
Improving the Performance of Waste Diversion Schemes: A Good Practice Guide to Monitoring and Evaluation

Chapter 5

Monitoring scheme usage, participation and uptake



One of the most important measures of how well your services or schemes are performing is the extent to which they are being used. This is particularly important for kerbside services for reasons of cost efficiency and round planning, but also applies to bring schemes, civic amenity sites and other council initiatives such as reusable nappy schemes. This chapter explains how usage monitoring and participation monitoring should be done.

WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

Document reference: WRAP, 2010. *Improving the performance of waste diversion schemes – A good practice guide to monitoring and evaluation* (WRAP Project EVA092-000). Report prepared by Resource Futures and WRAP, Banbury, WRAP.

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Monitoring scheme usage, participation and uptake

5.1 Background

One important measure for monitoring service provision is how many households are making use of your schemes and initiatives. This applies to all types of waste recycling, reduction and reuse schemes but is particularly relevant to kerbside recycling schemes (for cost efficiency and operational considerations) and communications campaigns.

Some local authorities carry out this kind of monitoring routinely. There are also organisations that specialise in providing monitoring services. If you have limited staff resources, limited experience in dealing with data and/or little or no time to learn these techniques, then WRAP suggests that you make use of the expertise of these organisations.

Four different approaches to monitoring participation and usage are discussed here:

- monitoring your kerbside services / schemes;
- drop-off scheme monitoring, e.g. household waste recycling centres (HWRCs);
- on-request collection scheme monitoring, e.g. bulky waste services or on-request recycling and composting collections; and
- measuring reduction and reuse behaviour (see also Chapter 7).

If your service or scheme is opt-in, you only need to keep track of the number of people that have signed up; this can be regarded as a proxy for participation. However, this method can be very misleading if the user database is not maintained. People may have signed up at some point but could have left the area, or just used the service on one occasion. Therefore you will have to have some way of knowing whether they have used the service within a relevant time frame. Only consider more in-depth approaches if there is evidence that many of those opted in don't actually use the service.

This chapter goes into detail about the approaches to be used to monitor participation and usage, the rationale behind them and possible pitfalls, as well as giving you hints and tips. If you are reading this with some expertise in this activity you may find some of it self-evident – we suggest you use the questions in the section headings to guide you.

As with any other research-based technique you might be using, be sure to set your aims and objectives down clearly so they can guide you throughout the process. In deciding on objectives you will need to consider: What do you want to monitor? What is your target population? For example, do you want to know an average rate that can be used for the whole council area? Or do you want to know the rate in poorly performing rounds? Do you want to know the rate in a certain area, e.g. an estate? Do you want to know the rate in an area where there has been a service change?

For example, if your monitoring aim is to assess the performance of a new kerbside scheme, you might set a monitoring objective relating to participation as follows:



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- To measure the participation rate of 1100 residents in each target area at least twice (once before the trial starts, and once again six months after the trial started).

Or you might want to assess the impact of both a county-wide communications campaign and one focused specifically on students. Again, the objective for participation will be to conduct participation rate monitoring, but in this case you will need to set two objectives as follows:

- A: To monitor the participation of a representative sample of 1100 residents across the county over three collection periods, once before and once again after the county campaign.
- B: To monitor the participation of 1100 student properties in the kerbside collection service over three collection periods, once before and once again after the student campaign.

In both of these examples, the associated key performance indicator (KPI) will be percentage participation.

If you want to monitor usage at your HWRCs to determine the effect of site improvements on site usage rates, your objective could be, for example:

- To monitor the usage of the affected HWRCs once before site improvements and again 3 months after the final improvements have been made to the sites.

The associated KPI for such monitoring will be percentage usage.

Your objectives should always be SMART and should relate to your KPIs as well as to achieving the overall aim. (See Chapter 2 for more on setting aims, objectives and KPIs.)

5.2 Kerbside scheme monitoring

The main technique for monitoring uptake of kerbside services / schemes is known as participation monitoring. It is an exercise in counting the number of households that take part in the service / scheme over a defined period. The process is made easier because households are normally given very visible containers in which to present their recycling or compostable waste.

Participation monitoring is an important measure and there are times when it is particularly useful:

- where there are poorly performing rounds;
- when there has been a service change; or
- when there has been a communications campaign.

Participation data can be used with tonnage data to calculate the average kg per household produced by participating households. This can be used as a planning tool to determine possible tonnages if the number of participating households increases.

There are a few circumstances when participation monitoring is not appropriate:

- high performing services or schemes; and
- for monitoring take-up of opt-in services or schemes (e.g. garden waste collections), but it is appropriate for their usage.



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5.3 What is meant by 'participation' and 'set out'?

For a household to be defined as a **participant**, it must set out its recycling or composting at least once in a defined period. This period should normally be three consecutive collection opportunities.

The **set out** rate is the proportion of households that put out target materials/container on one collection opportunity. This is a valuable measure because it can be used to assess vehicle utilisation and inform the planning of collection rounds.

Participation is **not** the same as set out. Similarly, participation rates are not the same as set out rates.

5.3.1 Set out rate

Set out rate is calculated according to the following formula:

$$\frac{\text{Number of households recorded as setting out on a given day}}{\text{Number of households monitored on that day}} \times 100(\%)$$

Set out rate is normally calculated for each of the three occasions on which monitoring data are collected to determine participation rates.

An average set out is calculated by adding the three set out rates for each occasion together and dividing the total by three. Average set out rate will be needed if you want to use tonnage data to calculate kg produced per household (kg/hh).

5.3.2 Participation rate

Participation rate is the proportion of households that take part at least once in the defined period.

Participation rate is calculated over three collection opportunities because many households don't put out their container each time, normally because it either isn't full or they forget, or are away.

Participation rate is calculated according to the following formula:

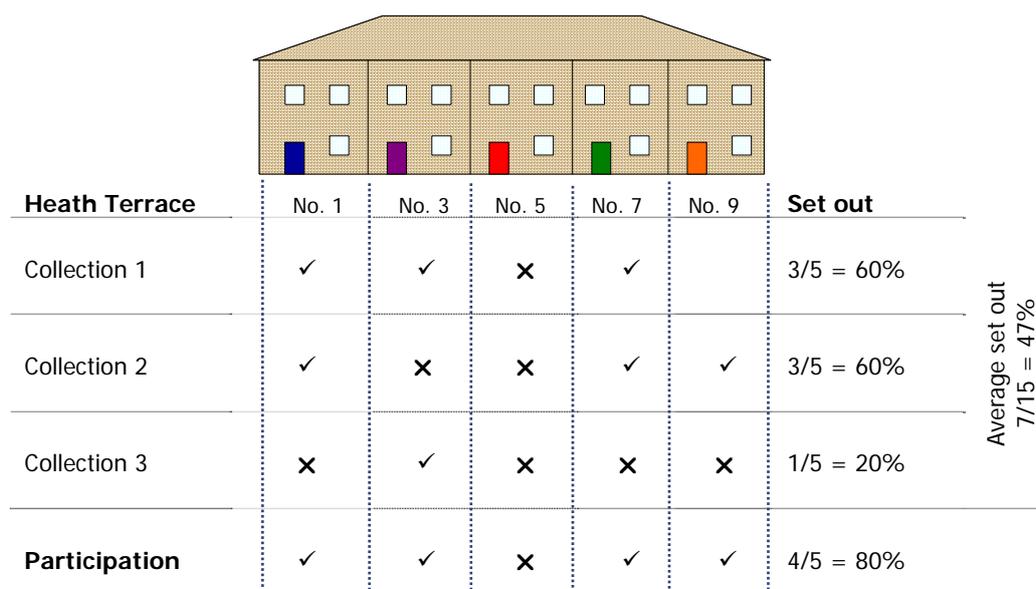
$$\frac{\text{Number of households recorded as setting out at least once in a defined period}}{\text{Number of households monitored in that period}} \times 100(\%)$$

The difference between participation and set out is shown in Figure 5.1.

TOP TIP

Participation rates are always equal to or greater than the highest set out rate observed on any one collection, usually by between 10 and 20 percentage points.

Figure 5.1 Graphical example of set out and participation rate calculations



Monitoring over three consecutive collection opportunities applies regardless of whether the collection frequency is weekly or fortnightly. For monthly collections it may be necessary to reduce this to two collection opportunities purely because waiting for three months for monitoring data may be too long. It is likely most people who use the scheme will participate in this period due to storage issues.

Because participation is measured over three collection opportunities, it is essential that you keep house-by-house records so you can work out if a given household is a participant or not. A simple tally or count of containers is not enough: the data need to be recorded against a particular property.

5.4 What are you monitoring?

Your aims and objectives for the work should state clearly what you are monitoring.

The aim states why you are doing the monitoring. For example, is it because you want to measure the effect of a communications campaign on how often estate residents use their bring banks? Or are you trying to identify which wards in your area are participating least in your kerbside collection? Perhaps you want to assess a trial of different bins and see which one yields the highest participation or identify which of your HWRCs are most used? Your aim will influence what you monitor.

Your objective should state specifically what it is you are monitoring. Are you looking at just one particular waste collection (e.g. food waste), or all the recycling set out by certain households, or do you want a participation rate for the whole of your council area?

You will also need to decide how much information you intend to obtain. This chapter deals mainly with simply monitoring for set out of containers, but it may be possible to do a more complex exercise and monitor the materials set out and/or contamination (see Chapter 8 for further information on this subject).

The possibility of collecting such additional data will depend upon whether the collection is single or multi-materials, and the containers used. Bags cannot be opened as the contents could spill on loading, and so only set out of the bags



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themselves can be recorded. With boxes, where a collection is made with a kerbside sort, the slower pace of collection may mean it is possible for monitors to record the materials set out, although they will not be able to search extensively through the boxes. For co-mingled collections this is more difficult, but the material visible on the surface can be recorded.

5.5 How do I decide which households to monitor?

First you will need to decide on your target area and whether you are going to monitor all households or take a sample. A sample will normally comprise of a number of collection rounds because you need to monitor a mix of household types that are representative of your target area. The recommended minimum for participation rate monitoring is to monitor across two rounds and to monitor at least 1500 households, so that you manage to get data for at least 1100 (see Section 5.6 for further explanation).

There are several ways to measure household types to make sure that the sample is representative. These include socio-demographic profiling by ACORN or MOSAIC, neighbourhood statistics, or housing types. You will probably need to monitor more than one round in order to obtain the representative sample. Ideally two or three rounds would be monitored.

Detailed information about sampling and profiling, and how to go about these, is given in Chapter 3.

Participation monitoring often requires two or more phases, usually before and after a campaign, or before and after a service / scheme change.

In the case of a communications campaign or service change, you would ideally monitor not only the same rounds but also the same set of households within each, for each phase. Before starting monitoring you should be aware of proposed round changes and how these may impact on the data collected.

In the case of a service / scheme change that alters the collections rounds, you will not be able to monitor exactly the same households. In this case monitoring a representative sample each time is very important. Ideally you would choose the new rounds that approximately cover the same area as pre-scheme change monitoring.

5.6 How many households do I need to monitor?

A useful rule is that 1100 households' results are needed for findings to be reliable. This means that if you want to say 'on average across my authority x% of households participate' you would need to have monitored approximately 1100 households. If on the other hand you want to say 'on average x% of households from one estate participate compared with x% of households from another estate' you would need to have monitored approximately 1100 households on each estate, so 2200 in total.

The reason for monitoring 1100 households is given in Chapter 3 (Section 3.5). If you are monitoring two or three rounds to make up a representative sample of your authority, then you are likely to have more households than this, which is fine.

In order to obtain a final sample of 1100, the rule of thumb is to select at least 1500 households to allow for the inevitability of some data not being complete (see Section 5.6). Note, though, that even if one round has more than 1500

TOP TIP

A useful rule of thumb is that approximately 1100 households' results are needed for each reported figure.

“WRAP guidance proved to be a useful framework in terms of the numbers to be monitored and the number of weeks. The adoption of consistent methodology allows benchmarking with other local authorities.”

Sarah George, Bath and North East Somerset Council

households, it is unlikely to be representative of your target area. You will almost certainly need to monitor two rounds, or more.

If you use social classification data (e.g. census, MOSAIC or ACORN) you can achieve reasonable representation by selecting rounds in this way. However, it may still not be representative of your target population in terms of particular factors that might be important to you such as housing type or ethnicity. For instance, in local authorities with a higher proportion of black and minority ethnic (BME) residents, inclusion of a round in a BME area may be considered. Using more detailed levels of the social classification data may help with this.

Because of the variation in population and housing types across large authorities, you may want to monitor more rounds to get a better cross-section of the target population, as well as being representative by social classification.

A simple rule for participation monitoring is that, if there are 2000 households or fewer in the area, you should monitor them all. If there are more than 2000 households in your area, you should monitor a sample of them. The exception is if you have chipped bins with weighing and scanning equipment on your vehicles when this information is gathered routinely for all households (see Chapter 6, Section 6.8).

5.7 Scheduling rounds

If you are not monitoring in-house (i.e. you are using a consultant), be aware of the impacts of choosing rounds on non-consecutive days. This has implications for the price of the project because, if monitoring staff are not local, there will be a choice of paying them to wait during an intervening day, or to go home and come back again; or when there is more than one round on the same day, having to train and bring in more than one monitor for small projects.

5.8 How do I select rounds for monitoring?

The following example demonstrates how to select several rounds to make up a sample that is representative of your target area.

Assuming you need to find two rounds that represent the target area, the first stage is to use your local knowledge to find pairs of rounds on different but consecutive days, which you think together might match the target area by housing type, ethnicity, affluence, or by whatever criteria are most relevant to your project (Table 5.1).

Table 5.1 Example permutations of rounds that may be representative of the target area

Permutation	Round 1	Round 2
1	R24 Tues Fairly affluent village	R19 Wed Inner city terraces including BME
2	R2 Tues Suburban semis	R17 Wed New housing estate and urban terraces
3	R2 Tues Suburban semis	R19 Wed Inner city terraces including BME
4	R6 Tues High density social housing	R13 Wed Affluent suburbs
5	R6 Tues High density social housing	R19 Wed Inner city terraces including BME
6	R12 Tues Mix of affluent and social housing	R17 Wed New housing estate and urban terraces

The second stage is to check your permutations using socio-demographic profiles, or another system that will allow you to profile your sample. This example uses ACORN. First find out how many households of each ACORN category there are in each round. When these numbers are added together in the permutations above, you can work out the percentage of households in each category for each permutation. This can be compared with the profile of the target area, as shown in Table 5.2. If you are using MOSAIC or ACORN, you will be able to purchase the profile of the target area. Otherwise you will have to calculate it yourself from other data sources.

Table 5.2 Profiles of round permutations

ACORN category	Target area profile (%)	Permutation 1 profile (%)	Permutation 6 profile (%)
1	5.7	13.7	8.0
2	1.7	0.9	4.6
3	25.2	17.9	24.1
4	33.0	55.2	34.8
5	34.4	12.3	28.5
Total	100.0	100.0	100.0

Comparing the profiles (percentages) of the permutations of the two examples with that of the target area, it can be seen that permutation 1 over-represents ACORN categories 1 and 4, and under represents categories 3 and 4. The profile

for permutation 6 is a much better match to the target area, although it does under-represent ACORN 5. You should compare all the permutations that you have profiled to get the closest match possible.

If you cannot get a good match, consider monitoring more rounds to encompass a wider range of people, or consider weighting your data (see Chapter 3, Section 3.9).

5.9 The areas I want to monitor don't coincide with round boundaries – what should I do?

Even if the area you want to monitor doesn't coincide with a round, you have no real choice but to carry out the monitoring on a round-by-round basis because that is how the recycle is collected.

1. Find out how many households are in the target area. Round lists should provide this information or you may be able to use a geographical information system (GIS) to calculate it. If there are less than 2000, all should be monitored. If there are 2000 or more, you should select around 1500 to be included in the monitoring.
2. Find out which round or rounds the target area falls into. If you are monitoring all the households within that target area, you will need to include all the rounds that collect within it. If you are monitoring a sample, you will need to identify one or two rounds that between them cover about 1500 households within the area.
3. After monitoring, analyse the data from those households that are located in the target area.

5.10 When should I monitor?

Timing depends on what you are monitoring.

For the monitoring of a communications campaign, you should monitor once (i.e. three consecutive collections) finishing just before the campaign starts, and once (i.e. three consecutive collections) starting one month after the campaign has finished (to allow the impacts to be felt). Table 5.3 gives some timetable examples.

Table 5.3 Timetable examples for monitoring communications campaigns

Weekly collections

Week	-3	-2	-1	Campaign	+1	+2	+3	+4	+5	+6	+7
Monitor?	✓	✓	✓						✓	✓	✓

Fortnightly collections

Week	-5	-3	-1	Campaign	+1	+2	+3	+4	+5	+7	+9
Monitor?	✓	✓	✓						✓	✓	✓

Monthly/four-weekly collections

Week	-12		-8	-4	Campaign	+4	+8	+12	+16		
Monitor?	If possible		✓	✓			✓	✓	If possible		

If you are monitoring a completely new service or scheme, you should monitor once (i.e. three consecutive collections) finishing one month before the service / scheme or related communications are rolled out. You should repeat the monitoring (i.e. three consecutive collections) starting three months after the roll-out is complete. If your service / scheme roll-out is phased, you may be able to wait to monitor at the end of the roll-out period. However, this may be a long period and so monitoring during roll-out should be considered. You may be able to find a set of rounds that represent the entire authority within the first, or first few, areas rolled out. You should wait for three months for the service to have bedded-in within these areas before repeating the monitoring. If you cannot find rounds that represent the whole district, but cannot wait longer for the monitoring, you will need to weight the data (see Chapter 3, Section 3.9).

If you are monitoring a waste stream that is seasonally affected, you will need to take this into account, probably by monitoring annually at the same time of year each time. With garden waste it could be worth monitoring participation in the winter to decide, for example, whether to stop the service / scheme during the winter months. The best time to monitor a garden waste collection is during the spring (March to May) and early autumn (September and early October) when gardening activity is at its peak. This will tell you participation and set out rates at times when gardening activity is common but won't be a typical rate across the year.

You should avoid monitoring at times such as during a football World Cup, in school summer holidays, on bank holiday weeks, or during/immediately after Christmas.

5.11 How do I prepare for the monitoring?

5.11.1 Preparing paperwork

Once you have decided where and when to monitor, prepare the list of street addresses that will be monitored. Compile these as a form with columns for the monitor to tick to indicate which households have put materials out for collection. The first column contains the address, with the remaining one(s) left blank for use during monitoring. As a minimum this should be capable of recording set out on three occasions. Table 5.4 shows an example of a completed form.

If you are combining the monitoring with a contamination assessment (see Chapter 8) or a materials assessment, the form should also include the major materials (contaminants or otherwise) as shown in Table 5.5.

Ideally, you would create these forms with the addresses listed in the same order as the collection crews cover the round. This would make it very easy for the monitor to record data sequentially on the lists as they move through the round. However, in practice, this is often not possible or reliable. It is well known that crews amend routes to suit their own needs, perhaps going in a different order, missing out streets or, in extreme cases, changing collection days. Although you may not consider this acceptable it does happen, and you need to take it into account. It is advisable therefore to print each street's list of properties on separate sheets of paper and arrange these in alphabetical order, so that the monitor can quickly locate the forms as the crews move from street to street.

It is good practice to visit the area that you going to monitor and walk the streets to identify every property that is to be monitored and ensure that your lists are complete.

It is also good practice always to have a few (about five) blank rows at the top of each sheet for households that are not on the list, and several pages of blank sheets for streets that are not on the list.

The monitor will need enough space to mark the following codes to note set out:

1 = set out

0 = not set out

E = delete. This will be used if the property was not monitored on that occasion, or can't be found.

Table 5.4 Example of a completed form

Property	Collection 1	Collection 2	Collection 3
1 South Terrace	1	1	0
2 South Terrace	0	0	0
3 South Terrace	1	1	1
4 South Terrace	1	0	1
5 South Terrace	1	E	E

In the case of the last entry in Table 5.4, even though set out was recorded in week 1 it was not possible to monitor the property in the following two weeks. If data entry for week 1 had already taken place, it would be important to go back to the database and delete the entry.

Table 5.5 Example of a form including a contamination assessment

Property	Contamination assessment criteria	Collection 1	Collection 2	Collection 3
1 South Terrace	Set out?	1	1	0
	Contaminated?	0	1	
	Non-bottle plastic		1	
	Textiles		0	
	Other		0	
2 South Terrace	Set out?	0	0	0
	Contaminated?			
	Non-bottle plastic			
	Textiles			
	Other			

5.11.2 Developing a system

You will need to develop a protocol for recording participation, otherwise the monitor may make a subjective judgement. Your answers to the following points may depend on what research questions your monitoring is trying to answer.

- If a container is rejected because of contamination, is this counted as set out?
- If monitoring 'fullness', be clear on the interpretation of what this means.
- If there is more than one container per household, are these to be counted and noted?

If a number of containers are grouped together there are ways in which to allocate them to households. Examples include:

- look for markers on the containers that identify them with a property;
- if the containers are on a shared driveway, and can't be otherwise allocated to properties, start at the left and allocate in turn. For example, if the driveway is shared by three houses and there are two containers, allocate them to houses 1 and 2. If two containers appear the following week, allocate them to the same houses;
- if the containers are for a house in multiple occupation, use a similar system, starting at the bottom of the building and working up;
- if a container is across two property boundaries, allocate it to the property that it is predominantly in; and
- if there are many containers at a 'bulking point', first look for identifying markers and assign those to the indicated properties. Then assign the remaining containers to the houses nearest the bulking point.

Although these systems are not infallible (you won't end up with a definitive list of non-participants), providing you are consistent with your methodology you will end up with a participation rate for the round.

5.11.3 Assisted collections

If possible, obtain a list of assisted collections so that the monitor is aware that these households will not have containers already at the kerbside.

5.12 How do I do the monitoring?

It is not advisable to ask crews to monitor participation. They are busy collecting the materials so may not count containers as accurately as necessary, especially as each container that is set out needs to be related to an individual household and this takes time. Either someone from within your authority should do it or you should commission an external organisation to do it for you.

Do the monitoring on foot, just ahead of the crew as they collect containers. Some form of transport may well be needed (to get to the start of the round, and between streets or areas).

5.12.1 Late set outs

You will need to stay in sight of the crew to capture late set outs (where a householder puts out their recycling when they hear the collection vehicle coming) or assisted collections. This means that you won't miss any containers. Most crews are very helpful and will shout out house numbers for you.



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5.12.2 How many monitors do you need?

One monitor can generally record the set out for one collection vehicle for simple recording. You may need more than one person if:

- you need to record set out of more than one material stream, such as dry recycling and garden waste, and they are collected by different vehicles. In this case collections will occur at different times and the rounds may also vary, so you should have one monitor per vehicle;
- you are collecting more data, such as contamination or materials set out, where one monitor could work each side of the street;
- you need a driver because the monitor cannot ride in the collection vehicle and the monitor cannot stay ahead of the vehicle solely on foot; and
- crews work by separating to work down side streets using slave bins. In this case the monitor will need to be able to work just ahead of the crew using the slave bins, rather than just ahead of the vehicle, in order to know which households are setting out – and more than one monitor may well be needed.

5.12.3 Transport for the monitor

If there is room, the best option is to travel in the cab with the crew. If there is no room in the cab, you should travel with the crew but using your own vehicle, accompanied by another person who will drive. The reason for having a driver is that you should never monitor and drive at the same time; and the speed of collections means that it is often impossible to park, monitor on foot and then drive to the next area. You should also take advice from the crew supervisor about whether this is a practical option for the round(s) you have chosen.

5.12.4 Tipping off

If collection vehicles go to tip partway through a round, you can either follow them so that you know when they restart or, if you are confident that they will restart the round in the same place (and you and the crew have each other's phone numbers), you can wait in position for them to restart.

5.12.5 Breakdowns

Find out in advance what the normal procedure is when a collection vehicle breaks down. You should stress the importance of monitoring the whole round and so they should not arrange for multiple vehicles to finish the collection. This should be communicated to the round supervisor in advance.

5.12.6 Helping out

This also applies if it is a normal practice for other vehicles to help finish rounds. By liaising with the round supervisor you can ask for this sharing of work to be suspended for your rounds during the monitoring period.

5.12.7 When collecting more data

Noting extra information such as contamination is more time-consuming than participation monitoring and so you will need to ensure that you are sufficiently ahead of the crews. This is especially pertinent on arrival at streets – it is worth making sure that you get a head start. This is particularly the case if the crews

CASE STUDY

Durham County Council participation rate monitoring

In order to monitor the effectiveness of a communications campaign to promote the 'Kerb-it' scheme in low-performing areas, Durham County Council conducted participation monitoring.

The pre- and post-campaign participation monitoring was undertaken across a representative sample of properties, with 1100 properties identified in each of the four districts using tonnage data and ACORN categories. In each area, the full collection round was monitored for consistency. A further round was monitored in Durham related to the student population. The collection service was fortnightly, so the monitoring was over a six-week period.

The results were very useful in demonstrating the impact of the campaign. They showed that participation had increased by 9.5% overall across all the campaign target areas. Specific monitoring had been conducted in student areas, and this showed a significant increase of 16.8% in participation levels. Combined with other monitoring data such as tonnage and survey data, the results allowed the council to determine the success of the campaign.

For more information, see full case study in Annex 1.

are unwilling to slow down to accommodate the monitoring. In this case you might have to be willing to miss some late set outs, or not monitor the first few houses at the start of round sections (be sure to exclude these properties from the analysis). Where you know this will be the case, it is very important to select areas larger than the minimum sample size.

There are two exceptions to this rule. First, if the containers are wheeled bins and you are monitoring contamination as they are tipped (in order to see the whole contents of the bin rather than just the surface), you will clearly need to stay close to the crew. Secondly, if the crews sort at kerbside and you are monitoring as they sort, the same applies. See Chapter 6 for more information.

5.12.8 Getting the data

Remember that only households that have been monitored on three consecutive occasions can be included in the participation rate calculation. It is crucial that every effort is made by both the monitor and the crew to cover every property on the list every time. Missing out households means that you may be at risk of not achieving the minimum 1100 that need to be monitored three times (this is why 1500 are included in the first place, so you have some leeway). Loss of data is more likely to happen if the monitor travels separately from the crew because the crew may go a different way and finish streets before you get to them.

5.13 Monitoring in rural areas

Rural areas present some particular challenges for participation monitoring which are set out in this section.

5.13.1 Sporadic households

Monitoring within villages can be similar to towns, but between and on the edge of villages there are scattered housing and hamlets. The collection vehicle may move fast between these, so that there is far more stopping and starting. This is normally not a problem if the monitor can ride with the crew, provided they can hop in and out quickly, or if the crew will help by shouting out house numbers for set outs. However, if the monitor cannot ride in the cab, they will need to be provided with a driver. The monitor will then have to take great care not to get too close to the collection vehicle (when they could get in the way of the crew), or too far away and risk missing late set outs.

5.13.2 Where am I?

It is not unusual in a rural area to find that you need to record set out for a house with no name on a similarly unidentifiable street. The collection crew often just know the route, not the names of the streets, but this can be overcome to some extent by providing monitors with maps (good practice in all cases). If this does not work the monitor should ask a resident or delivery person. If they cannot discover the street name while monitoring, a record of where the street was relative to known streets should be made and checked on the Internet upon return.

It is more common to find houses with no name indicated. If the household list is in order then a process of deduction should suffice. Otherwise, if there is no one to ask, then an identifier needs to be found such as 'blue gate after Rose Cottage'. This will need adding to the list. Similarly, if houses are not found they

need to be removed from the list. In this way 'blue gate next to Rose Cottage' will not appear twice in the list.

5.13.3 Property lists

If the lists are not in order of the position of the properties on the road, monitors will need to search the list for each property along the street, or in the hamlet (sometimes households are identified only by the hamlet, rather than by street). This can be difficult and time-consuming. Lists should be checked on completion of the round to find any added properties within the original list.

5.14 Liaising with crews

Liaising with crews is of the utmost importance to a successful participation monitoring exercise and should be done when planning the project, as well as during it.

Ideally a depot supervisor would attend the initial project planning meeting. The supervisor can clarify how the rounds are actually collected, and will be able to offer advice and insight into what happens on the ground and which rounds can make up a representative sample. It is also important to discuss with the supervisor how to make the crews aware of the method and purpose of the monitoring, and that help from the crew in calling out late set outs would be appreciated. It sets up a relationship with the supervisor to aid communication should anything go wrong.

The meeting is also a chance to clarify the situation with vehicle breakdowns and other collection vehicles finishing part-finished rounds.

You should liaise with the crews to make sure they know you are monitoring. You should make it very clear the crews that the aim is to assess household participation and not in any way to judge their performance.

5.15 Are there any other things I should be aware of?

The monitor needs to be fit and healthy. Crews move at exceptional speeds, especially if they are on a 'task and finish' system, and the monitor must be able to keep up. Even if the monitor is going ahead of the crews, they will soon be caught and overtaken if they go too slowly. If space is not available in the cab it is often necessary to use a driver.

Health and safety is a consideration when monitoring. Fluorescent high-visibility vests are essential and steel toe-capped boots are desirable. You should check with the crew supervisor what the requirements would be. In most instances monitors should not be touching the contents of containers. However, if the specific circumstances require some handling of containers or materials, monitors should not put their hands into containers without protecting them with gloves. Neither the crews nor the collection company can be considered responsible for the monitoring staff, who may at times be out of sight of the crews. Therefore lone-working procedures should be used for monitors working alone.

Photo identification badges and a letter of authority should be carried at all times, especially if a contamination assessment is being carried out which requires looking into containers. Householders are much more sensitive nowadays to people potentially stealing their identity from rubbish and may challenge you. Monitors should be trained to deal with challenging and potentially aggressive householders, especially if not travelling with the crews.



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It is also good practice to notify the police, the local authority call centre and parish councils that you are working in the area.

5.15.1 Things to take with you

Here is a useful checklist for items to take when monitoring:

- clipboard;
- pencil and sharpener;
- property lists;
- round maps;
- waterproofs;
- sunscreen;
- high visibility vest;
- steel toe-capped boots;
- mobile phone and contact numbers; and
- ID badge and letter of authority.

5.16 How do I deal with my data?

The easiest way to enter the data is after the third collection so that all three data collections can be entered at once. However, it is vital to check the quality of the data after the first data collection and for the second if problems are found. In order to do this you may need to use a set of sheets for each data collection. If a different person is conducting the monitoring after the first monitoring occasion, you should also be quality checking their work after they have collected data to ensure they are doing it correctly so that the data are recorded consistently.

When you have completed the three monitoring sessions, you should enter the data into Microsoft® Excel or another spreadsheet package. Databases can also be used. The easiest way to approach this is to complete a separate spreadsheet for each round or sample. More sophisticated approaches are possible if you are using a statistical analysis package or if you have a good grasp of spreadsheet formulas.

'Set out' should be entered as '1' and 'not set out' as '0'. Properties marked 'E' for any or all of the collections should be deleted from the dataset. Use the formulas shown in the example spreadsheet in Table 5.6 to calculate 'set out' and 'participation' rates, replacing the ranges B2:B6, C2:C6 and D2:D6 with your data ranges.

It is important that households that have not been monitored on three occasions are excluded from the spreadsheet; no cells should be left blank. For comparative surveys, you should remove households from the file that are not being monitored at both phases; otherwise there is a danger that they will be included in the analysis.

We recommend undertaking a 10% check of the monitoring sheets against the spreadsheet entry. If data input errors are found, then all the data must be checked. This quality checking should not be done by the same person who undertook the data entry.

Table 5.6 Example of a spreadsheet showing set out and participation calculations

	A	B	C	D	E
1	Property	Collection 1	Collection 2	Collection 3	Participant?
2	1 Heath Terrace	1	1	0	=IF(B2+C2+D2=0,0,1)
3	3 Heath Terrace	0	0	0	=IF(B3+C3+D3=0,0,1)
4	5 Heath Terrace	1	1	1	=IF(B4+C4+D4=0,0,1)
5	2 Heath Terrace	1	0	1	=IF(B5+C5+D5=0,0,1)
6	4 Heath Terrace	0	1	0	=IF(B6+C6+D6=0,0,1)
7					
8		Set out rates			Participation rate
9	Set out rate	=SUM(B2:B6)/COUNT(B2:B6)*100	=SUM(C2:C6)/COUNT(C2:C6)*100	=SUM(D2:D6)/COUNT(D2:D6)*100	=SUM(E2:E6)/COUNT(E2:E6)*100
10	Average set out rate	=SUM(B2:D6)/COUNT(B2:D6)*100			

In the example shown in Table 5.6, the set out rate is 60% for collection 1, 60% for collection 2, and 40% for collection 3. Four of the five are participants so the participation rate is 80%.

Average set out rate is calculated by taking the total number of instances when containers were set out over the three collection opportunities (seven in the example above) and dividing it by the total possible instances of set out (15 in the example above). This makes 47% set out.

You should use similar approaches for participation monitoring that includes contamination assessments. Contamination should be expressed as the percentage of contaminated containers of those set out, rather than as a percentage of those served by the collection.

When combining areas to generate overall participation or set out rates, you can't take the average of the percentages – this is simply wrong. Instead you should combine the data from the individual spreadsheets into one and calculate the set out and participation rates from the combined data.

“When combining the results of areas to generate an overall rate, you can't take the average of the different area rates – this is simply wrong.”

5.17 How do I quality check my data?

There are several aspects to quality checking:

5.17.1 Well-completed, neat paperwork

When paperwork is returned look for improbable set out, improbable contamination, etc. Ideally you should check the sheets after each day of monitoring. Check that the entire round was monitored. If not, find out why. Is it that the round has changed, or could the monitor not keep up for some reason?

5.17.2 Data entry (into Excel or other database)

Check data cleaning. Have all properties not monitored on all three weeks been removed? Check one in 10 properties against the monitoring sheets. If any mistakes are found, verify all entries.

Another quality issue is missing entire data sets because the participation monitor is taken ill, or there is some other emergency. If possible, arrange to have another trained and equipped monitor on standby who can be called upon if needed.

5.18 Drop-off scheme monitoring at HWRCs

Drop-off schemes include bring banks, household waste recycling centres, community skips, communal facilities and other central locations where materials for recycling, composting or reuse can be taken by residents. However, monitoring is only practical where there is a high flow of users. For this reason we have restricted this section to HWRCs.

The difference between monitoring use of kerbside services / schemes and drop-off schemes is that the potential users for drop-off schemes are more difficult to define. This makes the calculation of usage more difficult.

The following sections look at monitoring usage for particular sites.

5.19 Why is usage important?

The importance of having information on site usage may not be immediately apparent because most local authorities have never had this information, relying instead on tonnages to monitor the cost-effectiveness of each site. But usage data give good insight when answering behavioural questions and for monitoring the impact of communications campaigns. Such data also indicate whether all sections of the community are using the facility – because you can determine the catchment area or ask for postcodes when you do the survey.

Usage rate is defined as:

$$\frac{\text{Number of users}}{\text{Number of potential users}} \times 100(\%)$$

5.20 How do I work out how many potential users there are?

For some schemes this may be reasonably obvious. An HWRC may be restricted to residents of a particular local authority. If this is the case for you, determine the number of households that are eligible to use the scheme and then skip over the rest of this section to Section 5.20.5.

More commonly there won't be a clearly defined geographical catchment area. It is possible to make some assumptions about how far people are likely to travel to reach the site in question; this means that the catchment area, including the number of households within it, can be calculated using a GIS-based system. In most cases, though, you won't have the first idea about how far people travel. In this case a survey of site users can be used to establish the catchment – see below.

CASE STUDY

Greater Manchester Waste Disposal Authority (GMWDA) HWRC user catchment study

In 2006, GMWDA and its partner authorities conducted work with the objective of establishing the catchment area of four HWRCs in the Greater Manchester area.

This was necessary to assess the effectiveness of a campaign aimed at encouraging recycling at HWRCs. The monitoring objective was to identify whether residents' usage of the sites increased over the period of the campaign from a baseline of 44%.

The survey showed that overall usage of the four HWRCs monitored had increased to 48% by the end of the campaign.

For more information, see full case study in Annex 1.

It is worth noting that where there are not strict controls on who uses the site, there is likely to be some cross-border use of HWRCs, particularly those located close to the boundaries of your local authority area. As a result, you may find that users of your HWRCs come from beyond your authority boundaries. This will need to be taken into account when you analyse the findings of your study.

5.20.1 What does the survey involve?

The survey can be kept very simple, just asking people for the postcode of the place where the recycling originated ('Can I ask you for the postcode of the place where you've brought this recycling from today?'). This will result in the highest level of response. Or you can take the opportunity to ask site users about their views of the site and their satisfaction with it (see Chapter 4 on surveys). This will increase the cost of the survey but also add value.

5.20.2 How many people will I need to survey?

This depends partly on the nature of the site. If the site is large and attracts many hundreds of visitors a week, you should survey more people than if the site is a small local site which is unlikely to attract people from very far away. Use the following as a guide but always adjust numbers to take account of local circumstances:

- 1100 people for a busy HWRC; and
- 550 people for a quiet HWRC.

5.20.3 How do I get that number of people?

For most sites it will simply be a case of taking survey forms and going to stand at the site until you have interviewed enough people. You should try to spread this over different days of the week and times of the day to reduce bias in the sample. For busy HWRCs, it may only take one day to achieve the 1100 you need, so you should make sure that you survey in half- or quarter-day blocks on both weekdays and weekends. Site-specific tonnage data will help inform you about how busy the site is likely to be.

5.20.4 What do I do when I've got all their postcodes?

You now need to establish the catchment from the data you have collected in order to estimate how many people within that catchment are possible users. You can assume that any household within half a mile of a site is a potential user plus those who have access to a vehicle within the catchment area.

- Step 1 Accurately enter the postcodes onto a spreadsheet in one long column.
- Step 2 Map them using GIS.
- Step 3 Visually identify visitors who could be classified as 'outliers', i.e. those who have travelled much further than the rest of the users so as to be either extremely untypical or likely to have given you an incorrect postcode. Delete these postcodes and map the data again.
- Step 4 Use the GIS system to tell you how many properties are contained within the catchment area you have generated.
- Step 5 Use the GIS system to tell you how many properties within that catchment are more than half a mile away from the site.

- Step 6 Apply car ownership data to the number of properties that are more than half a mile away and would therefore need to drive to reach the site. These data are available on the Office for National Statistics website for local authorities as a whole and also smaller areas within an authority (see Annex 2). For example, if 75% of households have access to a car or van, then multiply the number of properties in the catchment that are more than half a mile away by 0.75.
- Step 7 Add the number of properties that have access to a vehicle and are more than half a mile away to the number of properties that are half a mile away or less. That represents the number of households that could possibly use the site.

5.20.5 How do I find out what proportion of the catchment area is using the site?

Some HWRCs monitor usage in connection with a system of residents' permits. This makes it very easy: all you have to do is count each household that has used the site at least once in a two-month period. The two-month period is recommended for drop-off site monitoring because the sites tend to be used much less frequently than kerbside schemes.

If the site in question does not monitor usage, you will need to carry out a survey of households within the catchment area. This approach has drawbacks because it relies on claimed rather than measured behaviour. If you have carried out a survey to obtain postcodes, you will have some information on users. However, this won't be good enough for estimating usage because most people will only use the site infrequently, perhaps every month or so. To use a site-based survey approach, you would need to stand at the site every day for about two months taking address details of users – something that is likely to be seen as an inefficient use of resources.

Instead you should survey residents within the catchment area. Ideally you should aim for a sample of 1100 completed surveys (see Chapter 3, Section 3.5 to find out why this is and the implications of reducing the sample size). See Chapter 4, Section 4.8 to help you decide what type of survey to carry out. The 1100 households should be spread across the whole catchment area. Where households are more than half a mile away, only those with access to a vehicle should be included in the survey; use a filtering question in the questionnaire to ask if they have the use of a vehicle.

The question should be kept as factual as possible, something along the lines of:

- In the last two months, have you taken materials for recycling to [name of site]?

Identify the site as fully as possible as householders may not refer to it in the same way as you do. To help identify those householders that may be stretching the truth about their usage of the site, you can ask them to tell you the materials they take there for recycling.

Because not everyone from the catchment area will respond to your survey, you will need to 'scale up' the results to the catchment as a whole. Take the proportion of the respondents that claim to use the site and apply this to the total number of households within the catchment area to derive the number of households within the catchment estimated to use the site.

You now need to add up the number of people that have used the site and divide by the total number of people surveyed to obtain a usage rate.

5.21 On-request scheme monitoring

There should be administrative information associated with all on-request schemes. The most common type of on-request scheme is bulky waste and the remainder of this section assumes that this is the scheme to be monitored. The principles can be applied to any on-request scheme.

5.21.1 What is the general approach?

First you need to get access to the administrative records for the period being monitored. See Section 5.10 in the kerbside monitoring section for some guidance in deciding when to monitor.

If records are held in electronic form this should be relatively easy. Some local authorities have had bespoke software designed and it may require an IT specialist to pull off the relevant records (addresses of all those requesting the service). You should request that the data are brought into a spreadsheet such as Excel. If records are held in paper form, the process is longer because data have to be entered into a spreadsheet or database but the general approach is the same.

You first need to identify households that have had more than one collection in the course of the period being monitored. How easy this is depends on how the names and addresses are entered. If there is a good deal of consistency in the approach by the people who enter the information, or if the database is designed with separate fields for different parts of the address, you should be able to use spreadsheet tools such as 'sort' and 'filter' to quickly identify duplicates – use the Excel help function for advice on how to do this. 'Postcode' might be a good field to start with, although you should remember that several houses have the same postcode so you will also need to check the address. You should delete all but one entry per person from your copy of the records, or use the unique record filter in Excel (share the relevant column and use data/filter/advanced filter and click unique records only, in Excel 2003).

It is now a simple job of counting the number of households that have had a collection and dividing by the number of households in the area covered by the scheme to get a fraction. Multiply by 100 to calculate the proportion. This calculation is given by the formula:

$$\frac{\text{Number of households that have had a collection}}{\text{Number of households in the area}} \times 100(\%)$$

Be sure that your data are for collections actually carried out and not for requests, which may never have happened. Good record-keeping is vital if you are to be able to monitor such schemes effectively.

While scheme participation is useful it is important to know what is actually collected. This is covered in Chapter 6 on tonnage monitoring.

5.21.2 Is there an alternative approach?

If you are carrying out a survey of residents, you can include a question about their usage of the on-request service you are monitoring. It must be remembered that this is 'claimed' usage and may be different to 'actual' usage. This will be a particular problem if the timescale over which people are asked to recall is long.

5.22 Monitoring uptake of reuse and reduction behaviour

Because this activity occurs in private (e.g. by purchasing recycled goods or using a jam jar for storing nails), it is very difficult to get an objective measure of it. If you have a scheme or campaign that is aimed specifically at these types of actions then you should try to monitor impact in some way.

5.23 Options for measuring usage/uptake

The main approach is to survey householders, asking them about their behaviour. There are major issues associated with this, not least of which is the tendency for people to exaggerate these 'good' behaviours.

Survey questions should be kept as specific and factual as possible so it is more difficult for people to exaggerate. For example, you should ask, 'Have you joined the Mailing Preference Service?' rather than 'Have you done anything to reduce unwanted direct mail?'.

Chapter 4 contains in-depth guidance on questionnaire surveys should you decide to go down this route.

There are specific alternatives for certain types of initiative. These are listed below:

- Nappy schemes should keep a record of 'converts' – see Chapter 9 for more information;
- You could ask scrap-stores and charity shops to keep a record of people who donate; some may be willing to do this, although others may fear it will deter donations. There may also be issues if the scheme is staffed by volunteers; they may need additional guidance and support to ask the appropriate questions and keep thorough records;
- The Mailing Preference Service can supply you with the approximate number of people within your area that have registered with them – see Chapter 9.
- You could carry out an observational study on items available from shops, e.g. the purchase of reusable bags as opposed to use of single use carrier bags, counting the number of people choosing each option; and
- Monitoring home compost bin sales will give you some information, but you won't know how many people actually used them successfully to divert waste (see Chapter 9 for more on how to monitor home composting).

5.24 Summary of chapter

This chapter has outlined the approaches available for monitoring participation and usage of recycling schemes and waste reduction and reuse initiatives. Four types of scheme have been considered:

- **Kerbside collection services / schemes** (Sections 1.2 to 1.17). Detail was provided on this subject because local authorities may wish to carry this out themselves.
- **HWRC drop-off schemes** (Sections 1.18 to 5.20). The reasons for gathering these data were outlined and approaches set out, but we appreciate this may be costly and time-consuming.
- **On-request schemes** (Section 1.21). It was suggested that administrative information be used as the source for estimating usage.
- **Reduction and reuse behaviour** (Sections 1.22 to 1.23). Surveys were recommended as the main source of information, but specific suggestions were made about alternatives where these exist.

5.25 Where do you want to go next?

Chapter 1 provides an **introduction** and helps you decide which chapters you need to look at.

Chapter 2 explains how to set **monitoring aims, objectives and KPIs**. It then explains how to use the results of monitoring to **improve a service / scheme or to measure the effects of a communications campaign**.

Chapter 3 gives details for consideration when **sampling and profiling**.

Chapter 4 deals with monitoring **awareness, claimed behaviour and satisfaction**.

Chapter 6 looks at the use of **tonnage data**.

Chapter 7 explains how to measure **capture rates**.

Chapter 8 considers monitoring of **contamination levels**.

Chapter 9 looks at approaches to measuring **waste reduction**.

Chapter 10 deals with monitoring **communications campaigns**.

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