

Food surplus and waste in the UK – key facts

Updated July 2019

1.0 UK food and drink surplus and waste arisings

In 2015, WRAP estimated annual food¹ waste² arisings within UK households, hospitality & food service (HaFS), food manufacture, retail and wholesale sectors at around 10 million tonnes³, 70% of which was intended to be consumed by people (30% being the 'inedible parts'). This had a value of over £20 billion a year, and would be associated with more than 25 million tonnes of greenhouse gas (GHG) emissions. Around 85% (by weight) of this wasted food arises in households and food manufacture, although waste arising in one part of the supply chain is certainly influenced by other parts of the chain.

Figure 1 below shows the breakdown of food waste arising in the UK, post-farm gate⁴. In comparison, around 41 million tonnes of food are purchased in the UK⁵ (the majority for in home use), meaning that the amount of food wasted post-farm-gate in the UK is equivalent to around a quarter of that purchased⁶. By weight, household food waste makes up around 70% (69%) of the UK post-farm-gate total, manufacturing 18%, hospitality and food service 10% and retail 2%.

Figure 2 below shows the breakdown of food wasted, excluding the 3 million tonnes of 'inedible parts', in the UK.

In addition to food ending up as waste, around 700,000 tonnes of food surplus from manufacturing, retail and hospitality and food service is either being redistributed via charitable and commercial routes (56,000 tonnes in 2018⁷) or being diverted to produce animal feed (around 660,000 tonnes in 2015⁸). Both of these are classed as waste prevention according to food material hierarchy (Figure 3).

There are also 2.2 million tonnes of food by-products from food manufacturing used as animal feed, and up to another 2 million tonnes of animal by-products sent to rendering plants⁷.

¹ 'Food' is used throughout as a shorthand term for both 'food' and 'drink'

² Definitions of 'food surplus' and 'food waste' can be found [here](#) (page 13 onwards)

³ [Courtauld Commitment 2025 food waste prevention baseline 2015](#); WRAP 2018

⁴ 'Post-farm gate' excludes food waste arising in primary production, but includes all other sectors, from manufacture, through retail, wholesale and HaFS, and from households

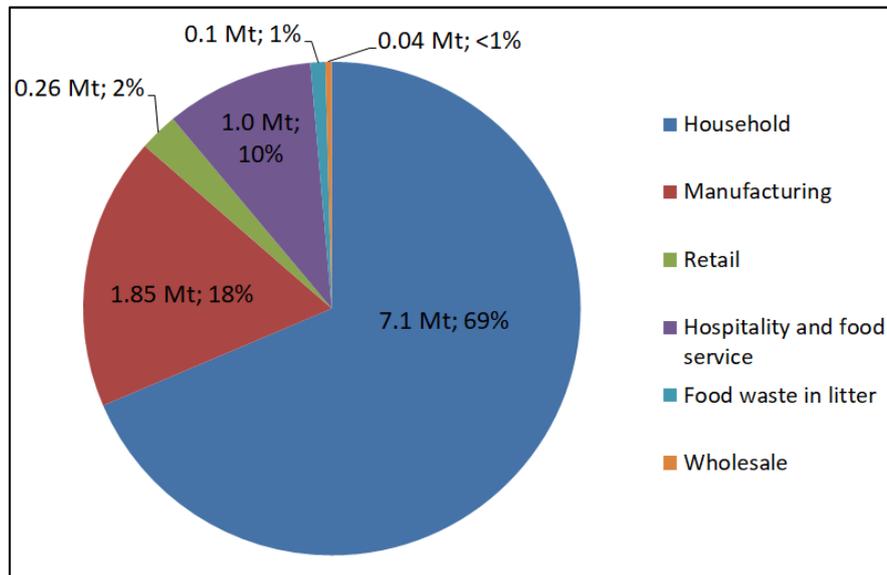
⁵ Analysis of data from [Family Food 2014](#) and [The True Cost of Waste in Hospitality and Food Service](#)

⁶ This also excludes food wasted outside of the UK in the production of food imported in to the UK

⁷ [Surplus food redistribution in the UK; 2015 to 2018](#); WRAP 2019

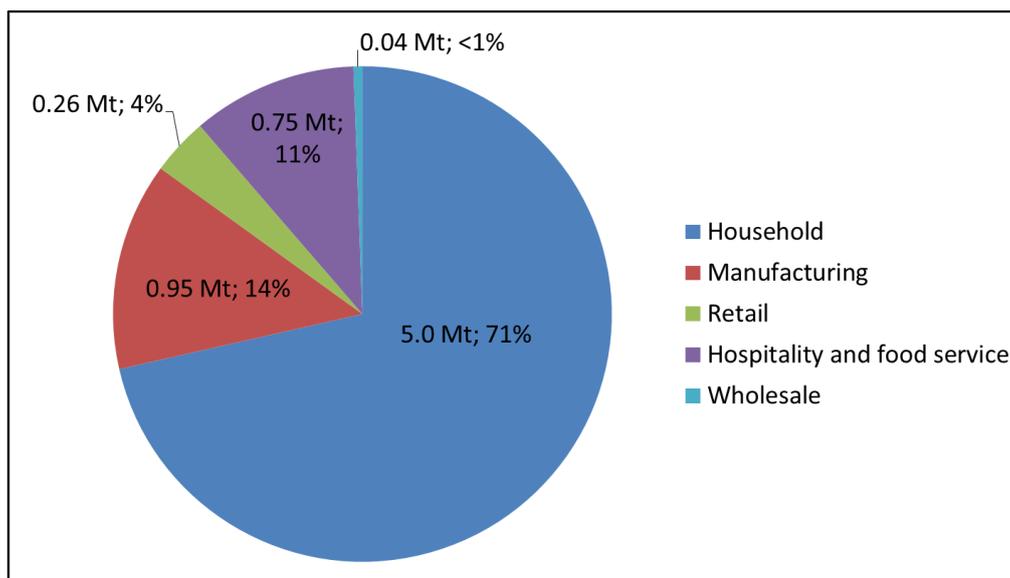
⁸ [Quantification of food surplus, waste and related materials in the supply chain](#); WRAP 2016

Figure 1: Amounts of total food waste arising in the UK by sector (total post-farm-gate = ca. 10 Mt)*



* Data for most sectors is for 2015, as published [here](#). Wholesale data (also 2015) is from [here](#), and food waste in litter (2012) is from [here](#). Data for household also includes waste to sewer, which is not currently available for other sectors.

Figure 2: Amounts of food (excluding inedible parts) wasted in the UK by sector (total post-farm-gate = ca. 7 Mt)*



* Data for most sectors is for 2015, as published [here](#). Wholesale data (also 2015) is from [here](#). Food waste in litter is excluded from this analysis as the percentage of inedible parts is unknown and difficult to predict. Data for household also includes waste to sewer, which is not currently available for other sectors.

There is no comparable estimate for food waste pre-farm gate in the UK, but the first detailed study⁹ undertaken by WRAP revealed that for just two important crops, strawberry and lettuce, £30 million of food ended up as waste (9% of strawberry production and 19% of lettuces grown).

As data specific to the UK is unavailable for many sectors, WRAP has estimated food surplus and waste levels from primary production based on an extensive literature review¹⁰. This draws on the best available data from comparable geographies: Europe, North America and Australia. Due to uncertainties associated with the data used, and likely variation in food waste due to weather, market fluctuations etc., ranges are given for both surplus and waste. The central estimate for food surplus is 2.0 million tonnes (range 0.9 – 2.7), and for food waste 1.6 million tonnes (range 0.9 – 3.5).

The estimate for food waste in primary production would suggest that more food waste arises from this sector than from hospitality & food service and retail combined. However, methodologies differ between these and the literature review for primary production, and therefore no direct comparison can be made.

Figure 3: Food material hierarchy



Table 1 presents a summary of what is known about food surplus, waste and related material arisings in the UK, and their respective treatment and disposal routes.

⁹ [Food waste in primary production – a preliminary study on strawberries and lettuces](#); WRAP 2017

¹⁰ [Food waste in primary production in the UK](#); WRAP 2019

Table 1 Summary of food surplus, waste and related material arisings in the UK, and their respective treatment and disposal routes
(See notes on subsequent page for further detail)

	Household	HaFS*	Retail & Wholesale	Manufacturing	Farm	Total ¹
Total food waste	7.1 Mt	1.0 Mt	0.3 Mt⁸	1.85 Mt	nk	>10 Mt
Food (excl. inedible parts)	5.0 Mt (£15.0 bn)	0.75 Mt (£2.9 bn)	0.3 Mt (£0.8 bn)	0.95 Mt (£1.4 bn)	nk	> 7.0 Mt (>£20 bn)
Preventing food becoming waste ↑	0.3 Mt [n/a humans 0.3 Mt pets/ other animals]	>0.001 Mt [>1kt to people [n/a to animals]	0.05 Mt [25kt to people] [27kt to animals]	0.66 Mt [26kt to people] [635kt to animals]	nk	> 1.0 Mt
Recycling (AD/composting)	1.2 Mt²	0.04 Mt	0.15 Mt³	0.54 Mt⁴	nk	> 1.9 Mt
Recovery (energy from waste, landspreading)	2.7 Mt⁵	0.62 Mt⁶	0.15 Mt³	1.3 Mt⁴	nk	> 4.8 Mt
Disposal (sewer, landfill, incineration w/o energy recovery)	3.2 Mt⁵ [1.6 Mt sewer 1.5 Mt landfill <0.1 Mt incineration]	0.36 Mt⁶ [nk sewer 0.35 Mt landfill 0.01 Mt incineration]	nk⁵	0.002 Mt⁴ [nk sewer 0.002 Mt landfill]	nk	> 3.5 Mt
Waste management ↓				0.6 Mt	nk	0.6 Mt
In addition:				2.2 Mt		2.2 Mt
Rendering of animal by-products						
Other food by-products⁷						

* HaFS = hospitality and food service; nk = not known; n/a = not applicable

Notes relating to Table 1:

Figures in black are the breakdown of the total food waste (figures in black and bold)

The portions of total food waste excluding inedible parts are shown in red, and are a fraction of the total food waste (and should not be added to the figures in black or blue)

Figures in blue are materials not classed as food waste (food surplus) or by-products, and are therefore not included in the total food waste figures in black

All food waste data is for 2015, estimates for food redistributed are for 2018, and those for surplus diverted to animal feed are for 2015.

1 – Estimates under the total column are indicated as minima, due to the absence of comparable data from on farm.

2 – This includes 0.64 Mt of food waste collected separately by local authorities and 0.52 Mt of food waste home composted.

3 – In WRAP's research it was not possible to identify the disposal route for much of the food waste from retail, but information from Courtauld 2025 signatories suggests that about half is recycled (via anaerobic digestion or composting) and half sent for recovery (primarily via thermal treatment).

4 – Detailed data on the destinations of food waste from manufacture are available for [2014](#), and the same split has been applied to the 2015 arisings data.

5 – Based on data for England from [Digest of Waste and Resource Statistics 2017 Edition](#) which shows 63% of household mixed waste being incinerated with energy recovery, ca 1% being incinerated without energy recovery and 37% going to landfill.

6 – The split between recovery and disposal for residual waste from HaFS has been assumed to be the same as for household residual waste (i.e. 63% of mixed waste being incinerated with energy recovery, ca 1% being incinerated without energy recovery and 37% going to landfill).

7 – Examples include spent grain from brewing and dried sugar beet pulp.

8 – Includes 261,000 tonnes from retail and 43,000 tonnes from wholesale.

Note: Food fed to pets and other animals in households and commercial food and related by-products used as animal feed are not classed as waste (as this is defined as a waste prevention activity). Estimates have been rounded and may not therefore add up to the total estimate for any given sector.

Source material:

- The primary source of data on UK food waste for 2015 (the most recent data available) is the [Courtauld Commitment 2025 food waste prevention baseline 2015](#) report; WRAP 2018.
- Additional and more detailed sector data can be found in:
 - [Household food waste: restated data for 2007-2015](#); WRAP 2018
 - [Overview of Waste in the UK Hospitality and Food Service Sector](#); WRAP 2013
 - [Food surplus and waste in UK wholesale grocery, 2015](#); WRAP 2016
 - [Quantification of food surplus, waste and related materials in the grocery supply chain](#); WRAP 2016
 - [Surplus food redistribution in the UK; 2015 to 2018](#); WRAP 2019

2.0 Further information

For information about WRAP's work to reduce food waste, please visit:

- [Food Waste Reduction Roadmap](#)
- [Food & Drink webpages](#)
- [The Courtauld Commitment 2025](#)
- [WRAPs Food Waste Data](#)

3.0 Changes in food surplus and waste over time

WRAP has published a number of reports on how food waste levels have changed over time, and the headline facts are listed here:

- Since 2007 the UK has had large-scale interventions aimed at reducing food waste across supply chains, and households. This contributed to a reduction in post-farm-gate total food waste between 2007 and 2015 of around 9%. Excluding 'inedible parts' the reduction was 15%, and on a per capita basis the reduction for post-farm-gate total food waste was 14%, and 19% excluding the 'inedible parts'¹¹ (see Table 2 below).
- Total household food waste in the UK was just over 1 Mt lower in 2015 compared to 2007, which equates to a 13% reduction. Excluding 'inedible parts' the reduction was 18%, equivalent to £3.4 billion less food being wasted in 2015 compared to 2007¹². On a per capita basis the reduction for total household food waste was 18%, and 23% excluding the 'inedible parts'.

¹¹ [UK food waste – Historical changes and how amounts might be influenced in the future](#); WRAP 2014; [Household food waste: restated data for 2007-2015](#); WRAP 2018; [Quantification of food surplus, waste and related materials in the grocery supply chain](#) WRAP 2016

¹² [Household food waste: restated data for 2007-2015](#); WRAP 2018

- Food waste arising at manufacture reduced by around 50,000 tonnes between 2011 and 2015 (an approximate 3% reduction, from around 1.9 Mt)¹³, whilst levels of food waste at retail were around 10% lower in 2015 (260,000 tonnes) compared to estimates for 2009 (290,000 tonnes)¹⁴.
- Over the lifetime of the [Courtauld 3 voluntary agreement](#) (2012 to 2015) the estimated weight of food waste avoided by signatories was 100,000 tonnes, with a value of approximately £100 million. The amount of food waste reported by signatories was around 3.6% lower in 2015 compared to 2012¹⁵.
- Under the [Hospitality and Food Service Agreement](#) (2012 to 2015) there was a reduction in CO₂e emissions of 11% against the (2012) baseline over the three years of the agreement. Food waste prevention activities saved an estimated 24,000 tonnes of food from being thrown away (worth £67 million)¹⁶.

Table 2: Comparison of UK post farm gate food waste in 2015 vs 2007*

	2007*		2015			
	Tonnes	Per capita (kg)	Tonnes	% change	Per capita (kg)	% change
UK total post-farm food waste	11,200,000	181	10,200,000	9%	156	14%
UK post-farm gate food waste (excluding inedible parts)	8,200,000	132	7,000,000	15%	107	19%

* In [Historical changes and how amounts might be influenced in the future](#) WRAP 2014, WRAP made the case for a baseline year of 2007 against which to assess changes in UK food waste over time. This was on the basis that a) there is robust data on the largest fraction of UK food waste from that year (i.e. household food waste; ca 70% of the total post-farm gate) and b) this is when the UK began large-scale interventions to reduce food waste (which were aimed exclusively at household food waste until 2010 – with a focus on supply chain food waste commencing under Courtauld 2 in 2010, and in 2012 on food waste from the hospitality and food service sector¹⁷.

¹³ [Quantification of food surplus, waste and related materials in the grocery supply chain](#) WRAP 2016 and [Courtauld Commitment 2025 food waste prevention baseline 2015](#) WRAP 2018

¹⁴ See [Courtauld Commitment 2025 food waste prevention baseline 2015](#) WRAP 2018 for 2015 estimates and [UK food waste – Historical changes and how amounts might be influenced in the future](#) for historical data

¹⁵ [Courtauld Commitment 3: Delivering action on waste](#)

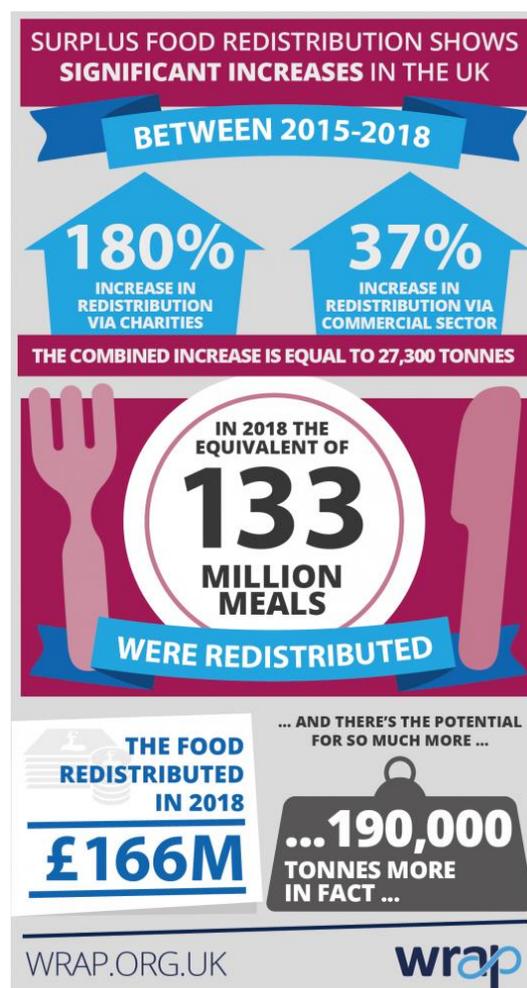
¹⁶ [The Hospitality and Food Service Agreement - Taking action on waste](#)

¹⁷ Baseline data for household food waste is from 2007, retail data is 2009 and manufacture / hospitality and food service is 2011.

In 2019 WRAP published [Surplus food redistribution in the UK; 2015 to 2018](#) which revealed that UK redistribution had almost doubled between 2015 and 2018, for the charitable and commercial sectors combined:

- A 96% increase overall (increase of 27,000 tonnes; the equivalent of an additional 65 million meals; with a value of £81 million).
- Charitable redistribution increased by around 180% (almost three-fold) or 21,000 tonnes over the three-year period (the equivalent of an additional 50 million meals), compared to an increase of around 37% or 6,000 tonnes via the commercial sector (the equivalent of almost an additional 15 million meals).
- Surplus redistributed via charitable routes made up almost 60% of the total redistributed in 2018, compared to just over 40% in 2015.
- There were increases in the supply of surplus food to the charitable sector from all three food business sectors where data is available (retail, manufacture and hospitality and food service).

Figure 4: Infographic showing changes in UK food surplus redistribution 2015 to 2108



4.0 Targets to reduce UK food waste

[Courtauld 2025](#) has a target to reduce UK food waste (post-farm gate) by 20% per person by 2025 against a 2015 baseline¹⁸. The 2015 UK food waste total of 10.2 Mt translates into the equivalent of 156 kg per person per year. Achieving the Courtauld 2025 target would therefore reduce this to 125 kg per person per year by 2025. This would result in 1.5 Mt a year less food waste arising in 2025 compared to 2015¹⁹.

[The UN's Sustainable Development Goal \(SDG\) 12.3](#) is that “By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses”. The [Champions 12.3 Group](#) propose that the ‘50%’ target should apply across the whole supply chain, from farm to fork²⁰.

Achieving the Courtauld 2025 food waste target would result in a 40% reduction of wasted food by 2025 compared to 2007, against a target for a 50% reduction by 2030²¹.

A 50% reduction in UK wasted food (excluding inedible parts) per capita by 2030 compared to 2007 would equate to a reduction from 132 kg per person to 66 kg per person. Taking into consideration population growth, this would mean a reduction in food going to waste of around 3.5 Mt a year (2007 levels were 8.2 Mt [11.2 including inedible parts], and in 2030 they would be 4.6 Mt [8.1 Mt including inedible parts]).

Table 3 shows the impact of achieving the Courtauld 2025 and SDG12.3 targets on UK food waste. Figure 5 is an infographic showing the Courtauld 2025 baseline and impact of achieving its target.

¹⁸ See <http://www.wrap.org.uk/content/what-courtauld-2025>

¹⁹ The UK population is forecast to grow by around 4 million by 2025 (vs 2015), a 6% increase, which means the reduction in total UK food waste is less than 20% (ca 15%, or 1.5 Mt a year less in 2025 than in 2015)

²⁰ [Guidance on Interpreting Sustainable Development Goal Target 12.3](#); Champions 12.3 2017

²¹ Courtauld 2025 has a target to reduce overall food waste (i.e. food plus the associated inedible parts) post-farm gate by 20% per capita by 2025 compared to a 2015 baseline. This scope is broader than that of the SDG12.3 target to reduce food waste by 50% by 2030, in terms of the parts of the supply chain covered. Courtauld 2025 builds on progress made under previous voluntary agreements (Courtauld 1, 2 and 3 and the Hospitality and Food Service Agreement), and the 40% reduction would be compared to a 2007 baseline and be based on food only, i.e. excluding inedible parts, and as expressed on a relative basis, i.e. per capita. It assumes that all of the reduction from 2015 to 2025 will be in the ‘food fraction’ of food waste, although in reality there will also be reductions in the ‘inedible parts’ (for example through manufacturers sending such materials to animal feed / bio-material processing. If inedible parts are included, the reduction in UK post-farm gate food waste compared to the baseline would be 32% by 2025.

Table 3: Impact of achieving the Courtauld 2025 and SDG12.3 targets on UK food waste

	Baseline*		2015				2025 (assuming Courtauld 2025 target achieved)				2030 (assuming 50% reduction in food only, post-farm gate)			
	Mt	Per capita (kg)	Mt	% change	Per capita (kg)	% change	Mt	% change	Per capita (kg)	% change	Mt	% change	Per capita (kg)	% change
SDG12.3 (retail, household, HaFS; food plus inedible parts)	9.3	151	8.3	11%	128	15%	7.1	24%	103	32%	6.4	31%	92	39%
SDG 12.3 (retail, household, HaFS; food only)	7.1	115	6.0	15%	92	20%	4.8	32%	69	40%	4.2	41%	59	49%
UK total post-farm food waste (food plus inedible parts)	11.2	181	10.2	9%	156	14%	8.6	24%	124	32%	8.1	28%	115	37%
UK post-farm gate food waste (food only)	8.2	132	7.0	15%	107	19%	5.3	34%	77	41%	4.6	43%	66	50%

* See Table 2 for an explanation of the baseline

Figure 5: Infographic showing the Courtauld 2025 baseline and impact of achieving its target



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Appendix 1: Useful facts relating to UK household food waste

1. WRAP research shows we now (2015) throw away 7.1 million tonnes of household food waste a year in the UK, compared to 8.1 million tonnes in 2007.
2. Of the 7.1 million tonnes we throw away, almost three quarters (70% of the total) is food we could have eaten (5.0 million tonnes).
3. Household food waste would fill approximately 70,000 three-bed terraced houses, equivalent to the population of a town the size of Peterborough.
4. By 2015 UK household food waste had reduced by around 13% (1 million tonnes) a year compared to 2007.
5. By 2015 food that could have been eaten (the 'edible parts') had reduced by 18% (1.1 million tonnes from 6.1 million tonnes to 5.0 million tonnes) a year compared to 2007.

[The amount of inedible parts increased by ca 0.1 million tonnes by 2015 compared to 2007, in line with the increasing population; explaining why total food waste 'only' reduced by 1.0 million tonnes]

6. The reduction of food waste in residual waste has saved councils almost £70 million in 2015 alone (compared to 2007). By sending less food to the tip they are incurring lower costs in landfill charges.
7. Had the reduction in wasted food & drink (the edible parts; i.e. the 5 million tonnes) not occurred, consumers would have been spending £3.4 billion a year more (in 2015 compared to 2007) on food & drink bought, but thrown away.
8. The savings associated with the reduction in food that could have been eaten (the 5 million tonnes) amount to around 5.0 million tonnes of CO₂e a year (in 2015 compared to 2007) (the same as taking 2.2 million cars off the road for a year).
9. Around 70% of UK food we throw away (post farm gate) still comes from the home (i.e. of the total from manufacturing / processing, retail, hospitality and food service and homes (10.2 million tonnes), approximately 70% comes from homes (7.1 million tonnes).
10. Food that could have been eaten but gets thrown away (5.0 million tonnes) is worth around £15 billion. This is almost £70 per month for the average family with children. The carbon associated with this food is equivalent to that generated by one in four cars on UK roads

11. A UK household wastes on average the equivalent of eight meals a week²²
12. An area almost the size of Wales (ca. 19,000km²), would be needed to produce the food and drink currently wasted. If that land were used to build houses, almost 4.7 million detached properties would fit on it.

'Fun facts' – based on 2015 data

The food and drink we waste, that could have been eaten (the 5 million tonnes) would fill:

- 9 Wembley Stadiums (London, UK)
- 7 Principality Stadiums (Cardiff, UK)
- 100 Royal Albert Halls
- 40 million wheelie bins (based on a standard 240l)
- 4,000 Olympic sized swimming pools
- 540,000 bin lorries/dustcarts

Detailed statistics – based on 2012 data

NB: The numbers shown below are from research carried out in 2012 as the 2015 research did not repeat the detailed compositional analysis. However, as there was little change in household food waste levels between 2012 and 2015, the 2012 data can be used as indicative of those in 2015.

- Whilst chicken is our favourite meat, we're wasting the meat from 120 million of them per year

Proportions of wasted food & drink ('edible parts') by food group:

- Fresh vegetables & salad – 28%
- Drinks – 15%
- Bakery – 11%
- Meals – 9%
- Dairy & eggs – 9%
- Fresh fruit – 6%
- Meat & fish – 6%

[The remaining 16% is made up of other foods such as sauces, pasta, rice, cakes & desserts, oils & fats and confectionery]

Top 10 most wasted food and drink items in UK homes (that could have been eaten):

- Potato (fresh)
- Bread
- Milk
- Meals (home-made and pre-prepared)
- Fizzy drinks

²² Based on 5.0 million tonnes of wasted food, [420g meal weight](#) and 27,440,295 households
This is 3.5 kg of wasted food per household per week

- Fruit juice and smoothies
- Pork / ham / bacon
- Poultry (chicken, turkey, duck)
- Carrots (fresh)
- Potato (processed)

Every day in UK homes we throw away approximately:

- 20 million whole slices of bread (equivalent to 1,000,000 loaves at 20 slices per loaf; but more than a third less than in 2007)
- 4.4 million whole potatoes
- 920,000 (0.9 million) whole bananas
- 1.2 million whole tomatoes
- 720,000 (0.7 million) whole oranges
- 800,000 (0.8 million) whole apples
- 2.7 million whole carrots
- 970,000 (1.0 million) whole onions
- 86,000 whole lettuce
- 3.1 million glasses' worth of milk
- 2.2 million slices' worth of ham