

*Data extracted in October 2020.
Planned article update: April 2021.*

This article gives an overview on [waste](#) generation and treatment in the [European Union \(EU\)](#) and several non-member countries. It draws exclusively on data collected in accordance with [Regulation \(EC\) No 2150/2002](#) of the [European Parliament](#) and [Council](#) on waste statistics.

Waste, defined by [Directive 2008/98/EC](#) Article 3(1) as 'any substance or object which the holder discards or intends or is required to discard', potentially represents an enormous loss of resources in the form of both materials and energy. In addition, the management and disposal of waste can have serious environmental impacts. [Landfill](#) , for example, takes up land space and may cause air, water and soil pollution, while [incineration](#) may result in emissions of air pollutants.

EU waste management policies therefore aim to reduce the environmental and health impacts of waste and to improve the EU's [resource efficiency](#) . The long-term aim of these policies is to reduce the amount of waste generated and when waste generation is unavoidable to promote it as a resource and achieve higher levels of [recycling](#) and the safe [disposal of waste](#) .

Total waste generation

In 2018, the total waste generated in the [EU-27](#) by all economic activities and households amounted to 2 317 million tonnes.

Waste generation by economic activities and households, 2018

(% share of total waste)

	Mining and quarrying	Manufacturing	Energy	Construction and demolition	Other economic activities	Households
EU-27	26.3	10.6	3.5	36.0	15.4	8.2
Belgium	0.1	24.9	1.2	33.5	33.1	7.2
Bulgaria	82.4	2.0	10.0	0.1	3.1	2.4
Czechia	0.3	18.2	1.8	41.6	24.8	13.3
Denmark	0.0	4.7	5.1	56.0	17.8	16.3
Germany	2.2	13.9	2.3	55.6	16.8	9.2
Estonia	29.5	18.8	32.3	9.5	7.6	2.4
Ireland	14.2	24.7	1.1	13.6	35.1	11.4
Greece	56.4	11.8	7.6	5.0	9.2	10.1
Spain	8.6	10.8	4.6	29.8	28.5	17.7
France	0.4	6.6	0.4	70.2	13.7	8.7
Croatia	12.0	8.9	1.3	22.7	31.7	23.3
Italy	0.8	16.5	1.3	35.3	28.7	17.5
Cyprus	6.6	16.3	0.1	45.8	14.5	16.8
Latvia	0.1	21.7	2.5	17.5	25.7	32.6
Lithuania	1.6	37.2	2.1	8.8	30.3	20.0
Luxembourg	0.0	6.9	0.1	81.2	9.7	2.1
Hungary	1.0	14.6	11.2	33.2	25.1	14.9
Malta	1.6	1.1	0.0	79.3	10.9	7.2
Netherlands	0.0	9.6	1.1	70.0	13.3	6.0
Austria	0.1	8.7	0.8	74.4	9.3	6.7
Poland	36.7	17.0	10.7	9.7	20.6	5.3
Portugal	0.2	19.0	1.1	8.8	38.1	32.8
Romania	87.9	4.0	3.4	0.3	2.4	2.1
Slovenia	0.2	20.2	11.8	8.1	51.9	7.8
Slovakia	2.2	27.5	7.9	4.4	39.8	18.2
Finland	74.9	6.7	1.0	12.3	3.5	1.6
Sweden	74.7	3.7	1.4	8.9	8.0	3.2
United Kingdom	5.2	4.0	0.2	48.8	32.4	9.4
Iceland	0.0	24.4	0.0	3.9	31.5	40.2
Liechtenstein (*)	3.0	2.3	0.0	87.9	1.5	5.4
Norway	1.2	12.8	1.5	40.0	27.4	17.1
Montenegro	27.4	3.7	27.6	11.3	8.6	21.4
North Macedonia	14.2	46.6	0.5	3.1	35.6	0.0
Serbia	75.6	3.0	14.7	1.1	2.1	3.6
Turkey	22.3	32.6	0.0	8.9	36.1	
Bosnia and Herzegovina	8.2	28.1	48.1	1.8	0.2	13.6
Kosovo*	93.5	2.0	3.4	0.1	0.0	1.0

(*) 2016.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: env_wasgen)

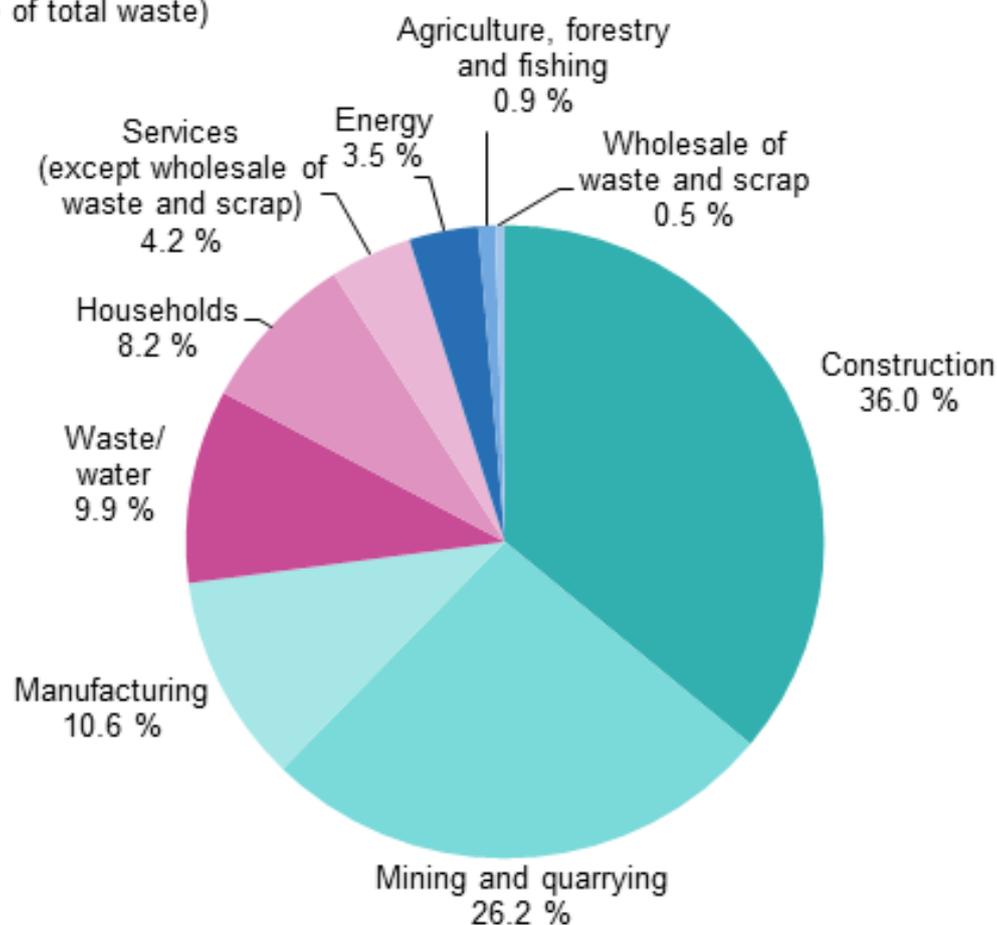
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Table 1: Waste generation by economic activities and households, 2018 (% share of total waste)
Source: Eurostat (env_wasgen)

The share of different economic activities and of households in total waste generation in 2018 is presented in Figure 1. In the EU-27, construction contributed 36.0 % of the total in 2018 and was followed by mining and quarrying (26.2 %), manufacturing (10.6 %), waste and water services (9.9 %) and households (8.2 %); the remaining 9.1 % was waste generated from other economic activities, mainly services (4.2 %) and energy (3.5 %).

Waste generation by economic activities and households, EU-27, 2018

(% share of total waste)



Source: Eurostat (online data code: env_wasgen)

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Figure 1: Waste generation by economic activities and households, EU-27, 2018 (% share of total waste) Source: Eurostat (env_wasgen)

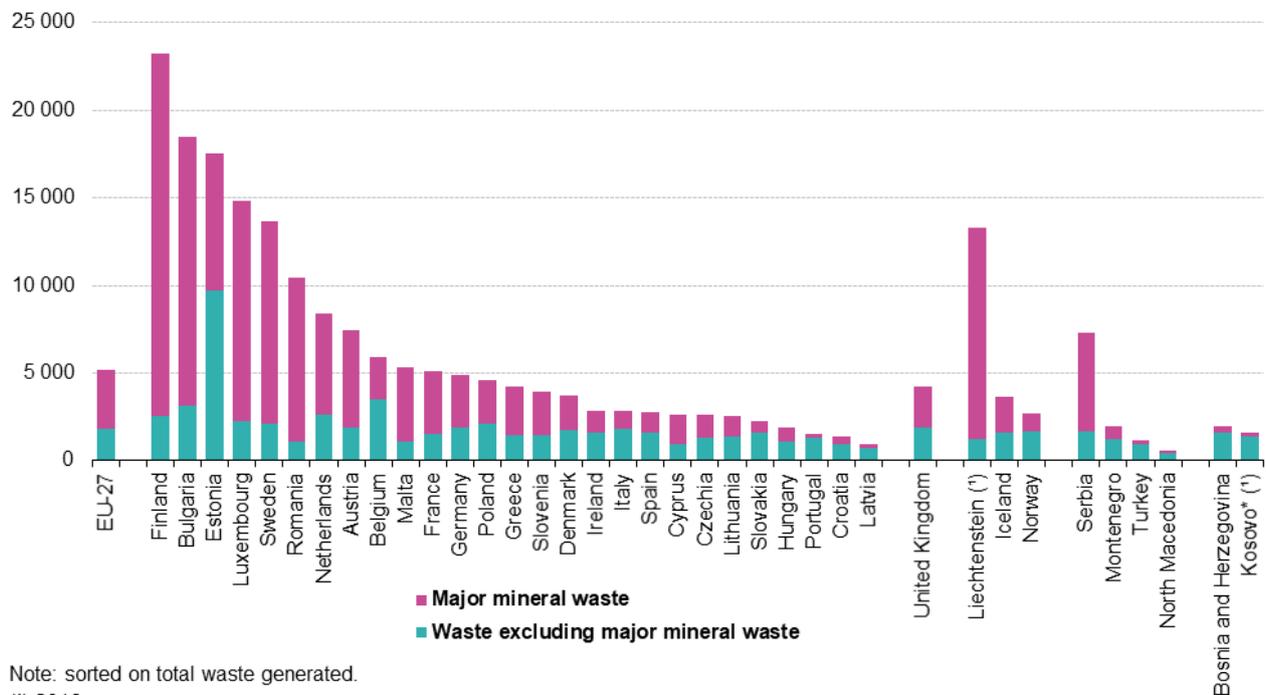
Figure 2 shows an analysis of the amount of waste generated in a standardised form, in relation to population size. The high levels of total waste generated in some of the smaller EU Member States can be clearly seen, with a particularly high value recorded for Finland where on average 23.3 tonnes of waste were generated per inhabitant in 2018, around four and a half times the 5.2 tonnes per inhabitant average across the EU-27. Several of the Member States with particularly high levels of waste generated per inhabitant reported very high shares of waste from mining and quarrying, while elsewhere construction and demolition often contributed to the high shares.

A lot of the waste from mining and quarrying and from construction and demolition is classified as major mineral waste: the analysis presented in Figure 2 distinguishes major mineral waste from all other wastes. Almost two thirds (65 % or 3.4 tonnes per inhabitant) of the total waste generated in the EU-27 in 2018 was major mineral waste. The relative share of major mineral waste in the total waste generated varied considerably between EU-27 Member States, which may reflect, at least to some degree, different economic structures. In general, those EU-27 Member States that had higher shares of major mineral waste were those that were characterised as having relatively sizeable mining and quarrying activities, such as Romania, Finland, Sweden and Bulgaria, and/or construction and demolition activities, such as Luxembourg; in these Member States, major

mineral waste accounted 83 % - 89 % of all waste generated; in Liechtenstein (91 %) this share was even higher.

Waste generation, 2018

(kg per capita)



Note: sorted on total waste generated.

(*) 2016.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: env_wasgen)

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Figure 2: Waste generation, 2018 (kg per capita) Source: Eurostat (env_wasgen)

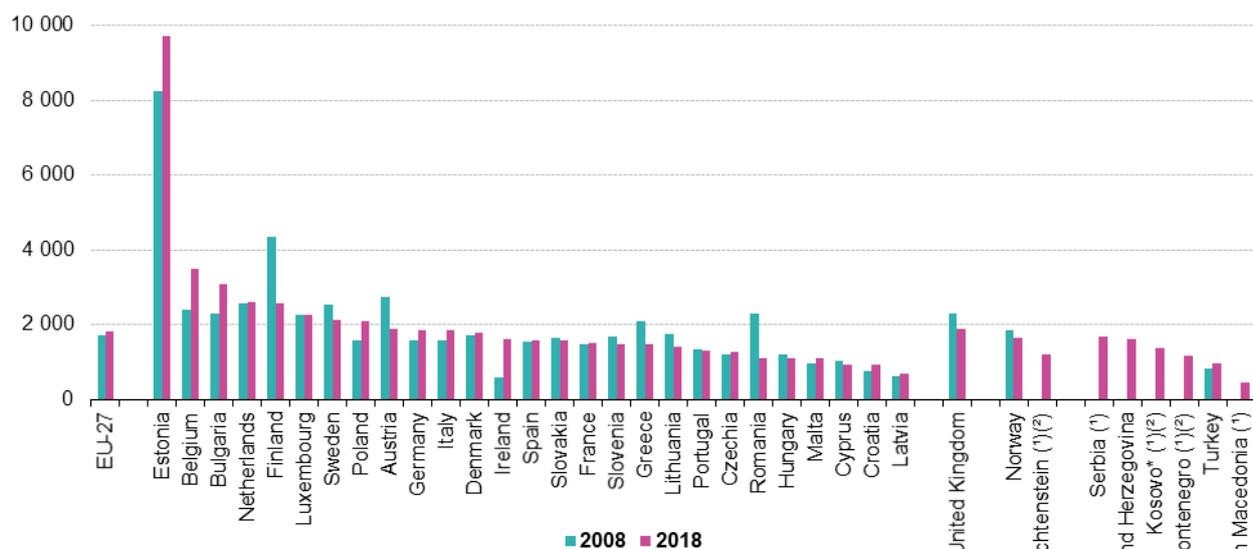
Waste generation excluding major mineral waste

In the EU-27, 812 million tonnes of waste excluding major mineral waste were generated in 2018, equivalent to 35 % of the total waste generated. When expressed in relation to population size, the EU-27 generated, on average, 1.8 tonnes per inhabitant of waste excluding major mineral waste in 2018 (Figure 3).

Across the EU-27 Member States, waste generation excluding major mineral waste ranged, in 2018, from an average of 9.7 tonnes per inhabitant in Estonia to less than one tone per inhabitant in Latvia, Croatia and Cyprus. The large quantity of waste generated in Estonia is related to energy production based on oil shale.

Waste generation, excluding major mineral waste, 2008 and 2018

(kg per capita)



Note: sorted on 2018 data.

(1) 2008: not available.

(2) 2016 instead of 2018.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: env_wasgen)

eurostat

Figure 3: Waste generation, excluding major mineral waste, 2008 and 2018 (kg per capita) Source: Eurostat (env_wasgen)

Table 2 shows the development of EU-27 waste generation excluding major mineral waste analysed by economic activity. In 2018, the highest levels of waste generation were recorded for waste and water services, for households and for manufacturing activities (207 million tonnes, 184 million tonnes and 180 million tonnes). Their developments followed different patterns over time: between 2004 and 2018 waste generation (excluding major mineral waste) by waste and water services and by households increased by 175.7 % and 5.9 %, and by manufacturing activities diminished quite considerably, down by 24.9 %.

Waste generation, excluding major mineral waste, EU-27, 2004-2018

(million tonnes)

	2004	2006	2008	2010	2012	2014	2016	2018	Change 2018/2004 (%)
Total	779.5	789.9	760.5	758.7	758.3	769.0	785.9	811.7	4.1
Agriculture, forestry and fishing	62.3	56.7	45.5	20.2	20.4	17.7	19.9	19.3	-69.0
Mining and quarrying	10.4	7.1	10.0	7.9	7.5	7.7	7.0	8.1	-22.5
Manufacturing	239.9	225.8	216.8	190.5	176.5	176.0	179.9	180.2	-24.9
Energy	85.4	93.3	84.1	78.6	88.8	87.4	75.0	78.4	-8.3
Waste/water	75.2	83.3	98.9	129.9	155.4	180.7	195.7	207.5	175.7
Construction	34.4	33.4	34.8	42.1	39.8	38.6	37.7	41.2	19.7
Other sectors	97.7	111.2	88.8	102.3	88.9	85.1	89.4	92.7	-5.1
Households	174.1	179.2	181.6	187.2	181.0	175.9	181.4	184.4	5.9

Source: Eurostat (online data code: env_wasgen)

eurostat

Table 2: Waste generation, excluding major mineral waste, EU-27, 2004-2018 (million tonnes) Source: Eurostat (env_wasgen)

Hazardous waste generation

Hazardous waste may pose an elevated risk to human health and to the environment if not managed and disposed of safely. Among the waste generated in the EU-27 in 2018, 101.4 million tonnes (4.3 % of the total) were classified as hazardous waste.

Compared with 2010, 11.6 % more hazardous waste was generated in 2018 in the EU-27 which is an increase in quantity terms from 90.8 to 101.4 million tonnes. In 2018, the share of hazardous waste in total waste generation was below 10.0 % in all of the EU-27 Member States except for Estonia and Bulgaria, where it made up, respectively, a 46.9 % and a 10.4 % share of the total (see Figure 4). The very high share for Estonia was principally due to energy production from oil shale. Among the non-member countries shown in Figure 4, Serbia recorded the highest share of hazardous waste in total waste generation (30.0 %) due to intensive activity in mining and quarrying, and was followed by Montenegro (27.8 %), Turkey (15.3 %) and Norway (11.6 %).

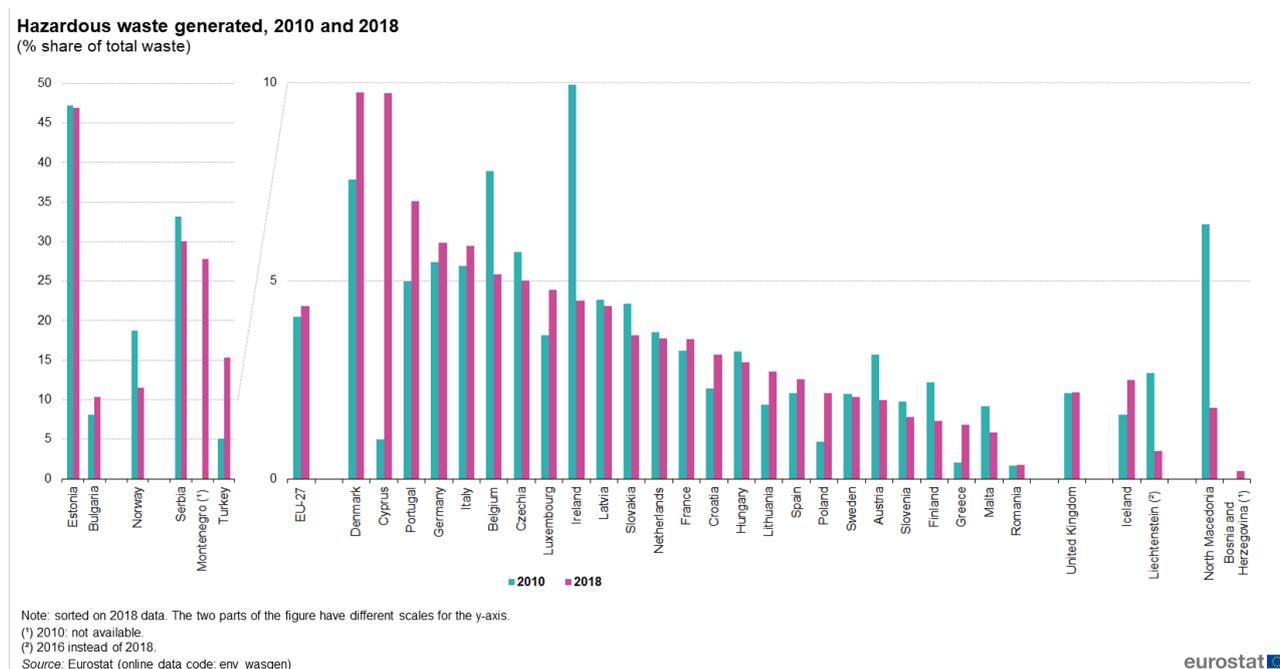


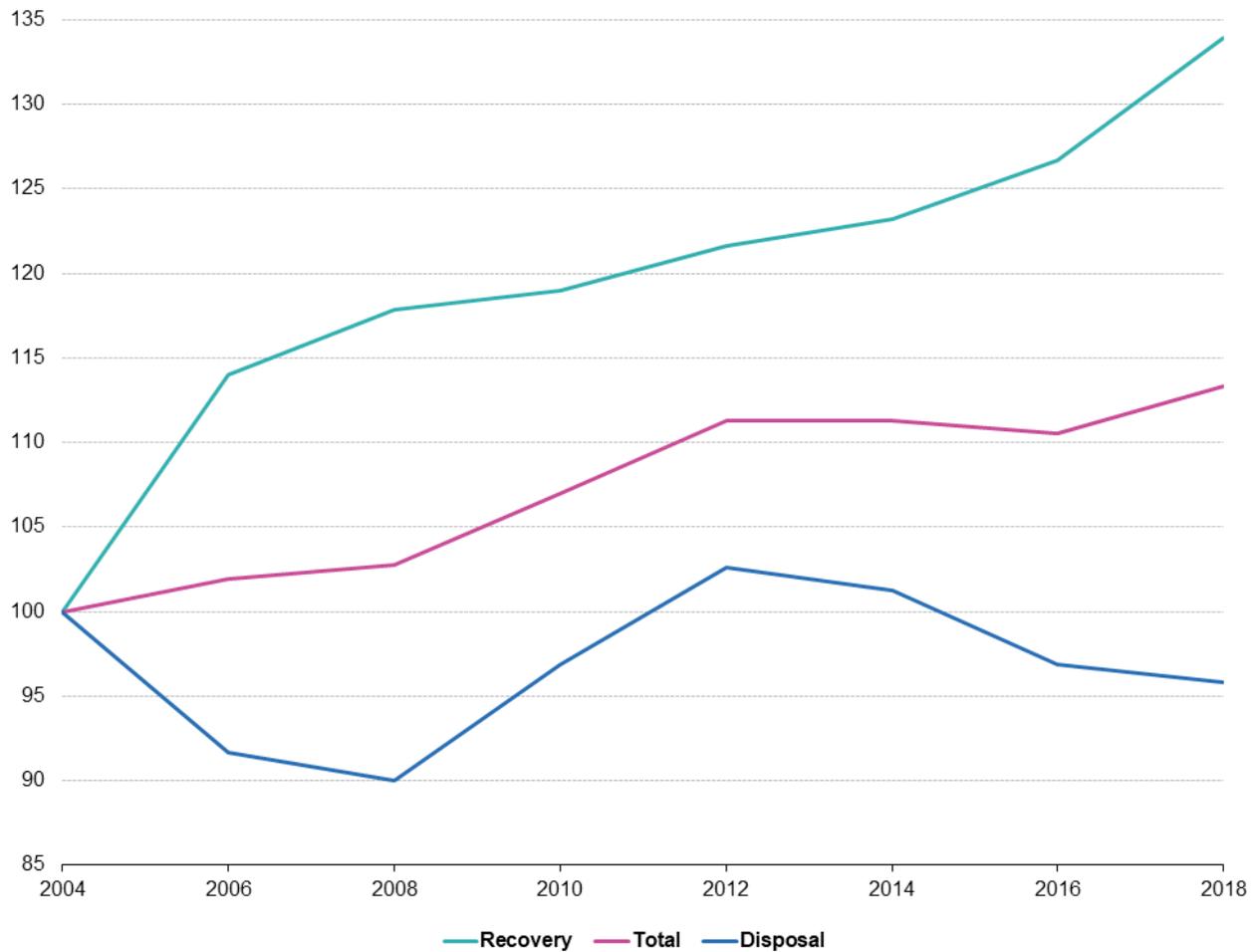
Figure 4: Hazardous waste generated, 2010 and 2018 (% share of total waste) Source: Eurostat (env_wasgen)

Waste treatment

In 2018, some 2 149 million tonnes of waste were treated in the EU-27. This doesn't include exported waste but includes the treatment of waste imported into the EU-27. The reported amounts are therefore not directly comparable with those on waste generation.

Figure 5 shows the development of waste treatment in the EU-27 for total and the two main treatment categories – recovery and disposal – during the period 2004-2018. The quantity of waste **recovered**, in other words recycled, used for backfilling (the use of waste in excavated areas for the purpose of slope reclamation or safety or for engineering purposes in landscaping) or incinerated with energy recovery grew by 33.9 % from 870 million tonnes in 2004 to 1 165 million tonnes in 2018; as a result, the share of such recovery in total waste treatment rose from 45.9 % in 2004 to 54.2 % in 2018. The quantity of waste subject to disposal decreased from 1 027 million tonnes in 2004 to 984 million tonnes in 2018, which was a decrease of 4.2 %. The share of disposal in total waste treatment decreased from 54.1 % in 2004 to 45.8 % in 2018.

Waste treatment, EU-27, 2004-2018
(Index 2004 = 100)



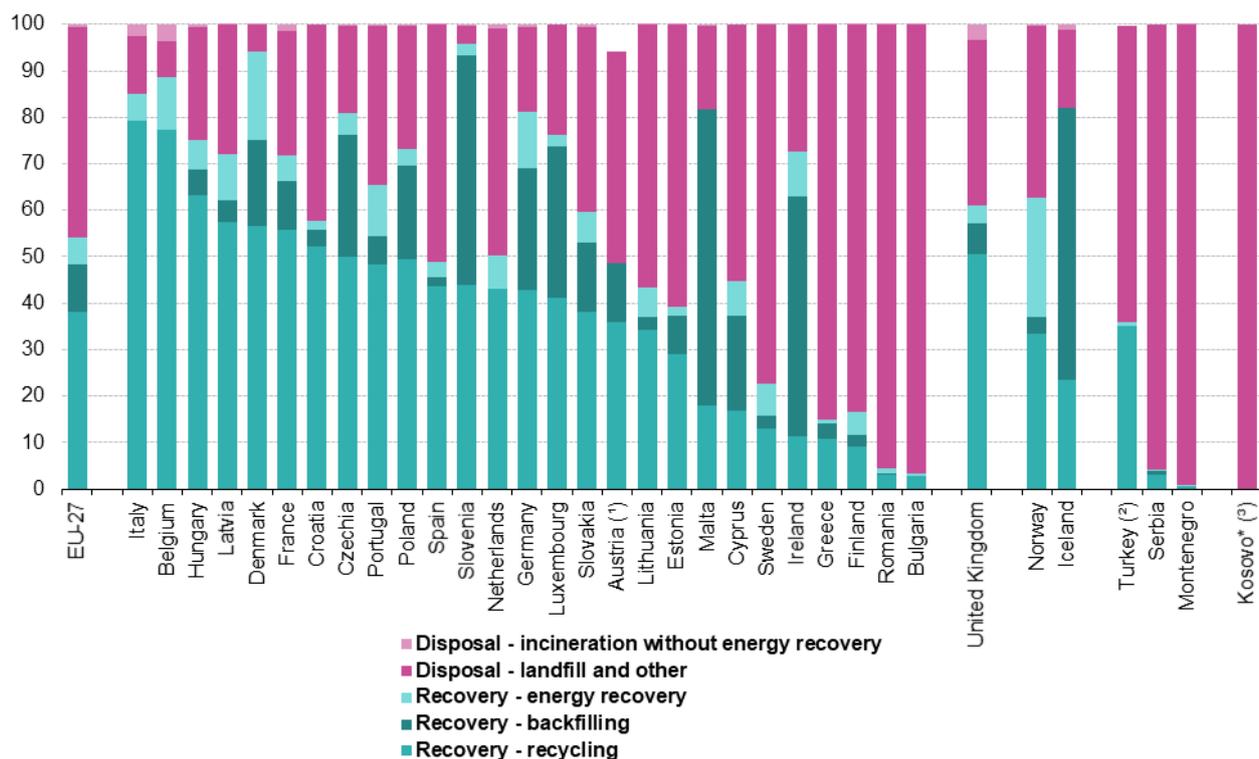
Source: Eurostat (online data code: env_wastrt)



Figure 5: Waste treatment, EU-27, 2004-2018 (Index 2004 = 100) Source: Eurostat (env_wastrt)

As stated above, in the EU-27 in 2018, more than a half (54.2 %) of the waste was treated in recovery operations: recycling (38.1 % of the total treated waste), backfilling (10.1 %) or energy recovery (6.0 %). The remaining 45.8 % was either landfilled (38.7 %), incinerated without energy recovery (0.7 %) or disposed of otherwise (6.3 %). Significant differences could be observed among the EU-27 Member States concerning the use they made of these various treatment methods. For instance, some Member States had very high recycling rates (Italy and Belgium), while others favoured landfill (Greece, Bulgaria, Romania, Finland and Sweden), see Figure 6.

Waste treatment by type of recovery and disposal, 2018 (% of total treatment)



(*) No data available for energy recovery and incineration without energy recovery.

(**) No data available for incineration without energy recovery.

(*) 2016.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: env_wasrrt)

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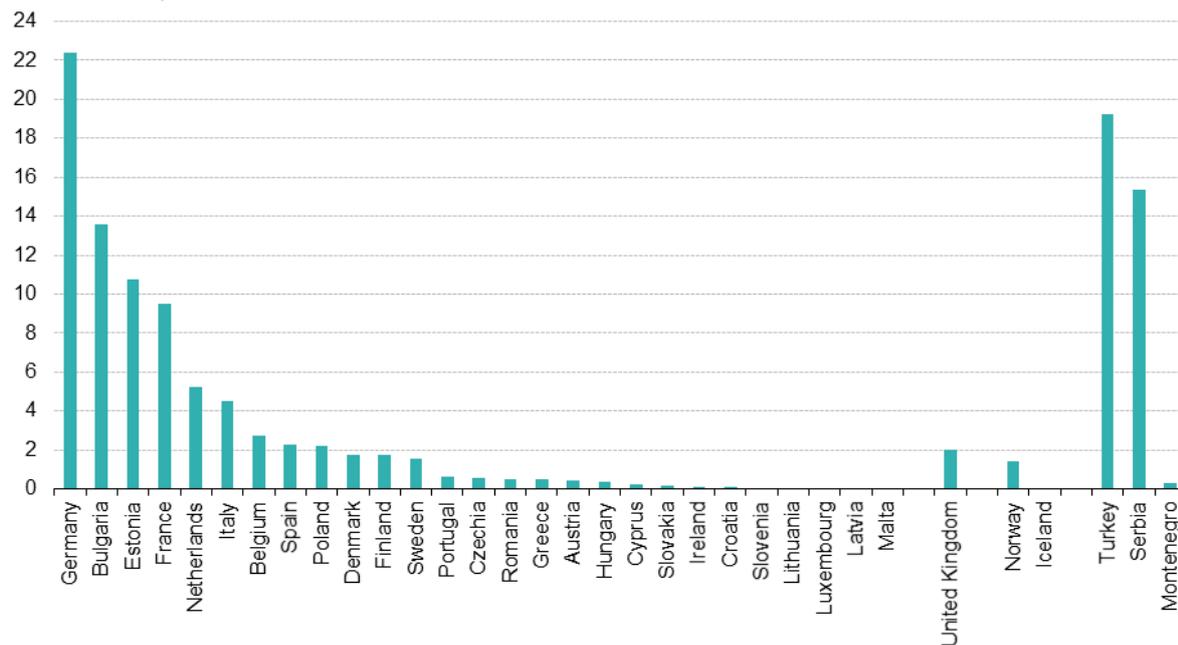
Figure 6: Waste treatment by type of recovery and disposal, 2018 (% share of total) Source: Eurostat (env_wasrrt)

Hazardous waste treatment

In total, 82.2 million tonnes of hazardous waste were treated in the EU-27 in 2018, with more than two thirds of this treated in just four EU-27 Member States, Germany (27.3 %), Bulgaria (16.5 %), Estonia (13.1 %) and France (11.6 %), see Figure 7.

Hazardous waste treatment, 2018

(million tonnes)



Source: Eurostat (online data code: env_wastrt)

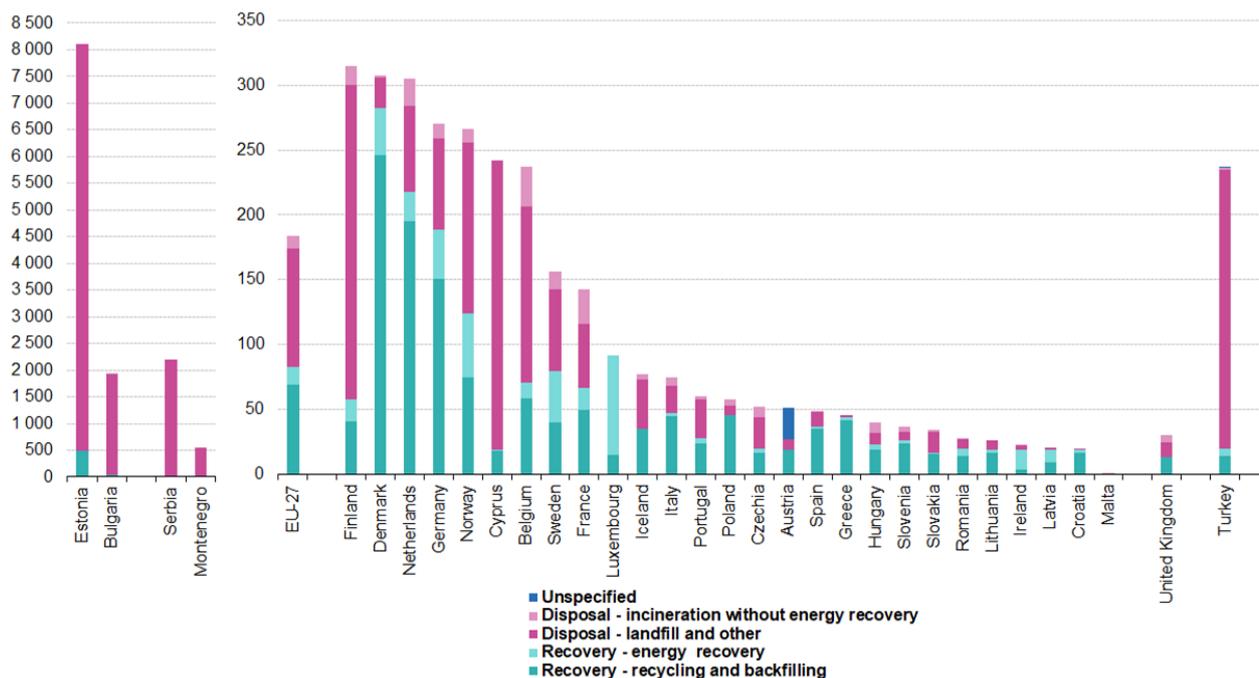
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Figure 7: Hazardous waste treatment, 2018 (thousand tonnes) Source: Eurostat (env_wastrt)

In 2018, almost half (45.0 %) of the hazardous waste treated in the EU-27 was recovered: 37.4 % by recycling or backfilling (equivalent to 69 kg per inhabitant) and 7.6 % by energy recovery (14 kg per inhabitant), see Figure 8. The remaining 55.0 % was incinerated without energy recovery (5.7 % or 10 kg per inhabitant), landfilled, in other words deposited into or onto land or through land treatment and release into water bodies (33.0 % or 61 kg per inhabitant) or disposed of by other way (16.2 % or 30 kg per inhabitant).

Hazardous waste treatment, 2018

(kg per capita)



Note: sorted on total hazardous waste treated. The two parts of the figure have different scales for the y-axis.

Source: Eurostat (online data code: env_wastrt)

eurostat

Figure 8: Hazardous waste treatment, 2018 (kg per capita) Source: Eurostat (env_wastrt)

Source data for tables and graphs

- [Waste statistics: tables and figures](#)

Data sources

In order to monitor the implementation of waste policy, in particular compliance with the principles of recovery and safe disposal, reliable statistics on the production and management of waste from businesses and private households are required. In 2002, [Regulation \(EC\) No 2150/2002](#) on waste statistics was adopted, creating a framework for harmonised Community statistics in this field.

Starting with reference year 2004, the Regulation requires EU Member States to provide data on the generation, recovery and disposal of waste every two years. Data on waste generation and treatment are currently available for even reference years from 2004 to 2018.

Context

EU waste management policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency. The long-term goal is to turn Europe into a recycling society, avoiding waste and using unavoidable waste as a resource wherever possible. The aim is to achieve much higher levels of recycling and to minimise the extraction of additional natural resources. Proper waste management is a key element in ensuring resource efficiency and the sustainable growth of European economies. For more information see [the Europe 2020 strategy](#).

Accordingly, the revised Waste Framework Directive of 2008 introduced a five-step waste hierarchy where prevention is the best option, followed by re-use, recycling and other forms of recovery, with disposal such as landfill as the last resort. In line with this hierarchy, the [7th Environment Action Programme](#) sets the following priority objectives for waste policy in the EU:

- reduce the amount of waste generated;

- maximise recycling and re-use;
- limit incineration to non-recyclable materials;
- phase out landfilling to non-recyclable and non-recoverable waste;
- ensure full implementation of the waste policy targets in all EU Member States.

Other articles

- [End-of-life vehicle statistics](#)
- [Environmental economy – statistics on employment and growth](#)
- [Municipal waste statistics](#)
- [Packaging waste statistics](#)
- [Recycling — secondary material price indicator](#)
- [Waste shipment statistics](#)
- [Waste statistics — electrical and electronic equipment](#)

Publications

- [Energy, transport and environment indicators — 2019 edition](#)
- [Environmental statistics and accounts in Europe \(2010\)](#)

Main tables

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

Waste generation and treatment (env_wasgt)

Database

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

Waste generation and treatment (env_wasgt)

Dedicated section

- [Waste](#)

Methodology

- [Manual on waste statistics](#)
- [Waste generation and treatment \(ESMS metadata file — env_wasgt_esms\)](#)

Legislation

- [Regulation \(EC\) No 2150/2002](#) of 25 November 2002 on waste statistics
- [Regulation \(EU\) No 849/2010](#) of 27 September 2010 amending Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics

External links

- [Being wise with waste: the EU's approach to waste management](#)
- [European Commission — DG Environment — Waste in the EU](#)
- [European Environment Agency — Waste and material resources](#)
- [Thematic strategy on the prevention and recycling of waste](#)