

Generation and treatment of waste

Households and businesses in the European Union (EU27) produced over six tonnes of waste per person in 2006; over 400 kg was household waste. Every second year information is collected on the generation and treatment of waste in the European Union on the basis of the Regulation on waste statistics. This publication gives the data for the second reference year 2006.

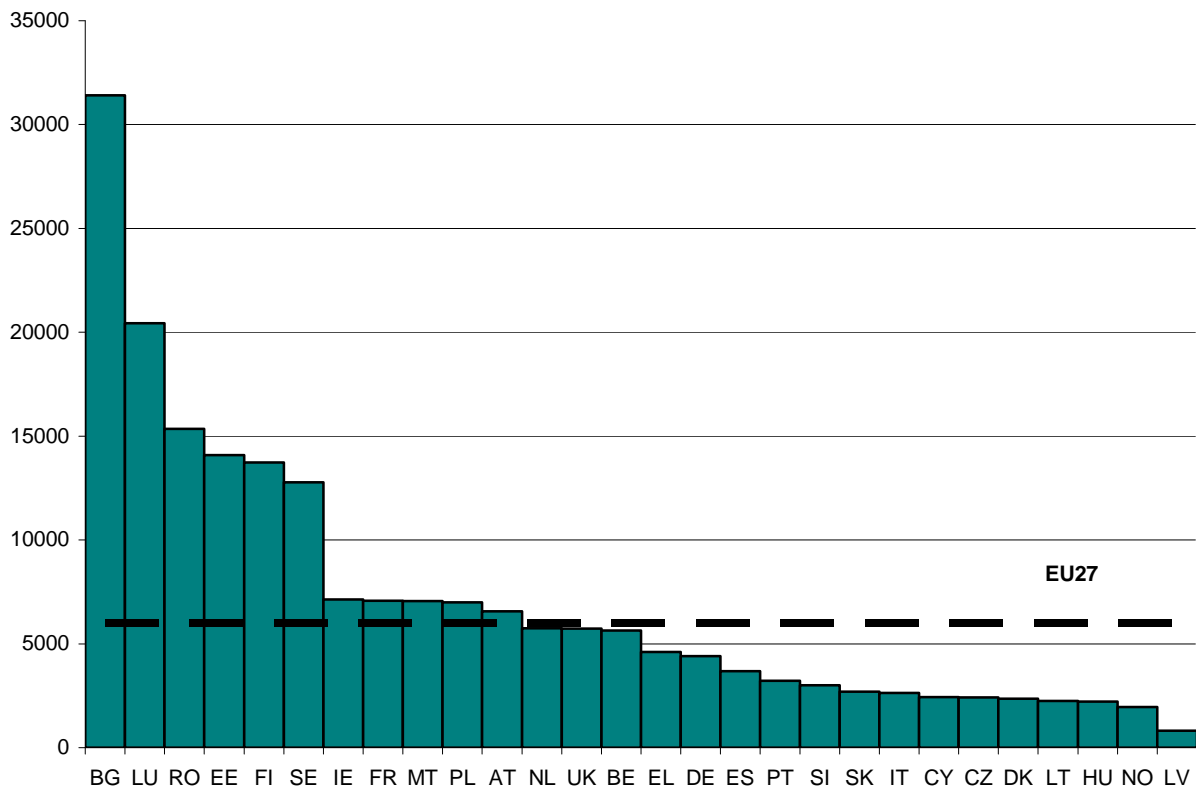
More than half of the waste generated by businesses was produced by industry and construction. Mining produced more than half of the waste generated by the industrial sector.

Mining, and as a consequence mining waste, is unevenly spread over the countries. Calculation of indicators in kilograms per inhabitant does not correct for such differences in industrial structure.

Around 3% of waste generated in EU27 was hazardous, meaning harmful for health or the environment.

The main treatment types were disposal and recovery; incineration is important for household and similar waste.

Figure 1: Waste generated, 2006 (kg per capita)



Households generated 423 kg waste per capita

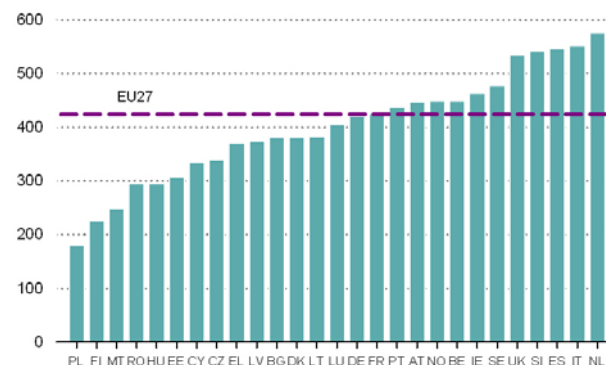
Waste production can be broken down by source, from households and the different economic sectors. The waste produced by households ranged from 181 kg per capita in Poland to 576 kg per capita in the Netherlands in 2006, with an average of 423 kg per capita (Figure 2 — dashed line). Households in Italy, Spain, Slovenia and the United Kingdom generated much more waste than the EU27 average. Households in Finland and Malta generated much less waste than the EU27 average.

The differences reflect diversity in organisation. In some countries households produce discarded vehicles, mineral waste from construction activities and sewage sludge; in other countries specialised services take care of these waste streams. Waste is attributed to the household or business that hands over the waste to the waste collection system.

The differences may, however, also be partly explained by the problem some countries still

face in distinguishing between waste generated by households *per se* and municipal waste, which also includes similar waste produced by businesses, offices and public institutions.

Figure 2: Waste generated by households, 2006 (kg per capita)



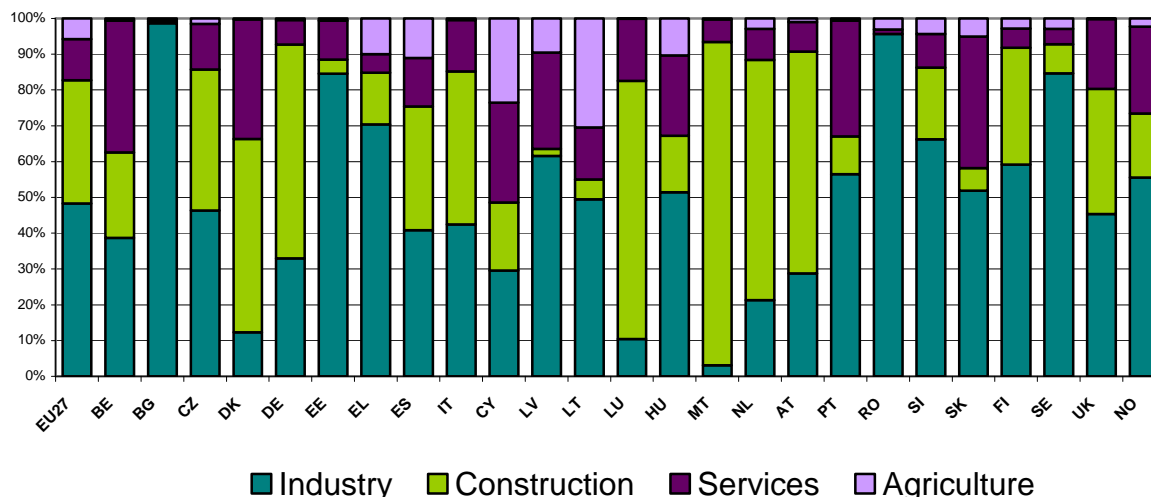
Industry and construction generated more than 50% of the waste

The volume of waste generated by economic activities can be allocated to the four main economic sectors: agriculture, industry, construction and services (Figure 3). In 2006 industry and construction generated the highest volume of waste, together accounting for 82.7% of all waste produced by economic activities. Services accounted for 11.6% of the total waste and agriculture for 5.8%.

Significant deviations from these averages can however be found when looking at country-specific data. Some countries show a surprisingly high percentage of waste in one of

the four sectors when compared with the EU27 averages. For instance, Cyprus and Lithuania reported substantial volumes of waste from agriculture (23.5% and 30.5%), whereas Romania and Bulgaria reported most of their waste from the industrial sector (95.6% and 98.7%). Similarly, Malta reported 90.3% of its waste from the construction sector and Belgium, Denmark and Slovakia reported high volumes from the services sectors (36.7%, 33.4% and 36.7%) compared to other countries. These differences between countries may be partly explained by differences in the structure of their economies.

Figure 3: Waste generated by economic activity, 2006 (in percent of total waste generated)



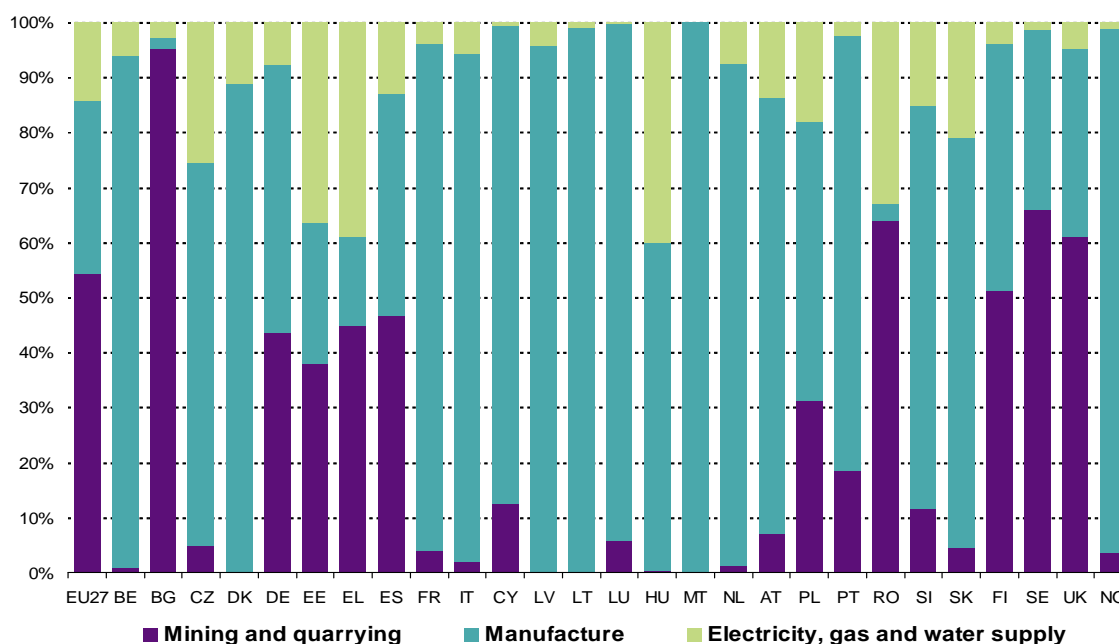
Manufacturing generated one third of all industrial waste

As industry is the main waste generating sector, a closer look is taken at the breakdown of waste by the three main industrial sectors (mining and quarrying, manufacturing and electricity, gas and water supply) (Figure 4). In 2006 in the EU27, 54.4% of industry's waste was produced by mining and quarrying. Small differences in the interpretation of the definition of mining waste may lead to significant differences in the results.

The patterns differ over the countries, mainly reflecting the presence of a mining industry and

different techniques for energy production. About half of the countries do not have a significant mining industry, whereas in one third of the countries the mining industry produced 40% or more of industrial waste. In a similar way in over half of the countries the energy sector produced less than 10% of industrial waste, whereas in Hungary, Greece and Estonia this sector produced up to 40% of industrial waste.

Figure 4: Waste generated in the three industrial sectors, 2006



Metal industry generated most waste in manufacturing

Manufacturing industry consists of subsectors carrying out very different activities; the volume of waste these subsectors produced varied greatly (Table 1). The manufacture of basic metal (NACE DJ) generated 32% of all manufacturing waste in the EU27. Greece even reported 72% of its manufacturing sector waste in this particular sub-sector. The manufacture of food (NACE DA)

accounted for 17% in EU27 and over 40% in Cyprus, the Netherlands, Ireland and Hungary. The manufacture of textile and textile products (NACE DB_DC), of coke and refined petroleum (NACE DF) and manufacture of furniture (NACE DN36) each represented less than 2% of EU27 manufacturing waste.

Table 1: Waste generated by subsectors of the manufacturing industry, 2006 (in percent of total waste generated in manufacturing)

Country	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	NO
DA	17	24	12	11	15	11	7	43	8	19	9	29	63	33	12	1	42	1	49	6	13	7	9	4	11	5	3	28	22
DB_DC	2	4	0	1	2	1	0	0	1	1	3	4	0	2	0	1	1	0	1	0	0	13	1	1	0	0	0	2	0
DD	13	5	2	9	2	7	34	6	0	3	21	4	5	23	4	8	6	0	2	15	3	6	13	40	7	40	59	7	11
DE	10	5	4	6	15	8	10	4	4	9	14	6	4	2	1	4	4	0	6	22	2	8	2	9	12	26	23	13	13
DF	1	1	2	0	0	0	25	0	0	0	1	2	0	0	1	0	3	0	3	0	0	0	3	0	1	0	0	0	0
DG_DH	11	20	19	6	8	15	1	9	6	13	12	13	3	1	75	5	3	0	10	2	10	2	8	14	3	14	1	14	5
DI	7	13	22	10	4	3	14	3	7	19	5	8	20	12	3	5	9	0	6	7	2	23	13	6	2	3	1	9	13
DJ	32	21	35	35	27	44	2	31	72	29	20	30	2	17	1	73	25	4	19	38	66	13	39	14	55	10	10	13	24
DK_TO_DM	7	7	4	21	0	7	2	4	1	7	14	3	1	8	1	2	7	0	3	7	2	26	9	8	6	1	3	12	12
DN36	1	0	0	1	26	2	4	1	0	1	2	1	4	2	2	0	1	95	2	1	1	1	3	3	1	0	0	2	1

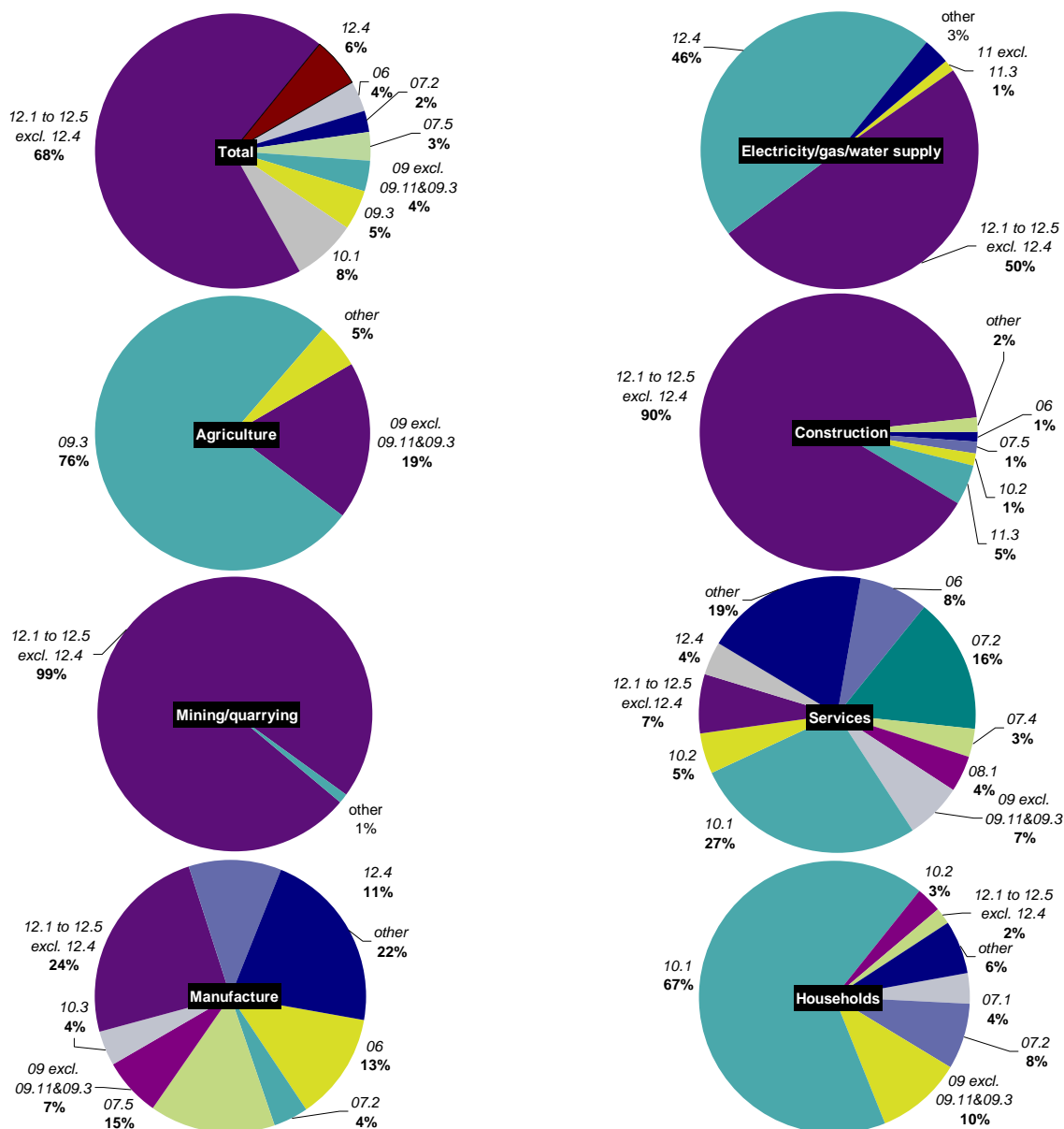
The main categories of waste vary considerably between economic sector

Aside from the total quantities of waste generated in different sectors, waste statistics also provides a snapshot of the breakdown of waste by waste category and sector. Figure 5 gives the average composition of waste from various activities; the activities differ considerably in the composition of their waste. Some activities are dominated by one waste category: mining and construction by mineral

waste, agriculture by animal faeces, urine and manure and households by household and similar waste. Other activities have a much more mixed composition of their waste; for instance manufacturing and services. This reflects the heterogeneity of these activities.

One waste category dominates the total; mineral waste is 68% of all waste arising. Mineral waste is mainly produced by mining and construction.

Figure 5: Average composition of waste generated in various activities for EU27, 2006 (in percent of total waste generated)

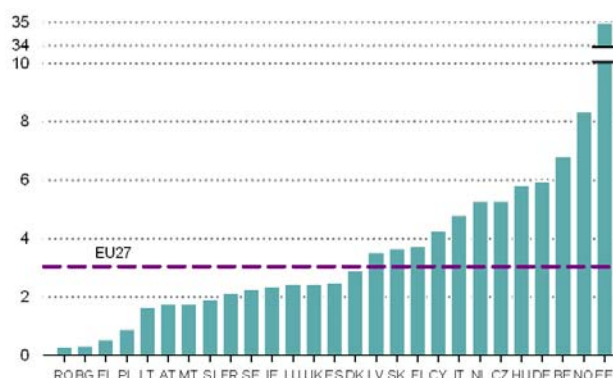


For the codes of the waste categories see the methodological notes attached to this publication.

Hazardous waste represented 3% of all waste

The quantity of hazardous waste expressed as a percentage of total waste generated is given in Figure 6 for the different countries. In the EU27 (dashed line), the vast majority of waste was non-hazardous (97%). The high percentage of hazardous waste in Estonia 35% is due to energy production from shale oil. Bulgaria, Romania and Greece reported low percentage of hazardous waste (0.3%, 0.3% and 0.5%). This can be explained by the differences in economic sectors in these countries, as already highlighted.

Figure 6: Hazardous waste generated, 2006 (in percent of total waste generated)



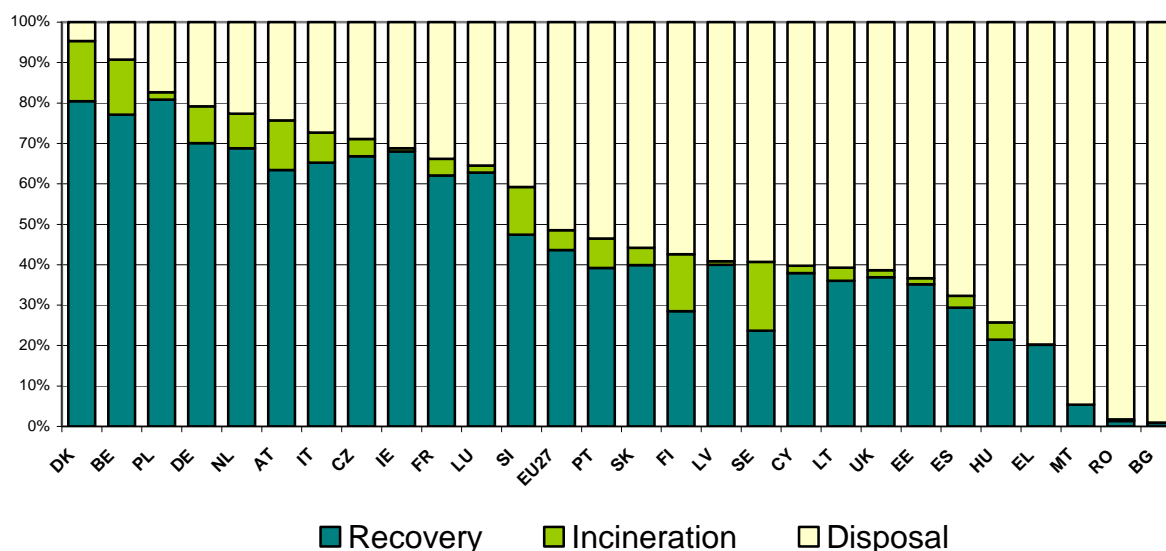
44% of waste was recovered

The Regulation on waste statistics is also a source of data on waste treatment. Figure 7 summarises the volume of waste treated by the three main treatment types: deposit, incineration and recovery. In the EU27, 4.9% of waste was incinerated, 43.6% recovered and 51.5% deposited in 2006. As already pointed out, major differences can be found between countries. Bulgaria and Romania deposited more than 98% of their waste. This can be explained by the fact that the highest volumes of

waste generated by these countries were in the mining and quarrying sector.

Sweden, Denmark and Finland incinerated a higher percentage of their waste than the EU-27 average. The category 'incineration' combines both incineration for the recovery of energy and for disposal.

Figure 7: Types of waste treatment, 2006 (in percent of total waste treated)



Mineral waste was the largest category of recovered and disposed waste

The type of treatment that suits best depends on the characteristics of the waste. Table 2 gives the composition of waste by treatment type. Both recovery and disposal are dominated by mineral waste; whereas the most important category of waste incinerated is household and similar waste.

Other waste streams important in recovery activities are metallic waste, animal and vegetal waste, wood waste and paper and cardboard waste. Recovery includes all treatment of biodegradable matter (composting).

The other waste categories important for disposal are animal and vegetal waste, household and similar waste and common sludges.

The composition of waste for incineration is less homogenous. Next to household waste, sorting residues and used oils are relevant categories. Still, these categories add up to only half of the incineration capacity.

Over 8 percent of waste for incineration is hazardous; for recovery this percentage is 3% and for disposal 2%. Incineration is sometimes the best technique to treat hazardous waste.

Table 2: Composition of waste by treatment type for EU27, 2006

	million tonnes
Recovery	1144
	%
Mineral wastes	72
Metallic wastes	7
Animal and vegetal wastes	5
Wood wastes	3
Paper and cardboard wastes	3
	million tonnes
Incineration	128
	%
Household and similar wastes	38
Sorting residues	6
Used oils	5
	million tonnes
Disposal	1350
	%
Mineral wastes	73
Animal and vegetal wastes	12
Household and similar wastes	8
Common sludges	3

METHODOLOGICAL NOTES

EXPLANATION

Waste policy is a key aspect of improving Europe's sustainability by stepping up resource efficiency. A five-step waste hierarchy was included in a new version of the Waste Framework Directive, promoting prevention before reuse, recycling, energy recovery and landfill.

Waste policy in the Member States is to a large extent set at European level and data on waste are collected to measure the effectiveness of these policies. Data on waste have been collected on a voluntary basis since the eighties by the Joint Eurostat/OECD Questionnaire, the Regulation on waste statistics (EC) No 2150/2002 of the European Parliament and of the Council establishes coherent framework for the production of statistics on waste generation and treatment by Member States.

DETAILS ON DATA SOURCES

All the data presented here were collected by Eurostat in 2008 on waste generated by countries in 2006 pursuant to the Waste Statistics Regulation. The data were extracted from the Eurostat database on 15 December 2008. At that time, the values for Portugal were still provisional. Population values used to calculate kilogram per capita are dated 1 January 2006 and were also extracted in December 2008.

According to the Regulation, data on waste generation must be broken down according to economic activity (NACE Rev 1.1) and 48 waste categories, both hazardous and non-hazardous. Data on waste treatment must be broken down into five treatment types and 14 to 17 waste categories, both hazardous and non-hazardous.

Data are published for the European Union and for individual Member States, plus Turkey, Croatia, Iceland and Norway. In this article, only data for Member States and Norway are given.

ABBREVIATIONS AND SYMBOLS

Countries' abbreviations

BE	Belgium	IT	Italy	PT	Portugal
BG	Bulgaria	CY	Cyprus	RO	Romania
CZ	Czech Republic	LV	Latvia	SI	Slovenia
DK	Denmark	LT	Lithuania	SK	Slovak Republic
DE	Germany	LU	Luxembourg	FI	Finland
EE	Estonia	HU	Hungary	SE	Sweden
IE	Ireland	MT	Malta	UK	United Kingdom
EL	Greece	NL	Netherlands	NO	Norway
ES	Spain	AT	Austria		
FR	France	PL	Poland		

NACE Rev. 1.1 codes: economic activities

A	Agriculture, hunting and forestry
B	Fishing
C	Mining and quarrying
DA	Man. of food and food products, and tobacco
DB_DC	Man. of textiles and textile products; of leather and leather products
DD	Man. of wood and wood products
DE	Man. of pulp, paper and paper products; publishing and printing
DF	Man. of coke, refined petroleum products and nuclear fuel
DG_DH	Man. of chemicals, rubber and plastic products
DI	Man. of other non-metallic mineral products
DJ	Manufacture of basic metal and fabricated metal products
DK_DM	Man. of machinery and equipment n.e.c.;man.of electrical and optical equipment;man.of transport equipment
DN36	Man. of furniture; manufacturing n.e.c.
DN37	Recycling
E	Electricity, gas and water supply
F	Construction
G_Q	Services

In this publication, D *Manufacturing* excludes 37 *Recycling*, Industry = NACE C+D+E and Agriculture refers to NACE A+B.

Waste codes used in this publication

01, 02, 03	Chemical compound waste, chemical preparation wastes, other chemical wastes
01.2	Acid, alkaline or saline waste
01.3	Used oils
03.1	Chemical deposits and residues
03.2	Industrial effluent sludges
05	Health care and biological wastes
06	Metallic wastes
07	Non-metallic wastes
07.1	Glass wastes
07.2	Paper and cardboard wastes
07.3	Rubber wastes
07.4	Plastic wastes
07.5	Wood wastes
07.6	Textile wastes
07.7	Waste containing PCB
08	Discarded equipment
09	Animal and vegetal wastes
09.11	Animal waste of food preparation and products
09.3	Animal faeces, urine and manure
10.1	Household and similar wastes
10.2	Mixed and undifferentiated materials
10.3	Sorting residues
11	Common sludges
11.3	Dredging spoils
12	Mineral wastes
12.1 to 12.5 excl 12.4	Mineral wastes (excluding combustion wastes, contaminated soils and polluted dredging spoils)
12.4	Combustion wastes
13	Solidified, stabilised or vitrified wastes

Treatment types used in this publication

Recovery	Operations which may lead to recovery, excluding energy recovery
Incineration	Incineration as disposal operation and incineration with energy recovery
Disposal	Combination of disposal operations, excluding incineration: e.g. disposal into or onto land (landfill), land treatment and release into water bodies

Further information

Data: [Eurostat Website: http://ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)

Select your theme on the left side of the homepage and then 'Data' from the menu.

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European Statistical Data Support:

Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

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The SiF was prepared in cooperation with ICEDD asbl (Institut de Conseil et d'Etudes en Développement Durable), Namur, Belgium
