



The State of Composting in the UK - 1998

The report of The Composting Association's 1998 survey results

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The State of Composting 1998

Results of The Composting Association's survey of composting facilities in operation in 1998

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1	ABSTRACT	3
2	INTRODUCTION	4
2.1	Background to the survey	4
2.2	Policy context	4
2.3	EU Landfill Directive	5
2.4	Proposed EU Composting Directive	6
2.5	Urban Waste Water Treatment Directive	6
3	METHODOLOGY	8
4	RESULTS AND DISCUSSION	9
4.1	Number of composting sites in the UK	9
4.2	Geographical distribution	9
4.3	Number of centralised composting facilities	9
4.4	Operational status of UK composting sites	10
4.5	Type of composting system in operation	11
4.6	Number of centralised composting sites	11
4.7	Throughput at centralised sites	12
4.8	Types and quantities of waste composted	13
4.9	Collection systems	15
4.10	Use of the composted products	16
4.11	Problems encountered and comments made	17
5	CONCLUSIONS	18
6	ACKNOWLEDGEMENT	20
7	REFERENCES	20

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1 Abstract

In May 1999, The Composting Association carried out its second annual survey of the status of composting facilities in the UK. A postal questionnaire was sent to 716 interested parties, and relates to the period January to December 1998. A total of 154 completed questionnaires were returned.

The returns indicated that in 1998, there were a total of 84 operators running 89 composting sites. In total, these composted approximately 910,821 tonnes. There were 59 centralised sites, composting 835,040 tonnes of organic waste, 11 community sites composting 939 tonnes, nine on-farm sites, composting 68,990 tonnes and nine on-site facilities composting approximately 5,837 tonnes. This represents a significant increase compared with the data obtained for the Association's survey in 1997, in which only 313,215 tonnes were composted at 47 centralised facilities.

The majority of the sites were located in England, with only three centralised sites in Scotland and Northern Ireland and one in Jersey. One community site was located in Wales and one on-farm site in Scotland.

The majority of the sites were open-air turned-windrow systems, with only two in-vessel systems at centralised facilities in operation.

The majority of centralised sites (58%) composted less than 5,000 tonnes per annum. However, the number of sites composting in excess of 50,000 tonnes per annum increased from one in 1997 to three in 1998.

A significant proportion of the waste composted comprised municipal wastes (69%), of which approximately two thirds was green waste collected from civic amenity sites or local authority parks and gardens. The survey indicated that there has been a considerable increase in the quantity of green wastes collected from civic amenity sites over the past few years. The same trend, however, was not observed with separate kerbside collection schemes.

The majority of the composted products (40%) were sold in bulk, although a large proportion (34%) was used on-site. Marketing problems were identified in the survey.

Planning and waste management licensing issues were highlighted by 28 respondents, as presenting problems in either establishing or operating sites.

2 Introduction

2.1 Background to the survey

Composting in the UK is a growing industry and is becoming more important in waste policy at the national and European level. One of the key issues facing the industry over the next few years is the provision of composting sites to provide an alternative to landfill for biodegradable municipal wastes in order to comply with the Article 5 targets set in the EU Directive on the Landfill of Waste (the Landfill Directive targets).

In May 1999, The Composting Association conducted its second annual survey to assess the state of the composting industry in the UK during 1998. It is the most comprehensive survey on the state of composting in the UK to date. The results of this survey show the progress made by the industry and highlights the need to increase composting capacity to meet the Landfill Directive targets. The main areas addressed by this survey were:

- The number and types of composting facilities currently operating
- Plans for the expansion of existing sites and construction of new facilities
- The quantities and types of waste being treated
- Uses of the composted products

Due to the rapid development of the composting industry and ever changing legislation the key drivers of this survey were different to those of the Association's 1997 survey¹, and as a result this present survey was designed and conducted differently to its predecessor. This means that care has been exercised when analysing and interpreting the results, and comparisons have only been made where appropriate.

2.2 Policy context

In the 1995 White Paper *Making Waste Work*, the Government set a target to compost one million tonnes of organic household waste by the year 2001 in England and Wales. New national waste strategies are currently being developed in the UK. The Scottish waste strategy was published in December 1999; the strategies for England, Wales and Northern Ireland are expected to be published in early 2000.

The Department of the Environment, Transport and the Regions (DETR) in conjunction with the Welsh Office, suggested further targets in the draft waste strategy for England and Wales, *A Way With Waste*². Although these do not relate directly to composting, the draft strategy proposed the following targets:

- To recover value from 45% of municipal solid waste (MSW) by 2010, rising to 66% by 2015
- To recycle or compost 30% of household waste by 2010, rising to 50% by 2015

In Scotland, the Scottish Environment Protection Agency, has proposed that municipal waste arisings should be reduced by 1% per annum³. Guidance on targets for household waste will be given in 2000.

2.3 EU Landfill Directive

After years of negotiation, the EU Landfill Directive was adopted on 26 April 1999 and came into force in the EU on 16 July 1999. The UK now has to transpose it into law by 16 July 2001. Strategies will therefore need to be in place to meet the Directive's requirements; the overall aims of which can be categorised as follows:

- To harmonise landfill standards amongst Member States
- To reduce landfill gas emissions
- To promote the separate collection and recycling / treatment of biodegradable municipal solid wastes
- To increase the cost of landfill, so that it reflects the full costs, including environmental costs

The EU Landfill Directive places strict limits on the amount of biodegradable municipal waste that can be disposed of to landfill, and requires landfill operators to collect, treat and utilise landfill gas. In addition, the Directive introduces a requirement for pre-treatment of all waste prior to landfill.

Under the Directive the amount of biodegradable municipal solid waste (BMSW) that can be disposed of to landfilled must be reduced to:

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

This assumes the UK opts for the four year derogation period. Municipal waste arisings for 1995 were 29 million tonnes in the UK.

Estimates vary for the quantities of BMSW that will need to be diverted in order to comply with these targets. The DETR have recently suggested that municipal waste is 60% biodegradable, and has estimated that the UK currently landfills approximately 27 million tonnes of municipal solid waste per annum⁴. Based upon these assumptions, estimates of at least 3.2, 7.5 and 10.1 million tonnes per annum of BMSW will need to be diverted to meet the 75%, 50% and 35% targets, respectively.

These figures, however, do not take into account estimates of increases in waste arisings, nor do they differentiate between the different fractions of municipal wastes that are biodegradable. Assuming that the amount of municipal waste increases by 3% per annum (as suggested by the DETR), the baseline 1995 arisings were 29 million tonnes and 60% of municipal waste is biodegradable, then the UK will have to find alternatives to landfill for approximately 14.0 million tonnes of biodegradable waste in 2010, rising to approximately 30.3 million tonnes per annum by 2020.

Clearly not all of this biodegradable waste is suitable for composting. A large proportion will be made up of paper and cardboard, and within an integrated waste management framework the best practicable environmental option (BPEO) may be recycling or incineration with energy recovery rather than composting. However, a substantial fraction will be the organic fraction, comprising garden and kitchen waste, where the BPEO is more likely to be composting.

It has been assumed that the organic fraction of municipal waste is 21%, whilst the paper and cardboard fraction comprises 32%. Different fractions of BMSW that may need to be diverted from landfill have been calculated and are illustrated in Table 1.

Table 1 - Estimates of the quantities of biodegradable municipal solid waste, organic waste and paper and cardboard (50%) to be diverted from landfill to meet the Landfill Directive Targets

Year	Total BMSW to be diverted from landfill (million tonnes per annum)	Organic (garden and kitchen waste) fraction to be diverted from landfill (million tonnes per annum)	Organic and 50% of paper and board fraction to be diverted from landfill (million tonnes per annum)
2010	14.0	4.9	8.6
2013	20.9	7.3	12.9
2020	30.3	10.6	18.7

Assumptions made:

- Municipal waste arisings in 1995 in the UK were 29 million tonnes
- Waste arising increase by 3% per annum from 1995
- The composition of the biodegradable fraction remains constant and is assumed to be 60%
- The paper/card fraction comprises 32%; organic fraction (garden and kitchen) 21%
- The Landfill Directive targets will apply equally to each BMSW type
- The UK opts for the four year derogation period

These figures indicate that by 2010 an alternative to landfill will have to be found for around 4.9 million tonnes of organic wastes which are suitable for composting. By 2020 this figure will have risen to 10.6 million tonnes per annum. It should also be noted that these are conservative estimates, and that recent data on waste composition suggests that the organic fraction may be much higher than 21%^{5,6}.

Estimates for the organic fraction plus half of the paper and cardboard fraction are also given. In this scenario the amount of waste that will have to be diverted from landfill, which may be suitable for composting, rises to 8.6 million tonnes by 2010 and doubles to 18.7 million tonnes by 2020. In order to treat these anticipated quantities, there will need to be a significant increase in the number of composting facilities in the UK.

2.4 Proposed EU Composting Directive

The European Commission is currently discussing the possibility of writing a Composting Directive. Initial discussions suggest that it will focus on compost quality issues and the protection of soil and water. Should a Composting Directive be implemented, it seems likely that this will also have a significant impact on the UK composting industry.

2.5 Urban Waste Water Treatment Directive

The Urban Waste Water Treatment Directive came into force in 1991, and prohibited the disposal of sewage sludge at sea by December 1998. As, historically, the UK has used this practice for a

significant proportion of its sewage sludge (around 30%), alternative disposal routes need to be found.

In recent years, the British Retail Consortium has aired concerns about the application of biosolids to agricultural land and the potential for pathogens to enter the human food chain. Scares such as *Escherichia coli*, *Salmonella*, and BSE have been prominent in the media over the past few years, hence retailers have demanded that sludges applied to land must first be subjected to stringent pathogen reduction processes. Composting has been used as an appropriate treatment technology for sewage sludges in the USA for many years, and the incentive is now on the waste water treatment companies to develop in a similar manner.

3 Methodology

This survey relates to the 12 month period from January to December 1998 and was conducted via a postal questionnaire in May 1999. Questionnaires were distributed to a total of 716 interested parties, comprising approximately 70 Composting Association Producer Members, 354 Local Authority contacts, and 292 other interested parties including community groups and farmers.

Composting Association Producer Members who did not return a questionnaire were contacted by telephone after six weeks, however, non-returns from the other recipients were not contacted.

A total of 154 completed questionnaires were returned, representing a response rate of 21.5%. Any ambiguous returns were contacted by telephone and clarified verbally. This questionnaire was designed to be as user friendly as possible. Most questions had categorised answers that were given in tick boxes. Respondents were also given the possibility to express any problems associated with their site that they felt the Composting Association should address, and also had the option to include any other general comments.

Questions concerning throughput and the use of the composted product required answers in tonnes per annum or cubic meters. Replies given in cubic meters were converted into tonnes by multiplying by 0.7 (as it was assumed that most finished composts have a bulk density of 0.7 tonnes m⁻³).

Respondents were promised confidentiality, therefore no names are given.

The survey did not include home composting initiatives, therefore estimates of the potential quantities of organic wastes diverted through such schemes have not been considered.

4 Results and discussion

4.1 Number of composting sites in the UK

The responses to this survey indicated that in 1998 there were 84 operators running a total of 89 sites in the UK, composting a total of 910,821 tonnes. The types of sites ranged from centralised (59 sites), community (11 sites), on-farm (9 sites), on-site (9 sites) and a miscellaneous category (1 site). The quantities composted at each type of site are shown in Table 2.

Table 2 - Number of composting sites in the UK in 1998

Site type	Number	Quantity of waste composted (tonnes)	Fraction of total waste composted at each facility type (%)
Centralised	59	835,040	92
Community	11	939	< 1
On-farm	9	68,990	8
On-site	9	5,837	< 1
Miscellaneous	1	15	< 1
TOTAL	89	910,821	100

4.2 Geographical distribution

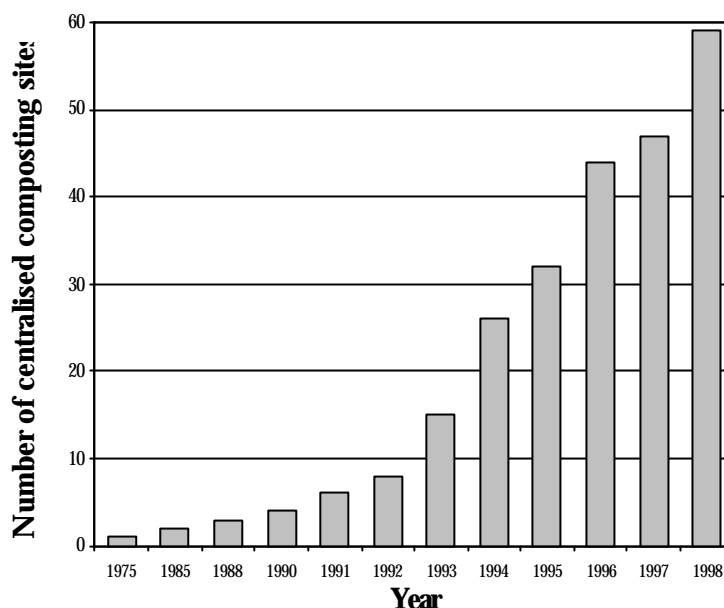
Most of the composting facilities were located in England. Of the 59 centralised sites, 52 were located in England, three in Scotland, three in Northern Ireland and one in Jersey. One of the community sites was located in Wales, with the remainder in England (10); one on-farm site was located in Scotland with the remainder in England (8). The miscellaneous site was also located in England.

4.3 Number of centralised composting facilities

The returns indicated that there were 59 centralised composting sites operating in the UK in 1998; these were run by 56 different operators. These sites composted a total of 835,040 tonnes of organic waste in 1998, which represents 92% of the total amount of waste composted.

These data indicate that there has been a significant growth in the number of centralised composting facilities over the past decade. These are shown schematically in Figure 1. Compared with data obtained during the 1997 survey, the number of centralised operational sites has risen from 47 to 59, and the amount of waste composted at centralised sites has risen from 313,215 tonnes to 835,040 tonnes. However, as this survey was more comprehensive than earlier ones, these figures should be treated with caution and be used to observe trends rather than taken to be absolute.

Figure 1 - Cumulative number of centralised composting sites in the UK



4.4 Operational status of UK composting sites

In an attempt to assess the number of operational and planned sites, the questionnaire asked respondents to indicate the operational status of each site. The responses are shown in Table 3.

Table 3 - Operational status of UK composting sites

Status	Number
Operational site	89
Proposed site: planning and licence obtained, but not yet operational	5
Proposed site: applying for / awaiting planning permission	10
Proposed site: applying for / awaiting waste management licence	3
Proposed site: not subject to planning and / or waste management licence	10
Proposed site: not specified	1
Closed down / suspended	4

There were a total of 29 planned sites, composting an anticipated 313,952 tonnes per annum. Of these, 11 were centralised sites, expected to compost 248,325 tonnes per annum; of which 69% (170,000 tonnes per annum) is expected to be sewage sludge. The remainder comprised 11 on-farm sites, two community composting sites and five on-site facilities.

Due to the large range of factors involved in opening a new site, it is not possible to predict when planned and considered sites will become operational. However, the figures clearly indicate a continued growth in new sites. The survey also identified that there are plans to expand 38 of the 89 sites currently operating.

Only four responses indicated that sites had closed during 1998. One closure was because a new facility had been commissioned, one site closed because of sale of land, and two closed because of financial constraints and budget cuts.

4.5 Type of composting system in operation

The questionnaire asked what type of composting system respondents operated or proposed to operate. The types of composting system identified through this survey are shown in Table 4.

Table 4 - Type of system in use based on *all* operational sites, and type of system envisaged at proposed composting sites

Type of system	Number operational	Number proposed
Open-air turned-windrow	71	18
Static aerated pile	0	6
In-vessel	6	2
Covered windrow	5	1
New Zealand box	12	2
Other	1	0
TOTAL	95	29

The data indicated that nearly 80% of all operational composting plants involved in the study used open-air turned-windrow systems, and of the total 910,821 tonnes of waste composted, 873,602 tonnes, or 96%, was processed through this type of system.

Responses from the community composting sites indicated that four of the sites used more than one type of composting system, which accounts for the difference between the total number of composting *systems* recorded in the survey which was 95, and the total number of *sites* recorded which was 89.

Of the proposed plants expected to come on line, around 62% (18) are expected to be open-air turned-windrow systems. However, not all respondents indicated the type of system that they intend to establish. Interestingly, responses indicated that six static aerated pile systems are planned.

4.6 Number of centralised composting sites

Given that the majority of waste was composted at centralised sites, the breakdown of the type of composting system used and the quantities composted have been calculated and are given in Table 5. Of the total number of centralised sites, 90% (53) were open-air turned-windrow systems, accounting for 96% of waste composted at centralised sites and 88% of all waste composted in this survey.

Table 5 - Type of system in operation at *centralised* sites, and the total throughput of waste for facility type

Type of system	Number of system type	Amount of waste processed (tonnes)	Fraction of waste processed (%)
Open-air windrow	53	799,980	96
In-vessel	2	24,560	3
Covered windrow	4	10,500	1
TOTAL	59	835,040	100

4.7 Throughput at centralised sites

The quantities of wastes composted at the centralised sites are shown schematically in Figure 2 and Table 6. Data obtained during the 1997 survey are also shown for comparative purposes.

Figure 2 - Throughput at centralised composting sites

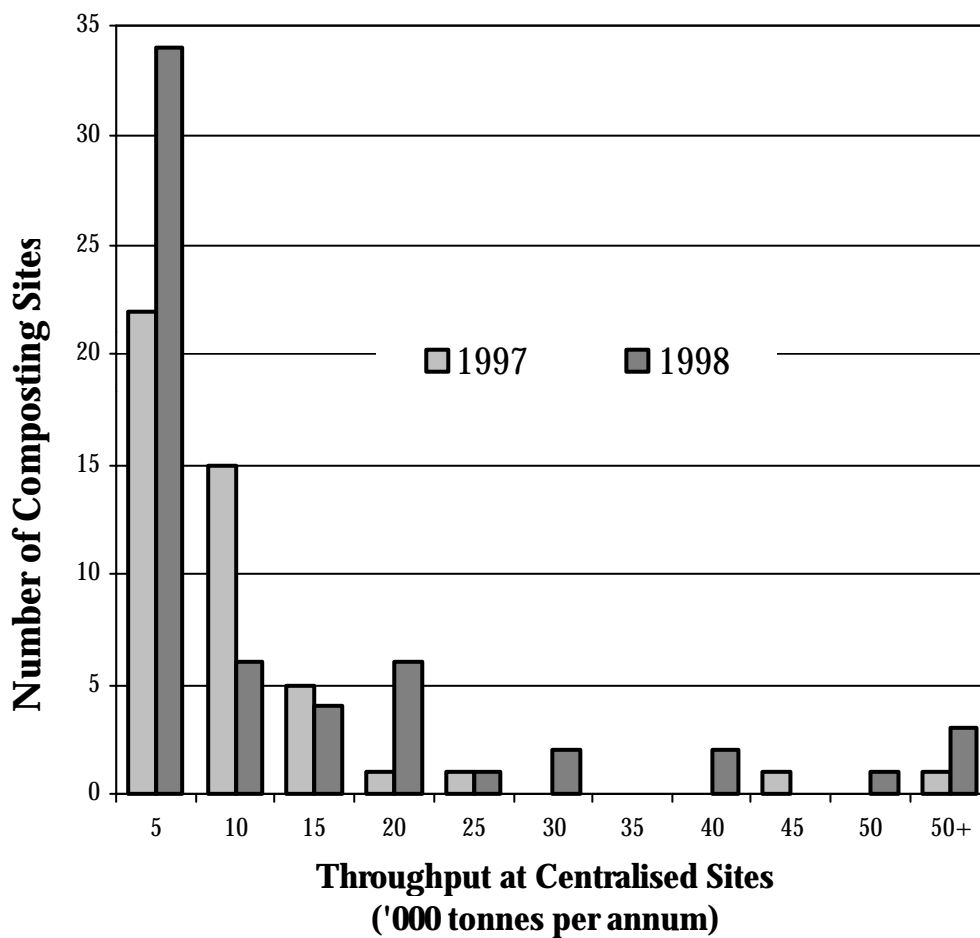


Table 6 - Throughput at centralised composting sites in 1997 and 1998

Throughput capacity (tonnes per annum)	Number of sites		% of total sites	
	1997	1998	1997	1998
<5,000	22	34	48	58
5,000 - <10,000	15	6	33	10
10,000 - <15,000	5	4	11	7
15,000 - <20,000	1	6	2	10
20,000 - <25,000	1	1	2	2
25,000 - <30,000	0	2	0	3
30,000 - <40,000	0	2	0	3
40,000 - <45,000	1	0	2	0
45,000 - <50,000	0	1	0	2
>50,000	1	3	2	5
TOTAL	46	59	100	100

The largest growth occurred in the number of centralised composting sites that have an annual throughput of 5,000 tonnes or less, where the number of sites rose from 22 (48% of sites) in 1997 to 34 (58%) in 1998. The number of sites processing between 5 and 10,000 tonnes of waste decreased from 15 in 1997 to 6 in 1998. Some of this fall is probably explained by the reduction of throughput so that a few sites may now fall into the 5,000 tonnes or less category, whilst some sites have expanded and now fall into the categories processing between 10,000 and 20,000 tonnes. An increasing trend can also be observed in larger sites with a throughput of over 25,000 tonnes of waste per annum.

The increase in the number of centralised sites processing less than 5,000 tonnes per annum during 1998 compared with 1997, is an interesting observation. The successful commercial operation of centralised sites will, in part, rely upon economies of scale. There is the possibility that planning and waste licensing issues have influenced this trend, however, if the Landfill Directive Targets are to be met, then The Composting Association expects to see an increase in the number of sites processing in excess of 20,000 tonnes per annum.

4.8 Types and quantities of waste composted

The survey asked respondents to distinguish the type and quantities of waste they composted. Categories included household waste, local authority waste, commercial and industrial waste. The results shown in Table 7 are based on the responses from **all** sites.

Table 7 - Types and quantities of waste composted at UK sites

Type of Waste	Quantity Composted (tonnes)	% of Total Waste Composted	
MUNICIPAL		% of municipal	
Household garden waste from civic amenity sites	362,596	58	40
Garden and kitchen waste collected from kerbside	30,954	5	3
Garden waste collected from kerbside	11,194	2	1
Other household	7,081	1	1
Green waste from local authority parks and gardens	216,548	34	24
Total municipal waste composted in 1998	628,373	100	69
NON-MUNICIPAL		% of non-municipal	
Green waste from landscaping activities	40,311	14	4
Industrial Processes	146,383	52	16
Other commercial processes not specified	95,753	34	11
Total non-municipal waste composted in 1998	282,447	100	31
TOTAL COMPOSTED IN 1998	910,820		100

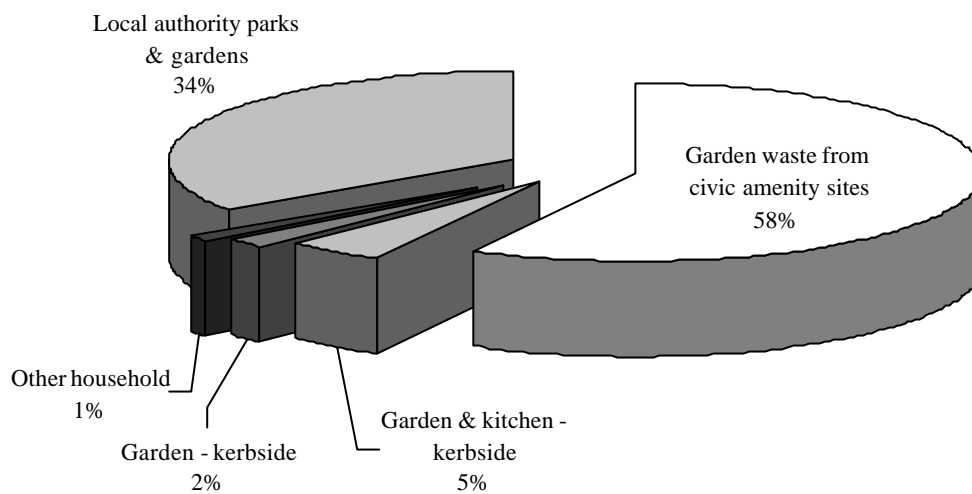
- Municipal waste has been classified as waste collected by Local Authorities or a contractor acting on their behalf.

The results indicate that just over two thirds of waste composted in the UK in 1998 came from a municipal source, and that two thirds of this was derived from households. A total of 94% of all municipal waste was composted at centralised sites (data not shown).

Although the total amount of *municipal* waste composted increased from 220,865 tonnes in 1997 to 628,375 in 1998 (representing a 285% increase), the projected quantities of biodegradable municipal wastes shown in Table 1 indicate that there is currently a massive shortfall between the current situation and the Landfill Directive Targets.

If the composting industry is to meet the challenge of the Landfill Directive for municipal organic wastes, current capacities for municipal waste will need to be expanded approximately eight-fold over the next decade. This rises to a 14-fold increase if the waste stream deemed suitable for composting includes 50% of the paper and cardboard fraction plus the organic fraction. The breakdown of the municipal waste composted in the UK is illustrated in Figure 3.

Figure 3 - Sources of municipal waste composted in the UK in 1998



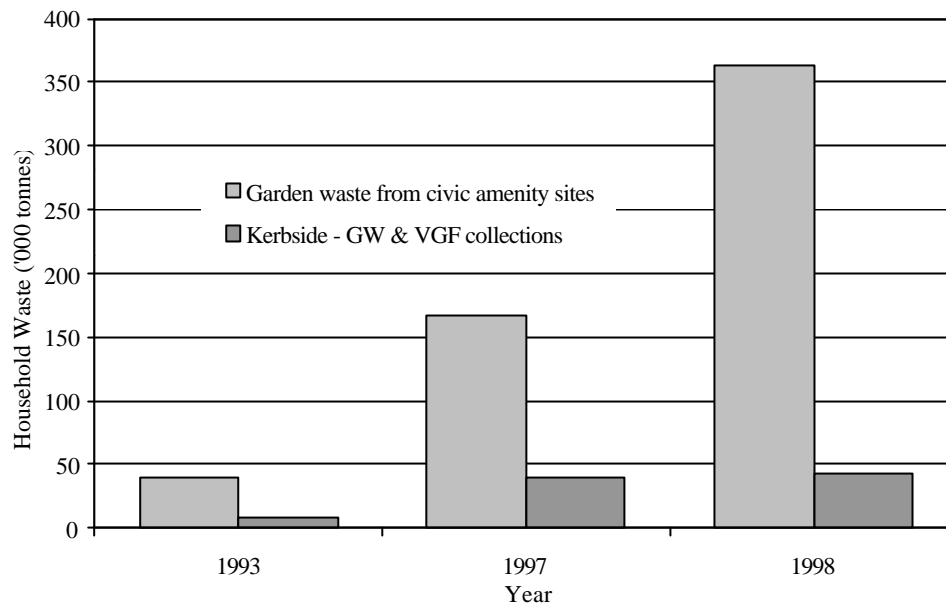
These figures indicate that garden waste, either from local authority parks and gardens or from household garden waste deposited at civic amenity sites, comprise over 90% of all municipal waste composted. Targeting the household fraction of municipal waste collected at the kerbside will be critical to meeting the biodegradable targets of the Landfill Directive.

4.9 Collection systems

The survey indicated that the majority of *municipal* wastes that were composted comprised garden wastes collected from civic amenity sites (58%), with only 7% of municipal waste collected from the kerbside. As approximately 63% of municipal wastes in England and Wales are collected from the kerbside and 16% from civic amenity sites⁷, there is clearly a need to increase the collection of organic wastes collected at the kerbside for composting.

Although source segregation and kerbside collection of organic wastes is critical for producing quality composts, quantities collected remain small and there has been no discernible increase in kerbside collections from 1997 to 1998. Household waste composted from both civic amenity and kerbside collection systems is illustrated in Figure 4.

Figure 4 - Collection system of household waste composted in 1993, 1997 and 1998



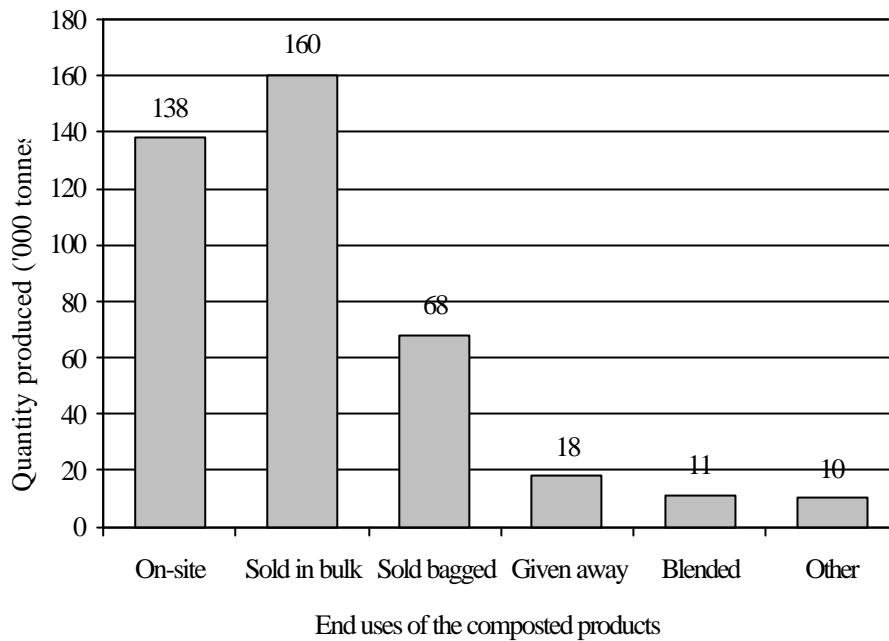
Although the data in Figure 4 reflect a positive overall trend in the amount of biodegradable household waste composted, the largest growth has been in green waste collected from civic amenity sites. The amount separated by householders and collected from the kerbside remains small, and has changed little since the last survey.

If the Landfill Directive Targets are to be met, the UK needs to specifically target the collection of source separated household biodegradable wastes. Whilst civic amenity green waste will continue to be an important source, it is unlikely that this will be sufficient to meet the Directive targets. New composting sites providing an alternative to landfill for the processing of household organic wastes need reliable feedstocks, and source separated household organics are likely to play an important role in contributing to this.

4.10 Use of the composted products

Interpretation of the returned questionnaires regarding uses of the composted products was difficult due to the different ways in which producers measure output; some manufacturers were reluctant to provide this information for reasons of confidentiality. Therefore, the data presented here only provide a broad indication of the uses of composts produced in 1998 and are shown schematically in Figure 5.

Figure 5 - Uses of the composted products



Responses to the survey indicated that the majority (40%) of composted product was sold in bulk. A large proportion (34%) was used on-site, presumably at composting sites operated by landfill operators, either as daily cover or for restoration purposes.

4.11 Problems encountered and comments made

Respondents were given the opportunity to inform the Association of any problems they had encountered, or to highlight any additional issues that they felt the Association should be aware of. A total of 68 respondents made comments; the problems encountered (59) have been summarised in Table 8.

Table 8 - Summary of problems encountered

Problem	Number
<i>Establishing & operating facilities</i>	
Opposition to site / negative public perception	2
Planning problems	8
Licensing problems	20
Lack of interest from Local Authority	4
Financial constraints	3
Educating the public to source segregate	3
Technical difficulties	2
Manpower support	3
<i>Marketing composts</i>	
Marketing problems	10

Need for standard / quality issues	4
TOTAL	59

The major problems encountered by the operators of centralised facilities were difficulties in marketing the composted products (9), problems obtaining planning permission (6) and difficulties in either obtaining a waste management licence or in dealing with the Environment Agency (8).

Five of the eight replies for the community sector, indicated that they had experienced difficulties, due to the current 'import – export' restriction of feedstocks and composts at waste management licence exempt sites. Two respondents also stated that they had experienced difficulties in finding appropriate volunteer labour support.

Two of the seven respondents for on-farm sites indicated that they had experienced problems over planning issues, whilst three respondents indicated difficulties with licensing / exemptions.

Marketing composts was clearly a problem across all sectors. Nine respondents suggested that the Composting Association should act to raise awareness of the benefits and uses of composts through a national marketing campaign; the provision of relevant information was also seen as important. This is a significant issue that needs to be effectively addressed to assist the composting industry in developing sustainably. The Association is developing a Composts Marketing Network, which, along with the Composts Quality Standard, should begin to tackle some of these issues.

Two respondents also suggested that the Association should develop training courses in composting technology and practice. The Association is currently working with the Waste Management Industry Training and Advisory Board (WAMITAB) in reviewing the need for a Certificate of Technical Competence (COTC) for composting. Once this has been developed, the Association will consider the training requirements for both managers and operatives.

5 Conclusions

The Composting Association's survey indicated that there were 89 facilities operating in 1998, composting a total of 910,821 tonnes. Of these, 59 were centralised sites, composting a total of 835,040 tonnes (92% of the total). These figures indicate that composting in the UK has increased significantly over the past decade.

The majority of the composting facilities identified in the survey were located in England. The Association therefore expects to see the development of composting in Scotland, Wales and Northern Ireland in a similar manner to England in the forthcoming few years.

A comparison of the Association's survey results for 1997 and 1998 suggest that the quantities of organic wastes composted at centralised sites in 1998 increased significantly (by just over 520,000 tonnes). The survey also indicated that approximately 628,373 tonnes of municipal waste was composted in 1998, of which approximately two thirds (411,825 tonnes) comprised household waste. The majority (92%) of municipal waste comprised either green wastes collected from civic amenity sites or local authority parks and gardens waste, with only 7% of municipal wastes organic

collected at the kerbside. As the DETR has estimated that household waste collected at the kerbside comprises over 60% of municipal waste collected in England and Wales, this clearly indicates the need for further expansion of separate collection schemes in this area.

These data demonstrate the need for a significant increase in the provision of household waste collections for organic wastes, if the Government's target set in *Making Waste Work* (for England and Wales) of one million tonnes of household waste to be composted by 2001 and the Landfill Directive targets are to be met.

The survey indicated that there were 29 proposed new sites, composting an anticipated total of 313,952 tonnes per annum. Of these, 11 were new centralised sites with a total expected throughput of 246,325 tonnes per annum, of which over 70% comprised sewage sludges.

The effect of the Urban Waste Water Treatment Directive and the pressure from the British Retail Consortium has led waste water treatment companies to seriously consider composting as a viable treatment process.

The majority (97%) of the centralised composting facilities comprised either open-air or covered turned-windrows. As many of the household organic wastes collected from the kerbside will be putrescible in nature, it will be interesting to see how the use of in-vessel systems develop over the forthcoming years. The survey indicated that there were two in-vessel systems in operation in 1998; anecdotal evidence provided by Composting Association members, suggests that there are now at least three more systems in operation.

The survey also indicated that there were three sites composting in excess of 50,000 tonnes per annum. Economies of scale should also see the development of a greater number of larger sites in the future. The number of small-scale sites composting less than 5,000 tonnes per annum also increased (from 22 in 1997 to 35 in 1998). It is likely that these will be exempt from waste management licensing and will probably involve community groups, on-site and on-farm facilities. The Association also expects to see an increase in these small-scale, decentralised sites in the next few years.

The major difficulties still being faced by the respondents include obtaining planning permission and a waste management licence / exemption. The Composting Association will be working with the Environment Agency to develop technical guidance for both the Agency and the composting industry, and the DETR is currently reviewing exemption criteria for small-scale composting facilities. Together, these should help alleviate most of these difficulties.

Clearly, if the composting industry is to develop sufficiently to be able to treat the anticipated quantities of municipal organic wastes in the future, then sustainable markets for the composted products will be required. Marketing problems were highlighted in the survey as presenting problems for a number of respondents, and this was probably reflected by the observation that 34% of the produced compost was used on-site, a situation where external markets do not need to be found.

The Composting Association's Composts Marketing Network and Composts Quality Standard should begin to address these issues, but, success will depend to a greater extent upon the ability of composters to produce consistently high quality products in order to maintain public confidence.

6 Acknowledgement

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7 References

- ¹ Walker, M. (1997) *The State of Composting in the UK - A Blueprint for Action*. The Composting Association.
- ² *A Way With Waste* (1999) Department of the Environment, Transport and the Regions, in partnership with the National Assembly for Wales.
- ³ *National Waste Strategy: Scotland* (1999) Scottish Environment Protection Agency.
- ⁴ *Limiting Landfill* (1999) Department of the Environment, Transport and the Regions, in partnership with the National Assembly for Wales.
- ⁵ *Towards a Waste Reduction Plan for London* (1999) MEL Research Limited.
- ⁶ Nesartnam S., Jones, A. and Porteous, A. (1997) A short study on the generation of household waste in the UK. *Journal of Waste Management and Resource Recovery*. **4 (1)**, p.27-37.
- ⁷ *Municipal Waste Arisings 1995 / 96* (1998), Department of the Environment, Transport and the Regions.