

Household food waste collections guide



This publication updates the 2009 guide and pulls together the findings from more recent studies and pilots conducted by WRAP and others. Through the various sections, this guide is designed to support local authorities by detailing good practice and evidence which can help inform the design and delivery of high capture, cost-effective food waste collections.

Section 3: How much food waste can be collected for recycling?

This section describes the factors that influence and dictate how much food waste is likely to be collected for recycling by a household food waste collection. It lists indicative yields for the different collection profiles used to collect household food waste and presents a formula to calculate the likely yield of food waste that local authorities might expect their service to achieve.

Contents

3.1	Factors influencing how much food waste can be collected for recycling	2
3.1.1	Collection profile: food waste collected separately or mixed with garden waste	3
3.1.2	Frequency of food waste collection	3
3.1.3	Correlation with deprivation	3
3.1.4	Frequency of residual waste collections	4
3.1.5	Property types	5
3.1.6	Quality of service (including quality of communications)	6
3.2	Participation	6
3.3	Predicting how much food waste you're likely to collect	7
3.3.1	Indicative yields	7
3.3.2	Food waste 'ready reckoner'	8
3.3.3	Kerbside costing tool	8

3.1 Factors influencing how much food waste can be collected for recycling

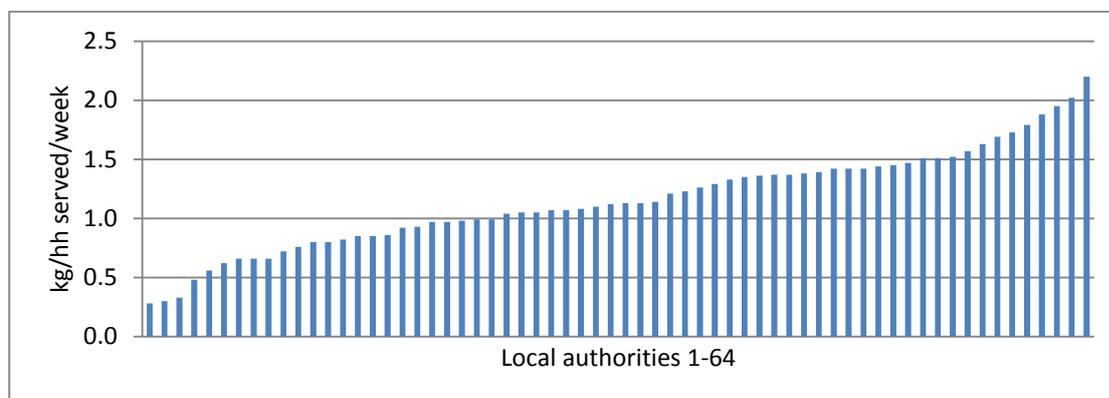
It is now well established research that the majority of households produce large quantities of waste food, both avoidable and un-avoidable, which predominantly ends up in the residual waste. However, despite increasing awareness of the issue, participation in household food waste collections is typically lower than participation in other recycling services such as kerbside dry recycling. Part of the issue is that food recycling services currently have low coverage and have been introduced much more recently than well-established dry recycling collections. Because of the relative infancy of food recycling in the UK there is much less of a social norm for storing and presenting food waste for collection in a food waste recycling service than in other countries internationally. The perception of some that food waste recycling can be both smelly and messy, the so-called 'yuck' factor (see Section 2), is a barrier limiting participation in a food waste collection.

There are also a number of other key factors that will influence how many households are likely to engage with a service. These factors can be listed under the following headings:

- collection profile: whether food is collected separately or mixed with garden waste;
- frequency of collection: whether food waste is collected weekly or fortnightly;
- correlation with deprivation;
- frequency of residual waste collections;
- provision of caddy liners to households;
- property types; and
- quality of service (including communications).

As a result of these different factors, there is a wide variation in the performance of household food waste collections across the UK. Figure 3.1 illustrates the diversity of performance (measured as kg/hh served/week) of separate weekly food waste collections delivered by 64 UK local authorities in 2012/13.

Figure 3.1 Yield from separate weekly food waste collections from selected local authorities (N.B. each column represents a separate local authority) (WRAP 2014)



3.1.1 *Collection profile: food waste collected separately or mixed with garden waste*

A key factor that will determine how much food waste is collected for recycling is whether food is collected separately or mixed with garden waste. Evidence from the original WRAP funded trial schemes conducted between January 2007 and March 2009 (see Figure 3.2), and data from household food waste collections introduced since then, demonstrates very clearly that separate food waste collections are more successful in capturing food waste for recycling than collections where food waste is collected mixed with garden waste. Part of the reason for the difference relates to the collection frequency collection of these services (section 3.1.2).

Evidence from waste composition analysis studies of mixed food and garden waste collections consistently shows that the amount of food waste collected by those services is between one-third and one-half (depending on the frequency of the collection) of that where food waste is collected separately.

http://www.wrap.org.uk/sites/files/wrap/Food_Garden_Waste_Report_Final.pdf

Analysis by WRAP of the performance of household food waste collections from across the UK has identified the following 'indicative yields' for food waste for the three common food waste collection profiles – assuming a service is well designed and implemented¹:

- Separate weekly collections: 1.5 kg/hh served/week;
- Weekly mixed food and garden waste collections: 0.8 kg/hh served/week;
- Fortnightly mixed food and garden waste collections: 0.5 kg/hh served/week.

3.1.2 *Frequency of food waste collection*

The 'indicative yields' detailed in 3.1.1 also illustrates that the frequency of a food waste collection service has an influence on the amount of food waste collected. While separate food waste collections are invariably weekly, mixed food and garden waste collections are provided both on a weekly and a fortnightly basis. Evidence from waste composition analysis shows that, when food waste is collected mixed with garden waste and that service is provided weekly, the amount of food waste collected is greater than for a service where mixed food and garden waste is collected fortnightly.

3.1.3 *Correlation with deprivation*

As is the case for other materials, participation – and therefore yields – in a food waste collection service is influenced by the levels of deprivation in the area. This relationship is often viewed too simplistically; there are many examples of high levels of participation from areas of relatively high deprivation. But where all other things are equal, the evidence from WRAP supported food waste collections has demonstrated a clear link between deprivation and performance when other factors are limited and

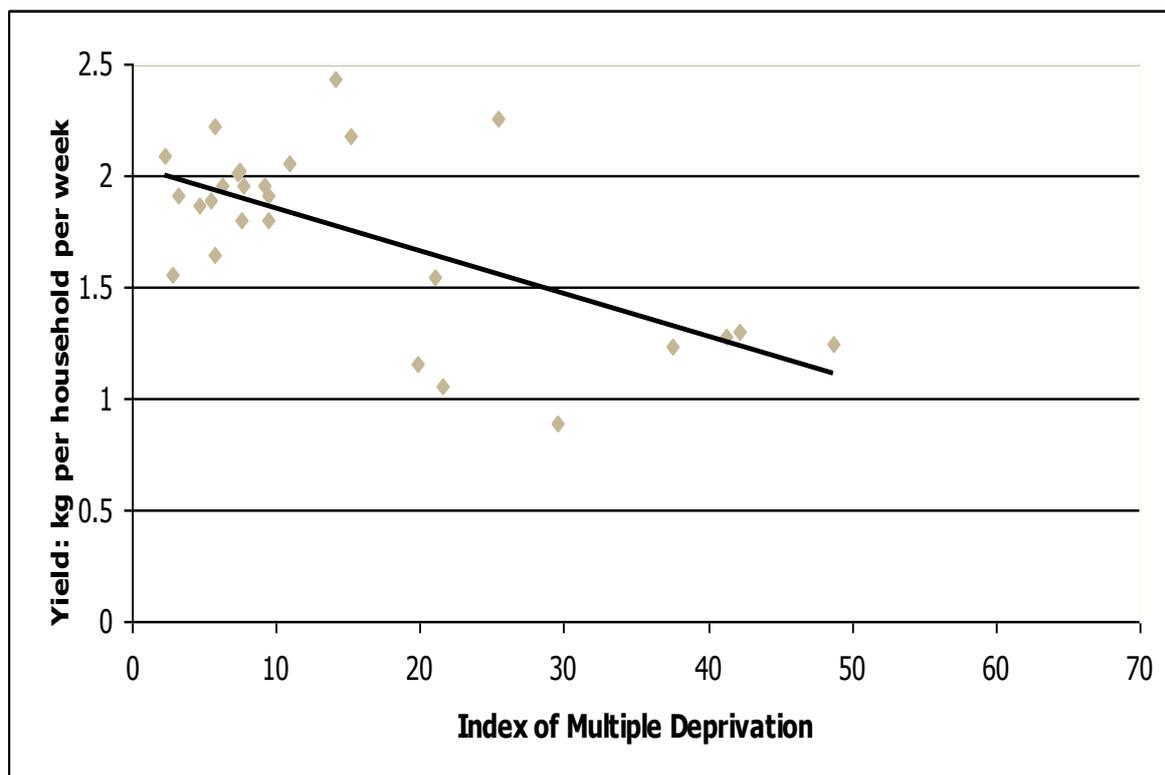
¹ WRAP 2014

controlled. Since households in all communities present similar quantities of food waste for collection, the difference in overall yield appears to be down to different levels of participation.

In general, the greater the level of deprivation, the lower the overall yield of food waste collected for recycling. Figure 3.4 below illustrates this using the Index of Multiple Deprivation in England as measured by the Office for National Statistics (www.gov.uk/government/statistics/english-indices-of-deprivation-2015).

More detailed information on the relationship between the performance of food waste collections and deprivation is provided in the report, 'Evaluation of the WRAP separate food waste collection trials' available on the WRAP website (www.wrap.org.uk/node/14212).

Figure 3.4 Correlation between food waste yields (kg/hh served/week) and Index of Multiple Deprivation



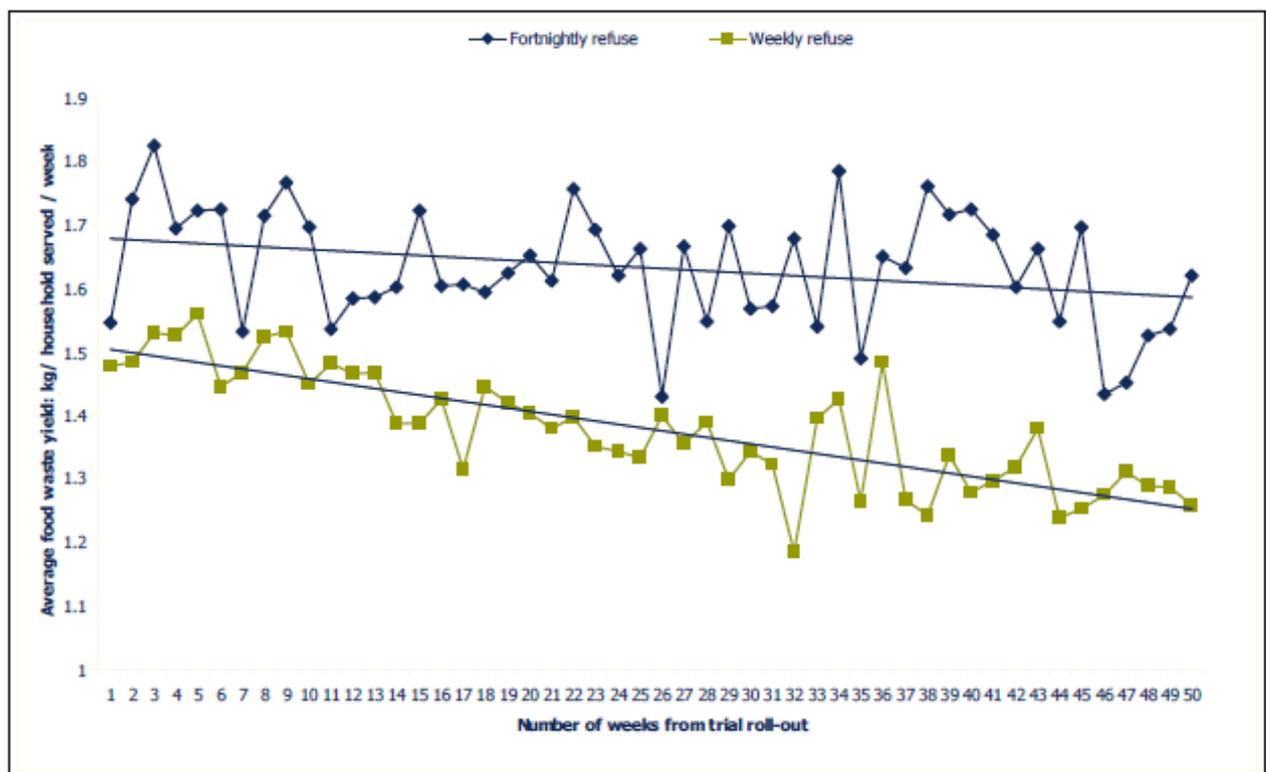
3.1.4 Frequency of residual waste collections

Yields of food waste collected for recycling are strongly affected by the frequency of residual waste collections. Weekly separate food waste collections allied to fortnightly residual collections have been shown to collect more food waste than those aligned to weekly residual collections. Figure 3.5 illustrates this by plotting the yields of food waste collected by weekly separate collections when delivered alongside both weekly and

fortnightly residual waste collections. Of note is the significant decline in yields of food waste over time associated with weekly residual waste collections.

More detailed information on the relationship between the performance of food waste collections and the frequency of residual waste collections is provided in the report, 'Evaluation of the WRAP separate food waste collection trials' available on the WRAP website (www.wrap.org.uk/node/14212).

Figure 3.5 Trends in food waste yields (per household served) achieved during the WRAP supported trials – comparison of trials with fortnightly and weekly collections



Note: Mean food waste yields across 34 rounds with fortnightly refuse collections and 27 rounds with weekly refuse collections, standardised across 50 weeks from roll-out of each respective trial included in analysis.

Source: WRAP

3.1.5 Property types

The type of property, either in terms of its physical characteristics (e.g. whether it's terraced or detached) or in terms of tenure (e.g. whether it is owner occupied or rented), will have an impact on householder participation in a food waste collection service.

The physical characteristics of a property can limit the options for the storage and presentation for collection of external food waste containers and thereby increase the onus on households compared to ground level properties. In the case of high-rise flats, the collections options available to a local authority are also limited (see Section 8 for information on the collection of food waste from flats).

3.1.6 *How liners are made available to residents*

Liners are used in the majority of food recycling schemes as a means of encouraging clean storage of food waste and helping transfer to the external storage container. There are a number of liner supply mechanisms in operation by local authorities which determines the access to households and the cost of liners to residents. Factors such as whether there is a requirement on residents to go out and purchase liners, their willingness to pay and whether they are affordable, or if they are provided free and in varying quantities, all heavily influence the level of householder participation. Further detail is covered in Section 4 of the guide which deals specifically with liners.

3.1.7 *Quality of service (including quality of communications)*

The quality of a food waste collection service will have a direct impact on how likely householders are to participate in it. Negative experiences, for example in the form of missed bins or a failure to deliver replacement containers when requested to do so, may provide householders with a justification to stop using a service.

There will always be a proportion of householders who refuse to engage with a service. However, providing a good quality food waste collection service will help keep service users on your side. It is particularly important to ensure:

- there is clear information and good quality communications (see Section 6);
- proper containment is provided to enable householders to participate (see Section 4.1);
- the introduction of a new service is well executed (see Section 10); and
- collections are made on schedule.

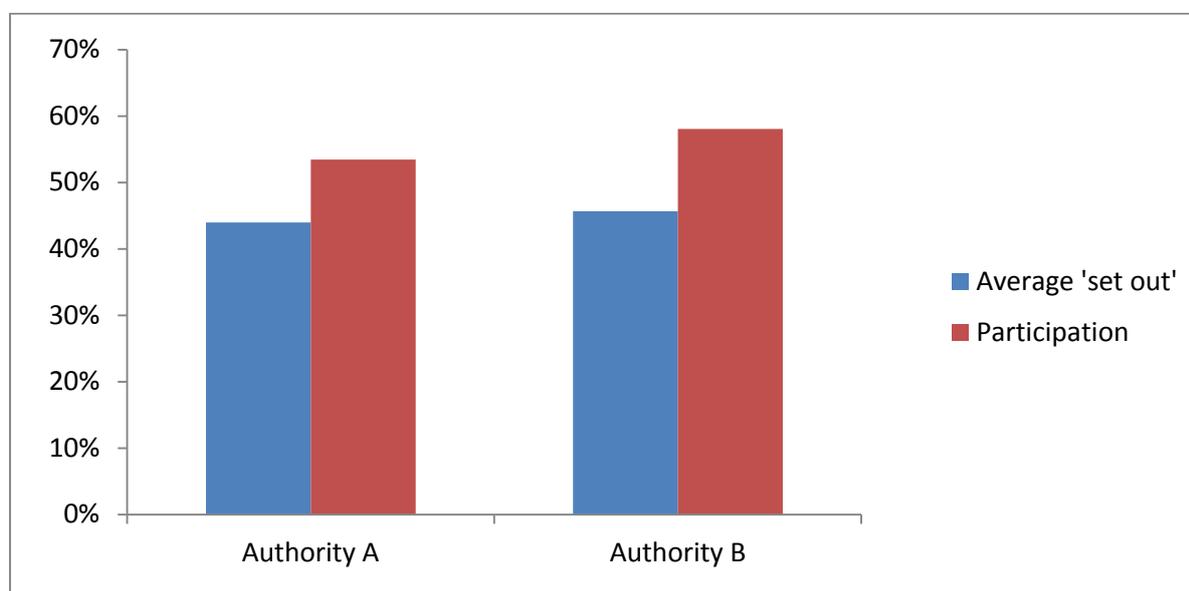
3.2 Participation

Participation in a food waste collection service is closely linked to the total yield of food waste collected. In simple terms, the higher the participation, the higher the yield. However, it is important to understand the nuances of participation in a service to be able to maximise the efficiency of that service.

Monitoring participation in separate weekly food waste collections has generated much useful information. For example, despite householders being provided with a collection each week, a reasonable percentage of service users choose not to present their food waste for collection at each collection.

As a result, the 'set out' rate on any given week is likely to be some 10–15 percentage points lower than the actual participation rate in a service. Figure 3.6 illustrates this point by presenting the results of participation monitoring carried out by WRAP in 2014.

Figure 3.6 Comparison of 'set out' and participation rates



As stated above, participation rates in food waste collections are typically lower than in other recycling services. Even the best performing services are likely to achieve participation rates of less than 70% and, as outlined above 'set out' rates will be lower.

For a separate weekly food waste collection:

- Poor participation = <35%
- Average participation = 35–55%
- Good participation = >55%

3.3 Predicting how much food waste you're likely to collect

3.3.1 Indicative yields

There is a wide variation in the actual yields reported by local authorities providing a food waste collection service. However, the following 'indicative yields' provide a useful comparison of the typical yields likely to be achieved by the three common food waste collection profiles – assuming a service is well designed and implemented:²

- Separate weekly collections: 1.5 kg/hh served/week;
- Weekly mixed food and garden waste collections: 0.8 kg/hh served/week; and
- Fortnightly mixed food and garden waste collections: 0.5 kg/hh served/week.

² WRAP 2014

3.3.2 Food waste 'ready reckoner'

For a more refined estimate of the likely yield that a separate weekly food waste collection will achieve, a 'ready reckoner' is available using information generated by the original WRAP funded food trials. These trials identified a correlation between separate weekly food waste collections, the frequency of residual collections and the level of deprivation. Data from the trials were used to produce a 'ready reckoner' to enable rough predictions of food waste yields in different local authorities to be made.

These predictions apply only to **separate weekly collections** of food waste where householders are provided with kerbside containers, kitchen caddies and liners (see Section 4).

WRAP has updated the model, which previously used indices of multiple deprivation, to enable it to be used by local authorities across the UK. The model uses the percentage of households in Social Groups D and E in a local authority area (derived from the 2011 Census) as a measure of deprivation and applies it to the following formulas:

- For areas with fortnightly residual waste collection (i.e. alternate weekly collection):
= $2.1614 - (\% \text{ Social Groups D and E} \times 2.2009) \pm 0.40 \text{ kg/hh/week}$
- For areas with weekly residual waste collections using sacks:
= $1.8121 - (\% \text{ Social Groups D and E} \times 1.14385) \pm 0.25 \text{ kg/hh/week}$
- For areas with weekly residual waste collections using bins:
= $1.5307 - (\% \text{ Social Groups D and E} \times 1.0736) \pm 0.25 \text{ kg/hh/week}$

Appendix A lists the percentage of households in Social Groups D and E for all UK local authorities.

The ready reckoner provides a **likely range** for anticipated food waste yields at the start of the service assuming that the service is implemented well, has clear communications and good initial liner supply. As outlined in Section 2 participation in food recycling schemes can deteriorate if quality or good scheme design is not maintained in the delivery of the service.

3.3.3 Kerbside costing tool

WRAP's 'Kerbside costing tool' is available to local authorities via its local authority portal <http://laportal.wrap.org.uk/>. The tool produces a series of benchmark costs and standard operational data, through service modelling, which local authorities can use when evaluating their current recycling service and considering service changes. The resulting benchmarks are based on the performance (yields of food and dry recycling) and cost of a modelled good practice system operated across a range of geographical areas. More information about the 'Kerbside costing tool' can be found in Section 9.1.1.

While we have tried to make sure this report is accurate, we cannot accept responsibility or be held legally responsible for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading. This material is copyrighted. You can copy it free of charge as long as the material is accurate and not used in a misleading context. You must identify the source of the material and acknowledge our copyright. You must not use material to endorse or suggest we have endorsed a commercial product or service. For more details please see our terms and conditions on our website at www.wrap.org.uk

www.wrap.org.uk/hhfoodwastecollections

