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Cost/Benefit Analysis

A regular review of the costs and benefits of your bring recycling service against key indicators can help you gain a true picture of how valuable your service is, and inform decisions about potential service changes and improvements.

It is often a more useful approach than benchmarking costs with those of other local authorities as the services are unlikely to be directly comparable in terms of site numbers, servicing regime and contract arrangements – as well as differences in socio-demographics and geography.

To help you carry out a cost/ benefit analysis of your bring service, the Cost/ Benefit Analysis tool in MS Excel can be downloaded which shows some potentially useful financial, community, public and environmental indicators.

Issues to consider

Any cost/benefit analysis needs to look at the entire costs for the service and a wide range of benefits. For costs, this means gathering information about costs for the provision and servicing of bring sites. These costs will depend on the contract arrangements in place and whether the whole service or elements are contracted out or delivered in-house.

In terms of benefits, a local authority may wish to consider not only financial implications of a service decision but also:

Social benefit (e.g. bring recycling at school sites) can be an important indicator in a cost/benefit analysis of bring services.

- social benefit – does the bring recycling service help engage the community – for example if community organisations operate a bring site, or local recycling champions help raise awareness of recycling;

- environmental benefit – consider the CO_2 savings made from diverting material for recycling, particularly if materials are collected separately and are used for closed loop reprocessing; the contribution the service makes to the overall recycling rate; the impact the service has on reducing the amount of waste sent to landfill; and

- public perception – how does the bring site service affect perception of the overall recycling service in the authority area? Are sites with particular issues such as fly-tipping affecting perceptions of the service or site usage?

The analysis may use a combination of qualitative and quantitative indicators to assess the bring service or individual bring sites. In addition, consider setting 'acceptable limits' for the different indicators: if these limits are not reached, action may be required to address any issues. The following section sets out potential areas to include when conducting a cost/benefit analysis of bring services.

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Establishing total costs

In-house services – total service cost

The most common indicator of cost is **cost per tonne**. This is the total bring service costs compared to the total tonnage of material collected for recycling/reuse from bring sites over a fixed period over time.

To establish a baseline and set an acceptable threshold (£/tonne) for ongoing monitoring, it is important to define:

- total cost of service – the different elements that contribute to the net overall cost, include:
  - providing bring containers;
  - emptying containers;
  - site/container maintenance;
  - site cleaning;
  - capital & operating costs of vehicles;
  - bulking up and haulage of material;
  - cost of sorting recyclables if collected co-mingled;
  - costs of cleaning up fly-tipping and any resulting enforcement action;
  - management /staff costs (Officer time) to run the service;
  - communication materials e.g. signage, leaflets, website
  - recycling/reuse credits paid; and
  - revenue from sale of material.
- the period of time over which you are quantifying costs and tonnages; and
- data reporting requirements, and a mechanism for collecting tonnage data, if different parties are involved.

Example of monitoring the cost/tonne recycled as part of a cost/benefit analysis
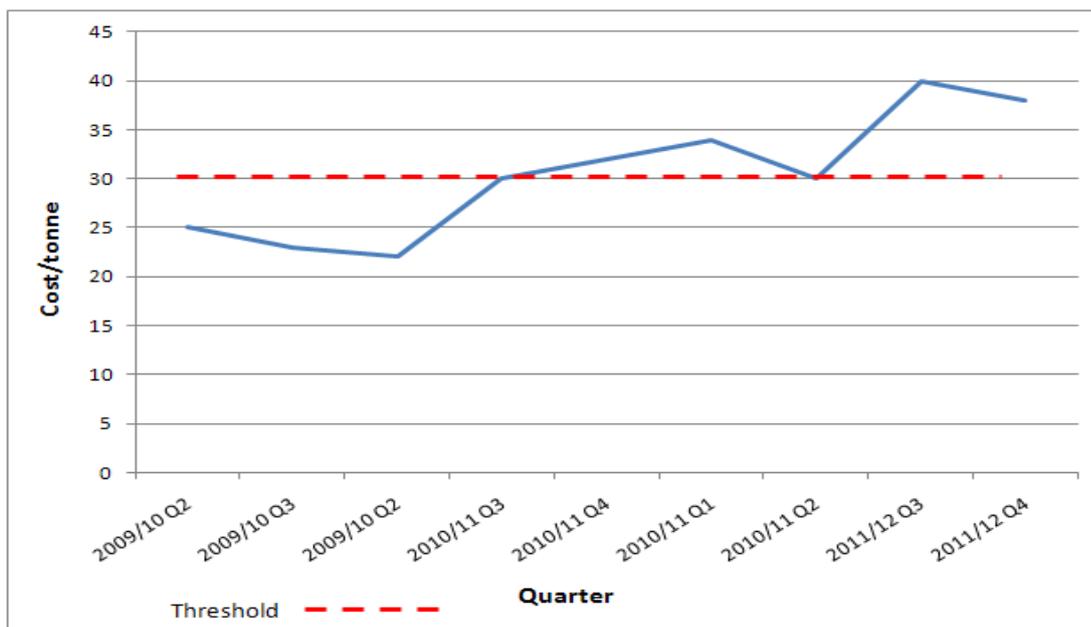
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In-house services – Individual bring site costs

When reviewing overall bring recycling services, analysing the cost/benefit of individual sites enables you to compare how different bring sites are performing. For example, if a bring site in a busy area generates less tonnage than another site but has the same servicing regime, this may indicate that the emptying frequency could be reduced as containers are likely not to be full when emptied. However, different factors and benefits may be important for different sites: for example, for a quieter rural site "lower" tonnages may be acceptable, providing you can keep your servicing costs manageable.

The following indicators could be used to assess expenditure, against the estimated tonnage collected, on a site by site basis, over a defined period (e.g. 12 months):

- *emptying visits per site – tonnes collected/number of container or cost of container emptying;*
- *cleaning visits per site – tonnes collected/number of cleaning visits or cost of site cleaning;*
- *enforcement visits per site – tonnes collected/number of incidents on site or cost of enforcement for specific sites; and*
- *revenue received per site – tonnes collected/revenue received from material sales*

This information can be used to track performance at individual sites as well as to compare the performance of sites within the local authority area, and to highlight particularly high or low performing sites. You may need to check that tonnage data is for the same period as data on emptyings.

Contracted-out service

For bring site services that are contracted out, the choice of indicators will depend on the contractual arrangements and the level of data reporting stipulated in the contract (see *Procuring new contracts* fact sheet).

Where a set contract cost/annum is payable for the bring site service, one useful indicator is to assess £/tonne collected. Calculate the total bring service contract cost against the total tonnage of material collected for recycling/reuse from bring sites over a fixed period over time.

Where payment is linked to performance, the choice of indicators could be similar to those suggested for an in-house service, particularly if the payment schedule is linked to any of the following:

- number of bring sites with a cost per bring site that you define (so over time, how many sites cost more than this to run, or less than this?);
- payment per container emptied; or
- share of income from the sale of materials.

Assessing community involvement

Involving the community in recycling at bring sites can provide a sense of ownership and encourage participation. This can lead to a range of benefits.

- Where a community organisation maintains a bring site, as well as increased tonnage collected, there may be benefits such as improved site cleanliness and reduced misuse, increased

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awareness of recycling and increased participation in other recycling schemes, including kerbside recycling.
- When recycling champions are used to promote bring site recycling, it may be possible to focus on specific issues, such as increasing material quality and reducing contamination, by ensuring residents understand how to use the site correctly.

Community involvement in a bring recycling service may be included as part of a cost/benefit analysis.

Potential indicators that could be used to monitor the cost/benefit of involving the community in bring recycling include:

- *the value of recycling/reuse credits paid against tonnage of material collected, over a set period of time; and*
- *the proportion of sites involving/ managed by community organisations – for example in schools or village car parks*

You could also assess the impact of recycling champions by examining whether there are differences in the tonnage collected from similar sites where some do/ do not have recycling champions. This in itself could be an indicator e.g. tonnage collected/ number of recycling champions.

Analysing the impact of public perceptions

The public perception of individual sites, as well as the bring service overall, can affect how well a site is used.

Relevant indicators will depend on the systems in place within a local authority, for example the call centre reporting system, but could include the following:

A clean, well-serviced bring site that has no overflowing containers can reduce the number of complaints received from residents.

- *Tonnes collected at a site monitored against the number of reported issues about the site.* For example, if a site has a large number of reported issues and tonnages are low compared to other sites, this may indicate that the authority needs to take action; servicing frequencies may be unsuitable and more regular cleaning may be required. All reports of site issues, whether from cleaning and collection staff or the public, need to be taken into account.
- *Percentage of residents reporting the bring*

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service as 'good' or 'excellent', through an organised survey. For more information on how to survey residents or monitor satisfaction with a service, see chapter 4 of WRAP's guide *Improving the Performance of Waste Diversion Schemes – A Good Practice guide to Monitoring and Evaluation*.

Environmental impacts

The environmental benefits of recycling can be quantified by calculating the carbon dioxide (CO_2) savings delivered. A detailed assessment of CO_2 reductions would require data on overall mileage, vehicle efficiency etc. It can be a complex process, requiring the use of a lifecycle assessment tool such as the Environment Agency's WRATE.

However, a simpler option is to assess the CO_2 performance of recycling the materials collected at bring sites compared to disposing of them to landfill or incineration, for the service as a whole or broken down by individual sites, using Defra and DECC's Excel tool, see Annex 9 '*Guidelines to Defra and DECC's GHG Conversion Factors for Company Reporting* '[1]. The tool can provide information on the net weight in kg of CO_2 emitted per tonne of material recycled, including avoided impacts. It also allows you to break this down by material.

The quality of material from bring sites may be higher than that collected at the kerbside. This is because bring sites can facilitate additional sorting, for instance sorting glass by colour, which can mean that the material is recycled via a 'closed loop' (to remelt) rather than open loop recycling (to aggregate). This will result in greater CO_2 savings.

Looking at the CO_2 savings of recycling specific material, as opposed to landfilling or using virgin material for new products, can help to assess the environmental benefits of a bring site service.

If material tonnages can be determined for each bring site, then differences between sites, in terms of the CO_2 saving for each material, can be assessed. Potential indicators include:

- *CO_2 savings per bring site* – based on the tonnes of different material collected at a site, multiplied against the net benefit per tonne (CO_2 saving) of recycling v landfill of this material
- *Net kg CO_2 emission by waste type/fraction* – based on the net kg CO_2 emitted per tonne of different material recycled. This will be a negative figure, as it involves multiplying the amount of avoided impact – i.e. how much is saved by not having to produce new primary materials – against the tonnes of different material collected for recycling at specific bring sites. Here is an example calculation, for the *net kg CO_2 savings for closed loop glass recycling*:

Net Kg CO_2 emitted per tonne of glass recycled for closed loop (including avoided impacts) = -366 kg CO_2[1]
If 1,000 tonnes of glass was recycled = 1000t glass x – 366 Kg CO_2
= **-366,000 kg CO_2 savings**

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[1] http://www.defra.gov.uk/environment/economy/business-efficiency/reporting/

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Note: Defra and DECC's Excel tool also has CO_2 figures which include emissions associated with the *production* of material e.g. extraction, primary processing, manufacturing and transportation which are not included in the above calculation. The calculation illustrates the avoided CO_2 for closed loop *recycling* of glass only.

Frequently asked questions

What are the best indicators to use to assess the cost/benefit of a bring site recycling service?
There are a range of indicators that can be used to assess the performance of a bring site recycling service. The most relevant indicators will depend upon whether you are assessing the overall performance of the service or the performance of individual sites. As with any monitoring and evaluation process, you need to be clear, at the outset, as to what you are trying to find out, as this will help you select the appropriate indicators.

How much analysis do I need to do?
This relates to what you are trying to find out. If you are looking to compare overall performance year on year, then the quantity of analysis may be different from when you are considering rationalising the number of sites and identifying the least effective sites.

Check list
- Conduct a cost/benefit review of your bring service and of individual sites on a regular basis.
- Consider wider indicators, other than financial, which may be important to your authority and help to assess the cost/benefit of your bring service.
- Once a baseline has been established for the different indicators, define and set 'acceptable limits'. Depending on your indicators, when these are reached or exceeded, or indeed not reached, you should consider what action may be required to improve your bring recycling service.
- Review the indicators frequently, and act on what the data are telling you.
- Ensure data reporting requirements are clearly defined and a mechanism is in place for collecting tonnage if different parties are involved.