

# Municipal waste statistics

Statistics Explained

Data extracted in January 2018. Most recent data: Further Eurostat information, Main tables and Database .  
Planned article update: May 2018.

This article shows trends in **municipal waste** generation and treatment in the **European Union (EU)** from 1995 to 2016. There is a very distinct trend towards less landfilling as countries move steadily towards alternative ways of treating waste.

Municipal waste accounts for only about 10 % of total waste generated when compared with the data reported according to the Waste Statistics Regulation (tab envwasgen). However, it has a very high political profile because of its complex character, due to its composition, its distribution among many sources of waste, and its link to consumption patterns.

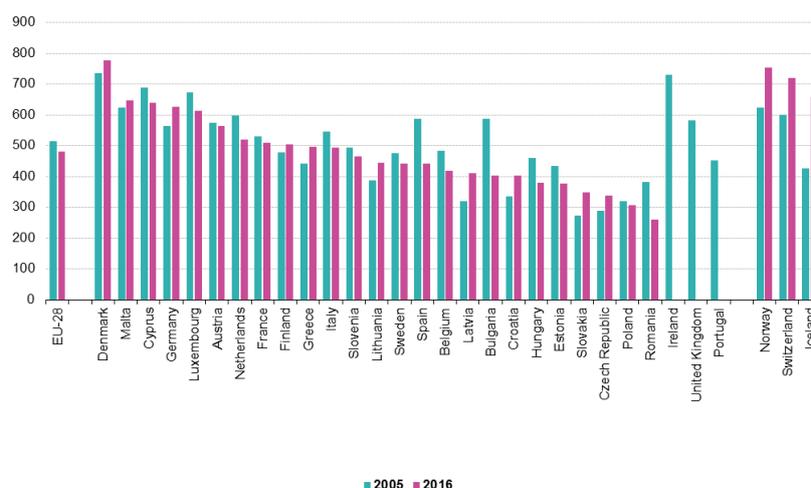


Figure 1: Municipal waste generated by country in 2005 and 2016, sorted by 2016 level (kg per capita) Source: Eurostat (envwasmun)

|  |      |      |      |      |      | change (%) |
|--|------|------|------|------|------|------------|
|  | 1995 | 2000 | 2005 | 2011 | 2016 | 1995-2016  |
| <b>EU-28</b>                                 | 473  | 521  | 515  | 498  | 480  | :          |
| <b>Belgium</b>                               | 455  | 471  | 482  | 456  | 420  | -7.7       |
| <b>Bulgaria</b>                              | 694  | 612  | 588  | 508  | 404  | -41.8      |
| <b>Czech Republic</b>                        | 302  | 335  | 289  | 320  | 339  | 12.2       |
| <b>Denmark</b>                               | 521  | 664  | 736  | 781  | 777  | 49.2       |
| <b>Germany</b>                               | 623  | 642  | 565  | 626  | 626  | 0.5        |
| <b>Estonia</b>                               | 371  | 453  | 433  | 301  | 376  | 1.3        |
| <b>Ireland</b>                               | 512  | 599  | 731  | 617  | :    | :          |
| <b>Greece</b>                                | 303  | 412  | 442  | 503  | 497  | 64.0       |
| <b>Spain</b>                                 | 505  | 653  | 588  | 485  | 443  | -12.3      |
| <b>France</b>                                | 475  | 514  | 530  | 534  | 510  | 7.3        |
| <b>Croatia</b>                               | :    | 262  | 336  | 384  | 403  | :          |
| <b>Italy</b>                                 | 454  | 509  | 546  | 529  | 495  | 9.1        |
| <b>Cyprus</b>                                | 595  | 628  | 688  | 672  | 640  | 7.6        |
| <b>Latvia</b>                                | 264  | 271  | 320  | 350  | 410  | 55.1       |
| <b>Lithuania</b>                             | 426  | 365  | 387  | 442  | 444  | 4.2        |
| <b>Luxembourg</b>                            | 587  | 654  | 672  | 666  | 614  | 4.5        |
| <b>Hungary</b>                               | 460  | 446  | 461  | 382  | 379  | -17.6      |
| <b>Malta</b>                                 | 387  | 533  | 623  | 589  | 647  | 67.0       |
| <b>Netherlands</b>                           | 539  | 598  | 599  | 568  | 520  | -3.6       |
| <b>Austria</b>                               | 437  | 580  | 575  | 573  | 564  | 29.0       |
| <b>Poland</b>                                | 285  | 320  | 319  | 319  | 307  | 7.9        |
| <b>Portugal</b>                              | 352  | 457  | 452  | 490  | :    | :          |
| <b>Romania</b>                               | 342  | 355  | 383  | 259  | 261  | -23.7      |
| <b>Slovenia</b>                              | 596  | 513  | 494  | 415  | 466  | -21.8      |
| <b>Slovakia</b>                              | 295  | 254  | 273  | 311  | 348  | 18.1       |
| <b>Finland</b>                               | 413  | 502  | 478  | 505  | 504  | 22.1       |
| <b>Sweden</b>                                | 386  | 428  | 477  | 449  | 443  | 14.8       |
| <b>United Kingdom</b>                        | 498  | 577  | 581  | 491  | :    | :          |
| <b>Iceland</b>                               | 426  | 462  | 516  | 495  | 656  | 36.9       |
| <b>Norway</b>                                | 624  | 613  | 426  | 485  | 754  | -32.5      |
| <b>Switzerland</b>                           | 600  | 656  | 661  | 689  | 720  | 20.9       |
| <b>Montenegro</b>                            | :    | :    | :    | 544  | :    | :          |
| <b>Former Yugoslav Republic of Macedonia</b> | :    | :    | :    | 357  | 385  | :          |
| <b>Serbia</b>                                | :    | :    | :    | 375  | 268  | :          |
| <b>Turkey</b>                                | 441  | 465  | 458  | 416  | 426  | -9.3       |
| <b>Bosnia and Herzegovina</b>                | :    | :    | :    | 340  | :    | :          |
| <b>Kosovo*</b>                               | :    | :    | :    | :    | 220  | :          |

(:) data not available

(\*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

**Table 1: Municipal waste generated by country in selected years (kg per capita), 1995-2016** Source: Eurostat (envwasmun)

## Main statistical findings

### Municipal waste generated by country

Eurostat has collected and published data on municipal waste since 1995.

The data cover the period from 1995 to 2016 for the 28 EU Member States (Croatia only has complete sets since 2006). For the **candidate countries**, coverage is as follows: The former Yugoslav Republic of Macedonia (since 2008), Serbia (since 2006) and Turkey. For the **EFTA** countries, Iceland, Norway and Switzerland, and the potential EU candidate country Bosnia and Herzegovina (since 2008), data are given to the extent possible.

Figure 1 and Table 1 show municipal waste generation by country expressed in kilograms per capita. To illustrate trends, Table 1 shows waste for selected years, covering the period 1995 to 2016. For better readability, Figure 1 covers only the years 2005 and 2016. Both include the **EU-28 aggregates** for comparison. In Figure 1, countries are sorted in decreasing order by municipal waste generation in 2016.

For 2016, municipal waste generation totals vary considerably, ranging from 777 kg per capita in Denmark to 261 kg per capita in Romania. The variations reflect differences in consumption patterns and economic wealth, but also depend on how municipal waste is collected and managed. There are differences between countries regarding the degree to which waste from commerce, trade and administration is collected and managed

together with waste from [households](#) .

The periods 1995-2005 and 2005-2016 show the following trends in the countries with complete time series.

In 19 of the 31 countries (Member States and EFTA), the amount of municipal waste generated per capita increased between 1995 and 2016. Based on 1995 and 2016 figures the highest average annual growth rates were recorded for Malta (2.5 %), Greece (2.4 %), Latvia (2.1 %) and Denmark (1.9 %).

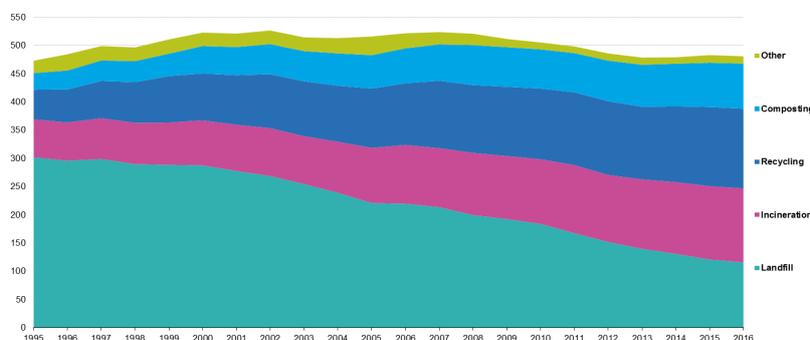
Bulgaria showed the largest reduction, with an annual average decrease of -2.5 %, followed by Romania, -1.3 % and Slovenia, -1.2 %.

From 2004 on, methodologies were finalised in most countries, so the waste generation time series of 2004 and later is more accurate and stable than that between 1995 and 2003.

## Municipal waste treated in Europe

| Municipal waste landfilled, incinerated, recycled and composted in the EU-28 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                         |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------------|
|  | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | change (%)<br>1995-2016 |
| million tonnes   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                         |
| Landfill   | 145  | 143  | 144  | 141  | 140  | 140  | 136  | 132  | 125  | 118  | 110  | 108  | 106  | 99   | 96   | 92   | 84   | 76   | 70   | 66   | 61   | 59   | -59                     |
| Incineration   | 32   | 32   | 35   | 35   | 36   | 39   | 40   | 41   | 41   | 44   | 48   | 51   | 52   | 55   | 56   | 57   | 60   | 59   | 62   | 64   | 65   | 66   | 105                     |
| Recycling  | 25   | 28   | 32   | 35   | 40   | 40   | 42   | 46   | 47   | 49   | 52   | 54   | 59   | 60   | 61   | 62   | 64   | 65   | 65   | 68   | 71   | 71   | 184                     |
| Composting   | 14   | 16   | 17   | 18   | 19   | 24   | 24   | 26   | 26   | 28   | 29   | 31   | 32   | 35   | 35   | 35   | 35   | 36   | 37   | 38   | 39   | 40   | 184                     |
| Other  | 10   | 14   | 12   | 12   | 12   | 11   | 12   | 12   | 12   | 13   | 16   | 13   | 11   | 10   | 7    | 6    | 6    | 6    | 6    | 6    | 7    | 8    | -24                     |
| kg per capita  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                         |
| Landfill   | 302  | 296  | 299  | 290  | 288  | 288  | 278  | 269  | 255  | 239  | 221  | 220  | 214  | 200  | 193  | 184  | 168  | 152  | 140  | 131  | 121  | 116  | -60                     |
| Incineration   | 67   | 68   | 72   | 73   | 75   | 80   | 82   | 85   | 85   | 90   | 98   | 104  | 105  | 110  | 112  | 115  | 121  | 119  | 123  | 127  | 130  | 131  | 93                      |
| Recycling  | 52   | 59   | 66   | 72   | 82   | 83   | 88   | 95   | 97   | 99   | 105  | 109  | 119  | 120  | 123  | 125  | 129  | 131  | 129  | 134  | 140  | 141  | 168                     |
| Composting   | 30   | 34   | 36   | 37   | 40   | 49   | 50   | 53   | 54   | 57   | 59   | 62   | 64   | 71   | 70   | 69   | 69   | 72   | 74   | 75   | 78   | 80   | 166                     |
| Other  | 22   | 29   | 26   | 24   | 25   | 24   | 24   | 24   | 24   | 27   | 33   | 27   | 22   | 20   | 15   | 12   | 12   | 13   | 13   | 11   | 14   | 13   | -38                     |

**Table 2: Municipal waste landfilled, incinerated, recycled and composted in the EU-28, 1995 to 2016** Source: Eurostat (envwasmun)



**Figure 2: Municipal waste treatment by type of treatment, EU-28, (kg per capita), 1995 - 2016** Source: Eurostat (envwasmun)

In this section, differences in the management of municipal waste are shown and treatment strategies are identified based on reported amounts of municipal waste [landfilled](#) , [incinerated](#) , [recycled](#) and [composted](#) . Member States are asked to distinguish between incineration with and without energy recovery<sup>1</sup>. In this article only the total amount incinerated is analysed.

Table 2 shows the amount of municipal waste treated in the European Union (EU-28) for the period 1995 to 2016 by treatment method, in million tonnes and kg per capita. Figure 2 shows the amount of waste generated at EU-28 level and the amount of waste by treatment category (landfill, incineration, recycling, composting).

<sup>1</sup>The Waste Framework Directive offers in Annex II an energy efficiency criterion that helps to objectify the classification of incineration facilities and to improve data comparability. The criterion came into force by 12 December 2010.

The 'other treatment' category was calculated as the difference between the sum of the amounts treated and the amounts of waste generated. This difference arises in countries that have to estimate waste generation in areas not covered by a municipal waste collection scheme and thus report more waste generated than treated. In addition, the 'other treatment' category reflects the effects of import and export, weight losses, double-counting of secondary waste (e.g. landfilling and recycling of residues from incineration), differences due to time lags, temporary storage and, increasingly, the use of pre-treatment, such as [mechanical biological treatment \(MBT\)](#). This may even lead to a rise in 'other treatment' for a given year. At EU-28 level, these effects contribute only marginally and tend to cancel each other out. However, at country level, the effects can be considerable.

Even though more waste is being generated in the EU-28, the total amount of municipal waste landfilled has diminished. In the reference period, the total municipal waste landfilled in the EU-28 fell by 86 million tonnes, or 59 %, from 145 million tonnes (302 kg per capita) in 1995 to 59 million tonnes (116 kg per capita) in 2016. This corresponds to an average annual decline of 4.2 %. For the period 2005-2016 landfilling has fallen by as much as 5.9 % per year on average.

As a result, the landfilling rate (landfilled waste as share of generated waste) compared with municipal waste generation in the EU-28 dropped from 64 % in 1995 to 24 % in 2016.

This reduction can partly be attributed to the implementation of European legislation, for instance [Directive 62/1994](#) on packaging and packaging waste. By 2001, Member States had to recover a minimum of 50 % of all packaging put on the market. With the revised recovery target of 60 % to be achieved by 31 December 2008, there was a further rise in the amount of packaging waste collected separately.

Furthermore, [Directive 31/1999](#) on landfill stipulated that Member States were obliged to reduce the amount of biodegradable municipal waste going to landfills to 75 % by 16 July 2006, to 50 % by 16 July 2009 and to 35 % by 16 July 2016. The reduction was calculated on the basis of the total amount of biodegradable municipal waste produced in 1995. The Directive has led to countries adopting different strategies to avoid sending the organic fraction of municipal waste to landfill, namely composting (including fermentation), incineration and pre-treatment, such as mechanical-biological treatment (including physical stabilisation).

As a result, the amount of waste recycled rose from 25 million tonnes (52 kg per capita) in 1995 to 71 million tonnes (141 kg per capita) in 2016 at an average annual rate of 5.1 %. The share of municipal waste recycled overall rose from 11 % to 29 %.

The recovery of organic material by composting has grown with an average annual rate of 5.1 % from 1995 to 2016. Recycling and composting together accounted for 46 % in 2016 relative to waste generation.

Waste incineration has also grown steadily in the reference period, though not as much as recycling and composting. Since 1995, the amount of municipal waste incinerated in the EU-28 has risen by 34 million tonnes or 105 % and accounted for 66 million tonnes in 2016. Municipal waste incinerated has thus risen from 67 kg per capita to 131 kg per capita.

Mechanical biological treatment (MBT) and sorting of waste are not covered directly as categories in the reporting of municipal waste treatment. These types of pre-treatment require an additional final treatment. In practice, the amounts delivered to mechanical biological treatment or sorting should be reported on the basis of the subsequent final treatment steps. However, the way these amounts are allocated to the four treatment categories (incineration, landfilling, recycling and composting) varies significantly, and some countries report only on the first (pre-)treatment step.

As a consequence, reporting on the current set of variables often requires additional information to relate the amounts of municipal waste landfilled, incinerated, recycled and composted to the amounts generated at country level.

## Data sources and availability

The data were extracted from the Eurostat database on 22 January 2018.

### Definitions

The municipal waste classification is based on the definitions for the section on waste in the OECD/Eurostat Joint Questionnaire. Further information is available in the

- [ESMS metadata sheet on municipal waste](#) (ESMS metadata file — envwasmunesms)

*MW generated / MW collected* : The data refer to the amount of municipal waste generated. In countries with complete (national) coverage of their municipal waste collection scheme the total of municipal waste generated is equal to the total of municipal waste collected. Some countries do not cover their whole territory with a collection scheme. These countries have added an estimate of the waste generated in areas not covered. For some countries data prior to 2008 refer to municipal waste collected, as it was not possible to make an estimate for the population not covered.

Data for France include the overseas departments (département d'outre-mer or DOM) Martinique, Guadeloupe, Réunion and French Guiana.

Data for Cyprus refer only to the area under the effective control of the Government of the Republic of Cyprus.

Data for Liechtenstein are included in Switzerland.

## Context

All the data presented here were collected by Eurostat since 1995. Eurostat has conducted surveys on European waste data using the OECD/Eurostat-Joint Questionnaire as the main source. After the introduction of the [Regulation 2150/2002](#) of 25 November 2002 on waste statistics the data collection on municipal waste based on the joint Questionnaire was continued to maintain the time series and to offer consistent data in an international context outside the EU (OECD, UN).

## See also

- [Environment statistics introduced](#)
- [Packaging waste statistics](#)
- [End-of-life vehicle statistics](#)
- [Waste statistics - electrical and electronic equipment](#)
- [Waste shipment statistics](#)
- [Waste statistics](#)

## Further Eurostat information

### Publications

- [Environmental statistics and accounts in Europe](#)
- [Generation and treatment of municipal waste - Statistics in focus 31/2011](#)

### Main tables

- [Waste \(tenvwas\)](#) see:

Waste statistics (tenvwasgt)

Generation of waste by economic activity (ten00106)

Generation of waste by economic activity (hazardous, non-hazardous), 2008 (ten00107)

Generation of waste by waste category (ten00108)

Generation of waste by waste category (hazardous, non-hazardous), 2008 (ten00109)

Waste generated by households by year and waste category (ten00110)

Waste generated by households and by waste category (hazardous, non-hazardous), 2008 (ten00111)

Recovery rates for packaging waste (ten00062)

Recycling rates for packaging waste (ten00063)

## Database

- [Waste \(envwas\)](#) , see:

Waste statistics (envwas)

Waste streams(envwasst)

## Dedicated section

- [Environmental Data Centre on Waste](#)

## Source data for tables and figures on this page (MS Excel)

- [Municipal waste 2016 - tables and figures](#)

## Methodology / Metadata

- [Waste statistics](#) (ESMS metadata file — envwasgtesms)

## Other information

- [Directive 94/62/EC](#) of 20 December 1994 on packaging and packaging waste
- [Directive 1999/31/EC](#) of 26 April 1999 on the landfill of waste
- [Regulation \(EC\) No 2150/2002](#) of 25 November 2002 on waste statistics

## External links

- [European Commission - DG Environment - Waste in the EU](#)
- [European Environment Agency - Waste and material resources](#)
- [OECD Website](#)

## Notes