This article shows recent statistics on packaging waste in the 27 European Union (EU) Member States and some non-member countries. In particular, it summarises the developments during the 2007–2017 period for which official reporting on packaging waste for all EU Member States was implemented. Information and data are based on the Directive 2004/12/EC which lays down the recycling and recovery targets. The Directive aims at providing a high level of environmental protection and harmonising national measures concerning the management of packaging and packaging waste.

**Waste generation by packaging material**

In 2017, 173.8 kg of packaging waste was generated per inhabitant in the EU. This quantity varied between 63.9 kg per inhabitant in Croatia and 230.9 kg per inhabitant in Luxembourg. Figure 1 shows that in 2017 ‘paper and cardboard (41 %)’, ‘plastic (19 %)’, ‘glass (18 %)’, ‘wood (17 %)’ and ‘metal (5 %)’ are the most common types of packaging waste in the EU. Other materials represent less than 0.3 % of the total volume of packaging waste generated in 2017.
Figure 1: Packaging waste generated by packaging material, EU-27, 2017 (%)

Source: Eurostat (env_waspac)

Time series of packaging waste generation and treatment

Figure 2 shows the development of packaging waste generated from 2007 to 2017 in the EU. The total quantity of generated packaging materials rose by 6.6 million tonnes from 2007 to 2017 (+9.3 %).
In 2017, all packaging waste materials experienced an increase compared to 2016 which resulted in a total volume of packaging waste of 77.5 million tonnes of generated waste — a rise of 3.0% compared with 2016.

Over the 10-year period 'paper and cardboard' was the main packaging waste material generated, contributing with 31.4 million tonnes to the total packaging waste generated in 2017, since 2007 this waste stream grew by 12.8%. Plastic packaging material reached a total of 14.5 million tonnes as the second most significant material (+12.7%). Glass had a volume of 14.1 million tonnes (+1.2%), wood packaging 13.3 million tonnes (+10.1%) and metal packaging 4.0 million tonnes in 2017 (+0.1%).

Figure 3 depicts the development of the quantity of waste generated per inhabitant, by main waste materials. The total waste generation of packaging materials per inhabitant in the EU in 2007 was 161.9 kg. After the economic crisis in 2008 the total waste generation dropped to 149.9 kg per inhabitant in 2009. Compared with the total volume of generated packaging waste per inhabitant in 2007, the total volume per inhabitant in 2017 increased by 11.9 kg. It peaked at the highest level for the entire period at 173.8 kg per inhabitant in 2017.
Figure 3: Packaging waste generated by packaging material, EU-27, 2007–2017 (kg per capita)

Note: Eurostat estimates between 2007 and 2011.
Source: Eurostat (online data code: env_waspac)

Figure 4 shows the evolution of the volume of all packaging waste per inhabitant generated, recovered and recycled. In comparison to the previous year, the amount of packaging waste generated in 2017 rose by 2.9%; packaging waste recycled and packaging waste recovered both increased by 2.8% respectively. While for the 2007–2017 period the amount of packaging waste generated increased by 7.4%, both recycling (+22.5%) and recovery (+18.8%) volumes in 2017 were significantly higher than in 2007. However, both volumes experienced also a short reduction during the 2008–2009 economic slump.
Figure 4: Packaging waste generated, recovered and recycled, EU-27, 2007-2017 (kg per capita)

Source: Eurostat (env_waspac)

Figure 5 shows the corresponding evolution of the recycling and recovery rates during 2007–2017. In the EU, the recycling rate of packaging waste went up from 59.1 % in 2007 to 67.5 % in 2017. The recycling rate and the recovery rate evolved in parallel. The recovery rate including incineration at waste incineration plants with energy recovery rose from 73.8 % in 2007 to 81.7 % in 2017.
Figure 5: Recycling and recovery rates for packaging waste, EU-27, 2007–2017 (%)

(Source: Eurostat (env_waspac))

Figure 6 shows the share of treatment options for all packaging waste in 2017. The major form of recovery in all countries is recycling. In some countries ‘Energy recovery’ and ‘Incineration with energy recovery’ contributed significantly to the overall recovery rate. Countries which utilise ‘Incineration with energy recovery’ as a standard method of waste disposal achieved a significantly higher recovery rate. In 2017, this was the case for Finland (45.7 %), Austria (21.5 %), Luxembourg (19.5 %), the Netherlands (12.6 %), Ireland (11.7 %), Belgium (11.1 %), Portugal (10.2 %) and Italy (10.2 %), as well as the EFTA countries Norway (34.7 %) and Liechtenstein (25.7 %). ‘Recovery other than energy recovery’ contributed only a minor share.
Generation and recycling per inhabitant

The total amounts of packaging waste generated and recycled are compiled from all packaging materials: 'glass', 'paper and cardboard', 'metal', 'plastic', 'wood' and 'others'. Figure 7 gives an overview of the data reported by the EU Member States in 2017 on generation and recycling of packaging per inhabitant. There were 13 EU Member States with amounts of packaging waste generated per inhabitant of more than 150 kg. In 2017, Croatia and Bulgaria reported the EU’s lowest amounts of generated and recycled packaging waste, showing generation per inhabitant of 63.9 kg and 64.1 kg and recycling per inhabitant of 34.0 kg and 42.0 kg respectively. On the other hand, Luxembourg (230.9 kg/inhabitant), Germany (226.5 kg/inhabitant), Italy (217.4 kg/inhabitant) and Ireland (216.0 kg/inhabitant) reported the highest amounts of packaging waste generated in 2017. Germany, Luxembourg, Italy and the Netherlands also reported the highest amounts of packaging material recycled (158.3 kg/inhabitant; 155.0 kg/inhabitant; 145.9 kg/inhabitant; 143.1 kg/inhabitant respectively) in 2017.
Recycling and recovery targets

Article 6 of the Packaging Waste Directive sets out the recovery and recycling targets. The targets had to be met in 2015 for the first time for all countries.

The Packaging Waste Directive sets the following targets: a minimum of 60 % recovery rate (including waste incineration); between 55 % and 80 % of packaging waste to be recycled; with minimum rates of 60 % for glass, paper and cardboard; 50 % for metals; 22.5 % for plastics; and 15 % for wood.

These targets are calculated according to weight, by dividing the amount of packaging waste recycled by the total amount of packaging waste generated.

All EU Member States and EEA/EFTA countries have to comply with the targets set for 2008 for recycling and recovery.

The recovery and recycling rates for all packaging waste in 2017 of the EU Member States, the United Kingdom and the EEA/EFTA countries are shown in Table 1. According to these rates, Finland held the highest recovery rate of 112.1 %, the rate of more than 100 % can be explained by storage and following this treatment of waste generated in former years. Belgium has the highest recycling rate of 83.8 %.
Table 1: Recovery and recycling rate for packaging waste, 2017 (%) Source: Eurostat (env_waspac)

### Recycling and recovery rates

Figure 8 shows the recycling rate for all packaging waste for the EU Member States, the United Kingdom and EEA/EFTA countries in 2017. The recycling covers material recycling and other forms of recycling (e.g. organic recycling). The target of 55% recycled packaging waste was met by all Member States, except Estonia (54.0%), Croatia (53.3%), Hungary (49.7%) and Malta (35.6%).
Figure 8: Recycling rate for packaging waste, 2017 (%)

Source: Eurostat (env_waspac)

Figure 9 shows the recycling rate for plastic packaging waste for the EU Member States, the United Kingdom and EEA/EFTA countries in 2017. The recycling rate covers only material recycling and no other forms of recycling, i.e. exclusively material that is recycled back into plastics.
The target of 22.5% recycled plastic packaging waste was met by all Member States, except Malta (19.2%). Lichtenstein also did not reach the target with 18.3%.
The recovery rate for all packaging waste of 60 % which should be achieved by all EU Member States and EEA/EFTA countries in 2017 is shown in Figure 10, together with the performance of each country. The recovery covers energy recovery, other forms of recovery, incineration at waste incinerators with energy recovery and total recycling. The recovery rates in Croatia (53.3 %) and Malta (35.6 %) were below the target of 60 %.
Conclusions

• Due to the 2008 global financial and economic crisis, the amount of packaging generated decreased in 2009 but it continued increasing during the following years and in 2017 the volume of packaging waste reached the highest value since 2007.

• Over the 2007–2017 period, the generation of all types of packaging waste material increased although to a different extend. The highest increase was observed for ‘paper and cardboard’, ‘plastic’ and ‘wooden’ packaging waste.

• The recycling and recovery rates have increased steadily over the ten-year period.

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

• Packaging waste EXCEL file

Data sources

The packaging waste data are reported by the EU Member States as laid down in Commission Decision 2005/270/EC. The reported data are usually available in the Eurostat database on packaging waste approximately 20 months after the end of the reference year.

The analysis focuses on the EU in 2017, as data on packaging waste are available for all EU Member States.

Context

As a first legal basis, Council Directive 85/339/EEC of June 1985 required the establishment of national programs for the reduction in the volume of beverage containers disposed as waste in order to raise consumer
awareness of the advantage of using refillable containers. The directive was repealed by the introduction of the European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, as amended by Directive 2004/12/EC of the European Parliament and of the Council (Packaging Waste Directive). This directive aims at harmonising national measures concerning the management of packaging and packaging waste and lays down measures aimed, as a first priority, at preventing the production of packaging waste and, as additional fundamental principles, at:

- reusing packaging;
- recycling; and
- implementing other forms of recovering packaging waste hence reducing the final disposal of such waste.

It also limits the level of heavy metals in packaging.


Definitions

Packaging is defined as any material which is used to contain, protect, handle, deliver or present goods. Packaging waste can arise from a wide range of sources including supermarkets, retail outlets, manufacturing industries, households, hotels, hospitals, restaurants and transport companies. Items like glass bottles, plastic containers, aluminium cans, food wrappers, timber pallets and drums are all classified as packaging.

Article 3 and Annex I of the Packaging Waste Directive specify 'packaging' in further detail.

The main packaging materials are glass, paper and cardboard, plastics, metals (aluminium and steel) and wood.

Composite materials are made of paper, plastic and metal which could not be separated by hand. Composites are reported under their predominant material by weight. Other packaging materials are counted as 'others'.

Recycling is divided into 'material recycling' (the reprocessing to the original material) and other forms of recycling (including the reprocessing for other purposes such as organic recycling).

Recovery includes recycling, energy recovery (e.g. as fuel in cement kilns or blast furnaces), other forms of recovery and incineration at waste incinerators with energy recovery. Energy recovery means energy generation from waste at special incineration plants. Incineration with energy recovery and the other forms of recovery are defined by Annex II.b in the Waste Framework Directive 75/442/EEC (amended).

The weight of recovered or recycled packaging waste is determined as the input to an effective process or, for practical reasons, as the output of a sorting plant which is sent to an effective recovery or recycling process. The weight should exclude non-packaging materials as far as practical.

Reusable packaging is only counted once in its lifetime and not after every refilling and purchase trip.

The recycling or recovery rates are the total quantity of recycled or recovered materials divided by the total quantity of generated packaging waste.

See also

- Environment statistics introduced
- Waste statistics
- Municipal waste statistics
- Waste shipment statistics
• End-of-life vehicle statistics
• Waste statistics - electrical and electronic equipment

Publications

All publications on waste issued by Eurostat.

Main tables

• Waste statistics, see:

  Waste streams (t_env_wasst)
    Recovery rates for packaging waste (ten00062)
    Recycling rates for packaging waste (ten00063)

Database

• Waste, see:

  Waste (env_was)
    Waste generation and treatment (env_wasgt)
    Waste streams (env_wasst)
    Packaging waste (env_waspac)

Dedicated section

• Eurostat’s dedicated website on waste statistics

Methodology

• Packaging waste (ESMS metadata file — env_waspac_esms)

Legislation


External links

• European Commission — Environment — Packaging waste
• European Environment Agency — Resource efficiency and waste