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Household and municipal waste: Comparability of data in EEA member countries

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Background and methodology

The purpose of this report prepared by the European Topic Centre on Waste (ETC/W) is to investigate comparability between existing household and municipal waste data for the years 1993-1996 in European Environment Agency (EEA) member countries. This topic requires investigation because published household and municipal waste statistics show large variations in the generation per capita from one country to another without sufficient explanation as to why these variations exist.

- The terms 'household waste' and 'municipal waste' are described and discussed, in particular the use of the terms in waste surveys conducted by the OECD and Eurostat in the last decade.

- In order to relate the ETC/W study and survey to the existing OECD/Eurostat statistics, the ETC/W has followed the OECD/Eurostat definition of household and municipal waste. Household waste is waste from domestic households. Municipal waste is household-type waste collected by or on the behalf of the municipalities and household-type waste collected by the private sector.

- The ETC/W survey has been developed in such a way that it can be related to the existing OECD/Eurostat questionnaires. In general, the ETC/W survey splits up the aggregated items in the OECD/Eurostat surveys and seeks more detailed information.

- All EEA member countries except Liechtenstein participated in the survey (i.e. EU15 plus Norway and Iceland participated).

Key findings

- Total Household Waste cannot be compared between **all** member countries. This is simply due to the fact that some countries do not provide sufficient information on all waste categories produced by households.

- Total Municipal Waste cannot be compared between **all** member countries due to differences in the kind of waste collected by different municipalities. Data and information on municipal waste must therefore be expected to be incomparable by nature.

- However, certain well-defined fractions from the household and municipal waste streams can be compared between all member countries. These are traditional collection waste (or bagged wastes, i.e., mixed waste collected from households and other sources every day, every week, every two weeks etc) and separately collected fractions, including packaging (such as paper, cardboard, glass, metal) and food/organic waste from households and other sources. Other sources of these types of waste include commercial and institutional activities. For convenience, this waste stream is called **'daily household and commercial waste'**. Generally, these wastes are produced from the daily or routine activity of households and businesses and do not include items such as bulky wastes that are generated on an intermittent basis. It has to be underlined

that the term 'daily household and commercial waste' is not the same as the OECD/Eurostat term 'household waste'.

- The total yearly amount of 'Daily household and commercial waste' in EEA member countries is about 150 million tonnes, which is approximately 10 % of the total amount of waste generated in the EEA member countries (excl. agriculture waste).

- Total waste generation per capita per year of this comparable fraction, 'daily household and commercial waste', varies to a lesser extent between member countries than previously reported statistics for total household waste and total municipal waste. The generation in most countries ranges from 350 to 430 kg per capita per year. The mean production of 'daily household and commercial waste' is 368 kg/capita/annum with a standard deviation of 13 % of the mean compared with 26 % and 20 %, respectively, for household and municipal waste quantities reported by OECD/Eurostat. The data applied in the calculation of 'daily household and commercial waste' do not necessarily include all the relevant wastes generated. For example, in some countries some of the traditional collection waste (bagged waste) from sources other than households are collected by private companies (not on the behalf of the municipality) and this quantity may therefore not be included in the figures for 'daily household and commercial waste', even if its inclusion is desirable.

- Variations in 'daily household and commercial waste' between member countries are mainly a function of the extent to which household and similar waste from other sources is sorted and separately collected. For instance, member countries with a national, regional or local waste policy that actively promotes sorting of household and similar waste will tend to have a lower quantity of bagged waste per capita than countries where little sorting activity occurs

- 'Daily household and commercial waste' includes five waste fractions, which for many years have been relevant to waste management policy in many countries and at EU level. The relative size of each of the waste fractions represented in 'daily household and commercial waste' can indicate whether or not a country or region is making progress in relation to the management of these waste streams. Therefore, the term is a useful indicator for comparing the status and development in each country of waste management practices in relation to these streams.

- There is a need in most member countries for better guidelines to be provided to the data providers (municipalities, regional governments, treatment plants, etc) on how to obtain reliable data on household and municipal waste. The member countries' guidelines do not have to be identical but must be co-ordinated between the member countries to secure comparable data across the EEA countries. This co-ordination of guidelines for data collection and detailed definition of the waste categories will be crucial if Eurostat is to successfully implement the forthcoming EU regulation on waste management statistics.

1. Introduction

1.1. Background

Waste represents an enormous loss of resources both in the form of materials and energy. Indeed, the amount of waste that we produce can be seen as an indicator of how efficient we are as a society, particularly in relation to our use of natural resources. During the last 20 years an increasing number of initiatives have been taken by the EU, governments, councils, NGOs, private companies etc to improve waste management, including programmes for reducing the quantities of waste generated.

In general, private citizens throughout Europe have demonstrated an interest in how they can support better management of their own waste. Many programmes have been established which encourage the sorting of waste from households such as kerb-side collection systems and bring-bank systems. These separated waste fractions such as glass, paper and metals are then, generally, separately collected for recovery either by or on the behalf of a municipality.

The Fifth EU Environmental Action Programme had as one of its targets that municipal waste generation per capita by the year 2000 would be stabilised at the EU average for 1985 (300 kg per capita). However, it is not clear whether or not this target relates to waste collected by municipalities (common understanding of municipal waste) or waste generated by households (common understanding of household waste). Lack of clarity in relation to definitions clearly impedes the usefulness of targets such as that mentioned above.

Both the OECD and Eurostat publish data on municipal and household waste generation in EU Member States, EFTA countries and some accession countries. The existing data for municipal waste and household waste per capita vary significantly between EEA member countries EEA (See Table 1).
For instance, countries such as Denmark and the Netherlands are reported to have household waste generation data of about 500 kg/capita/annum. This is twice that reported for Iceland and Luxembourg and over 60 % higher than that reported for Austria, Germany and Norway. Similar wide variations can be found for municipal waste.

Table 1 Generation of household and municipal waste in kilo per capita in EEA member countries in 1995 or latest year available according to OECD and Eurostat surveys

Country	Household waste	Municipal waste	Country	Household waste	Municipal waste
Denmark	500	530	Austria	310	480
The Netherlands	470	580	Germany	300	320
Italy	400	470	Norway	300	620
Spain		370	Ireland	290	430
Sweden	360	440	Luxembourg	250	530
Portugal		350	Iceland	240	560
United Kingdom	340		Finland	180	410
France	340	470	Belgium		470
Greece		310			

Source: OECD, 1997

Possible explanations for these variations include:

- different definitions of waste and differences in systems used for waste data collection;
- differences in economic structure and lifestyle;
- differences in waste policy; and
- real differences in waste quantities produced.

While it is generally possible to demonstrate a link between economic growth and municipal waste generation (European Environment Agency, 1999), this linkage can only partly explain these apparent differences in waste production from one country to another. It is not at all clear that these apparent differences are real differences in waste generation or simply artifacts of the different ways in which waste is defined and information collected in different countries.

In recent years, several reports and investigations have considered the question of comparability of statistics on household and municipal waste between the European states, especially EU Member States. For example, the ERM-study made on behalf of the Commission's DG Environment (ERM, 1997) concluded in a report from November 1997 that, using existing statistics on waste 'it is not possible to determine trends from 1990-95 with a sufficient degree of confidence for the results to be meaningful'.

In February 1997, the Ministry of Housing, Spatial Planning and Environment of the Netherlands published the results of the survey 'Comparison of household waste figures for various countries in Europe' (VROM, 1997). The survey included data for household waste and municipal waste for nine countries of which eight are members of the EU. The direct reason for carrying out the study was that the OECD had concluded that in 1991 the Netherlands generated significantly more municipal waste per capita than other comparable OECD countries. The municipal waste data for the countries compared were between 460 and 585 kg per capita, with an average of 537 kg.

The Dutch study concluded that in 1993-94 the municipal waste statistics per capita of the countries surveyed were closer to each other than the statistics for 1991, and that the conclusions drawn by the OECD for 1991 were based on statistics that were not comparable. However, the household waste statistics for the countries compared in the Dutch study were between 261 and 488 kg per capita, with an average of 400 kg per inhabitant, for the period 1993-94, still a remarkably wide range for countries at similar stages of economic development.

In September 1998 the report for the REMECOM project was published (ADEME(a), 1998; ADEME(b), 1998). The project was created in 1995 under anADEME (French Environment Protection Agency) initiative with funding from the EU. Seventeen communities (10 from France and the remainder from Belgium, Germany, Ireland, Italy and United Kingdom) carried out household waste characterisation campaigns using a standardised methodology. The project identified 13 household waste categories, which have been measured six times in the period 1995-1998. In spring 1997, the annual household waste statistics per capita varied between 260 kg and 538 kg. This suggests that real differences do exist between the various countries studied because a standardised methodology was used.

In conclusion, while considerable effort has gone into the question of data comparability in relation to statistics on household and municipal waste, there remains uncertainty as to the degree to which these reported variations are real differences in waste generation or artifacts of the different ways in which waste is defined and information collected in different countries and regions.

1.2. Purpose of the report

The purpose of this report from the European Topic Centre on Waste (ETC/W) is to investigate comparability between existing household and municipal waste data for the years 1993-1996 in European Environment Agency member countries. This topic requires investigation because published household and municipal waste statistics show large variations in the generation per capita from one country to another without sufficient explanation as to why these variations exist.

To address this situation, the EEA requested that the European Topic Centre on Waste to:

- review the existing data on municipal and household waste for the period 1993-1996;
- investigate the comparibility of the data; and
- attempt to develop a comparable dataset for the countries concerned.

In doing this, it cannot be assumed that it is possible to make valid comparisons in all cases. The objective is to identify the fractions of municipal and household waste that can be compared with reasonable accuracy and confidence, along with those fractions that cannot be compared.

To identify these fractions, the member countries' municipal and household waste data for the period 1993-1996 needed to be scrutinised in a more detailed manner than has been done before. The period 1993-1996 was chosen because it was considered that reasonably good quality data should be available for most countries for this period. The work has therefore concentrated specifically on clarifying and scrutinizing existing data for waste generation for municipal waste and household waste.

2. Methodology

2.1. Definitions

Before developing a common structure and a useful information list, clear definitions of household waste and municipal waste are required. The various definitions in common usage at EU level are described and discussed below with a view to adopting a practical and workable definition for the purpose of comparing data.

Definitions or mention of municipal and household waste are to be found in the joint Eurostat/OECD questionnaires (1992 - 1998), the Landfill Directive and the Commission's draft Regulation on Waste Management Statistics (27 January 1999). Individual Member States also have their own definitions that are not necessarily in harmony with internationally applied definitions.

Since all Member States are familiar with the joint OECD/Eurostat questionnaire, and these surveys are the principal source of European-wide information on municipal and household waste, it is worth considering in some detail the definitions that have been used in these questionnaires over the past decade.

2.1.1. Municipal waste

In the 1992 and 1994 questionnaires, municipal waste was defined as follows:

'Municipal wastes are waste collected by municipalities or by order of them. They include waste originating from households, commercial activities, office buildings, institutions such as schools and government buildings and small businesses that dispose of waste at the same facilities used for municipally collected waste. They also include similar waste from rural areas, even if they are disposed by the generator.

The definition goes on to include:

- similar wastes generated by the same sources that are collected or purchased for recycling, even if the material does not enter the same waste stream (including separately collected fractions)
- white goods, bulky waste
- street sweepings and the content of litter containers, if managed as solid waste'

In the 1992 questionnaire, 'all those wastes requiring treatment other than household waste' were excluded although this exclusion was removed from the 1994 questionnaire, perhaps due to lack of clarity as to its meaning.

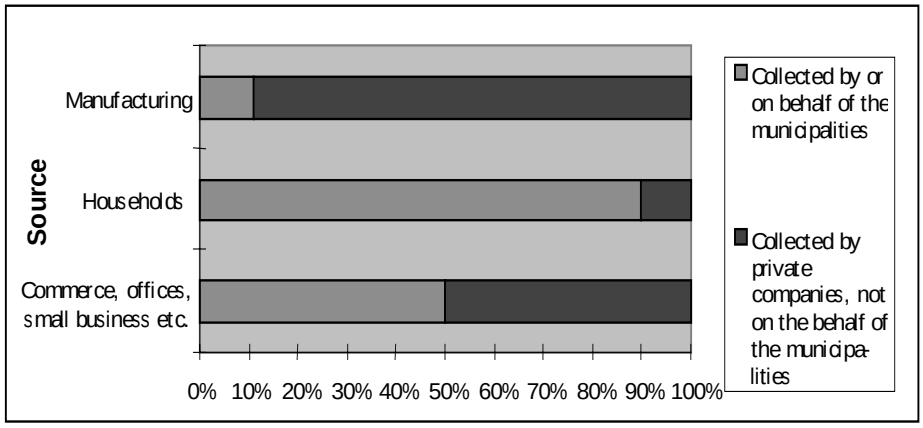
Some minor but significant amendments were made to the definition used in the 1996 questionnaire. Waste to be included as municipal waste was clarified as being 'waste originating from households, **similar** waste from .....'. The introduction of the qualification 'similar' restricted municipal waste from sources other than households such as commerce and trade, to waste of a similar character to that of household waste, effectively removing industrial-type wastes from the definition of municipal waste, even where industrial wastes are collected by or on behalf of a municipality. Sewage sludge and construction and demolition wastes were also excluded. The exclusion of construction and demolition waste seems to imply that

construction and demolition waste generated from the activities of munipalities (e.g. building maintenance, construction, roads etc) is not a part of the municipal waste stream. Whether construction and demolition waste from do-it-yourself activities should also be excluded or counted as bulky waste, which is the practice in some countries, was not clarified.

In 1998, a new Table was introduced which sought information on similar waste to municipal waste, including household waste, collected by the private sector. This means that waste originating from households but collected by, for example, the private DUAL system in Germany, is accounted for by the 1998 questionnaire, which was not the case with the 1996 questionnaire, which only sought information on waste collected by or on the behalf of the municipalities.

It is therefore clear that the definition used by OECD/Eurostat has evolved over the years, reflecting to a certain extent, changing practices in waste management. However, the definition remains relatively complex, being based on at least three separate concepts: waste collection, waste source and waste type. This complexity is illustrated in Figure 1. The inevitable consequence of this is that it is highly unlikely that the term is going to be applied in a uniform manner across Europe making it very difficult if not impossible to make a direct comparison between municipal waste arisings in different countries.

Figure 1 A purely hypothetical case illustrating paper and cardboard waste related by source and way of collecting



The Landfill Directive defines municipal waste as follows: 'Municipal waste means waste from households, as well as other waste which, because of its nature or composition, is similar to waste from households'. This is a departure from the definitions used by OECD/Eurostat as it makes no mention of collection and restricts municipal waste to household waste by type but not by source.

The draft Regulation on waste management statistics does not define either municipal waste or household waste. However, the proposal seeks statistics on waste from 'household and similar waste collected by the businesses and the municipal collection scheme' which encompasses waste type (household waste), waste source (any source that generates waste similar to household waste) and waste collection (businesses engaged in collection and the municipal collection scheme). The proposal goes on to define 26 waste categories as belonging to 'household and similar waste'. There is therefore similarity between the description used in the draft Regulation and the OECD/Eurostat definition of municipal waste from 1998.

2.1.2. Household waste

In relation to household waste, the 1992 and 1994 questionnaires sought information on household waste, but did not include a precise definition of the term. The OECD Environmental Compendium 1995 includes the results from the 1994 survey and defines household waste as 'waste generated by the domestic activity of households. It includes garbage, bulky waste and separately collected waste. National definitions may differ' (page 161). A similar definition is used in the Eurostat Environment Statistics 1996 (page 191).

In 1996 and 1998, a relatively clear direction was given in relation to household waste by stating that 'household waste consists of traditional collection waste, separately collected bulky waste and other separately collected fractions'.

2.1.3. Conclusions

The following general conclusions can be drawn in relation to household and municipal waste.

Household waste is a concept linked specifically to waste **generation**, consisting of waste from a unique type of source: households. However, in practice, waste collected from households will often be mixed in with similar waste from other sources such as offices, restaurants etc making it difficult for the authorities to be precise about exactly how much waste collected is actually generated by households.

Municipal waste, generally speaking, is a management/collection concept, because it is generally understood to mean waste collected by or on behalf of municipalities. Because municipal activities can vary from one country to another and even vary from one region to another within countries, data and information on municipal waste must therefore be expected to be incomparable by nature. That said, there has been a general convergence between the various definitions in relation to the **type** of waste that is considered under the heading municipal - waste type is generally understood to mean household-type waste, meaning that industrial-type wastes are not included. Perhaps, in the long term, and in light of the introduction of private collection schemes in many countries, the definition that is provided in the Landfill Directive is the most practical from the point of view of comparing one country to another as it simply defines municipal waste as household-type waste from any source and is silent on the question of collection.

However, in order to relate the ETC/W study and survey to the existing OECD/Eurostat data, the ETC/W has followed the OECD/Eurostat definition of household and municipal waste. Household waste is defined as waste coming from households. Municipal waste is defined as household-type waste collected by or on the behalf of the municipalities and household-type waste collected by the private sector. A detailed list of the definitions used is attached as Annex 3.

2.2. ETC/W survey

2.2.1. Questionnaire design

A questionnaire for household and municipal waste was developed by ETC/W in early 1998. The questionnaire was designed to be used to obtain additional information from EEA member countries for the years 1993-1996. Based on the method used in the Dutch survey, mentioned in chapter 1, the ETC/W developed the questionnaire in close co-operation with Eurostat and presented it for discussion to Eurostat´s Sub-Group on Waste at its meeting in April 1998. The questionnaire was then forwarded to the EEA National Reference Centres on Waste (NRC/W) requesting completed returns by 31 July 1998.

The questionnaire was designed to determine, in relation to both household and municipal waste:

- what waste fractions are collected;
- which parts of the waste originate from the source household and which from other sources;
- the parts of the municipal waste stream for which a source cannot be identified;
- whether wastes are collected by or on behalf of municipalities or by the private sector; and
- how the member countries collect data on household and municipal waste.

For example the fraction 'paper and cardboard' waste is produced both by the source 'households' and by other the sources, such as 'Commercial activities, offices, small businesses, restaurants etc'. When the ETC/W drew up the questionnaire, it was considered important to do it in a way that the answers would reveal if, for instance, separately collected paper and cardboard from the source 'office, commercial activities, offices, small businesses, restaurants etc' was actually registered under this source and not under the source 'households'.

Similarly, for bagged waste from the source 'Commercial activities, offices, small businesses, restaurants etc' it should be clear whether it was registered under this source or under the source 'households' or, if the source is impossible to identify more precisely, that only a total quantity can be reported which includes waste from households and commercial enterprises.

Therefore, the ETC/W questionnaire included four parts, as follows (Tables 2 and 3):

a. **Household waste**. Waste generated by the domestic activity of households and collected by or on behalf of a municipality.
b. **Other municipal waste**. Waste originating from commerce and trade activities, office buildings, institutions (schools, hospitals, government buildings) and small businesses etc and collected by or on behalf of a municipality.
c. **Municipal waste total**. The total figure for waste collected by or on behalf of municipalities i.e. 'Household waste' (a) plus 'Other municipal waste' (b). In some instances, a country might have a figure for the total amount of a particular waste stream collected by or on behalf of the municipality without knowing how much came from households and how much from other sources. Where this applies, a return would be given under the heading 'Municipal Waste Total' with no data reported under headings (a) and (b).
d. **Household waste** collected outside of the municipal collection scheme, i.e., household waste collected by non-profit organisations, charities and the private sector.

Table 2 Questionnaire list for household waste and other municipal waste broken up by type of collection, sources and waste categories

ETC/W list 1993-96 Country:..... '000 tonnes	1993	% from house-holds	1994	% from house-holds	1995	% from house-holds	1996	% from house-holds
Household Waste Total (A)								
Of which								
1. Traditional collection (bagged waste)								
Separately collected Household Waste								
2. Bulky Household Waste Total								
Of which								
· Electric and electronic waste								
· Construction and demolition waste								
· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)								
3. Food waste and garden waste. Total								
Of which								
· Food waste								
· Garden waste								
4. Paper and cardboard								
5. Glass and bottles without deposit								
6. Metals (ferrous and non-ferrous)								
7. Small scale hazardous waste								
8. Other separately collected household waste (e.g. plastics, textiles etc)								
Other Municipal Waste Total (B)								
Of which								
9. Commercial activities, offices, small businesses, restaurants etc Total								
Of which								
· Traditional collection (bagged waste)								
Separately collected								
· Paper and cardboard								
· Glass and bottles without deposit								
· Garden waste								
· Food waste								
· Hazardous waste								
· Metals (ferrous and non ferrous)								
· Other separately collected waste (e.g. plastics, textiles etc)								
Other waste from commercial activities, offices, small businesses, restaurants etc								

10. Hospitals Total								
Of which								
· Hazardous Hospital waste								
· Non hazardous Hospital waste								
11. Municipal services (street and market cleaning, yard waste litter containers, etc)								
Municipal Waste Total (C)								
Of which								
12. Traditional collection (bagged waste)								
Separately collected Waste								
13. Bulky Waste Total								
Of which								
· Electric and electronic waste								
· Construction and demolition waste								
· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)								
14. Food waste and garden waste. Total								
Of which								
· Food waste								
· Garden waste								
15. Paper and cardboard								
16. Glass and bottles without deposit								
17. Metals (ferrous and non-ferrous)								
18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste								
19. Hazardous hospital waste								
20. Non hazardous hospital waste								
21. Other separately collected waste (e.g. plastics, textiles etc)								
22. Municipal services (street and market cleaning, yard waste litter containers, etc)								
Household waste from rural areas not served by municipal services								
Memorandum item: Refillable bottles with deposit (not regarded as waste)								
Sources:								
Notes:								

To assist in developing a common understanding of the different waste terms used in the ETC/W survey, definitions were provided for all the waste terms used and a list enclosed with the survey. The definitions are attached as Annex 3.

Table 3 Household waste collected outside the municipal collection scheme (e.g. by DUAL-system, churches, non-profit organisations, private institutions and businesses) and *not* included in table 2

ETC/W list1993-96	1993	1994	1995	1996
Household Waste Total (A)				
Of which				
1. Traditional collection (bagged waste)				
Separately collected Household Waste	Collected by systems outside the municipal collection scheme	Collected by systems outside the municipal collection scheme	Collected by systems outside the municipal collection scheme	Collected by systems outside the municipal collection scheme
2. Bulky Household Waste Total				
Of which				
• Electric and electronic waste				
• Construction and demolition waste				
• Other bulky waste (furniture, mattresses, mixed bulky waste etc)				
3. Food waste and garden waste				
Of which				
• Food waste				
• Garden waste				
4. Paper and cardboard				
5. Glass and bottles without deposit				
6. Metal (ferrous and non-ferrous)				
7. Small scale hazardous waste				
8. Other separately collected (e.g. plastics, textiles)				
Total of household waste collected outside the municipal system				

2.2.2. The relationship between the ETC/W questionnaire and the OECD/Eurostat questionnaire

The list used in the ETC/W questionnaire is a combination of Tables 1.a and 3 from the 1996 OECD/Eurostat questionnaire. Table 1a. in the OECD/Eurostat questionnaire sought the following information on municipal waste:

Municipal waste generated	
Household waste	**Other municipal waste**
of which - traditional collection	*of which* - commercial activities, offices etc
- separate collection: bulky waste	- small businesses
- separate collection: other fractions	- hospitals
	- municipal services (street and market cleaning yard waste, litter containers etc)
	Similar waste from rural areas not served by municipal services

Source: OECD/Eurostat questionnaire 1996, Waste, Table 3, page 13.

Table 3 of the OECD/Eurostat questionnaire sought information on total generation of municipal waste and also specific parts of the municipal waste stream and how much is collected separately. The table sought information on:

- Paper, paperboard, paper products
- Textiles
- Plastics
- Glass
- Metals
- Food waste, garden waste and similar waste
- Other waste

Table 4 below provides a comparison between the data sought by the existing OECD/Eurostat questionnaire (1996), the data from the 1996 OECD/Eurostat questionnaire that are published and the data sought by the ETC/W questionnaire as supplementary information.

As can be seen from Table 4, the ETC/W questionnaire sought a more detailed breakdown of waste composition than requested heretofore. It is also interesting to note that while the OECD/Eurostat questionnaire sought a considerable amount of information on household and municipal waste, only the aggregated statistics for the two waste streams have actually been published.

By analysing the composition of the waste streams in some detail, it was hoped that some light would be shed on the apparent differences reported by different countries. Table 4 indicates that by splitting up the aggregated published statistics for household waste and municipal waste, it should be possible to get an overview of why the differences demonstrated in Table 1 (see section 1.1.) exist.

2.2.3. Information on methodologies for data collection

At European level, knowledge of how Member States collect waste data is limited. The ERM Study included an overview of statistical methodologies for data collection on municipal waste. On the basis of this overview and in order to improve the level of information, the ETC/W sought information about collection and registration of household waste data and municipal waste data. The questions concern items such as the percentage of the municipalities included in the survey; whether the statistics are estimated or based on weighed quantities; do the national organizations provide guidelines for the municipalities on how to collect data on household and municipal waste quantity and composition, etc. The questions are attached as Annex 4.

2.2.4. Time schedule for the survey

For each country, the ETC/W prepared a table where the aggregated data already registered for the period 1993-96 were shown. The sources for these data were the OECD Environmental Data Compendium 1997; Eurostat, Environment Statistics 1996; the OECD/Eurostat questionnaire from 1996; the Dutch survey and various national data reports.

Table 4 Correspondence between the existing OECD/Eurostat questionnaire (1996), the data from the OECD/Eurostat questionnaire 1996 which are published and the ETC/W list for supplementary information

OECD/Eurostat Questionnaire1996	OECD/Eurostat Published data 1996	ETC/W list1993-96
Municipal Waste	**Municipal Waste**	**Municipal Waste Total (A)**
Of which	Of which	Of which
Household Waste	**Household Waste**	**Household Waste Total (B)**
Of which		Of which
1. Traditional collection		1. Traditional collection (bagged waste)
		Separately collected Household Waste
2. Bulky waste		2. Bulky Household Waste Total
		Of which
		• Electric and electronic waste
		• Construction and demolition waste
		• Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)
Separate collection other fractions		
3. Food waste and garden waste		3. Food waste and garden waste
		Of which
		• Food waste
		• Garden waste
4. Paper and cardboard		4. Paper and cardboard
5. Glass		5. Glass and bottles without deposit
6. Metal (ferrous and non-ferrous)		6. Metal (ferrous and non-ferrous)
7. Textiles		7. Small scale hazardous waste
8. Plastics		8. Other separately (e.g. plastics, textiles etc)
Other Municipal waste		**Other Municipal waste total (C)**
Of which		Of which
9. Commercial activities, offices etc		9. Commercial activities, offices, small businesses, restaurants etc
10. Small businesses		Of which
		• Traditional collection (bagged waste)
		Separately collected
		• Paper and cardboard
		• Garden waste
		• Food waste
		• Hazardous waste
		• Metal (ferrous and non-ferrous)
		• Other separately collected waste (e.g. plastics, textiles)
		• Other (plastic, glass, metal
		Other waste from commercial activities, offices, small businesses, restaurants etc
11.Hospitals		10. Hospitals
		Of which
		• Hospital waste
		• Non hazardous waste
12. Municipal services (street and market cleaning, yard waste litter containers, etc)		11. Municipal services (street and market cleaning, yard waste litter containers, etc)
13. Similar waste from rural areas not served by municipal services		12. Similar waste from rural areas not served by municipal services

Source: OECD/Eurostat questionnaire 1996, Waste and OECD, 1997.

The questionnaire was distributed on the 23rd of April 1998 to all EEA member countries except Liechtenstein. The survey was sent to the EEA's National Focal Points and National Reference Centres on Waste (NRC/W) with a copy to the Member States' statistical bureaux.

All 17 member countries replied in July and August 1998. Some countries were then asked for additional information following which data analysis proceeded.

3. Results

3.1. General conclusions about data comparability

3.1.1. Overview of the information reported by countries surveyed

Table 5 presents a summary of the main sources of waste for which member countries reported information. The table illustrates the differences in reported information. Only 'Municipal Waste Total' was completed by all member countries. However, as mentioned in section 2.1.3, data and information on total municipal waste must be expected to be incomparable by nature.

Table 5 Information on household waste and other municipal waste given by the member countries. Stated according to the source generating the waste

	Source. Total waste generation from the source	Number of countries, which have given information	Number of countries, which have not given information
A	Total waste from: Households	11	6
B1	Total waste from: Commercial activities, offices, small businesses, restaurants etc	8	9
B2	Total waste from: Hospitals	1	16
B3	Waste from: Street and market cleaning, yard waste.	5	12
C	Municipal Waste Total (A+B1+B2+B3)	17	

The **first general conclusion** is therefore that it is not possible to compare the existing statistics for total waste generation from the source households between all member countries. This is simply due to lack of information from 6 countries. One country expressed the situation this way: 'We do not have information about all waste categories from households, only a few of them. It would therefore be difficult for us to add these statistics to get the 'Household Waste Total' as this could create some confusion'.

Table 6 provides a detailed overview of the kinds of information that different countries submitted in response to the ETC/W survey. The questionnaire included 26 main entries and 21 additional sub-entries, all of which can be related to the OECD/Eurostat questionnaires. Table 6 provides a very clear indication as to why the published waste statistics from OECD and Eurostat show large variations between member countries in relation to amounts of household waste and municipal waste reported (see table 1); there are major differences between what countries report under the various headings.

For instance, of the 11 countries that provided information on total waste generation from households, Ireland, Luxembourg and Norway did not include data on bulky waste in the total waste generation from households.

Table 6 View over which kind of information member countries have given on waste 1993-96 from households and other municipal waste broken up by type of collection, sources and waste categories. (Decoding of the country codes and explanation of the symbols is shown after the table)

	AT	BE	*Bru*	*Fla*	*Wa*	DK	FI	FR	DE	GR	IE	IT	LU	NL	PT	ES	SE	UK	IS	NO	No of countries, which have given information
Household Waste Total (A)	x	x	x	x	x	x	x	x	x	:	x	:	:	x	:	:	:	x	x	x	11
Of which																					
1. Traditional collection (bagged waste)	x	x	x	x	x	x	:	x	x	:	x	:	x	x	:	x	:	x	x	x	12
Separately collected Household Waste																					
2. Bulky Household Waste Total	x	x	x	x	x	x	:	x	x	n.i.	n.i.	:	:	x	n.i.	n.i.	n.i.	x	n.i	:	7
Of which																				:	
· Electric and electronic waste	:	:	:	:	:	:	:	:	:	n.i.	n.i	:	:	x	n.i.	n.i.	n.i.	:	n.i.	:	1
· Construction and demolition waste	:	:	:	x	n.i.	:	:	:	:	n.i.	n.i.	:	:	x	n.i.	n.i.	n.i.	:	n.i.	:	1
· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	:	:	:	x	:	:	:	:	:	n.i.	n.i.	:	x	x	n.i.	n.i.	n.i.	:	n.i.	:	2
3. Food waste and garden waste. Total	x	x	x	x	x	x	:	x	x	n.i.	o	:	:	x	n.i.	n.i.	:	x	:	x	9
Of which																					
· Food waste	:	:	o	x	:	x	:	:	:	n.i.	o	:	:	:	n.i.	n.i.	n.i.	:	:	x	3
· Garden waste	:	:	x	x	:	x	:	:	:	n.i.	o	:	:	:	n.i.	n.i.	:	:	:	x	3
4. Paper and cardboard	x	x	x	x	x	x	:	x	x	:	x	:	:	x	:	n.i.	:	x	:	x	9
5. Glass and bottles without deposit	x	x	x	x	x	x	:	x	x	:	x	:	:	x	:	x	:	x	:	x	10
6. Metals (ferrous and non-ferrous)	x	x	o	x	x	x	:	x	x	:	x	:	:	x	:	n.i.	n.i.	x	:	x	9
7. Small scale hazardous waste	x	x		x	x	x	:	n.i.	x	n.i.	n.i.	:	:	x	n.i.	n.i.	:	n.i.	:	x	6
8. Other separately collected household waste (e.g. plastics, textiles etc)	x	x	x	x	x	x	:	x	x	n.i.	x	:	:	x	:	n.i.	:	x	:	x	9
Other Municipal Waste Total (B)	x	x	x	x		x	x	x	x	:	x	:	:	x	:	:	:	x	x	x	11
Of which																					
9. Commercial activities, offices, small businesses, restaurants etc Total	x	:	:	:		x	:	x	x	:	:	x	:	x	:	:	:	x	:	x	8
Of which																					
· Traditional collection (bagged waste)	:	:	:	:		x	:	:	x	:	x	:	:	x	:	:	:	x	:	x	6
Separately collected																					
· Paper and cardboard	:	:	:	:		x	:	:	:	:	x	:	:	:	:	x	:	:	:	x	4
· Glass and bottles without deposit	:	:	:	:		x	:	:	:	:	x	:	:	:	:	x	:	:	:	x	4
· Garden waste	:	:	:	:		x	:	:	:	n.i.	o	:	:	x	n.i.	n.i.	:	:	:	x	4
· Food waste	:	:	:	:		x	:	:	:	n.i.	o	:	:	:	n.i.	n.i.	n.i.	:	:	x	3
· Hazardous waste	:	:	:	:		n.i.	:	:	:	n.i.	n.i.	:	:	:	n.i.	n.i.	:	:	:	x	1
· Metals (ferrous and non ferrous)	:	:	:	:		n.i.	:	:	:	:	x	:	:	:	:	n.i.	n.i.	:	:	x	2
· Other separately collected waste (e.g. plastics, textiles etc)	:	:	:	:		x	:	:	:	n.i	x	:	:	:	:	n.i.	:	:	:	x	3
Other waste from commercial activities, offices, small businesses, restaurants etc																					

	AT	**BE**	*Bru*	*Fla*	*Wa*	**DK**	**FI**	**FR**	**DE**	**GR**	**IE**	**IT**	**LU**	**NL**	**PT**	**ES**	**SE**	**UK**	**IS**	**NO**	No. of countries, which can give information
10. Hospitals Total	n.i.	:	x			x	:	:	n.i	:	n.i.	:	:	:	x	n.i.	n.i.	n.i.	n.i.	n.i.	1
Of which																					
· Hazardous Hospital waste	n.i.	:	x			x	:	:	n.i	:	n.i.	:	x	n.i.	x	n.i.	n.i.	n.i.	n.i.	n.i.	3
· Non hazardous Hospital waste	n.i.	:				n.i.	:	:	n.i	:	n.i.	:	:	:	x	n.i.	n.i.	n.i.	n.i.	n.i.	1
11. Municipal services (street and market cleaning, yard waste litter containers, etc)	x	:	x	x		n.i.	:	x	x	:	x	:	:	x	n.i.	n.i.	n.i.	:	:	n.i.	5
Municipal Waste Total ©	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
Of which																					
12. Traditional collection (bagged waste)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
Separately collected Waste																					
13. Bulky Waste Total	x	x	x	x	x	x	x	x	x	n.i.	n.i.	x	x	x	n.i.	n.i.	n.i.	x	n.i.	:	10
Of which																					
· Electric and electronic waste	:	:	:	:	:	:	:	:	:	n.i.	n.i.	:	:	x	n.i.	n.i.	n.i.	:	n.i.	:	1
· Construction and demolition waste	:	:	:	x	:	:	:	:	:	n.i.	n.i.	:	:	x	n.i.	n.i.	n.i.	:	n.i.	:	1
· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	:	:	:	x	:	:	:	:	:	n.i.	n.i.	:	:	x	n.i.	n.i.	n.i.	:	n.i.	x	2
14. Food waste and garden waste. Total	x	x	x	x	x	x	x	x	x	n.i.	o	x	x	x	n.i.	n.i.	:	x	x	x	13
Of which																					
· Food waste	:	:	o	x	:	x	x	:	:	n.i.	o	:	:	:	n.i.	n.i.	n.i.	:	n.i.	x	4
· Garden waste	:	:	x	x	:	x	:	:	:	n.i.	o	:	:	x	n.i.	n.i.	x	:	x	x	6
15. Paper and cardboard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
16. Glass and bottles without deposit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	17
17. Metals (ferrous and non-ferrous)	x	x	o	x	x	x	x	x	x	x	x	x	n.i.	x	x	n.i.	n.i.	x	x	x	14
18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	x	x		x	x	x	x	n.i.	x	n.i.	n.i.	n.i.	x	x	n.i.	n.i.	x	n.i.	x	x	10
19. Hazardous hospital waste	n.i.	:	x			x	n.i.	n.i.	n.i.	x	n.i.	n.i.	x	n.i.	x	n.i.	n.i.	n.i.	n.i	n.i.	4
20. Non hazardous hospital waste	n.i.	:	x			n.i.	n.i	n.i	n.i	x	n.i.	n.i.	n.i.	:	x	n.i.	n.i.	n.i.	n.i.	n.i.	1
21. Other separately collected waste (e.g. plastics, textiles etc)	x	x	x	x	x	x	n.i	x	x	n.i.	x	x	n.i.	x	x	n.i.	x	x	x	x	13
22. Municipal services (street and market cleaning, yard waste litter containers, etc)	x	:	x	x		n.i.	n.i	x	x	n.i.	x	n.i.	n.i.	x	n.i.	n.i.	n.i.	x	n.i	n.i.	6
Household waste from rural areas not served by municipal services			o		o						x			o				o	x		4

Source: ETC/W, 1998

Explanation of symbols and country codes applied in table 6					
Code	**Name**	**Code**	**Name**	**Code**	**Name**
AT	Austria	FR	France	PT	Portugal
BE	Belgium	DE	Germany	ES	Spain
Bru	*Bruxelles*	GR	Greece	SE	Sweden
Fla	*Flandern*	IE	Ireland	UK	United Kingdom
Wa	*Wallonia*	IT	Italy	IS	Iceland
DK	Denmark	LU	Luxembourg	N	Norway
FI	Finland	NL	The Netherlands		
X	Quantity is reported by the country	:	Information not available	n.i.	The ETC/W has deducted from the context that the waste amount is not included

The same situation applies for Municipal Waste Total, with countries including Greece, Ireland, Norway, Portugal, Spain and Sweden not including data on bulky waste.

The **second general conclusion** is therefore that in relation to Total Municipal Waste, it is not possible to compare the existing data between all the member countries simply due to differences in the kind of waste reported under the heading 'Municipal Waste Total'.

Under Municipal Waste Total for the south European countries, the few reported waste types indicate that the figure for traditional collection waste (bagged waste) for these countries apparently is the only big contributor to the **total** amount of municipal waste. In the published waste statistics from OECD and Eurostat however, only the data for the total municipal waste have been published, although these data are in fact not comparable, whereas the non-published figures on traditional collection waste (bagged waste) might have been more comparable.

3.1.2. Waste categories that can be compared

Even if it is not possible to compare **all** the member countries total generation of waste from households or municipal waste, Table 6 can be used to identify which parts of the household and municipal waste stream can be compared. By deconstructing the data it should therefore be possible to arrive at a comparable dataset (a '**common denominator'**) for all or the majority of countries.

The most comprehensive reporting was under the heading 'Municipal Waste Total'. All countries reported information about the following waste types under this heading: traditional collection waste (bagged waste); paper and cardboard; glass and bottles without deposit. Many countries have also given information about bulky waste; food waste and garden waste total, metal waste and other separately collected waste.

While reporting under the heading 'Households' was not as comprehensive, many countries reported information on the following waste types under this heading: traditional collection (bagged waste); paper and card board; glass and bottles without deposit; food waste and garden waste and other separately collected waste. However, some countries including Iceland, Spain and the Netherlands have explicitly underlined that in practice a part or a small part of the collected waste may originate from commercial activities.

The various categories that should be included in a 'common denominator' between countries will now be considered.

Traditional collection waste
Traditional collection waste (bagged waste) is mixed garbage collected door-to-door on a regular basis (every day, every week, every two weeks etc). The bagged waste is typically generated as a result of the daily activities in the households but this kind of waste, due to its nature or composition, also be generated by sources other than households.

For example in countries with a small percentage of the population sharing home during the day (a high percentage of adults in the workforce), many people will have their lunch, afternoon tea/coffee etc at work and the waste generated by this activity will not count as waste from households. In a country with a lower percentage of adults in the workforce, more people will have lunch etc at home and the waste generated will therefore count as coming from the household. However, in both cases, the waste is of similar character.

The size and design of the bag or the container used for traditional collection waste (bagged waste) can also have some influence on the composition of the waste collected. Mini-containers with a size of, for example, 240 litres will (compared to smaller sized containers or a plastic bag) provide the opportunity to dispose of larger waste items, which might be better described as bulky waste. However, it has not been possible to include this kind of consideration in the survey and in the comparison.

In all countries, municipalities are responsible for traditional collection waste (bagged waste) from households and often also for the collection of bagged waste from other sources such as commercial activities, offices, small businesses, restaurants, etc. Often, the same truck collects bagged waste from both households and commercial enterprises/institutions. However, in some cases the bagged waste from commercial enterprises/institutions is collected separately at source or delivered by producers themselves, if they have larger quantities of bagged waste. Furthermore, in these cases the container will also often include waste that is more like industrial waste in nature or composition.

If the same truck collects bagged waste from households and other sources, it may be impossible or difficult to be precise about how much bagged waste originates from households and how much from other sources. Some countries are therefore only able to give a figure for the total amount of bagged waste collected and this figure is reported under the heading Municipal Waste Total in Table 6.

The situation as described above can lead to the following problems:

- Some member countries have included traditional collection waste(bagged waste) from commercial activities, offices, etc, in the reported statistics for traditional collection from households.
- Some countries may have included industrial waste in the reported quantities of bagged waste from commercial activities, offices, small businesses, restaurants etc.

These problems can be addressed in the following manner. In relation to the first problem mentioned, it is reasonable to assume that the quantity reported under the heading 'Total Municipal Waste' should be greater than the quantity reported under the heading 'Households', since municipalities are likely to be collecting waste from sources other than households. However, as illustrated in Table 7, five countries reported the same figure for 'Household Waste' as they reported for 'Total Municipal Waste' and a sixth country, Denmark, reported almost identical

data under the two headings. This leads to the conclusion that these countries may be including waste from sources other than households under the heading 'household' unless municipalities in the countries concerned **only** collect waste from households, a situation considered unlikely. When these six countries are considered along with other countries that did not report a figure for household bagged waste, it leads to the conclusion that only bagged waste under the heading 'Total Municipal Waste' can be included in the 'common denominator' for comparing statistics between countries.

Table 7 Member countries' reporting on traditional collection (bagged waste) stated by sources

	AT	DK	FI	FR	DE	GR	IE	IT	LU	NL	PT	ES	SE	UK	IS	NO
Households	x	x		x	x		x		x	x		x		x	x	x
Commercial activities, offices etc		x			x		x		x	x				x		x
Municipal Waste Total	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
The amount of bagged waste from households is the same as the amount from Municipal Waste Total	x	(x)		x								x			x	

Source: ETC/W, 1998. Decoding of the country codes is shown in the explanation to table 6.

As for the second problem, a possible solution is to attempt to identify whether or not a significant quantity of industrial-type waste is included in the statistics reported for bagged waste collected from commercial activities, offices, etc, by countries that provided separate statistics for waste from these sources. This is dealt with in more detail in section 3.2. and Annex 2.

However, at this stage it can be concluded that the first category that should be included in the 'common denominator' is bagged waste under the heading 'Total Municipal Waste'. This leads to the **third general conclusion** that, based on the existing statistics relating to all 17 member countries, traditionally collected waste (bagged waste) is best compared, when the total quantity of bagged waste within municipal waste is studied provided that the statistics for the bagged waste do not include significant quantities of waste similar to industrial waste.

However, the relative quantity of traditional collected waste in each member country will be affected by the degree to which separate collection is encouraged and practised – the more waste that is separately collected, the less there should be in the traditional bagged collection.

In the following paragraphs, the various separately collected waste streams reported under the headings Households and Municipal Waste Total are described, with the objective being to identify those streams that can be compared between member countries and that should be included as part of the 'common denominator'.

Separate collection waste

Two waste fractions are collected separately to some extent in all countries, paper/cardboard and glass waste. In many countries metals are also separately collected with future growth expected in separate collection of plastics.

Separately collected food and garden waste will also affect the relative amount of traditionally collected waste, particularly separately collected food waste. However, many member countries have only provided information on the total separately collected 'food and garden waste', making it difficult to determine the amount of organic food waste that has been separately collected.

Other waste types separately collected can in principle also affect the relative quantity of traditionally collected waste, if they would be expected to be contained within the bagged waste stream had they not been separately collected. On the other hand, it is not reasonable to include all separate collections in the common denominator. In particular, bulky waste should be excluded from the comparison because the types of items included would rarely find there way into the traditional collection stream, due to their size and weight.

Many countries reported information on 'Other separately collected waste (e.g. plastic, textiles)', point 8 and 21 in table 6. However, in general, these amounts are small and will therefore not be included.

The **fourth general conclusion** is therefore: In order to make a valid comparison between statistics for traditionally collected waste, separately collected paper, cardboard, glass, metal and food waste should be included in the lowest common denominator.

This conclusion is general and needs further elaboration in order to specify which parts of the separately collected waste should be included in the comparison.

Glass waste

Glass waste (container glass) will typically come from households, restaurants and shops. All member countries have reported the amounts of separately collected glass waste (container glass). It is reasonable to assume that all collected glass waste would have been a part of the traditional collection under Total Municipal Waste, had it not been separately collected.

In some countries waste glass is collected both by municipalities and other bodies, such as charities, private companies etc. Because of this the ETC/W survey sought information on glass waste from households collected outside of the municipality scheme. Only very few countries, however, reported information on glass waste collected outside of the municipal scheme.

As a part of the ETC/W contribution to the EEA publication: *Environment in the European Union at the turn of the century* (European Environment Agency, 1999) statistics were received from Fédération Européenne de Verre d'Emballage (FEVE) on the total container glass collection in the EU countries 1990-1996. The ETC/W has had the statistics checked by the member countries as part of the consultation process. The statistics covering the total collection of waste glass are presented in Table 8 compared to the information received as part of the survey concerning municipal and household waste.

Table 8 shows that most countries did not include all separately collected glass waste (container glass) in their answers to the ETC/W survey. This suggests that private organisations and enterprises collect a portion of the glass waste stream.

Table 8 Member countries reporting to the ETC/W on municipal collected glass waste in 1996 or latest year compared to total collection of waste glass. Stated in 1000 tonnes

		AT	BE	DK	FI	FR	DE	GR	IE	IT	NL	PT	ES	SE	UK	NO
	Year	1996	1996	1996	1994	1995	1993	1996	1996	1996	1996	1996	1996	1994	1996	1996
A	Separate collection of waste glass under municipal waste in 1996 or latest year. According to ETC/W survey. Stated in 1000 tonnes.	183	167	98	20	1160	2455	38	29	555	306	27	456	83	320	30
B	Total collection of waste glass in reference year according to FEVE. Stated in 1000 tonnes.	206	224	126	28	1400	2390	39	29	894	380	120	456	95	519	40
C	Collection under municipal waste in % of total collection of waste glass	89	75	78	71	83	103	97	100	62	81	23	100	88	62	75
D	Total recycling % for glass waste according to FEVE.(Total collected glass for recycling x 100/total consumption of container glass)	79	66	71	50	50	65	25	29	53	81	42	35	56	27	75

Source: ETC/W 1999, FEVE

As mentioned above it is reasonable to assume that all collected waste glass (container glass) would be a part of the traditional collection, had it not been collected separately. If this assumption is correct, it will be more correct to include the member countries total amounts of collected container waste glass in the comparison. i.e., as long the FEVE-data do not include flat glass, it will be more correct to use these data.

Paper and cardboard waste

Paper and cardboard waste originates not only from households, commercial activities and offices but also from manufacturing industries such as printing houses, bookbinding works and industrial transport packaging.

Paper and cardboard waste arising from manufacturing activities has for many years been collected for recycling in most countries.

Municipal collection schemes for paper and cardboard waste have been introduced in the various member countries over the past 15 years. The schemes have tried to promote better sorting and separation by households, commercial activities, offices, etc, and in this way reduce the amount of paper being disposed of through traditional collection (bagged waste). Cardboard waste comes mainly from commercial activities, offices etc, while paper waste comes from both households and commercial activities, offices etc.

Unlike glass waste, it is not reasonable to assume that all separately collected paper and cardboard waste would have been part of the traditional collection under Total Municipal Waste, if it had not been separately collected. Separate collection systems for paper and cardboard from manufacturing activities have existed for many years and this fraction can therefore be assumed to have been always separately collected and should therefore not be included in the common denominator.

Table 9 illustrates the large differences between member countries in relation to the proportion of the total amount of collected waste paper and cardboard accounted for by municipal separate collection schemes. These variations are much more important than for waste glass.

Table 9 Member countries reporting to the ETC/W on municipal collected paper and cardboard waste in 1996 or latest year compared to total collection of paper and cardboard waste (in1000 tonnes)

		AT	BE	DK	FI	FR	DE	GR	IE	IT	NL	PT	ES	SE	UK	NO
	Year	1996	1996	1996	1994	1995	1993	1996	1996	1996	1996	1996	1996	1994	1996	1996
A	Separately collected paper and cardboard waste under municipal waste in 1996 or latest year according to ETC/W survey. Stated in 1000 tonnes	439	321	332	392	220	4649	273	84	576	840	6	2125	399	580	195
B	Total collection of paper and cardboard waste in 1996 or latest year according to CEPI. Stated in 1000 tonnes	1062	1020	615	473	3857	10912	273	84	2531	1700	329	2125	1158	4552	367
C	Collection in reference year under municipal waste in % of total collection of paper and cardboard waste	41	31	54	83	6	43	100	100	23	49	2	100	34	13	53
D	Total recycling % for paper and cardboard waste according to CEPI. Total for collection for recycling x 100/ total consumption of paper and cardboard)	71	38	52	38	41	71	31	17	31	69	39	41	66	40	44

Source: ETC//W, 1999 and CEPI, 1997

Countries with a separate collection of paper and cardboard waste within municipal waste accounting for 100 percent of the total collection of paper and cardboard waste need to be considered in more detail to clarify whether or not a significant part of the collection is in fact from manufacturing activities.

This is dealt with in more detail in section 3.2. and in Annex 2.

Metal

As shown in Table 6 few countries have reported data on separately collected metals which would include metal packaging. Metal packaging would have been a part of the traditional collection, if it had not been separately collected, and it is therefore reasonable to include it in the common denominator.

Food waste/organic waste from households

Many countries have been unable to distinguish between separately collected food waste and separately collected garden waste, but could report a figure for 'organic household waste'. Organic household waste includes, for example, fruit and vegetable waste, potato peelings, remnants of fish and meat, tea bags, coffee grounds, kitchen paper, garden clippings, grass mowings, leaves, weeds, flowers, plants, etc. It does not usually include wood and thick branches.

It is natural to consider organic waste from the kitchen in a household as part of the traditional collection, if no separate collection for this waste exists. On the other hand, garden waste like wood and thick branches would not normally be collected as part of the traditionally collected waste. These items are too heavy and large and should not be included in the common denominator.

Lighter garden waste, for example, garden clippings, leaves, weeds, grass mowings, plants, may have been composted or incinerated in the garden if they have not been separately collected. In this way a separate collection system of organic waste including this kind of garden waste can contribute to an increasing recorded waste generation from households without a real increase having occurred. If that is so, it would not be reasonable to include these amounts in the lowest common denominator. However, it could equally be argued that this kind of lighter garden waste might also have been a part of the traditional collection (bagged waste) and would in this case be reasonably included in the common denominator.

It has not been possible in this survey to get more detailed information about this question. Therefore, a pragmatic approach has been adopted. Eight countries reported data for total 'food waste and garden waste' from households with only six countries reporting considerable amounts. Three countries reported separate statistics for food waste. The rest of the countries is dealt with in Annex 2. Therefore, for this survey it is reasonable only to include the gross quantity 'organic food waste' from households in the common denominator.

Organic food waste from other sources will also find its way into the traditional collection stream in the absence of separate collection and reported quantities should therefore be included in the lowest common denominator.

Common denominator for comparable data for traditionally collected waste and separately collected waste fractions

When identifying a common denominator to compare the data for traditional collected waste between member countries, the following parameters should be included in the denominator (the numbers refer to those used in Table 6):

- the collected quantity of traditional waste (TradCol) under municipal waste total (MW12) provided that the data for the traditional collection (bagged waste) do not include too much waste similar to industrial waste;
- the total separate collection of food waste (OrganicFood) under municipal waste total (MW14);
- the total separate collection of newspapers & magasines, printing paper and paper and cardboard packaging (Newspaper-CardboardPackaging) under municipal waste total (MW15) but not the collection from manufacturing activities;
- the total separate collection for recycling of glass waste/container glass (GlassRecy) under municipal waste (MW16);
- the total separate collection of metal packaging waste (MetalPackaging) under municipal waste total (MW17).

If the total collected waste quantity is the same per capita and per year in countries x and y, it will be reasonable to assume from a theoretical point of view that:

XTradCol+XOrganicFood+XGlassRecy+XNewspaperCardboardPackaging+XMetalPackaging
=
YTradCol+YOrganicFood+YGlassRecy+YNewspaperCardboardPackaging
+YMetalPackaging

The fifth conclusion is therefore: Generally, this waste stream, which can be compared, albeit tentatively, between different countries, is produced from the daily or routine activity of households and businesses and does not include items

such as bulky wastes that are generated on an intermittent basis. For convenience, we will call this waste stream 'daily household and commercial waste'.

It has to be underlined that the term 'daily household and commercial waste' is not the same as the OECD/Eurostat term 'household waste'. Furthermore, as much of the data supplied by member states has been modified for the purpose of inclusion in the common denominator, the analysis should be considered as providing an indication of relative quantities arising as opposed to precise data on waste generation.

3.2. Comparable data sets for the EEA member countries

3.2.1. Harmonised dataset for 'daily household and commercial waste'

In this section a harmonised data set is presented for 'daily household and commercial waste' using the common denominator. The data used were those reported by member states, or adjusted data where additional information was available.

It has not been possible to prepare a time series for the period 1993-1996 for 'daily household and commercial waste' due to the absence of data for all countries for the respective years. Therefore, the harmonised dataset is for either 1996 or the latest year for which data is available.

Per capita statistics calculated by the ETC/W using the common denominator are presented in Table 10 along with statistics published by the OECD for household and municipal waste. Two ETC/W statistics are presented for each country, one calculated from data reported by member states to the ETC/W following the survey (see Annex 1), and the other which accounts for adjustments made following analysis of the statistics. Footnotes explaining why these adjustments were made are attached as Annex 2.

Mean values and standard deviations are also presented in Table 10 for reported 'daily household and commercial waste', adjusted 'daily household and commercial waste', household waste reported by OECD/Eurostat and municipal waste reported by OECD/Eurostat. The standard deviation, as a percentage of the mean, provides a relative measure of the differences that exist between Member States for the various categories. The results suggest that differences between Member States for the category adjusted 'daily household and commercial waste' are less marked than those for household waste and municipal waste as reported by OECD/Eurostat. Statistics have been presented with and without Iceland and Austria which had a very low 'daily household and commercial waste' generation compared to other countries.

The analysis allows us to draw the following **sixth general conclusion:** variations between member states for the category 'daily household and commercial waste' are less marked than for the more general categories 'household' and 'municipal' waste, as reported previously by OECD/Eurostat. The average generation per capita of 'daily household and commercial waste' is 368 +/-47 kg/capita/annum.

Countries in the lower per capita/per annum range such as Austria, Finland, Greece Iceland, Norway and Sweden also have lower population densities per km^2, which may partially explain why the reported statistics are lower, i.e., the lower statistics may be a function of differences in waste collection systems as opposed to real differences in the quantity of waste produced.

Further, in Austria the low generation of waste is explained by the fact that people living in rural areas have different habits from people in towns. They buy less fast food, they grow their own vegetables and sometimes they use the scrapings and other organic waste to feed their animals. Therefore, they need less consumption articles than people in towns and generate less waste.

Table 10 Generation of 'daily household and commercial waste' according to the ETC/W survey and compared to the published statistics for household and municipal waste so far. Kilo per year

	ETC/Survey			OECD/Eurostat		
Country	Generation per capita daily household and commercial waste (reported statistics)	ETC/W Adjusted statistics. Generation per capita	Year	Total household waste per capita	Total municipal waste per capita	Year
Unit	Kg	Kg		Kg	Kg	
Austria	253	**245**	1996	310	480	1993
Belgium	352	**347**	1996	0	470	1994/95
Denmark	380	**386**	1996	500	530	1995
Finland	348	**350**	1994	180	410	1994
France	379	**403**	1995	340	470	1993
Germany	503	**403**	1993	300	320	1993
Greece	354	**328**	1996	0	310	1992
Iceland	387	**272**	1996	240	560	1994
Ireland	422	**393**	1995	290	340	1995
Italy	430	**430**	1996	400	470	1995
Luxembourg	677	**391**	1996	250	530	1995
Norway	293	**362**	1996	300	620	1995
Portugal	377	**387**	1996	0	350	1994
Spain	451	**397**	1996	0	370	1994
Sweden	355	**357**	1994	360	440	1994
The Netherlands	400	**402**	1996	470	580	1995
United Kingdom	394	**396**	1996	340	0	1990
EEA-total	419	**397**				
EEA countries average simple mean	397	**368**		329	453	
Standard deviation	89	**47**		86	89	
Standard deviation as a percentage of mean	22	**13**		26	20	
EEA countries average simple mean (exc. Iceland)	398	**374**		337	446	
Standard deviation (excl. Iceland)	91	**42**		85	92	
Standard deviation as a percentage of mean (excl. Iceland)	23	**11**		25	21	
EEA countries average simple mean (excl. Austria & Iceland)	408	**382**		339	444	
Standard deviation (excl. Austria & Iceland)	85	**27**		88	95	
Standard deviation as a percentage of mean (excl. Austria & Iceland)	21	**7**		26	21	

Source: The ETC/W survey 1998,.OECD 1997, Eurostat 1996. For the adjusted ETC/W statistics see the notes in Annex 2.

Table 11 Generation of 'daily household and commercial waste' according to the ETC/W survey related to waste category. Stated in total and per capita.

	Total generation per year in 1000 tonnes						Per capita waste generation in kilo per year								
	ETC/W adjusted waste generation	Bagged waste	Organic house-hold waste/ food waste	Paper and card-board waste	Glass waste	Metal packa-ging waste	ETC/W adjusted waste	Of which	Bagged waste	Organic house-hold waste/ food waste	Paper and card-board waste	Glass waste	Metal packa-ging waste	Population	Foot-note
Austria	1976	1291	0	439	206	40	245		160	0	54	26	5	8059	1
Belgium	3521	2852	66	321	224	48	347		281	6	32	22	5	10159	2
Denmark	2021	1457	68	332	130	0	386		278	13	63	25	0	5237	3
Finland	1846	1335	70	392	33	21	363		263	14	77	6	4	5084	4
France	24134	21100	0	1440	1400	194	403		352	0	24	23	3	59879	5
Germany	33032	24728	941	4649	2455	259	409		306	12	58	30	3	80771	6
Greece	3442	3400	0	0	38	4	328		324	0	0	4	0	10490	7
Iceland	74	65	0	6	3	0	272		240	0	21	11	0	271	8
Ireland	1395	1325	0	32	38	1	393		373	0	9	11	0	3554	9
Italy	24609	23480	0	576	550	3	430		410	0	10	10	0	57226	10
Luxembourg	161	131	0	16	14	0	391		318	0	39	34	0	412	11
Norway	1572	1282	47	195	40	8	362		295	11	45	9	2	4348	12
Portugal	3792	3664	0	6	120	2	387		374	0	1	12	0	9808	13
Spain	15763	15307	0	0	456	0	397		386	0	0	11	0	39674	14
Sweden	3121	2627	0	399	95	0	357		300	0	46	11	0	8750	15
The Netherlands	6268	3869	1167	840	338	54	402		248	75	54	22	3	15575	16
United Kingdom	23264	22000	230	580	430	24	400		378	4	10	7	0	58144	17
EEA-total	149991	129913	2589	10217	6567	658	397		344	7	27	17	2	377441	

Source: The ETC/W survey, 1998 and sources mentioned in the footnotes, see Annex 2.

3.2.2. The quantity of bagged waste

Table 11 presents a breakdown of the 'daily household and commercial waste' statistics for each member country. These disaggregated statistics, together with the data presented in Table 12, illustrate that while the differences in total quantity of 'daily household and commercial waste' are relatively small; there are significant differences between the quantities collected as bagged waste and the quantities separately collected. Countries with well-developed infrastructure for separate collection and sorting tend to have higher quantities collected separately and lower quantities collected as bagged waste. Mean values for bagged waste and separately collected wastes are 311 +/- 62 kg/capita/annum for bagged waste and 58 +/- 41 kg/capita/annum for separately collected waste. Of particular interest here is the large variation in separately collected waste where the standard deviation is 71 % of the mean, compared with 20 % for bagged waste and 13 % for total 'daily household and commercial waste'.

This leads to the **seventh general conclusion**: differences between member countries in relation to the quantities of 'daily household and commercial waste' collected as bagged waste or collected separately are of more significance than the relatively small differences between the gross quantities generated.

Table 12 Number of countries grouped according to bagged waste, quantity of sorted waste and total waste. Yearly waste generation per capita of 'daily household and commercial waste'

Waste categories	< 249 kg	250-299 kg	300-349 kg	350-399 kg	= > 400 kg	Average simple mean kg	Standard Deviation kg	Standard deviation as a percentage of mean
Bagged waste	3	4	4	5	1	311	62	20
Total generation of daily household and commercial waste	1	1	2	8	5	369	47	13
	< 25 kg	25-49 kg	50-74 kg	75-99 kg	= >100 kg			
Separately collected	6	1	5	1	4	58	41	71

Source: ETC/W survey 1998

For instance, member countries with a national, regional or local waste policy that encourages or requires separation and sorting of waste are likely to have a relatively lower quantity of waste per capita collected as bagged waste.

Furthermore, an analysis of data from countries for which sufficient information is available to do a trend analysis from 1993-1996 suggests that the quantity of bagged waste has stabilised or declined during the period 1993-96. During the same period, the quantities of separately collected organic food waste, glass waste, waste paper and metals have been increasing. This indicates a trend away from collection of 'daily household and commercial waste' as bagged waste towards better source separation and sorting of these wastes.

It is perhaps not so surprising as it may be at first sight that the conclusion that only minor variations appear to exist in the production of 'daily household and commercial waste', i.e., waste generated by typical daily activities and similar waste including packaging from other sources. Even if considerable differences exist between the member countries in relation to purchasing power per capita, waste categories included in 'daily household and commercial waste' are all linked to

daily activities such as eating, drinking reading newspapers, disposable nappies etc There is likely to be a natural limit to the amount of waste produced through normal daily activity. In addition, many of these goods for daily use are the same in all member countries with the same packaging etc Therefore, it is not so surprising that the differences in waste generation of these particular categories of waste are not so large.

Table 10 shows that according to the OECD/Eurostat data, Denmark and the Netherlands in 1995 had a yearly household waste generation per capita of 500 kg and 470 kg, respectively, whereas other countries had much lower quantities. Because the ETC/W survey can be related to the OECD/Eurostat survey, it is possible to explain the high statistics for Denmark and the Netherlands. In Annex 1 the quantities of bulky waste from households in member countries in the years 1993-96 are listed. Annex 1 shows that only 8 member countries have reported quantities of bulky waste. Belgium, Denmark, and the Netherlands have, compared to other countries, very high quantities reported, with an annual generation between 81-122 kg.

Therefore, the apparent differences in household waste generation that are indicated by the data published by OECD/Eurostat appear, to a large extent, to be explained by the presence or absence of bulky wastes in the figures and, where figures for bulky wastes are included, differences in the quantities of bulky wastes reported. The atypically low quantity of bulky waste in some countries, for example in Norway and Sweden, does not mean this waste type is not produced in the households of these two countries. It simply suggests that bulky waste is not included in the overall quantities reported as household waste and/or municipal waste.

3.2.3. How useful is the category 'daily household and commercial waste'

The total estimated 'daily household and commercial waste' arisings in EEA member countries is about 150 million tonnes, which is approximately 10 % of the total amount of non-agricultural waste generated in the 17 countries surveyed. It therefore represents a significant percentage of the total waste stream.

The category 'daily household and commercial waste', as defined above, may be of use in waste management planning at European level in the following ways. First of all, because the category is specifically connected to daily household and commercial activity, i.e., our daily lives, changes in it may better reflect real changes in household-type waste generation than either of the more general terms 'household' waste or 'municipal' waste that have been applied up to now and it may therefore be a useful indicator of change. Secondly, and maybe of greater importance, the category can be used as an indicator of the relative success of measures at both EU level and national level to increase recycling and decrease landfilling or incineration of waste. It can be used for this purpose because it distinguishes between traditional collection waste which, generally, is disposed of either at landfill or by incineration, and separately collected waste, which, generally, is recycled or recovered. Changes in the relative quantities that are separately collected or collected as bagged waste can therefore be used to track developments in individual countries and at European level. Clearly, those countries with increasing quantities of 'daily household and commercial waste' that are separately collected are moving towards a progressively improved situation, provided that this is mirrored by a corresponding decrease in quantities of bagged waste collected.

3.3. EEA member country methods for collection of data on household and municipal waste

It is not only different waste management systems, different waste classifications and different economic activities that affect the reported generation of waste from households and the total reported amount of municipal waste. Methods used for collecting the waste data can also influence the reported figures. Therefore, the ETC/W included in its survey some questions on how data on household and municipal waste was collected. The questions are attached as Annex 3 and were asked based on the ERM study (made on behalf of the Commission's DG Environment). The ERM information is stated in Table 13 and some of the answers to the ETC/W questionnaires are presented in Table 14.

3.3.1. General conclusions on methods for data collection

In general the replies reveal:

- Most information on municipal waste and waste from households is obtained through surveys undertaken by the municipalities or regional governments.
- All member countries prepare guidelines for how to complete these surveys. However, most countries do not have general guidelines for the municipalities on how to collect data on household and municipal waste.
- Very few member countries have guidelines with information on the average quantities per capita and average composition of waste from households. In fact this is an advantage, but it is a problem for the reliability of the surveys that only very few countries prepare guidelines on how the municipalities can obtain their own average data.
- Only very few member countries have general guidelines on how to obtain data on municipal waste from sources other than households. i.e. from commercial activities, offices, small enterprises, etc.

Table 13 Methodologies for data collection of household and municipal waste in EEA member countries

Country	Authorities for collection data	Main Data providers	Authorities for compilation data	Survey metod	Frequency
Austria	9 provincial governments	Municipalities	Federal Environment Agency	Postal questionnaire survey	Annual
Belgium					
Brussels	IBGE, Bruxelles	Municipality		Declaration	
Flanders	OVAM	Municipalities		Questionnaire survey	Annual
Wallonien	Ministry of Environment, Wallonien	Group of municipalities		Declaration	Annual
Denmark	EPA	Treatment plants	Environment Protection Agency	Declaration	Annual
Finland					
France	Adame	All treatment plants for MW	IFEN	Postal questionnaire	Annual
Germany	16 Federal State Statistical Offices	Municipalities	Federal Statistical Office	Questionnaire survey	Annual from 1996, prior every 3 years
Greece	Municipalities	Municipalities	Ministry of Environment		
Iceland	Group of municipalities	Group of municipalities	Environmental and Food Agency	Declaration	Annual
Ireland	Local municipalities	All major local authorities	Environment Protection Agency	Postal questionnaire	1995 and every 3 years
Italy	Federambiente	All municipalities	Environment Protection Agency	Declaration of waste generation	1996 and every year after
Luxembourg	Ministry of Environment	Municipalities	Ministry of Environment	Survey	Annual
Norway	Statistics Norway	Municipalities	Statistics Norway	Survey	3rd year for all municipalities. Sample survey every year
Portugal	Instituto dos Residuos (INR), Ministry of Environment	All municipalities	Instituto dos Residuos (INR), Ministry of Environment	Declaration by completing a questionnaire	Annual
The Netherlands	Statistics Netherlands (CBS)	All municipalities	Statistics Netherlands (CBS)	Survey	Annual
Spain	Ministry of Environment/ regional governments	Municipalities/regional governments	Ministry of Environment	Survey	
Sweden	Statistical Sweden	All municipal authorities	EPA	Questionnaire survey	Every 4-5 years
Unit Kingdom	Department of Environment, Transport & regions	Municipalities	Department of Environment, Transport & the Regions (England and Wales) Scottish Office	Questionnaire survey	

Source: ERM, 1997 and the ETC/W survey 1999

Table 14 Methodologies for data collection of household and municipal waste in EEA member countries

Country	Survey includes direct contact from federal authority to the municipalities	Survey sent to treat-ment plants	Rate of country´s population covered by responding municipalities	General guidelines for the municipalities on how to collect data on quantity and composition of waste coming from the source households	Presumption that data from households is based on weighed quantities	Guidelines inform on average quantities per capita and average composition of household waste which the municipalities can use	Guidelines on how the municipality can obtain its own average generation and composition of household waste	General guidelines on how to obtain data on municipal waste from other sources than households
Question number, confer annex 4.	*1a*		*1e*	*2a*	*2b*	*2c*	*2d*	*3a*
Austria	no		100 %	yes	yes	no		no
Belgium								
Brussels	yes		no information	yes	no information	yes	yes	no
Flanders	yes		100 %	yes	no	no	no information	no
Wallonien	no		no information	yes	no information	yes	yes	no
Denmark	no	yes	.	yes for treatment plants	yes	no	no	yes for treatment plants
Finland		The figures have been calculated using average generation depending on densely or sparsely populated areas and using average composition						
France	no	yes	> 90 % [1]	no	yes	no	yes	no
Germany	no	yes	100 %	no	yes	no	no	no
Greece	yes		65 %	yes	yes	no	Partly	no
Iceland	no information		no information	no information	no information	no information	no information	no information
Ireland	yes		100 %	Only for composition	no	no	yes	yes
Italy	yes		85 %	yes	yes	no	no	yes
Luxembourg	yes		no information	no information	no information	no information	no information	
Norway	Yes		100 %	yes	yes	no	no	yes
Portugal	no information		no information	no information	no information	no information	no information	no information
The Netherlands	yes		91 %	not yet, but are under developing	yes in the future	no	yes, in the future	no
Spain	yes		no information	no	no	no	no	no
Sweden	yes		99 %	no	no information	no information	no information	no
United Kingdom	yes		> 85 %	no	no	yes	no	some

Source: ETC/W survey 1998.[1)] >90 % means that the information from the treatment plants for municipal waste covers >90%of the country's population.
Source: The ETC/W survey, 1998.

The eighth general conclusion is: There is a need in the member countries for better guidelines for the data providers (municipalities, regional governments, treatment plants, etc) on how to obtain good data on waste from households and municipal waste as such. The member countries' guidelines do not have to be identical but must be co-ordinated between the member countries to secure comparable data**.**

3.3.2. Other data collection initiatives

In the REMECOM project, created in 1995 under ADEME's initiative, tools and methods to characterise municipal waste and household waste are recommended. Cities and regions in seven European countries participated in the project, funded by the European Commission. The project is an important first step to secure better guidelines on how to obtain good data on waste from households and municipalities.

Unfortunately, the method in the REMECOM project does not secure a clear distinction between waste coming from the source households or other sources producing waste similar to waste from households or the total amount of a certain waste type disregarding the source. Therefore four different sampling methodologies are recommended, causing difficulties in different surveys.

The Commission draft proposal of 27 January 1999 concerning a regulation on waste management statistics requires information on some well-defined household-like waste categories, independent of whether or not the wastes come from households or other sources. In this way the proposal in principle clarifies some of the existing confusion and some of the uncertainties mentioned here. However, based on the experiences so far, it will be necessary to develop additional guidelines, which very carefully define what should be included in each of the waste categories. An attempt has been made to do this in this study, which could form the basis for guidelines (see Annex 3).

The co-ordination of guidelines for data collection and detailed definition of the different waste categories to be used is a very important task for Eurostat, particularly in relation to the future implementation of the forthcoming EU regulation on waste management statistics.

4. Conclusions

The main conclusions drawn from this study are:

1. It is not possible to compare total waste generation from the source households between **all** member countries simply due to lack of information on certain waste types in several countries.

2. It is not possible to compare total generated municipal waste between **all** member countries simply due to differences in the kind of waste collected by the municipalities. Data and information on municipal waste must therefore be expected to be incomparable by nature.

3. However, certain well-defined fractions from the household and municipal waste streams can be compared between **all** member countries. These are traditional collection (bagged wastes i.e., mixed waste collected from households and other sources every day, every week, every two weeks etc) and separately collected fractions, including packaging, such as paper, cardboard, glass, metal packaging and food waste from households and other sources. Other sources include commercial and institutional activities that generate waste similar to that generated by households. Generally, these wastes are produced from the daily or routine activity of households and businesses and do not include items such as bulky wastes that are generated on an intermittent basis. For convenience, this waste stream is called **'**daily household and commercial waste'.

4. When comparing between the member countries, the following categories were included in the common denominator for 'daily household and commercial waste':
    - the total collected quantity of traditional waste (provided that the figures for the bagged waste do not include too much waste similar to industrial waste);
    - the total separate collection of food waste;
    - the total separate collection of newspapers & magazines, paper and packaging made of paper and cardboard but not the collection coming from manufacturing activities;
    - the total separate collection for recycling of glass waste/container glass;
    - the total separate collection of metal packaging waste.

5. Total waste generation per capita per year of the comparable fraction, 'daily household and commercial waste', varies to a lesser extent between member countries than previously reported figures for total household waste and total municipal waste. The standard deviation for 'daily household and commercial waste' is 13 % of the mean compared with 26 % and 20 %, respectively, for household and municipal waste quantities reported by OECD/Eurostat.

6. The mean production of 'daily household and commercial waste' in EEA member countries was 368 kg/capita/annum with a range of 272 - 430 kg/capita/annum and a standard deviation of 13 % of the mean.

7. Variations in 'daily household and commercial waste' between member countries are mainly a function of the extent to which household and similar waste from other sources is sorted and separately collected. For instance, member countries with a national, regional or local waste policy that promotes sorting of household and similar waste will tend to have a lower quantity of bagged waste per capita than countries where little sorting activity occurs.

8. There is a need in most member countries for better guidelines to be provided to the data providers (municipalities, regional governments, treatment plants, etc) on how to obtain reliable data on household and municipal waste. The member countries' guidelines do not have to be identical but must be co-ordinated between the member countries to secure comparable data between the EEA countries. This co-ordination of guidelines for data collection and detailed definition of the waste categories will be crucial for Eurostat to handle in order to secure the successful future implementation of the forthcoming EU regulation on waste management statistics.

Annex 1. Member countries reported data to the ETC/W

EEA member countries reported data to the ETC/Survey on household and municipal waste, confer table 2 in the report. The figures include also household waste collected outside the municipal scheme.

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Austria	Household Waste Total (A)	2 509	2 569	2 644	2 775	317	322	329	342
Belgium	Household Waste Total (A)			4 650	4 688			459	461
Brussels Region	Household Waste Total (A)			340	347	0	0	357	366
Flanders	Household Waste Total (A)	2 617	2 776	2 787	2 827	449	475	475	481
Wallonia	Household Waste Total (A)		1 646	1 524	1 514	0	282	260	257
Denmark	Household Waste Total (A)		2 575	2 586	2 787	0	490	495	523
Finland	Household Waste Total (A)		900			0	177	0	0
France	Household Waste Total (A)	24 500		25 588		413	0	427	0
Germany	Household Waste Total (A)	40 067				496	0	0	0
Greece	Household Waste Total (A)								
Iceland	Household Waste Total (A)	64	64	64	65	243	241	238	240
Ireland	Household Waste Total (A)	912		1 325		259	0	374	0
Italy	Household Waste Total (A)					0	0	0	0
Luxembourg	Household Waste Total (A)					0	0	0	0
Norway	Household Waste Total (A)	1 100	1 069	1 262	1 285	256	248	291	296
Portugal	Household Waste Total (A)					0	0	0	0
Spain	Household Waste Total (A)					0	0	0	0
Sweden	Household Waste Total (A)					0	0	0	0
The Netherlands	Household Waste Total (A)	7 101	7 156	7 243	7 471	465	465	468	480
United Kingdom	Household Waste Total (A)		25 589	26 930	26 810	0	441	464	461
	Of which								
Austria	1. Traditional collection (bagged waste)	1 488	1 282	1 244	1 291	188	161	155	159
Belgium	1. Traditional collection (bagged waste)			2 934	2 594			290	255
Brussels Region	1. Traditional collection (bagged waste)			272	270	0	0	286	285
Flanders	1. Traditional collection (bagged waste)	1 567	1 571	1 498	1 270	269	269	255	216
Wallonia	1. Traditional collection (bagged waste)		1 332	1 164	1 054	0	228	198	179
Denmark	1. Traditional collection (bagged waste)		1 435	1 392	1 406	0	276	267	268
Finland	1. Traditional collection (bagged waste)					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
France	1. Traditional collection (bagged waste)	18 500		19 200		312	0	321	0
Germany	1. Traditional collection (bagged waste)	24 728				306	0	0	0
Greece	1. Traditional collection (bagged waste)					0	0	0	0
Iceland	1. Traditional collection (bagged waste)	63	63	64	65	240	237	238	240
Ireland	1. Traditional collection (bagged waste)	898		982		255	0	277	0
Italy	1. Traditional collection (bagged waste)					0	0	0	0
Luxembourg	1. Traditional collection (bagged waste)	99	100	102	103	250	249	251	250
Norway	1. Traditional collection (bagged waste)	980	894	988	937	228	207	228	216
Portugal	1. Traditional collection (bagged waste)					0	0	0	0
Spain	1. Traditional collection (bagged waste)	14 256	14 296	14 914	15 307	361	361	376	386
Sweden	1. Traditional collection (bagged waste)					0	0	0	0
The Netherlands	1. Traditional collection (bagged waste)	4 006	3 648	3 432	3 478	262	237	222	223
United Kingdom	1. Traditional collection (bagged waste)		15 192	19 240	19 600	0	262	331	337
	Separately collected Household Waste								
Austria	2. Bulky Household Waste Total	182	199	212	221	23	25	26	27
Belgium	2. Bulky Household Waste Total			716	825			71	81
Brussels Region	2. Bulky Household Waste Total			25	25	0	0	26	26
Flanders	2. Bulky Household Waste Total	547	594	608	673	94	102	104	114
Wallonia	2. Bulky Household Waste Total		167	83	127	0	29	14	22
Denmark	2. Bulky Household Waste Total		554	571	589	0	106	109	112
Finland	2. Bulky Household Waste Total					0	0	0	0
France	2. Bulky Household Waste Total			4 500		0	0	77	0
Germany	2. Bulky Household Waste Total	3 818				47	0	0	0
Greece	2. Bulky Household Waste Total					0	0	0	0
Iceland	2. Bulky Household Waste Total					0	0	0	0
Ireland	2. Bulky Household Waste Total					0	0	0	0
Italy	2. Bulky Household Waste Total					0	0	0	0
Luxembourg	2. Bulky Household Waste Total					0	0	0	0
Norway	2. Bulky Household Waste Total					0	0	0	0
Portugal	2. Bulky Household Waste Total					0	0	0	0
Spain	2. Bulky Household Waste Total					0	0	0	0
Sweden	2. Bulky Household Waste Total					0	0	0	0
The Netherlands	2. Bulky Household Waste Total	1 175	1 222	1 308	1 331	77	79	84	85
United Kingdom	2. Bulky Household Waste Total		208	1 790	1 500	0	4	31	26

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
	Of which								
The Netherlands	· Electric and electronic waste	65	71	66	77	4	5	4	5
Belgium	· Construction and demolition waste								
Brussels Region	· Construction and demolition waste					0	0	0	0
Flanders	· Construction and demolition waste	175	231	272	330	30	40	46	56
Wallonia	· Construction and demolition waste		not included	not included	not included	0			
The Netherlands	· Construction and demolition waste	248	222	230	265	16	14	15	17
Belgium	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)								
Brussels Region	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)					0	0	0	0
Flanders	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	372	363	335	342	64	62	57	58
Wallonia	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)					0	0	0	0
Luxembourg	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	12	13	13	13	30	32	32	32
The Netherlands	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	862	929	1.012	989	56	60	65	63
Austria	3. Food waste and garden waste. Total	183	284	346	360	23	36	43	44
Belgium	3. Food waste and garden waste. Total								
Brussels Region	3. Food waste and garden waste. Total			15	15	0	0	16	16
Flanders	3. Food waste and garden waste. Total	228	281	318	428	39	48	54	73
Wallonia	3. Food waste and garden waste. Total		n.a.	54	57	0		9	10
Denmark	3. Food waste and garden waste. Total		320	365	447	0	61	70	85
Finland	3. Food waste and garden waste. Total					0	0	0	0
France	3. Food waste and garden waste. Total	1 500				25	0	0	0
Germany	3. Food waste and garden waste. Total	2 823				35	0	0	0
Greece	3. Food waste and garden waste. Total					0	0	0	0
Iceland	3. Food waste and garden waste. Total					0	0	0	0
Ireland	3. Food waste and garden waste. Total	0		0		0	0	0	0
Italy	3. Food waste and garden waste. Total					0	0	0	0
Luxembourg	3. Food waste and garden waste. Total					0	0	0	0
Norway	3. Food waste and garden waste. Total		3	45	71	0	1	10	16
Portugal	3. Food waste and garden waste. Total					0	0	0	0
Spain	3. Food waste and garden waste. Total					0	0	0	0
Sweden	3. Food waste and garden waste. Total					0	0	0	0
The Netherlands	3. Food waste and garden waste. Total	874	1 234	1 427	1 459	57	80	92	94
United Kingdom	3. Food waste and garden waste. Total			110	230	0	0	2	4

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
	Of which								
Belgium	· Food waste								
Brussels Region	· Food waste			0	0	0	0	0	0
Flanders	· Mixed garden and Food waste	64	76	87	173	11	13	15	30
Wallonia	· Food waste			n.a.	n.a.	0	0		
Denmark	· Food waste		33	39	46	0	6	7	9
Norway	· Food waste			18	29	0	0	4	7
The Netherlands	· Food waste					0	0	0	0
United Kingdom	· Food waste			110	230			2	4
Belgium	· Garden waste								
Brussels Region	· Garden waste			15	15	0	0	16	16
Flanders	· Garden waste	164	205	231	254	28	35	39	43
Wallonia	· Garden waste			n.a.	n.a.	0	0		
Denmark	· Garden waste		287	326	401	0	55	62	77
Norway	· Garden waste			27	42	0	0	6	10
The Netherlands	· Garden waste					0	0	0	0
United Kingdom	· Garden waste			0		0	0	0	0
Austria	4. Paper and cardboard	349	393	406	439	44	49	50	54
Belgium	4. Paper and cardboard								
Brussels Region	4. Paper and cardboard			11	18	0	0	12	19
Flanders	4. Paper and cardboard	147	181	197	260	25	31	34	44
Wallonia	4. Paper and cardboard		n.a.	22	43	0		4	7
Denmark	4. Paper and cardboard		143	173	160	0	27	33	31
Finland	4. Paper and cardboard					0	0	0	0
France	4. Paper and cardboard		200	220		0		4	0
Germany	4. Paper and cardboard	4 649				58	0	0	0
Greece	4. Paper and cardboard					0	0	0	0
Iceland	4. Paper and cardboard					0	0	0	0
Ireland	4. Paper and cardboard	2		32		1	0	9	0
Italy	4. Paper and cardboard					0	0	0	0
Luxembourg	4. Paper and cardboard					0	0	0	0
Norway	4. Paper and cardboard		124	131	140	0	29	30	32
Portugal	4. Paper and cardboard					0	0	0	0
Spain	4. Paper and cardboard					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Sweden	4. Paper and cardboard					0	0	0	0
The Netherlands	4. Paper and cardboard	724	716	727	840	47	47	47	54
United Kingdom	4. Paper and cardboard			613	580	0	0	11	10
Austria	5. Glass and bottles without deposit	169	187	185	183	21	23	23	23
Belgium	5. Glass and bottles without deposit								
Brussels Region	5. Glass and bottles without deposit			9	9	0	0	9	9
Flanders	5. Glass and bottles without deposit	91	103	106	120	16	18	18	20
Wallonia	5. Glass and bottles without deposit		n.a.	43	38	0		7	6
Denmark	5. Glass and bottles without deposit		69	46	65	0	13	9	12
Finland	5. Glass and bottles without deposit					0	0	0	0
France	5. Glass and bottles without deposit *(1993 figur includes separately collected paper&cardboard and metals)*	1 500	1 005	1 160		25		19	0
Germany	5. Glass and bottles without deposit	2 455				30	0	0	0
Greece	5. Glass and bottles without deposit					0	0	0	0
Iceland	5. Glass and bottles without deposit					0	0	0	0
Ireland	5. Glass and bottles without deposit	10		8		3	0	2	0
Italy	5. Glass and bottles without deposit					0	0	0	0
Luxembourg	5. Glass and bottles without deposit					0	0	0	0
Norway	5. Glass and bottles without deposit		15	16	28	0	3	4	6
Portugal	5. Glass and bottles without deposit					0	0	0	0
Spain	5. Glass and bottles without deposit	138	159	193	220	3	4	5	6
Sweden	5. Glass and bottles without deposit					0	0	0	0
The Netherlands	5. Glass and bottles without deposit	287	298	302	306	19	19	20	20
United Kingdom	5. Glass and bottles without deposit			314	320	0	0	5	6
Austria	6. Metals (ferrous and non-ferrous)	87	110	112	126	11	14	14	16
Belgium	6. Metals (ferrous and non-ferrous)								
Brussels Region	6. Metals (ferrous and non-ferrous)			0	0	0	0	0	0
Flanders	6. Metals (ferrous and non-ferrous)	24	29	36	43	4	5	6	7
Wallonia	6. Metals (ferrous and non-ferrous)		n.a.	12	15	0		2	3
Denmark	6. Metals (ferrous and non-ferrous)		7	9	38	0	2	3	3
Finland	6. Metals (ferrous and non-ferrous)					0	0	0	0
France	6. Metals (ferrous and non-ferrous)		10	194		0	0	3	0
Germany	6. Metals (ferrous and non-ferrous)	924				11	0	0	0
Greece	6. Metals (ferrous and non-ferrous)					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Iceland	6. Metals (ferrous and non-ferrous)					0	0	0	0
Ireland	6. Metals (ferrous and non-ferrous)	1		1		0	0	0	0
Italy	6. Metals (ferrous and non-ferrous)					0	0	0	0
Luxembourg	6. Metals (ferrous and non-ferrous)					0	0	0	0
Norway	6. Metals (ferrous and non-ferrous)		16	19	24	0	4	4	6
Portugal	6. Metals (ferrous and non-ferrous)					0	0	0	0
Spain	6. Metals (ferrous and non-ferrous)					0	0	0	0
Sweden	6. Metals (ferrous and non-ferrous)					0	0	0	0
The Netherlands	6. Metals (ferrous and non-ferrous)	40	45	48	54	3	3	3	3
United Kingdom	6. Metals (ferrous and non-ferrous)			27	24	0	0	0	0
Austria	7. Small scale hazardous waste	17	19	22	24	2	2	3	3
Belgium	7. Small scale hazardous waste								
Brussels Region	7. Small scale hazardous waste			0	0	0	0	0	0
Flanders	7. Small scale hazardous waste	4	6	7	8	1	1	1	1
Wallonia	7. Small scale hazardous waste		n.a.	6	7	0		1	1
Denmark	7. Small scale hazardous waste		10	16	16	0	2	3	3
Germany	7. Small scale hazardous waste	70				1	0	0	0
Norway	7. Small scale hazardous waste				2	0	0	0	0
The Netherlands	7. Small scale hazardous waste	24	24	23	24	2	2	1	2
Austria	8. Other separately collected household waste (e.g. plastics, textiles etc)	34	95	117	131	4	12	15	16
Belgium	8. Other separately collected household waste (e.g. plastics, textiles etc)								
Brussels Region	8. Other separately collected household waste (e.g. plastics, textiles etc)			7	9	0	0	7	9
Flanders	8. Other separately collected household waste (e.g. plastics, textiles etc)	9	11	17	25	2	2	3	4
Wallonia	8. Other separately collected household waste (e.g. plastics, textiles etc)***		147	2	7	0	25	0	1
Denmark	8. Other separately collected household waste (e.g. plastics, textiles etc)		14	14	19	0	3	3	4
France	8. Other separately collected household waste (e.g. plastics, textiles etc)		7	14		0	0	0	0
Germany	8. Other separately collected household waste (e.g. plastics, textiles etc)	600				7	0	0	0
Ireland	8. Other separately collected household waste (e.g. plastics, textiles etc)	0		4		0	0	1	0
Norway	8. Other separately collected household waste (e.g. plastics, textiles etc)		17	18	26	0	4	4	6
The Netherlands	8. Other separately collected household waste (e.g. plastics, textiles etc)	46	47	51	64	3	3	3	4
United Kingdom	8. Other separately collected household waste (e.g. plastics, textiles etc)			413	420	0	0	7	7
Austria	Other Municipal Waste Total (B)	832	832	832	1.335	105	104	103	165
Belgium	Other Municipal Waste Total (B)		654 **						
Brussels Region	Other Municipal Waste Total (B)			236	249	0	0	248	263

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Flanders	Other Municipal Waste Total (B)	14	41	103	74	2	7	18	13
Wallonia	Other Municipal Waste Total (B)					0	0	0	0
Denmark	Other Municipal Waste Total (B)		264	429	367	0	51	82	70
Finland	Other Municipal Waste Total (B)		1 200			0	236	0	0
France	Other Municipal Waste Total (B)			8 400		0	0	140	0
Germany	Other Municipal Waste Total (B)	8 648				107	0	0	0
Greece	Other Municipal Waste Total (B)					0	0	0	0
Iceland	Other Municipal Waste Total (B)	97	98	101	103	369	368	375	380
Ireland	Other Municipal Waste Total (B)	767		524		218	0	148	0
Italy	Other Municipal Waste Total (B)					0	0	0	0
Luxembourg	Other Municipal Waste Total (B)					0	0	0	0
Norway	Other Municipal Waste Total (B)	1 120	1 297	1 460	1 476	261	301	337	339
Portugal	Other Municipal Waste Total (B)					0	0	0	0
Spain	Other Municipal Waste Total (B)					0	0	0	0
Sweden	Other Municipal Waste Total (B)					0	0	0	0
The Netherlands	Other Municipal Waste Total (B)	1 319	1 307	1 233	1 245	86	85	80	80
United Kingdom	Other Municipal Waste Total (B)			2 120	2 500	0	0	37	43
	Of which								
Austria	9. Commercial activities, offices, small businesses, restaurants etc Total	1 130				143	0	0	0
Belgium	9. Commercial activities, offices, small businesses, restaurants etc Total								
Brussels Region	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Flanders	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Wallonia	9. Commercial activities, offices, small businesses, restaurants etc Total					0			
Denmark	9. Commercial activities, offices, small businesses, restaurants etc Total		255	418	357	0	49	80	68
Finland	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
France	9. Commercial activities, offices, small businesses, restaurants etc Total		5 000	5 200		0		87	0
Germany	9. Commercial activities, offices, small businesses, restaurants etc Total	7 839				97	0	0	0
Greece	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Iceland	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Ireland	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Italy	9. Commercial activities, offices, small businesses, restaurants etc Total		4 200			0	73	0	0
Luxembourg	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Norway	9. Commercial activities, offices, small businesses, restaurants etc Total		1 243		1 476	0	288	0	339
Portugal	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Spain	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
Sweden	9. Commercial activities, offices, small businesses, restaurants etc Total					0	0	0	0
The Netherlands	9. Commercial activities, offices, small businesses, restaurants etc Total	878	874	854	866	57	57	55	56
United Kingdom	9. Commercial activities, offices, small businesses, restaurants etc Total			2 120	2 500	0	0	37	43
	Of which								
Denmark	· Traditional collection (bagged waste)		76	73	46	0	15	14	9
Germany	· Traditional collection (bagged waste) (Confer footnotes in Annex 2)	7 839				97	0	0	0
Ireland	· Traditional collection (bagged waste)	656		404		186	0	114	0
Luxembourg	· Traditional collection (bagged waste)					0	0	0	0
Norway	· Traditional collection (bagged waste)				1 202	0	0	0	276
The Netherlands	· Traditional collection (bagged waste)	425	406	371	391	28	26	24	25
United Kingdom	· Traditional collection (bagged waste)			2 010	2 400	0	0	35	41
	Separately collected								
Denmark	· Paper and cardboard		103	181	173	0	20	35	33
Ireland	· Paper and cardboard	71		52		20	0	15	0
Spain	· Paper and cardboard		1 823	2 118	2 125	0	46	53	54
Denmark	· Glass and bottles without deposit			38	33	0	0	7	6
Ireland	· Glass and bottles without deposit	12		21		3	0	6	0
Norway	· Glass and bottles without deposit			2	2	0	0	0	0
Spain	· Glass and bottles without deposit	190	213	209	236	5	5	5	6
Denmark	· Garden waste		65	103	81	0	12	20	15
Ireland	· Garden waste	0		0		0	0	0	0
Norway	· Garden waste			6	13	0	0	1	3
The Netherlands	· Garden waste	453	468	483	475	30	30	31	30
Denmark	· Food waste		10	20	22	0	2	4	4
Norway	· Food waste			17	18	0	0	4	4
Norway	· Hazardous waste				5	0	0	0	1
Ireland	· Metals (ferrous and non ferrous)	16		0		5	0	0	0
Norway	· Metals (ferrous and non ferrous)			28	40	0	0	6	9
Denmark	· Other separately collected waste (e.g. plastics, textiles etc)		1	3	3	0	0	1	1
Ireland	· Other separately collected waste (e.g. plastics, textiles etc)	12		0		3	0	0	0
Norway	· Other separately collected waste (e.g. plastics, textiles etc)			53	141	0	0	12	32
Austria	10. Hospitals Total					0	0	0	0
Belgium	10. Hospitals Total								

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Brussels Region	10. Hospitals Total			14	14	0	0	15	15
Flanders	10. Hospitals Total					0	0	0	0
Wallonia	10. Hospitals Total					0	0	0	0
Denmark	10. Hospitals Total		9	11	9	0	2	2	2
Finland	10. Hospitals Total					0	0	0	0
France	10. Hospitals Total					0	0	0	0
Germany	10. Hospitals Total					0	0	0	0
Greece	10. Hospitals Total					0	0	0	0
Iceland	10. Hospitals Total					0	0	0	0
Ireland	10. Hospitals Total					0	0	0	0
Italy	10. Hospitals Total					0	0	0	0
Luxembourg	10. Hospitals Total					0	0	0	0
Norway	10. Hospitals Total					0	0	0	0
Portugal	10. Hospitals Total				41	0	0	0	4
Spain	10. Hospitals Total					0	0	0	0
Sweden	10. Hospitals Total					0	0	0	0
The Netherlands	10. Hospitals Total					0	0	0	0
United Kingdom	10. Hospitals Total					0	0	0	0
	Of which								
Belgium	· Hazardous Hospital waste								
Brussels Region	· Hazardous Hospital waste			1		0	0	1	0
Flanders	· Hazardous Hospital waste					0	0	0	0
Wallonia	· Hazardous Hospital waste					0	0	0	0
Denmark	· Hazardous Hospital waste			11	9	0	0	2	2
Luxembourg	· Hazardous Hospital waste		0	0	1	0	0	0	2
Portugal	· Hazardous Hospital waste				16	0	0	0	2
Portugal	· Non hazardous Hospital waste				25	0	0	0	3
Austria	11. Municipal services (street and market cleaning, yard waste litter containers, etc)	832	832	832	1 335	105	104	103	165
Belgium	11. Municipal services (street and market cleaning, yard waste litter containers, etc)								
Brussels Region	11. Municipal services (street and market cleaning, yard waste litter containers, etc)			6		0	0	6	0
Flanders	11. Municipal services (street and market cleaning, yard waste litter containers, etc)	14	41	103	74	2	7	18	13
Wallonia	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Denmark	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Finland	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
France	11. Municipal services (street and market cleaning, yard waste litter containers, etc)	3 000		1 400		51	0	23	0
Germany	11. Municipal services (street and market cleaning, yard waste litter containers, etc)	809				10	0	0	0
Greece	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Iceland	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Ireland	11. Municipal services (street and market cleaning, yard waste litter containers, etc)			47		0	0	13	0
Italy	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Luxembourg	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Norway	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Portugal	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Spain	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Sweden	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
The Netherlands	11. Municipal services (street and market cleaning, yard waste litter containers, etc)	441	433	379	379	29	28	24	24
United Kingdom	11. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Austria	Municipal Waste Total (C)	3 341	3 401	3 476	4 110	423	426	432	507
Belgium	Municipal Waste Total (C)		4 781						
Brussels Region	Municipal Waste Total (C)			606	626	0	0	637	660
Flanders	Municipal Waste Total (C)	2 630	2 817	2 890	2 901	452	482	493	493
Wallonia	Municipal Waste Total (C)		1 646	1 524	1 514	0	282	260	257
Denmark	Municipal Waste Total (C)		2 816	3 015	3 107	0	541	577	593
Finland	Municipal Waste Total (C)		2 100			0	413	0	0
France	Municipal Waste Total (C)	31 264		35 588		527		568	0
Germany	Municipal Waste Total (C)	48 715				603	0	0	0
Greece	Municipal Waste Total (C)				3 600	0	0	0	343
Iceland	Municipal Waste Total (C)	192	195	197	200	730	733	732	738
Ireland	Municipal Waste Total (C)	1 679		1 848		477	0	521	0
Italy	Municipal Waste Total (C)	26 386	26 900	25 780	25 959	462	470	451	454
Luxembourg	Municipal Waste Total (C)	268	282	289	330	677	701	710	801
Norway	Municipal Waste Total (C)	2 220	2 355	2 722	2 761	517	546	628	635
Portugal	Municipal Waste Total (C)		3 500	3 600	3 741	0	356	367	381
Spain	Municipal Waste Total (C)	14 584	16 491	17 434	17 888	369	417	440	451
Sweden	Municipal Waste Total (C)		3 314			0	379	0	0
The Netherlands	Municipal Waste Total (C)	8 420	8 463	8 476	8 716	551	550	547	560
United Kingdom	Municipal Waste Total (C)			29 050	29 310	0	0	500	504
	Of which								

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Austria	12. Traditional collection (bagged waste)	1 488	1 282	1 244	1 291	188	161	155	159
Belgium	12. Traditional collection (bagged waste)								
Brussels Region	12. Traditional collection (bagged waste)			516	528	0	0	542	557
Flanders	12. Traditional collection (bagged waste)	1 567	1 571	1 498	1 270	269	269	255	216
Wallonia	12. Traditional collection (bagged waste)		1 332	1 164	1 054	0	228	198	179
Denmark	12. Traditional collection (bagged waste)		1 511	1 465	1 452	0	290	280	277
Finland	12. Traditional collection (bagged waste)		1 335			0	263	0	0
France	12. Traditional collection (bagged waste)			24 400		312	0	434	0
Germany	12. Traditional collection (bagged waste). Confer footnotes in Annex 2.	32 567				403	0	0	0
Greece	12. Traditional collection (bagged waste)				3 400	0	0	0	324
Iceland	12. Traditional collection (bagged waste)	64	64	64	65	243	241	238	240
Ireland	12. Traditional collection (bagged waste)	1 555		1 385		441	0	391	0
Italy	12. Traditional collection (bagged waste)				23 480	0	0	0	410
Luxembourg	12. Traditional collection (bagged waste)	208	199	204	192	525	495	501	466
Norway	12. Traditional collection (bagged waste)	980	894	988	937	228	207	228	216
Portugal	12. Traditional collection (bagged waste)		3 475	3 571	3 664	0	354	364	374
Spain	12. Traditional collection (bagged waste)	14 256	14 296	14 914	15 307	361	361	376	386
Sweden	12. Traditional collection (bagged waste)		2 627			0	300	0	0
The Netherlands	12. Traditional collection (bagged waste)	4 431	4 054	3 803	3 869	290	264	246	248
United Kingdom	12. Traditional collection (bagged waste)		15 192	21 250	22 000	0	262	366	378
	Separately collected Waste								
Wallonia	*(Total separately collected waste)*			360		0	0	61	0
Austria	13. Bulky Waste Total	182	199	212	221	23	25	26	27
Belgium	13. Bulky Waste Total								
Brussels Region	13. Bulky Waste Total			25	25	0	0	26	26
Flanders	13. Bulky Waste Total	547	594	608	673	94	102	104	114
Wallonia	13. Bulky Waste Total		167	83	127	0	29	14	22
Denmark	13. Bulky Waste Total		554	571	589	0	106	109	112
Finland	13. Bulky Waste Total		262			0	52	0	0
France	13. Bulky Waste Total			4 500		0	0	75	0
Germany	13. Bulky Waste Total	3 818				47	0	0	0
Greece	13. Bulky Waste Total					0	0	0	0
Iceland	13. Bulky Waste Total	16	16	16	17	61	60	59	63
Ireland	13. Bulky Waste Total					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Italy	13. Bulky Waste Total				612	0	0	0	11
Luxembourg	13. Bulky Waste Total			10	8	0	0	25	19
Norway	13. Bulky Waste Total					0	0	0	0
Portugal	13. Bulky Waste Total					0	0	0	0
Spain	13. Bulky Waste Total					0	0	0	0
Sweden	13. Bulky Waste Total					0	0	0	0
The Netherlands	13. Bulky Waste Total	1 175	1 222	1 308	1 331	77	79	84	85
United Kingdom	13. Bulky Waste Total		208	1 790	1 500	0	4	31	26
	Of which								
The Netherlands	· Electric and electronic waste	65	71	66	77	4	5	4	5
Belgium	· Construction and demolition waste								
Brussels Region	· Construction and demolition waste					0	0	0	0
Flanders	· Construction and demolition waste	175	231	272	330	30	40	46	56
Wallonia	· Construction and demolition waste					0	0	0	0
The Netherlands	· Construction and demolition waste	248	222	230	265	16	14	15	17
Belgium	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)								
Brussels Region	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)					0	0	0	0
Flanders	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	372	363	335	342	64	62	57	58
Wallonia	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)					0	0	0	0
Norway	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)				102	0	0	0	23
The Netherlands	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)	862	929	1 012	989	56	60	65	63
United Kingdom	· Other bulky waste (e.g. furniture, mattresses, mixed bulky waste etc)					0	0	0	0
Austria	14. Food waste and garden waste. Total	183	284	346	360	23	36	43	44
Belgium	14. Food waste and garden waste. Total								
Brussels Region	14. Food waste and garden waste. Total			15	15	0	0	16	16
Flanders	14. Food waste and garden waste. Total	228	281	318	428	39	48	54	73
Wallonia	14. Food waste and garden waste. Total			63	57	0	0	11	10
Denmark	14. Food waste and garden waste. Total		395	488	550	0	76	93	105
Finland	14. Food waste and garden waste. Total		70			0	14	0	0
France	14. Food waste and garden waste. Total					26	0	0	0
Germany	14. Food waste and garden waste. Total	2 823				35	0	0	0
Greece	14. Food waste and garden waste. Total					0	0	0	0
Iceland	14. Food waste and garden waste. Total	10	10	10	10	38	38	37	37
Ireland	14. Food waste and garden waste. Total	0		0		0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Italy	14. Food waste and garden waste. Total				376	0	0	0	7
Luxembourg	14. Food waste and garden waste. Total	6	7	8	7	15	17	20	17
Norway	14. Food waste and garden waste. Total			68		0	0	16	0
Portugal	14. Food waste and garden waste. Total					0	0	0	0
Spain	14. Food waste and garden waste. Total					0	0	0	0
Sweden	14. Food waste and garden waste. Total					0	0	0	0
The Netherlands	14. Food waste and garden waste. Total	1 327	1 702	1 910	1 934	87	111	123	124
United Kingdom	14. Food waste and garden waste. Total			110	230	0	0	2	4
	Of which								
Belgium	· Food waste								
Brussels Region	· Food waste			0	0	0	0	0	0
Flanders	· Mixed Garden and Food waste	64	76	87	173	11	13	15	30
Wallonia	· Food waste					0	0	0	0
Denmark	· Food waste		43	59	68	0	8	11	13
Norway	· Food waste			35	47	0	0	8	11
The Netherlands	· Food waste					0	0	0	0
United Kingdom	· Food waste			110	230	0	0	2	4
Belgium	· Garden waste								
Brussels Region	· Garden waste			15	15	0	0	16	16
Flanders	· Garden waste	164	205	231	254	28	35	39	43
Wallonia	· Garden waste					0	0	0	0
Denmark	· Garden waste		352	429	482	0	68	82	92
Iceland	· Garden waste	10	10	10	10	38	38	37	37
Norway	· Garden waste			33	55	0	0	8	13
Sweden	· Garden waste		134			0	15	0	0
The Netherlands	· Garden waste	453	468	483	475	30	30	31	30
United Kingdom	· Garden waste					0	0	0	0
Austria	15. Paper and cardboard	349	393	406	439	44	49	50	54
Belgium	15. Paper and cardboard								
Brussels Region	15. Paper and cardboard			11	18	0	0	12	19
Flanders	15. Paper and cardboard	147	181	197	260	25	31	34	44
Wallonia	15. Paper and cardboard			31	43	0	0	5	7
Denmark	15. Paper and cardboard		246	354	333	0	47	68	64
Finland	15. Paper and cardboard		392			0	77	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
France	15. Paper and cardboard			220		0	0	4	0
Germany	15. Paper and cardboard	4 649				58	0	0	0
Greece	15. Paper and cardboard				273	0	0	0	26
Iceland	15. Paper and cardboard	2	3	4	6	8	9	16	21
Ireland	15. Paper and cardboard	73		84		21	0	24	0
Italy	15. Paper and cardboard				576	0	0	0	10
Luxembourg	15. Paper and cardboard	34	42	48	73	86	104	118	177
Norway	15. Paper and cardboard		162	170	195	0	38	39	45
Portugal	15. Paper and cardboard	2	3	2	6	0	0	0	1
Spain	15. Paper and cardboard		1 823	2 118	2 125	0	46	53	54
Sweden	15. Paper and cardboard		399			0	46	0	0
The Netherlands	15. Paper and cardboard	724	716	727	840	47	47	47	54
United Kingdom	15. Paper and cardboard			613	580	0	0	11	10
Austria	16. Glass and bottles without deposit	169	187	185	183	21	23	23	23
Belgium	16. Glass and bottles without deposit								
Brussels Region	16. Glass and bottles without deposit			9	9	0	0	9	9
Flanders	16. Glass and bottles without deposit	91	103	106	120	16	18	18	20
Wallonia	16. Glass and bottles without deposit			62	38	0	0	11	6
Denmark	16. Glass and bottles without deposit		69	84	98	0	13	16	19
Finland	16. Glass and bottles without deposit		20			0	4	0	0
France	16. Glass and bottles without deposit			1 160		0	0	19	0
Germany	16. Glass and bottles without deposit	2 455				30	0	0	0
Greece	16. Glass and bottles without deposit				38	0	0	0	4
Iceland	16. Glass and bottles without deposit	3	3	3	3	11	11	11	11
Ireland	16. Glass and bottles without deposit	22		29		6	0	8	0
Italy	16. Glass and bottles without deposit				550	0	0	0	10
Luxembourg	16. Glass and bottles without deposit	14	15	16	14	35	37	39	34
Norway	16. Glass and bottles without deposit		16	18	30	0	4	4	7
Portugal	16. Glass and bottles without deposit	11	20	24	27	1	2	2	3
Spain	16. Glass and bottles without deposit	328	371	402	456	8	9	10	11
Sweden	16. Glass and bottles without deposit		83			0	9	0	0
The Netherlands	16. Glass and bottles without deposit	287	298	302	306	19	19	20	20
United Kingdom	16. Glass and bottles without deposit			314	320	0	0	5	6
Austria	17. Metals (ferrous and non-ferrous)	87	110	112	126	11	14	14	16

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Belgium	17. Metals (ferrous and non-ferrous)								
Brussels Region	17. Metals (ferrous and non-ferrous)			0	0	0	0	0	0
Flanders	17. Metals (ferrous and non-ferrous)	24	29	36	43	4	5	6	7
Wallonia	17. Metals (ferrous and non-ferrous)			12	15	0	0	2	3
Denmark	17. Metals (ferrous and non-ferrous)		7	9	38	0	1	2	7
Finland	17. Metals (ferrous and non-ferrous)		21			0	4	0	0
France	17. Metals (ferrous and non-ferrous)			194		0	0	3	0
Germany	17. Metals (ferrous and non-ferrous)	924				11	0	0	0
Greece	17. Metals (ferrous and non-ferrous)				4	0	0	0	0
Iceland	17. Metals (ferrous and non-ferrous)	30	31	31	31	114	117	115	114
Ireland	17. Metals (ferrous and non-ferrous)	17		1		5	0	0	0
Italy	17. Metals (ferrous and non-ferrous) Aluminium				3	0	0	0	0
Luxembourg	17. Metals (ferrous and non-ferrous)					0	0	0	0
Norway	17. Metals (ferrous and non-ferrous)		34	47	64	0	8	11	15
Portugal	17. Metals (ferrous and non-ferrous)		2	2	2	0	0	0	0
Spain	17. Metals (ferrous and non-ferrous)					0	0	0	0
Sweden	17. Metals (ferrous and non-ferrous)					0	0	0	0
The Netherlands	17. Metals (ferrous and non-ferrous)	40	45	48	54	3	3	3	3
United Kingdom	17. Metals (ferrous and non-ferrous)			27	24	0	0	0	0
Austria	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	17	19	22	24	2	2	3	3
Belgium	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste								
Brussels Region	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste			0	0	0	0	0	0
Flanders	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	4	6	7	8	1	1	1	1
Wallonia	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste			6	7	0	0	1	1
Denmark	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste		10	16	16	0	2	3	3
Finland	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste		13			0	3	0	0
France	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Germany	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	70				1	0	0	0
Greece	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Iceland	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	1	1	1	1	2	3	3	4
Ireland	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Italy	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Luxembourg	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	1	1	1	1	2	2	2	3
Norway	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste				7	0	0	0	2

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Portugal	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Spain	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Sweden	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste		20			0	2	0	0
The Netherlands	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste	24	24	23	24	2	2	1	2
United Kingdom	18. Small scale hazardous waste and hazardous waste apart from hazardous hospital waste					0	0	0	0
Austria	19. Hazardous hospital waste					0	0	0	0
Belgium	19. Hazardous hospital waste								
Brussels Region	19. Hazardous hospital waste			1		0	0	1	0
Flanders	19. Hazardous hospital waste					0	0	0	0
Wallonia	19. Hazardous hospital waste					0	0	0	0
Denmark	19. Hazardous hospital waste		9	11	9	0	2	2	2
Finland	19. Hazardous hospital waste					0	0	0	0
France	19. Hazardous hospital waste					0	0	0	0
Germany	19. Hazardous hospital waste					0	0	0	0
Greece	19. Hazardous hospital waste				15	0	0	0	1
Iceland	19. Hazardous hospital waste					0	0	0	0
Ireland	19. Hazardous hospital waste					0	0	0	0
Italy	19. Hazardous hospital waste					0	0	0	0
Luxembourg	19. Hazardous hospital waste		0	0	1	0	0	0	2
Norway	19. Hazardous hospital waste					0	0	0	0
Portugal	19. Hazardous hospital waste				16	0	0	0	2
Spain	19. Hazardous hospital waste					0	0	0	0
Sweden	19. Hazardous hospital waste					0	0	0	0
The Netherlands	19. Hazardous hospital waste					0	0	0	0
United Kingdom	19. Hazardous hospital waste		0	0	0	0	0	0	0
Austria	20. Non hazardous hospital waste					0	0	0	0
Belgium	20. Non hazardous hospital waste								
Brussels Region	20. Non hazardous hospital waste			13		0	0	14	0
Flanders	20. Non hazardous hospital waste					0	0	0	0
Wallonia	20. Non hazardous hospital waste					0	0	0	0
Denmark	20. Non hazardous hospital waste					0	0	0	0
Finland	20. Non hazardous hospital waste					0	0	0	0
France	20. Non hazardous hospital waste					0	0	0	0
Germany	20. Non hazardous hospital waste					0	0	0	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Greece	20. Non hazardous hospital waste				3	0	0	0	0
Iceland	20. Non hazardous hospital waste					0	0	0	0
Ireland	20. Non hazardous hospital waste					0	0	0	0
Italy	20. Non hazardous hospital waste					0	0	0	0
Luxembourg	20. Non hazardous hospital waste					0	0	0	0
Norway	20. Non hazardous hospital waste					0	0	0	0
Portugal	20. Non hazardous hospital waste				25	0	0	0	3
Spain	20. Non hazardous hospital waste					0	0	0	0
Sweden	20. Non hazardous hospital waste					0	0	0	0
The Netherlands	20. Non hazardous hospital waste					0	0	0	0
United Kingdom	20. Non hazardous hospital waste					0	0	0	0
Austria	21. Other separately collected waste (e.g. plastics, textiles etc)	34	95	117	131	4	12	15	16
Belgium	21. Other separately collected waste (e.g. plastics, textiles etc)								
Brussels Region	21. Other separately collected waste (e.g. plastics, textiles etc)			7	9	0	0	7	9
Flanders	21. Other separately collected waste (e.g. plastics, textiles etc)	9	11	17	25	2	2	3	4
Wallonia	21. Other separately collected waste (e.g. plastics, textiles etc)			> 15.2	7	0	0		1
Denmark	21. Other separately collected waste (e.g. plastics, textiles etc)		15	17	22	0	3	3	4
Finland	21. Other separately collected waste (e.g. plastics, textiles etc)					0	0	0	0
France	21. Other separately collected waste (e.g. plastics, textiles etc)			14		0	0	0	0
Germany	21. Other separately collected waste (e.g. plastics, textiles etc)	600				7	0	0	0
Greece	21. Other separately collected waste (e.g. plastics, textiles etc)					0	0	0	0
Iceland	21. Other separately collected waste (e.g. plastics, textiles etc) Wood	6	6	6	7	24	23	23	27
Ireland	21. Other separately collected waste (e.g. plastics, textiles etc)	12		4		3	0	1	0
Italy	21. Other separately collected waste (e.g. plastics, textiles etc)				362	0	0	0	6
Luxembourg	21. Other separately collected waste (e.g. plastics, textiles etc)					0	0	0	0
Norway	21. Other separately collected waste (e.g. plastics, textiles etc)		57	70	151	0	13	16	35
Portugal	21. Other separately collected waste (e.g. plastics, textiles etc)			1	1	0	0	0	0
Spain	21. Other separately collected waste (e.g. plastics, textiles etc)					0	0	0	0
Sweden	21. Other separately collected waste (e.g. plastics, textiles etc)		51			0	6	0	0
The Netherlands	21. Other separately collected waste (e.g. plastics, textiles etc)	46	47	51	64	3	3	3	4
United Kingdom	21. Other separately collected waste (e.g. plastics, textiles etc)			413	420	0	0	7	7
Austria	22. Municipal services (street and market cleaning, yard waste litter containers, etc)	832	832	832	1.335	105	104	103	165
Belgium	22. Municipal services (street and market cleaning, yard waste litter containers, etc)								
Brussels Region	22. Municipal services (street and market cleaning, yard waste litter containers, etc)			6		0	0	6	0

Country	ETC/W list 1993-96	1993 1000 tonnes	1994 1000 tonnes	1995 1000 tonnes	1996 1000 tonnes	Kg per capita 1993	Kg per capita 1994	Kg per capita 1995	Kg per capita 1996
Flanders	22. Municipal services (street and market cleaning, yard waste litter containers, etc)	14	41	103	74	2	7	18	13
Wallonia	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Denmark	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Finland	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
France	22. Municipal services (street and market cleaning, yard waste litter containers, etc)			1.400		51	0	23	0
Germany	22. Municipal services (street and market cleaning, yard waste litter containers, etc)	809				10	0	0	0
Greece	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Iceland	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Ireland	22. Municipal services (street and market cleaning, yard waste litter containers, etc)			47		0	0	13	0
Italy	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Luxembourg	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Norway	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Portugal	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Spain	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
Sweden	22. Municipal services (street and market cleaning, yard waste litter containers, etc)					0	0	0	0
The Netherlands	22. Municipal services (street and market cleaning, yard waste litter containers, etc)	441	433	379	379	29	28	24	24
United Kingdom	22. Municipal services (street and market cleaning, yard waste litter containers, etc)		1.072			0	18	0	0
Iceland	Household waste from rural areas not served by municipal services	1	1	1	1	2	2	2	2
Ireland	Household waste from rural areas not served by municipal services			299		0	0	84	0
The Netherlands	Household waste from rural areas not served by municipal services	Negligible	Negligible	Negligible	Negligible				

Annex 2. Footnotes explaining the ETC/W adjusted waste figures

Adjusted figures for daily household and commercial waste compared to the reported data from the Member Countries, see section 3.1 and annex 1.

Table 11 Generation of 'daily household and commercial waste' according to the ETC/W survey related to waste category. Stated in total and per capita

	Total generation per year in 1000 tonnes						Per capita waste generation in kilo per year								
	ETC/W adjusted waste generation	Bagged waste	Organic household waste/ food waste	Paper and cardboard waste	Glass waste	Metal packaging waste	ETC/W adjusted waste	Of which	Bagged waste	Organic household waste/ food waste	Paper and cardboard waste	Glass waste	Metal packaging waste	Population	Footnote
Austria	1 976	1 291	0	439	206	40	245		160	0	54	26	5	8 059	1
Belgium	3 521	2 852	66	321	224	48	347		281	6	32	22	5	10 159	2
Denmark	2 021	1 457	68	332	130	0	386		278	13	63	25	0	5 237	3
Finland	1 846	1 335	70	392	33	21	363		263	14	77	6	4	5 084	4
France	24 134	21 100	0	1 440	1 400	194	403		352	0	24	23	3	59 879	5
Germany	33 032	24 728	941	4 649	2 455	259	409		306	12	58	30	3	80 771	6
Greece	3 442	3 400	0	0	38	4	328		324	0	0	4	0	10 490	7
Iceland	74	65	0	6	3	0	272		240	0	21	11	0	271	8
Ireland	1 395	1 325	0	32	38	1	393		373	0	9	11	0	3 554	9
Italy	24 609	23 480	0	576	550	3	430		410	0	10	10	0	57 226	10
Luxembourg	161	131	0	16	14	0	391		318	0	39	34	0	412	11
Norway	1 572	1 282	47	195	40	8	362		295	11	45	9	2	4 348	12
Portugal	3 792	3 664	0	6	120	2	387		374	0	1	12	0	9 808	13
Spain	15 763	15 307	0	0	456	0	397		386	0	0	11	0	39 674	14
Sweden	3 121	2 627	0	399	95	0	357		300	0	46	11	0	8 750	15
The Netherlands	6 268	3 869	1 167	840	338	54	402		248	75	54	22	3	15 575	16
United Kingdom	23 264	22 000	230	580	430	24	400		378	4	10	7	0	58 144	17
EEA-total	149 991	129 913	2 589	10 217	6 567	658	397		344	7	27	17	2	377 441	

Footnotes explaining the ETC/W adjusted figures of 'Daily household and commercial waste'. See also the common denominator in section 5.4.5. and the reported figures under Total Municipal Waste in Annex 1.

1. Austria: Based on the total collection of glass waste (cf. page 95 in Bundes-Abfallwirtschaftsplan, Bundesafballbericht 1998, Bundes Ministerium für Umwelt, Jugend & Familie) 23 000 tonnes glass waste is added to the existing figure of 183 000 tonnes.

   Only 39 611 tonnes of metals were in 1996 originating from packaging (cf. page 95 in Bundes-Abfallwirtschaftsplan, Bundesabfallbericht 1998, Bundes Ministerium für Umwelt, Jugend&Familie). 86 389 tonnes metals were therefore deducted from the reported figure.

   In the 71 largest communities in Austria with a total population of 3 529 536, the average generation of 'traditionally collected' household waste was in 1996 224 kg per person. The similar figure for Austria as a whole was 159 kg, implying an average figure in scarcely populated areas of 108 kg.

2. Belgium: Added 57 000 tonnes glass waste to the reported figure of 167 000 tonnes. Total collection of glass waste according to FEVE is used.

   In the Flemish region of Belgium 173 000 tonnes mixed food and garden waste were collected in 1996. According to information from OVAM 38 % of this amount was food waste. Therefore 108 000 tonnes garden waste is deducted from the reported figure.

3. Denmark: Added 32 000 tonnes glass waste to the existing figure of 98 000 tonnes. Total collection of glass waste according to FEVE is used.

   In the total of separately collected paper and cardboard waste of 332 000 tonnes is included 172 000 tonnes from commercial activities, offices etc In the reported figures to OECD and Eurostat this amount (172 000 tonnes) is normally not included because this waste is not collected by the municipalities. Only 160 000 tonnes paper and cardboard waste from households is reported to OECD and Eurostat (cf. Environment Protection Agency, Denmark 1997: Waste Database: ISAG)

4. Finland. Added 8 000 tonnes glass waste to the existing 20 000 tonnes. Total collection of glass waste according to FEVE is used.

5. France: Added 240 000 tonnes glass waste to the existing figure of 1 160 000 tonnes. Total collection of glass waste according to FEVE is used.

   Added 1 200 000 tonnes paper and cardboard packaging waste. This quantity is an estimate based on the information in *Atlas professionnel des déchets en France*, CD-Rom, ADEME, October 1998 (Chapter on household and household packaging waste). The estimate is based on the following:

   3 727 000 tonnes paper and cardboard packaging wastes are treated including 1 716 000 tonnes material recycling and 206 000 tonnes organic recycling, confer section 2.4 in the chapter on packaging waste. All together 1 912 000 tonnes paper and cardboard packaging waste are recycled.

The relation between the packaging waste collected by 'the household waste circuit' and the 'non-household waste specific circuit DIB' is 3313/5125 and 1812/5125.

Therefore, it is assumed that 2/3 of the treated 1 912 000 tonnes paper and cardboard packaging waste is coming from the 'household waste circuit' equivalent to approximately 1 200 000 tonnes, which is added to the reported figure on 220 000 tonnes collected by the municipalities. This amount includes some non-household packaging waste (confer section 2.1 in the chapter on packaging waste), which is collected by the household circuit. Therefore, it is estimated that the amount would have been part of bagged waste, had it not been separately collected.

6. Germany: 258 500 tonnes metals out of the 924 000 tonnes originate from packaging (cf. Environmental data Germany, 1998). Therefore (924 000- 258 500) 665 500 tonnes metals are deducted.

   According to the German NRC approximately 1/3 of the amount of 2 823 000 tonnes 'Food waste and garden waste. Total' can be estimated as organic household waste. Therefore, 941 000 tonnes is added. The part of 1/3 is based on the composition of the collected organic waste delivered to composting plants in 1997. The rest of the organic waste delivered is organic waste from gardens and parks (especially from communities) and other biodegradable waste from gardens and parks from commerce and industry.

   7 839 000 tonnes waste from commercial activities, offices small businesses, restaurants, industry etc are delivered as other municipal waste. However, from the context it is estimated that the waste is more characterised as industrial waste than traditional bagged waste (cf.. page 430 in Daten zur Umwelt, Umweltbundesamt., 1997). Therefore, the 7 839 000 tonnes are not included.

7. Greece: According to the National Technical University of Athens the quantity of separately collected paper and cardboard is 273 000 tonnes. According to CEPI this amount is equivalent to the total amount of collected paper and cardboard in Greece in 1996. It is therefore assumed that the amount is first of all coming from industrial activities and therefore, it is deducted.

8. Ireland: The reported figures includes 982 000 tonnes bagged waste from households, 404 000 tonnes bagged waste from commercial activities, 84 000 tonnes separately collected paper, 29 000 separately collected glass and 1 000 tonnes metals. However, these figures do not include 299 000 tones waste from households, which is not served by municipal services. In addition the 404 000 tonnes from commercial activities seems very high. Due to this and the information on page 67 in the National Waste Database Report-1995 ('in many cases, it can be difficult to discern between commercial and non-hazardous industrial waste and therefore, large discrepancy currently exists between the different commercial waste arisings'), the bagged waste from commercial activities (404 000 tonnes - point 9 in the survey) has been deducted.

   The following figures have been used: The total reported bagged waste coming from households (982 000 tonnes), the estimated household waste coming from rural areas not served by municipal services (299 000 tonnes),

the total quantity of separately glass waste (29 000 tonnes), the total amount of separately collected waste paper and cardboard (84 000 tonnes) and 1 000 tonnes metals, summing up to total of 1 395 000 tonnes.

9. Italy: The amount of separately collected waste glass was in 1996 reported by FEVE to reach 894 000 tonnes. However, the amount reported by ANPA is 550 000 tonnes. According to *Secondo Rapporto sui Rifiuti Urbani e sugli Imballaggi e Rifiuti di Imaballaggio'*(ANPA, 1999) and Stima Istituto Italiano Imballaggi the amount of collected packaging waste glass was in 1997 644 000 tonnes. Therefore, the amount of 555 000 tonnes has been used for 1996.

10. Luxembourg: 192 000 tonnes bagged waste has been reported under Total Municipal Waste of which 103 000 tonnes is coming from households. However, according to Page 174 in Daten 1996, Luxemburger Abfalldatenban 1998 (Administration de l'Environment) only 28 000 tonnes of the bagged waste was coming from commercial activities. Therefore the total figure for bagged waste has been reduced to (103 000+28 000) 131,000 tonnes. Instead of the reported figure on 73 000 tonnes separately collected paper and cardboard, the figure 16 000 tonnes waste paper and cardboard collected from households is used. Source: Page 194 in 'Daten 1996'.

11. Norway: Added 11 000 tonnes glass waste to the existing figure of 19 000 tonnes. Total collection of glass waste according to Norsas is used.

    Only 8 400 tonnes of metals were originating from packaging (cf. page 31 in *Statistik over emballageavfall*, Statistics Norway 98/45). Therefore, (24 000- 8 400) 15 600 tonnes metals are deducted.

    Added 344 494 tonnes of bagged waste collected from trade, hotels, restaurants, offices, schools, defence, health and social activities. Source: Page 30 in *Statistik over emballageavfall*, Statistics Norway 98/45.

    Added 21 000 tonnes glass waste to the existing figure of 8 000 tonnes. Total collection of glass waste according to FEVE is used.

12. Portugal: Added 93 000 tonnes glass waste to the existing figure of 27 000 tonnes. Total collection of glass waste according to FEVE is used

13. Spain: Added 236 000 000 tonnes glass waste collected from bottle facilities, washing facilities etc to the existing figure of 220 000 tonnes collected from consumers and some commercial activities. Total collection of glass waste according to Ministerio de Medio Ambiente, Spain is used.

    According to Ministerio de Medio Ambiente, Spain, the collected waste paper and cardboard is coming from industrial activities and only to a small extend from consumers. Therefore, no amount of collected waste paper and cardboard is included.

14. Sweden: Added 12 000 tonnes glass waste to the existing figure of 83 000 tonnes. Total collection of glass waste according to FEVE is used.

15. The Netherlands: 1 459 000 tonnes food and garden waste is separately collected. According to an e-mail from RIVM to ETC/W 23 April 1999, it is reasonable to assume that the majority is withdrawn from the organic fraction of the traditionally household waste. Therefore, the ETC/W has set the percentage of food waste to 80 % and added this amount (1 167 000 tonnes). The remaining 20 % is regarded as garden waste and is not included.

    Added 32 000 tonnes glass waste to the existing figure of 306 000 tonnes. Source: Waste in the Netherlands, One-way packaging glass waste. Ministry of housing, spatial planning and the Environment 1997.

16. United Kingdom: Added 110 000 tonnes glass waste to the existing figure of 320 000 tonnes. Source: page 192 in *Digest of Environmental statistics No. 20, 1998*, DETR, UK. Total collection of glass waste according to FEVE (519 000 tonnes) is not used, because it is likely to include flat glass.

Annex 3. Definitions of waste terms used in the ETC/W survey

The questionnaire includes the use of different waste terms. For that purpose it has been necessary to define the used terms. Some of the following definitions have been taken from the definitions used by OECD/Eurostat. Some have been defined by the ETC/W itself.

The survey includes three parts:
A) Household waste
B) Other municipal waste
C) Total municipal waste (household waste + other municipal waste)

The survey follows the OECD/Eurostat definition of municipal waste:
'Municipal waste is waste collected by or on behalf of municipalities'.

It includes:

- Waste originating from households (post-consumption waste), similar waste from commerce and trade activities, office buildings, institutions (schools, hospitals, government buildings) and small businesses.

- Waste from these sources collected door-to-door or delivered to the same facilities used for municipally collected waste, as well as fractions collected separately for recovery operations (through door-to-door collection and/or through voluntary deposits). It also includes similar waste from rural areas, even if this is disposed of by the generator.

- Bulky waste (e.g. white goods, old furniture, mattresses) and yard waste, leaves, grass clippings, street sweepings, the content of litter containers, and market cleansing waste if managed as waste.

It excludes:

- Waste from municipal sewage network and treatment.

A) Household waste, generated by the domestic activity of households:

Household waste – generated by the domestic activity of households – total:
The total figure for the different types of waste that are generated by the domestic activity of households:

1. **Traditional collection (bagged waste):**
   Mixed garbage collected door-to-door from private individuals on a regular basis (every day, every week, every two weeks, etc).

Separately collected household waste:

Any collection to separate one or several homogenous waste fractions from the household waste.
Please state the figures in the survey as totals, regardless of collection scheme (door-to-door collection or delivery by the generator to a bottle bank, paper bank, municipal yard, civic amenity, etc).

2. Bulky household waste – TOTAL:

Waste from private individuals that is too large or too heavy to be submitted to the collection service in the same way as bagged waste.
The figures are the total for bulky household waste and a breakdown on:

- Electric and electronic household waste (e.g. refrigerators, washing machines, televisions, computers etc)
- Construction and demolition waste originating from households
- Other bulky waste (e.g. furniture, mattresses, mixed bulky waste, etc)

If a figure for bulky garden waste is available, please state it under 'food waste and garden waste' as garden waste.

3. Food waste and garden waste – TOTAL:

The figures are the total for waste from households of organic origin (meat, vegetables, etc) and garden waste (e.g. leaves, grass clippings, branches, etc), and a breakdown on:

- Food waste
- Garden waste

4. Paper and cardboard:

The total figure for paper and cardboard originating from households.

5. Glass:

The figure for glass and bottles without deposit originating from households, i.e. glass and bottles whose destination is recycling and not re-use. The figures exclude flat glass.

6. Metals (ferrous and non-ferrous):

The total figure for metals originating from households.

7. Small scale hazardous waste:

The total figure for small-scale hazardous waste originating from households (e.g. medicines, batteries, paint residues, photo chemicals, solvents etc)

8. Other separately collected household waste (e.g. plastics, textiles etc):

The total figure for the types of waste that are not stated anywhere else. If known, please state the exact types of waste and the amounts in a footnote.

B) Other municipal waste – total:

The total figure for waste that does NOT originate from the domestic activity of households, but is collected by or on behalf of municipalities, i.e. waste originating from commerce and trade activities, office buildings, institutions (schools, hospitals, government buildings) and small businesses.

The figures are the totals for other municipal waste and a breakdown on the amounts generated by:

- Commercial activities, offices, small businesses, restaurants etc;
- Hospitals;
- Municipal services.

9. Commercial activities, offices, small businesses, restaurants, etc – total:
The figures are the total figure for waste originating from commerce and trade activities, office buildings, institutions (schools, government buildings, etc) and small businesses, and a breakdown on:

Traditional collection (bagged waste):
Mixed garbage (similar to mixed garbage from households) collected door-to-door on a regular basis (every day, every week, every two weeks, etc) which does not originate from households but from commerce and trade activities, office buildings, institutions (schools, government buildings, etc) and small businesses.

Separately collected:
Separately collected waste split up in the following fractions not originating from households but from commerce and trade activities, office buildings, institutions (schools, government buildings, etc) and small businesses.

- **Paper and cardboard:**
  Paper and cardboard which does not originate from households but from commerce and trade activities, office buildings, institutions (schools, government buildings, etc) and small businesses.

- **Glass and bottles without deposit**

- **Garden waste:**
  Waste arising from maintenance of parks, public gardens, green amenities, etc

- **Food waste:**
  Food waste of organic origin (meat, vegetables, etc) which does not originate from households but from commerce and trade activities including restaurants, office buildings, institutions (schools, government buildings, etc) and small businesses.

- **Hazardous waste:**
  Hazardous waste which does not originate from households but from commerce and trade activities, office buildings, institutions (schools, government buildings, etc) and small businesses.

  Please note that hazardous hospital waste is stated under the source: Hospitals.

- **Other separately collected waste (e.g. plastics, textiles, etc):**
  The types of waste that are not stated anywhere else and are separately collected from commerce and trade activities including restaurants, office buildings, institutions (schools, government buildings etc) and small businesses. If known, please state the exact types of waste and the amounts in a footnote.

- **Other waste from commerce and trade activities, offices, small business, restaurants, etc.**
  The types of waste that are not stated anywhere else from commerce and trade activities including restaurants, office buildings, institutions (schools, government buildings etc) and small businesses and which often will be of a heavier or larger character like bulky waste.

10. **Hospitals – total:**
    Waste generated by the human or animal health care sector (e.g. hospitals, doctors, dentists, clinics, vets, maternity wards, etc). The figure is the total of hazardous waste and non-hazardous waste and a detailed figure for:

    - Hazardous hospital waste from the human or animal health care sector: Hazardous waste from natal care, diagnosis, treatment or prevention of disease in humans or animals: sharps, body parts and organs including blood bags, other wastes where the collection and disposal is subject to special requirements in view of the prevention of infection, discarded chemicals, etc

    - Non hazardous waste from the human or animal health care sector. Includes all non hazardous waste from the human or animal health care sector which is not subject to special requirements in view of infection (e.g. dressings, plaster casts, linen, disposable clothing, diapers) and which is not covered by the collection of other municipal collection schemes (e.g. bagged waste, food waste, paper and cardboard).

11. **Municipal services (street and market cleaning, yard waste, the content of litter containers, etc)**
    The figure is the total for waste arising from municipal services not mentioned above.

C) Municipal waste – total:

The total figure for waste collected by or on behalf of municipalities i.e. 'Household waste' (A) plus 'Other municipal waste' (B).

In some cases it will not be possible to give a reliable figure for the amount of e.g. waste glass and bottles collected from households and other sources (commercial activities, offices, small businesses, etc) respectively where, for instance, only a total figure for the total municipal collection of glass and bottle waste exists. In these cases we ask you, if possible, to indicate roughly which percentage you estimate derives from households by filling in the column '% from households'.

Similar household waste from rural areas not served by municipal services.

It includes waste from households not served by municipal services, even if the waste is disposed of by the generator. The figure typically covers waste similar to 'traditional collection (bagged waste)'.

Memorandum item: Refillable bottles with deposit (not regarded as waste).

Please state the yearly amount of glass waste saved because of the use of refillable bottles with deposit as well as how you have calculated the amount.

Annex 4. Questions on method for data collection of household and municipal waste

Almost every EU Member State makes use of surveys/questionnaires in order to collect information on the generation of municipal waste and household waste. Normally, the municipalities provide data.

In order to improve the information at the European level about how these data are collected and provided we kindly ask you to answer the following questions:

Country: .....

1) *Municipalities included in your surveys*

a) Does your survey involve direct contact to municipalities? Yes/no .....

b) Is your survey sent to all municipalities? Yes/no.....

c) If no in 1b, please specify the criteria for selecting the municipalities .....

d) How many of the municipalities receiving the questionnaire normally return it? (Latest survey) ……%

e) Which rate of the country's total population does the population of the responding municipalities cover? ……. %

f) Which rate of the total population is provided with a household waste collection service? .....%

2) *Guidelines on how to determine the quantity and the composition of waste coming from the source households.*

a) Do you make general guidelines for the municipalities on how to collect data on household waste quantity and composition? Yes/no ……

b) Do the guidelines presuppose that the information on waste arising from households is based on weighed quantities (weighbridges at treatment plants)? Yes/no .....

c) Do the guidelines inform which average quantities per capita and average composition of household waste the municipalities can use for the survey? Yes/ no .....

(If yes, please enclose the average figures for different types of households (e.g. single-family house, block of flats, size of household etc) and different waste types. Please specify if the composition of the waste covers only bagged waste from households or if separately collected waste, e.g. waste paper, is included)

d) Do the guidelines give information about how the municipality can obtain its own average generation rate per capita and average composition of household waste? Yes/no.....

e) If yes in 2d), please specify if the guidelines recommend a specific method for obtaining data about quantity and composition of waste from households, e.g. source sampling at the households or randomly selected collection trucks at treatment plant.....

f) Please specify how you estimate the quantities of household waste from municipalities who do not reply to your survey?.....

g) Are these estimated figures (from the not replying municipalities) included in the figures reported to OECD/Eurostat? Yes/no.....

h) If the population provided with a household waste collection service is not 100 %, please specify if the figures for household waste generation reported to OECD/Eurostat are transformed to a 100% - level.
Yes/no.....

3) *Guidelines to determine the quantity and the composition of municipal waste coming from other sources than households, e.g. commercial activities, offices and small business etc*

a) Do you make general guidelines for the municipalities on how to obtain waste data from commercial activities, offices and small business etc? Yes/no
……

b) Do the guidelines presuppose that the information on waste arising from households, commercial activities, offices and small business etc is based on weighed quantities (weighbridges at treatment plants)? Yes/no .....

c) Do the guidelines for waste from commercial activities, offices and small business etc recommend calculations based on?

Waste production per employee? Yes/no.....(If yes, please enclose the figures)

Waste composition in relation to industrial activity?
Yes/no.....(If yes, please enclose the figures)

d) If you do not make guidelines (cf. 3a) on how to obtain waste data from commercial activities, offices and small business etc please specify how the municipalities make their estimates

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