

# The State of Composting 1999

*Results of The Composting Association's survey of UK  
composting facilities and collection systems in 1999*

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This survey was carried out by Rachel Slater from the Integrated Waste Systems research group at The Open University. The survey forms part of a wider research programme funded by the Economic and Social Research Council and Shanks.Waste Solutions.

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## **Executive Summary**

This report presents the findings of the 1999 Composting Association's survey of the UK composting industry. The survey was carried out during 2000, and covers the period from January to December 1999. This third annual survey is the most comprehensive undertaken to date, and includes current and future composting activities, site licensing and planning, collection systems, markets and end-use for the composted material and home composting. Postal questionnaires were distributed to 685 interested parties, and 388 responses were received, a response rate of 57%.

### ***Composting – operators, sites and material composted***

The overall picture for composting in the UK is one of continued expansion. Over the last five years the number of operational centralised sites has grown, on average, by around 25% per annum. From 1998 to 1999 the increase in throughput was around 23%, and a similar growth is predicted for 1999 to 2000.

The results showed that in 1999 there were a total of 90 operators running 197 sites, processing approximately 833,044 tonnes of material. The sites have been classified into three different types, comprising:

- 62 operators running 80 centralised sites processing 765,155 tonnes;
- 18 co-ordinators/operators running 65 on-farm sites processing 66,401 tonnes; and
- 10 co-ordinators/operators running 52 community sites processing 1,488 tonnes.

The vast majority of all three site types were based in England. The geographical location of the different types of sites were:

- England 67 centralised sites, 63 on-farm sites, 52 community sites;
- Wales 2 centralised sites, 1 on-farm site, 1 community site;
- Scotland 4 centralised sites, 1 on-farm site;
- N.Ireland 5 centralised sites; and
- Jersey<sup>3</sup> 2 centralised sites.

As the EU Landfill Directive applies to biodegradable municipal waste<sup>4</sup> for the whole UK, and separate policies for England and Wales, Scotland and Northern Ireland target household waste, this report includes details of both waste streams for the UK as a whole, and for each UK domain. Of the 833,044 tonnes composted in the UK, approximately 74% came from municipal sources and 26% came from non-municipal sources. Sites based in England processed 92% of all material composted in the UK.

Of the 618,517 tonnes of municipal waste composted in the UK, 72% was garden waste from bring sites, 17% was green waste from Local Authority parks and gardens, 7.5% was collected from the kerbside, and the remainder came from other non-household sources. Sites based in England processed 93% of all municipal waste composted in the UK.

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<sup>3</sup> The sites in Jersey are members of the Association, and as they have been included in previous surveys, they are included here for consistency. However, the Landfill Directive is not applicable to Jersey as it is not part of the UK.

<sup>4</sup> Municipal waste has been classified as waste collected by Local Authorities or contractors acting on their behalf, and includes household and non-household waste.

The 618,517 tonnes of municipal waste was comprised of 80% (493,520 tonnes) household waste<sup>5</sup> and 20% (124,997 tonnes) non-household waste<sup>6</sup>. Around 91% of household waste composted was garden waste from bring sites, and 9% was collected from the kerbside. Sites based in England processed 94% of all household waste composted in the UK.

Results showed the expansion of the composting industry has been largely based upon small scale centralised sites, and relatively unsophisticated composting processes. The most common centralised site processed between 5,000-6,000 tonnes. Mechanically turned open-air windrows processed 88% of all material handled at centralised sites, mechanically turned covered windrows processed 4%, and in-vessel systems processed 4.5%.

The survey identified 27 new sites expected to come into operation, 15 of these had secured planning and licensing and were awaiting commission, 2 had secured planning and were awaiting licence approval, 7 were awaiting planning permission, and 3 were trial sites. These new sites had an expected aggregated throughput of 190,600 tonnes, and over half the sites were expecting to process less than 7,000 tonnes per site per annum. In addition to new sites, around 75% of operators running sites in 1999 said they had plans to increase composting activity at their sites, and around 40% said they wanted to increase the amount of kitchen waste composted. Aside from new and expanding composting sites, ten respondents expressed interest in mechanical and biological treatment of unsorted waste. Two of these had secured planning and licensing and were awaiting commission, three had secured planning and were awaiting licensing approval, one was undertaking trials and four were at the speculative stage.

### ***Collection Systems***

#### **Municipal organic waste from bring sites (civic amenity sites)**

The survey identified 447,044 tonnes of garden waste collected from 396 bring sites across the UK. Around 29% of respondents who operated sites said they had plans to open additional bring sites for organic waste. Approximately 75% of sites said they accepted only household garden waste, and 25% said they accepted household garden waste and Local Authority parks and garden waste. Around 72% of municipal waste composted in the UK came from bring sites.

#### **Kerbside collection of household organic waste**

The survey identified 45 schemes that collected around 46,100 tonnes of segregated organic waste from the kerbside. Of these schemes, 37 were operated by Local Authorities, and accounted for 93% of material collected. Around 36% of schemes collected garden waste only, 53% collected garden and kitchen (uncooked) waste, 8% collected garden, kitchen (cooked and uncooked) waste, and 3% collected kitchen (cooked and uncooked) only.

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<sup>5</sup> Household waste includes green waste from bring sites and organics separated for kerbside collection.

<sup>6</sup> Non-household waste includes green waste from Local Authority parks and gardens.



The survey asked about participation criteria and found that around 60% of schemes run by Local Authorities were run on a voluntary 'opt-in' basis, and 40% were run on an 'opt-out' basis. Results showed that, on average, 'opt-out' schemes tended to have a higher number of participants and collected slightly more per participating household.

The number of kerbside collection schemes for household organics is set to rise; 63 Local Authority respondents and three non-Local Authority respondents who were not running schemes in 1999 said they had plans to implement a scheme.

### ***Markets and end-use of composted products***

In previous surveys, obtaining information on composted products and end-use has proved difficult, largely due to commercial sensitivity. To help address this problem in the 1999 survey, questions on product type and quantities produced were clearly separated from questions on end-use and distribution. Virtually all producers completed the product type and quantity section, whilst around one-third did not complete the more sensitive end-use section.

Results showed that around 462,700 tonnes of composted material was produced in 1999, approximately one-third of this was mulch, one-third was soil conditioner, and the remaining third comprised landfill cover, land remediation material, growing media and topsoil.

Respondents provided information on end-use and distribution for approximately 75% of the composted material produced. Responses showed that 57% of composted material was sold, 29% was used on-site and 14% was distributed without charge. Of the material sold, 75% was sold in bulk and 25% was bagged.

### ***Home composting***

Around 75% of Local Authorities that responded to the survey promoted home composting during 1999, and virtually all promotions involved a scheme to supply home composting units. Respondents estimated that during 1999 they supplied around 258,000 composting units, and that prior to 1999 around 600,000 units had been distributed. Around 70% of units were offered to the public at subsidised costs, 17% were offered free of charge and 13% were offered at full cost.

The survey asked about the type of communication method employed to promote home composting. All respondents used more than one type of method, leaflets to households and local media were the most popular methods, and home visits were the least popular.

Results reinforced the problem of monitoring the effectiveness of home composting. Approximately 40% of Authorities that promoted home composting had not undertaken any monitoring or assessment of their scheme. Of the 60% that had undertaken some monitoring, around two-thirds relied on questionnaires completed by householders.

### ***Problems encountered and comments made***

Respondents were given the opportunity to raise any problems or issues they felt the Association should be aware of. Difficulties with obtaining planning permission and obtaining and complying with a waste management licence were the two main areas highlighted by current and potential composters. In particular the main concerns reported include the time taken to process planning and licensing applications, lack of suitable sites, and rigid licensing conditions. Other issues raised were markets for compost, composting standards, raising public awareness and composting research.

# 1 Introduction

## 1.1 *Background to the survey*

The Composting Association acts as the voice for composting in the UK, providing specialist information and advice to practitioners, regulatory authorities and UK and EU governmental bodies. It is essential that the decisions made by these bodies are based upon up-to-date and accurate information, coming from those who make strategic provision for composting and those who wish to compost. This report presents the results of the third annual Composting Association survey. This is the most comprehensive survey undertaken of the composting industry in the UK to date, and was carried out with the support of the former Department of the Environment, Transport and the Regions (DETR).

Over the last two years the content of the survey has expanded from a two-page questionnaire designed to give an overview of the composting industry, to a 23-page questionnaire designed to reveal a more in-depth and detailed picture. The 1999 survey covered current composting operations and future plans, site licensing and planning, collection systems, markets and end-use for the composted material and home composting.

Results showed that the overall picture for composting in the UK is one of continued growth. One of the key challenges facing the industry over the next few years is the continued expansion required to provide an alternative to landfill for biodegradable waste to contribute to national statutory recycling and composting targets and EU Landfill Directive obligations.

## 1.2 *Outline of the report*

Section 2 of this report outlines the relevant policy and legislative context, briefly discussing the EU *Landfill Directive*, national waste strategies and targets, and the EC Working Document on the *Biological Treatment of Biowaste*. Section 3 details the survey distribution and respondents. The main body of this report is contained in Section 4 which details the composting results. This section opens with the results for all composting activity in the UK, and then details this activity for England, Wales, Scotland and Northern Ireland. Section 4 then examines centralised, on-farm and community composting, and concludes with future composting plans. Section 5 details the results of collection systems for organic waste, looking at bring systems and kerbside collections. Section 6 presents the results for markets and end-use of composted products, looking at the quantity, type and distribution of products. Section 7 details home composting promotions, Section 8 details problem areas and comments made, and Section 9 presents the conclusions.

## 2 Policy and legislative context

### 2.1 EU Landfill Directive

The EU Landfill Directive (99/31/EC) came into force in the EU on 16 July 1999, and should be transposed into UK national law by 16 July 2001. The Directive places strict regulatory controls over landfilling, requiring all waste to be pre-treated prior to landfill and ceasing the longstanding UK practice of co-disposal. Included in the main Directive requirements are the mandatory targets for the successive reduction of the amount of biodegradable municipal waste going to landfill. For the UK, the amount of biodegradable municipal waste that can be disposed of to landfill must be reduced to:

- 75% of the amount produced in 1995, by 2010;
- 50% of the amount produced in 1995, by 2013; and
- 35% of the amount produced in 1995, by 2020.

Translating these targets into actual quantities to be diverted from landfill introduces problems due to the uncertainty of municipal waste composition and growth in waste arisings. Table 1 contains a range of diversion estimates that reflect the uncertainty of municipal waste composition, assuming that 29 million tonnes of municipal waste was produced in the UK in 1995, and that waste arisings increase by 3% per annum from 1995.

Table 1 - Estimates of the quantities of biodegradable municipal waste, and organic waste, to be diverted from landfill to meet the Landfill Directive targets

Year	Total biodegradable municipal waste to be diverted from landfill (million tonnes per annum)	Organic fraction (garden and kitchen waste) to be diverted from landfill (million tonnes per annum)
2010	12.4-15.5	4.9-7.7
2013	18.5-21.9	7.3-10.9
2020	26.8-31.0	10.6-15.5

Assumptions made in calculations for Table 1:

- the biodegradable fraction remains constant and is assumed to be between 53-60%
- the organic fraction (garden and kitchen) ranges from 20-30%
- the Landfill Directive targets apply equally to each biodegradable municipal waste type.

## **2.2 UK Policy context: national targets**

### **2.2.1 Waste Strategy 2000 - England and Wales**

*Waste Strategy 2000* (DETR 2000) delivers the Government's and the National Assembly for Wales's vision for sustainable waste management in England and Wales, and the changes needed to move towards this vision. In response to the Landfill Directive targets, the strategy sets out the following challenging targets for the recycling and composting of household waste:

- To recycle or compost at least 25% of household waste by 2005;
- To recycle or compost at least 30% of household waste by 2010;
- To recycle or compost at least 33% of household waste by 2015.

Current levels of recycling and composting activities will need to expand dramatically to meet these targets. According to the latest statistics from the former DETR (2001a) the household waste recycling and composting rate has increased from 8.8% in 1998/99 to 10.3% in 1999/00<sup>7</sup>, comprising approximately 7.7% from recycling and 2.6% from composting<sup>8</sup>.

Underpinning these national targets are statutory recycling and composting performance standards for Local Authorities. The former DETR's *Guidance on Municipal Waste Management Strategies* (2001b) lists the statutory individual performance standard for each Local Authority in England. The National Assembly is considering measures appropriate for Welsh Authorities and will outline these in a draft strategy for Wales, which is due to be published during 2001.

### **2.2.2 National Waste Strategy - Scotland**

*National Waste Strategy: Scotland*, published by the Scottish Environment Protection Agency (SEPA) in December 1999, sets out a framework for moving towards waste minimisation and sustainable waste management in Scotland. Central to the Strategy is the creation of 11 Waste Strategy Areas (WSA), which are developing their own Area Waste Plans to set out the measures necessary to deliver the Strategy. In line with the principles of proximity and self-sufficiency, WSAs are intended to promote innovative local solutions wherever possible.

The Strategy sets out some aspirational targets, including a reduction in municipal waste arising of 1% per annum, while suggesting the development of other targets. The Strategy proposes that the Landfill Directive targets will be incorporated into future legislation which will be subject to consultation as it is developed.

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<sup>7</sup> The former DETR's recycling and composting rate for 1999/00 is taken from the provisional *Municipal Waste Management Statistics 1999/00* which are subject to revision. A full report is expected to be published in 2001.

<sup>8</sup> This current composting rate refers to centralised, on-farm or community composting, it does not include home composting.

### 2.2.3 Waste Management Strategy - Northern Ireland

*Waste Management Strategy: Northern Ireland* was published by the Environment and Heritage Service in March 2000. The Strategy proposes various initiatives to develop markets for recycled material from key waste streams, including the development of markets for composts. Greater waste regulation and enforcement is also a key element.

The major goals of the strategy are primary targets for reduction, recycling and recovery. These primary targets include:

- Recover<sup>9</sup> 25% of household waste by 2005;
- Recover 40% of household waste by 2010, of which 25% shall be recycling or composting;
- Reduce the quantities of biodegradable municipal wastes being landfilled to 75% of 1995 baseline levels by 2010, 50% by 2013, and 35% by 2010 (in line with Landfill Directive targets).

At present these targets are only provisional and aspirational. The Strategy proposes that after further analysis and consultation to establish that the proposed targets are achievable, they shall become mandatory at the first statutory review point in 2003.

### **2.3 EC Working Document - Biological Treatment of Biowaste**

In February 2001, the European Commission's Sustainable Development and Policy Support Directorate published a 2<sup>nd</sup> draft working document on the *Biological Treatment of Biowaste*. The working document is intended to promote discussion between Member States and will evolve into proposed EU legislation for the management of biodegradable waste. The document aims to provide a framework to promote the production of good quality composts that can be marketed without restrictions, whilst placing constraints on lower grade materials. The 2<sup>nd</sup> draft suggests a three grade classification, distinguishing between two grades of 'compost', and a third classification for 'stabilised biodegradable waste'.

The document proposes a hierarchy for the management of biodegradable wastes that places composting or anaerobic digestion of separately collected biodegradable waste above both mechanical/biological treatment and the use of biodegradable waste as a source for generating energy. The document encourages home composting, community composting and on-site composting, particularly that Local Authorities be encouraged to compost their own green waste from parks, gardens and cemeteries.

In addition, the document states that Member States 'shall set up separate collection schemes with the aim of collecting biowaste separately from other kinds of waste'. In particular, these schemes shall collect food waste (from households, restaurants, canteens, schools and public buildings), biowaste (from markets, shops and small businesses and other commercial and industrial sources) green and wood waste (from private and public parks and gardens). At this stage in the discussions it is not clear whether the proposals intend to encourage, or make obligatory, separate collections.

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<sup>9</sup> Recover includes recycling, composting and energy recovery.

EU legislation is a lengthy process, and it is likely to be some time before this working document evolves into legislation. However, according to its work programme, the Commission is due to propose legislation in 2001. It has been suggested that proposed legislation could emerge as two directives; one prioritising the EU internal market for a composted product, and one stressing environmental protection for stabilised waste (ENDS Daily, 2001).

#### ***2.4 The Animal By-Products (Amendment) Order 2001***

Following recent epidemics of both swine fever and foot and mouth disease in the UK, the interpretation of the 1999 Animal By-Products Order and the 2001 Amendment by the former Ministry of Agriculture, Fisheries and Food (MAFF), restrictions on the composting of catering waste (which includes household organic wastes) will be made. This will not affect green waste only facilities. This report does not consider the possible restrictions arising from the Amendment Order as the analysis and discussion were conducted prior to the Amendment. At the time of publication it was not clear what these restrictions will be. The Association will keep members informed as the dialogue continues and issues are clarified.

### 3 Distribution and respondents

A total of 685 questionnaires were distributed by post throughout the UK during July 2000. The distribution was categorised into Local Authorities, commercial companies and Not for Profit groups.

Of the 685 questionnaires, 475 were distributed to all Waste Collection Authorities, Waste Disposal Authorities and Unitary Authorities in the UK, which comprised of 395 in England, 22 in Wales, 32 in Scotland and 26 in Northern Ireland.

A total of 157 questionnaires were sent to trade organisations, 120 of these were Composting Association producer or selected trade members, and 37 were non-member water companies or waste management companies.

A total of 53 questionnaires were sent to Not for Profit groups, 31 of these were Composting Association members and 22 were members of the Community Composting Network.

Of the 685 questionnaires distributed, a total of 388 responses were received, representing a response rate of 57%, almost three times the response rate of the previous year. This increase in response rate is likely to be due to the comprehensive follow up and more appropriate survey design and distribution. A breakdown of questionnaire distribution and response by country and organisation type is given in Table 2.

Table 2 - Questionnaire distribution and response

	England		Wales		Scotland		N.Ireland		Total	
	sent	received	sent	received	sent	received	sent	received	sent	received
<b>Council Authorities</b>	395	244	22	10	32	17	26	13	475	284
<b>Trade</b>	139	88	7	2	6	1	5	0	157	91
<b>Not for Profit</b>	42	11	4	1	7	1	0	0	53	13
<b>Total</b>	576	343	33	13	45	19	31	13	685	388

Respondents were promised confidentiality, therefore no names are given or sites identified in this report.



## **4 Composting**

### **4.1 UK Composting: operators, sites and material composted**

The overall picture for composting over the last decade in the UK is one of continued expansion. From 1998 to 1999 the increase in the amount of organic material composted was around 23%, and a similar growth in throughput is predicted for 1999 to 2000. According to respondent's activities in 1999 and their planned activities, the UK was on course to have composted one million tonnes of material during 2000.

This section presents the overall results for all site types in the UK, and then presents more detailed results for centralised, on-farm and community sites, before looking at planned future developments.

#### **4.1.1 Definition of centralised, on-farm and community sites**

Centralised composting sites bring in material for composting, or compost a mixture of material brought in and produced on site. They distribute the composted material off site and/or utilise it on site.

On-farm sites would be expected to operate on a scale small enough to be exempt from waste management licensing. They are located on farms and may compost a mixture of material brought into the site and material produced on site. On-farm sites are ideally placed to utilise the composted material on site.

Community sites would also be expected to operate on a scale small enough to be exempt from waste management licensing. Sites are operated by community groups or other Not for Profit organisations, and material for composting would usually be collected from the local vicinity.

Previous Association surveys identified an on-site category, which is classified as sites that only compost material produced on-site and utilise all composted material on-site. No sites in the 1999 survey satisfied these criteria.

#### **4.1.2 UK operators, sites and material composted**

The responses to the postal questionnaire indicated that in 1999 there were 90 operators running 197 sites in the UK. A total of 833,044 tonnes of material was composted from household, commercial and trade sources. The types of sites were categorised as centralised (65 operators, 80 sites), on-farm (18 operators, 65 sites) and community (10 operators, 52 sites). Table 3a gives a UK overview of the number and type of site, material composted and the number of operators. Table 3b then breaks down this overview into geographical regions.

Table 3a - UK total number of sites, operators, and material composted

UK	Site Type	No. of Operators	No. of Sites	Material composted (tonnes)	Proportion of the total material composted (%)
	Centralised	62	80	765,155	92
	On-Farm	18	65	66,401	8
	Community	10	52	1,488	<1
<b>UK Total</b>		<b>90</b>	<b>197</b>	<b>833,044</b>	<b>100</b>

Table 3b - Geographical breakdown of sites, operators and material composted

Country	Site Type	No. of Operators	No. of Sites	Material composted (tonnes)	Proportion of the total material composted (%)
England	Centralised	50	67	700,472	84
	On-Farm	16	63	65,886	8
	Community	9	51	1,392	<1
<b>England Total</b>		<b>75</b>	<b>181</b>	<b>767,750</b>	<b>92%</b>
Wales	Centralised	2	2	2,607	<1
	On-farm	1	1	315	<1
	Community	1	1	96	<1
<b>Wales Total</b>		<b>4</b>	<b>4</b>	<b>3,018</b>	<b>&lt;1</b>
Scotland	Centralised	4	4	10,292	1
	On-farm	1	1	200	<1
	Community	-	-	-	-
<b>Scotland Total</b>		<b>5</b>	<b>5</b>	<b>10,492</b>	<b>1</b>
Northern Ireland	Centralised	5	5	21,784	3
	On-farm	-	-	-	-
	Community	-	-	-	-
<b>Northern Ireland Total</b>		<b>5</b>	<b>5</b>	<b>21,784</b>	<b>3</b>
Jersey	Centralised	1	2	30,000	4
	On-farm	-	-	-	-
	Community	-	-	-	-
<b>Jersey Total</b>		<b>1</b>	<b>2</b>	<b>30,000</b>	<b>4</b>

Table 3b shows that 92% of all UK composting sites were situated in England, and that these sites handled 92% of the 833,044 tonnes composted in the UK.

Table 4 shows the increase in number of operators and sites from 1998 to 1999. For centralised sites, the increase in number of sites was greater than the increase in number of operators, showing that new operators entered the industry and existing operators increased the number of sites operated. The mean number of sites per operator in 1998 was 1.1 and in 1999 this increased to 1.4.

Table 4 - Composting operators and sites in 1998 and 1999

Site Type	Number of Operators		Number of Sites	
	1998	1999	1998	1999
Centralised	56	62	59	80
On-farm	7	18	11	65
Community	11	10	9	52
On-site	9	-	9	-
Miscellaneous	1	-	1	-
<b>Total</b>	<b>84</b>	<b>90</b>	<b>89</b>	<b>197</b>

A caveat needs considering when looking at the increase in the number of on-farm and community sites. The multiple site per operator/co-ordinator, and small scale nature of on-farm and community sites means that it is often difficult to obtain accounts of individual sites. In addition, the 1998 survey design prohibited small scale multiple site details, and multiple on-farm/community site respondents offered aggregated data which was largely analysed as one site per operator. The 1999 survey design allowed for multiple sites per operator and has gone some way to address this problem. Therefore, as well as new sites, some of the increase in on-farm and community sites from 1998 to 1999 should be attributed to recording multiple sites. It is also worth noting that because of the small diffuse nature of on-farm and community sites, there were probably more operational sites than recorded in the survey.

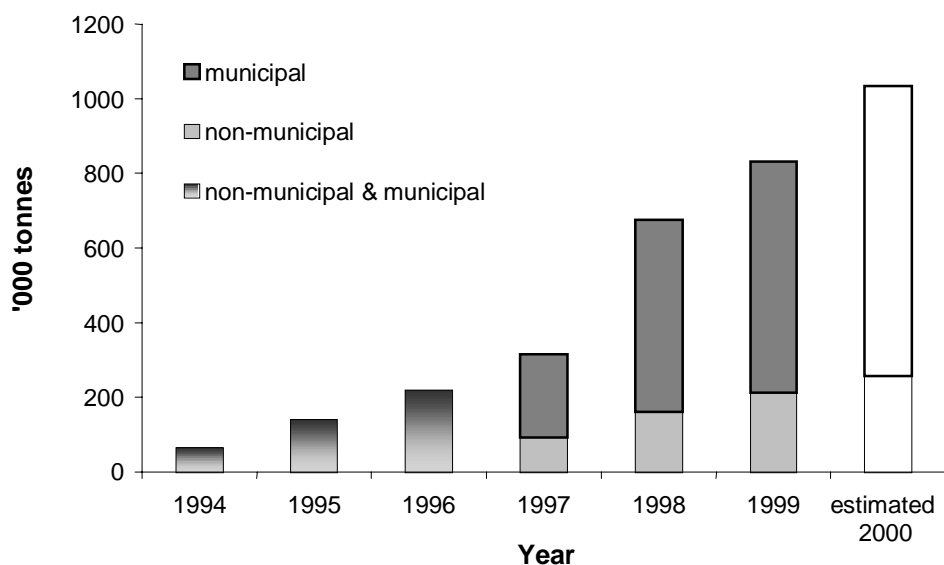
#### 4.1.3 Growth in material composted in UK

Although the formalised annual Composting Association survey has only been operational since 1997, the Composting Association has been collecting limited information on members' activities during the last decade.

Figure 1 illustrates the recorded growth in total material composted in the UK since 1994. Each bar in Figure 1 represents the total material composted in that year. Since 1997 the survey has been able to identify how much of the total material composted was municipal waste and this is indicated by the stacked bars for 1997 to 1999. In 1997, 71% of all material composted was municipal, rising to 75% in 1999. The white bar for 2000 illustrates predictions of growth taken from the planned activities reported by respondents, and shows that the UK was on course to have composted one million tonnes. Further details of future composting plans are given in Section 3.5.

Figure 1 shows that the 1999 survey recorded a total of 833,000 tonnes of material having undergone a managed composting process. Detailed question design revealed that, in addition to this total, there was an area of uncertainty where material was taken into sites but may have been subjected to processes other than managed composting, such as shredding prior to land application or marketing as mulch. This has led the Association to revisit and revise the 1998 figures, the revised estimate for material having undergone a managed composting process in 1998 is depicted in Figure 1.

Figure 1 - Growth in material composted in the UK



#### 4.1.4 Type of composting processes at UK sites

The types of composting processes identified in the survey are outlined in Table 5, which shows that the expansion of the industry has been based upon relatively unsophisticated composting processes, with 88% of material processed in open-air mechanically turned windrows, and a further 2% in static piles with no aeration. Only 4% of material was processed in covered or fully contained mechanically turned windrows, and 4.5% of material was processed using in-vessel technology. Although there has been a slight increase in the proportion of material composted using in-vessel systems, from 3% in 1998 to 4.5% in 1999, the overall reliance on open-air turned windrows continues the emphasis on relatively unsophisticated technology which has been observed over many years.

Table 5 - Type of composting process, all site types

Process Type	Number of Sites	Material Composted (tonnes)	% of Total T'put
Open-air mechanically turned windrow	121	736,529	88%
Covered/contained mechanically turned windrow	5	35,124	4%
In-vessel	7	32,717	4.5%
Open-air static pile with no aeration - Centralised	5	15,967	2%
Open-air static pile with no aeration - On-farm	3	630	<1%
Open-air static pile with no aeration - Community	23	751	<1%
Vermicomposting	1	250	<1%
Other centralised - 1 mixed, 1 not known	2	9,889	1%
Other - 2 not known, 28 community mixed	30	1,187	<1%
<b>Total</b>	<b>197</b>	<b>833,044</b>	<b>100%</b>

#### 4.1.5 Type and source of material composted at UK sites

The survey asked respondents to identify the types and quantities of waste they composted. Responses have been categorised as municipal and non-municipal waste. Municipal waste was classified as waste collected by Local Authorities or contractors acting on their behalf, and includes household and non-household waste. Household waste includes waste from civic amenity sites and collected from the kerbside. Non-household municipal waste includes Local Authority parks and garden waste and other commercial compostable waste collected by Local Authorities or their agents. Non-municipal waste includes commercial landscaping, and other commercial and industrial waste received from private contractors. Table 6a shows the source and quantities of waste composted by all site types in the UK.

Table 6a - Source and quantities of waste composted in UK, all site types

Country	Type of Waste	Quantity composted (tonnes)	Proportion of total UK material composted (%)	
<b>UK</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	447,044	53.6	72.3
	Garden/kitchen waste from kerbside	21,602	2.6	3.5
	Garden waste only from kerbside	24,530	3	4.0
	Other household	344	<1	<0.1
	Green waste from Local Authority parks and gardens	107,762	13	17.4
	Other non-household	17,235	2	2.8
<i>Total Municipal Waste Composted in UK</i>		<i>618,517</i>	<i>74.4</i>	<i>100</i>
<b>UK</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	21,438	2.6	10.0
	Industrial processes	136,303	16.3	63.8
	Agricultural activities	32,060	3.8	15.0
	Other non-municipal	23,939	2.9	11.2
<i>Total Non-municipal Waste Composted in UK</i>		<i>213,740</i>	<i>25.6</i>	<i>100</i>
	Type not specified	787	<0.1	
<b>Total Composted in UK in 1999</b>		<b>833,044</b>	<b>100</b>	

Table 6a shows that of the 833,044 tonnes composted in the UK, 618,517 (74%) was from municipal sources and 231,740 tonnes (26%) was from non-municipal sources. Comparing these figures with the adjusted 1998 figures shows that proportion of municipal and non-municipal waste composted has remained relatively static (around 75% and 25% respectively).

Of the 618,517 tonnes of municipal waste composted, 72% came from civic amenity sites, 17% came from Local Authority parks and gardens and only 7.5% was collected from the kerbside. The amount of garden waste from civic amenity sites as a proportion of municipal waste had increased from 67% in 1998 to 72% in 1999, and Local Authority parks and garden waste had decreased from 24% to 17%. However,

some respondents to the 1999 survey highlighted the difficulty in distinguishing between household garden waste from civic amenity sites and waste from Local Authority parks and gardens (when taken into civic amenity sites).

Interestingly, the proportion of waste collected from the kerbside remained relatively constant; 8% in 1998 and 7.5% in 1999. However, the proportion of *garden and kitchen waste* collected from the kerbside had decreased from 6% in 1998 to 3.5% in 1999, and the proportion of *garden waste only* collected had increased from 2% to 4%. This suggests that some kerbside collection schemes may have gone from collecting both kitchen and garden waste to collecting garden waste only, or that some garden and kitchen waste collection schemes have ceased (or collect less material), and new schemes collecting only garden waste have become operational during 1999. Unfortunately, lack of kerbside collection details for 1998 prohibits more detailed comparisons.

The UK figures presented in Table 6a have been dis-aggregated and presented for each UK domain in Tables 6b-6f. Table 6b shows that the overwhelming majority of composting took place in England, which managed 92% of all material composted in the UK (93% of all municipal waste and 89% of all non-municipal waste).

Table 6b - Type and quantities of waste composted at sites in England

Country	Type of Waste	Quantity composted (tonnes)	Proportion of UK total material composted (%)	
<b>England</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	421,178	50.5	68.1
	Garden/kitchen waste from kerbside	21,266	2.5	3.4
	Garden waste only from kerbside	23,112	3.0	3.7
	Other household	101	<0.1	<0.02
	Green waste from Local Authority parks and gardens	93,634	11.0	15.0
	Other non-household	17,173	2.0	2.7
<i>Total Municipal Waste Composted in England</i>		<i>576,464</i>	<i>69.0</i>	<i>92.9</i>
<b>England</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	21,438	2.5	10.0
	Industrial processes	125,303	15.0	58.6
	Agricultural activities	22,725	3.0	10.6
	Other non-municipal	21,233	2.5	9.9
<i>Total Non-municipal Waste Composted in England</i>		<i>190,699</i>	<i>23.0</i>	<i>89.1</i>
	Type not specified	587	<0.1	
<b>Total Composted in England</b>		<b>767,750</b>	<b>92</b>	

Table 6c - Type and quantities of waste composted at sites in Wales

Country	Type of Waste	Quantity composted (tonnes)	Proportion of UK total material composted (%)	
<b>Wales</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	645	<0.1	<0.1
	Garden/kitchen waste from kerbside	96	<0.01	<0.2
	Garden waste only from kerbside	-	-	-
	Other household	15	<0.01	<0.01
	Green waste from Local Authority parks and gardens	262	<0.1	<0.05
	Other non-household	-	-	-
<i>Total Municipal Waste Composted in Wales</i>		<i>1,018</i>	<i>0.1</i>	<i>0.2</i>
<b>Wales</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	-	-	-
	Industrial processes	2,000	<0.3	0.9
	Agricultural activities	-	-	-
	Other non-municipal	-	-	-
<i>Total Non-municipal Waste Composted in Wales</i>		<i>2,000</i>	<i>&lt;0.3</i>	<i>0.9</i>
<b>Total Composted in Wales</b>		<b>3,018</b>	<b>&lt;0.4</b>	

Table 6d - Type and quantities of waste composted at sites in Scotland

Country	Type of Waste	Quantity composted (tonnes)	Proportion of UK total material composted (%)	
<b>Scotland</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	5,911	0.7	0.96
	Garden/kitchen waste from kerbside	240	<0.3	<0.04
	Garden waste only from kerbside	1,418	<0.2	<0.3
	Other household	228	<0.1	<0.04
	Green waste from Local Authority parks and gardens	2,227	<0.3	0.36
	Other non-household	62	<0.01	<0.02
<i>Total Municipal Waste Composted in Scotland</i>		<i>10,086</i>	<i>1.2</i>	<i>1.6</i>
<b>Scotland</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	-	-	-
	Industrial processes	-	-	-
	Agricultural activities	-	-	-
	Other non-municipal	206	<0.1	<0.1
<i>Total Non-municipal Waste Composted in Scotland</i>		<i>206</i>	<i>&lt;0.1</i>	<i>&lt;0.1</i>
	Type not specified	200	<0.1	
<b>Total Composted in Scotland</b>		<b>10,492</b>	<b>&lt;0.1</b>	

Table 6e - Type and quantities of waste composted at sites in Northern Ireland

Country	Type of Waste	Quantity composted (tonnes)	Proportion of UK total material composted (%)	
<b>Northern Ireland</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	12,560	1.5	2.0
	Garden/kitchen waste from kerbside	-	-	-
	Garden waste only from kerbside	-	-	-
	Other household	-	-	-
	Green waste from Local Authority parks and gardens	4,889	0.6	0.8
	Other non-household	-	-	-
<i>Total Municipal Waste Composted in Northern Ireland</i>		<i>17,449</i>	<i>2.1</i>	<i>2.8</i>
<b>Northern Ireland</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	-	-	-
	Industrial processes	-	-	-
	Agricultural activities	4,335	0.5	2.0
	Other non-municipal	-	-	-
<i>Total Non-municipal Waste Composted in Northern Ireland</i>		<i>4,335</i>	<i>0.5</i>	<i>2.0</i>
<b>Total Composted in Northern Ireland</b>		<b>21,784</b>	<b>2.6</b>	

Table 6f - Type and quantities of waste composted at sites in Jersey

Country	Type of Waste	Quantity composted (tonnes)	Proportion of UK total material composted (%)	
<b>Jersey</b>	<b>Municipal</b>			% of UK municipal
	Garden waste from civic amenity sites	6,750	0.8	1.1
	Garden/kitchen waste from kerbside	-	-	-
	Garden waste only from kerbside	-	-	-
	Other household	-	-	-
	Green waste from Local Authority parks and gardens	6,750	0.8	1.1
	Other non-household	-	-	-
<i>Total Municipal Waste Composted in Jersey</i>		<i>13,500</i>	<i>1.6</i>	<i>2.2</i>
<b>Jersey</b>	<b>Non-municipal</b>			% of UK non-municipal
	Green waste from landscaping	-	-	-
	Industrial processes	9,000	1.1	4.2
	Agricultural activities	5,000	0.6	2.3
	Other non-municipal	2,500	0.3	1.2
<i>Total Non-municipal Waste Composted in Jersey</i>		<i>16,500</i>	<i>2.0</i>	<i>7.7</i>
<b>Total Composted in Jersey</b>		<b>30,000</b>	<b>3.6</b>	

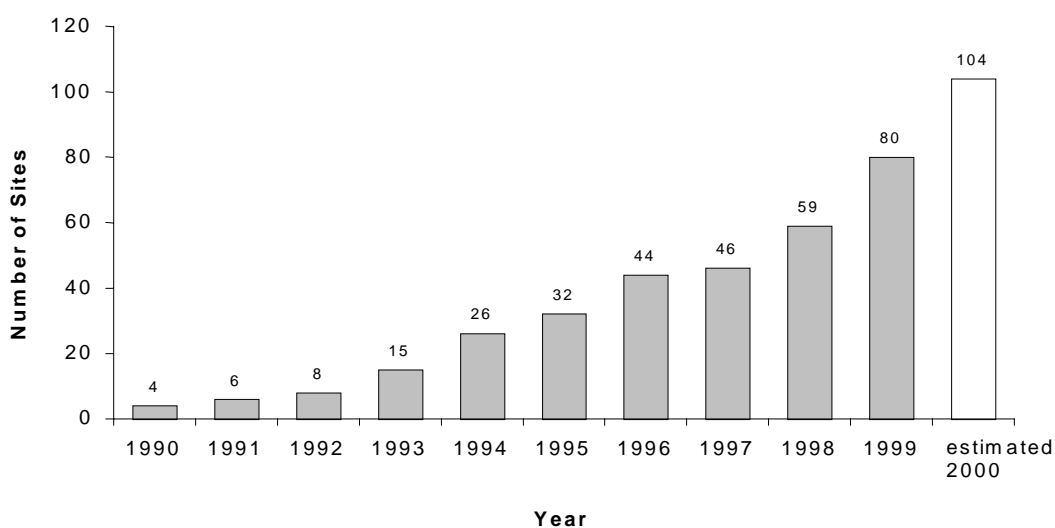


## 4.2 Centralised composting facilities

### 4.2.1 Number of centralised composting sites

In line with the increase in material composted, the number of centralised composting facilities rose from 56 operators running 59 sites in 1998, to 62 operators running 80 sites in 1999. Figure 2 shows the cumulative increase in the number of centralised sites over the last decade. From 1997 to 1998 the number of centralised sites increased by 28% and from 1998 to 1999 this increased to 35%. The white bar marked 2000 estimates growth in cumulative sites according to respondents' stated future plans, and this was expected to be around a 30% increase from 1999.

Figure 2 - Cumulative number of centralised composting sites



In terms of the composting sector diverting organic waste from landfill in the future, the role of centralised sites will be paramount, as in 1999 they handled 92% of all material composted in the UK (see Table 3). Figure 2 shows the overall picture for centralised sites is positive, with a relatively stable high rate of growth. However, this only accounts for the number of sites, the following section examines the size of sites.

### 4.2.2 Size of centralised composting sites

Table 7 shows the scale of operations at centralised sites for both 1998 and 1999. Although 1999 saw an increase in larger sites, in both 1998 and 1999 well over half the number of all centralised sites operated on a small scale, processing 7,000 tonnes of material or less. The most common centralised site size recorded in 1999 processed between 5,000 - 6,000 tonnes.

Table 7 - Throughput at centralised composting sites in 1998 and 1999 in the UK

Throughput at individual sites (tonnes)	Number of sites		Proportion of sites (%)		Throughput (tonnes)		Proportion of throughput (%)	
	1998	1999	1998	1999	1998	1999	1998	1999
<7,000	38	45	64%	56%	102,735	158,909	17%	21%
7,001<14,000	7	14	12%	13%	75,860	143,882	13%	19%
14,001<21,000	6	11	10%	14%	106,710	179,754	18%	23%
>21,001	8	10	14%	12%	316,890	282,610	52%	37%
Total	59	80	100%	100%	602,195	765,155	100%	100%

Table 7 shows the total material composted by each throughput category in 1998 and 1999, and shows this throughput as a proportion of total throughput managed at centralised sites. In 1998, 64% of sites were in the small scale category, composting 7,000 tonnes or less per site. When the individual throughputs for these sites were aggregated, they only processed 17% of total material composted. Although 1999 saw an increase in the proportion of larger sites, the emphasis on small sites continued, with 56% of sites composting 7,000 tonnes or less, and processing 21% of total material. If composting is to offer a viable alternative for diverting large quantities of waste from landfill, it could be argued that this could be more easily achieved by placing greater emphasis on the development of medium and large scale sites, thus complementing the current focus on small scale sites.

#### 4.2.3 Type of composting process at centralised sites in 1999

The most dominant composting process at centralised sites was the relatively low technology of open-air mechanically turned windrows. Table 8 shows that 65 out of 80 centralised sites (81%) used this process, and managed 88% of waste composted at centralised sites. In terms of all site types, centralised open-air turned windrows accounted for 65 out of 197 sites (33%), and managed 81% of total UK throughput.

Table 8 - Type of composting process at centralised sites in the UK

Process Type	Number of Sites	Material Composted (tonnes)	Proportion of material composted at centralised sites (%)	Proportion of total material composted at all sites (%)
Open-air mechanically turned windrow	65	676,294	88	81
Contained mechanically turned windrow	3	31,240	4	4
Contained in-vessel	5	31,765	4.5	3.5
Open-air static pile with no aeration	5	15,967	2	2
Other (1 mixed process, 1 not known)	2	9,889	1.5	1
Total	80	765,155	100	91.5

#### 4.2.4 Type of material composted at centralised sites

Table 9 details municipal and non-municipal waste composted at centralised sites for each UK domain. Municipal waste has been classified into household and non-household to provide information in relation to recycling and composting targets for household waste.

Table 9 - Geographical breakdown of material type composted at centralised sites

Country	Waste Type	Material composted (tonnes)	Proportion of material composted - centralised sites (%)
England	<i>Municipal - Household</i>	418,275	
	<i>Municipal - Non-household</i>	96,479	
	Total Municipal	514,754	67.3
	Total Non-Municipal	185,146	24.2
	Type not specified	587	<0.1
<i>England Total</i>		<i>700,487</i>	<i>91.6</i>
Wales	<i>Municipal - Household</i>	345	
	<i>Municipal - Non-household</i>	262	
	Total Municipal	607	<0.1
	Total Non-Municipal	2,000	0.3
<i>Wales Total</i>		<i>2,607</i>	<i>0.3</i>
Scotland	<i>Municipal - Household</i>	7,797	
	<i>Municipal - Non-household</i>	2,289	
	Total Municipal	10,086	1.3
	Total Non-Municipal	206	<0.1
<i>Scotland Total</i>		<i>10,492</i>	<i>1.4</i>
Northern Ireland	<i>Municipal - Household</i>	12,560	
	<i>Municipal - Non-household</i>	4,889	
	Total Municipal	17,449	2.3
	Total Non-Municipal	4,335	0.6
<i>Northern Ireland Total</i>		<i>21,784</i>	<i>2.9</i>
Jersey	<i>Municipal - Household</i>	6,750	
	<i>Municipal - Non-household</i>	6,750	
	Total Municipal	13,500	1.8
	Total Non-Municipal	16,500	2.1
<i>Jersey Total</i>		<i>30,000</i>	<i>3.9</i>
<b>UK</b>	<i>Municipal - Household</i>	445,727	
	<i>Municipal - Non-household</i>	110,669	
	Total Municipal	556,396	72.8
	Total Non-Municipal	208,187	27.2
Type not specified		787	<0.1
<b>UK Total for Centralised Sites</b>		<b>765,370</b>	<b>100</b>

#### 4.2.5 Number and type of operator running centralised sites

In contrast to on-farm and community sites, centralised composting was characterised by a large number of operators each running one, or a small number, of sites. In addition to a large number of operators, the survey identified a large number of different types of operator. These different types have been classified as Local Authority (42% of all operators) and non-Local Authority (58% of all operators). The Local Authority comprised waste collection, waste disposal and unitary Authorities in England, and unitary Authorities in Wales, Scotland and Northern Ireland. The non-Local Authority comprised solely compost producers, waste management companies, water treatment companies, agricultural companies, forestry companies and equipment manufacturers. The number of operators for each of these categories, and the number of sites operated is given in Table 10.

Table 10 - Centralised Sites: type of operators and number of sites operated

	Type of Organisation	Number of operators who have primary responsibility for composting operations <sup>10</sup>	Number of Sites Operated
England	Waste Collection Authority	4	4
	Waste Disposal Authority	6	8
	Unitary Authority	6	6
	Solely Compost Producer	9	11
	Waste Management Company	15	27
	Agricultural Company	3	3
	Forestry Company	2	3
	Equipment Manufacturers	1	1
	Water Company	2	2
	Other	2	2
<i>England Total</i>		<i>50</i>	<i>67</i>
Wales	Unitary Authority	1	1
	Waste Management Company	1	1
<i>Wales Total</i>		<i>2</i>	<i>2</i>
Scotland	Unitary Authority - Scotland	4	4
<i>Scotland Total</i>		<i>4</i>	<i>4</i>
N.Ireland	Unitary Authority	5	5
<i>Northern Ireland Total</i>		<i>5</i>	<i>5</i>
Jersey	Agricultural Company	1	2
<i>Jersey Total</i>		<i>1</i>	<i>2</i>
<b>Overall UK Total</b>		<b>62</b>	<b>80</b>

Given that the majority of UK composting was carried out in England, it is not surprising that most multiple site operators were based in England. The largest proportion of England based single and multiple site operators were waste management companies with a total of 15 operators; nine of these operated single

<sup>10</sup> Six of the Local Authorities who have primary responsibility for composting operations sub-contract the running of the sites to private contractors (4 are based in England, 2 in Northern Ireland).

sites, four operated two sites, two operated three sites and one operated five sites. Sites operated by these waste management companies accounted for 31% of material composted in England, with an average throughput per site of around 8,600 tonnes. The next largest group in England was dedicated compost producers, i.e. organisations who were solely involved in producing/distributing compost and not engaged in other waste management or industrial/commercial activity. Out of a total of nine dedicated compost producers identified, seven operated single sites, and two operated two sites. Although only a small number of dedicated compost producers, they accounted for 30% of all material composted in England, with an average throughput per site of around 17,700 tonnes.

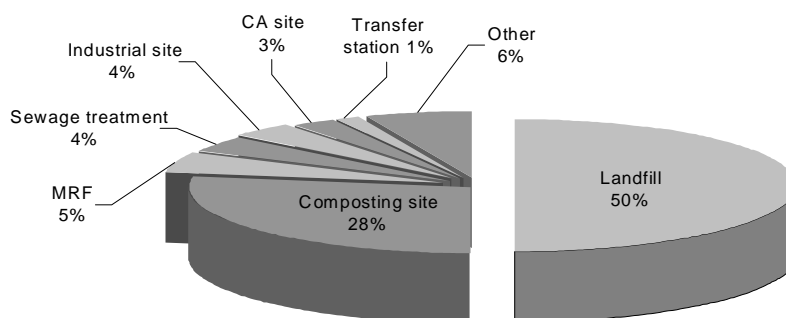
Apart from England, only Jersey had a multiple site operator. Interestingly, apart from one waste management company based in Wales, Local Authorities were the only type of operator involved in all other composting activities identified in Wales, Scotland and Northern Ireland, although two of the latter sub-contracted site operations to private contractors.

Of the 80 centralised sites recorded in the survey, 45 composted municipal waste exclusively, 27 sites accepted a mixture of municipal waste and non-municipal waste, and eight sites composted non-municipal waste exclusively. It is worth pointing out that of these eight sites, three England based sites operated by two forestry companies composted forestry by-products only, and although classified as non-municipal soil waste (non-MSW) in the survey, they classified the material as a forestry co-product and not a waste.

#### 4.2.6 Location of centralised sites

Given the prominence of waste management companies in operating composting sites, it was expected that a large number of composting operations would be situated on landfill sites. The survey asked for compost site location, and found that of the 80 centralised sites in the UK; 40 were based at landfill sites, 22 were dedicated composting sites (i.e. not located with other commercial activity), four were at material recycling facilities (MRFs), three were at sewage treatment works, three were based at industrial or commercial facilities, two were at Civic Amenity sites (CA), one was based at a transfer station, and five were classified as other (including plant nurseries). The proportional breakdown of these locations are illustrated in Figure 3.

Figure 3 - Location of centralised sites



#### 4.2.7 Planning and licensing of centralised sites

Table 11 shows whether planning permission and a waste management licence had been granted for centralised sites in operation in 1999. As a number of respondents chose not to answer the planning and licensing section, results obtained for the centralised sites related to 50 out of the 80 sites in operation.

Table 11 - Planning and licensing status of centralised sites

		Licensing Status				Planning Total
		Not yet applied	Granted	Awaiting	Exempt	
Planning Status	Not yet applied	2	-	-	-	2
	Granted	-	28	2	10	40
	Awaiting	-	1	-	2	3
	Not required	-	-	1	4	5
Licensing Total		2	29	3	16	50

Table 11 shows that 40 out of 50 (80%) centralised sites had planning permission, three (6%) were awaiting permission, five (10%) sites were thought not to require planning permission, and two (4%) sites were undergoing trials and in the process of applying for planning and licensing. With regard to licensing, 29 (58%) sites had a licence, three (6%) were awaiting, and 16 (32%) sites were licence exempt. The cross-tabulation of these results show the majority of sites had been granted both planning and licensing (28 sites, 56%) or had planning permission but were exempt from licensing (10 sites, 20%). Of the 16 centralised sites that said they were exempt from licensing, 11 were based on operational landfills. These sites did not require a specific licence as their composting operations would have been encompassed within the same licence covering landfill activity. The remaining exemptions tended to be small sites that utilised the composted material on-site.

#### 4.2.8 Problems encountered or issues raised on planning and licensing of centralised sites

Respondents were given the opportunity to raise any problems or issues faced in obtaining planning permission and waste management licensing for centralised sites. A detailed breakdown of all problems and comments raised is given in Section 7. The main areas of concern reported for planning and licensing include the time taken to process planning applications (5) and licensing applications (6), lack of suitable sites to satisfy planning regulations (5) and problems with meeting rigid licensing conditions (7).

### 4.3 On-farm composting facilities

On-farm composting is likely to be a growth area as it offers farmers diversification opportunities, site size and existing machinery may be suitable, and the composted material can be utilised on site.

#### 4.3.1 Number and size of on-farm composting sites

As with centralised composting, the majority of on-farm composting was carried out in England. Table 3 (section 3.1.2) showed that the survey identified 65 on-farm composting sites in the UK; 63 (97%) of these were based in England, 1 was in Wales and 1 in Scotland. Most on-farm operations were small scale, the most common site composted around 600 tonnes, and 72% of on-farm sites composted 1,000 tonnes or less, and 19% composted 1,001-1,500 tonnes. The number of sites for each on-farm size category is given in Table 12.

Table 12 - Size of on-farm sites

Throughput at individual sites (tonnes)	Number of sites	Proportion of sites (%)	Material composted (tonnes)	Proportion of on-farm throughput (%)	Proportion of Total throughput (%)
1-500	11	17	2,939	4.4	0.4
501-1,000	36	55	23,086	34.8	2.8
1,001-1,500	12	19	17,500	26.4	2.1
1,501-2,000	-	-	-	-	-
2,001-2,500	-	-	-	-	-
>2,501	6	9	22,876	34.4	2.7
Total	65	100	66,401	100	8

#### 4.3.2 Type of composting process at on-farm sites

As with centralised sites, the vast majority of on-farm sites (85%) utilised open-air mechanically turned windrow systems, processing 91% of all material composted on-farms. Table 13 gives a breakdown of the different processes employed and the amount of material composted, both as a proportion of the material composted on-farms, and as a proportion of all material composted by all site types in the UK.

Table 13 - Type of composting process at on-farm sites

Process Type	Number of Sites	Material Composted (tonnes)	%of On-farm T'put	% of Total T'put
Open-air mechanically turned windrow	55	60,220	91	7
Covered mechanically turned windrow	2	3,884	6	<1
Contained in-vessel	2	952	1.5	<1
Open-air static pile with no aeration	3	630	1	<1
Vermicomposting	1	250	<1	<1
Not known	2	465	<1	<1
Total	65	66,401	100	8

### 4.3.3 Type of material composted at on-farm sites

Table 14 details municipal and non-municipal waste composted at on-farm sites. Municipal waste has been classified into household and non-household to provide information in relation to recycling and composting targets for household waste. England managed over 99% of material composted at on-farm sites in the UK.

Table 14 - Geographical breakdown of material type composted at on-farm sites

Country	Waste Type	Material composted (tonnes)	Proportion of material composted at on-farm sites (%)
England	<i>Municipal - Household</i>	46,671	
	<i>Municipal - Non-household</i>	13,804	
	Total Municipal	60,475	91.1
	Total Non-Municipal	5,411	8.1
<b>England Total</b>		<b>65,886</b>	<b>99.2</b>
Wales	<i>Municipal - Household</i>	300	
	<i>Municipal - Non-household</i>	15	
	Total Municipal	315	0.5
	Total Non-Municipal	-	
<b>Wales Total</b>		<b>315</b>	<b>0.5</b>
Scotland	Type not specified	200	0.3
<b>Scotland Total</b>		<b>200</b>	<b>0.3</b>
UK	<i>Municipal - Household</i>	46,971	
	<i>Municipal - Non-household</i>	13,819	
	Total Municipal	60,799	91.6
	Total Non-Municipal	5,411	8.1
	Type not specified	200	0.3
<b>UK Total for Centralised Sites</b>		<b>66,401</b>	<b>100</b>

### 4.3.4 Number and type of operator/co-ordinator running on-farm sites

In contrast to centralised sites, on-farms composting was characterised by a small number of operators managing multiple sites. Although farmers may have operated the day-to-day running of the site, Table 15 details the operator who was responsible for organising or co-ordinating the site.



Table 15 - On-farm: type of operators and number of sites operated

Where in UK	Type of Operator	Number of Operators	Number of Sites Operated
England	Waste Collection Authority	6	7
	Unitary Authority	2	2
	Solely Compost Producer	3	36
	Waste Management Company	1	4
	Agricultural Company	3	13
	Other	1	1
<i>England Total</i>		<i>16</i>	<i>63</i>
Wales	Unitary Authority - Wales	1	1
<i>Wales Total</i>		<i>1</i>	<i>1</i>
Scotland	Other (consultant)	1	1
<i>Scotland Total</i>		<i>1</i>	<i>1</i>
<b>Total UK On-farm operators and sites</b>		<b>18</b>	<b>65</b>

#### 4.3.5 Planning and licensing of on-farm sites

The planning and licensing section in the questionnaire was completed for 27 of the 65 on-farm sites identified in the survey. Of these 27 on-farm sites, 23 (85%) were exempt from licensing. Of these licence exemptions, 11 had planning permission, and 12 said that they did not require planning permission. Only three of the 27 sites had been granted a licence.

Most on-farm sites did not require a licence as they satisfied the exemption criteria, including utilising the composted product on site, and not composting more than 1,000 cubic metres at any one time. However, feedback in the survey suggested that licensing exemption may be constraining site size. Feedback also suggested that there were inconsistencies in on-farm planning requirements in different areas.

#### 4.4 Community Composting Facilities

The survey identified 10 community composting operators/co-ordinators, responsible for co-ordinating 52 small scale sites. Fifty-one of these sites were based in England, where one operator co-ordinated 24 sites, one operator co-ordinated 20 sites, and seven operators each ran one site. One operator was based in Wales and ran one site.

Community group respondents recorded 1,488 tonnes of material composted during 1999, 94% of this was composted in England and 6% composted in Wales. Fifty-one of the 52 sites composted less than 100 tonnes in 1999, and one site composted just over 200 tonnes. Table 16 gives the breakdown of material type for community sites.

Table 16 - Material type composted at community sites

Country	Waste Type	Material composted (tonnes)	Proportion of material composted at community sites (%)
UK	<i>Municipal - Household</i>	807	
	<i>Municipal - Non-household</i>	524	
	Total Municipal	1,331	89
	Total Non-Municipal	142	10
	Not specified	15	1
<b>UK</b>		<b>1,488</b>	<b>100</b>

Unlike centralised sites where only 10% of household waste composted was collected from the kerbside, household waste composted by community groups was dominated by kerbside collected waste. Of the 807 tonnes of household waste composted, 66% was collected from the kerbside and 34% came from bring/civic amenity sites. However, when considering all material collected from the kerbside for composting (see Table 6a) community groups collected only 1%.

Table 17 illustrates the type of composting processes employed at community sites. As would be expected with such small scale sites, the vast majority did not use machinery to aerate the composting pile. Twenty-three sites said they used static piles, any turning being carried out using hand shovels, and co-ordinators for 28 sites said that a mixture of processes were used at their sites, including hand-turned piles, New-Zealand boxes and adapted containers.

Table 17 - Type of composting process at community sites

Process Type	Number of Sites	Material Composted (tonnes)	% of Community T'put	% of Total T'put
Open-air mechanically turned windrows	1	15	1	<1
Static pile with no aeration	23	751	50	<1
Mixed	28	722	49	<1
Total	52	1,488	100	0.5

With regard to planning and licensing, 49 sites said they did not require planning permission, two sites had been granted planning permission and one site was in the application process, all 52 sites said they were exempt from waste management licensing. As in previous years, feedback from respondents highlighted difficulties with the 'import-export' restriction of feedstock and composts at licence exempt sites. Other feedback called for compost standards and legislation appropriate to small groups rather than excluding them. One community group said that they were involved with monitoring green waste arisings, and that this data was being used in planning community composting sites for new residential areas.

## 4.5 Future composting plans

Respondents were asked to give details of their future composting plans, and the results have been grouped into two main areas: new sites and expansion of existing sites.

### 4.5.1 New sites

The survey identified a total of 56 planned sites. Respondents were asked to give the stage of these planned sites; 29 were at the speculative stage, three were trial sites, seven were awaiting planning permission, two were awaiting licensing approval and 15 had secured planning and licensing and were awaiting commission. For the purposes of estimating expected growth in the composting industry, only the 27 sites that were undergoing trials or were awaiting planning, licensing or commission have been included in the calculations.

The 27 new sites expected to come into operation in the UK had an aggregated expected throughput of 190,642 tonnes per annum. Of these 27 new sites, 15 were additional sites planned by existing composting site operators, 12 were planned by organisations that had not previously operated a site. The growth in material composted in the UK over the last decade, as well as projections for 2000, was illustrated in Figure 1, section 2.1.2. Of the 27 new sites planned to come on line, 24 were expected to be centralised sites, and this was illustrated in Figure 2, section 2.2.1.

Table 18a below shows the expected site size for planned sites, together with aggregated throughput for each site size category, and the expected municipal and non-municipal throughput, and Table 18b takes this information and breaks it down for each UK domain.

Table 18a - Size of planned sites in the UK

Location	Site Size	Number of sites	Total Throughput (per size category)	Municipal Throughput	Non-municipal Throughput
UK	<7,000	14	48,642	48,642	-
	7,001-14,000	6	62,000	53,000	9,000
	14,001-21,000	-	-	-	-
	>21,001	3	80,000	67,500	12,500
	Not specified	4	-	-	-
<b>UK Total</b>		<b>27</b>	<b>190,642</b>	<b>169,142</b>	<b>21,500</b>

Table 18b - Size and UK location of planned sites

Location	Site Size	Number of sites	Total Throughput (per size category)	Municipal Throughput	Non-municipal Throughput
England	<7,000	9	32,618	32,618	-
	7,001-14,000	6	62,000	53,000	9,000
	14,001-21,000	-	-	-	-
	>21,001	3	80,000	67,500	12,500
	Not specified	3	-	-	-
<b>England total</b>		<b>21</b>	<b>174,618</b>	<b>153,118</b>	<b>21,500</b>
Wales	<7,000	2	9,000	9,000	-
	7,001-14,000	-	-	-	-
	14,001-21,000	-	-	-	-
	>21,000	-	-	-	-
<b>Wales total</b>		<b>2</b>	<b>9,000</b>	<b>9,000</b>	<b>-</b>
Scotland	<7,000	2	6,024	6,024	-
	7,001-14,000	-	-	-	-
	14,001-21,000	-	-	-	-
	>21,001	-	-	-	-
	Not specified	1	-	-	-
<b>Scotland total</b>		<b>3</b>	<b>6,024</b>	<b>6,024</b>	<b>-</b>
Northern Ireland	<7,000	1	1,000	1,000	-
	7,001-14,000	-	-	-	-
	14,001-21,000	-	-	-	-
	>21,001	-	-	-	-
<b>Northern Ireland</b>		<b>1</b>	<b>1,000</b>	<b>1,000</b>	<b>-</b>

Tables 18a and 18b show that trends identified to date are set to continue. The vast majority of composting planned for the UK was expected to be carried out in England. There is continued emphasis on small scale sites, with 50% of planned sites expecting to process less than 7,000 tonnes per annum, accounting for around 20% of planned throughput. In addition, there appears to be continued emphasis on the composting of municipal waste. In 1998 and 1999 around 75% of material composted was municipal waste. For planned new sites, 90% of throughput was expected to be municipal waste. However, these figures are concerned with new sites, and do not account for expansion of existing sites.

#### 4.5.2 Expansion of existing sites

In order to outline a picture of planned expansion of current sites, the survey asked questions on increasing composting capacity, and increasing the proportion of kitchen waste and paper/card accepted at operational sites.

A total of 58 centralised composting site operators completed the section on current capacity, and 43 (74%) said they planned to expand, 11 (19%) said they had no plans to expand, and four (7%) were undecided. Of the 43 planning to expand, 28 (65%) operated small scale sites with annual throughput of <7,000 tonnes. In addition to

centralised operators, a total of 13 on-farm operators, and eight community groups completed the section on current capacity. Ten (77%) on-farm operators and six (75%) community groups said they planned to expand their capacity.

A total of 55 centralised site operators completed the section on increasing the proportion of kitchen waste, 22 (40%) said yes they wanted to accept more kitchen waste, whilst 33 (60%) said they had no plans to take in any/additional kitchen waste. Fourteen on-farm operators and eight community groups also completed this section, seven (50%) of on-farm operators and five (63%) of community groups said they planned to accept more kitchen waste at their sites.

In contrast, only a small proportion of centralised and on-farm responses favoured accepting increased proportions of paper and card. A total of 53 centralised operators completed this section, and 13 (24.5%) said they planned to accept increased proportions of paper and card, whilst 40 (75.5%) said they had no plans to accept any/additional paper and card. A total of 14 on-farm operators and eight community groups completed this section; five (36%) on-farm sites and six (75%) of community groups favoured increasing paper and card.

Whilst these expansion plans are encouraging in terms of growth in composting capacity, the main focus would appear to be on expanding very small scale sites, with little emphasis on expanding the small to medium scale sites. In addition, the dominance of open-air turned windrow processing raises questions as to the suitability of this type of infrastructure for handling increased proportions of putrescible kitchen waste.

#### 4.5.3 Mechanical and biological treatment (MBT)

In addition to new sites, and expansion of current sites, the survey revealed a renewed interest in mechanical and biological treatment (MBT) (also known as unsorted MSW composting). A total of 10 respondents expressed interest in MBT, of these: four were considering MBT (all in England); one was undertaking trials (England); two had obtained planning permission and were in the process of applying for licences (one Wales, one England); one had planning permission and was awaiting a licence decision (one in Scotland); and two had secured planning and licensing and were awaiting final completion (one in England, one in Scotland).

The survey asked respondents for their intended use of the MBT stabilised material. Only four out of 10 respondents completed this question: two speculative respondents said they would use the material either for daily landfill cover, or as landfill restoration material; one respondent undertaking trials intended to use the material for landfill restoration purposes, and one of the respondents awaiting site commission intended to use the material as daily landfill cover.

The survey also asked that if the MBT stabilised material was to be utilised on landfill, was it subject to landfill tax; only three respondents completed this question: two respondents said that the material was not subject to landfill tax; one said that they did not know.

Overall, the questionnaire revealed a renewed interest in MBT. However, several gaps in filling out this section, together with uncertain answers, suggested that the

increased interest in MBT was accompanied by areas of uncertainty including landfill tax liabilities and possible uses for processed/stabilised MBT material.

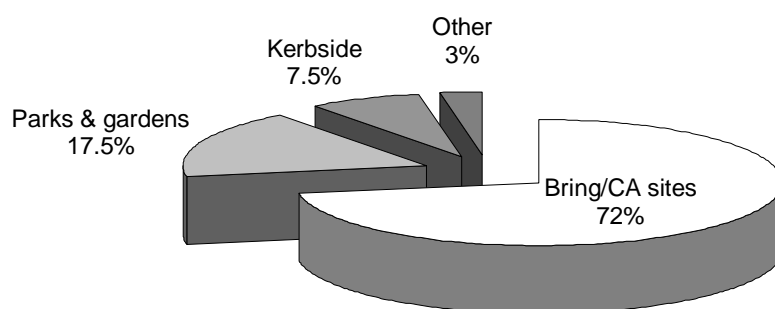
## 5 Collection Systems

This section considers the collection of municipal waste for composting. Municipal waste comprises household organic waste and non-household organic waste, the latter being predominantly Local Authority parks and gardens waste. This section did not take into account the collection of non-municipal waste.

The two main collection systems for household organic waste in the UK were collections from bring sites (also known as drop-off or civic amenity sites) and kerbside collections. For the first time, the 1999 survey included a detailed section on current and future plans for the collection of household organics, focusing on kerbside collections. There were three main reasons why the survey was expanded to include collections systems. Firstly, knowledge of organic collections is an important composting factor as the quality of composted material will be determined by the quality of feedstock and the composting process, and quality of feedstock, will, in part, be determined by collections. Secondly, increased levels of composting, driven by EU and national policies, are unlikely to be achieved with continued reliance on green waste from civic amenity site. An overview of current and planned organic collections will help establish whether this trend is changing. Thirdly, this section was included in the survey in the absence of other detailed data on household organic waste collections.

The survey found that almost three quarters (72%) of municipal waste composted was household green waste derived from bring sites. This continued predominance and reliance on bring site waste follows trends identified in previous surveys. Figure 4 shows the proportion of household waste collected from bring sites and the kerbside, and non-household municipal waste obtained directly from Local Authority parks and gardens during 1999.

Figure 4 - Sources of municipal waste composted in the UK in 1999



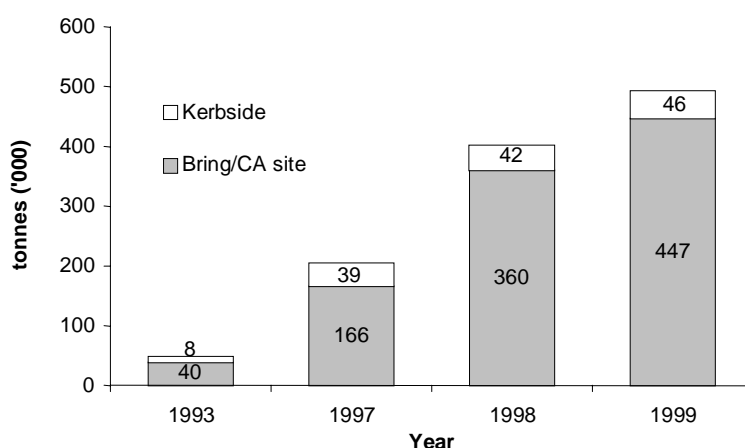


The relative proportion of material from bring/CA sites had increased from 67% in 1998<sup>11</sup> to 73% in 1999, whilst Local Authority parks and gardens waste had decreased from 24% in 1998 to 17% in 1999. Although there had been a small increase in the amount of organic waste separately collected from the kerbside in 1999, the proportion remained constant with the previous year at around 7%.

One caveat should be taken into account when considering the sources of municipal waste. Some respondents expressed difficulty in distinguishing between Local Authority parks and garden waste, and household green waste, when both were delivered to bring sites. This is because bring sites that accepted waste from both sources usually combined the waste in one container and recorded it as household waste.

Moving from municipal to household waste (i.e. not including Local Authority parks and gardens waste), Figure 5 shows the increase in household waste collected for composting from bring sites and the kerbside.

Figure 5 - Household organic waste from bring sites and separately collected from the kerbside



Whilst Figure 5 shows a steady increase in the total amount of household waste for composting from 1993 to 1999, the proportion of green waste from bring sites continued to increase while quantities collected from the kerbside remained small. In 1999, less than 10% of household waste for composting was collected from the kerbside.

### **5.1 Municipal organic waste from bring sites (civic amenity sites)**

The survey identified 447,044 tonnes of garden waste collected from 396 bring sites across the UK. Around 87% of respondents who ran sites said the number of bring sites they operated had remained the same from 1998 to 1999, but 29% said they had plans to open additional bring sites for organic waste.

<sup>11</sup> Revised 1998 figures.

Approximately 75% of bring sites said they accepted garden waste from households only, whilst 25% said they accepted garden waste from both households and Local Authority parks and gardens. As mentioned above, Local Authority parks and garden waste delivered directly to a composting site would usually be classified as non-household municipal waste. This is an important point with regard to the statutory recycling and composting targets outlined in *Waste Strategy 2000*, which levies targets on *household* waste. In theory, composting of non-household parks and garden waste should not qualify for the recycling and composting of household waste targets. However, Local Authority parks and garden waste delivered to a civic amenity (bring) site, and combined with household garden waste prior to composting, is likely to be classified as household waste and would qualify for the recycling and composting targets.

## **5.2 Kerbside collection of household organic waste**

The survey recorded 46,132 tonnes of separately collected household organic waste. This comprised 21,602 tonnes of mixed garden and kitchen waste, and 24,530 tonnes of garden only waste. Figure 5 showed that the quantity of separately collected organic waste has remained small and relatively unchanged over the last few years.

However, quantities collected from the kerbside are likely to increase as the survey revealed that the number of kerbside collection schemes in operation is set to rise. A total of 162 Waste Collection and Unitary Authorities completed the kerbside collection section in the questionnaire: 37 (23%) said they operated a scheme; 63 (39%) said they planned to implement a scheme. Therefore, just under two-thirds of authorities responding to the survey already had, or were planning to have, source segregation and kerbside collection of household organics. Another 12 (7%) Local Authority respondents said they were considering implementing a scheme, whilst 50 (31%) said that they had no plans to implement such a scheme.

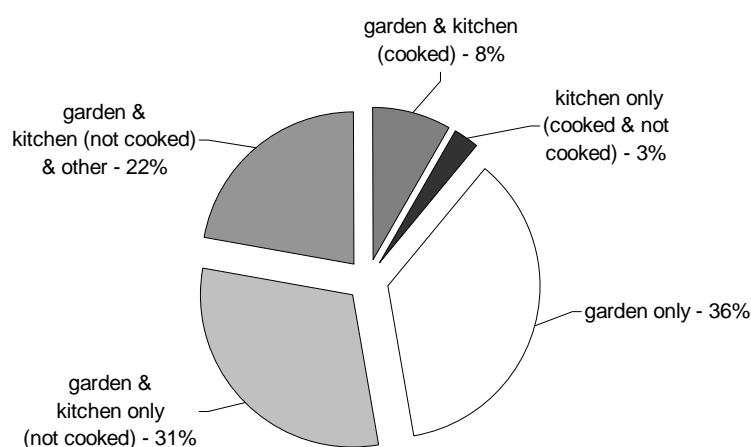
In addition, 16 non-Local Authority respondents, including not-for profit and compost producers, completed this section: eight operated a scheme; three planned to, and five had no plans to implement a scheme.

The survey revealed that around 90% of operational and planned schemes were based in England.

### **5.2.1 Kerbside collection operated by Local Authorities**

Approximately 93% (42,700 tonnes) of the total organic material separately collected from the kerbside was from schemes operated by Local Authorities. The survey asked for the different types of household organics collected, distinguishing between uncooked and cooked kitchen waste, 36 of the 37 Local Authorities operating a scheme provided details. The findings showed that 36% (13) of schemes collected garden waste only, 31% (11) collected garden and uncooked kitchen waste only, 22% (8) collected garden, uncooked kitchen waste and other organics such as kitchen paper, newspaper, and cardboard. Of the remainder, 8% (3) collected garden and both cooked and uncooked kitchen waste, and 3% (1) focused on kitchen waste (cooked and uncooked) only. The proportion of schemes that collected the different waste types are illustrated in Figure 6.

Figure 6 - The proportion of schemes collecting different combinations of household organic waste from the kerbside



The survey asked whether kerbside collections were based on a voluntary 'opt-in' or an 'opt-out' basis. 'Opt-in' assumes that the householder has to be pro-active in joining the scheme. On the other hand, 'opt-out' schemes tend to apply to all households in a given area, and householders have to take action to omit themselves if they do not wish to participate. Although participation in both styles of scheme is technically voluntary, participation in 'opt-out' schemes may be perceived as a requirement, i.e. the effect may be more mandatory in style. Details on participation criteria were provided by 35 of the 37 schemes operated by Local Authorities. Table 19 shows the number and proportion of 'opt-in' and 'opt-out' schemes, together with the total quantity collected by these schemes.

Table 19 - Number and proportion of 'opt-in' and 'opt-out' schemes operated by Local Authorities, and quantities collected from kerbside for each scheme type

Scheme participation criteria	Number of schemes	Proportion of schemes (%)	Quantity collected from kerbside (tonnes)	Proportion of total collected from kerbside (%)
'Opt-in'	21	60%	11,400	27%
'Opt-out'/mandatory	14	40%	31,300	73%
Total	35	100%	42,700	100%

Table 19 shows that 40% of schemes were run on an 'opt-out' (or more mandatory style basis) and they collected 73% of organic waste from the kerbside, whilst 60% of schemes were run on an 'opt-in' basis, and accounted for only 27% of the total collected from the kerbside. The nature of 'opt-out' schemes suggests they are likely to have more participants than 'opt-in' schemes, and therefore they are likely to collect more waste per scheme. Therefore, whilst these figures give a feel for the kerbside collection situation in 1999, it would be misleading to suggest that 'opt-out'/mandatory style schemes were more effective without additional information on the size of each scheme and levels of participation per scheme.

As would be expected, the survey found the number of participants involved in 'opt-out' schemes was larger than the number of participants in 'opt-in' schemes. The number of households in opt-out schemes ranged from around 1,800 to 27,000 with a median of 10,000, whereas the number of households in opt-in schemes ranged from 200 to 17,000 with a median of 1,300. This suggests that opt-out schemes have potential for collecting greater quantities than opt-in schemes due to a higher number of participants. However, looking at the number and range of households in each scheme type gives no indication of how well these participants were participating.

How well households were participating can be explored by taking into account the quantity of waste collected by each scheme and the number of participating households in that scheme. Unfortunately this is quite difficult data to obtain. The voluntary nature of some of these schemes means that unless participation had been monitored such data were not available. Only 11 of the 21 (52%) opt-in schemes detailed in Table 19 provided information on both quantities collected and number of households that participated. For opt-out schemes, 10 of the 14 (71%) schemes provided this information.

Results showed that the range collected per household is similar for each scheme type. The minimum recorded for one opt-in scheme and one opt-out scheme was 48 kilograms per participating household in 1999. The maximum recorded for one opt-in and one opt-out was around 350 kilograms per participating household. The median for opt-out schemes was 257 kilograms per participating household, slightly higher than the 236 kilograms recorded for opt-in schemes. Although the range for both types of scheme is almost identical, results showed that the quantities collected per household for half of the opt-out schemes are more closely clustered around the median than for the opt-out schemes. This suggests that from the schemes recorded in the survey, opt-out/mandatory style schemes tended to collect more per participating household than opt-in voluntary schemes.

Therefore, the survey showed that the number of participants in opt-out schemes was greater than the number of participants in opt-in schemes, and results observed suggest that on average households tended to participate better in opt-out schemes (i.e. more waste collected per household). Of course, this is only based on the number of households that respondents said participated in schemes, and it does not take into account other variables such as levels of contamination.

In addition to types of waste collected and participation criteria, the survey also included questions on other scheme design variables including charging, collection frequency and container type. Results showed that 9 Local Authorities had schemes with some form of charging mechanism, predominantly the purchase of sacks. As expected, the charged schemes all operated on an opt-in basis, and collectively they accounted for just over 900 tonnes collected from the kerbside, less than 2% of the overall total. Respondents who ran charged collection schemes did not complete details on the number of participants, probably due to the difficulty in obtaining such data, therefore it was not possible to identify quantities collected per household for charged schemes.

Respondents provided collection frequency information and container type details for 35 of the 37 schemes operated by Local Authorities. All the 14 opt-out schemes recorded in the survey collected the organic waste from the kerbside on a fortnightly basis, eight of these offered an integrated collection service using the same vehicle to collect residual waste and organic waste on alternate weeks, whilst the remaining six used a separate vehicle additional to residual waste collections. Of the 21 opt-in schemes, 12 collected on a fortnightly basis using a separate vehicle additional to restwaste collections, six operated an on-demand service and three collected on a weekly basis. Of the 46,132 tonnes collected from the kerbside around 97% was collected on a fortnightly basis, 73% of this from opt-out schemes and 24% from opt-in schemes.

A separate wheeled bin for organics was used by 25 schemes, one of these also used split wheeled bins, and four of these also provided biodegradable bags to use inside the bin. Of the ten schemes that did not use wheeled bins, seven used non-biodegradable bags, one used biodegradable bags and three said they used a container other than bags or bins.

### 5.2.2 Kerbside collection operated by non-Local Authority organisations

The survey recorded eight kerbside collection schemes operated by non-Local Authority organisations, accounting for approximately 7% (3,300 tonnes) of household organics separately collected from the kerbside. However, two of these schemes (accounting for 2,700 tonnes) were Local Authority contractors who both collected and composted the waste. The remaining six schemes (accounting for 650 tonnes) were run either by community groups or compost producers.

Of the eight schemes, seven provided details on the type of waste accepted for separate collection, one collected garden waste only, two collected garden and uncooked kitchen waste, three collected garden and both cooked and uncooked kitchen waste, and one collected kitchen (cooked and uncooked) only.

## 6 Markets and end-uses of composted products

Obtaining information on composted products and end-use has proved difficult in previous surveys, largely due to commercial sensitivity. To help address this issue in the 1999 survey, and in addition to confidentiality assurances, questions on type of composted product and questions on end-use of composted material were clearly separated. Virtually all compost producers completed the product type section, whilst about one-third of producers did not complete the more sensitive end-use and distribution section.

### 6.1 Types of composted product

Respondents were given the choice of using tonnes or cubic metres when giving quantities for composted product. For consistency and standardisation purposes responses in cubic metres were converted to tonnes. Composted product derived from mixed green waste material was assumed to have a bulk density of 0.7 tonnes m<sup>-3</sup>, whilst composted product derived from lighter bark, or timber only from forestry by-products was assumed to have a lower bulk density of 0.4 tonnes m<sup>-3</sup>.

The survey found that 462,768 tonnes of composted material was produced in the UK during 1999, accounting for 55% of total feedstock material, the remaining 45% being accounted for by the loss of organic matter and moisture during the composting process, and material rejected. Approximately a third of composted product was mulch, and a third was soil conditioner. The remaining third comprised daily landfill cover, remediation material, growing media and topsoil. The quantities and proportions for each product are given in Table 20.

Table 20 - Quantity and proportion of composted material.

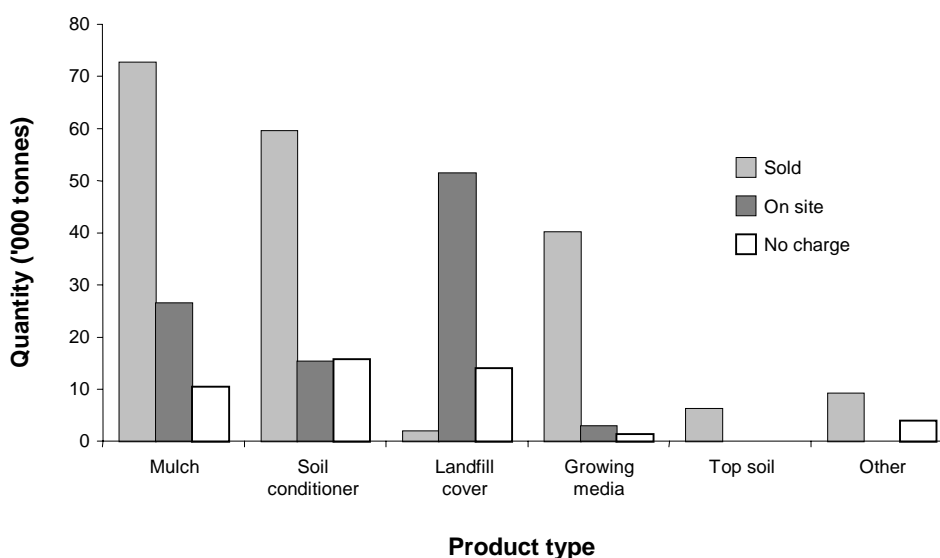
Composted Product	tonnes	%
Mulch	166,772	36.0
Soil conditioner	164,480	35.5
Landfill cover / remediation material	66,132	14.3
Growing media	43,126	9.3
Top soil	9,000	2.0
Other	13,258	2.9
	462,768	100

In addition to questions on product type, respondents were asked whether they blended the composted material with other material. A total of nine centralised site operators running 11 sites said that they blended the composted material.

## 6.2 End-use and distribution of composted material

Around two-thirds of compost producers completed the end-use and distribution section of the questionnaire, providing details for 332,813 tonnes of the 462,768 tonnes produced. The survey found that of all composted material, 190,273 tonnes (57%) was sold, 96,637 tonnes (29%) was used on-site, and 45,903 tonnes (14%) was distributed without charge. These overall distribution proportions are different for each product type. Around 66% of mulch was sold, 24% was used on-site and 10% was distributed without charge. Around 66% of soil conditioner was sold, 17% was used on site, and 17% was distributed without charge. Around 76% of daily landfill cover was used on site, 21% was distributed without charge, and 90% of growing media was sold. Quantities distributed for each product type are illustrated in Figure 7.

Figure 7 - Distribution of product type



For composted material that was sold, the survey asked whether this was distributed in bulk or whether it was bagged. The results showed that 77% of material sold was distributed in bulk, and 23% was bagged. Of the composted material sold in bulk, approximately 50% was mulch, 34% was soil conditioner, and the remainder included growing media and top soil. Of the bagged composted material, 80% was growing media, 14% was soil conditioner, 5% mulch, 1% top soil and other.

For composted material that was sold, the most popular types of customer were commercial landscapers and commercial gardeners, followed by garden centres and hobby gardeners. In addition to these main customers, composted material was also sold to organic growers, Local Authorities, golf courses and building companies.

Results showed that a greater proportion of composted material was sold in 1999 compared to 1998. However, it should be emphasised that not all producers completed this section leaving 129,955 tonnes of composted material unaccounted for in terms of end-use and distribution.

## 7 Home composting

A total of 250 Waste Collection and Unitary Authorities completed the home composting section. The status of home composting promoted by Local Authorities is given in Table 21, and shows that around 75% of Authorities promoted home composting during 1999.

Table 21 - The status of home composting promoted by Local Authorities

Home Composting Status	Waste Collection Authority	Unitary	Total
Promoted in 1999	142	44	186
Plan to promote in 2000+	16	17	33
Promoted prior to 1999, now ceased	5	9	14
Never promoted and no plans to	5	12	17
	168	82	250

Complementing the WCA, 14 WDA said that they promoted home composting at a district level, and supported the WCA in their promotions. In addition to the Authority responses, 6 non-Local Authority responses said they promoted home composting during 1999 (5 of which were community groups), and 3 said they had plans to promote home composting (2 of which were community groups).

The survey found that nearly all Local Authority home composting promotions (96%) involved a scheme to supply composting units. Respondents estimated that during 1999 they supplied around 258,000 composting units, and that prior to 1999 around 600,000 had been distributed. Around 70% of all units were offered to the public at a subsidised cost, 17% were offered free of charge, and 13% were offered at full cost.

The majority of respondents said their schemes were promoted over an entire area (93%) rather than being targeted at specific areas (7%). All respondents used more than one form of communication to promote the scheme. The most popular way of communicating the promotion was via leaflets to individual households and utilising local media, including Local Authority newsletters. The least popular method was via home visits. Table 22 gives a breakdown of communication methods used to promote home composting.

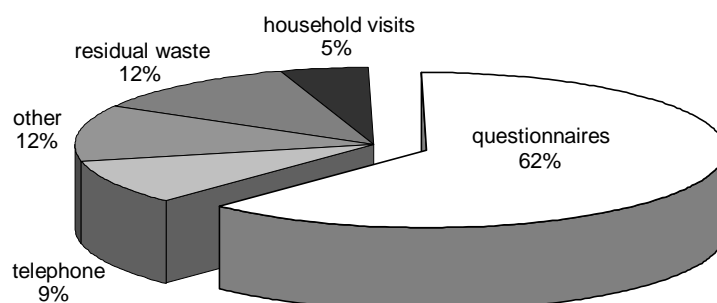


Table 22 - Type of communication used to promote home composting

Type of communication	Number of schemes
Leaflets to householders	168
Local media	155
Roadshows	82
Telephone hotline/advice line	93
Home composting roadshows	82
Through local schools	65
Letters to householders	59
Through community groups	53
Home visits	16

One of the problem areas of home composting reinforced by the survey results is the difficulty in monitoring effectiveness and diversion rates. Over 40% of respondents who promoted home composting had not undertaken any monitoring or assessment of their scheme. Of the 60% that had undertaken some form of monitoring, just under two-thirds relied on questionnaires completed by householders. Figure 8 gives a breakdown of the type of monitoring and assessment methods employed. The 'other' method category included sales of home composting units and monitoring contracted to external consultants.

Figure 8 - Type of home composting monitoring and assessment methods



The status of home composting in Table 21 shows that 14 respondents had previously promoted home composting but had ceased by 1999. Ten respondents cited funding as the main reason for ceasing, and seven of these stated that they no longer offered composting units, although they still promoted the principle of home composting. In addition, ten respondents gave reasons why they were not considering promoting home composting in the future, which included lack of funds, difficulty in calculating waste diverted, and focussing on kerbside collections for organic waste. Three WCA said that in their area, waste diverted to home composting was not eligible for recycling credit payments, and four WCA raised the problem of excluding home composting from composting performance indicators.

## 8 Problems encountered and comments made

Respondents were given the opportunity to raise problems or comments concerning site planning and licensing as well as being able to highlight other problems or additional issues that they felt the Association should be aware of. A total of 95 respondents raised one or more issue, and the main points are categorised and summarised in Table 23.

Table 23 - Problems encountered and comments made

Problems and comments	Centralised	On-Farm	Local Authority	Other	Total
Planning issues	19	4	-	-	23
Licensing issues	12	2		2	16
Need for standard / quality issues	3	-	3	2	8
Need to raise awareness/benefits of composting	-	1	5	1	7
More composting research / information	3	1	3	-	7
Need to promote markets for compost	3	-	2	1	6
Financial constraints - composting	2	1	2	-	5
Financial constraints - kerbside collection	1	-	2	-	3
Technical issues	2	1	1	-	4
Clear understanding of composting terms	2	-	-	1	3
Enforce regulation / environmental protection	2	-	-	-	2
Home composting not qualifying for recycling credits	-	-	3	-	3
Home composting in recycling performance indicators	-	-	4	-	4
<b>Total Comments</b>	<b>49</b>	<b>10</b>	<b>25</b>	<b>7</b>	<b>91</b>

Centralised and On-farm refers to current and planned sites

Local Authority refers to those not currently (or planning) composting

Other includes composting community groups and non-Local Authority not composting

Difficulties with obtaining planning permission and obtaining and complying with a waste management licence were the two main problem areas highlighted by composters and potential composters. Respondents were asked to give details of planning and licensing problems, and the main areas of concern reported include the time taken to process planning (5) and licensing (6) applications, the lack of suitable sites (5) and rigid licence conditions (7). Table 24 summarises the type and number of planning and licensing problems reported for each type of composting site. The planning and licensing of sites were also two of the main problem areas identified in the 1998 survey.

Table 24 - Breakdown of planning and licensing problems for Centralised, On-farm and Community sites

Problems and comments	Centralised Sites	On-Farm	Community	Total
<b>Planning:</b>				
Too long to process	3	2	-	5
Suitable sites	5	-	-	5
Lack of knowledge/interest from Local Authority	3	1	-	4
Planning conditions and size restrictions	3	1	-	4
Public opposition (nimby)	2	-	-	2
Existing site affects proposed sites	2	-	-	2
Planners concern over effective licensing	1	-	-	1
<b>Planning Total</b>	<b>19</b>	<b>4</b>	<b>-</b>	<b>23</b>
<b>Licensing:</b>				
Too long to process	4	2	-	6
Licence conditions too rigid	5	-	2	7
Regulators lack of composting knowledge	2	-	-	2
Specimen working plan required	1	-	-	1
<b>Licensing Total</b>	<b>12</b>	<b>2</b>	<b>2</b>	<b>16</b>

In 1998 marketing the composted product was identified as a problem area by nine respondents operating centralised sites, in 1999 this had fallen to three centralised operators. The other three respondents who reported a need to develop markets for compost did not operate composting sites.

A total of eight respondents highlighted the need for composting standards/consistent compost quality. Three of the eight were from centralised operators, one of which referred to the need for more stringent standards when composting putrescibles. Two of the eight were from community composting groups, one of which stressed the importance of standards that are viable for small groups. The other three respondents who reported a need to develop compost standards were Local Authorities who did not operate sites, but referred to standards in terms of compost utilisation.

Only one of the seven respondents that highlighted the need to raise composting awareness and promote the benefits of compost, operated a composting site (on-farm). Five of the seven were Local Authorities, and three of these suggested promotions on television, especially on gardening programmes. A total of seven respondents detailed the need for more composting research and dissemination of information. In particular, material biodegradability, on-farm composting, utilisation in agriculture and home composting were areas highlighted.

Markets for compost, composting standards, raising awareness and composting research are all important and recurrent themes. The Association's development of the Composting Marketing Network, the Composts Quality Standard, the annual Compost Awareness Week and the Association's new Composting Research Group should help address some of these issues.

In addition to the issues illustrated in Table 23, four Local Authority respondents suggested that the survey would have been easier to complete if based on a financial rather than calendar year. The Association conducts the survey on a calendar year to facilitate submission of data to Eurostat, the agency responsible for providing statistical information to the European Commission.

## **9 Conclusions**

The overall picture for composting in the UK is one of continued expansion. Over the last five years the number of operational centralised sites has grown, on average, by around 25% per annum. From 1998 to 1999 the increase in throughput was around 23%, and a similar growth is predicted for 1999 to 2000. One of the key challenges facing the industry over the next few years is the continued expansion required to provide an alternative to landfill for biodegradable waste to contribute to national statutory recycling and composting targets and EU Landfill Directive obligations.

Results showed that in 1999 there were a total of 90 operators running 197 sites, processing approximately 833,044 tonnes of material within the UK. Approximately 74% of this material came from municipal sources and 26% came from non-municipal sources. Of the 618,517 tonnes of municipal waste composted, 72% was green waste from bring sites, 17% was green waste from Local Authority parks and gardens and only 7.5% was collected from the kerbside. Municipal waste composted was comprised of 80% (493,520 tonnes) household waste and 20% (124,997 tonnes) non-household waste.

The sites recorded in the survey were classified into centralised, on-farm and community sites. In terms of location the survey found that 84% of centralised sites, 97% of on-farm sites and 98% of community sites were based in England, and collectively they handled 92% of all material processed in the UK.

### **9.1 Centralised sites**

In terms of the composting sector providing an alternative to divert organic waste from landfill in the future, the role of centralised sites will be paramount. Throughout the UK centralised sites handled 92% of all material composted, 90% of municipal waste composted and 90% of household waste composted. The results show that in 1999 there were a total of 62 operators running 80 centralised sites, processing approximately 765,155 tonnes of material.

Although 1999 has seen a small increase in larger centralised sites, the emphasis on small sites observed in previous surveys continued. The most common centralised site size recorded in 1999 processed between 5,000-6,000 tonnes. Overall 56% of centralised sites composted 7,000 tonnes or less, and handled 21% of total material processed at centralised sites. If composting is to offer a viable alternative for diverting large quantities of waste from landfill, it could be argued that this may be more easily achieved by placing greater emphasis on the development of medium and large scale sites, complementing the current focus on small scale sites.

In addition to the emphasis on small scale sites, results showed that the expansion of the composting industry has been largely based upon relatively unsophisticated composting processes. Mechanically turned open-air windrows processed 88% of all material handled at centralised sites, mechanically turned covered windrows processed 4%, and in-vessel systems processed 4.5%. Open-air windrow composting dominated the industry because of the continued reliance on relatively benign garden waste (accounting for 93% of municipal waste composted). For the future diversion of biodegradable waste from landfill, the composition of waste for composting is likely to have a higher proportion of putrescible waste. The survey found that 40% of

centralised, 50% of on-farm and 63% of community site operators said they wished to increase the proportion of kitchen and food waste composted at their sites. The survey also found that the quantity of garden and kitchen waste collected from the kerbside is set to rise. Increased proportions of putrescible kitchen waste for composting will increase the potential for environmental impact, and is likely to require a move away from largely open-air windrow systems to more sophisticated enclosed processes.

The main problems faced by centralised site operators continued to be obtaining planning permission, and obtaining and complying with a waste management licence. Particular issues raised include the time taken to process planning and licensing applications, lack of suitable sites and rigid licensing conditions. The *Technical Guidance Notes on Composting*, to be published by the Environment Agency in 2001 should help alleviate some of these problems. The guidance document is aimed at operators, regulators and planning authorities, and includes current licensing requirements and discusses possible amendments to exemption legislation. Markets for compost, composting standards, raising awareness and composting research were other main issues raised by the survey. The Association's development of the Composting Marketing Network, the Composts Quality Standard, the annual Compost Awareness Week and the Research Working Group will help address these issues.

## **9.2 On-farm and community sites**

The survey recorded 18 co-ordinators/operators running 65 on-farm sites processing 66,401 tonnes of waste, and 10 co-ordinators/operators running 52 community sites processing 1,488 tonnes. In terms of proportion of total material composted in the UK, on-farm sites processed 8% and community sites processed <1%. When considering the future diversion of large quantities of biodegradable waste from landfill, on-farm and community sites start from a very small throughput base, and have relatively limited potential for processing large quantities when compared to centralised sites. However, both these types of site have an important niche in the composting sector.

On-farm composting is likely to be a growth area as it offers farmers diversification opportunities, existing land and machinery may be suitable and available for use, and the composted material can be utilised on site. As would be expected, on-farm sites rely on unsophisticated composting processes; 91% of waste composted on-farms was processed using open-air turned windrows, and 6% was processed using enclosed turned windrows. Around 50% of on-farm operators said they wished to increase the proportion of putrescible waste composted, which may raise future issues regarding suitability of these processes and requirements for waste management licensing. Most sites recorded in the survey were exempt from licensing due to the small scale of operations and the import/export criteria. However, feedback from on-farm operators suggested that exemption criteria is constraining site size, and highlighted inconsistencies in planning requirements for different areas.

Community sites recorded in the survey processed only <1% of material composted in the UK. Operators said they used a variety of composting processes, including hand-turned piles, New-Zealand boxes and adapted containers. Due to the very small scale of community sites, even a large increase in the number of sites means that, in terms of diverting large quantities from landfill, the role of community sites is likely to be limited. However, community composting has other strengths that are valuable to the

industry and should be taken into account in policy making. In particular, community groups are ideally placed to invoke the proximity principle and to raise public awareness of the importance and benefits of composting. This last point is a necessary prerequisite to increasing the quantities of household waste composted.

Unlike centralised and on-farm sites, a large proportion of waste composted by community sites was collected from the kerbside. Although this only accounted for a fraction of total material collected from the kerbside for composting, if this model of community composting were to be expanded it could provide valuable experience and a springboard for the wider adoption of kerbside collections.

As in previous years, feedback from community respondents highlighted difficulties with the 'import-export' restriction of feedstock and composts at licence exempt sites, and suggestions called for compost standards and legislation appropriate to small groups.

Due to the small scale, de-centralised and diffuse nature of on-farm and community sites, it is likely that there are more sites in operation than captured by the survey. However, the Association feels confident that the main on-farm and community operators have been included.

### **9.3 Future composting plans**

Respondents were asked to give details of their future composting plans, including new sites and expansion of existing sites.

With regard to new sites, results showed that the growth in the number of sites and material composted over the last few years is set to continue. The survey identified 27 new sites expected to come into operation, 15 of these had secured planning and licensing and were awaiting commission, two had secured planning and were awaiting licence approval, seven were awaiting planning permission, and three were trial sites. These new sites had an expected aggregated throughput of 190,600 tonnes.

In addition to overall growth, trends observed in previous years are also expected to continue. Results showed that new sites in England were expecting to compost over 90% of planned throughput from new sites in the UK. There was continued emphasis on small scale sites, with around 50% of planned sites expecting to process less than 7,000 tonnes per site per annum, accounting for around 20% of planned throughput.

With regard to expanding existing sites, around 75% of operators running sites in 1999 said they had plans to increase composting activity at their sites, and around 40% wished to increase the amount of kitchen waste composted.

Aside from new and expanding composting sites, ten respondents expressed interest in mechanical and biological treatment of unsorted waste. Two of these had secured planning and licensing and were awaiting commission, three had secured planning and were awaiting licensing approval, one was undertaking trials and four were at the speculative stage. Feedback suggests that interest in MBT is accompanied by areas of uncertainty, including landfill tax liabilities (if stabilised material is utilised on landfill) and potential uses for processed/stabilised MBT material. Evolving EU legislation should help clarify some uncertainty. In particular, it will be interesting to

see how the distinction between 'compost' (from separately collected waste) and 'stabilised biodegradable material' (from unsorted waste) proposed in the EC working Document *Biological Treatment of Biowaste* evolves into proposed legislation.

#### **9.4 Collection systems**

For the first time, the 1999 survey included a detailed section on current and future plans for the collection of household organics, both from bring sites and from the kerbside.

The results showed that 447,044 tonnes of garden waste was collected from 396 bring sites across the UK, accounting for 72% of municipal waste composted, and 91% of household waste composted. Around 29% of respondents operating bring sites said they planned to open additional sites. Around 25% of sites said they accepted garden waste both from the householder and from Local Authority parks and gardens. This raised an issue that needs clarification in terms of the recycling and composting targets. In theory, composting of non-household parks and garden waste should not qualify for the recycling and composting of household waste targets. However, Local Authority parks and garden waste delivered to a bring site, and combined with household garden waste prior to composting, is likely to be classified as household waste and would qualify for the recycling and composting targets.

The survey recorded 46,132 tonnes of household organic waste separately collected from the kerbside, accounting for only 7.5% of municipal waste composted, and 9% of household waste composted. This waste was collected from 45 schemes in the UK, 37 were run by Local Authorities, and eight were run by community groups or composting operators. Results showed that the number of kerbside schemes is set to rise. Of the 162 Local Authorities who completed this section, around two-thirds already had, or were planning to have, source segregation and kerbside collection of household organics (23% said they operated a scheme, 39% said they planned to implement a scheme, 7% said they were considering implementation). Around 90% of existing and planned schemes recorded in the survey were based in England.

Around 60% of schemes were run on a voluntary 'opt-in' basis, and 40% on an 'opt-out' basis. Results showed that 'opt-out' schemes tended to have more participants, and on average, collected slightly more per participating household than 'opt-in' schemes. Around 40% of the 'opt-in' schemes had some form of charging mechanism, and these accounted for less than 2% of waste collected from the kerbside. Given the numerous variables affecting quantities collected, more detailed research of these schemes needs to be carried before drawing any definite conclusions. This need for research is particularly timely as 50% of planned schemes were expecting to be based on 'opt-in' participation, and 20% were expecting to have some form of charging. If the aim is to maximise quantities collected, these results raise the issue as to whether 'opt-in' and charging are the most effective ways forward.

#### **9.5 Markets and end-use of composted products**

Around 462,700 tonnes of composted material was produced in 1999, accounting for 55% of total feedstock. Approximately one-third of composted product was mulch, one-third was soil conditioner, and the remaining third comprised daily landfill cover, land remediation material, growing media and top-soil. Respondents provided



information on end-use and distribution for approximately 75% of the composted material produced. Responses showed that overall, 57% was sold, 29% was used on-site and 14% was distributed without charge, but of course these proportions differ for the different product types. Approximately 66% of mulch, 66% of soil conditioner and 90% of growing media was sold. Approximately 76% of landfill cover, 24% of mulch and 17% of soil conditioner was used on-site. Approximately 21% of landfill cover, 17% of soil conditioner and 10% of mulch was distributed without charge.

These figures showed that markets had been secured for a large proportion of mulch, soil conditioner and growing media. Securing sustainable markets in the future will be an important factor for the successful expansion of the composting industry. Whilst the Association's Composting Marketing Network and Composts Quality Standard should help develop markets, success will depend upon the ability of composters to produce consistently high quality products to maintain user confidence.

### **9.6 Home composting**

Around 75% of Local Authorities that responded to the survey promoted home composting during 1999, and virtually all promotions involved a scheme to supply home composting units. An additional 13% had plans to introduce home composting during 2000.

The survey reinforced the difficulties involved in monitoring effectiveness and diversion rates from home composting. Around 40% of Authorities that promoted home composting had not undertaken any monitoring or assessment of their scheme. Of the 60% that had undertaken monitoring, two-thirds relied on questionnaires completed by householders.

Around 12% of responding Authorities had either stopped promoting, or had no plans to introduce home composting. Feedback suggested that some Authorities were continuing with promoting the principle of home composting but were no longer supplying units. Reasons given included lack of funds, difficulty in calculating waste diverted, focus on kerbside collections and the exclusion of home composting from composting performance indicators. It will be interesting to see how the former DETR's reclassification of home composting as part of waste minimisation rather than composting will impact upon home composting promotions.

### **9.7 Concluding remarks**

The composting industry has grown rapidly over the last few years, and indications are that it will continue to expand. Policy at the European and national level, especially the diversion of biodegradable waste from landfill and recycling and composting targets, present great opportunities for further development. However, areas of constraint, particularly the lengthy planning and licensing system, need to be resolved in order to develop opportunities. Key stakeholders in the industry now need to work together to consider the nature of future development.

To date, expansion of the industry has relied predominantly on small sites, utilising relatively unsophisticated composting processes, processing predominantly garden waste. The Government's obligation to meet the Landfill Directive targets may be more easily realised by placing greater emphasis on the development of medium and larger scale sites to complement the current focus on small sites. The Landfill

Directive targets also offers an opportunity to change the composition of material for composting to include greater proportions of putrescible waste. In the survey, 40% of composters said they wished to increase the amount of putrescible waste they compost, and responses from Local Authorities showed a planned increase in the separate collection of garden and putrescible waste for composting. A large increase in the proportion of putrescible waste for composting is likely to necessitate the development of more sophisticated enclosed composting processes.

Alongside the development of source segregation and kerbside collections, the survey revealed a renewed interest in MBT. At this early stage it is important to consider how these potentially conflicting options can be developed so that MBT emerges as a stabilisation and treatment process that integrates with, rather than competes against, source segregation and kerbside collection.

## **Annex A**

### ***Methodology***

The content and scope of the survey has expanded considerably over the last two years. In 1997 a simple 2-page questionnaire was distributed to around 70 selected organisations. In 1998, the distribution increased ten-fold, but the format of the questionnaire remained short and simple. Whilst these surveys provided an invaluable overview of the industry, they lacked the depth to reveal a detailed picture.

Driven by demand from policy makers for a more comprehensive and detailed knowledge about the industry, and internal requirements to enable the Composting Association to represent and promote the industry effectively, the 1999 questionnaire was substantially re-designed. Initially a questionnaire was drafted following information gathering visits to composting sites. This draft questionnaire was then piloted with a representative sample group. Following amendments from the pilot and internal consultation, a 23-page questionnaire was produced, with sections covering current composting operations and future plans, site licensing and planning, collection systems, markets and end-use for the composted material, and home composting. As not all sections were relevant to all recipients, the questionnaire was colour coded for ease of completion.

The questionnaires were distributed at the beginning of July 2000, with a closing date for the beginning of August. Towards the closing date a first reminder was sent by email or letter to all non-respondents. After the deadline a second reminder letter was sent to all non-respondents with an extended closing date. After these two reminders all non-respondents known to be involved in composting were contacted by telephone to ensure their response. Any unclear or ambiguous returns were contacted by telephone and clarified verbally.

The questionnaire was largely quantitative based, with most questions having categorised answers that were given in tick boxes. Some questions were open-ended, and where relevant, explanatory comments could be added. Respondents were also given the possibility to express any problems associated with their site that they thought the Composting Association should address, and also had the option to include any other general comments. Several checks were built into the survey design to avoid double counting. Where multiple responses were received relating to the same composting site, only one response was used for analysis. Once data had been coded and input, validation checks were carried out prior to analysis. Data were analysed in SPSS version 10, using predominantly descriptive statistics.

Some questions could be answered using a choice of unit measurement; i.e. questions relating to site size could be answered using hectares or square metres, and questions relating to use of composted product could be answered in tonnes or cubic metres. For the purposes of standardising data input, site size was recorded as square metres (1 hectare = 10,000 square metres), and use of composted product in tonnes. For composted product conversion purposes, finished compost derived from mixed green waste material was assumed to have a bulk density of 0.7 tonnes m<sup>-3</sup>, whilst finished compost derived from timber only products was assumed to have a lower bulk density of 0.4 tonnes m<sup>-3</sup>.

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