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COMMISSION OF THE EUROPEAN COMMUNITIES

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**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND
THE COUNCIL**

**on statistics compiled pursuant to the Regulation (EC) 2150/2002 on waste statistics and
their quality**

1. INTRODUCTION

1.1. Regulation on Waste Statistics

Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics¹ requires the Commission according to Article 8(1) to "submit a report to the European Parliament and the Council on the statistics compiled pursuant to this Regulation and in particular on their quality and the burden on businesses."

Section 7(3) of Annex I and of Annex II stipulates that "the Commission will include the coverage and quality reports in the report provided for in Article 8". The quality reports from Member States are available on the following Internet site:

http://circa.europa.eu/Public/irc/dsis/pip/library?l=/wastesstatistics/regulat/data_transmission/quality_statistics

This report summarises the first results, provides an overview of data quality and includes recommendations for possible amendments to the Regulation. It covers the 25 EU Member States that were legally obliged to submit data in 2006.

Starting with the reference year 2004, the Regulation requires the EU Member States to provide data every second year. Annexes I and II set out the requirements for statistics on waste generation, waste treatment and waste treatment capacities. Results have a breakdown by waste categories according to the statistical nomenclature on waste (EWC-Stat), which is defined in Annex III of the Regulation. Table 1 provides further details on the reporting requirements.

¹ OJ L 332, 9.12.2002, p. 1, as amended by Regulation (EC) No 1893/2006 (OJ L 393, 30.12.2006, p. 1).

Table 1: Data sets according to the Waste Statistics Regulation

Data set		Description and breakdown	Regional level
1	Generation	Waste generation by: - 20 waste producing activities: 19 industries, households - 48 waste categories	National
2	Incineration	Waste incineration by: - 2 treatment types - 14 waste categories	NUTS 1
3	Recovery excl. energy recovery	Waste recovery by: - 1 treatment type - 17 waste categories	NUTS 1
4	Disposal other than incineration	Waste disposal by: - 2 treatment types - 16 waste categories	NUTS 1
5	Treatment Infrastructure	No./capacity of recovery/disposal facilities by: - 5 treatment types	NUTS 2
	Coverage of the collection scheme	Percentage of population / dwellings covered by a collection scheme for household and similar waste.	

1.2. Implementation measures

The Commission has underpinned Regulation (EC) No 2150/2002 by preparing additional legal acts and drawing up a guidance document:

- Commission Regulation (EC) No 574/2004 of 23 February 2004 amending Annexes I and III to Regulation (EC) No 2150/2002 on waste statistics²
- Commission Regulation (EC) No 783/2005 of 24 May 2005 amending Annex II to Regulation (EC) No 2150/2002 on waste statistics³
- Commission Regulation (EC) No 782/2005 of 24 May 2005 setting out the format for the transmission of results on waste statistics⁴
- Commission Regulation (EC) No 1445/2005 of 5 September 2005 defining the proper quality evaluation criteria and the contents of the quality reports for waste statistics⁵
- Manual for the Implementation of Regulation (EC) No 2150/2002 on Waste Statistics (July 2006, Version 1.1)⁶.

² OJ L 90, 27.3.2004, p.15.

³ OJ L 131, 25.5.2005, p. 38.

⁴ OJ L 131, 25.5.2005, p.26.

⁵ OJ L 229, 6.9.2005, p.6.

1.3. Data quality in a multi-method environment

Regulation (EC) 2150/2002 defines the data to be submitted and the required quality but does not prescribe a specific method of drawing up waste statistics, which are thus compiled in a multi-method environment. This enables Member States to keep their established data collection systems and to minimise the changes needed to comply with the Regulation.

However, the multi-method approach raises serious problems. It may result in methodological differences from one country to another, between different data sets from the same country, and even within individual data sets. This makes it somewhat difficult to safeguard data comparability and to ensure high data quality.

The way in which data quality can be measured depends on the methods used. For different methods, there are different quality parameters (e.g. coefficient of variation for sample surveys; sensitivity analysis for modelling; etc.). In particular the combination of methods within data sets makes it difficult to define indicators for overall data quality. As a consequence the Regulation's multi-method approach considerably hampers the assessment and communication of data quality.

The variety of approaches also affects the comparability of data. Limitations on data comparability may arise in particular with regard to coverage and to the way waste is allocated to the various generating activities, as will be described later in this report.

In their quality reports, the Member States described the data by reference to quality elements commonly used in the European Statistical System to assess the quality of statistics⁷ and set out in Regulation (EC) 1445/2005 on the quality of waste statistics.

2. PUNCTUALITY AND TIMELINESS

Punctuality and timeliness refer to the compliance of data delivery with official deadlines and to the time lag between reference period and data availability.

Regulation (EC) 2150/2002 required data for the reference year 2004 and the quality reports to be submitted by 30 June 2006. Eurostat evaluated the resultant information within two months after the deadline with regard to the following criteria:

- completeness of data sets;
- completeness of quality report;
- timeliness;
- proper application of definitions and classifications;
- application of sound statistical methods.

⁶ http://circa.europa.eu/Public/irc/dsis/pip/library?l=/wastesstatisticsssregulat/manual_statistics

⁷ Eurostat website on Quality:
http://epp.eurostat.ec.europa.eu/portal/page?_pageid=2273.1,2273_47140765&_dad=portal&_schema=PORTAL

Member States were told of the results on 23 August 2006 and were asked, in the event of incomplete data or missing quality reports, to provide the missing information as soon as possible. Where necessary, data were re-evaluated in September 2006, incorporating the information received after the first evaluation; the re-evaluation sheets were sent out on 13 September 2006.

Considering that 2006 was the first reporting year, punctuality was satisfactory. Most countries either met the deadline or overran it by only a few days:

- 12 Member States met the deadline of 30 June 2006 (Austria, Belgium, Cyprus, Czech Republic, Germany, Estonia, Finland, Hungary, Latvia, Poland, Sweden, Slovenia).
- 6 Member States submitted data and/or quality reports late, but early enough to be considered in the first evaluation round in August 2006 (Denmark, Spain, Italy, Lithuania, Slovakia, United Kingdom).
- 4 Member States had submitted data but no quality report by August 2006 (France, Luxembourg, Malta, Netherlands); all of them did supply the report shortly after.
- 3 Member States failed to deliver substantial parts of the data by 22 September 2006 (Greece, Ireland, Portugal) and thereupon received an official letter. Greece delivered in November 2006, Ireland in June 2007 and Portugal in September 2007.

Publication

The data on waste generation were published in the Eurostat Dissemination database in December 2006; the data on the treatment of waste in January 2007. The database has been updated several times since then to upload revised data or estimates for missing values. The data set on waste treatment capacity has not been published yet as the structure of this data set is complicated by the number of dimensions.

3. COMPLETENESS OF DATA

The delivery of complete data sets is crucial for the production of EU aggregates. Imputation of missing data is difficult and time-consuming, affecting the timeliness of waste statistics as well as the quality of the data. Countries are therefore asked to minimise the amount of missing data, if necessary by sending in estimates.

Figure 1 shows that the Member States submitted 88 % of the required data; 12 % were declared as missing. Focusing on how the missing data break down among Member States, economic sectors and waste categories, it is evident that three areas account for the major part of the missing values.

About a third of the missing data is for waste generated in agriculture, forestry and hunting (NACE A), fishery (NACE B) and the services sector (NACE G-Q). Eleven countries had derogations from reporting on these sectors according to Article 4 of the Regulation. This explains about 70 % of the missing data in these three sectors; the remaining 30 % concern

countries that had no derogations. Some countries with a derogation actually delivered (part of) the data.

About 20 % of the missing data concerns sludges. Sludge amounts have to be reported in wet and in dry weight. Most countries were able to deliver data either in dry or in wet weight. Eurostat has established a wet/dry conversion factor and used it to impute missing values.

By the time this report was drafted Portugal had delivered only data on waste generated by households; data on waste generation in the economy were completely missing. To be able to calculate EU totals Eurostat had to impute the values, although the empirical basis for this is weak in the first year.

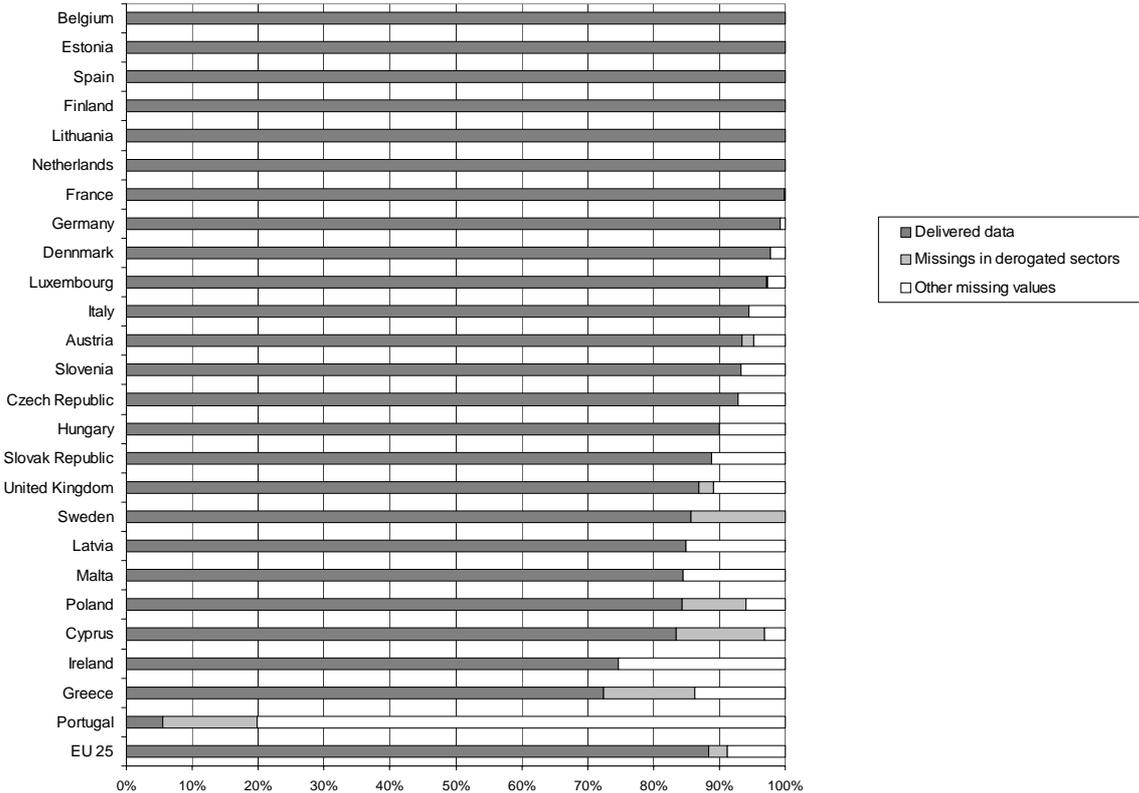


Figure 1: Completeness of data on waste generation by Member States

The completeness of delivered data for waste treatment is even more important than for waste generation, as it is not feasible to impute the quantities treated by type of treatment. Quantities treated have to be reported at national level and at NUTS 1 level. The description in this section refers to the national level only. Several countries did not deliver the complete regional breakdown; at this first data delivery stage, Eurostat has given priority to coherence and completeness at the national level.

The share of missing data on waste treatment amounts to no more than 2.6 %. Two areas account for the major part of this.

Several countries were not able to provide data on sludges in wet weight and dry weight but could provide only one of the figures. More than half of the missing values are related to incomplete reporting on sludges. Most of the remaining missing values refer to disposal

methods used less frequently: land treatment (e.g. biodegradation of liquid or sludgy discards in soils etc.) and release into water bodies.

4. ACCURACY

Accuracy deals with the closeness between the estimated or computed value and the exact or true value, including aspects like sampling errors, data coverage, applied thresholds, non-response, adjustments, controls and corrections, confidentiality, etc.

4.1 Data coverage and coverage errors

The objective of the Regulation is to produce statistics on waste according to the definition in Article 1(a) of Directive 2006/12/EC, with the exception of radioactive waste.

Statistics on waste generation must be compiled for all economic sectors and for households. The statistics should also cover waste from small businesses (< 10 employees) although such firms should be exempt from surveys wherever possible.

Statistics on waste treatment cover all waste that is recovered or disposed of within a country, irrespective of the origin of the waste. The underlying concept of the Regulation is to collect data on the final destination of waste; preparatory treatment operations are not covered.

Excluded from the scope of the Regulation is all waste that is recycled directly at the site where the waste was generated.

Unclear definitions

Waste statistics is part of European waste legislation. As a consequence, waste statistics have to find some way of coping with the deficits of the legal definitions, in particular the problem of distinguishing between waste and non-waste. Differing interpretations of definitions may have a considerable effect on data coverage and comparability where huge waste streams are concerned. Common problems mentioned in the quality reports are on how to include wood waste, metal waste and organic waste from the food industry.

On the matter, the Commission Interpretative Communication on waste and by-products (COM(2007) 59 final) provides useful guidance. The Commission is also working on elaborating end-of-waste criteria that would further help clarifying the distinction between waste and non-waste.

Clear classifications and definitions are in particular needed for the usability of data when considering the setting of targets, such as on recycling.

Imports and exports

Coverage errors with regard to waste generation occur mainly because in some countries data are not collected from the waste generators but derived indirectly from waste collection or waste treatment. This approach keeps the burden on respondents low but has some shortcomings. One is that direct exports of waste, i.e. exports without a treatment stage within the country, will not be covered (e.g. in Austria, Denmark, Lithuania) unless other data sources are used to adjust for these exports. This will mainly affect the coverage of recyclable waste. The possibilities of collecting statistics on import and export of waste are addressed by

a separate pilot study programme, which ended in 2007. A report from the Commission to the European Parliament and the Council summarising the results is currently under preparation.

Some countries traditionally compile national statistics only on the treatment of waste that is generated within the country (e.g. Denmark, France, the Netherlands, Belgium). Not all of these countries have adapted their approach to the Regulation's requirements. Deviations from the required coverage may apply to all waste categories (e.g. Denmark, Belgium) or to specific waste streams only (e.g. France).

Secondary waste

Annex I of the Regulation on waste statistics explicitly asks for information on waste resulting from recovery and disposal operations, known as secondary waste. Secondary waste is expected to arise mainly in the economic activities which deal with waste management (NACE sectors 37, 51.57 and 90). However, the data and the quality reports indicate that several countries did not consider this provision, most likely because data are prepared in a different way for national purposes.

Because of the incomplete coverage of secondary waste, waste generation tends to be underestimated in the various sectors; this in turn complicates the interpretation of the data for these sectors and for the waste totals.

Coverage of small enterprises

Most Member States exempted small companies from collecting data on waste generation. Whereas some countries produced estimates on the waste generated by small companies, others did not (e.g. the Czech Republic, France, Hungary, Latvia, Poland, Slovenia) either on account of methodological problems or because the amounts of waste were considered to be small.

The resulting undercoverage of amounts generated varies depending on the thresholds for data collection and on the economic structure of the countries, i.e. the number and activities of firms not covered. Information from different countries indicates that the proportion of waste generated by small companies may vary considerably. Several countries that did not produce estimates pointed out in their quality reports that they were working on estimation methods and would be able to provide estimates in the next reporting round.

4.2. Classification and allocation problems

Breakdown by economic sectors

The Regulation calls on the Member States to break down their data by 20 waste generating activities. The correct allocation is a prerequisite for:

- the comparability of sector-specific waste amounts;
- the coherence of waste statistics with business statistics.

The breakdown of economic activities is by reference to the Classification of Economic Activities in the European Community (NACE Rev. 1.1). A new classification of economic activities (NACE Rev. 2) has been adopted and the required breakdowns in the Regulation on waste statistics have been adapted accordingly. NACE Rev. 2 will be used from reference

year 2008 onwards; a conversion of the 2004 and 2006 data to NACE Rev. 2 is foreseen. The revision of the NACE does not interfere with the classification problems discussed below.

The way waste is allocated to the generating sector depends on the methods applied for data collection. About two thirds of the Member States collect most of their data on waste generation directly from the waste generators, either by surveys or from administrative documents. This approach provides direct information on the source of waste. Most of these countries use their statistical Business Register to determine the generator's NACE code; this ensures the coherence with Business Statistics.

There is a significant risk of misallocation in countries where data on waste generation are derived indirectly from waste treatment data. This is the approach taken by Denmark, Germany, Lithuania, Austria and Malta. In this case information on the generating activity is known only from secondary sources (e.g. waste collector, waste treatment operator) or has to be derived by some other means (e.g. by models or by using the European waste list⁸, which contains information on the origin of waste). All these approaches have clear limitations.

Waste generated by households

The distinction between waste generated by economic activities and waste generated by households in the Regulation replaces the traditional concept of 'municipal waste'.

The methodological challenge is to produce accurate statistics for waste generated by households as waste from households is usually collected together with waste from shops, small businesses and institutions. Many countries do not have direct information on the share of waste produced by households; these countries were therefore required to determine the share of waste from households by some other method.

Twelve Member States established the new concept and reported figures for waste from households only. Their methods range from targeted surveys (waste analyses) to rough estimates received from waste management companies or landfill operators. Nine countries did not implement the new concept. Four countries' quality reports contained no information on this issue. As a result, the comparability of data on waste from households is currently limited to the compliant countries. The situation is expected to improve with the delivery of data for 2006 as several countries are working on appropriate methods.

4.3. Measurement errors

Measurement errors might result from the use of imprecise conversion factors. Landfills not yet equipped with weighbridges are still quite a common problem. In such cases the reported figures are usually based on the volume of the collection vehicles and converted by means of average waste densities. Experience in Poland and Lithuania suggests that this approach tends to overestimate waste quantities rather than underestimate them. The measurement error is probably biggest for municipal waste and other landfilled non-hazardous waste. Hazardous waste and recyclables are more likely to be weighed for financial reasons. Data quality in this regard will improve steadily as old landfills are closed down and new ones built in compliance with EU Regulations.

⁸ Decision 2000/532/EC as regards the list of wastes, OJ L 226, 6.9.2000, p.3.

5. BURDEN ON BUSINESSES

Burden on respondents refers to the burden that data delivery imposes on businesses and is measured as the actual number of respondents and their burden in physical terms (time required for response).

The Regulation on waste statistics asks the Member States to reduce the burden by providing access to administrative data and to exclude small firms with fewer than 10 employees from surveys unless they contribute significantly to waste generation.

Most Member States, however, do not measure the burden in physical terms and are therefore unable to report on this. Five Member States report a burden of between 30 minutes and five hours per respondent. Nevertheless, most Member States are aware of the workload for companies and follow different approaches with a view to reducing the burden and collecting data in an efficient way.

The most important help to companies is to avoid double reporting for administrative and statistical purposes by using administrative data and/or by co-ordinating waste surveys among the institutions concerned (Statistical Offices, Ministries of the Environment, Environmental Agencies). For 14 Member States, administrative data are the main raw material for waste statistics. Other countries use administrative data as one of many data sources.

The request in the Regulation to exempt small companies from surveys is handled in different ways. Some countries cover small companies by sample surveys and extrapolate the results (Belgium; Estonia for some sectors; Greece). Most, though, exclude them completely, the figures being either ignored (see section 4.3.) or extrapolated by factor-based estimation models. Countries have established different exclusion thresholds, defined mostly by the number of employees or by the amount of waste generated per year. Some countries combine the two criteria to make sure that even small companies are covered by data collection when they exceed the defined waste generation threshold.

6. CONCLUSIONS

Analysis of the data from the first reporting round has not yet been finalised, but the progress we have made towards more complete and harmonised European waste statistics is already obvious.

We should stress the positive impact of the obligation to document methodologies and to assess data quality in the quality reports. Problems and deficiencies are more visible and show where improvement is needed. In addition, the Regulation gives a boost to coherence between waste statistics and other statistical domains by requiring strict adherence to the NACE classification of economic activities and the use of statistical units as applied in business statistics. It thus enhances the possibility of integrating waste statistics into Environmental-Economic Accounting.

6.1. Development in Member States

On the national level, the binding character of the Regulation has clearly strengthened the status of waste statistics within statistical systems. The obligations imposed by the Regulation have led to methodological developments and to changes in national data collection systems.

In the light of experience in the first reporting round, several countries announced their intention of improving data quality and compliance with the Regulation's requirements. Where such changes require legal action, the measures might not become effective until the reference year 2008.

It would seem that the Regulation has advanced the general trend in Member States of avoiding redundant reporting through co-operation between the data collecting institutions and streamlining of reporting obligations. The dual use of data for administrative and for statistical purposes is becoming more commonplace, the bottom line being more consistency between data and a reduced burden on respondents.

6.2. Need for revision

Although the outcome of the first reporting round confirmed the general approach, some conceptual shortcomings clearly need to be reviewed.

Breakdown by waste types

In Annex I and Annex II (Section 2) the Regulation requires generated and treated waste amounts to be broken down by waste categories in a different way for each data set (see Table 1). This was to minimise the required level of detail and hence minimise the burden for Member States.

The experience of the first reporting round clearly shows that the drawbacks of this concept are numerous whereas any advantages are insignificant, with no observable relief for the Member States. Most Member States collect the information at a much more detailed level and reduce the breakdowns when preparing the data for transmission to Eurostat.

The main negative aspects are:

- It is not possible to draw up balances for individual waste categories; this greatly hampers data validation and interpretation.
- The level of detail for waste treatment data is too low; important waste streams are subsumed in non-specific waste categories ('other wastes').
- The presentation and communication of results is very complicated.
- The different formats make it difficult to handle and process the data.

The current approach should be abandoned in favour of a common breakdown for both waste generation and waste treatment. The more detailed breakdown of waste categories in Section 2 of Annex I should be used as basis for discussion.

Regional breakdown of data on waste treatment infrastructure

The Regulation requires the Member States to provide data on the number and capacity of recovery and disposal facilities at NUTS 2 level (Annex II, section 3). This detailed regional breakdown causes a significant workload for Eurostat and for Member States alike. The proportion of confidential data rises considerably with the regional level of detail, thus limiting the usefulness. The relevance of this detailed information has to be reviewed.

Breakdown by waste treatment types

Under Section 8(2), reporting on the treatment of waste aggregates all (10) recovery operations, except energy recovery, into a single reporting category. Furthermore, the required data on waste recovery capacity embraces such treatment operations as composting, recycling of metals and oil refining. In these cases the level of detail seems to be insufficient: information on certain recycling operations would be desirable for the purposes of monitoring waste policy. In particular, there is a growing need to provide data suitable for use as benchmarking against set targets. In some cases such targets may be mandatory. This highlights the need for consistent data across Member States, for which further refinement of definitions and classifications would probably be required.

Finally, disposal operations (8 treatment types) are broken down into two reporting categories, one of which is virtually unused in Member States.

7. OUTLOOK

On the strength of the first experience and in order to boost the usability and quality of data, while taking into account any additional costs for enterprises and public administrations, the Commission will propose amending the Regulation in due time for data collection for the reference year 2008:

- to have the same breakdown of waste categories for waste generation and waste treatment by aligning Sections 2 of Annex I and Annex II,
- to review the regional breakdowns in Annex II,
- to review the breakdown of waste treatment categories in Annex II, in particular waste recovery and waste disposal.