scotland) Regulations 2012 will ban all businesses from disposing of any food waste to the public sewer system in urban areas of Scotland from 1 January 2016. This ban will apply to the use of macerators or any other equipment that does not capture the food waste for separate collection.

Use of SDUs: waste reduction opportunity

When measuring waste, operators using an SDU could consider not using their machine for a period, and ask their staff to put food waste into transparent refuse sacks, so that waste amounts can be measured accurately. This visibility is an important first step in understanding and then communicating ways to creating less waste.

10. Waste Management

The management of food waste, packaging and other wastes varies significantly by subsector, but all can do more to divert such waste away from mixed residual waste bins and SDUs.

Redistributing surplus food to charities is another way to prevent food ending up as waste, working with charities such as [Plan Zheroes \(www.planzheroes.org\)](http://www.planzheroes.org) and [FareShare \(www.fareshare.org.uk\)](http://www.fareshare.org.uk). These donations must comply with food safety legislation.

Legislation for the disposal of food and packaging waste is changing in Scotland from 2014, including a ban on food waste being disposed of to landfill and to sewer, and a requirement to separate food waste and certain packaging wastes for recycling. For more information visit: <http://www.zerowastescotland.org.uk/content/waste-scotland-regulations>

There are opportunities for improving waste management, such as:

- **Get the bins right:** Incorrect types and numbers of bins can lead to the wrong waste going in the wrong bin, such as recycling going in with general waste. Adjusting the size of bins or frequency that they are collected can also save money.
- **Ask your waste management contractor for your data:** Having data on how much waste is going to landfill, being recycled or going to AD is important. Firstly it will help to understand current levels of recycling. This information can then be used to identify further opportunities. Monitor how this changes on a regular basis.
- **Do the sums:** Recycling waste doesn't attract landfill tax and may cost less. If you are already recycling packaging, it's worth speaking to the waste contractor about other services including food waste collections.
- **Get staff on your side:** Engage staff to recycle more by helping them understand which waste goes in which bin. It is key for staff to 'buy in' to initiatives so that they see the benefits. This will encourage participation and help increase recycling rates.
- **Work together:** Consider working with neighbouring businesses, where appropriate, to procure food waste and recycling collections. There may be efficiencies and economies of scale to be made by working together.
- **Choose the right waste management company** When entering into a contract for food waste recycling, or other waste collections, it's useful to ask questions to make sure that the service meets your requirements and won't incur additional costs. Questions such as:
 - What type of containers will be provided?
 - What can or can't they recycle?
 - What are the charges? Are there any separate charges e.g. for bin rental or over-filled bins?
 - What is the process for changing and/or renewing the contract?

- If you are a contract caterer operating on a client site, engage with your client on waste management in order to work together towards reducing waste and increasing recycling. For example, sometimes kitchen food waste and consumer food waste are collected separately under separate waste management contracts - where appropriate this could be combined to increase clarity on waste monitoring and could save money on collections.
- Where appropriate, ensure that packaging is recyclable by consumers and that the on-pack labelling clearly states this. If you operate a QSR or have a significant proportion of take-away trade, consider how your take-away packaging can be designed for recycling. This will help encourage recycling on the go.

Conclusions and next steps

The UK HaFS sector has great diversity in the services that it provides and the type and scale of organisations involved. This is mirrored in the varied quantity and composition of waste generated across the sector. However, a factor common to all subsectors is that significant opportunities exist for every type of organisation and outlet to save money through wasting less food. This will also deliver substantial environmental benefits.

Given the diversity and complexity, it is difficult to generalise about what individual HaFS outlets need to do to prevent and reduce waste. In part it is up to individual operators to develop their own plans that make most sense within the context of their HaFS business. However, there are number of instances where a joined up approach needs to be taken. This will require collaboration across the supply chain, for example bringing client and contract caterers together or working with suppliers to optimise packaging.

If you want to take action and do more, WRAP's Hospitality and Food Service Agreement (HaFSA) is a UK wide voluntary agreement, funded by all four UK Governments, that is delivering food and associated packaging waste prevention as well as increasing recycling rates. There are over 165 signatories and supporters to the Agreement which is flexible to allow any size of organisation to sign up, from multi-national companies to smaller businesses, from sector wholesalers/distributors to trade bodies.

Where to find out more

Wherever your HaFS operation is in the UK, WRAP can provide support to help you reduce food and packaging waste and increase recycling. More information can be found at the following websites:

The Hospitality and Food Service Voluntary Agreement can be found at:

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

Supporting particularly for small and medium sized businesses, information can be found at:

<http://www.wrap.org.uk/brehub>

In Scotland, Zero Waste Scotland provides a range of support to hospitality, food service and tourism businesses on material, energy and water efficiency through the Resource Efficient Scotland programme. Information on this support can be found at:

<http://www.resourceefficientscotland.com/HospitalityTourism>

The Waste (Scotland) Regulations come into force on January 1 2014, after which all organisations and businesses in the country will be legally required to recycle plastic, metal, glass, paper and card or face a fine. Additionally, the regulations will mean that any food business that produces more than 50kg of food waste each week must present it for separate collection, which will then extend to all food businesses producing 5kg or more of food waste each week from January 1 2016. However, food businesses in rural areas may be exempt from the food waste regulations. Advice on the changes to Scotland's Waste Regulations, coming into force can be found at:

<http://www.resourceefficientscotland.com/regulations>

WRAP Cymru in Wales provides support to businesses working towards Zero Waste in Wales, with a specific focus on hospitality, food and drink. More information on WRAP Cymru's activity can be found at:

<http://www.wrapcymru.org.uk/content/food-and-drink-1>

Information on support specific to Northern Ireland can be found at:

<http://www.wrapni.org.uk/>.

Further information about the research underpinning this summary report is contained within the following technical reports:

- WRAP, 2011 'The Composition of Waste Disposed of by the UK Hospitality Industry'
- WRAP, 2013a 'Waste in the UK Hospitality and Food Service Sector'
- WRAP, 2013b 'The True Cost of Food Waste within Hospitality and Food Service Sector'
- WRAP, 2013c 'Where Food Waste a Rises within the UK Hospitality and Food Service Sector: spoilage, preparation and plate waste'

Summaries of the waste profiles have been developed for all nine subsectors in the HaFS sector, in-conjunction with industry bodies such as the British Hospitality Association, British Beer and Pub Association and the British Institute of Facilities Management:

- Restaurants
- QSRs
- Pubs
- Hotels
- Leisure
- Staff catering
- Healthcare
- Educations
- Services

These information sheets are available from www.wrap.org.uk/hospitality

Appendix 1: HaFS Sector in the UK

A1.1 HaFS sector definitions and descriptions used.

The HaFS sector can be defined as outlets that sell food and drinks for immediate consumption outside the home. An 'outlet' is a place where food and/or drink are available for sale to consumers, and there may be multiple outlets on a single site. An example could be multiple QSRs and cafés at a large hospital site. There are nine major HaFS subsectors as defined by Horizons (2012):

Table A1.1: The nine UK HaFS subsectors (Horizons, 2012)

| Subsector | Definition | Examples |
|----------------|---|---|
| Restaurants | Outlets that have table service. | Italian, Chinese, Indian, French restaurants. |
| QSRs | Outlets that may have take-away or eat-in, or both. | Fast food, cafes, take-aways, fish & chip shops, sandwich bars. |
| Pubs | Outlets that focus on providing alcoholic drinks, and food sales are less than 50% of turnover. | Pubs (tenanted, managed branded, managed unbranded). |
| Hotels | Outlets that provide overnight accommodation and food accounts for less than 50% of turnover. | Hotels, bed & breakfasts, youth hostels, caravan parks. |
| Leisure | Outlets located in places where leisure services and transport are the prime focus of activity. Outlets in this sector may provide restaurant, quick service or pub style catering. | Museums/galleries, theatres, cinemas, sports clubs, events and mobile caterers, visitor attractions, motorway service stations, travel/transport. |
| Staff catering | Feeding employees at the place of work including government locations as well as business and industry. | Run in-house, contracted staff restaurants. |
| Healthcare | Outlets whose main focus is providing healthcare (including short- and long-stay care). | Private & NHS hospitals, care & nursing homes. |
| Education | Outlets that are primarily concerned with educating children or adults (or both). | Nursery, primary, secondary schools; further & higher education establishments. |
| Services | Outlets that provide a publicly-funded service and which are not healthcare or educational establishments. | Prisons, armed forces, police & fire service catering, local authority & government departments/agency staff restaurants. |

In some subsectors, provision of food and drink is a primary function of the organisation (e.g. pubs, restaurants, hotels and QSRs), whereas in other subsectors food service is not the main purpose, it is a component of other functions (e.g. healthcare, services and education). Where the latter is true, the food service is often provided by a contract caterer.

A summary of the main differences in meal provision between subsectors is shown in Table A1.2¹⁵. For some subsectors there is no 'typical' meal as a number of different food service types are found, for instance within 'leisure' this ranges from restaurant-style food service to provision of snacks and confectionary.

Table A1.2: Typical meals in each UK HaFS subsector

| Subsector | Typical meal |
|----------------|---|
| Restaurants | Generally two courses consisting of protein, carbohydrate, vegetables and sauce. |
| QSRs | Can be heavier on carbohydrate than restaurants (bread, bun, pizza, chips) plus protein and vegetables. In coffee shops and cafes carbohydrates are more likely to be bakery products. |
| Pubs | Similar to restaurants and covering a range of meal types. |
| Hotels | Half of all meals served are breakfasts, 65% of which are 'continental'. Other meals are more similar to those served at restaurants. |
| Leisure | Some meals are similar to 'restaurant' food service, but others more like QSR and provide a lot of snacks (savoury snack, confectionary, cakes) and 'grab and go' catering. |
| Staff catering | Light restaurant meals, generally smaller portions; certain industries have larger servings reflecting different dietary requirements (i.e. where manual work involved); there is a major trend towards more 'grab and go' provision. |
| Healthcare | Meals can be higher in carbohydrate. There are minimum requirements and guidance specified particularly for hospitals. |
| Education | Carbohydrates, protein, vegetables and fruit (more in primary schools). Universities & further education are split between quick service and catering more like schools. Nutrient and food based standards in schools influence meal provision and many pupils bring lunch boxes from home. |
| Services | Meal types differ greatly, from higher carbohydrate meals in prisons to larger portion and greater protein content in the armed forces. |

Further information about Horizons definitions for HaFS subsectors can be found at: http://www.hrzn.com/mint/pepper/tillkruess/downloads/tracker.php?url=http://www.hrzn.com/files/Horizons_Definitions_.pdf&force&inline

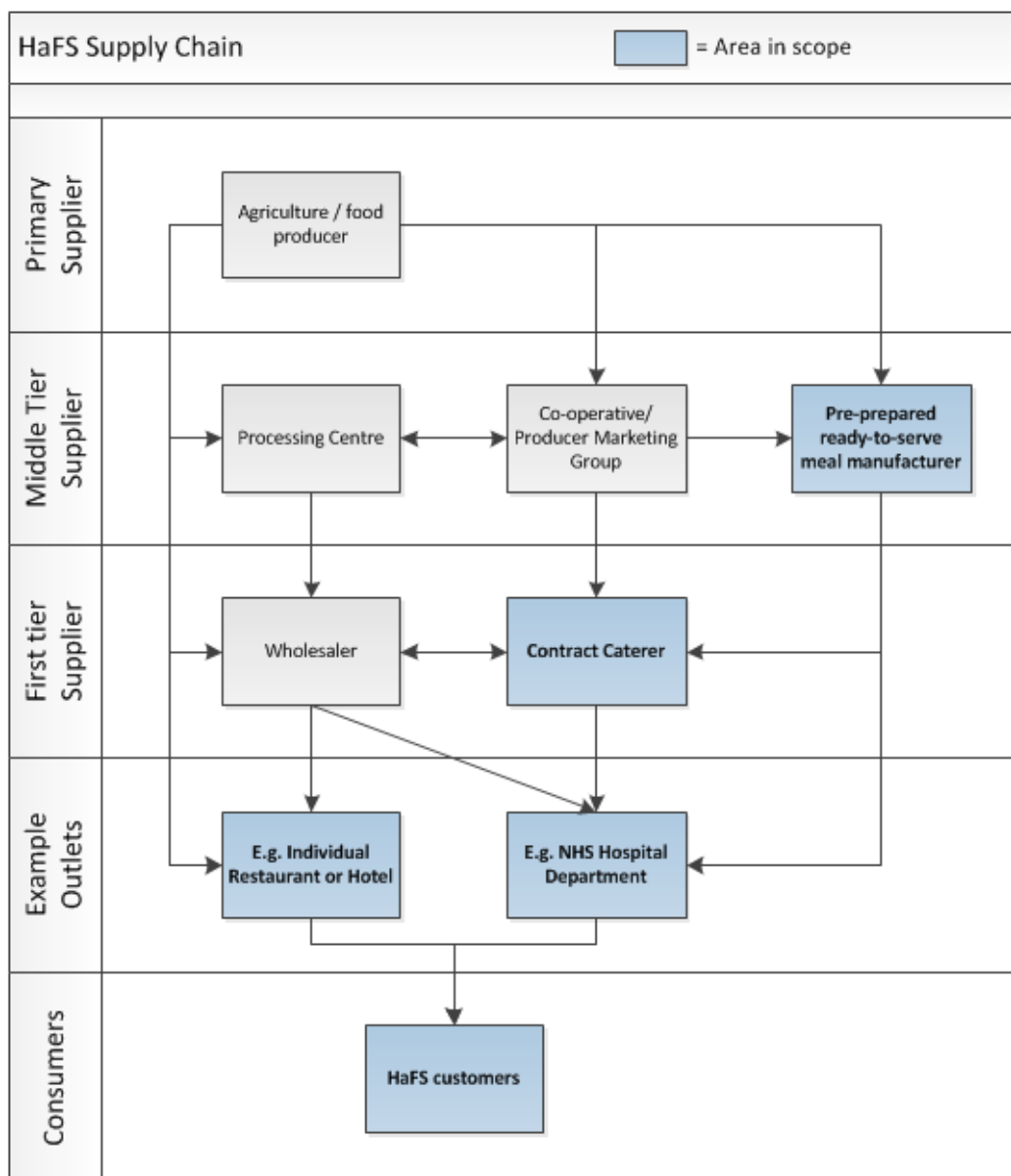
¹⁵ Adapted from Horizons 2012

A1.2 The HaFS supply chain

The supply chain of food and drink products to the UK HaFS sector is varied and complex. HaFS outlets are supplied either directly from a supplier, or through an intermediary distributor/wholesaler. While smaller businesses may visit cash-and-carry wholesalers or supermarkets, larger businesses have products delivered directly to their outlets. In addition to the waste that arises directly at outlets, waste is also generated within the supply chain at food processing sites and at businesses preparing ready-to-serve meals (e.g. sandwiches) that are supplied to the sector.

The scope of this report includes waste arising at HaFS outlets as well as food waste associated with ready-to-serve meal manufacturers supplying the sector, as depicted in Figure A1.3.

Figure A1.3: The UK HaFS supply chain and the scope of waste estimates in this report.



Appendix 2: Definitions and additional information

A2.1 Definitions

Food Waste

'Food waste' is the discarded food that arises from food service activities. This includes preparing food, uneaten plate scrapings, disposal of unopened packaged items, food spoilt during preparation and discarded ingredients. It **does not** include waste from drinks.

It is categorised as either avoidable or unavoidable food waste¹⁶:

- **Avoidable food waste** is food that could have been eaten, at some point prior to disposal (e.g. a slice of bread, apples, meat). This may be due to consumer behaviour or perhaps it could have been eaten if it had been better prepared, stored or portioned. Avoidable food waste also includes some food items that may or may not be eaten as a matter of consumer preference such as bread crusts and jacket potato skins.
- **Unavoidable food waste** is food that is not, and has not been, edible under normal circumstances. This includes wastes that are associated with food preparation (such as vegetable peelings, egg shells, pineapple skins) or the inedible component of food that has been served (e.g. bones, apple cores). At a site preparing meals from raw ingredients, a higher proportion of unavoidable waste will be associated with food preparation than a site using pre-prepared ingredients.

Packaging¹⁷

'Packaging' is all products made of any materials of any nature used for the containment, protection, handling, delivery and preservation of goods from the producer to the user or consumer. There are three types:

- **primary packaging:** Packaging that contains the finished or final products, sometimes called retail or consumer packaging. This packaging is used to contain, preserve, protect and inform the end user. In the context of WRAP's work, it is the total packaging that the end-user will ultimately dispose of via reuse, recycling, landfill or other disposal routes. The primary pack can be made of a number of components, e.g. for a multi-pack of beers this would include the bottles, their labels and the card sleeve or shrink film. Primary packaging should include all packaging up to the point of sale, but does not include carrier bags (single use and bags for life) and delivery boxes.
- **secondary packaging:** Packaging additional to the primary packaging and that is used for protection and collation of individual units during storage, transport and distribution. They can be used in some sectors to display primary packs on shelf. Sometimes called grouped or display packaging. This category also includes packaging purposely made to display multiple product units for sale, in order to speed restocking from storeroom to shelf. Also known as retail-ready packaging (RRP), shelf-ready packaging (SRP) or counter-top display units (CDUs).
- **tertiary packaging:** Outer packaging, including pallets, slip sheets, stretch wrap, strapping any labels, used for the shipment and distribution of goods. This packaging is also referred to as transport or transit packaging and is rarely seen by the final consumer. The final destination will often deal with this via its own internal reuse or recycle routes.

¹⁶ WRAP - Household Food and Drink Waste in the UK (2009)

¹⁷ <http://www.wrap.org.uk/sites/files/wrap/Definitions.pdf>

Example: A fresh pizza might include the following packaging:

- Primary packaging: pizza tray, film wrap, label;
- Secondary packaging: Retail Ready Packaging, outer carton; and
- Tertiary packaging: pallet, stretch wrap, label, layer pad, strapping.

'Other' wastes

These are wastes associated with HaFS that are neither packaging nor food, and include items specific to HaFS operations such as kitchen towels, disposable gloves, cups and plates, newspapers, magazines and office paper may also be a significant element at certain outlets.

Recyclability of waste

'Readily recyclable materials' are those for which recycling markets are well-established; such materials are currently widely recycled across the UK. For the HaFS sector these are mostly packaging materials (glass, aluminium and steel cans, plastic bottles and cardboard), but may include office paper, newspapers and magazines/other printed material. Conversely, non-readily recyclable materials are those that are currently difficult to recycle in the UK.

Food waste prevention

Prevention of food waste can be achieved at all stages of catering, including procurement, menu planning/choice, preparation, portioning and at the consumer stage. Food waste prevention may result from a range of changes made to food service including:

- less wasteful food preparation techniques;
- improved stock control;
- better portion control;
- pre-selection of menu choices;
- improvements in demand forecasting;
- packaging design; and
- improved waste monitoring and feedback on menu choices.

Redistribution of surplus food so that it is still eaten before it becomes waste, is preventing food waste, e.g. sending surplus food to a charity.

Appendix 3: Summary of food waste by UK nation

Table A 3 presents the amount of food waste generated by HaFS outlets by UK nation and management route.

Table A 3: Food waste produced by UK HaFS outlets, by nation (WRAP, 2013a)

| Country | Total HaFS waste | Total food waste | Food waste type | | Food waste: management route | | |
|-------------------------|------------------|-----------------------|----------------------|------------------------|--|---------------------|-----------------------|
| | | | avoidable food waste | unavoidable food waste | disposed of within residual waste stream | disposed of via SDU | composted /sent to AD |
| England | 2,395,300 | 763,200 | 567,200 | 195,900 | 558,300 | 116,700 | 88,200 |
| Scotland | 262,600 | 85,600 | 63,800 | 21,800 | 59,400 | 15,600 | 10,500 |
| Wales | 143,700 | 47,800 | 35,600 | 12,200 | 33,600 | 8,500 | 5,800 |
| Northern Ireland | 72,900 | 22,800 | 16,900 | 5,800 | 17,400 | 2,600 | 2,700 |
| Total | 2,874,500 | 919,300 | 683,600 | 235,700 | 668,700 | 143,400 | 107,200 |
| | | % of total HaFS waste | % total food waste | | % of total food waste | | |
| | | 32% | 74% | 26% | 73% | 16% | 12% |

Note: it is not possible to split the 130,000 tonnes of food waste from preparation of ready to serve food items and meals by nation. Therefore this estimate is excluded from the above table. All data has been rounded to the nearest 100 tonnes.

Appendix 4: Summary of packaging and other wastes by UK nation

Table A 4 presents the amount of packaging and other wastes generated by HaFS outlets by UK nation and management route.

Table A 4: Packaging and other wastes produced by HaFS outlets, by nation (WRAP, 2013a)

| Country | Total packaging and other waste | Packaging / other waste: recyclability of residual waste | | Packaging / other waste: management route | |
|-------------------------|---------------------------------|--|----------------|---|------------|
| | | potentially recyclable | non-recyclable | disposed of within residual waste | recycled |
| England | 1,632,100 | 348,300 | 264,500 | 612,900 | 1,019,200 |
| Scotland | 177,100 | 39,600 | 29,700 | 69,300 | 107,800 |
| Wales | 95,900 | 20,700 | 16,200 | 36,900 | 58,900 |
| Northern Ireland | 50,100 | 10,600 | 8,100 | 18,700 | 31,500 |
| Total | 1,955,200 | 419,300 | 318,500 | 737,700 | 1,217,400 |
| | % of total HaFS waste | % of residual packaging / other waste | | % of total packaging / other waste | |
| | 68% | 57% | 43% | 38% | 62% |

Note: All data has been rounded to the nearest 100 tonnes.

Appendix 5: Advice on the use of doggy bags and boxes

The Food Standards Agency (FSA) supports eradication of food waste where this can be done without a detrimental effect on public health. There is nothing in food hygiene legislation to prevent HaFS establishments giving out food in 'doggy bags/boxes'¹⁸.

In terms of how food safety and hygiene law might apply to doggy bags, Article 14 of Regulation (EC) 178/2002 sets out clearly that all food businesses are responsible for the safety of food 'placed on the market' (effectively all food which is supplied or handled by food businesses). So food businesses cannot abrogate responsibility just because the food has left the restaurant if it was unsafe at the point the food was placed on the market (e.g. in the restaurant concerned).

The position becomes more complicated if the food was made and handled safely by the food business, but becomes unsafe because of the conditions under which it was transported, stored or used by the consumer who has taken the food away in the doggy bag. This of course is not the same as takeaway food or fast food where there is an expectation that the food will be consumed immediately or soon after purchase and the food business concerned will have food safety measures in place precisely for such supply of food.

The definition of "unsafe" in Article 14.3 of 178/2002 takes account of "normal conditions of use by the consumer" and "information provided to the consumer", so were there for example appropriate safety advice on the doggy bag (some has been provided in the box below), this would affect considerations of whether or not the food was judged to be safe.

The FSA would therefore advise catering establishments giving out doggy bags to give consideration to how it can be done safely, and the information below is designed to assist in that. The FSA is not in a position to give advice on the possible exposure of a business to criminal or civil liability if a consumer were to become ill and businesses may wish to seek individual legal advice from their solicitors on this point.

Hygiene advice for doggy bags / boxes

- If you want to store the food, as a general rule (for foods other than rice) chill the food quickly, ideally within 2 hours as chilling food properly helps to stop the growth of harmful bacteria and consume the food within 2 days.
- If you reheat the food, you should do so until it is 'steaming hot' throughout, reaching a core temperature of 70°C for 2 minutes or equivalent.
- Only reheat leftovers once.
- It is advised that rice should not be kept or reheated

For the latest food news and information visit www.food.gov.uk

¹⁸ This packaging may come under packaging waste obligation requirements.

www.wrap.org.uk/hospitality

