

Survey of the UK organics recycling industry 2008/09



A survey of the UK organics recycling industry in 2008/09, which details industry size and trends, processing technologies in use, product certification, end users and markets for organics recycled products

This survey was carried out by M.E.L Research on behalf of the Association for Organics Recycling and WRAP



The Association for Organics Recycling, WRAP and M-E-L Research believe the content of this report to be correct as at the date of writing.

However, some factors are subject to change therefore care should be taken in using any of the information provided as it is based upon project specific assumptions (such as scale, location, context, etc).

The report does not claim to be exhaustive, nor does it claim to cover all relevant products and specifications available on the market. While steps have been taken to ensure accuracy, the authors cannot accept responsibility or be held liable to any person for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading.

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Executive summary

The annual survey of the UK organics recycling industry for 2008/09 was carried out on behalf of the Waste & Resources Action Programme (WRAP) and the Association for Organics Recycling (AfOR) by M.E.L Research. It follows on from previous surveys implemented by or on behalf of the Association for Organics Recycling over the past decade. The term 'organics recycling' covers a wide range of processes including composting, biological treatment, in-vessel composting (IVC) and Anaerobic Digestion (AD), as well as mechanical biological treatment (MBT) of municipal and non municipal waste.

Overall, the 2008/09 survey shows that the UK organics recycling industry continues to grow in size, with a slightly steeper rate of growth in quantity of throughput and business turnover than was evident in 2007/08. The industry continues to increase in its diversity in terms of business type, feedstocks used, process technologies and recycling products.

Survey methods

A market survey questionnaire was developed and distributed to 511 organisations in the autumn of 2009, with online, email and paper response options available. In total, 30% of these organisations replied, and 112 companies reported being active in the organics recycling market in 2008/09. Data returns were provided for 194 operational sites where organics recycling was actively undertaken. Of those 194 individual sites, 179 were recycling source segregated feedstocks. Data returns for source segregated feedstocks from this survey have been compared to Waste Data Flow statistics. The 179 sites captured from this survey are estimated to account for around 50% of all separately collected organic municipal wastes in the UK. The survey continues to grow in complexity each year, reflecting differentiation in the industry and emergence of technologies such as anaerobic digestion. Greater emphasis may need to be given to these emerging technologies in any future surveys.

Industry size and trends

Overall the organics recycling industry has shown significant growth since the previous survey in 2007/08, both in terms of financial turnover and quantities of biodegradable waste treated. The key business indicators are summarised as follows:

The annual turnover of the organics recycling industry is estimated at £226 million for 2008/09. This estimate is 36% above the 2007/08 figure, suggesting significant growth over the period.

Employment was estimated at 1,700 full time equivalents during 2008/09, an increase of 26% on 2007/08 and further indicating the expansion of the sector during the same period

A quarter of all firms (25%) reported an annual turnover¹ exceeding £1 million, while a third (31%) had turnovers below £100,000. Approximately 85% of the overall industry turnover occurs in the quarter of firms exceeding £1 million, a profile broadly the same as in 2007/08.

Most companies (79%) operate single sites, but 9% have 2 sites and 12% operate 3 or more sites. Again this profile is similar to 2007/08, indicating that the segmented nature of the organics recycling industry is a fairly constant feature at present.

Over a third of firms (42%) described themselves as either "specialist composters" or "biological treatment operators"; new data this year show this to divide into 37% specialist composters and 5% specialist AD/organics treatment companies, a quarter (25%) were waste management companies and a fifth (21%) were agricultural businesses. The proportion of operators describing themselves as either 'specialist composters, or biological treatment operators' has declined by 4% since 2007/08, while those described as waste management or agriculture have increased by a similar amount. The size and nature of sites, licensing and certification

There are a number of different business models in the organics recycling sector, accounting for small, medium and large scale operations, which may, or may not, form part of a larger commercial operation. The key features identified in this survey suggest that:

Two-thirds of all sites are described as dedicated composting / biological treatment sites, which is an increase of 13% on 2007/08. A further 15% are described as farm sites, which is a decline of 10% over the same period. When taken alongside the changing nature of the company descriptions, this implies more waste management companies and agricultural businesses operating dedicated composting sites, rather than describing the site as 'on-farm'.

The organics recycling sector as a whole was dominated by a large number of medium sized sites, with 58% of sites inputting between 10,000 and 50,000 tonnes for processing in 2008/09 – a similar proportion to 2007/08

¹ For businesses where organics recycling is not their sole activity turnover figures are specifically related to the organics recycling component only

Two-thirds are permitted licensed sites while a third operate under exemption for site licensing; 15% have full approval under the Animal By-products Regulations, a similar proportion to 2007/08. The proportion of sites certified to PAS100 has continued to increase. In 2008/09 47% of all sites in the UK composting source segregated waste were fully PAS100 certified, with a further 10% working towards certification. The proportion not seeking PAS100 (43%) is however the same as 2007/08, suggesting that PAS100 certification may be approaching a threshold limit. Sites certified or working towards certification under the Compost Quality Protocol (CQP) have doubled since 2007/08. To calculate the uptake of the CQP we only included sites in England and Wales that were PAS100 certified or working towards certification and were over 5,000 tonnes in size. 70% were fully CQP certified, and a further 21% seeking certification under CQP. This leaves only 9% of sites potentially certifiable under CQP that were not engaging in this process.

Source segregated organic waste recycling – input quantities and sources

The quantity of solid organic waste recycled through a biological treatment process in 2008/09 increased by 14% when compared to 2007/08. Composting formed the principal treatment method. This increase was in line with a long term trend of annual increases in tonnage processed (9% between 2006/07 and 2007/08). Collectively this and previous surveys indicate there has been a five-fold increase in the quantities of organic wastes composted since 1998. The 2008/09 survey suggested that:

In total, 5.1 million tonnes of source segregated waste feedstock was recycled in the UK in 2008/09, an increase of 14% on 2007/08.

Of the 5.1 million tonnes of source segregated feedstock, some 4.34 million tonnes (85%) was composed of municipal waste, with just under a half (43%) of this collected at civic amenity (CA) sites, and a further half (51%) collected through kerbside collections. The balance between municipal and non-municipal feedstocks has remained relatively stable over recent years, while total tonnages have steadily expanded, indicating a broadly equal growth in both municipal and non-municipal source segregated feedstocks.

Quantities of food waste inputs collected separately at the kerbside have more than doubled to 36,000 tonnes in 2008/09 when compared with 2007/08. However, a further 383,000 tonnes of feedstock was described as 'garden and food waste'. While the survey cannot determine the exact composition of

this mixed feedstock, food waste typically forms a relatively small fraction (less than 10%).

759,000 tonnes (12% of the total) of the organic waste recycled was from non-municipal sources, of which just over a third (37%) was from landscaping / grounds maintenance, and a quarter (23%) was food waste from commercial or industrial origins – a balance that has broadly remained constant.

Overall, 91% (by weight) of the source segregated waste input was recycled at sites with throughputs in excess of 10,000 tonnes a year. However, sites in excess of 10,000 tonnes a year represent only 65% of the total number of sites. Only 3% (by weight) of the total waste inputs were processed at sites of less than 5,000 tonnes a year, although these account for 21% of all individual sites by number.

Most source segregated input waste (72%) was processed at a dedicated organics recycling site, a small increase from 67% in 2007/08. A further 10% was processed at farm sites.

Source segregated organic waste recycling - processing and technologies

In 2008/09 the organics recycling sector is dominated by relatively simple windrow composting systems processing green waste. However, newer technologies such as IVC and AD are expanding and now adding substantially to the overall market. Together IVC and AD account for greater input quantities than the quantities of food waste collected by the sector (either separately or mixed with green waste) from all sources (419,000 tonnes), suggesting that IVC and AD are being used to treat some non-food waste feedstocks.

The majority of sites (86%) solely treated waste that was imported from outside the recycling site, exactly the same proportion as in 2007/08 and a proportion that has remained stable over a long period of this survey. Only 5% of sites recycled solely organic waste that was produced on the site, marginally up on the 3% in 2007/08. This suggests that the industry in general establishes operations to treat *ex-situ* wastes, rather than being established as on-site treatment facilities. The ways in which these wastes were recycled is summarised below:

The majority of source segregated waste (74% or 3.76 million tonnes) was composted using open air mechanically turned windrows. This proportion is slightly down on the 78% share found for 2007/08, although the total quantity has increased by some 300,000 tonnes. A further 249,000 tonnes (5%) was composted through table composting. In-vessel composting (IVC) and anaerobic digestion (AD) technologies now account for nearly 1 million tonnes (19%) of the inputs to organics recycling.

Around 17% (or 852,000 tonnes) of source segregated waste was composted using in-vessel composting technology, which is an increase of 120,000 tonnes from 2007/08. A further 113,000 tonnes (2%) was processed using anaerobic digestion, a very substantial increase on the 17,000 tonnes reported in 2007/08.

Source segregated organic waste recycling – compost and digestate products

The increase in feedstocks recycled translated into a corresponding increase in the quantities of compost and digestate (from AD plants) manufactured. Further implementation of the compost certification scheme and Compost Quality Protocol (in England and Wales) also appeared to increase compared with the previous year's data. The key findings from the survey are summarised below:

The total quantity of compost products from source segregated feedstocks increased by 9% on the previous year: rising from 2.69 million tonnes in 2007/08 to 2.85 million tonnes in 2008/09.

Nearly three-quarters of all compost (71%, or 2.02 million tonnes) was produced at sites fully certified to PAS100 – broadly double that reported in 2007/08. Of the 2.02 million tonnes produced under PAS100 certification, 76% or 1.55 million tonnes were produced at English and Welsh sites that were also fully certified under the Compost Quality Protocol.

The quantity of digestate product in 2008/09 (105,000 tonnes) reported in the survey may understate the full national picture due to under-reporting by firms operating this technology. In the previous year no data were reported for digestate products.

Taking all compost and digestate products together the main product from these processes was soil conditioner, which accounted for 2.3 million tonnes or 81% of the total compost and digestate products produced. This is an increase of over 500,000 tonnes from 2007/08, and an increase in product share from 71% to 81%.

Soil conditioners accounted for the largest quantity of material containing food waste feedstocks (420,000 tonnes), with turf top dressings utilising about 41,000 tonnes of source-segregated feedstocks containing food waste.

Source segregated organic waste recycling - outlets and end users

Results from the 2008/09 survey suggest that markets for organics recycling products have grown and that sales have increased. This illustrates a continued increase in the commercial value of

organics recycling products and signals continued development of the market. This may suggest increased customer confidence, such that end users are willing to pay for more products. These changes also seem likely to have been aided by the introduction of the Compost Quality Protocol. A similar uptake of the outputs from AD processes is anticipated as the PAS 110 (for anaerobic digestion) and the AD Quality Protocol are implemented.

The survey identified that:

Over half (55%) of source segregated compost and digestate products were sold – 35% to end users and 20% to third parties. This is an increase of 6% on 2007/08 and is attributable to a growth in sales to third parties rather than direct to end users. A fifth (21%) was distributed to end users at no charge and nearly a quarter (23%) was used on site.

Agriculture remained the largest end user for all compost and digestate products at 1.77 million tonnes or 60% of total end use. This is an increase of 520,000 tonnes compared to 2007/08. This is the most substantial change in end user category, and reinforces the long term trend for agricultural end use to have driven the sector for several years. The majority (78%) of agricultural users applied products to cereal or combinable crops.

Just 3% (or 79,000 tonnes) of product was supplied to landfill restoration/daily cover in 2008/09, falling substantially from 14% (389,000 tonnes) in 2007/08. The use of source-segregated products in landscaping in 2008/09 (12% or 354,000 tonnes) remained the same as 2007/08. A further 191,000 tonnes of source-segregated product was used in land restoration (as distinct from landfill restoration) in 2008/09, again broadly similar to estimates for 2007/08 (171,000).

When respondents were asked about future markets for organics products, the agriculture sector is suggested to offer the most significant growth potential, having broadly tripled over the past six years.

Mixed organic wastes – tonnages, processing and end use

Although widely established in other European countries, the treatment of mixed waste to reduce its biodegradable content remains relatively small-scale in the UK. The key findings from this survey indicated that:

The total quantity of mixed organic waste processed in a Mechanical Biological Treatment (MBT) plant in the UK in 2008/09 is estimated at 629,000 tonnes, an increase on the 584,000 tonnes estimated for 2007/08.

The most common processing technique was reported as aerobic IVC (88%) with 6% aerobic bio-drying

The majority of the mixed waste output was reported to be used for land restoration (65%) or landfill restoration / daily cover (21%)

Conclusions

Overall, the 2008/09 survey shows that the UK organics recycling industry is continuing to grow, with a slightly steeper rate of growth in quantity of throughput and business turnover than was evident in 2007/08. The organics recycling industry is becoming increasingly diverse in terms of business type, feedstock used, process technologies and the types of end products. New technologies are expanding and this can be expected to continue. However, the findings from the 2008/09 survey suggest well-established composting processes continue to underpin the industry and were responsible for the majority of growth. Agricultural end-uses dominate the market for organics recycling products and operators anticipate this sector to provide the strongest driver for growth in the future.

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The project team is also grateful to Phil Williams, our contract manager at WRAP, for his continuing support and assistance; Jeremy Jacobs at AfOR for help in estimating the financial turnover and interpreting the implications of the survey for the UK organics recycling industry; and the wider Organics Team at WRAP for their assistance on this project.

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Glossary

Mechanically turned windrow

Composting method where the feedstocks are formed into long piles and are physically 'turned' (lifted into the air and allowed to drop back down either using a dedicated machine or a materials handling vehicle) to allow stale air, moisture and trapped heat to escape, and fresh air to enter. Windrow composting may be carried out either outdoors (open air) or under a cover (such as a geotextile membrane, shed or in a building).

Static pile with aeration

Form of composting where the materials are turned infrequently, and the fresh air is introduced into the pile through a forced aeration system. This may be either through channels in the ground or through a perforated pipe laid within the compost. Aeration may be either positive (pushed through the composting mass) or negative (sucked through the mass).

Table composting

Table composting is an approach that is used to compost large volumes of material, employing minimal process management: large piles called 'tables' are formed, with new material added at one end and compost harvested at the other. Composting relies largely on passive aeration with turning often being achieved through the use of a side turner which slowly moves the table a windrow's width down the pad at a time, starting from one end. Table composting is commonly used for non-putrescible materials, such as woody green wastes and may take a number of months to produce a composted product.

In-vessel composting

A term used to describe a wide range of composting systems where the composting feedstocks are contained in a purpose built structure for the active composting stage allowing a higher degree of process control and environmental protection than windrow composting. Many in-vessel composting sites incorporate an element of windrow composting for maturation of the material following the sanitization stages. At present, it is primarily used for feedstocks that fall under the provision of the Animal By-Products Regulations.

Anaerobic digestion

Process of controlled decomposition of biodegradable materials under managed conditions where free oxygen is absent, at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobic and facultative bacteria species, that convert the inputs to biogas and whole digestate

Thermophilic aerobic digestion

Method of treating slurries or liquid suspensions of organic wastes where the materials are pumped into a tank and air is forced through encouraging the growth of thermophilic bacteria that then digest the waste. The process is typically shorter than composting and anaerobic digestion.

Source-segregated feedstocks

Feedstocks which have been kept separate from other waste types so as to reduce contamination and facilitate treatment. It is referred to as "separate collection" in the Waste Framework Directive (2008/98/EC).

Animal By-Products Regulations

The Animal By-Products Regulations 2005 (SI 2347/2005) provide for the application of the EU Regulation (EC No. 1774/2002) in England. It controls the collection, transport, storage, handling, processing and use or disposal of animal by-products in EU member states, including catering wastes. Similar legislation applies in Scotland and Wales. The England Regulations were amended with effect from 2 May 2009 by the Animal By-Products (Amendment) Regulations 2009 (SI 2009/1119).

PAS 100

Publicly Available Specification 100, which is the British Standards Institution Specification for Composted Material published in 2005

Compost Quality Protocol

Published in March 2007, this sets criteria for the production of quality compost from source-segregated biodegradable waste (biowaste) and is effective in England and Wales². Compliance with the criteria in the Protocol is considered sufficient to ensure that the product may be used without risk to human health or the environment and therefore without the need for waste regulatory control.

Dedicated composting / biological treatment site

A site used solely for the purpose of recycling organic materials, for example through a composting, aerobic or anaerobic digestion process. It differs from other non-dedicated sites, which may carry out other activities, such as farming, dry recyclable processing or landfilling.

On-farm composting

A composting activity which is carried out on a farm. It may be an ancillary process to complement existing agricultural activities, or a standalone business that is simply located on designated agricultural land.

² At the time of writing the CQP is also being rolled out in Northern Ireland, given the time period considered by this survey any reference to CQP applies to England and Wales only

1.0 Introduction

Since 2004/05 M·E·L Research has undertaken an annual market survey of the UK organics recycling industry (originally under the title of the composting and biological treatment industry). This 2008/09 survey was undertaken in the later part of 2009 and early 2010 by M·E·L Research on behalf of the Association for Organics Recycling (AfOR), and WRAP (Waste & Resources Action Programme).

The survey captures the recycling of municipal organic waste from Civic Amenity (CA) sites or via source-segregated kerbside collection of garden and/or food waste. It also includes the recycling of feedstocks from non-municipal sources such as green waste from landscaping and grounds maintenance, and food waste from the retail and catering sectors. Waste inputs can either be source segregated or mixed waste. It does not include home composting, or composting undertaken on-site for organic waste generated at premises such as schools and hospitals.

The survey covers a range of organic waste recycling processes operating across the UK, with particular emphasis on biological treatment techniques, such as composting and anaerobic digestion (AD), as well as residual waste processing through mechanical biological treatment (MBT). A glossary of technical terms is provided to aid the reader. This year the survey has captured further detail on organic waste processed through new technologies such as AD – an emerging need as the industry diversifies.

Many of the topics covered by the 2008/09 survey are similar to previous years and analysis of longer-term trends is now possible. For example, changes in the quantities and types of organic waste materials recycled, the quantity of compost and other products produced and the markets and end uses for these products. The 2007/08 version of the survey also introduced questions regarding on site licensing and the adoption of quality certification schemes. This has been completed again this year so year-on-year trends for these elements are now available.

In the 2007/08 survey, an enhanced methodology was also introduced to provide a more accurate and reliable way of grossing up the survey results to national tonnages. Further details are provided in Section 3 and in Appendix 8. This methodology has been replicated for the 2008/09 survey.

Section 2 of the report begins by outlining the survey methodology. Section 3 then describes the calculations used for grossing up the survey results to produce national estimates. Sections 4 to 9 present the results of the survey; with the structure of findings following the lines of enquiry in the survey form.

2.0 Survey methodology

2.1 Design of survey forms

The survey questionnaire was developed by WRAP, AfOR and M.E.L Research for completion by firms potentially engaged in organics recycling. Copies of the survey questionnaire and covering letters are shown in Appendix 1. For the 2008/09 survey, additional information was sought on the use of developing technologies such as AD and greater detail on food waste inputs. The additional information requested this year was:

Whether collected green waste included bags and whether these were biodegradable
Additional options on the new technology processes
Additional options for digestate product
Further details on whether products contained food waste or not
More extensive classification of agricultural end-uses to match standard Defra agricultural definitions

To compensate for the potential impact of these changes on response rates, a significant re-design was implemented to make the survey easier to complete. Section 2.4 provides further details on the response rates achieved.

The period covered was the financial year 2008/09 or the time period best approximating to this, for which data were available from the surveyed company. Given the rapidly developing nature of some aspects of the industry, it should therefore be noted that the picture represented in this report applies to the survey year 2008/09, and will not take account of developments since 2009. As in previous years, two questionnaire formats were produced with the same content. One was suitable for printing and completing by hand, and the other format was a version suitable for completing electronically. This year however a new online version was also developed, although there was a relatively limited uptake of this option. Further discussion and conclusions on the practical working and learning points from the current survey are provided in Section 2.6 and the concluding Section 10.

The general flow of the survey questions starts with a section asking for data relating to the operator organisation as a whole, examining company size, predominant business activity, turnover and employment related to organics recycling. Respondents were then asked to provide operational details for individual sites, in relation to two site categories:

- Sites taking source segregated waste feedstock
- Sites taking mixed waste feedstock.

For each site, a survey return was requested, covering:

- Quantity of inputs
- Type of organics recycling process or technology
- Quantity and type of product output
- End markets and end uses of the product.

As in previous years organics recycling firms that operated more than one site were asked to complete separate survey sections for each site. Where more than one process operates on a site, quantities of throughput and output were requested for each separate process, although wider commercial data such as employee numbers and turnover per process were not commonly unavailable.

2.2 Organisations surveyed

The survey used a database of UK members of the Association for Organics Recycling, which includes the majority of composting companies in the UK (operating both large and small scale facilities), as well as the emerging anaerobic digestion (AD) and MBT sectors. In total there were 424 entries on the AfOR membership database supplied to M.E.L Research in Autumn 2009. Although the list covers a broad cross-section of the organics recycling industry, there is no definitive census of such firms in order for its representativeness to be judged. Regulatory agencies also compile lists of businesses adopting certification scheme and these could provide valuable additional information for future surveys. A number of other sources (listed below) were used to develop an additional contacts list of 87 non-AfOR member companies:

companies receiving support and assistance via WRAP members of the Environmental Services Association the appropriate environment agency database of licensed and exempt composting sites in England, Wales, Scotland and Northern Ireland

The aim was to gather information on potential organics recycling operators from as many relevant sources in the UK. In total, 511 organisations across the UK were contacted and asked to take part in the 2008/09 survey.

This survey did not target the community sector specifically. A provision was made in the estimates for the activities of this sector drawing on the Defra funded project (WR0211) undertaken in 2006 called "Unlocking the potential of community composting". The project was carried out by the Integrated Waste Systems group at the Open University in association with the Community Composting Network (CCN), London Community Recycling Network (LCRN) and the New Economics Foundation. Although a more recent survey of this sector has been undertaken by the CCN, it has not been possible to access individual respondent identities to identify duplicates with this survey. In view of this, the 2006 survey results have therefore been used as a proxy for 2008-09. Further information about the previous 2006 Defra funded project can be found in Appendix 2.

2.3 Administration of the survey

Survey forms were sent out by email, where email addresses were available, or by post in October 2009 to all 511 contacts. Companies not responding to the

first invitation were sent a postal or email reminder in November 2009. Non-respondents were then telephoned in December 2009 and February 2010 and given the further opportunity to complete the survey by telephone or online. As in previous surveys, it is often only at this stage that companies get down to preparing their submission. To help maximise the chances of capturing the major business operations, the 'top 20' AfOR members were identified through the membership fee band system. To this was added professional knowledge of AfOR and WRAP on large companies active in organics recycling. Combinations of approaches were then made to contacts in these firms by a range of project team members. Notwithstanding this targeted approach, several key companies in the industry have continued not to take part in the survey. In the long term it would be helpful

if a way could be found to assist companies in preparing routinely for this annual return as part of their established yearly cycle of business activities. This might be helped for example by synchronising the survey operation with the reporting schedule required by the Environment Agency and others.

2.4 Response rates

Responses to the survey were received from 154 of the 511 companies targeted (Table 1) – a response received from 30% of all companies approached. Of these, 112 respondents had actively recycled organic wastes in 2008/09 while 42 organisations responding had not operated any organic recycling processes during the period.

Table 1 Summary of survey responses, 2008/09 and 2007/08

Data item	Number of organisations 2008/09	Number of organisations 2007/08
Overall number of organisations surveyed	511	313
Respondents which actively recycled organic waste	112	107
Respondents not active in organics recycling	42	20
Non respondents	357	186
Response rate	30%	41%

In addition to the 42 respondents not actively recycling organic material in 2008/09, a further 17 replies were received indicating the company was no longer trading or in existence. From the 112 actively operating respondents, information was gathered on 194 sites at which organics recycling took place in 2008/09 (as some companies operated multiple sites). This compares to 204 site recordings in the previous year 2007/08, an overall decrease of 10. As seen in Section 3.1 below, there has also been a decline in the proportion of organic waste quantities covered by survey respondents. This could be accounted for by expansion within the larger non-responding companies. This decline in response may have come from the additional information requested this year (see section 2.1), potentially deterring response, or possibly from the pressures of industry growth and financial competitiveness on the availability of staff time to complete the forms.

Of the 112 active companies responding, the method for sending back the response ranged from:

- 18 replies (16%) received by email document
- 26 replies (23%) completed online
- 61 replies (54%) completed by phone
- 7 replies (6%) returned by post.

Of the 112 active respondents, a quarter replied without the need to chase up, while three-quarters responded after various levels of chase-up.

In addition to the 42 respondents not engaged in organics recycling in 2008/09, a range of different factors affected the 357 non-responding contacts. In summary:

- 96 refused (mainly after chase-up contact by phone); reasons given range from not wanting to take part, not recycling enough material to make it worthwhile, and not having the requested data available
- 170 were successfully contacted but despite indicating an intention to respond, no reply was received
- 74 were either not contactable (e.g. phones never answered, individuals in meetings) or contact details were incorrect; non-contactable organisations were approached at least 5 times before deemed non-respondents
- 17 contacts no longer existed.

2.5 Checking and standardisation of returned survey forms

Survey forms returned were checked to ensure that respondents had answered all the questions and that answers were internally consistent. For example, it was checked that the quantity of output product was lower than the quantity of waste input and that both totalled correctly. Where there were omissions or inconsistencies, respondents were telephoned or emailed for clarification.

Where respondents did not provide data on the tonnages of product generated, they were asked to provide a factor to convert input tonnages to tonnes of output. Where respondents could not do this (57 of the 179 source segregated input sites), it was assumed that output was 60% of input. While this is likely to be a reliable figure for well established figure for composting processes, the data from new technologies shows conversions can range from 30% up to 90%.

In view of the emerging role of in-vessel composting (IVC) and anaerobic digestion (AD) it is important that a better understanding of the wide range in these specific coefficients for these particular technologies should be developed in future. As well as being useful in its own right as a measure of 'productive efficiency', this would also mean that where output quantities were not specified, a reliable figure could be inferred. While this was not required in 2008/09 because all sites reported outputs directly, in previous years the 60% conversion was assumed as the best available approximation, a position that would not be reliable in future in view of the high range in actual conversion coefficients observed.

In the small number of cases (two) where output quantities were provided in cubic metres instead of tonnes, standard density conversion factors provided by the Environment Agency (0.67 tonnes per m³) were used to convert volume to tonnes.

2.6 Review of survey operation and learning points

This survey has been undertaken using similar methods for several years – originally as a postal self-completion survey operated for its members by the former Composting Association, with additional potential companies and survey completion options being steadily added in the past four years while the survey has been commissioned through WRAP.

Compiling the mailing lists annually is a complex process as there is no single data source on organics recycling operators, and considerable de-duplicating work is required every year to reassemble the list from its component sources. It is sometimes hard to identify duplicate companies as individuals may appear as 'contacts' on several lists with different sites addresses, without it being immediately evident that they cover the same company. There is no mechanism to transfer this knowledge, once gained, back to the parent list holder to avoid the same problem recurring in the subsequent year.

The scope of the survey has also expanded considerably, as the need for more detailed information has grown and the technological mix has diversified. As a result the survey form itself has become more complex and potentially off-putting to

small operators. At the same time, it is difficult for larger companies to provide data with many sites have not been presented with an easy way to split up the form into site-specific records. This suggests that in future years, consideration should be given to approaching different types of operator in different ways, rather than through the current 'one-size-fits-all' survey method. The introduction of an on-line format in 2008-09 was intended to make this easier by building in 'skips' so that irrelevant questions are not asked of respondents, and make it easier to replicate site records for multi-site users. However only a quarter of respondents took up the online option, and this may not offer a communications medium that is appropriate to some in this industry sector.

Telephone chase-ups have proved decisively effective where the appropriate individuals have been successfully contacted. However where a named and recognised contact is not available, especially in the larger firms, it has often been hard to track down and reach the individual best placed to complete the forms.

Response from firms prevailing in the new technology sector has also been disappointing. This may reflect an historic impression that the survey is about 'composting' not new organics recycling processes, or possibly that there is no established 'tradition' for completing the annual survey in the way that has become customary amongst 'composters'.

In Section 2.1 above, it was noted that while throughput and output data are recorded by specific process at multi-process sites, it is not possible to correlate this with wider company data such as employment and turnover. In principle such commercial data would provide useful market intelligence and options for its collection should be explored, while recognising the highly commercially sensitive nature of such information and the inevitable constraints this will impose on the practicability of collecting it.

Later in Section 10 Conclusions, there are recommendations on how these learning points might be addressed and overcome in further surveys.

3.0 Statistical gross up techniques allowing for non respondents

3.1 Estimating for organics recycling activity by non survey respondents

To generate national estimates for the total quantity of organics recycling ongoing in the UK, a method needs to be found to account for non-responding firms. Reference was made in Section 2.2, to the representativeness of the sample frame and survey respondents, and a longer term need was highlighted to track responses against Defra list of IVC and AD ABPR approvals to validate total responses for these processes, for the specific period of the surveys. A good general validation check on the proportion of recycled organic waste that was captured by the survey can be made with Waste Data Flow³ municipal waste data for the quantities of municipal waste collected through source segregation and sent for organics recycling. This official municipal waste data is known to be high quality, reliable data, as they have been externally validated. Table 2 shows the percentage of separately collected municipal organic waste that was captured by this survey. The percentages were calculated by comparing the survey data from this survey with the official data on the quantities of municipal waste sent for organics recycling in each of the four nations of the UK.

Table 2 Percentage of source segregated organic municipal waste recorded by survey respondents, 2008/09 and 2007/08

Nation	Capture rate of source segregated organic municipal waste collected in the UK (2008/09)	Capture rate of source segregated organic municipal waste collected in the UK (2007/08)
England*	51%	60%
Wales*	23%	47%
Scotland*	57%	56%
Northern Ireland*	47%	55%
UK total	50%	59%

* Data for England, Wales, Scotland and Northern Ireland were from Waste Data Flow 2007/08 and 2008/09 returns.

For the UK as a whole, Table 2 shows that 50% of source segregated organic municipal waste recycled in 2008/09 was captured by this survey, in other words that 50% of source segregated organics recycling of municipal waste going on in the UK was carried out by 2008/09 survey respondents. This

remains a substantial overall proportion to have been achieved by the survey, although it has declined from previous years. Looking at the situation in the individual UK nations, it can be seen from Table 2 that the capture rate of municipal waste organics recycling by the survey was good for England (51%), Scotland (57%) and Northern Ireland (47%) but rather more modest for Wales at 23%. More detail on the regional response profile can be found in Appendix 3.

In order to allow for organics recycling not captured by this survey, the survey data on inputs of source segregated organic municipal wastes were scaled up so that this input data matched the validated data on source segregated organic municipal wastes, extracted from Waste Data Flow. The non municipal waste inputs recycled by survey respondents were scaled up by the same factor. This assumed that the proportion of municipal and non municipal waste processed by survey respondents was representative of the UK organics recycling industry as a whole. This is an established statistical method for projecting sample data onto a known national total, and is more reliable and robust than the alternative of grossing up the respondent sample by assuming non-respondents match respondents. The effect is to apportion the nationally known quantities (tonnes) to the known characteristics of the respondent sample. It has been assumed that the same factor applies in estimating national MBT totals for mixed waste inputs, and while there is no method for verifying this assumption, this is the

best method available for making national estimates of MBT quantities.

During previous surveys the analysis of Waste Data Flow returns has identified that some of the lower grade source segregated organic municipal waste may be added to mixed waste inputs (i.e. the fraction that is processed using MBT and other mixed waste processes). In 2007-08 a refinement to the gross-up methodology was introduced to account for this. Waste Data Flow data distinguishes between source segregated 'green waste' and source segregated 'other compostable' waste. It has

³ See: www.WasteDataFlow.org

been assumed that all green waste goes into the source segregated organics recycling input stream, but that 10% of the 'other compostable' municipal waste actually enters the 'mixed waste' input stream. A further refinement was also introduced to the gross-up methodology, which includes a more precise technique for apportioning 'unspecified' waste inputs (i.e. where the respondent has not separated municipal and non-municipal input quantities). This improved and more rigorous approach is set down in a Technical Memorandum in Appendix 8, and was used again this year.

3.2 Estimating financial turnover and employment within the sector

Respondents were asked to report their financial turnover and number of employees specifically associated with their organics recycling activities. For both measures size bands were used during surveying⁴. The mid-point of each size band was used to estimate the total turnover and employment within the sector. As with tonnage totals a gross-up method was used to account for firms not responding to this section of the survey or overall non-respondents to the survey. Please see section 4 for further details.

3.3 Presentation of analysis and results

The remainder of the report presents the results from analysis of specific themes and sections within the questionnaire, structured as follows:

- Section 4 contains a business analysis of the industry, based on company level data
- Section 5 is a description of the specific activities and processes operating on individual sites
- Section 6 deals specifically with sites taking source-segregated waste inputs and treatment processes
- Section 7 covers the product types, output quantities and markets from processing source segregated inputs
- Section 8 centres on the smaller number of sites and processes handling mixed waste inputs
- Section 9 considers plans for future capacity growth and expansion across all types of sites and feedstocks
- Section 10 contains a discussion and conclusions from the survey

⁴ The size bands for turnover are specified at question A2 in Appendix 1, and for employees at question A3.

4.0 Business analysis of the UK organics recycling industry

4.1 Types of organisation operating organics recycling activities

The first part of the survey consists of a business analysis of the firms engaged in the organics recycling industry in the UK. Table 3 shows the main business activities of companies responding to the survey. Note that this is a question about the principal business activity of the company, not about the technical processes operated on site, a distinction that was made clearer and more specific in this year's survey.

In 2008/09 the survey results indicate that approximately 37% of organics recycling companies stated that their main business activity was specialist compost producer. This shows a decrease of 9% over the previous year. At 21%, a fifth of operators considered their main business activity to be agricultural activities (an increase of 5% on 2007/08 figures) and 25% were solid waste treatment / disposal companies (an increase of 6% on 2007/08 figures). The percentage reporting their main business activity as 'anaerobic digestion/organics treatment company', at 5%, is a new option introduced this year and may account in part for operations previously self-reporting their main activities as 'compost producer'.

The possible implication of the fall in firms describing themselves as specialist compost

producers, is that there has been a shift away from compost-specific business, and towards the development of organic waste treatment on farms and organics recycling in general being taken up by the waste management industry. This would be consistent with the development of a wider interest in organics recycling in the waste management industry, and a re-emergence in the agricultural sector of organics recycling as a business diversification as well as on-site treatment option. It should be noted that when the specific activities on-site are explored in the later site-specific section of the survey, a different trend is evident. Thus the trends discussed above may result from the clearer distinction made this year between 'nature of the business' and 'operational site activity'.

As stated earlier in paragraph 2.2, the survey did not specifically gather information from the community/not for profit sector. As a result the proportion of community/not-for-profit businesses responding to this survey as shown in Table 3, may not fully represent the activities of this business sector.

The decrease in the number of respondents between the 2007/08 and 2008/09 surveys may also be a result of consolidation within the sector, as it was known that a number of companies with complementary expertise had merged during the survey period.

Table 3 Types of respondent organisations operating organics recycling sites in the UK in 2008/09 and 2007/08

Main business activity	Number of companies in 2008/09	% of total companies in 2008/09	Number of companies in 2007/08	% of total companies in 2007/08
Specialist compost producer	41	37%	49	46%
Anaerobic digestion / organics treatment company	6	5%	0	0%(*)
Water treatment company	0	0%	0	0%
Solid waste treatment / disposal company	28	25%	20	19%
Equipment / plant supplier / hire company	0	0%	1	1%
Agricultural activities	24	21%	17	16%
Horticultural / landscaping activities	2	2%	2	2%
Community group / not-for-profit business**	3	3%	3	3%
Local authority	7	6%	11	10%
Wood recycling***			1	1%
Other	1	1%	3	3%
Unspecified	0	0%	0	0%
Total	112	100%	107	100%

* Not asked in 2007-08

** While this table reports only three responses from the community sector, the figures generated through a separate Defra funded survey of this sector have been included later in this report (see Appendix 2 for more detail).

*** Wood recycling business sector was removed from 2008/09 survey

4.2 Financial size of the UK organics recycling industry

Respondent companies were asked about the financial turnover of the organics recycling aspects of their business including the production, distribution and sales of their product. Table 4 shows the distribution by turnover bands of the 97 survey respondents who answered this question. Nearly a third of responding companies (32%) had turnovers relating to organics recycling, of less than £100,000 with a further 27% of companies in the £100,000 to £500,000 band. There was a sizeable number (25) of survey respondents with turnovers over £1 million per annum with eight of these reporting turnovers in excess of £3 million per annum. In total 15 survey respondents chose not to answer the question on turnover.

These data suggest that the organics recycling sector comprises a diverse range of company sizes, and hence business models, with the distribution of small, medium and large organisations remaining relatively constant between 2007/08 and 2008/09, but with a potentially significant increase in business volume deriving from the firms individually turning over more than £1million. This implies that economies of scale have not played a significant role to date.

The turnover information provided by respondents was used to calculate the financial size of the UK organics recycling industry. Firms were invited to report their turnover in indicative ranges rising to over £20 million. However, due to the commercially sensitive nature of this information for larger firms, their data are reported in aggregate form in this report as turnover more than £3 million. For the 15 firms responding to the survey but not indicating turnover, their organics recycling turnovers were estimated based on applying the average turnover-per-tonne coefficient from the respondent firms to their input data for tonnes of waste processed. The average turnover/tonne for respondents providing complete data was £39 in 2008/09 compared to £36 in 2007/08.

To estimate the total industry turnover, the grossing-up methods were repeated as in the previous year to cater (a) for respondent firms who omitted the turnover question (15 out of the 112, rather more than in the previous year's survey), and (b) to take account of non-respondent firms in the survey as a whole. Thus, in addition to the reported turnover of the firms completing this question, an additional £14.2 million was estimated for survey respondents who did not provide turnover information, based on their tonnage throughout and the average 'turnover per tonne' coefficient derived from the respondent firms, i.e. by calculating the average turnover per tonne of source segregated waste input for all those answering the turnover question and applying this to respondents not answering the turnover question. In order to allow for survey non respondents, the financial turnover of these operators was scaled up in proportion to their municipal waste inputs using the same standard method as described in Section 3.2. The estimate for the turnover of survey non respondents was £123.9 million, broadly equating to the estimated 50% of tonnage not captured through this survey.

Table 4 shows that the normal 'Pareto principle'⁵ applies to this business sector, with over 80% of the whole industry's turnover arises from the quarter of all firms that are in the turnover bracket over £1 million.

⁵ *The Pareto Principle or '80:20 Rule' is an established statistical feature that often characterises the proportional distribution of product volume across firms of different sizes. The expected statistical distribution is such that 80% of total volume of business activity typically occurs in the 20% largest organisations.*

Table 4 Turnover for the UK organics recycling industry, 2008/09 and 2007/08

Turnover band	Number of companies (survey respondents only)		% of total responding companies in each band		Total estimated turnover per band	
	2008/09	2007/08	2008/09	2007/08	2008/09	2007/08
Less than £10,000	13	11	13%	11%	£65,000	£55,000
£10,000 - £50,000	10	12	10%	12%	£300,000	£360,000
£50,000 - £100,000	8	8	8%	8%	£600,000	£600,000
£100,000 - £500,000	26	32	27%	31%	£7.8 million	£9.6 million
£500,000 - £1 million	15	15	15%	15%	£11.3 million	£11.3 million
£1 million - £3 million	17	16	18%	16%	£34 million	£32 million
More than £3 million*	8	9	8%	9%	£46.5 million	£41.5 million
Total for respondents providing turnover information	97	103		100%	£100.5 million	£95.4 million
Estimate for survey respondents not providing turnover information					£12.9 million	£2.3 million
Estimate for survey non respondents					£112.6 million	£68.1 million
Total estimated turnover for UK organics recycling industry					£226 million	£165.8 million

To provide a specific turnover figure for firms responding in the 'more than £10 million' turnover category, the input and output tonnages were checked against the indicative gate fees for the relevant processes and using the same assumptions as in 2007/08 the estimate was scaled back to a presumptive average organics-related turnover of £5 million per firm.

Summary:

- The total estimated turnover for the UK organics recycling industry in 2008/09 is calculated to be of the order of £226 million.
- This is an increase of 36% on the 2007/08 figure.
- As seen later in Section 5, only around a third of this growth (14%) appears to be accounted for by the increase in tonnage throughputs, indicating that improved gate fees and/or product prices during 2008/09 are likely to account for the additional increased financial strength of the sector⁶.

4.3 Employment in the UK organics recycling industry

Organics recycling companies were asked to provide information on how many full time equivalent (FTE) staff they employed in the composting and biological treatment aspects of their business. This could cover more than one site where a single company operated multiple organics recycling sites. Size bands were provided (see Table 5) on the survey form. The most common of these was the 1 to 5 FTE band with over half of companies falling into this category.

Table 5 therefore shows first of all, for 2008/09 compared to 2007/08, the total number of operators employing FTE employees in each size band. It shows for example, that the number of firms employing between 6 to 10 FTE employees, has increased from 14 in 2007/08 to 20 in 2008/09. The next pair of columns in Table 5 show that estimated total FTE number of people actively employed in the organics recycling industry, again for 2008/09 compared to 2007/08. This estimate is produced for each size band by multiplying the number of firms in the band by the average FTE number of employees in the band. This shows for example that the total FTE number of employees in companies employing between 6 and 10 FTE employees, has increased from 112 in 2007/08 to 160 in 2008/09.

The total overall employment in the UK organics recycling industry was estimated from summing the totals for each size band as shown in Table 5. Survey non respondents were allowed for by assuming the same scaling factor based on their municipal waste inputs as described in Section 3.2. In total, 1,708 FTE employees are estimated to have been employed in the organics recycling industry in 2008/09, an increase from the 1,351 estimated for 2007/08.

By dividing the total amount of recycled organic product output by the number of people employed in the industry, an overall 'organics recycling efficiency rate' might in future be reliably estimated in terms of tonnes of product output per employee, for the main process types (composting, IVC, AD, MBT etc). From the survey data provided at present it is not possible to break this down into efficiency ratings per type of process because employment data are generally held and reported company wide while processes are reported per site, and it is not yet evident from respondents to the survey, that they could in practice in the short term provide such data

⁶ Although there is evidence that gate fees may have fallen more recently

Table 5 Employment in the UK organics recycling industry 2008/09 and 2007/08

Employment Band – Total number of FTE employees per firm	Number of operators in employment band (survey respondents only)		Total number of FTE employees in band	
	2008/09	2007/08	2008/09	2007/08
Less than 1	13	12	7	6
1 to 5	57	58	171	174
6 to 10	20	14	160	112
11 to 20	16	16	248	248
More than 20	6	6	271	253
Total for respondents providing employment information	112	106	857	793
Estimate for respondents not answering this question			0	4
Estimate to allow for survey non respondents			850	554
Total FTE employment in UK organics recycling industry			1,707	1,351

Summary:

- The overall employment in the UK organics recycling industry in 2008/09 is estimated at approximately 1,707 FTE employees
- This is an increase of 26% on the 2007/08 figure.

4.4 Number of organic waste recycling sites operated by survey respondents

The next section of the survey asks firms to provide details on the number and nature of individual sites

they operate. Data are for all sites, including those taking source segregated feedstocks and those taking mixed waste.

Table 6 shows that approximately four-fifths of companies surveyed were operating single sites, while 21% of companies operated between two and 10 sites. Only one of the companies surveyed operated more than 10 sites. This shows the sector is fragmented, with the majority of companies operating single sites, and this profile of the distribution of site numbers is virtually identical to the previous year.

Table 6 Number of organics recycling sites operated by survey respondents in the UK, 2008/09

Number of sites operated	Number of companies 2008/09	% of total companies 2008/09	Number of companies 2007/08	% of total companies 2007/08
1	89	79%	86	80%
2	10	9%	8	7%
3	3	3%	2	2%
4	3	3%	2	2%
5	2	2%	2	2%
6	2	2%	1	1%
7	1	1%	3	3%
>10	2	2%	3	3%
Unspecified	0	0%	0	0%
Total	112	100%	107	100%

5.0 Characteristics of individual organics site operations and processes

This section presents the characteristics of all site types covered by the survey. This includes both sites taking source segregated waste inputs, and also sites with mixed waste feedstock. The 194 sites for which replies were received, divided into:

- 176 sites taking source segregated waste only
- 3 taking both source segregated and mixed waste feedstock (thus a total of 179 taking source segregated)
- 15 taking mixed waste only (thus a total of 18 taking mixed waste)

5.1 Sites operating under a waste management licence or permit

For each site operated, survey respondents were asked if this site was operating under a waste management licence or permit⁷ (see Table 7). Nearly two thirds of the sites operated in 2008/09 (64%) were operating under a waste management licence or permit and 35% of the sites were operating under exemption.

⁷ In England and Wales all waste management licences transferred to environmental permits in April 2008 under the Environmental Permitting Regulations 2007. Sites in Scotland and Northern Ireland are required to operate under either a licence, Pollution Prevention and Control (PPC) permit or an exemption.

Table 7 Organics recycling sites operating under a waste management licence or permit, 2008/09

Site operating under licence or permit	Number of sites 2008-09	% of sites 2008-09	Number of sites 2007-08	% of sites 2007-08
Yes	125	64%	137	67%
No	67	35%	65	32%
Unspecified	2	1%	2	1%
Total	194	100%	204	100%

In terms of the overall profile, the balance of permitted to exempt sites has remained basically the same as the previous year. As almost one third of the responding sites were operated under an exemption, which places limits on the quantities of waste that can be treated at any one time (i.e. most sites will be processing small tonnages), this continues to restrict their participation in the BSI PAS 100 and Compost Quality Protocol certification scheme due to the fixed costs and processing requirements involved. As a result, the recycled organics produced at these sites continue likely to remain classed as waste, thereby being subject to regulatory control. The new environmental permitting regime introduced in England and Wales

on the 6 April 2008 does not appear to have increased the proportion of sites operating under a permit in 2008/09.

Table 8 compares turnover with the status of the site (licensed or exempt), and shows that the licensed sites are more prevalent amongst the larger turnover companies. In total 27% of licensed sites were known to be operated by companies with turnovers in excess of £3 million, whereas only 3% of exempt sites were known to be operated by companies of this size. This is similar to the 2007/08 data, which indicated 29% and 6% for licensed/ permitted and exempt sites, respectively.

Table 8 Turnover for the UK organics recycling industry by sites being licensed or exempt, 2008/09

Turnover band	Yes, site was licensed/permitted			No, site was exempt		
	Count of sites	%	Cumulative %	Count of sites	%	Cumulative %
Less than £10,000	9	7%	7%	4	6%	6%
£10,000 - £50,000	4	3%	10%	9	13%	19%
£50,000 - £100,000	2	2%	12%	5	7%	27%
£100,000 - £500,000	19	15%	27%	10	15%	42%
£500,000 - £1 million	16	13%	40%	1	1%	43%
£1 million - £3 million	23	18%	58%	33	49%	93%
More than £3 million	34	27%	86%	2	3%	96%
Unspecified	18	14%	100%	3	4%	100%
Total	125	100%		67	100%	

5.2 Types of organics recycling sites operated by survey respondents

Survey respondents were asked to categorise the nature of their sites using a pre-defined list on the survey form (see Table 9). Two thirds (66%) of the sites operated by survey respondents were described as 'dedicated composting/biological treatment sites' and a quarter of the sites (15%) were described as farms. Just 4% of sites were described as landfill sites and another 4% as horticultural/landscaping activity sites. The remaining 11% of sites came under a variety of site type classifications. As in previous years, some of the dedicated composting sites were actually located on other types of sites such as farms or landfill sites, but were classified by their operators as

dedicated composting sites because they operated independently of the farm or landfill business. These latter sites may well be those operated under an exemption (especially on farms), and encompass the large number of small processes with small annual throughputs. These third-party sites represent a different business model to the larger sites, where organics recycling takes place at a dedicated site.

Table 10 shows the contrasting profiles of sites with licences or permits compared to exempt sites. Permitted / licensed sites were more likely than average to be specialised composting or biological treatment sites, while exempt sites were more likely than average to be farms.

Table 9 Types of organics recycling sites operated by survey respondents in the UK, 2008/09 and 2007/08

Site type	Number of sites 2008/09	% of total sites 2008/09	Number of sites 2007/08	% of total sites 2007/08
Dedicated composting / biological treatment site	128	66%	108	53%
Civic amenity site	3	2%	2	1%
Landfill site	8	4%	23	11%
Materials recycling facility	4	2%	5	2%
Farm	30	15%	50	25%
Horticultural / landscaping activities	7	4%	7	3%
Community based project	3	2%	3	1%
Other	11	5%	6	3%
Total	194	100%	204	100%

Table 10 Types of organics recycling sites operated by waste management licence/permit in the UK, 2008/09

Site type	Yes, site was licensed/permited		No, site was exempt		Total	
	Count of sites	%	Count of sites	%	Count of sites	%
Dedicated composting / biological treatment site	89	71%	39	58%	128	67%
Civic amenity site	2	2%	0	0%	2	1%
Landfill site	8	6%	0	0%	8	4%
Materials recycling facility	3	2%	1	1%	4	2%
Farm	12	10%	17	25%	29	15%
Horticultural / landscaping activities	1	1%	5	7%	6	3%
Community based project	0	0%	2	3%	2	1%
Other	10	8%	3	4%	13	7%
Total	125	100%	67	100%	192*	100%

* Records available on site types and license status for 192 of the total 194 sites

5.3 Location of organics recycling sites

The location of organics recycling sites operated by survey respondents are summarised in Table 11. Approximately 73% of the sites covered by the 2008/09 survey were in England. This is 18 sites

fewer than were covered by the survey in 2007/08. Site coverage in Scotland increases from 16% in the 2007/08 survey to 21%. Site coverage in Wales and Northern Ireland remained similar for the two surveys.

Table 11 Location of organics recycling sites operated by survey respondents in UK, 2008/09 and 2007/08

Country / region	Number of sites 2008/09	% of total sites 2008/09	Number of sites 2007/08	% of total sites 2007/08
East Midlands	14	7%	19	9%
East of England	23	12%	25	12%
London	3	2%	8	4%
North East	10	5%	8	4%
North West	10	5%	13	6%
South East	24	12%	28	14%
South West*	39	20%	37	18%
West Midlands	15	8%	14	7%
Yorkshire & the Humber	4	2%	8	4%
Total England	142	73%	160	78%
Wales	8	4%	9	4%
North Scotland	5	3%	4	2%
South Scotland	36	19%	28	14%
Total Scotland	41	21%	32	16%
Northern Ireland	3	2%	3	1%
UK TOTAL	194	100%	204	100%

* In the South West one company sent in a single site record in 2007/08 which covered 26 sites and a single site record in 2008/09 which covered 25 sites. These have been included in the results as 26 and 25 sites.

5.4 Sources of organic waste recycled

The majority of sites, 86%, solely recycled organic waste which was brought in from outside the site (imported from off site). This was 2% more than in 2007/08 and the number of sites using both feedstock brought in from outside the site and

feedstock produced on the site remained similar in both years. This balance has remained pretty static now, for several years of this survey, still showing that the vast majority of sites have been established to treat *ex-situ* wastes, rather than being established as on-site treatment facilities.

Table 12 Source of organic feedstock at sites operated by survey respondents in the UK, 2008/09 and 2007/08

Organic feedstock	Number of sites 2008/09	% of sites 2008/09	Number of sites 2007/08	% of sites 2007/08
Produced on site	10	5%	7	3%
Imported from off site	166	86%	176	86%
Both	18	9%	21	10%
Total	194	100%	204	100%

5.5 Animal By-Products Regulations

Approximately 15% of organics recycling sites (31 sites) in the survey had full approval under the Animal By-Products Regulations (ABPR; the same proportion as in 2007/08), with a further 6% (12 sites) being under discussion as regards to the Regulations (Table 13). It is interesting to note from the Table that the profile has remained almost exactly constant over the reporting years.

There has also been a continuing majority (74% in 2008/09 and 75% in 2007/08) of sites not considering seeking approval under the ABPR. This is not surprising as over 80% of the waste treated was sourced from gardens and parks which does not require approval under the ABPR (data on this are reported later in more detail in section 6 and the accompanying Table 16)

Table 13 Sites coming under the Animal By-Products Regulations, 2008/09 and 2007/08

Animal By-Products Regulations	Number of sites 2008/09	% of total sites 2008/09	Number of sites 2007/08	% of total sites 2007/08
Site has full approval	31	15%	31	15%
In verification	4	2%	3	1%
Under discussion	12	6%	16	8%
Not under consideration	143	74%	154	75%
Unspecified	1	1%	0	0%
Total	194	100%	204	100%

5.6 PAS 100 Certification and the Quality Protocol

The introduction of PAS100 and then the Compost Quality Protocol (CQP) in England and Wales has marked an intensification of effort to improve quality control and quality assurance for composting processes taking source segregated wastes. This section of the report reviews progress in this area, and deals specifically with the 177 out of 194 sites taking source segregated feedstocks into composting related processes (i.e. excluding source segregated sites only operating AD or MBT).

Nearly half (47%) of the above-defined sub-set of sites were now fully certified to PAS 100 under AfOR's Compost Certification Scheme by the end of March 2009, showing an increase of 15% between 2007/08 and 2008/09 (Table 14). There has also been a corresponding 15% decrease between 2007/08 and 2008/09 in the number of sites working towards PAS 100 certification. The remaining proportion not considering certification (43%) remains the same as the previous year. As there has been no change in the proportion of sites not considering PAS 100 certification, the indication is that a threshold may have been reached. In support of this, it could well be that the limiting factor is site size – when sites taking less than 5000 tpa are removed from the sample, the percentage fully PAS100 certified increases to 50%, with 11% working towards it and only 39% not seeking certification.

The Compost Quality Protocol (CQP) was launched by WRAP and the Environment Agency in mid-March 2007, operating in England and Wales, but not Scotland or Northern Ireland. To judge the impact of CQP it is therefore necessary to consider how far it has been taken up amongst source segregated composting sites specifically confined to England and Wales. A further consideration is the minimum site size that might make CQP a cost-effective option. A 'qualifying threshold' of a minimum 5,000 tonnes

per annum was set, representing a professional judgement on the size bands where CQP might be regarded as cost effective at the 2008/09 time period. It should be noted that more recently, CQP certification is occurring in smaller sites and in future this lower limiting size threshold in the analysis should be revised.

The returns to this survey indicate (Table 15) that a total of 57 sites have achieved CQP certification during 2008/09, which represents 70% of the 81 sites in England and Wales where CQP was considered practicable (over 5,000 tonnes), and a further 17 (21%) of this sub-group were working towards it – leaving only 9% of this sub-group of sites not certified or working towards the CQP. Note these figures broadly accord with the data held by AfOR, showing 65 sites fully CQP certified by March 2009.

When the throughput of these sites is taken into account, it is estimated that 73% (3.6 million tonnes) of the total quantity of source segregated waste feedstock entering composting sites during 2008/09, was processed at sites certified to BSI PAS 100 and 2.7 million tonnes of input entered sites fully certified under the Compost Quality Protocol. Given the CQP certification process was still relatively new in 2008/09, and systems had to be developed and implemented to accommodate the additional requirements of the CQP, this remains a relatively positive outcome for the increasing professionalism of the sector.

Table 15 shows that an estimated 3.3m tonnes of organic waste is input to sites certified or working towards the CQP; this is 91% of the waste input to the eligible PAS100 certified sites or sites working towards PAS100 (i.e. disregarding AD/MBT sites, sites in Scotland and Northern Ireland, and sites with inputs under 5,000 tonnes per annum).

Table 14 Sites certified or working towards certification under the PAS 100 scheme, 2008/09 and 2007/08

PAS 100 Certification	Number of sites 2008/09	% of total sites 2008/09	Number of sites 2007/08	% of total sites 2007/08
Site / processes fully PAS 100 certified	84	47%	61	32%
Site / processes working towards PAS 100 certification	17	10%	48	25%
Site / processes not certified or working towards certification	76	43%	83	43%
Total	177*	100%	192*	100%

* Sample base relates to source segregated input sites operating composting related processes only. Data for 2007/08 have been adjusted from those contained in the previous report, to allow this like-for-like comparison.

Table 15 Sites certified or working towards certification under PAS100, that are also certified or working towards the Compost Quality Protocol, 2008/09 (excluding out-of-scope sites defined as Scotland and Northern Ireland and inputs below 5000 tpa*)

Quality Protocol Certification	Number of sites 2008/09	% of total sites 2008/09*	Estimated input quantity ('000 tonnes)	% of total input tonnes*
Site / processes fully certified under Quality Protocol	57	70%	2,708	75%
Site / processes working towards certification under Quality Protocol	17	21%	583	16%
Site / processes not certified or working towards certification	6	8%	135	7%
Unspecified	1	1%	30	1%
Out of scope*	20*	-	612*	-
Total	101	100%	4,201	100%

*In-scope data are for composting sites certified or working towards certification under the PAS 100 scheme, excluding Scotland, Northern Ireland, and sites <5000tpa

6.0 Source segregated organic waste – input quantities and treatment processes

The survey report next turns to the consideration of specific organic waste treatment processes carried out on-site. The survey form distinguishes between sites taking source segregated organic waste (discussed in the section below) and sites taking mixed organic waste feedstock, discussed in Section 8. The quantities and types of source segregated waste which were recycled were scaled up to allow for non respondents through the method described in Section 3.2.

6.1.1

6.2 Quantities and types of source segregated organic waste recycled in 2008/09

Figure 1 shows the trend in the quantity of organic waste recycling in the UK from 1994 up to and including the current 2008/09 data. The time series is generated from two sources – the annual Composting Association members survey from 1994 – 2004/05, and then the data obtained from the more extensive annual survey funded by WRAP from 2005/06 to date. Where data were available, municipal and non municipal wastes inputs to organics recycling are shown separately. For each of the past five years there had been a sizable year-on-year increase in the overall quantity processed by the industry, with around a three-fold increase over this period. The figures from the 2008/09 survey show an increase for both municipal waste and non-municipal waste compared to 2007/08.

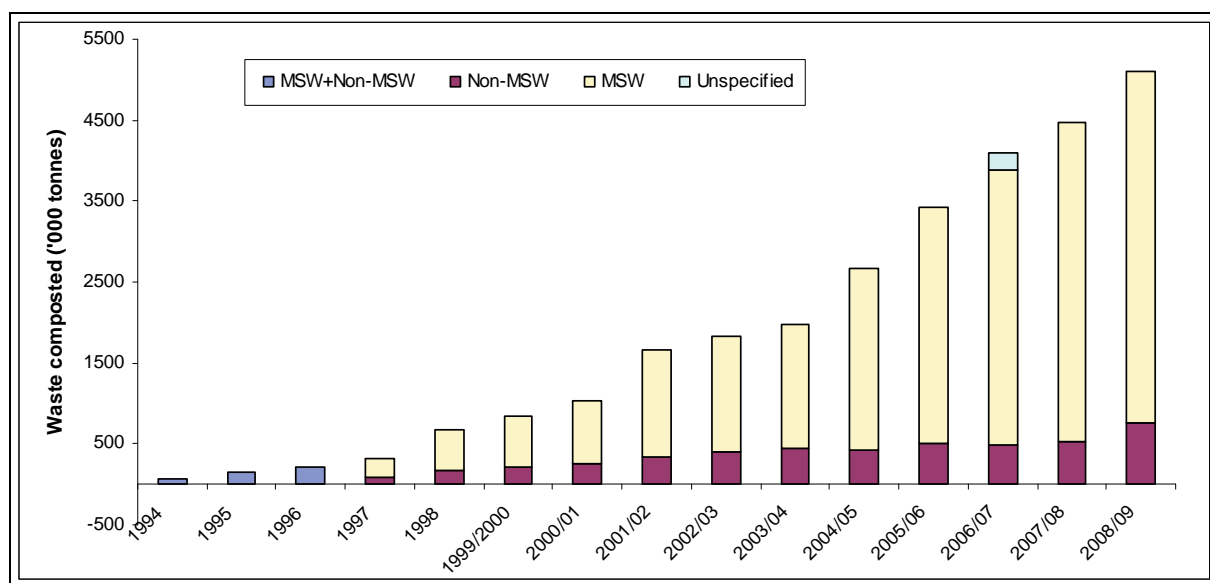


Figure 1 Growth in UK organics recycling based on quantity of input source segregated waste material

Increases in landfill tax and local authority targets for the diversion of biodegradable municipal waste from landfill appear to be driving the industry forward. It will be interesting to see how the ratio of non-municipal to municipal waste composted changes after the introduction of the £8-a-year landfill tax escalator in 2008/09.

Table 16 shows the type and quantity of organic waste recycled in 2008/09 with data from 2007/08 also shown for comparison. Of the municipal waste processed in 2008/09 43% was taken from Civic

Amenity (CA) sites with slightly more than half (51%) coming from kerbside collections. Compared with 2007/08, there has been a 9% increase in the quantity of municipal organic waste recycled in the UK which corresponds to an additional 405,000 tonnes. The relative proportions of different municipal waste types being recycled have remained similar between 2007/08 and 2008/09 with the exception that kerbside garden waste only collections show a 5% increase in 2008/09. The proportion of non municipal waste in 2008/09 has increased from 12% in 2007/08 to 15%.

Table 16 Quantity and type of organic wastes recycled in the UK, 2008/09 and 2007/08

	2008/09			2007/08		
	Estimated total collected ('000 tonnes)	% of total collected	% of total collected by waste category	Estimated total collected ('000 tonnes)	% of total collected	% of total collected by waste category
Municipal waste						
Garden waste from civic amenity/bring sites	1,867	37%	43%	1,773	40%	45%
Garden waste only from kerbside collection	1,789	35%	41%	1,414	31%	36%
Garden and food waste from kerbside collection	383	8%	9%	435	10%	11%
Food waste only from kerbside collection	36	1%	1%	14	<1%	<1%
Council parks / gardens waste and green waste from educational institutes	76	1%	2%	68	1%	2%
Council-collected food waste from retailers / catering establishments	0	0%	0%	8	<1%	<1%
Other municipal waste	190	4%	4%	225	5%	6%
Total municipal waste	4,342	85%	100%	3,937	88%	100%
Non municipal waste						
Landscape / grounds maintenance	278	5%	37%	156	4%	29%
Forestry / timber / bark / by-products	36	1%	5%	2	<1%	<1%
Food waste from retailers / catering establishments	6	0%	1%	197	4%	37%
*Food waste from other commercial establishments	30	1%	4%	-	-	-
*Food waste from industrial establishments	141	3%	19%	-	-	-
Other non municipal waste	268	5%	35%	183	4%	34%
Total non municipal waste	759	15%	100%	538	12%	100%
UNSPECIFIED WASTE INPUT	0	0%	-	<1	<1%	-
TOTAL INPUT WASTE	5,101	100%		4,476	100%	-

* Newly added options in 2008/09 survey

The data reported in Figure 1 and Table 16 take some account of the waste composted by the community sector through the few (3) community organisations responding to this survey. However the previous estimate was used, that there may be an additional 15,000 tonnes composted by community sector organisations that are not captured here. This estimate is based on the results of the separate Defra funded project (WR0211) "Unlocking the potential of community composting". The study estimated that 21,500 tonnes composted by community sector in the calendar year 2006. This is the most reliable assumption available until the results of the more recent research are accessible in a form that avoids double-counting.

The data in Table 16 indicate that the largest single increase in inputs has been from kerbside garden waste collections, rising from 1.41 M tonnes to 1.79 M tonnes.

There has also been an increase in the quantities of municipal food waste only collected at the kerbside; the total appears to have more than doubled from 14,000 tonnes to 36,000 tonnes, although this is still small in absolute terms. Set against this has been the fall in commingled food and garden waste, possibly reflecting WRAP guidance towards the separate collection of these components.

The table also shows for the first time a more detailed breakdown of food waste from non-municipal sources. Industrial establishments provide 141,000 tonnes, commercial premises 30,000 tonnes and retail / catering 6,000 tonnes. The further increase in 'other' non-municipal sources from 183,000 tonnes to 268,000 tonnes, may be explained by respondents having greater difficulty classifying sources in this level of detail.

A new question was included in the 2008/09 survey on whether biodegradable bags were contained within organic waste inputs. In total 52 of the 179 sites processed source-segregated organic waste that contained biodegradable bags. Of these, 42 (81%) were for kerbside collected garden waste only; 4 (8%) were mixed garden and food from kerbside collection; a similar proportion for kerbside food waste collection; and 11 (21%) garden waste from CA or bring sites.

For all this range, 94% of bags were compostable. When asked if the bags had created any problems, some three-quarters (73%) of sites reported no problems. The biggest problems that did occur were wind-blown litter (13%) and bags not fully degrading during treatment (10%). These findings bear out parallel research being undertaken by WRAP⁸.

Table 17 shows the quantity of source segregated waste processed by main business activities of the organics recycling companies responding to the surveys in 2008/09 and 2007/08. In 2008/09, over a third (37%) of the source segregated waste was processed by companies classifying themselves as a specialist compost producer which shows a significant 14% decrease from 2007/08. A further 28% was processed by solid waste treatment / disposal companies (again, a 7% decline from 2007/08). Both of these decreases are offset by an increase of 7% in source segregated waste processed by anaerobic digestion/organics treatment companies in 2008/09 compared with 2007/08, and a 9% growth in agricultural activities (15% in 2008/09, compared with 6% in 2007/08).

⁸ *Review of the biodegradability of BS EN13432 caddy liners in AD & IVC systems OFW005-003*

Table 17 Quantity of source segregated organic waste processed by main business activity, 2008/09 and 2007/08

Main business activity	Quantity processed 2008/09 ('000 tonnes)	% of total processed 2008/09	Quantity processed 2007/08 ('000 tonnes)	% of total processed 2007/08
Specialist compost producer	1,892	37%	2,305	51%
Anaerobic digestion / organics treatment company	362	7%	0	0%
Water treatment company	0	0%	0	0%
Solid waste treatment / disposal company	1,403	28%	1,564	35%
Equipment / plant supplier / hire company	0	0%	28	1%
Agricultural activities	756	15%	279	6%
Horticultural / landscaping activities	144	3%	41	1%
Community group / not-for-profit business	0	0%	<1	0%
Local authority	495	10%	175	4%
Other	49	1%	84	2%
Total	5,101	100%	4,476	100%

Of the 5.1 million tonnes of source segregated organic waste processed in 2008/09 more than a half was processed by the 26% largest companies (upper quartile) with organics related turnovers of over £1 million. This is an increase in business share of 12% compared to 2007/08 and indicates a shift towards larger producers and from the smaller and medium sized producers (Table 18). For the smaller companies at the lowest end of the turnover range (i.e., with organics recycling related turnovers of less than £100,000), the quantity of source

segregated waste processed in 2008/09 fell to 7% compared to 11% in the previous year.

This situation may well accentuate in the future as a greater number of sites seek to process food waste through either in-vessel composting or anaerobic digestion, both of which attract greater gate fees due to the higher capital and operational costs (AD also attracts income from the sale of renewable energy). In addition, the economics may also change as the landfill tax now increases at the £8 a year escalator up to a maximum level of £80/tonne.

Table 18 Quantity of source segregated waste processed by turnover, 2008/09 and 2007/08

Turnover band	Quantity processed 2008/09 ('000 tonnes)	% of total processed 2008/09	Quantity processed 2007/08 ('000 tonnes)	% of total processed 2007/08
Less than £10,000	99	2%	147	3%
£10,000 - £50,000	105	2%	158	4%
£50,000 - £100,000	145	3%	194	4%
£100,000 - £500,000	656	13%	984	22%
£500,000 - £1 million	785	15%	902	20%
£1 million - £3 million	1,441	28%	1,202	27%
More than £3 million	1,217	24%	722	16%
Unspecified	653	13%	169	4%
Total	5,101	100%	4,476	100%

Summary:

- The total quantity of source segregated organic waste recycled in the UK in 2008/09 was estimated at 5.1 million tonnes.
- Of this 85% (4.3 million tonnes) was municipal waste and 15% (759,000 tonnes) was non municipal waste.
- This equates to an increase of 14% on the estimate of approximately 4.5 million tonnes of total source segregated organic waste recycled in 2007/08.

6.3 Quantities of organic waste recycled at individual sites

The next section of the report explores the profile of source segregated organics recycling at the level of

individual sites. Table 19 shows that the majority (72%) of source segregated waste processed in 2008/09 was undertaken at sites designated as dedicated composting / biological treatment sites (an increase from 67% in 2007/08 and 58% in 2006/07). This continuing trend probably reflects the specialisation of the sector in order to meet the increasingly complex regulatory and customer requirements. Only 3% was processed at sites described as landfill sites (a decrease from 12% in 2007/08 and 19% in 2006/07, marking a longer term decline in activity at this designation of site) and a further 13% was from sites described as farms (Table 19), a slight increase in fraction compared to 2007/08 (10%).

Table 19 Quantity of source segregated waste processed by type of site, 2008/09 and 2007/08

Site type	Quantity processed 2008/09 ('000 tonnes)	% of total processed 2008/09	Quantity processed 2007/08 ('000 tonnes)	% of total processed 2007/08
Dedicated composting / biological treatment site	3,690	72%	3,007	67%
Civic amenity site	31	1%	21	<1%
Landfill site	128	3%	556	12%
Materials recycling facility	90	2%	118	3%
Farm	667	13%	453	10%
Horticultural / landscaping activities	45	1%	42	1%
Community based project	<1	0%	<1	<1%
Other - please specify	450	9%	279	6%
Total	5,101	100%	4,476	100%

Of the sites surveyed in 2008/09 there were a considerable number of mid range size sites, with 61% of all sites in the survey processing annual waste inputs in the range 10,000 and 50,000

tonnes. The size profile of sites is very similar to 2007/08, with 21% of sites taking fewer than 5,000 tonnes per annum and only a very few sites (4%) taking more than 50,000 tonnes (Table 20).

Table 20 Number of sites processing source segregated waste in the UK by waste input band, 2008/09 and 2007/08

Source segregated waste input to site (tonnes)	Number of sites 2008/09	% of total sites 2008/09	Number of sites 2007/08	% of total sites 2007/08
Less than 5,000	37	21%	43	22%
5,000 - 10,000	25	14%	24	12%
10,000 – 50,000	109	61%	118	61%
50,000 - 100,000	8	4%	8	4%
Total	179	100%	193	100%

The majority of the UK's organic waste input flow (73%) in 2008/09 was found to take place through the mid range sized sites in the range 10,000 and 50,000 tonnes. For the smaller sites (taking less than 5,000 tonnes of source segregated waste) these were found to be treating only 3% of the total amount of waste composted in the UK in 2008/09 despite making up 21% of the total number of sites (Table 21). Correspondingly at the other end of the spectrum, while only 4% of sites took more than 50,000 tonnes per site, these took 18% of the total waste input, and altogether the 65% of sites above 10,000 tonnes account for 91% of the total waste input. These results are almost identical to those of 2007/08 and continue broadly to accord with the Pareto principle in market analysis, where the largest proportion of business volume is accounted for by a small numbers of larger producers. These stable findings appear to provide a reliable guide to 2007⁹

the market profile of the current UK organics recycling industry. Future expansion in capacity and for new technologies may be more likely to occur on existing sites rather than new sites, owing to planning restrictions, so the existing stable profile might be anticipated to continue in future.

As the majority of the organic waste was processed at sites accepting between 10,000 to 50,000 tonnes a year, this implies there is a balance between economies of scale (which would tend to increase site capacity in order to off-set fixed costs) and other factors that may limit site size (e.g. transport, and boundary / neighbour issues). It is interesting to note that the returns to this current survey continue to contrast to an extent, with the practical economic site size of 50,000 tonnes a year for both windrow and in-vessel composting modelled in a study in

Table 21 Quantity of source segregated waste processed in the UK by waste input band, 2008/09 and 2007/08

Source segregated waste input to site (tonnes)	Quantity processed 2008/09 (000's tonnes)	% of total processed 2008/09	Quantity processed 2007/08 (000's tonnes)	% of total processed 2007/08
Less than 5,000	140	3%	141	3%
5,000 - 10,000	309	6%	282	6%
10,000 – 50,000	3,722	73%	3,288	74%
50,000 - 100,000	929	18%	765	17%
Total	5,101	100%	4,476	100%

⁹ DEFRA (2007) *Economies of Scale - Waste Management Optimisation Study* by AEA Technology

6.4 Organics treatment processes used on site

An important area for this project has been to track the different types of composting and other biological treatment processes used at individual sites for source segregated waste. This excludes analysis of data on mixed waste MBT processes which is presented in section 8. The profile of site processes for composting and other biological treatment in 2008/09 is summarised in Table 22. More than one process may be used at some sites. The results are very similar for both 2008/09 and

2007/08. The vast majority of sites 82% in 2008/09 and 86% in 2007/08 used open air mechanically turned windrow composting. Approximately 12% of sites composted in-vessel in both years, with a small rise in AD, thermophilic and other processes. Technologies such as IVC, AD and other techniques accounted total for 15% of all processes covered in the survey. The apparently low figure for AD probably reflects the difficulty in securing a survey response from some operators of this technology.

Table 22 Percentage of sites using different organics treatment processes for source segregated waste in the UK, 2008/09 and 2007/08

Treatment method	Number of sites 2008/09	% of total sites 2008/09*	Number of sites 2007/08	% of total sites 2007/08*
Open air mechanically turned windrow	147	82%	166	86%
Covered mechanically turned windrow	4	2%	0	0%
Static pile with aeration	5	3%	5	3%
Table composting	6	3%	3	2%
In-vessel composting	22	12%	23	12%
Anaerobic digestion	2	1%	1	1%
Thermophilic aerobic digestion	0	0%	1	1%
Other	3	2%	2	1%
Total	179		193	-

* Multiple organics treatment methods may be used at a single site therefore numbers will not total exactly to 100%.

Estimates of the quantities of source segregated waste processed using each method were calculated. These estimates are shown in Table 23. The 3,761,000 tonnes processed through open air turned windrow systems is of a similar order to the estimated 4,046,000 tonnes of non-ABPR green waste collected (calculated from Table 16¹⁰). This indicates that the organics recycling sector remains dominated by relatively simple windrow systems processing green waste. However, there was an increase of 120,000 tonnes of material composted in-vessel (IVC) between 2007/08 and 2008/09, adding to the increase of 291,000 tonnes between 2006/07 and 2007/08 to give a total of 852,000 tonnes (17% of the total).

A further 113,000 tonnes is now reported to be processed through anaerobic digestion, giving a

total of 965,000 tonnes processed either by IVC or AD technologies. This is greater than the quantities of food waste collected (either separately or mixed with green waste) from all sources (596,000 tonnes from municipal and non municipal; also calculated from the previous Table 16), suggesting that IVC and AD is probably being used to treat some non-food waste sources. Although only six sites used table composting, the total tonnages appear to have increased significantly to 249,000 tonnes – a finding that is worthy of further consideration.

¹⁰ An estimate of non-ABPR waste was made from the data in Table 14, by subtracting from the total of 5,101,000 tonnes, the tonnages arising from sources potentially including food waste. These were: garden and food waste from kerbside; food waste only from kerbside; council-collected food waste; other municipal waste; food waste from retailers/catering; food waste from other commercial and industrial establishments; and other non-municipal waste.

Table 23 Source segregated wastes treated by different processes in the UK, 2008/09 and 2007/08

Treatment Method	Quantity treated 2008/09 ('000 tonnes)	% of total waste treated 2008/09	Quantity treated 2007/08 ('000 tonnes)	% of total waste treated 2007/08
Open air mechanically turned windrow	3,761	74%	3,472	78%
Covered mechanically turned windrow	55	1%	0	0%
Static pile with aeration	51	1%	98	2%
Table composting	249	5%	137	3%
In-vessel composting	852	17%	732	16%
Anaerobic digestion	113	2%	17	<1%
Thermophillic aerobic digestion	<1*	0%*	<1	0%
Other	20	0.4%	5	<1%
Not specified	0	0.0%	15	<1%
Total	5,101	100%	4,476	100%

* = quantities below the level of detection in this survey possibly through under-reporting

Summary:

- It was estimated that 74% of source segregated waste was composted by open air mechanically turned windrow (a small decline from the 78% in 2007/08)
- A further 17% was composted by in-vessel composting (up from 16% in 2007/08 and 11% in 2006/07).
- Between 2007/08 and 2008/09, the reported quantities of source-segregated waste processed by IVC and AD increased from 732,000 to 852,000 tonnes, and 17,000 to 113,000 tonnes respectively.
- The data reported from IVC / AD operators may be understated due to low response, as discussed earlier in Sections 2.6 and 6.3, and recommendations to counter this in future are proposed in Section 10.8.

7.0 Source segregated waste – product quantities and markets

7.1 Compost and digestate products

This section of the report now moves on to consider the characteristics and destinations of the output product from the composting and other organics recycling processes. In sections 7.1 to 7.3 the results specifically relate to compost products; while section 7.4 reports specifically on digestate products.

The increase in compost products manufactured from source segregated feedstocks continues the trend shown in recent years (Table 24). The quantity has nearly tripled over the seven year period between 2001/02 and 2008/09, standing at 2.85 million tonnes. This represents an increase of just over 1.25 million tonnes over a four year period.

The most common product in 2008/09 was soil conditioner which accounted for 81% by mass of all compost products, compared with 71% in 2007/08. The second most common product was 'growing media', although this appears to have declined from 199,000 to 144,000 tonnes between 2007/08 and 2008/09. This is a technically demanding sector with complex supply chains, which stands to gain the most from the introduction of the CQP¹¹ in England and Wales, therefore it is anticipated that use of CQP certified material in this high value - low volume sector may increase in coming years. The use of composted materials in growing media formulations is influenced by the 90% peat replacement target for 2010 in the UK's Biodiversity Action Plan¹², and has been helped by the development of the Growing Media Specification¹³.

- The quantity of compost products manufactured from source segregated feedstocks has increased from 2.69 million tonnes in 2007/08 to 2.85 million tonnes in 2008/09. This is an increase of approximately 6% (160,000 tonnes).
-
- Overall, 71% (2,021,000 tonnes) of the total quantity of compost product manufactured in the UK from source segregated feedstock during 2008/09 was compost certified to BSI PAS 100¹⁴. This is more than double the 977,000 tonnes in 2007/08 (36%).
-
- Of this, 76% (1,553,000) was also fully certified under the Compost Quality Protocol (54% of the national total compost product). Again this has risen from 758,000 tonnes (28% of national product) in 2007/08.
-
- This is one of the largest structural changes arising in the survey results.

Summary:

¹¹ *The Compost Quality Protocol sets criteria for the production of quality compost from source-segregated biodegradable waste (biowaste) and is effective in England and Wales. Compliance with the criteria in the Protocol is considered sufficient to ensure that the product may be used without risk to human health or the environment and therefore without the need for waste regulatory control. This means that certified composted products may be distributed and blended into a variety of products at sites that are not permitted to handle or store waste. This is particularly important in the growing media sector, where composted materials will be blended with other materials such as fertilisers and peat, before bagging and distribution to retail outlets for sale.*

¹² See: <http://www.ukbap.org.uk/>

¹³ WRAP (2004) Guidelines for the specification of composted green materials used as a growing medium component – currently being updated

¹⁴ Note that PAS100 applies only to composting processes. A separate specification, PAS110:2010, applies to AD processes

Table 24 Compost products from source segregated feedstock manufactured in the UK, 2003/04 to 2008/09

Product	2008/09	2007/08	2006/05	2005/04	2004/03
	Estimated quantity ('000 tonnes)				
Soil conditioner	2,316	1,898	1,797	1,463	591**
Mulch	141	114	73	127	98
Topsoil / subsoil manufacture	144	199	152	138	198
Growing medium	175	241	184	155	459**
Turf (top) dressing	50	34	29	37	94
Solid biofertilizer from digestate product*	4	-	-	-	-
Concentrated liquid fertilizer from digestate product*	0	-	-	-	-
Other	22	199	237	88	150
Unspecified	-	-	-	67	-
Total	2,851	2,686	2,462	2,073	1,603
Soil conditioner	81%	71%	73%	71%	37%
Mulch	5%	4%	3%	6%	6%
Topsoil / subsoil manufacture	5%	7%	6%	7%	12%
Growing medium	6%	9%	7%	7%	29%
Turf (top) dressing	2%	1%	1%	2%	6%
Solid biofertilizer from digestate product*	0%	-	-	-	-
Concentrated liquid fertilizer from digestate product*	0%	-	-	-	-
Other	1%	7%	10%	4%	9%
Unspecified	-	-	-	3%	-
Total	100%	100%	100%	100%	100%

* Newly added product types in 2008/09 survey

** This figure was generated before the survey terminology was amended in 2004/05 to clarify the meaning of these terms, in particular 'soil conditioner' and 'growing medium', and hence this particular entry may overstate the true position prevailing in that year, and understate 'soil conditioner'.

7.2 Product certification

As discussed in Section 5.6, the observation that over half of all compost product was certified to the Compost Quality Protocol (CQP) during 2008/09 is noteworthy, and means that this product was no longer classed as a waste and was not subject to regulatory control. This is significant considering the CQP only came into effect during mid March 2007 (just a year before the period covered by this survey), that it is only applicable in England and Wales, and that both compost producers and AfOR developed new operating systems and record keeping processes.

In Scotland the situation is somewhat different, where compost certified to PAS 100 and complying

with SEPA's position statement¹⁵ were also classed as products. The returns to this survey indicated that this amounted to a total of 229,000 tonnes of PAS 100 certified compost, out of a total of 287,000 tonnes of composted outputs in Scotland in 2008/09, representing 80%.

¹⁵ *Composting Position, Scottish Environment September 2004*

Table 25 Compost product quality, measured as mass produced by sites certified or working towards certification under the PAS 100 scheme and Compost Quality Protocol (CQP)

PAS 100 Certification	Estimated quantity produced ('000 tonnes) 2008/09	% of total organic products 2008/09	Estimated quantity produced ('000 tonnes) 2007/08	% of total organic products 2007/08
Site / processes fully PAS 100 certified	2,021	72%	1,138	45%
Site / processes working towards PAS 100 certification	362	13%	712	28%
Site / processes not seeking PAS 100 certification	438	16%	661	26%
Total	2,821	100%	2,511	100%
Quality Protocol Certification	Estimated quantity produced ('000 tonnes) 2008/09	% of total in-scope* organic products 2008/09	Estimated quantity produced ('000 tonnes) 2007/08	% of total 'in-scope' organic products 2007/08
PAS 100 Site or process(es) also fully certified under Quality Protocol	1,553	76%	758	48%
Site or process(es) working towards certification under Quality Protocol	337	17%	737	47%
Not working towards CQP	137	7%	26	2%
Not specified	12	1%	51	3%
PAS 100 certified site or working towards certification, but 'out of scope' for CQP	344	-	278	-
Total	2,383	100%	1,850	100%

*In-scope data and % are for composting sites certified or working towards certification under the PAS 100 scheme, excluding Scotland, Northern Ireland and sites < 5000tpa

Summary:

- Of the 2,851,000 tonnes of compost products manufactured in the UK from source segregated feedstock during 2008/09, approximately 71% (2,021,000 tonnes) was certified to BSI PAS 100
- Of this compost product, 76% (1,553,000) was certified under the Compost Quality Protocol, which is equivalent to 54% of the national total quantity of compost product
-

7.3 Compost products containing food waste feedstock

Table 26 shows the quantities and the percentage of the total compost products made from feedstocks that included any food waste¹⁶, for each product type from source segregated feedstock manufactured in the UK in 2008/09. Note therefore that the data describe quantities of products containing any food waste, not quantities of food waste in the product. Digestate products which are

likely to contain food waste feedstock are presented later in section 7.4.

Soil conditioners accounted for the largest quantity of compost material containing food waste feedstocks as in the previous year; quantities rose from 313,000 to 420,000 tonnes. As most soil conditioners tend to be used in agricultural applications, this probably reflects the demand by farmers for a higher nutrient content compost (compared to green waste only derived material), and also where salt content (electrical conductivity) is less important than for containerised growing

¹⁶ The question in the survey asks simply whether the product was produced from any inputs containing food waste (yes or no). The results therefore indicate the quantities of product containing any food waste, not the quantities of food waste in the product.

media¹⁷. Interestingly, the growing media sector was still utilising over 30,000 tonnes of food waste-derived compost in 2007/08, but this had reduced to zero amongst survey respondents in 2008/09 (noting that this may simply reflect the absence of survey respondents operating in this way in the 2008/09 survey).

Turf (top) dressing contained the greatest proportion of feedstock including food waste in 2008/09 (83% of product by mass containing some food waste derivative), which again, may rely on its

greater nutrient content, compared with compost derived from green waste. Mulch contained the least amount of feedstock including food waste at only 1%, which is not surprising, as this is generally derived from coarser screened materials, and requires few nutrients. The two options introduced this year, for solid biofertilizer and concentrated liquid fertilizer from digestate products produced no significant response due to the small respondent numbers, but are included as tracker questions intended to pick up this trend in future years.

Table 26 Compost products from feedstocks including food waste in the UK, 2008/09

Product	Made from feedstocks which included food waste	Estimated quantity ('000 tonnes) 2008/09	% of total product 2008/09	Estimated quantity ('000 tonnes) 2007/08	% of total product 2007/08
Soil Conditioner	Yes	420	18%	313	16%
	No	1,591	69%	1,563	82%
	Unspecified	305	13%	22	1%
	Total	2,316	100%	1,898	100%
Mulch	Yes	1	1%	5	4%
	No	121	86%	109	96%
	Unspecified	18	13%	0	0%
	Total	141	100%	114	100%
Topsoil	Yes	8	6%	14	7%
	No	97	68%	185	93%
	Unspecified	38	26%	0	0%
	Total	144	100%	199	100%
Growing medium	Yes	0	0%	37	15%
	No	136	78%	204	85%
	Unspecified	39	22%	0	0%
	Total	175	100%	241	100%
Turf (top) dressing	Yes	41	83%	19	56%
	No	7	15%	15	44%
	Unspecified	1	2%	0	0%
	Total	50	100%	34	100%
	No	-	-		
	Unspecified	-	-		
	Total	-	-		

¹⁷ Food waste-derived composts tend to have higher salt content than green waste only derived composts.

7.4 Digestate products

In the 2008/09 survey only two sites reported producing digestate from anaerobic digestion of source segregated feedstock. The 2007/08 survey did not yield any returns in this category. A total of 105,000 tonnes of digestate products were produced by the AD sites, of which 24% (26,000 tonnes) were classified as soil conditioner and 76% (80,000 tonnes) were concentrated liquid fertilizer from digestate product.

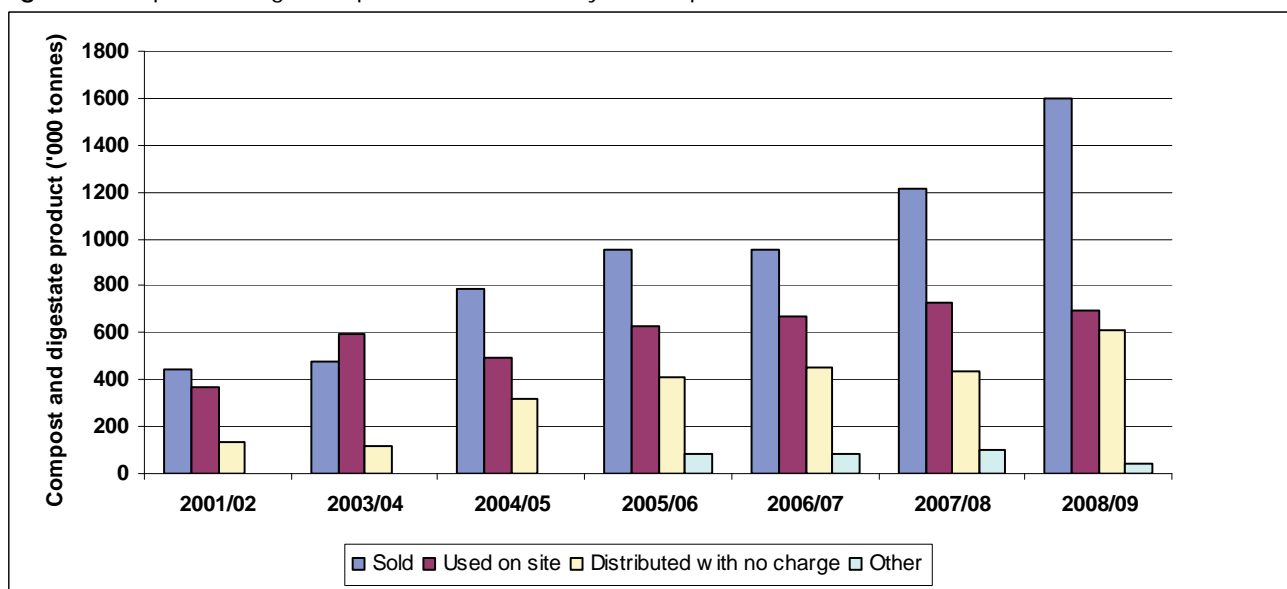
Given the current policy interest in anaerobic digestion, it seems likely that this product category will increase substantially in future years. When the 105,000 tonnes of digestate product are added to the 2,851,000 tonnes of compost product, it can be seen that the total organics product quantity from

the UK organics recycling industry is now approaching 3 million tonnes.

7.5 Source segregated waste - product distribution

The report now proceeds to consider the distribution markets and end uses of the organics recycling products, taking together both the compost and digestate products. Figure 2 and Table 27 show the broad categories of how compost and digestate products were distributed in 2008/09 as compared with previous years. To allow for comparison with previous years, some of the categories in Table 28 were amalgamated in 2007/08.

Figure 2 Compost and digestate products distributed by UK companies, 2001/02 to 2008/09



There has been an increase in the overall quantity of compost and digestate product sold either directly to end users, or to third parties of 292,000 tonnes between 2007/08 and 2008/09. Sales of compost and digestate directly to end users remained similar in proportion but increased by 68,000 tonnes during the same period, while sales to third parties increased most, from 357,000 to 581,000 tonnes – accounting for much of the overall increase in end product quantities sold. To put this total increase into context, if it assumed that all of this was spread onto agricultural land at a rate of 30 tonnes/ hectare, there would be sufficient compost to cover an area of land of 9,200 hectares.

Collectively, these changes signal further development of the compost products market,

indicating that end users are willing to pay for more products. However, it is noteworthy that the total increase in feedstocks between the 2008/09 and 2007/08 surveys of between 625,000 tonnes only resulted in a total increase of product manufactured of 165,000 tonnes (a 26% increase), suggesting that quantity does not necessarily translate into quality. It is not known why this has occurred.

These changes also seem likely to have been aided by the introduction of the Compost Quality Protocol and also potentially, WRAP's marketing support work with producers.

Table 27 Compost and digestate product distribution by UK companies, 2008/09 and 2007/08

	2008/09				2007/08	
	Compost products		Digestate products		Compost and digestate products	
	Estimated quantity ('000 tonnes)	% of total product	Estimated quantity ('000 tonnes)	% of total product	Estimated quantity ('000 tonnes)	% of total product
Sold directly to end users	1,007	35%	16	15%	955	36%
Sold on to third parties	581	20%	0	0%	357	13%
Distributed to end users or third parties (no charge)	550	20%	64	61%	471	18%
Used on site	669	23%	25	24%	793	30%
Other	44	2%	0	0%	107	4%
Unspecified	0	0%	0	0%	2	<1%
Total	2,851	100%	105	100%	2,686	101%

* Data for 2007/08 have been revised using a refined gross-up methodology and therefore may differ to those reported in the 2007/08 report.

Table 28 shows the quantities and the percentage of the total product made from feedstocks that included food waste, for each type of compost and digestate product distribution by UK companies in 2008/09. These data suggest that 209,000 tonnes

of product derived from food waste-containing feedstocks was sold either directly to end users or onto third parties. This compares to 259,000 tonnes that were used either on-site or distributed at no charge.

Table 28 Distribution of compost and digestate products made from feedstocks including food waste in the UK, 2008/09

Product distribution	Made from feedstocks which included food waste	Estimated quantity ('000 tonnes) 2008/09	% of total product 2008/09	Estimated quantity ('000 tonnes) 2007/08	% of total product 2007/08
Sold directly to end users	Yes	102	10%	178	19%
	No	753	74%	767	80%
	Unspecified	168	16%	10	1%
	Total	1,023	100%	955	100%
Sold onto third parties	Yes	123	21%	59	17%
	No	354	61%	298	83%
	Unspecified	103	18%	0	0%
	Total	581	100%	357	100%
Distributed (no charge)	Yes	273	44%	134	28%
	No	318	52%	320	68%
	Unspecified	22	4%	17	4%
	Total	613	100%	471	100%
Used on site	Yes	50	7%	28	3%
	No	567	82%	765	97%
	Unspecified	77	11%	0	0%
	Total	695	100%	793	100%

Summary:

- Over half (55%) of the compost / digestate products manufactured from source segregated feedstock in 2008/09 was sold (up 6% from 2007/08 and 11% from 2006/07)

- The majority of this fraction was sold directly to end users.
- About a quarter of the product produced was used on the site of production (down 6% on 2007/08) and about a fifth was distributed with no charge (which was similar to 2007/08 data).

7.6 Source segregated waste – compost and digestate product markets

Agriculture used over half (1.77 million tonnes or 60%) of all compost and digestate products in 2008/09 (Table 29). In Table 29 below product markets are not split by whether the product was sourced from composting or digestate processes. However, from section 7.4 it should be noted that the current survey captured 105,000 tonnes of digestate product during 2008/09, so the great majority of tonnages reported below are attributed to composting processes.

Approximately 79% of the sites in the survey provided compost to the agricultural sector, compared to 71% in 2007/08. The second largest market end-use sector was landscaping which took 354,000 tonnes in 2008/09. The biggest decline was in landfill restoration and daily cover, which fell from 389,000 tonnes (14%) to just 79,000 (3%). This decline was noted in the 2007/08 report owing to increasingly stringent landfill diversion targets coming into force, and as landfill tax increases.

Table 29 Distribution of recycled organic products in the UK by market type, 2008/09 and 2007/08

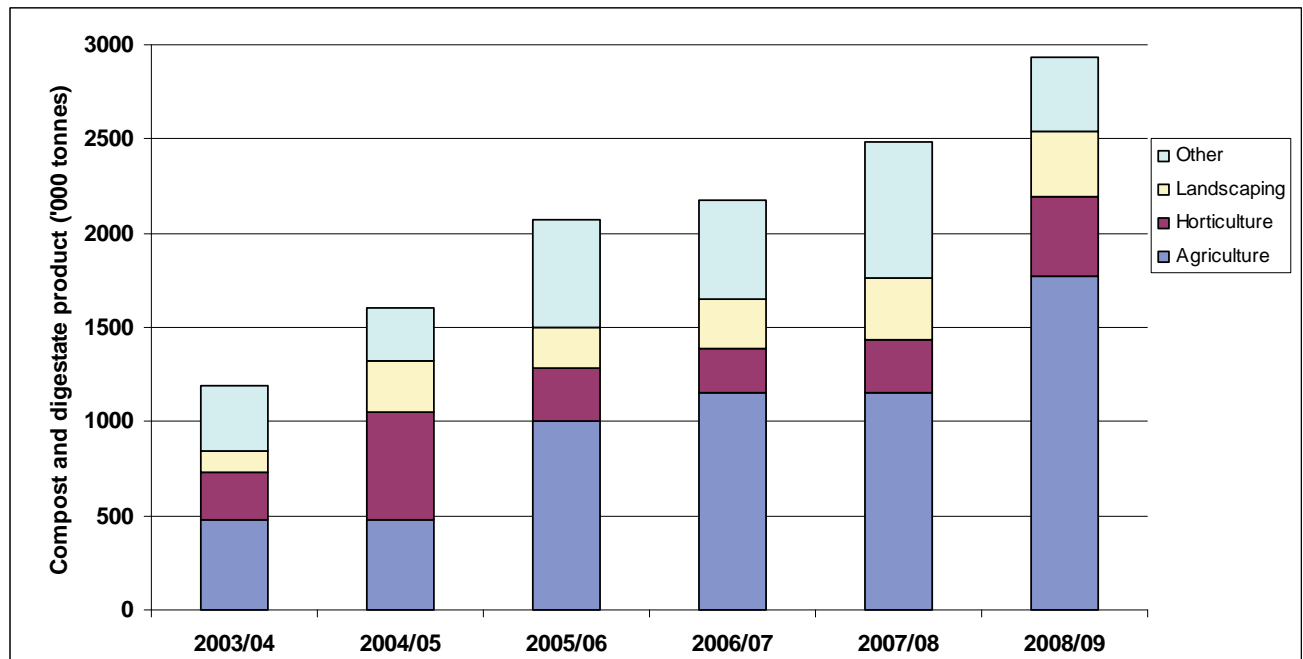
	Estimated quantity of compost and digestate product going to each market sector ('000 tonnes)		% of compost and digestate product going into each market sector		Percentage of sites servicing market sector*	
	2008/09	2007/08	2008/09	2007/08	2008/09	2007/08
Agriculture	1,771	1,251	60%	47%	79%	71%
Horticulture - professional	148	70	5%	3%	18%	11%
Horticulture – amateur	271	231	9%	9%	23%	18%
Landscaping	354	354	12%	13%	34%	25%
Sports turf	45	50	2%	2%	6%	5%
Landfill restoration / daily cover	79	389	3%	14%	8%	14%
Energy recovery	7	15	<1%	1%	2%	2%
Forestry	1	1	<1%	<1%	1%	<1%
Land restoration	191	171	6%	6%	10%	7%
Other	64	80	2%	3%	4%	4%
Unspecified	26	74	1%	3%	1%	0%
Total	2,956	2,686	100%	100%	-	-

* Sites may supply more than one market sector so numbers will not total 100%

Figure 3 below shows the longer term trends and compares the principal compost product markets for

2008/09 with the previous five years.

Figure 3 Markets for recycled organic products in the UK, 2003/04 to 2008/09



Over the six years summarised in Figure 3, it is evident that agriculture has dominated the market for organic products, providing the single biggest growth market for the end product. In absolute terms, quantities used in agriculture have more than tripled over this period and this broadly equates to the whole of the increase in the overall market. This may, in part, be due to increased confidence of farmers in the use of composted products, stemming from improved relationships between farmers and composters; an increase in the quantity of information available; and feedback from demonstration projects. Additionally, the increase in cost of artificial fertilizers noted in the previous survey (2007/08) continued during the first half of 2008, as oil prices continued to rise. As the price of oil dropped during the latter half of 2008 in response to the economic recession, the price of nitrogen based fertilizers also fell. This therefore occurred during the autumn and winter months, which would not coincide with the growing season. It will be interesting to observe whether the reduced fertilizer prices known to occur during 2009 will impact on compost use in the forthcoming survey for 2009/10. Notwithstanding the above, the data illustrate the importance of this sector to the organics recycling industry as a whole.

Table 30 shows the market type distribution of compost and digestate products from feedstocks including food waste in the UK in 2008/09. Compost and digestate products used in agriculture and amateur horticulture continued to contain the greatest amount of feedstock including food waste in 2008/09 (338,000 compared to 231,000 tonnes and 128,000 compared to 45,000 tonnes, in 2007/08 and 2008/09 respectively). It is interesting to note that whilst there has been a reported increase in the quantity of product sold to the amateur horticultural market, the quantity of material sent for incorporation into growing media (Table 24) decreased. It may be that the product sold to amateur gardeners was bagged material intended for use as a soil conditioner, hence its use would have been reflected in this category. This survey would not have identified material sold to third parties for blending into a growing medium, which would subsequently have been sold on through retail outlets.

Compost and digestate products used in landfill restoration/daily cover and forestry contained no feedstocks which included food waste.

Table 30 Market type distribution of compost and digestate products from feedstocks including food waste in the UK, 2008/09

Market type	Product made from feedstocks which included food waste	Estimated quantity ('000 tonnes) 2008/09	% of total product 2008/09	Estimated quantity ('000 tonnes) 2007/08	% of total product 2007/08
Agriculture	Yes	338	19%	231	18%
	No	1,125	64%	1,002	80%
	Unspecified	308	17%	18	2%
	Total	1,771	100%	1,251	100%
Horticulture - professional	Yes	7	4%	11	16%
	No	97	66%	57	81%
	Unspecified	44	30%	2	2%
	Total	148	100%	70	100%
Horticulture - amateur	Yes	128	47%	45	20%
	No	140	52%	184	80%
	Unspecified	3	1%	2	<1%
	Total	271	100%	231	100%
Landscaping	Yes	29	8%	35	10%
	No	264	75%	316	89%
	Unspecified	61	17%	3	1%
	Total	354	100%	354	100%
Sports turf	Yes	0	0%	7	15%
	No	44	99%	41	82%
	Unspecified	0	1%	2	3%
	Total	45	100%	50	100%
Landfill restoration / daily cover	Yes	0	0%	0	0%
	No	65	82%	385	99%
	Unspecified	14	18%	4	1%
	Total	79	100%	389	100%
Energy recovery	Yes	3	45%	10	69%
	No	0	1%	5	31%
	Unspecified	4	54%	0	0%
	Total	7	100%	15	100%
Forestry	Yes	0	0%	0	0%
	No	1	100%	1	100%
	Unspecified	0	0%	0	0%
	Total	1	100%	1	100%
Land restoration	Yes	4	2%	22	13%
	No	150	79%	149	87%
	Unspecified	37	19%	0	0%
	Total	191	100%	171	100%

The survey also asked those supplying compost to the agriculture sector, which crops their composted products were used on. Options on this question were substantially expanded and modified in the most recent 2008/09 survey, to align with standard agricultural classification schemes as shown in Table 31. By far the most common type of crop remained the cereal and combinable crops category (78%).

Fewer sites supplied to grassland, and the vegetables/fruit/salad crops category. Amongst the new categories, the most notable were other arable e.g. oilseed rape, beet, peas (38%), vegetables (25%), and potatoes (10%). Very little is supplied to glasshouse crops, soft fruit, plants or flowers. The percentage of sites supplying to grassland has decreased by from 33% to 29%.

Table 31 Agricultural crops where compost and digestate products were used in the UK, 2008/09 and comparison with 2007/08

Crop	Number of sites supplying to crop type (2008/09)	% of sites 2008/09*	Number of sites supplying to crop type (2007/08)	% of sites 2007/08*
Cereals / combinable crops	109	78%	110	86%
Vegetables / fruit / salad crops**			35	27%
Other arable e.g. oilseed rape, beet, peas	53	38%		
Potatoes	14	10%		
Vegetables	35	25%		
Orchard fruit	3	2%		
Soft fruit	1	1%		
Plants and flowers	0	0%		
Glasshouse protected crops	1	1%	0	0%
Grassland	40	29%	42	33%
Other	5	4%	2	2%
Unspecified	53	38%		
Total	139		128	-

* Sites may supply more than one crop type so numbers will not total 100%.

**A more detailed list of crops was introduced in 2008/09 survey to replace the options listed in previous surveys.

Table 32 shows the compost and digestate products from feedstocks specifically including food waste used on agricultural crops in the UK in 2008/09. Compost products used on cereal and combinable crops contained the greatest amount of feedstock including food waste in 2008/09 (204,000 tonnes or 18%). Products containing food wastes were not

significantly supplied for other agricultural applications, which probably reflects the increased technical demands of these sectors (compared with arable crops) and suggest further work is required in order to build confidence and demonstrate efficacy.

Table 32 Recycled organic products from feedstocks including food waste used on agricultural crops in the UK, 2008/09

Agricultural crop	Product made from feedstocks which included food waste	Estimated quantity ('000 tonnes) 2008/09	% of total product 2008/09	Estimated quantity ('000 tonnes) 2007/08	% of total product 2007/08
Cereals / combinable crops	Yes	204	18%	259	25%
	No	681	60%	755	74%
	Unspecified	255	22%	11	1%
	Total	1140	100%	1025	100%
Other arable e.g. oilseed rape, beet, peas	Yes	6	4%		
	No	137	82%		
	Unspecified	25	15%		
	Total	168	100%		
Potatoes	Yes	1	2%		
	No	58	77%		
	Unspecified	17	22%		
	Total	76	100%		
Vegetables	Yes	2	2%		
	No	73	95%		
	Unspecified	2	3%		
	Total	77	100%		
Orchard fruit	Yes	0	0%		
	No	1	95%		
	Unspecified	0	5%		
	Total	1	100%		
Soft fruit	Yes	0	0%		
	No	0	100%		
	Unspecified	0	0%		
	Total	0	100%		
Plants and flowers	Yes				
	No				
	Unspecified				
	Total				
Glasshouse protected crops	Yes	0	0%		
	No	3	100%		
	Unspecified	0	0%		
	Total	3	100%		
Grassland	Yes	72	41%	5	4%
	No	73	41%	127	94%
	Unspecified	32	18%	3	2%
	Total	177	100%	135	100%

Summary:

- In both 2008/09 and 2007/08, the biggest UK market for compost and digestate products from source segregated feedstock was agriculture
- This took 1.77 million tonnes of compost and digestate product in 2008/09, up by 415,000 tonnes from 2007/08.

7.7 Potential market growth areas for compost and digestate products

7.7.1

Finally in this section on end markets and market drivers, the survey asked companies to specify which market sectors they saw offering the greatest potential for growth for their organisation in the year ahead (Table 33). Agriculture continues to dominate, with 60% of companies seeing this sector as offering growth potential, with relatively strong prospects also from professional horticulture (21%), amateur horticulture (18%) and landscaping (18%). Interest also now appears to be growing in the

energy recovery market – from solid products (13%) and biogas (10%). These were separated for the first time this year and together these amounted to only 9% last year. Land restoration, at 9%, is a declining prospect (from 16% last year). This continuing decrease in respondents who considered the landfill restoration/ daily cover offered potential for growth, is possibly due to the increase in landfill tax and diversion targets noted previously.

Table 33 Market sectors viewed by survey respondees as offering greatest potential for growth in the UK

Market sector	Number of companies 2008/09	% of companies*	Number of companies 2007/08	% of companies*
Agriculture	67	60%	71	66%
Horticulture – professional	23	21%	25	23%
Horticulture – amateur	20	18%	28	26%
Landscaping	20	18%	28	26%
Sports turf	9	8%	11	10%
Landfill restoration / daily cover	9	8%	10	9%
Energy recovery from solid products	15	13%	10	9%
Energy recovery from biogas	11	10%		
Land restoration	10	9%	17	16%
Forestry	2	2%	2	2%
Other	9	8%	6	6%
Total	112	-	107	-

* Companies may choose more than one market sector so numbers will not total 100%.

8.0 Mixed waste biological treatment

Up to this point, the report has presented the findings of the research as they relate to source segregated organic waste inputs. The survey also asked about mechanical biological treatment (MBT) of mixed waste inputs. MBT of mixed waste tends to produce a lower value output that is harder to market than compost or digestate products from source segregated feedstock, and remains a waste, and hence, subject to regulatory control. The results are shown in Tables 34 and 35. There were 18 site responses to the survey where companies operated MBT or biological treatment of mixed waste (representing 9% of all sites covered in the survey responses). This number has risen from 15 in 2007/08 and 13 sites in 2006/07 operating MBT or biological treatment of mixed waste.

Estimates of the quantities of mixed waste treated are shown in Table 34. The estimated quantity of mixed waste processed in the UK in 2008/09, based on survey responses received (Please note: this has not been scaled up to allow for survey non respondents as a reliable basis for this has yet to be determined) was approximately 629,000 tonnes, up

8% on last year's estimate of 583,500 tonnes. The biodegradable component of the waste was approximately 355,500 tonnes. Approximately 90% of the waste undergoing MBT or biological treatment of mixed waste in 2008/09 was municipal waste and approximately 10% was non-municipal waste, compared to 85% that was municipal and 15% that was non municipal in 2007/08.

Table 35 shows a much more expanded analysis of the processing techniques, outputs and end uses than in previous years. The prevalent technology is IVC in the presence of oxygen, with one site reporting aerobic bio-drying. Around half the output type was waste for disposal to land and a smaller proportion (7%) as solid recovered fuel. Product end uses were dominated by general land restoration (65%) and landfill restoration/daily cover (21%).

While quantities for the variety options under output and end use were reported as low, these categories have now been established as trackers to monitor prospective future developments in this sector.

Table 34 Quantity of mixed waste inputs to biological treatment in the UK, 2008/09 and 2007/08

	Estimated quantity 2008/09 (tonnes)	Estimated quantity 2007/08 (tonnes)
Input municipal mixed waste	570,499	494,244
Input non municipal mixed waste	58,770	89,281
Total input mixed waste	629,219	583,525
Biodegradable fraction of municipal waste	336,789	316,330
Biodegradable fraction of non municipal waste	18,790	28,138*
Total biodegradable fraction of the mixed waste	355,579	344,468

Table 35 Summary of survey results on the mechanical and biological treatment of mixed wastes in the UK, 2008/09

Total mixed waste processed as reported by survey respondents	629,219 tonnes	
Results below relate to the 18 sites for which MBT data were reported only*		
Processing technique used by sites		% of sites
Technique	Aerobic in-vessel composting (in the presence of oxygen)	88%
	Aerobic bio-drying	6%
	Anaerobic (in the absence of oxygen)	0%
	Unspecified	6%
How outputs are distributed		
		% of tonnes
Output types	Soil conditioner	7%
	Mulch	0%
	Topsoil/subsoil manufacture	0%
	Stabilised biowaste for disposal	9%
	Waste for direct disposal to landfill	46%
	Solid recovered fuel	7%
	Biogas	0%
	Other	31%
End uses	Land restoration	65%
	Landfill restoration / daily cover	21%
	Landscaping	1%
	Agriculture	3%
	Energy (solid recovered fuel)	0%
	Direct disposal to landfill	0%
	Other disposal with cost associated	0%
	Other	9%

9.0 Site expansion and assessment of additional processing capacity

This final part of the report covers questions on current site capacity, plans for site expansion, and companies' plans to develop other sites. The objective of this range of questions is to gain a broad picture of likely future growth trends in the industry.

(i.e. with any required permits and necessary investment already in place). Quantities of additional source segregated and mixed waste capacity that would be generated by such expansion were requested. Companies were also asked to provide details of any new organics recycling sites they would be opening after the 31st March 2009.

9.1 Existing site capacity and plans for site expansion

Companies were asked whether their existing sites had reached their full capacity, and whether they had any plans to expand the processing capacity of these sites during the next five years. If so, they were then asked whether these were 'definite plans'

Companies estimated that four-fifths (81%) all the existing organics recycling sites have not yet reached full capacity (Table 36), up from 58% last year and suggesting expansion has been put in place ready for current and future growth.

Table 36 Status of existing processing capacity at existing sites (both source segregated and mixed wastes) in the UK, 2008/09 and 2007/08

	Number of organics recycling sites 2008/09	% of organics recycling sites 2008/09	% of organics recycling sites 2007/08
Reached full capacity	37	19%	38%
Not reached full capacity	157	81%	56%
Unspecified	0	0%	6%
Total	194	100%	100%

Respondents were then asked if they had plans to expand existing sites in future, and if so whether these were definite plans. Table 37 shows that 58 sites (30%) had future plans to expand the processing capacity of their existing sites during the five year period from April 2009 to March 2014,

slightly down on the 70 sites (34%) last year. When asked if these plans were definite, with required permits and necessary investment already in place, there were 26 out of the 58 sites (equating to 13% of all sites) said they had definite plans (Table 38).

Table 37 Nature of plans for expanding processing capacity at existing sites (both source segregated and mixed wastes) in the UK, April 2009 to March 2014

	Number of organics recycling sites at 2008/09	% of organics recycling sites at 2008/09
Yes – plans for expansion	58	30%
No – no plans for expansion	133	68%
Unspecified	3	2%
Total	194	100%

Table 38 Status of plans for expanding processing capacity at existing sites (both source segregated and mixed wastes) in the UK, April 2009 to March 2014

	Number of organics recycling sites at 2008/09	% of organics recycling sites with plans for expansion at 2008/09
Yes – definite plans	26	45%
No – not definite yet	32	55%
Total	58	100%

Just over a quarter (26%) of organics recycling companies had definite plans for opening new sites after 31st March 2009, up from 21% reported last year (Table 39). All in all therefore, a continuing

strong prediction of site expansion is planned into the medium term by the industry.

Table 39 Nature of plans for opening new organic waste recycling sites in the UK after 31st March 2009

	Number of organics recycling companies 2008/09	% of organics recycling companies 2008/09
Yes - definite plans	29	26%
No - no plans	83	74%
Total	112	100%

9.2 Unused capacity

The survey also asked companies whether they had any unused capacity in 2008/09, and if that was the case, how much additional waste could have been processed in 2008/09 if this capacity has been used. Capacity obviously varies substantially during the course of the seasonal year, and the question asked here dealt with this issue by requesting operators simply to state how much additional waste they could have processed over the year as a whole, thus leaving it to producers to define the practical extent of their 'unused capacity'.

The results relating to the reported amount of additional processing capacity in 2008/09, are shown in Table 40 and are compared with 2007/08 figures. The unused source segregated capacity in 2008/09 is estimated to be about 1.33 million tonnes (around 260,000 tonnes higher than in 2007/08) and the unused capacity for the biological treatment of mixed waste in 2008/09 is estimated to be about 122,000 tonnes (15,000 tonnes less than in 2007/08). Note that this is the producers' own assessment of their current annualised capacity to handle more waste. An additional 577,000 tonnes of source segregated capacity is also estimated to be generated by companies in future across their existing sites over the next five years as a result of the planned expansion discussed above, with a much smaller additional capacity (97,000 tonnes) for biological treatment. As the question on capacity is asked of companies as a whole and is not site specific, it is not

possible to determine which site size bands are most likely to expand nor therefore, their individual planned future capacity.

The figures for this 'currently unused' and 'additional new' capacity should be treated with a degree of caution as there continue to be subjective ways in which the information is estimated by respondents to this section of the survey. These included potential double counting of unused and new capacity as well as specifying waste management licence capacity limits rather than actual site capacity limits. Every effort was made to clarify the unused and new capacity information provided, however the results should still be interpreted with care.

In summary therefore, and notwithstanding the caveats outlined above, it is estimated very broadly that the total annual capacity of the industry as 6.5 million tonnes (5.1 million of which is currently used and approximately 1.4 million additional unused capacity) – a current available annualised capacity utilisation rate of 78%, essentially the same ratio as the 79% reported last year. Anticipated annual available capacity is estimated to expand further, by some 674,000 tonnes, in the coming five years. This total figure is broadly in line with estimated diversion of municipal garden and food waste required by 2012/13 to meet the UK's landfill diversion target for that year, but continues to suggest there may be a shortfall for industrial and commercial wastes.

Table 40 Unused organics recycling capacity in the UK in 2008/09 and future expansion to capacities in the UK, compared with 2007/08

	Additional capacity 2008/09 (000 tonnes)	Additional capacity 2007/08 (000 tonnes)
Unused source segregated capacity	1,332	1,068
Unused mixed wastes capacity	122	137
Total unused capacity	1,454	1,205
Additional source segregated capacity within five years	577	570
Additional mixed wastes capacity within five years	97	40
Total additional capacity	674	610
Total unused and additional capacity	2,128	1,815

10.0 Summary and conclusions

10.1 Organic waste recycling and treatment quantities

The results from this survey suggested that a total of around 5.1 million tonnes of separately collected organic wastes were recycled in the UK during 2008/09 through a biological treatment process, with composting comprising the principal method. Quantities steadily increased in line with a long term trend of annual increases (up 14% compared to 2007/08 data); this compares with a 9% tonnage increase between 2006/07 and 2007/08. Collectively the surveys indicate there has been a five-fold increase in the quantities of organic wastes composted since 1998.

Of the 5.1 million tonnes, 85% comprised municipal wastes, showing the continuing prominence of this input source (88% in 2007/08), although non-municipal feedstock sources have grown slightly faster than municipal sources within the past year (a 15% share compared to 12% in 2007/08). This continuing growth in municipal organic waste recycling is probably accounted for by the recycling targets set for local authorities and their landfill diversion targets (LATS) for biodegradable municipal wastes introduced under the Waste and Emissions Trading Act (2003).

The rate of landfill tax during the survey period 2008/09 was set at £32 a tonne, £8 a tonne higher than in the previous year. Recent research published by WRAP¹⁸ suggested that landfill gate fee prices (including tax) ranged between £40 to £74 per tonne, with a median of £54 a tonne in 2008/09. This compares with the reported gate fees for open windrow composting of between £12 - £49 / tonne (median £23) and in-vessel composting of between £15 - £70 / tonne (median £38). These suggest that the differential cost between disposal to landfill and biological treatment was broadly in the region of £31 a tonne for windrow composting, and £16 a tonne for in-vessel composting (based on median values). Although this does not take into account regional differences in pricing, these differentials are probably sufficient overall to accommodate separate collection costs and transport to organics recycling facilities. They seem likely to impact on commercial and industrial wastes, where disposal and / or recycling decisions are largely based on cost. The impact the increase in landfill tax (to £40 a tonne from April 2009) will have on further stimulating the relative competitiveness of organics recycling industry for commercial and industrial wastes has yet to be observed. In the longer term UK and devolved governments may be considering a proposed

¹⁸ WRAP Gate Fees Report, 2009. Comparing the cost of alternative waste treatment options.

ban on the landfilling of certain materials including food waste, which may also stimulate increased recycling of organic wastes.

The survey also showed that the quantity of mixed waste undergoing biological treatment continued to be much lower than for source segregated processes, although it has expanded at a rate similar to source segregated processes. Again, this is a sector that is anticipated to increase in the future as the landfill diversion targets become progressively higher, and as the costs of landfill disposal continue to increase. Estimates by WRAP¹⁹ suggested that the median gate fee for mechanical biological treatment in 2008/09 was £62 a tonne. Coupled with uncertainties about the end use of treated wastes, these processes are yet to become cost competitive.

10.2 Industry market analysis and business structure

The organics recycling industry has an estimated annual turnover of £226 million (up 36% on the 2007/08 estimate), with a workforce of around 1,700 full time equivalent employees²⁰, again an increase of 26%. The estimated turnover per tonne of organic waste recycled increased slightly from £36 to £39 between 2007/08 and 2008/09, respectively. Considering open windrow composting for green wastes, this estimate is broadly in line with the median gate fee (£23 / tonne) plus a sales price of between £5-12/m³ of product²¹.

Most firms operated either just one site (79% of firms) or two sites (9%), indicating the fragmented nature of the sector. The size distribution of sites showed that there continues to be large prevalence of medium sized sites, with 61% of sites (109 out of the 174 responding sites processing source segregated waste) processing between 10,000 and 50,000 tonnes of input feedstocks in 2008/09. Notably this is still less than the optimal practical scale estimated in a recent study²² of 50,000 tonnes per annum for both windrow and in-vessel composting.

¹⁹ *Ibid*

²⁰ Please note: some caution should be used in interpreting these figures as there is a risk as the sector expands, that overhead employees contributing elsewhere in the larger businesses are 'counted' along with wider turnover, as fully related to organics recycling activities.

²¹ Source: Letsrecycle.com accessed 28 April 2010. Range between April 2008 – March 2009 used. It has been assumed for the purposes of this rough calculation that for every tonne of feedstock input, 1 m³ of product was manufactured.

²² DEFRA (2007) Economies of Scale - Waste Management Optimisation Study by AEA Technology

The proportion of total waste composted was also highest for the medium sized sites with 73% of the total quantity processed being through the mid range sites taking 10,000 to 50,000 tonnes – the same as in 2007/08. Only 3% of the total waste was processed through the small sites taking less than 5,000 tonnes per annum despite these accounting for 21% of all sites. Altogether 91% of waste was composted by the 65% largest sites taking above 10,000 tonnes a year.

These data confirm a stable profile, virtually identical to 2007/08, with the organics recycling sector comprising a diverse range of company sizes, and hence business models, across a distribution of small, medium and large organisations. This implies that economies of scale have not yet played a significant role to date. Productive efficiencies also do not yet appear to have emerged from the data, although it is anticipated that this will change especially as 'merchant' sites (developed to accept wastes from a range of commercial, industrial and municipal sources) begin to become operational.

The majority of businesses described themselves as 'specialist compost producer' (37%), with an additional 5% self-describing themselves as 'AD/organics treatment company'. This gives 43% describing themselves as a form of biological treatment operator, similar to the 46% in 2007/08. The trend towards describing the principal business activity from being simply a 'compost manufacturer' to an operator of both 'AD/organics treatment' may well continue in future years as many composters seek to diversify their business and co-locate AD plants on their composting sites.

A further quarter of respondents were waste management companies, and a similar proportion described their business activity as agricultural. This spectrum again highlights the highly diverse business nature of the producer sector.

10.3 Site types and processes

Approximately 66% of all sites were found to be dedicated composting sites, an increase from the 53% in 2007/08, processing 72% of the total organic waste recycled – again an increase from 67% in 2007/08. Correspondingly fewer sites were described as farms, but an increasing proportion of waste was processed at the remaining sites called farms. The latter may indicate an intensification and consolidation of farm based organics waste treatment around a smaller number of larger operations.

The majority of sites (86%) solely treated waste that was imported from outside the recycling site, exactly the same proportion as in 2007/08 and a proportion that has remained stable over a long period of this

survey. Only 5% of sites recycled solely organic waste that was produced on the site, marginally up on the 3% in 2007/08. This still therefore suggests that the industry in general establishes operations to treat *ex-situ* wastes, rather than being established as on-site treatment facilities.

Open air mechanically turned windrow composting remained by far the most common recycling method used in 2008/09 with an estimated 82% of all source segregated waste recycling sites using this method, and a total of 74% of all waste inputs being processed through this technique. Notably six sites recycled waste using the 'table composting' method, accounting for 249,000 tonnes (compared with 137,000 tonnes in 2007/08) – a finding that is worthy of further consideration, as it is a relatively low-tech approach.

In-vessel composting was carried out at 12% of sites, accounting for 17% of the total quantity of organic waste recycled during the survey period. Together IVC and AD have expanded to account for just short of 1 million tonnes of organic waste recycling in 2008/09, around 33% higher than in 2007/08. The relatively high capital costs for establishing IVC and AD compared with windrow systems may have slowed growth, however, the increasing differential in gate fees noted in the 2009 WRAP report cited previously, suggest that the differential in median fees (£38 for IVC and £53 for AD compared with £54 a tonne for landfill) may well have an impact in the future. The high capital costs of establishing AD facilities seem likely to be offset by the sale of renewable energy, and, in particular, the generation of renewable obligation certificates (ROCs), which are currently set at two ROCs per mega watt hour. The impact emerging renewable energy policies, such as Feed-In Tariffs for small scale energy producers, will have on the development of AD systems is yet to be realised.

The data from the survey indicates that the organics recycling sector remains dominated by relatively simple windrow composting systems processing green waste, but that the newer technologies are expanding and now adding substantially to the overall market. Together they account for greater input quantities than the quantities of food waste collected by the sector (either separately or mixed with green waste) from all sources (419,000 tonnes), suggesting that these processes are being used to treat some non-food waste sources.

10.4 Product certification

In total 47% of all eligible sites were fully certified to BSI PAS 100 and a further 10% were working towards certification. Nearly three-quarters of all product (72%, or 2.02 million tonnes) was produced at sites fully certified to PAS 100 – broadly double

that reported in 2007/08. Of this 76% (1.55 M tonnes) was from PAS 100 sites that are also fully certified under the Compost Quality Protocol (CQP), and a further 17% from sites working towards CQP. This reflects the finding that 70% of all 'in-scope' PAS 100 certified sites (i.e. in England and Wales, and with inputs above 5000 tpa) were also fully certified under the CQP in 2008/09. Both PAS100 and CQP figures have broadly doubled since 2007/08 – the biggest single area of change across this year's survey – and shows the progressive adoption of these standards across the composting industry. However the static residual number of sites for which PAS100 certification is not being considered, implies that a saturation threshold may be approaching and that as things stand, rather fewer sites may come forward for certification in future.

The corresponding PAS110 and Quality Protocol for anaerobic digestate were not published during the study period²³. It would be interesting to observe whether a similar rate and extent of uptake is observed in the AD sector as in the composting sector, albeit from a much smaller base.

10.5 Markets for recycled organics products

10.5.1 Product types

The quantity of compost produced from source segregated waste in the UK in 2008/09 was approximately 2.85 million tonnes, to which should be added a further 105,000 tonnes of digestate product. This total is significantly up from the compost and digestate total of 2.7 million tonnes in 2007/08 and more than double the quantity produced five years ago. The main compost product was soil conditioner which accounted for 2.3 million tonnes or 81% of the total products produced, an increase of 0.4 million tonnes and 10% of total product quantity over this period.

Other product groups (mulch, topsoil / subsoil manufacture and growing media) comprised 141, 145 and 175 thousand tonnes, respectively. Notably, these are much smaller quantities than the soil conditioner category and may reflect their specialist applications and smaller target market sectors (professional and amateur horticulture compared to agriculture). It was surprising that the reported quantities sent for blending into growing media had fallen on the previous year's estimate by 66,000 tonnes. It is unclear why this occurred and may simply be a change in reporting between the two surveys, a factor borne out in a subsequent

analysis of food waste derived products (see below).

The other surprising finding from the survey was the limited reporting of anaerobic digestate product (or its constituent components, fibre and liquor), at only 105,000 tonnes of digestate. Securing participation from AD specialist companies may be an intrinsic limitation (see Section 6.3 and the forthcoming recommendations in Section 10.8). This paucity of data may also have stemmed from a number of contextual factors, such as the lack of a product standard during the survey period. Also, the anaerobic digester outputs seem likely to have been liquid suspensions, which would have been pumped onto (or injected into) land, rather than applied as a solid (fibre). A substantial increase in this product is anticipated in subsequent years as AD facilities come on-stream.

10.5.2 Feedstock sources

The 2008/09 survey asked respondents whether they recycled food waste and how the resultant product was used (i.e. to which market sectors it was sent). Soil conditioners accounted for the largest quantity of material containing food waste feedstocks at 420,000 tonnes, up from the 313,000 tonnes in the previous survey (2007/08). As most soil conditioners tend to be used in agricultural applications, this probably reflects the demand by farmers for a higher nutrient content compost (compared to green waste only derived material), and also where salt content (electrical conductivity) is less important than for containerised growing media. The relatively high fertilizer prices during the early half of 2008 may have influenced farmers' decisions to use compost, as sales are often based on replacement fertilizer value.

In contrast to the previous survey which suggested that the growing media sector still utilised over 30,000 tonnes of food waste-derived compost, in 2008/09 no food waste based product was reported to be destined for this use. This was thought to be a reporting issue, as it was known that at least one company manufactures growing media based on food waste-derived compost.

Turf (top) dressing contained the greatest proportion of feedstock including food waste in 2008/09, with the 41,000 tonnes of food waste related feedstock amounting to 83% of all product used in this way – up from the proportion of the product (56%) reported in 2007/08. This may relate to its greater nutrient content, compared with compost derived from green waste, and smaller particle size, which would make it more amenable to screen and apply as a turf dressing.

10.5.3 Product sales

Over half (55%) of all composted products produced in the UK in 2008/09 from source segregated feedstock were sold (up 6% from 2007/08, and 11% from

²³ The AD Quality Protocol was published in September 2009 and the BSI PAS 110 for anaerobic digestate in February 2010

2006/07) showing a continued increase in the commercial value of the recycled organics product. A quarter of product quantity was used on the site of production and a further fifth distributed with no charge.

Collectively, these changes signal continued development of the compost products market, indicating increased customer confidence, such that end users are willing to pay for more product. These changes also seem likely to have been aided by the introduction of the Compost Quality Protocol, and may well indicate further improvements in the future as more compost becomes certified under the Protocol. A similar uptake of the outputs from AD systems is anticipated as the BSI PAS 110 (for anaerobic digestion) and the AD Quality Protocol are implemented.

The survey indicated that 209,000 tonnes of product derived from food waste feedstocks was sold, a decrease compared to 237,000 in 2007/08. A corresponding increase occurred however, in the quantities that were either distributed at no charge (up from 134,000 tonnes to 209,000 tonnes) or used on-site (up from 28,000 tonnes to 50,000 tonnes). While consumers were still willing to purchase these materials, this accounted for just 30% of product in 2008/09 compared to 36% in the previous year.

10.5.4 Market sectors

Over half (58%, or 1.67 million tonnes) of all products generated from source segregated organics recycling went to agriculture in 2008/09, an increase in both quantity (up 410,000 tonnes) and market share (up 11%). Agricultural end-use has tripled over the past six years and the growth in this outlet equates to the whole of the growth in end use markets in the past six years. Of those sites supplying product to agriculture, the most common crop type for compost usage was cereal / combinable crops (76%) followed by other arable (38%), vegetables (25%) and grassland (28%). The new and more detailed categories introduced in the 2008/09 survey strengthen the value of the data and link the findings better to standard agricultural classifications.

No significant quantities of compost were supplied to glasshouse protected crops, which may indicate unwillingness by growers to use compost, or a lack of end use specifications for these technically demanding, high value crops. Further research in this area may be needed to identify opportunities and constraints for this sector.

Organics recycling companies considered the agricultural sector to offer the greatest potential for growth for their business, (62% of respondents, up 5% since 2007/08). Approximately 18% of respondents felt that the landscaping sector also offered some potential, together with amateur

horticultural (15%) and professional horticulture (13%) and land restoration (14%). As agriculture was the dominant market sector in both 2007/08 and 2008/09, it is not unexpected that companies see potential for growth in this sector. In the view of recent significant rises in artificial fertilizer prices the benefits of compost are being realised by the farming community. It will be interesting to see whether this changes as the price of artificial fertilizers dropped during the latter part of 2009 / early 2010.

After agriculture, the next most common market sectors were landscaping (12%) and amateur horticulture (9%). The proportion going to landfill restoration / daily cover fell sharply from 14% in 2007/08 to 3% in 2008/09 (corresponding to a decrease of 310,000 tonnes), and was probably a result of the increase in landfill tax.

The data from the survey indicate that compost markets have generally grown compared with previous years, and that pay-back markets for food waste-derived composts exist, although without showing signs of expansion. As more compost is produced under the CQP it will be interesting to observe whether demand for product (non-waste) in certain sectors increases, especially if the waste regulators begin to enforce the controls on waste compost more rigorously than they have to date. Given the different economics for anaerobic digesters (due to the subsidies paid for the generation of renewable energy) it will be interesting to note how the markets for both the solid and liquid outputs develop, and whether they will be revenue generating for the business (i.e. whether the products will be sold, given away, or farmers paid to receive them).

10.5.5 Mixed waste-derived materials

Through an expanded section of the survey dealing with mixed waste feedstocks, it was found that 88% of sites processed this material through aerobic in-vessel composting systems, with 6% using aerobic bio-drying. Of the treated organic waste, 46% was described as waste for direct disposal to landfill, 9% as stabilised biowaste for disposal (method not specified), with 7% destined for use as a solid recovered fuel. Notably 31% was classed as 'other' which may reflect the variable status of this material and uncertainty in its final end use, as the output from MBT plants tends to be of lower value and remain subject to regulatory control. The market sector distribution was also very different from that of compost from source segregated feedstock, with two-thirds of the end-use volumes going for land restoration (65%) and a further fifth (21%) landfill restoration / daily cover.

10.6 Future capacity increases

It is estimated that in 2008/09 there was up to 1.33 million tonnes of unused source segregated waste processing capacity and approximately 122,000 tonnes of unused mixed waste processing capacity available in the UK. This is in addition to the 5.1 million tonnes of source segregated and 759,500 tonnes of mixed waste that was processed in 2008/09.

An increasing proportion of site operators said they had definite plans to expand their operating capacities at existing and / or new sites (26% of companies, up from 21% in 2007/08) over the coming five years. In addition, there were plans for expansion at 30% of existing sites, almost half of which (45%) were definite plans. Total UK capacity is therefore anticipated to continue to expand in line with the necessary diversion of municipal garden and food waste required by 2012/13 to meet the UK's landfill diversion target for that year. Again, changes in the nature of the organics recycling industry are anticipated, as existing composting operators seek to co-locate AD plants at existing composting sites, and interest in AD generally is sparking interest from local authorities. The emergence of merchant sites may also affect the potential make-up of the industry.

10.7 Conclusions from the market survey

Overall, the 2008/09 survey shows that UK organics recycling industry is in robust economic health and continues to grow, with a slightly steeper rate of growth in quantity of throughput and business turnover than was evident in 2007/08. The industry is diverse and increasingly becoming still more diverse, in terms of business type, feedstock used, process technologies and products produced including product types, markets the products are used in and how they are distributed.

Despite the necessary increase in the complexity of the survey, the overall response to the survey remains high, but it will become increasingly more important in future to improve the engagement of companies developing new technologies. To achieve this it will be necessary to further develop appropriate industry-standard reporting techniques that allow an ever-increasing amount of data to be collected from increasingly more complex producer organisations as the sector continues to develop and mature.

10.8 Conclusions from the review of methodology

A broad overview of the survey methodology has been conducted during the 2008/09 survey. From this, a number of the survey features appear to be robust and should be continued:

- The basic principle of the survey methodology, involving asking firms to complete an annual return for their company and for individual site operations, continues to generate a useful response and is the best source available on the detailed operation of the industry.
- Grossing up results using Waste Data Flow appears to be the best practicable approach to generating national estimates.
- The later autumn period appears to be an appropriate time of year to ask firms to complete the return.
- To strengthen and improve the methodology it is recommended that:
- A definitive and annually-updated list of potential organics recycling firms is compiled and maintained, incorporating but extending beyond the Association for Organics Recycling membership list, and in particular including the Renewable Energy Association and Anaerobic Digestion and Biogas Association members.
- Established survey respondent contacts (named individuals) should be identified and commitment to participation secured before the survey request is issued.
- Further work should be undertaken within the industry to secure motivation, commitment and participation amongst larger companies and amongst companies specialising in the new technologies.
- For larger firms, a simpler mechanism should be devised for each site record to be returned – possibly developing the online system and relating the returns to existing reporting requirements of the Environment Agency and SEPA.
- Information collected from sites operating new technologies should be adapted to reflect the kind of additional information relevant to these processes rather than traditional composting processes.
- Consideration should be given to the feasibility of requesting more extensive site and process-specific returns so that the productive performance (per employee, per tonne) can be better understood at this level rather than company-wide aggregate level, as happens currently.

Appendix 1

Survey form and covering letter

Dear

ASSOCIATION FOR ORGANICS RECYCLING (AFOR) - ANNUAL SURVEY OF THE UK ORGANICS RECYCLING INDUSTRY 2008/09

The **Association for Organics Recycling** (AFOR) is continuing to work in partnership with the **Waste & Resources Action Programme** (WRAP) to conduct its **annual survey of the UK Organics Recycling Industry (1)**. WRAP is a not-for-profit company supported by government funding, with a remit to create stable and efficient markets for recycled materials and products.

You may well have seen that the findings of the survey for 2007-08 have just been published by AFOR and WRAP – and we are now starting the next survey, to cover the year 2008-09. The survey is being administered as before, by **M·E·L Research** on behalf of AFOR and WRAP.

*** Please can you complete this next survey by **Friday 13th November 2009**.

Why should I take part?

The benefit of the survey can be seen in the most recently published version. The results will be of interest to all business operators who process organic wastes, whether producers of compost, digestate or any other kinds of organics recyclers. The industry is growing rapidly and becoming more complex year-on-year, and the survey results will help you:

- Identify industry trends in operating methods and processing technologies
- Plan for diversification and treatment of new feedstocks in the future
- Prepare business plans for investment, based on sound market knowledge
- Formulate long-term strategies based on detailed knowledge of the scale and rate of growth of the sector
- Identify product development and marketing opportunities
- Prepare for impacts from competing products and services

All completed responses to the survey received by the closing date of 13th November 2009 will be entered into a prize draw to win an iPod Nano **(2)**.

How do I complete the survey?

There are three ways to complete the survey:

On-line, by clicking on the following weblink - <http://www.m-e-l.co.uk/surveys/08107/afor.htm>

Completing the electronic microsoft word copy attached and emailing the completed questionnaire to - organicsrecycling.survey@m-e-l.co.uk

Over the telephone – Contact Sophi Dangerfield or Ian Stone at MEL Research on 0121 604 4664

Is my response confidential?

All responses will be treated in strict confidence and will not be accessible to anyone outside of the project team. All published results will be in aggregate form and individual responses will not be identified. The report on last year's survey is available now, via the Association for Organics Recycling website at www.organics-recycling.org.uk or via WRAP website at www.wrap.org.uk/wrap_corporate/news/uk_composting.html

If you have any questions about the survey or if you require help filling in the survey form please:

Call the Organics Recycling Survey Helpline at MEL Research on 0121 604 4664 and speak to Sophi Dangerfield or Ian Stone

E-mail organicsrecycling.survey@m-e-l.co.uk with your query.

Thank you for your support and we look forward to receiving your views.

Yours sincerely



Jeremy Jacobs
Managing Director, Association for Organics Recycling

(1) We use the term 'organics recycling' to refer to all processes for composting, anaerobic digestion, in-vessel composting (IVC) or other biological treatment technologies, including treatment of residual waste, for example through mixed biological treatment (MBT)

(2) iPod is a registered trademark of Apple Computer, Inc. iPod is not a promotional partner or sponsor of this survey.

The Association for Organics Recycling - Annual Survey of:

The UK Organics Recycling Industry 2008/09

The Association for Organics Recycling (AFOR) is working in association with WRAP (Waste & Resources Action Programme) to conduct its annual survey of the UK Organics Recycling Industry. The term 'organics recycling' refers to all processes for composting, anaerobic digestion, in-vessel composting (IVC) or other biological treatment technologies, and also includes treatment of residual waste, for example through mixed biological treatment (MBT).

This survey is being administered by M·E·L Research on behalf of AFOR and WRAP. Alongside AFOR we would also like to thank the following organisations for helping to distribute this survey to their members:

Environmental Services Association and Environmental Services Association Scotland
REA biogas group
Lord Redesdale's Anaerobic Digestion Biogas Association
Chartered Institute of Wastes Management

It is important that you take part because the results will be of interest to all business operators who process organic wastes, whether they be **producers of compost, digestate or any other kinds of organics recyclers**. The industry is growing rapidly and becoming more complex year-on-year, and the survey results will help you:

- Identify industry trends in operating methods and processing technologies
- Plan for diversification and treatment of new feedstocks in the future
- Prepare business plans for investment, based on sound market knowledge
- Formulate long-term strategies based on detailed knowledge of the scale and rate of growth of the sector
- Identify product development and marketing opportunities
- Prepare for impacts from competing products and services

PLEASE NOTE - The survey covers your organics recycling business activities over the year from 1 April 2008 to 31 March 2009, or as close as you can report for this period.

All responses will be treated in strict confidence and will not be accessible to anyone outside of the project team. All published results will be in aggregate form and individual responses will not be identified. The report on last year's survey will be available soon via the Association for Organics Recycling website at www.organics-recycling.org.uk.

Need help filling in the survey form?

If you have any questions about the survey or if you require help filling in the survey form please:

Ring the **Organics Recycling Survey Helpline** at M·E·L Research on **0121 604 4664** and speak to Sophi Dangerfield or Ian Stone; or

E-mail organicsrecycling.survey@m-e-l.co.uk with your query.

SURVEY CLOSING DATE: Friday 13th November 2009

Please return the completed survey form to M·E·L Research by:

Fax to: 0121 604 6776

E-mail to: organicsrecycling.survey@m-e-l.co.uk

Freepost to: Organics Recycling Survey, M·E·L Research Ltd, FREEPOST, Birmingham, B7 4BR

Thank you for supporting this survey.



Section A – Contact Details and General Information about your Business

Name Telephone
 E-mail
 Company Company
 Name Postcode

A1. Which of these best describes the principal business activity of your company? *(Please select one option only)*

- Specialist compost producer
- Anaerobic digestion / organics treatment company
- Water treatment company
- Solid waste treatment / disposal company
- Equipment / plant supplier / hire company
- Agricultural activities
- Horticultural / landscaping activities
- Community group / not-for-profit business
- Local authority
- Other or mixed activity business – please specify

A2. What was the annual turnover specifically from the organics recycling/ treatment aspects of your business (including production, distribution and sales) in 2008/09? *(Please select one option only, and please exclude turnover from other business activities such as agricultural or landfill operations)*

- Less than £10,000
- £10,000 - £50,000
- £50,000 - £100,000
- £100,000 - £500,000
- £500,000 - £1 million
- £1 million - £3 million
- £3 million - £5 million
- £5 million - £8 million
- £8 million - £10 million
- More than £10 million – please specify

A3. How many full time equivalent staff were engaged in the organics recycling/ treatment aspects of your business (including production, distribution and sales) in 2008/09? *(Please select one option only)*

- Less than 1
- 1 - 5
- 6 - 10
- 11 - 20
- 21 - 50
- More than 50

A4. How many separate organics recycling/ treatment sites did your company operate in the UK in 2008/09? By 'site' we mean the location of a specific business operation for which you can report process and throughput information (note there may be more than one process operating on an individual 'site')

- One site only
.....
PLEASE COMPLETE THE FOLLOWING SECTIONS B TO D BELOW ONCE ONLY
- More than one – how many sites in total?
PLEASE COMPLETE THE FOLLOWING SECTIONS B TO D BELOW FOR THE FIRST SITE, THEN REPEAT FOR EACH ADDITIONAL SITE

A5. Have you opened, or do you have definite plans to open, any new composting/anaerobic digestion/biological treatment sites after 31 March 2009? *(Please include only those sites for which the necessary investment and required permits are already in place)*

- No
- Yes – please specify site names and location
.....
.....



Section B – Individual Site Details

PLEASE NOTE: If your company operates on a single site only please complete sections B to D below once only. If you operate more than one separate site please complete sections B to D below for the first site, then repeat for each additional site.

B1. If you operated more than one site please indicate which of your site(s) this specific survey form relates to.

Site of (e.g. Site 1 of 3)

Basic site information

Operating site name
 Operating site postcode County or local council area
 or nearest town/village where site located

B2. Which of these best describes the primary nature of the business conducted on this site? *(Please select one option only)*

- | | | |
|--|--|--|
| <input type="checkbox"/> Dedicated organics recycling/
treatment site | <input type="checkbox"/> Materials recycling facility | <input type="checkbox"/> Community based project |
| <input type="checkbox"/> Civic amenity site | <input type="checkbox"/> Farm | <input type="checkbox"/> Other – please specify |
| <input type="checkbox"/> Landfill site | <input type="checkbox"/> Horticultural / landscaping
activities | |

B3. In 2008/09 was the organic waste feedstock for this site: *(Please select one option only)*

- Produced on site? Brought in from outside site? Both?

Regulations, certification and quality assurance schemes

B4. In 2008/09 was this site operating under a waste management license or permit? *(Please select one option only)*

- Yes – site was licensed / permitted No – site was exempt

B5. Is any part of this site approved by Animal Health under the Animal By-Products Regulations? *(Please select one option only)*

- | | |
|--|---|
| <input type="checkbox"/> Yes – full approval | <input type="checkbox"/> Under discussion |
| <input type="checkbox"/> In verification | <input type="checkbox"/> No – not under consideration |

B6. Was this site or any of the processes on this site PAS 100 certified or working towards certification under the PAS 100 scheme in 2008/09? *(Please select one option only)*

- | | | |
|---|--|--|
| <input type="checkbox"/> Yes – site or process(es) fully
PAS 100 certified – <i>Please go to
Question B7 below</i> | <input type="checkbox"/> Yes – site or process(es)
working towards PAS 100
certification – <i>Please go to Question
B7 below</i> | <input type="checkbox"/> No – Please go to Question B8 |
|---|--|--|

B7. Was this site or any of the processes on this site certified or working towards certification under the Compost Quality Protocol in 2008/09? *(Please select one option only; this question does not apply to sites in Scotland)*

- | | | |
|--|---|-----------------------------|
| <input type="checkbox"/> Yes – site or process(es) fully
certified under Quality Protocol | <input type="checkbox"/> Yes – site or process(es)
working towards certification
under Quality Protocol | <input type="checkbox"/> No |
|--|---|-----------------------------|

Site capacity in 2008/09

B8. In the table below, please indicate (a) how much waste could have been processed at this site in 2008/09 taking account of any existing restrictions placed on you by site infrastructure, permits / licences and planning consents; and (b) what percentage of this capacity was used in 2008/09. (Please include existing unused processing capacity only and take seasonality into account i.e., unused capacity should be capacity that is unused all year and not just during winter months for example)

Waste input	a) Maximum existing site capacity, taking account of licensing and infrastructure	b) Percentage of capacity used in 2008/09
Separately collected waste	tonnes	%
Mixed (unsorted) waste	tonnes	%
TOTAL WASTE INPUTS	tonnes	%

B9. If your site was not used at full capacity for 2008/09, what were the main reasons for this?

.....
Expansion plans

B10. Do you have plans to expand the processing capacity of this site during the **five year period** from April 2009 to March 2014?

- Yes – Please go to Question B11 No – Please go to Question B13

B11. Are these plans for expansion definite, with the required planning, permits and necessary investment already in place?

- Yes – Please go to Question B12 No – Please go to Question B13

B12. Excluding any existing unused processing capacity already entered for Question B8, please indicate how much additional annual processing capacity will be generated at this site as a result of the expansion.

Waste input	Additional processing capacity planned
Source segregated waste	tonnes per annum
Mixed (unsorted) waste	tonnes per annum
TOTALS	tonnes per annum

Organics recycling / treatment activities carried out during 2008/09

B13. To guide you through the next sections of the survey, please indicate below the types of organic waste inputs processed on this site during 2008/09? (Please select both options if appropriate)

- Separately collected (source segregated) organic waste PLEASE COMPLETE SECTION C
 Mixed (un-segregated) wastes PLEASE COMPLETE SECTION D
 Both of the above PLEASE COMPLETE BOTH SECTIONS C and D

Section C – Separately collected (source segregated) waste treatment processes

This section is specifically about organic waste inputs to this site that have been separately collected at source (sometimes called source-segregated*). We ask you about the waste input types, treatment processes, product types and how products are eventually used. Please note, for 'mixed waste' inputs see the following Section D.

***Source segregated waste** – is waste in which organic materials are kept separate from non-organic materials during collection*

C1. Confirmatory check - did you process separately collected organic waste at this site during 2008/09, either by composting or anaerobic digestion? *(Excluding mixed wastes treatment which are covered in Section D)*

- Yes – Please complete the rest of Section C
- No – Please go to Section D

C2. What was the total input of separately collected organic waste to composting and/or anaerobic digestion processes at this site in 2008/09? *(Excluding mixed wastes treatment which are covered in Section D)*

..... tonnes

Waste input types

C3. In the table below, please provide an approximate breakdown of the total input of separately collected organic waste in 2008/09. (*Excluding mixed wastes treatment which are covered in Section D*)

Waste input	Tonnes of separately collected organic waste input	
Municipal waste inputs (i.e. household waste and any other waste collected by or on behalf of local authorities)		
Garden waste from civic amenity/bring sites	tonnes	Tick if biodegradable bags were used <input type="checkbox"/>
Garden waste only from kerbside collection	tonnes	Tick if biodegradable bags were used <input type="checkbox"/>
Garden and food waste from kerbside collection	tonnes	Tick if biodegradable bags were used <input type="checkbox"/>
Food waste only from kerbside collection	tonnes	Tick if biodegradable bags were used <input type="checkbox"/>
Council parks / gardens waste and garden waste from educational institutes	tonnes	
Council-collected food waste from retailers / catering establishments	tonnes	
Other municipal waste – please specify	tonnes	
Non-municipal waste inputs (i.e. commercial / trade / industrial wastes not collected by or on behalf of local authorities)		
Landscape / grounds maintenance	tonnes	
Forestry / timber / bark / by-products	tonnes	
Food waste from retailers / catering establishments	tonnes	
Food waste from other commercial establishments	tonnes	
Food waste from industrial establishments	tonnes	
Other non municipal waste – please specify	tonnes	
TOTAL	= Question C2	

C3b If any biodegradable bags were used in the organic waste collections, were they certified as compostable, or oxo-degradable?

- Compostable Oxo-degradable Neither

C3c Did you experience any of the following problems with biodegradable bags during processing?

Did not degrade fully during treatment	<input type="checkbox"/>
Got wrapped around equipment	<input type="checkbox"/>
Created wind-blown litter	<input type="checkbox"/>
Could not distinguish from other plastics	<input type="checkbox"/>
Other problems	<input type="checkbox"/>
No problems encountered	<input type="checkbox"/>

Initial treatment processes

C4. In the table below, please provide an approximate breakdown of the initial primary treatment processes that were used to treat separately collected waste at this site in 2008/09. (*Excluding mixed wastes treatment which are covered in Section D*)

Initial treatment process	Tonnes of separately collected waste input	
Open air mechanically turned windrow (i.e. composting outside in long rows (windrows) that are turned mechanically)	tonnes	
Covered mechanically turned windrow (i.e. composting undercover or inside a building in long rows (windrows) that are turned mechanically)	tonnes	
Static pile with aeration (i.e. composting in long rows (windrows) utilising forced aeration, usually with minimal turning)	tonnes	
Table composting (i.e. composting outside using a trapezoidal arrangement, that is turned mechanically)	tonnes	
In-vessel composting (the production of compost, featuring the enclosure of the active composting stage, providing a high degree of control)	tonnes	
Anaerobic digestion (a series of enclosed biological processes in which microorganisms break down biodegradable material in the absence of oxygen)	tonnes	Please indicate if the AD system is either: wet <input type="checkbox"/> or dry <input type="checkbox"/>
Thermophilic aerobic digestion (a series of enclosed biological processes in which microorganisms break down biodegradable material in the presence of oxygen)	tonnes	
Other – please specify	tonnes	
TOTAL	= Question C2	

Compost and digestate product types

***Compost & digestate products** – Products produced as a result of composting or anaerobically digesting source segregated waste. If quantity of products produced is unknown assume to be 60% of waste inputs*

C5. In the table below, please provide an approximate breakdown of the compost and/or digestate products you produced at this site in 2008/09 and indicate whether these products were made from feedstocks which contained food waste. *(Please note this question relates to compost/digestate products before blending and excludes outputs from mixed waste processing which are covered in Section D)*

Product type	Quantity of <u>compost</u> products produced (before blending) (Delete units as appropriate)	Quantity of <u>digestate</u> products produced from AD (before blending) (Delete units as appropriate)	Were these products made from feedstocks which included food waste?
Soil conditioner (incorporated by digging or ploughing into soil to improve structure, nutrient and biological properties)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Mulch (surface application of large particles used to suppress weeds, retain moisture, prevent soil erosion and for decorative purposes)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Topsoil/subsoil manufacture (mixed with soils or other materials to produce topsoil or subsoil for landscape applications)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Growing medium constituent (material other than soils used alone or in mixtures to grow plants)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Turf (top) dressing (fine composts to improve establishment and growth of turf)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Solid biofertilizer from digestate product	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Concentrated liquid fertilizer from digestate product	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other – please specify (e.g. landfill cover, biofuel)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Total product produced	tonnes / m ³	tonnes / m ³	

Product certification and quality protocols

C6. What was the total quantity of compost product produced at this site during 2008/09 that was certified to BSI PAS 100? *(Please note this question relates to compost products only and excludes digestate products)*

..... tonnes / m³ (Delete units as appropriate)

C7. What was the total quantity of compost product produced at this site during 2008/09 that was certified under the Compost Quality Protocol? *(Please note this question relates to compost products only and excludes digestate products)*

..... tonnes / m³ (Delete units as appropriate)

Destination of compost and digestate products

C8. In the table below, please provide an approximate breakdown of the destination of compost and/or digestate products produced at this site in 2008/09 and whether these products were made from feedstocks which contained any food waste. *(Please note this question relates to compost/digestate products before blending and excludes outputs from mixed waste processing which are covered in Section D)*

Product destination	Quantity of <u>compost</u> products (before blending) (Delete units as appropriate)	Quantity of <u>digestate</u> products (before blending) (Delete units as appropriate)	Were these products made from feedstocks which included food waste?
Sold directly to end users	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sold on to third parties	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Distributed to end users or third parties with no charge	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Used on the site where it was produced	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other – please specify	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Total product produced	= Total from Question C5	= Total from Question C5	

How compost and digestate products will be used

C9. In the table below, please provide an approximate breakdown of how the compost and/or digestate products produced at this site in 2008/09 will be used and indicate whether these products were made from feedstocks which contained food waste. *(Please note this question relates to compost/digestate products before blending, including both solid and liquid fractions, but excludes mixed waste outputs which are covered in Section D)*

Use for product	Quantity of <u>compost</u> products distributed (before blending) (Delete units as appropriate)	Quantity of <u>digestate</u> products distributed (before blending) (Delete units as appropriate)	Were these products made from feedstocks which included food waste?
Agriculture	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Horticulture – professional (either via growing media manufacturers or direct to professional growers)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Horticulture – amateur (either via growing media manufacturers or direct to retail outlets, civic amenity sites)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Landscaping (to treat or improve usable land e.g. tree / shrub planting, bed establishment, topsoil manufacture)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Sports turf (e.g. golf, cricket, football)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Landfill restoration / daily cover	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No

Use for product	Quantity of <u>compost</u> products distributed (before blending) (Delete units as appropriate)	Quantity of <u>digestate</u> products distributed (before blending) (Delete units as appropriate)	Were these products made from feedstocks which included food waste?
Energy recovery (e.g. burning oversize)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Forestry	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Land restoration (to treat unusable, derelict, neglected or brownfield land to bring it back to productive use e.g topsoil manufacture)	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other – please specify	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Total compost / DIGESTATE product produced	= Total from Question C5	= Total from Question C5	

Use of compost and digestate products in agriculture

C10 If you indicated in Question C9 that you distributed compost and/or digestate products to the agriculture sector in 2008/09 please provide an approximate breakdown for each of the agricultural crops where your products were used and whether these products were made from feedstocks which contained food waste. *(Please note this question relates to compost/digestate products before blending and excludes outputs from mixed waste processing which are covered in Section D)*

Main agricultural crop	Quantity of <u>compost</u> products distributed (before blending) (Delete units as appropriate)	Quantity of <u>digestate</u> products distributed (before blending) (Delete units as appropriate)	Were these products made from feedstocks which included food waste?
Cereals / combinable crops	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other arable e.g. oilseed rape, beet, peas	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Potatoes	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Vegetables	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Orchard fruit	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Soft fruit	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Plants and flowers	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Glasshouse protected crops	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Grassland	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other – please specify	tonnes / m ³	tonnes / m ³	<input type="checkbox"/> Yes <input type="checkbox"/> No

Developing markets for compost and digestate products

C11. Which of the following markets for compost and/or digestate products do you think offer the greatest potential for growth for your business in the next year? *(Please select all that apply)*

- | | | |
|---|--|---|
| <input type="checkbox"/> Agriculture- see C11 (b) below | <input type="checkbox"/> Sports turf | <input type="checkbox"/> Land restoration |
| <input type="checkbox"/> Horticulture – professional | <input type="checkbox"/> Landfill restoration / daily cover | <input type="checkbox"/> Forestry |
| <input type="checkbox"/> Horticulture – amateur | <input type="checkbox"/> Energy recovery from solid products | <input type="checkbox"/> Other – please specify |
| <input type="checkbox"/> Landscaping | <input type="checkbox"/> Energy recovery from biogas | |
| | | ... |

C11b If you see agriculture as a growth potential in C11a above, please indicate the crop sectors with most potential

Main agricultural crop	
Cereals / combinable crops	<input type="checkbox"/>
Other arable e.g. oilseed rape, beet, peas	<input type="checkbox"/>
Potatoes	<input type="checkbox"/>
Vegetables	<input type="checkbox"/>
Orchard fruit	<input type="checkbox"/>
Soft fruit	<input type="checkbox"/>
Plants and flowers	<input type="checkbox"/>
Glasshouse protected crops	<input type="checkbox"/>
Grassland	<input type="checkbox"/>
Other – please specify	<input type="checkbox"/>
.....	

C12. Please explain why you think the markets you specified in Question C11 offer the greatest potential for growth for your business in the next year.

.....

.....

.....

.....

.....

Section D – Mixed (unsorted) waste treatment processes

This section is specifically about mixed waste inputs* to the site, and the processes you operate there to deal with them.

***Mixed (unsorted) waste** – is waste in which organic materials are mixed with non-organic materials during collection*

D1. Did you treat or process mixed (unsorted) waste at this site during 2008/09? (Excluding source segregated organic waste treatment which is covered in Section C)

- | | |
|--|---|
| <input type="checkbox"/> Yes – Please complete the rest of Section D | <input type="checkbox"/> No – Thank you, this site return form is complete – fill in comments at the end, or another site return, if required |
|--|---|

D2. What was the total input of mixed (unsorted) waste for treatment or processing at this site in 2008/09? (Excluding source segregated organic waste treatment which is covered in the previous Section C)

..... tonnes

Waste input type

D3. In the table below, please provide an approximate breakdown of the total input of mixed (unsorted) waste in 2008/09. (*Excluding source segregated organic waste treatment which is covered in Section C*)

Waste input	Tonnes of mixed (unsorted) waste input
Municipal waste (i.e. household waste and any other waste collected by or on behalf of local authorities)	tonnes
Non-municipal waste – please specify (i.e. commercial / trade / industrial wastes not collected by or on behalf of local authorities)	tonnes
.....	
.....	
.....	
TOTAL	= Question D2

D4. For each of the waste inputs you specified in Question D3 what percentage was organic (biodegradable)? (*i.e. capable of decomposing rapidly by microorganisms under aerobic and/or anaerobic conditions*)

Waste input	% that was organic (biodegradable)
Municipal waste	%
Non-municipal waste	%

Active phase treatment types

D5. Was the active phase of treatment of the mixed (unsorted) waste at this site in 2008/09 aerobic or anaerobic? (*Please select one option only*)

- Aerobic in-vessel composting (*in the presence of oxygen*)
 Anaerobic (in the absence of oxygen)
 Aerobic bio-drying

D6. Please provide the name of the technology provider you use for these systems

.....

Outputs from mixed (unsorted) waste treatment

***Mixed waste derived outputs** – Outputs produced as a result of mechanical biological treatment of mixed organic and non-organic waste. If quantity of outputs produced is unknown assume to be 60% of waste inputs*

(Please note this section relates to mixed organic waste derived outputs only. Please do not include dry recycle such as plastics, glass and metals)

Output types

D7. In the table below, please provide an approximate breakdown of the mixed waste derived outputs you produced at this site in 2008/09. (Excluding compost & digestate products which are covered in section C)

Output product type	Quantity of mixed waste outputs (before blending) (Delete units as appropriate)
Soil conditioner (incorporated by digging or ploughing into soil to improve structure, nutrient and biological properties)	tonnes / m ³
Mulch (surface application of large particles used to suppress weeds, retain moisture, prevent soil erosion and for decorative purposes)	tonnes / m ³
Topsoil/subsoil manufacture (mixed with soils or other materials to produce topsoil or subsoil for landscape applications)	tonnes / m ³
Stabilised biowaste for disposal (stabilised material from mixed municipal waste processing)	tonnes / m ³
Waste for direct application to landfill as daily cover	tonnes / m ³
Solid recovered fuel (RDF)	tonnes / m ³
Biogas	tonnes /m ³
Other – please specify (e.g. landfill cover, biofuel)	tonnes / m ³
Total Mixed waste OUTPUT produced	tonnes / m ³

Destination for waste outputs

D8. In the table below, please provide an approximate breakdown of the destination of mixed waste outputs produced at this site in 2008/09. (Excluding compost & digestate products which are covered in section C)

Output destination	Quantity of mixed waste outputs (before blending) (Delete units as appropriate)
Sold directly to end users	tonnes / m ³
Sold on to third parties	tonnes / m ³
Distributed to end users or third parties with no charge	tonnes / m ³
Used on the site where it was produced	tonnes / m ³
Disposed of directly to landfill	tonnes / m ³
Other disposal with cost associated	tonnes / m ³
Other – please specify	tonnes / m ³
Total Mixed waste OUTPUT produced	= Total from Question D7

Outlets/end uses

D9. In the table below, please provide an approximate breakdown of the outlets or end-uses to which the mixed waste outputs produced at this site were distributed in 2008/09. (Excluding compost & digestate products which are covered in section C)

Outlet / end use	Quantity of mixed waste outputs (before blending) (Delete units as appropriate)
Land restoration (to treat unusable, derelict, neglected or Brownfield land to bring it back to productive use e.g topsoil manufacture)	tonnes / m ³
Landfill restoration / daily cover	tonnes / m ³
Landscaping (to treat or improve usable land e.g. tree / shrub planting, bed establishment, topsoil manufacture)	tonnes / m ³
Agriculture	tonnes / m ³
Energy (solid recovered fuel or biogas)	tonnes / m ³
Direct disposal to landfill	tonnes / m ³
Other disposal with cost associated	tonnes / m ³
Other – please specify	tonnes / m ³
Total Mixed waste OUTPUT produced	= Total from Question D7

Further comments and feedback

AFOR and WRAP are continually looking at ways to improve this survey and we would appreciate your feedback. Please provide any additional comments you may have on this survey or any of the issues it covers.

.....
.....
.....
.....
.....

Thank you for taking the time to complete this survey form.

Appendix 2

Community composting activity in the UK – 2006 (Defra funded project WR0211)

The Community Composting Sector

It is well known that the community composting sector is made up of a diverse range of groups and organisations. All these companies operate on a not-for-profit basis and while community composting is often a main focus, other environmental, social and educational objectives are also important. Consequently the survey design used for the commercial composting sector was considered to be inappropriate for the community composting sector and the community sector was therefore not specifically included in the main survey.

However, a separate project called 'Unlocking the Potential of Community Composting' profiled and characterised the community composting sector in the UK in 2006. This work was funded by Defra under their Waste and Resources R&D Programme (ref WR0211). The project was carried out by the Integrated Waste Systems group at The Open University in association with the Community Composting Network (CNN), London Community Recycling Network (LCRN) and the New Economics Foundation. After checking with CNN for an update of

the community sector in 2007, it was advised that composting activity in the community sector in 2007/08 would have stayed broadly the same as in 2006. Therefore the survey results for the 2006 project can be used as a proxy for 2007/08.

The first part of the project is a survey of the environmental, social and educational activities of organisations involved in promoting or carrying out composting activity in their communities. The survey report "Community composting activity in the UK – 2006" has been published by Integrated Waste Systems, The Open University, Milton Keynes in May 2007. It is available via the following website link:

http://technology.open.ac.uk/iws/docs/cc%20report_Final.pdf

The findings presented in the above report represent the first time a comprehensive profiling of the community composting sector has been conducted and results published. The data reported are for the 2006 calendar year. In total 243 organisations were surveyed.

Appendix 3

National and regional breakdown of wastes input to composting

Regional breakdown of wastes input to composting

Comparison of survey data with municipal waste data

Table A3.1 shows the quantities of municipal wastes input to composting in 2008/09 by survey respondents. The table also shows the quantities of municipal wastes input to composting which came from Civic Amenity (CA) site collections and from kerbside collections on a regional basis for England, and on a national basis for the other UK countries. These data then have been compared with official municipal waste data on the quantity of waste collected by local authorities in these regions / countries to calculate the percentages of CA and kerbside waste arising in each region / country that has been captured by 2008/09 survey (i.e. that has been composted by survey respondents in that region/country in 2008/09). However, while this is a useful measure it should be noted that not all waste collected for composting will be composted in the

region where it is collected. Official municipal waste data has been obtained from Waste Data Flow for 2008/09. Waste Data Flow is the web based system for local authority waste data reporting to government.

Overall 72% of civic amenity waste for composting has been captured by the survey, and 41% of kerbside waste. It is not clear why there is this difference. There are some figures over 100% for CA waste in North East, North West and West Midlands in England. This could be due to either waste from CA sites from outside these regions being composted within the regions or that there is an issue of under reporting to Waste Data Flow.

Between the nations, the capture rate for civic amenity waste was highest for England at 77% and lowest for Northern Ireland at 23%. The capture rate for kerbside waste was highest for Northern Ireland at 103% and lowest for Wales at 9%.

Table A3.1 Regional and national comparison of wastes input to composting by survey respondents with municipal waste data 2008/09

	MSW input survey respondents	Survey respondents CA input tonnes	Survey capture rate of CA waste	Survey respondents kerbside input tonnes	Survey capture rate of kerbside waste
England					
East Midlands	232,493	100,248	90%	130,445	46%
East of England	301,639	110,194	86%	141,854	38%
London	36,000	3,000	4%	31,350	18%
North East	133,935	44,343	116%	86,219	100%
North West	171,673	92,700	103%	78,973	21%
South East	336,763	209,179	78%	121,707	46%
South West	228,178	114,380	61%	96,543	43%
West Midlands	343,500	171,000	190%	160,600	50%
Yorkshire & the Humber	54,280	6,800	6%	32,480	16%
England total	1,838,461	851,844	77%	880,171	38%
Wales	47,908	33,931	73%	9,668	9%
Scotland	217,647	41,989	73%	153,301	69%
Northern Ireland	74,000	9,000	23%	65,000	103%
UK TOTAL	2,178,016	936,764	72%	1,108,140	41%

Quantities and types of waste composted in individual UK countries and in regions of England

Table A3.2 shows the quantity and type of waste composted by survey respondents in the individual UK nations and Table A3.3 shows this information for the England regions. It should be noted that the waste quantities in these tables have not been grossed up to allow for survey non respondents. They are the combined quantities from survey respondents.

Table A3.2 shows that in Northern Ireland and Scotland kerbside collected waste for composting makes up a higher percentage of the total input of wastes to composting at 88% and 70% respectively of wastes composted compared with only 12% and 19% respectively from civic amenity sites. Wales had more composting of civic amenity site waste (71%) than kerbside collected waste. England had similar percentages between kerbside collected waste and civic amenity site waste.

Table A3.3 shows that the East Midlands and the Yorkshire and the Humber region have an atypical waste input pattern. All the other regions have municipal waste composting dominating non municipal waste composting with at least 84% of input waste being municipal. For the East Midlands and the Yorkshire and Humber region, only 74% and 64% respectively of the waste composted by survey respondents is municipal with the remaining 26% and 36% being a range of non municipal waste types.

Table A3.2 Quantities and types of waste composted by survey respondents in UK countries, 2008/09

	England		Northern Ireland		Scotland		Wales	
	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total
Municipal waste								
Garden waste from civic amenity/bring sites	851,844	40%	9,000	12%	41,989	15%	33,931	67%
Garden waste only from kerbside collection	741,678	34%	0	0%	150,376	54%	5,468	11%
Garden and food waste from kerbside collection	122,668	6%	65,000	88%	505	<1%	4,200	8%
Food waste only from kerbside collection	15,825	1%	0	0%	2,420	1%	0	0%
Council parks / gardens waste and green waste from educational institutes	19,216	1%	0	0%	14,458	5%	4,309	8%
Council-collected food processing by-products and food waste from retailers	0	0%	0	0%	0	0%	0	0%
Other municipal waste - please specify	87,230	4%	0	0%	7,898	3%	0	0%
Total municipal waste	1,838,461	85%	74,000	100%	217,647	78%	47,908	94%
Non municipal waste								
Landscape / grounds maintenance	128,199	6%			8,383	3%	3,002	6%
Forestry / timber / bark / by-products	17,997	1%			221	<1%	0	0%
Food waste from retailers / catering establishments	1,017	<1%			1,784	1%	0	0%
Food waste from other commercial establishments	14,000	1%			1,195	<1%	0	0%
Food waste from industrial establishments	68,113	3%			2,584	1%	0	0%
Other non municipal waste - please specify	87,557	4%			46,672	17%	0	0%
Total non municipal waste	316,883	15%			60,838	22%	3,002	6%
Total	2,155,344	100%	74,000	100%	278,485	100%	50,910	100%

Table A3.3 Regional data on wastes composted by survey respondents in England's regions, 2008/09 – part 1

	East Midlands		East of England		London		North East	
	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total
Municipal waste								
Garden waste from civic amenity/bring sites	100,248	33%	110,194	31%	3,000	8%	44,343	33%
Garden waste only from kerbside collection	130,445	43%	91,854	26%	0	0%	86,219	64%
Garden and food waste from kerbside collection	0	0%	50,000	14%	31,350	87%	0	0%
Food waste only from kerbside collection	0	0%	0	0%	0	0%	0	0%
Council parks / gardens waste and green waste from educational institutes	1,800	1%	2,841	1%	0	0%	3,373	2%
Council-collected food processing by-products and food waste from retailers	0	0%		0%	0	0%	0	0%
Other municipal waste - please specify	0	0%	46,750	13%	1,650	5%	0	0%
Total Municipal waste	232,493	76%	301,639	86%	36,000	100%	133,935	99%
Non municipal waste								
Landscape / grounds maintenance	54,233	18%	21,647	6%			1,260	1%
Forestry / timber / bark / by-products	0	0%	2,000	1%			0	0%
Food waste from retailers / catering establishments	0	0%	0	0%			0	0%
Food waste from other commercial establishments	0	0%	8,500	2%			0	0%
Food waste from industrial establishments	9,000	3%	11,000	3%			0	0%
Other non municipal waste - please specify	8,344	3%	7,175	2%			0	0%
Total non municipal waste	71,577	24%	50,322	14%			1,260	1%
Total	304,070	100%	351,961	100%	36,000	100%	135,195	100%

Table A3.3 Regional data on wastes composted by survey respondents in England's regions, 2008/09 – part 2

	North West		South East		South West		West Midlands		Yorkshire & The Humber	
	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total	Input Tonnages	% of Total
Municipal waste										
Garden waste from civic amenity/bring sites	92,700	48%	209,179	52%	114,380	38%	171,000	49%	6,800	8%
Garden waste only from kerbside collection	76,688	40%	115,012	29%	58,460	20%	160,600	46%	22,400	26%
Garden and food waste from kerbside collection	2,285	1%	6,695	2%	31,858	11%	0	0%	480	1%
Food waste only from kerbside collection	0	0%	0	0%	6,225	2%	0	0%	9,600	11%
Council parks / gardens waste and green waste from educational institutes	0	0%	3,877	1%	5,325	2%	2,000	1%	0	0%
Council-collected food processing by-products and food waste from retailers	0	0%	0	0%	0	0%	0	0%	0	0%
Other municipal waste - please specify	0	0%	2,000	1%	11,930	4%	9,900	3%	15,000	18%
Total municipal waste	171,673	89%	336,763	84%	228,178	76%	343,500	98%	54,280	64%
Non municipal waste										
Landscape / grounds maintenance	2,300	1%	25,529	6%	16,030	5%	7,200	2%	0	0%
Forestry / timber / bark / by-products	7,967	4%	7,130	2%	0	0%	900	<1%	0	0%
Food waste from retailers / catering establishments	517	<1%	0	0%	500	<1%	0	0%	0	0%
Food waste from other commercial establishments	0	0%	0	0%	5,500	2%	0	0%	0	0%
Food waste from industrial establishments	7,113	4%	0	0%	41,000	14%	0	0%	0	0%
Other non municipal waste - please specify	2,256	1%	30,310	8%	8,472	3%	0	0%	31,000	36%
Total non municipal waste	20,153	11%	62,969	16%	71,502	24%	8,100	2%	31,000	36%
Total	191,826	100%	399,732	100%	299,680	100%	351,600	100%	85,280	100%

Appendix 4

National and regional manufacture of compost products

National and regional manufacture of compost products

The quantities of compost products manufactured from source segregated wastes in each of the countries of the UK in 2008/09 by survey respondents are shown in Table A4.1 below. The proportion that each product makes up of the total produced is also

shown. The quantities have not been grossed up to allow for survey non respondents.

Table A4.2 shows the quantities of different compost products manufactured in the English regions by survey respondents and the proportion that each product type made up of the total produced in 2008/09.

Table A4.1 Compost products manufactured by survey respondents in UK countries, 2008/09

	England	Northern Ireland	Scotland	Wales
	Quantity (tonnes)			
Soil conditioner	984,231	48,000	111,146	18,252
Mulch	67,725	0	1,027	1,781
Topsoil/subsoil	45,714	0	25,062	1,250
Growing medium	87,977	0	0	0
Turf (top) dressing	24,212	0	0	750
Solid biofertilizer from digestate product	2,000	0	0	0
Concentrated liquid fertilizer from digestate product	0	0	0	0
Other	4,300	0	6,549	46
Total	1,216,159	48,000	143,784	22,079
	Proportion (%)			
Soil conditioner	81%	100%	77%	83%
Mulch	6%	0%	1%	8%
Topsoil/subsoil	4%	0%	17%	6%
Growing medium	7%	0%	0%	0%
Turf (top) dressing	2%	0%	0%	3%
Solid biofertilizer from digestate product	<1%	0%	0%	0%
Concentrated liquid fertilizer from digestate product	0%	0%	0%	0%
Other	<1%	0%	5%	<1%
Total	100%	100%	100%	100%

Table A4.2 Compost products manufactured by survey respondent in the regions of England, 2008/09

	East Midlands	East of England	London	North East	North West	South East	South West	West Midlands	Yorkshire & The Humber
	Quantity (tonnes)								
Soil conditioner	138,701	182,719	10,800	50,100	97,796	158,424	94,645	190,550	60,496
Mulch	5,870	6,300	0	0	0	40,516	12,489	2,550	0
Topsoil/subsoil	8,749	200	0	13,000	2,966	6,200	12,599	2,000	0
Growing medium	27,270	17,860	0	10,100	10,680	10,508	4,759	6,800	0
Turf (top) dressing	0	0	0	0	0	3,012	21,200	0	0
Solid biofertilizer from digestate product	0	0	0	0	0	0	0	2,000	0
Concentrated liquid fertilizer from digestate product	0	0	0	0	0	0	0	0	0
Other	2,500	1,800	0	0	0	0	0	0	0
Total	183,090	208,879	10,800	73,200	111,442	218,660	145,692	203,900	60,496
	Proportion (%)								
Soil conditioner	76%	87%	100%	68%	88%	72%	65%	93%	100%
Mulch	3%	3%	0%	0%	0%	19%	9%	1%	0%
Topsoil/subsoil	5%	<1%	0%	18%	3%	3%	9%	1%	0%
Growing medium	15%	9%	0%	14%	10%	5%	3%	3%	0%
Turf (top) dressing	0%	0%	0%	0%	0%	1%	15%	0%	0%
Solid biofertilizer from digestate product	0%	0%	0%	0%	0%	0%	0%	1%	0%
Concentrated liquid fertilizer from digestate product	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	1%	1%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix 5

Compost product distribution – the national and regional picture

Compost product distribution in the UK and the English regions

Table A5.1 shows how compost products were distributed in the UK countries in 2008/09. The quantities are not grossed up to allow for survey non respondents.

It can be seen in Table A5.1 that in Scotland a higher proportion, 46%, of compost was sold directly to end users compared with 34% for England, and 33% for Wales. More compost was sold to third parties in England and Wales. This indicates less blending to

make compost products in Scotland than in England. Unlike the result of 2007/08 when all the compost in Northern Ireland (100%) was used on the site of production, in 2008/09, 70% was sold to third parties and the remaining 30% was sold directly to end users.

Table A5.2 shows how compost products produced in the different regions of England by survey respondents were distributed in 2008/09. Again, there has been no grossing up of the quantities to allow for survey non respondents.

Table A5.1 Compost product distribution in the UK countries, 2008/09

	England	Northern Ireland	Scotland	Wales
	Quantity (tonnes)			
Sold directly to end users	416,556	14,550	66,663	7,296
Sold on to third parties	232,726	33,450	23,806	1,251
Distributed (no charge)	249,233	0	22,005	4,513
Used on site	298,780	0	27,995	9,020
Other	18,863	0	3,315	0
Total	1,216,158	48,000	143,784	22,080
	Proportion (%)			
Sold directly to end users	34%	30%	46%	33%
Sold on to third parties	19%	70%	17%	6%
Distributed (no charge)	20%	0%	15%	20%
Used on site	25%	0%	19%	41%
Other	2%	0%	2%	0%
Total	100%	100%	100%	100%

Table A5.2 Compost product distribution for survey respondents for compost produced in each region of England, 2008/09

	East Midlands	East of England	London	North East	North West	South East	South West	West Midlands	Yorkshire & The Humber
Quantity (tonnes)									
Sold directly to end users	82,670	63,800	900	46,392	65,360	71,954	41,080	44,400	0
Sold on to third parties	34,470	44,360	0	13,558	6,300	49,602	26,236	58,200	0
Distributed (no charge)	22,100	52,750	8,100	0	15,632	7,615	15,540	67,000	60,496
Used on site	26,850	47,419	1,800	13,250	24,150	89,489	61,522	34,300	0
Other	17,000	550	0	0	0	0	1,313	0	0
Total	183,090	208,879	10,800	73,200	111,442	218,660	145,691	203,900	60,496
Proportion (%)									
Sold directly to end users	45%	31%	8%	63%	59%	33%	28%	22%	0%
Sold on to third parties	19%	21%	0%	19%	6%	23%	18%	29%	0%
Distributed (no charge)	12%	25%	75%	0%	14%	3%	11%	33%	100%
Used on site	15%	23%	17%	18%	22%	41%	42%	17%	0%
Other	9%	<1%	0%	0%	0%	0%	1%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Appendix 6

Markets for composted products – the national and regional picture

Markets for composted products in 2008/09 in UK countries and English regions

England, Scotland and Wales had more than 50% of composted products going to agriculture with 69%, 55% and 54% respectively. The majority of the composted products (68%) in Northern Ireland went to horticulture – amateur. Wales had a much higher proportion (28%) of composted products going in Landfill restoration/daily cover than the rest countries.

Scotland and Wales had relatively higher percentages of composted products going to land restoration with 24% and 15% respectively than England and Northern Ireland.

Table A6.2 shows the quantities of compost product going into the different markets for the English regions.

Table A6.1 Markets for composted products in UK countries, 2008/09

	England		Northern Ireland		Scotland		Wales	
	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total
Agriculture	762,419	69%	1,500	3%	61,342	55%	10,300	54%
Horticulture - professional	70,306	6%	1,500	3%	2,672	2%	1	<1%
Horticulture - amateur	98,983	9%	32,700	68%	3,965	4%	148	1%
Landscaping	133,450	12%	7,800	16%	32,816	30%	3,389	18%
Sports turf	20,826	2%	0	0%	1,550	1%	0	0%
Landfill restoration / daily cover	21,138	2%	4,500	9%	8,549	8%	5,320	28%
Energy recovery	3,300	<1%	0	0%	0	0%	23	<1%
Forestry	420	<1%	0	0%	0	0%	0	0%
Land restoration	66,352	6%	0	0%	26,635	24%	2,898	15%
Other - please specify	27,965	3%	0	0%	4,255	4%	0	0%
Total	1,110,842	100%	48,000	100%	110,894	100%	19,181	100%

Table A6.2 Regional breakdown of markets for composted products manufactured in the English regions, 2008/09

	East Midlands		East of England		London		North East	
	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total
Agriculture	126,860	75%	143,032	71%	8,100	75%	36,992	58%
Horticulture - professional	7,136	4%	34,990	17%	0	0%	9,420	15%
Horticulture - amateur	15,375	9%	5,765	3%	2,700	25%	5,400	8%
Landscaping	19,054	11%	9,552	5%	0	0%	5,000	8%
Sports turf	0	0%	3,000	1%	0	0%	0	0%
Landfill restoration / daily cover	0	0%	4,090	2%	0	0%	7,388	12%
Energy recovery	0	0%	1,800	1%	0	0%	0	0%
Forestry	0	0%	0	0%	0	0%	0	0%
Land restoration	7,200	4%	6,650	3%	0	0%	9,000	14%
Other - please specify	7,465	4%	0	0%	0	0%	0	0%
Total	168,425	100%	202,229	100%	10,800	100%	64,200	100%

Table A6.2 (continued) Regional breakdown of markets for composted products manufactured in the English regions, 2008/09

	North West		South East		South West		West Midlands		Yorkshire & Humber	
	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total	Tonnes	% of total
Agriculture	63,922	62%	120,614	66%	63,903	51%	138,500	72%	60,496	100%
Horticulture - professional	900	1%	2,220	1%	15,640	12%	0	0%	0	0%
Horticulture - amateur	9,000	9%	11,062	6%	6,281	5%	43,400	22%	0	0%
Landscaping	14,580	14%	44,060	24%	31,704	25%	9,500	5%	0	0%
Sports turf	12,900	13%	2,882	2%	2,044	2%	0	0%	0	0%
Landfill restoration / daily cover	1,440	1%	2,100	1%	6,120	5%	0	0%	0	0%
Energy recovery	0	0%	0	0%	0	0%	1,500	1%	0	0%
Forestry	0	0%	420	0%	0	0%	0	0%	0	0%
Land restoration	8,700	8%	34,802	19%	0	0%	0	0%	0	0%
Other - please specify	0	0%	500	0%	20,000	16%	0	0%	0	0%
Total	102,742	100%	183,358	100%	125,692	100%	192,900	100%	60,496	100%

Appendix 7

Unused composting capacity in 2008/09 and additional composting capacity becoming available regionally and nationally

Unused composting capacity in 2008/09 and additional composting capacity becoming available regionally and nationally

Table A7.1 shows unused composting capacity in 2008/09, and definite new capacities becoming

available during the next five years for the UK countries, and for the English regions. The capacities have not been grossed up to allow for survey non respondents.

Table A7.1 Unused composting capacity in the UK, 2008/09 and definite new capacity becoming available during the next five years

	2008/09 unused source segregated capacity (000' tonnes)	2008/09 unused mixed waste capacity (000' tonnes)	Definite new capacity during next 5 years		Totals (000' tonnes)
			Source segregated at existing sites (000' tonnes)	Non source segregated at existing sites (000' tonnes)	
England					
East Midlands	130	0	93	0	223
East of England	214	35	181	0	430
London	21	40	46	0	107
North East	89	20	10	0	119
North West	61	0	40	0	101
South East	144	0	29	0	173
South West	235	5	30	85	355
West Midlands	131	0	105	0	236
Yorkshire & the Humber	77	0	0	0	77
England total	1,102	100	534	85	1,821
Wales	52	17	0	0	69
Scotland	152	6	43	12	213
Northern Ireland	26	0	0	0	26
Total	1,332	122	577	97	2,128

Appendix 8

Technical memorandum on survey data gross-up methodology

March 2010

Different assumptions and approximations have been used to gross up the survey results to represent the UK over the three year period 2005/06 to 2008/09. This memo sets out a proposed standardised method for grossing up the survey results to be used consistently from 2007/08 into the future.

The gross-up method relies on national municipal waste data derived from Waste Data Flow (WDF), as the definitive measure of the total quantity of organic municipal waste that is processed either by composting, through mechanical biological treatment (MBT) or through anaerobic digestion (AD). Waste Data Flow is the web based system for local authority waste data reporting to government in the UK.

The problem lies in deciding how to apportion the organic municipal waste reported via Waste Data Flow to the source segregated municipal and mixed municipal waste inputs to the organic waste treatment industry derived from the survey. This is summarised in the Table A8.1.

Over the years, different assumptions have been made in relation to this. The main difficulty relates to unspecified source segregated waste (row 1c) and mixed waste from municipal sources (row 2a). This is because WDF does not provide definitive information to link the quantities of municipal collected organic waste with the disposal routes of composting and MBT/AD.

Table A8.1 Distribution of source segregated and mixed organic waste

Primary waste flow route	Data from survey	Data covered by WDF
1. Source segregated organic waste inputs to composting processes	1a. Municipal sources	Yes
	1b. Non-municipal sources	No
	1c. Unspecified	(Some?)
2. Mixed waste inputs to MBT or AD processes	2a. Municipal sources	(Some?)
	2b. Non-municipal sources	No

Proposed method for unspecified source segregated waste sources as inputs to composting processes

In future it is proposed that where respondents to the producer survey report 'unspecified' sources of source segregated organic waste inputs to composting processes, these should be apportioned between municipal and non-municipal sources in proportion to the ratio found from the producers that do report these separate sources. This will remove the need to make adjustments later in the calculation.

Proposed method for municipal mixed waste sources as inputs to MBT/AD processes

The growing area of municipal mixed waste sources of MBT/AD inputs is the more problematic of the two. WDF provides data on separately collected organic waste in terms of two material categories: 'green waste only' and 'other compostable waste'. It is assumed that all 'green waste only' tonnages go exclusively to composting processes as this is where the higher value

lies. The tonnages reported under 'other compostable waste' are likely to be lower grade material, food waste and mixed food and garden waste. While most will also go to composting processes, it appears (from discussion with Defra statisticians, the WDF consultancy firm and knowledge of the industry) that some low grade fractions of separately collected 'other compostable waste' may end up in the mixed waste feedstock going to MBT/AD (i.e., row 2a in table above). However, the proportion ending up in the mixed waste feedstock is unknown and a method of approximation is therefore required. Based on knowledge of the industry and in the absence of any definitive data it is assumed that 10% of the tonnage arisings separately collected 'other compostable' municipal sources is added to the residual inputs and therefore goes to MBT or AD. Conversely it is assumed that 90% of the tonnage classified as 'other compostable' municipal waste in WDF is still going to composting processes.

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