Waste statistics

Statistics Explained

Data extracted in January 2023.
Planned article update: October 2024.

" 4.8 tonnes of waste were generated per EU inhabitant in 2020."

" 39.2 % of waste were recycled and 32.2 % landfilled in the EU in 2020."

This article gives an overview on waste generation and treatment in the European Union (EU) and several non-EU 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 2020, the total waste generated in the EU by all economic activities and households amounted to 2 135 million tonnes or 4 815 kg per capita.

Waste generation by economic activities and households, 2020

(% share of total waste)

	Mining and quarrying	Manufacturing	Energy	Waste/water	Construction and demolition	Other economic activities	Households
EU	23.4	10.6	2.3	10.8	37.5	5.9	9.4
Belgium	0.0	20.9	1.5	31.4	30.5	7.9	7.8
Bulgaria	81.6	4.2	5.2	2.9	1.6	2.5	2.0
Czechia	0.3	12.1	1.1	15.5	42.9	12.2	15.9
Denmark	0.1	5.4	3.9	7.5	54.8	10.3	18.0
Germany	1.3	13.7	2.0	12.0	56.3	5.1	9.6
Estonia	15.2	24.6	35.0	4.6	9.8	7.4	3.4
Ireland	9.4	22.4	1.0	12.6	32.6	10.1	12.0
Greece	31.7	11.1	5.3	11.4	19.1	5.5	15.9
Spain	2.3	12.4	0.8	20.8	30.8	11.5	21.3
France	0.1	6.0	0.3	8.1	68.5	6.3	10.8
Croatia	11.6	7.5	1.1	16.3	23.8	19.5	20.2
Italy	0.8	15.2	0.9	24.6	37.8	4.1	16.6
Cyprus	6.9	9.5	0.1	6.6	50.2	9.8	17.0
Latvia	0.0	17.0	4.1	33.7	9.7	12.9	22.6
Lithuania	1.0	32.7	2.3	18.4	8.3	16.3	20.9
Luxembourg	1.1	6.5	0.3	3.5	82.1	4.2	2.2
Hungary	0.8	15.2	11.4	12.1	25.4	7.5	27.6
Malta	1.1	0.9	0.0	2.5	85.3	4.7	5.6
Netherlands	0.1	10.6	0.4	7.4	65.4	8.7	7.4
Austria	0.1	7.5	0.6	3.5	76.5	5.2	6.7
Poland	36.6	16.1	6.6	13.4	13.0	6.6	7.8
Portugal	0.1	17.8	1.3	22.9	10.7	15.4	31.8
Romania	84.3	4.6	3.1	2.0	0.9	2.2	3.0
Slovenia	0.1	17.9	12.1	3.8	6.3	51.4	8.4
Slovakia	1.6	24.0	5.5	8.9	9.0	32.5	18.5
Finland	75.1	8.2	0.8	1.0	11.8	1.0	2.1
Sweden	76.5	3.1	1.2	4.5	9.3	2.3	3.1
Iceland	0.0	24.2	0.0	2.0	3.6	31.0	39.2
Liechtenstein	0.0	1.1	0.0	0.3	92.5	0.1	6.0
Norway	1.3	13.6	1.6	8.0	44.2	12.9	18.4
Montenegro	25.3	2.5	29.0	0.3	13.8	10.5	18.5
North Macedonia	35.1	35.0	0.5	17.9	3.8	7.7	0.0
Serbia	78.0	1.9	13.5	1.1	1.2	0.9	3.5
Türkiye	25.6	19.2	22.6	0.3	0.0	5.8	26.5
Bosnia and Herzegovina	11.3	27.3	46.3	0.0	1.3	0.4	13.4
Kosovo (¹)	19.9	9.4	52.5	0.3	0.2	3.1	14.6

(¹) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion Declaration of Independence.

Source: Eurostat (online data code: env_wasgen)

Table 1: Waste generation by economic activities and households, 2020 (% share of total waste) Source: Eurostat (env_wasgen)

The share of different economic activities and of households in total waste generation in 2020 is presented in Figure 1. In the EU, construction contributed 37.5 % of the total in 2020 and was followed by mining and quarrying (23.4 %), waste and water services (10.8 %), manufacturing (10.6 %) and households (9.4 %); the remaining 8.2 % was waste generated from other economic activities, mainly services (4.4 %) and energy (2.3 %).

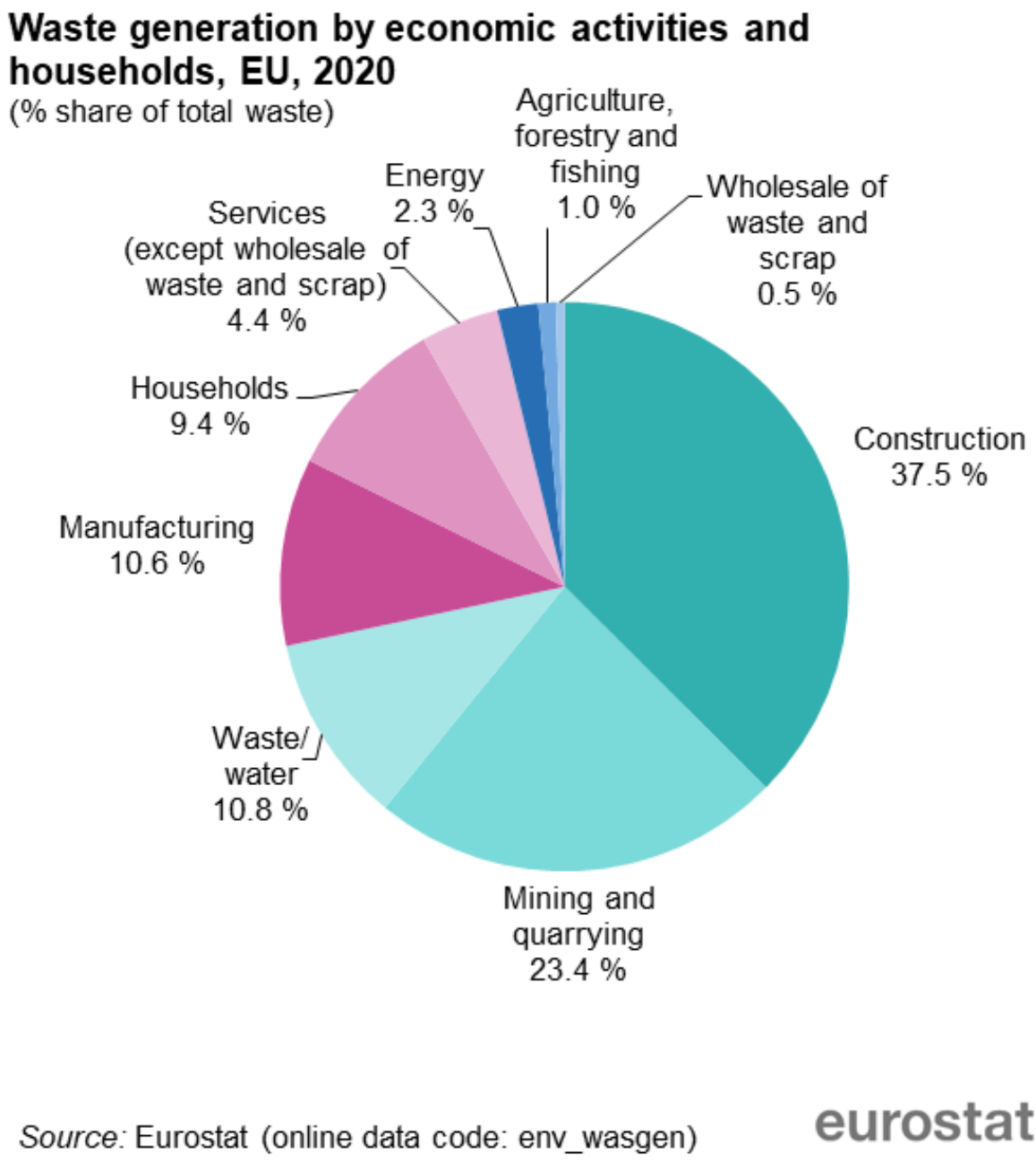
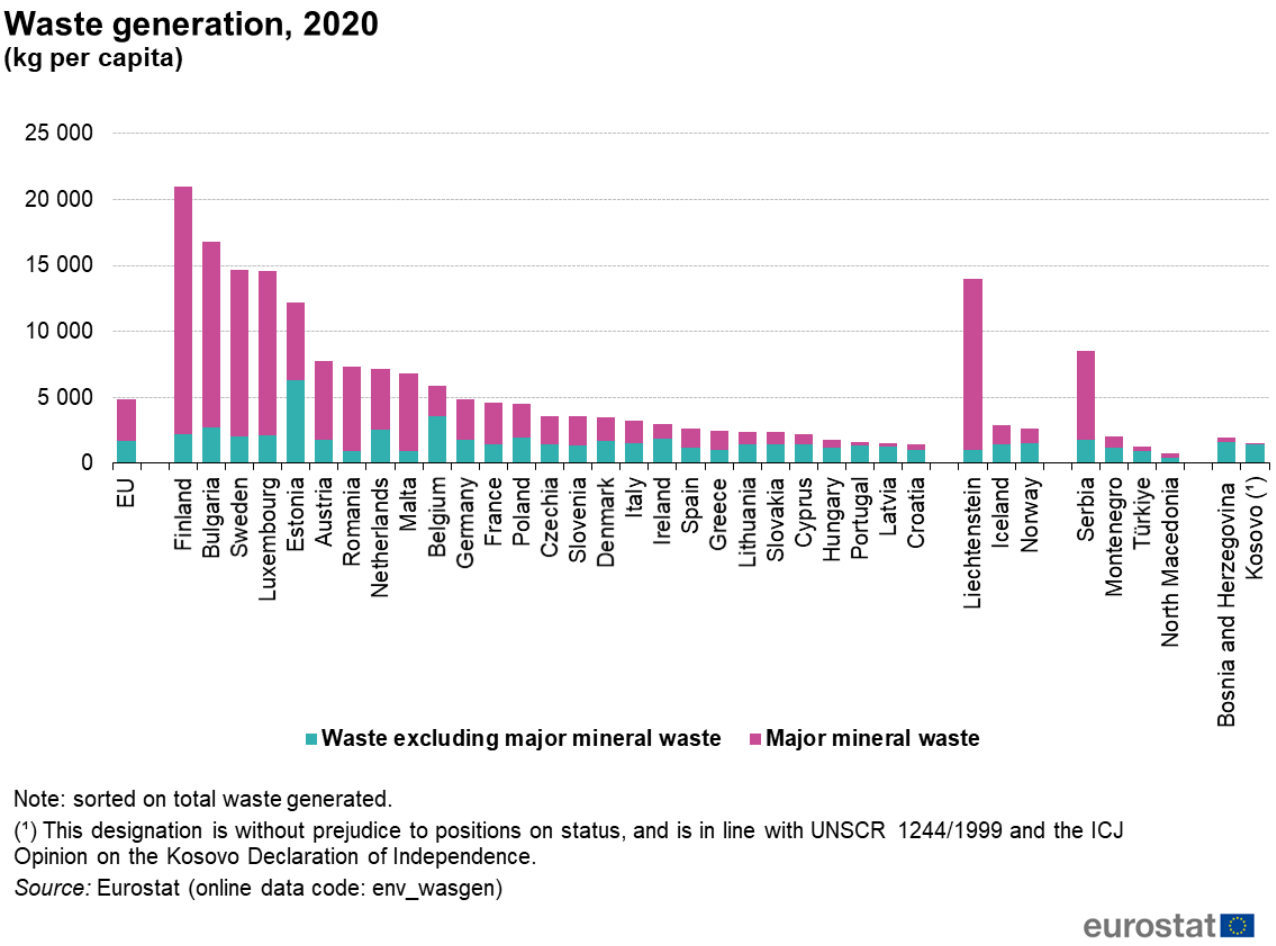


Figure 1: Waste generation by economic activities and households, EU, 2020 (% share of total waste) Source: Eurostat (env_wasgen)

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 particularly high values recorded for Finland where on average more than 20 tonnes of waste were generated per inhabitant in 2020, more than four times the EU average of 4.8 tonnes per inhabitant. 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 (64 % or 3.1 tonnes per inhabitant) of the total waste generated in the EU in 2020 was major mineral waste. The relative share of major mineral waste in the total waste generated varied considerably between EU Member States, which may reflect, at least to some degree, different economic structures. In general, those EU 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 Finland, Sweden and Bulgaria, and/or construction and demolition activities, such as Luxembourg; in these Member States, major mineral waste accounted for between 84

% and 89 % of all waste generated.



Note: sorted on total waste generated.

(1) 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)

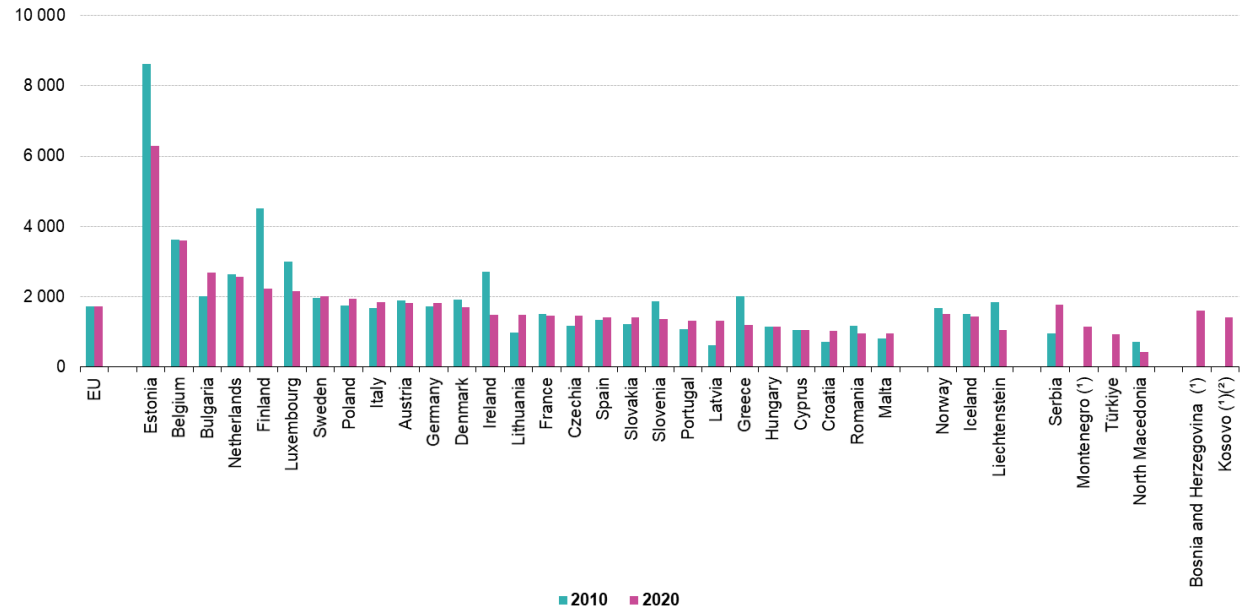
Figure 2: Waste generation, 2020 (kg per capita) Source: Eurostat (env_wasgen)

Waste generation excluding major mineral waste

In the EU, 776 million tonnes of waste excluding major mineral waste were generated in 2020, equivalent to 36 % of the total waste generated. When expressed in relation to population size, the EU generated, on average, 1.7 tonnes per inhabitant of waste excluding major mineral waste in 2020 (Figure 3).

Across the EU Member States, waste generation excluding major mineral waste ranged from an average of 6.3 tonnes per inhabitant in Estonia to less than 1 tonne per inhabitant in Romania and Malta in 2020. The large quantity of waste generated in Estonia is related to energy production based on oil shale.

Waste generation, excluding major mineral waste, 2010 and 2020
(kg per capita)



Note: sorted on 2020 data.
(1) 2010: not available.
(2) 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, 2010 and 2020 (kg per capita) Source: Eurostat (env_wasgen)

Table 2 shows the development of EU waste generation excluding major mineral waste analysed by economic activity. In 2020, the highest levels of waste generation were recorded for waste and water services (212 million tonnes), for households (196 million tonnes) and for manufacturing activities (167 million tonnes). Their developments followed different patterns over time: between 2004 and 2020, waste generation (excluding major mineral waste) by waste and water services and by households increased by 182.3 % and 12.4 %, respectively, while generation by manufacturing activities diminished quite considerably, down by 30.5 %.

Waste generation, excluding major mineral waste, EU, 2004-2020
(million tonnes)

	2004	2006	2008	2010	2012	2014	2016	2018	2020	Change 2020/2004 (%)
Total	779.5	789.9	760.5	758.7	758.3	769.0	784.6	812.9	776.3	-0.4
Agriculture, forestry and fishing	62.3	56.7	45.5	20.2	20.4	17.7	19.7	19.4	20.7	-66.7
Mining and quarrying	10.4	7.1	10.0	7.9	7.5	7.7	6.9	8.1	7.5	-28.3
Manufacturing	239.9	225.8	216.8	190.5	176.4	176.0	179.0	179.8	166.6	-30.5
Energy	85.4	93.3	84.1	78.6	88.8	87.4	74.7	75.7	45.7	-46.5
Waste/water	75.2	83.3	98.9	129.9	155.0	180.7	196.8	208.5	212.4	182.3
Construction	34.4	33.4	34.8	42.1	39.8	38.6	37.8	41.3	38.7	12.5
Other sectors	97.7	111.2	88.7	103.5	89.6	85.1	88.5	94.0	89.0	-8.9
Households	174.1	179.2	181.6	186.0	180.7	175.9	181.2	186.1	195.7	12.4

Source: Eurostat (online data code: env_wasgen)

eurostat

Table 2: Waste generation, excluding major mineral waste, EU, 2004-2020 (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 in 2020, 95.5 million tonnes (4.4 % of the total) were classified as hazardous waste.

Compared with 2010, 5.1 % more hazardous waste was generated in 2020 in the EU. This is an increase in quantity terms from 90.8 to 95.5 million tonnes with a peak in of 102.0 million tonnes in 2018. The decline in 2020 compared with 2018 results mainly from less combustion wastes due to less incineration of solid fuels such as coal, coke and oil shale. In 2020, the share of hazardous waste in total waste generation was between 0.5 % in Romania and 12.0 % in Bulgaria. Among the non-EU member countries shown in Figure 4, Türkiye recorded the highest share of hazardous waste in total waste generation (28.5 %) and was followed by North Macedonia (28.2 %). Montenegro (27.6 %), Serbia (19.3 %) and Norway (13.3 %).

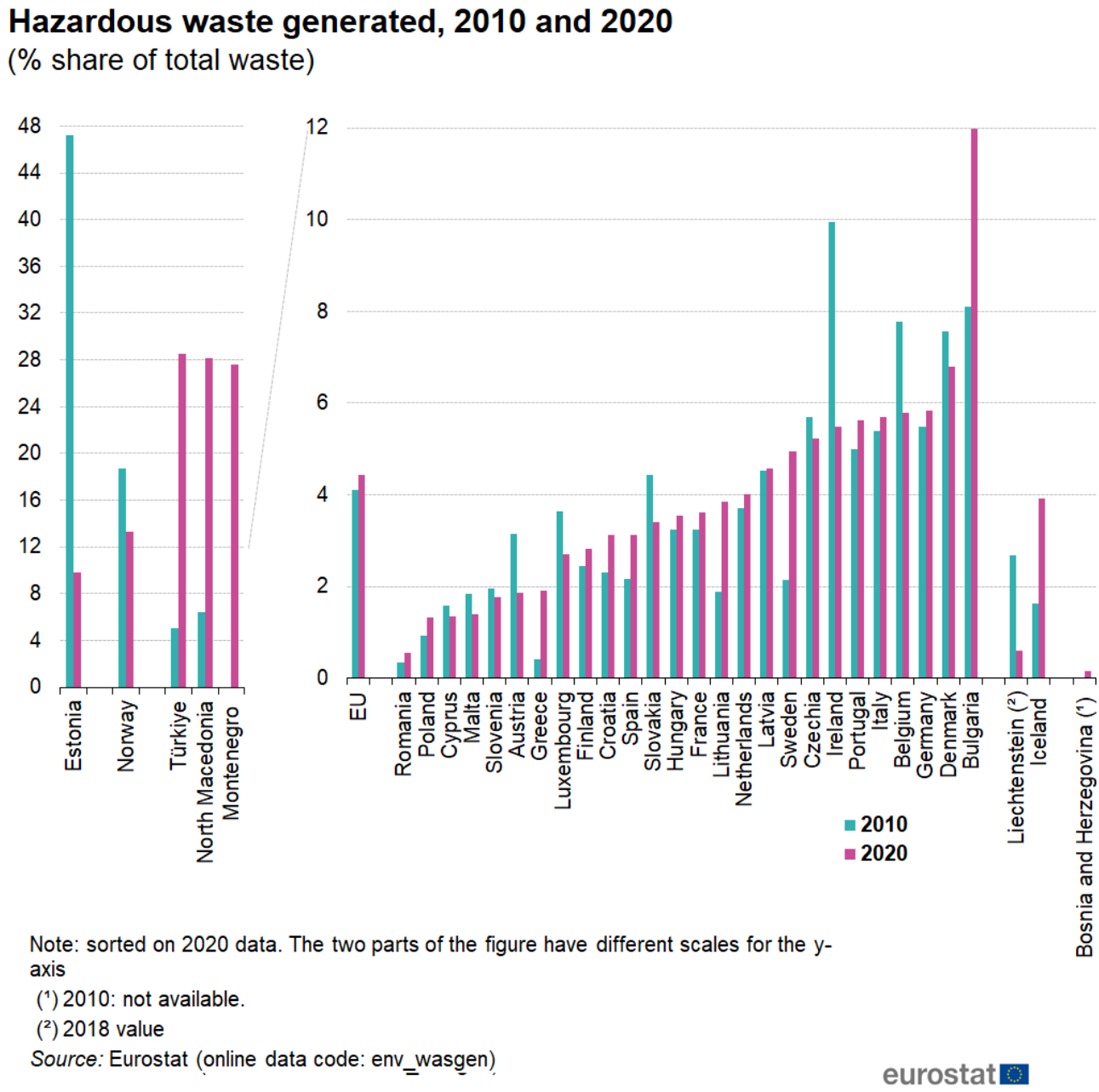


Figure 4: Hazardous waste generated, 2010 and 2020 (% share of total waste) Source: Eurostat (env_wasgen)

Waste treatment

In 2020, some 1 971 million tonnes of waste were treated in the EU. This does not include exported waste but includes the treatment of waste imported into the EU. The reported amounts are therefore not directly comparable with those on waste generation.

Figure 5 shows the development of total waste treatment in the EU, as well as for the two main treatment categories – recovery and disposal – during the period 2004-2020. 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 increased by 33.9 % from 870 million tonnes in 2004 to 1 165 million tonnes in 2020; as a result, the share of such recovery in total waste treatment rose from 45.9 % in 2004 to 59.1 % in 2020. The quantity of waste subject to disposal decreased from 1 027 million tonnes in 2004 to 806 million tonnes in 2020, which was a
decrease of 21.5 %. The share of disposal in total waste treatment decreased from 54.1 % in 2004 to 40.9 % in 2020.

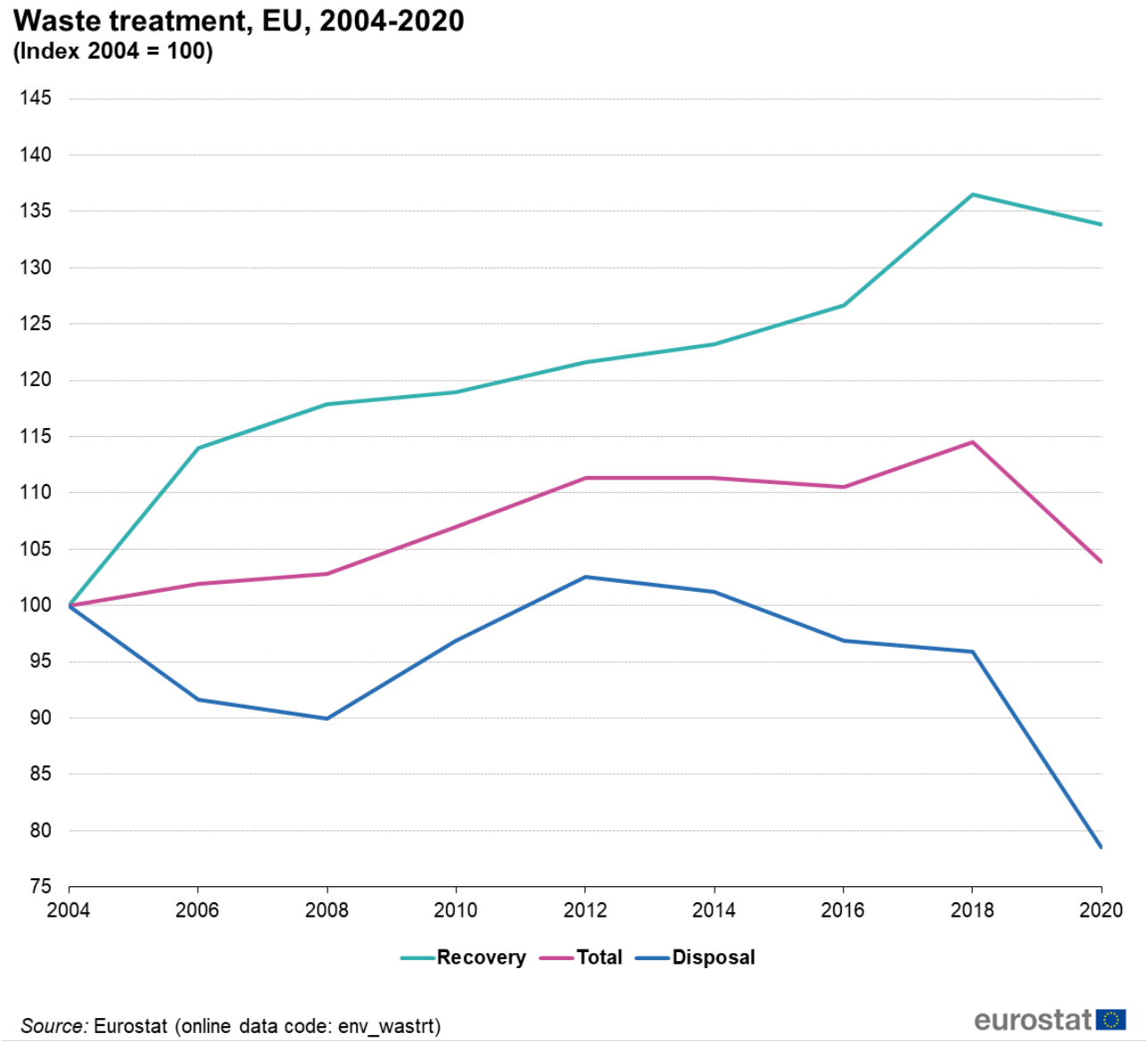


Figure 5: Waste treatment, EU, 2004-2020 (Index 2004 = 100) Source: Eurostat (env_wastrt)

As stated above, in the EU in 2020, more than a half (59.1 %) of the waste was treated in recovery operations: recycling (39.9 % of the total treated waste), backfilling (12.7 %) or energy recovery (6.5 %). The remaining 40.9 % was either landfilled (32.2 %), incinerated without energy recovery (0.5 %) or disposed of otherwise (8.2 %). Significant differences could be observed among the EU Member States regarding the use they made of these various treatment methods. For instance, some Member States had very high recycling rates (Italy, Belgium, Slovakia and Latvia),
in others landfill is the prevailing treatment category (Romania, Bulgaria, Finland, Sweden and Greece, see Figure 6).

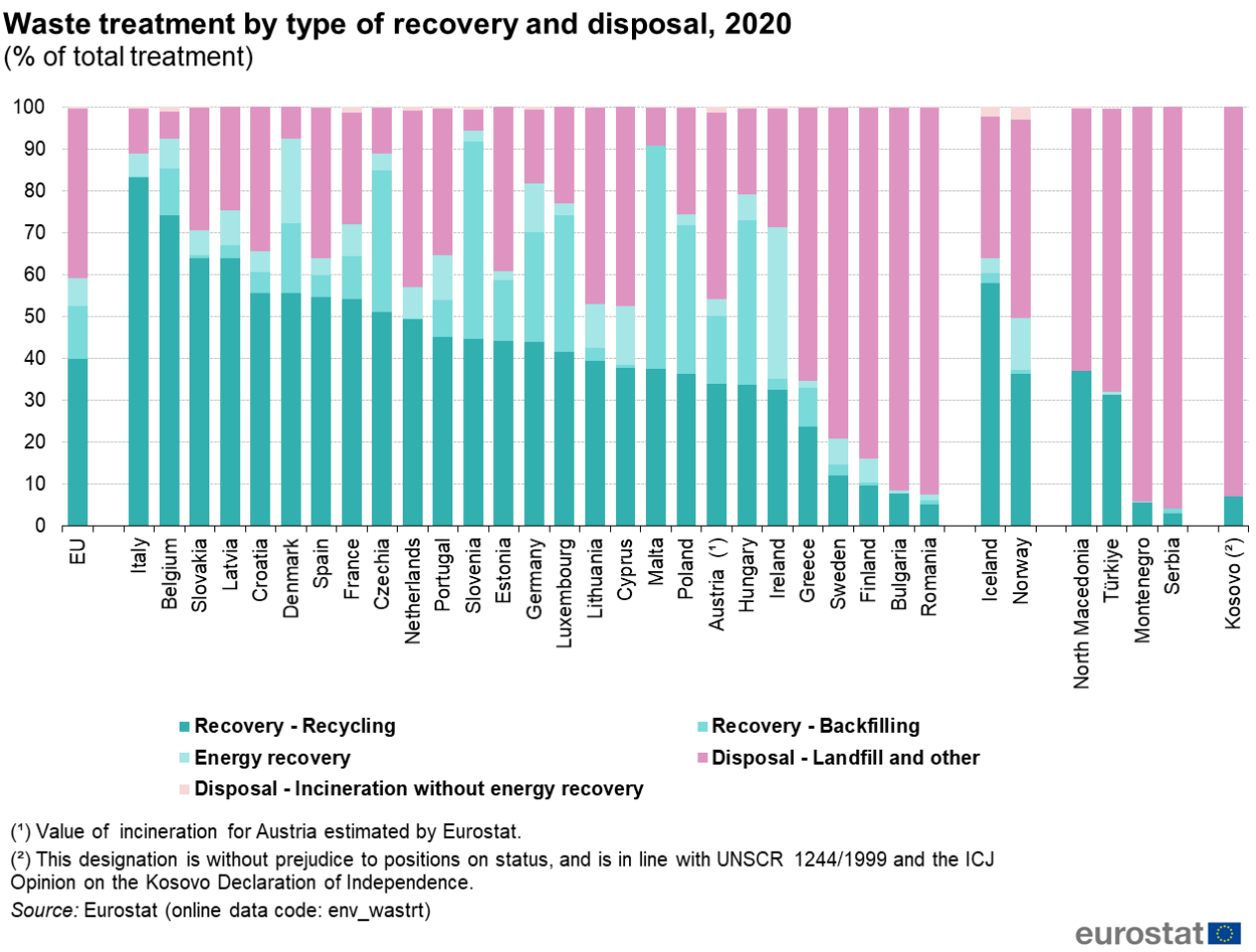


Figure 6: Waste treatment by type of recovery and disposal, 2020 (% of total treatment) Source: Eurostat (env_wastrt)

Hazardous waste treatment

In total, 74.7 million tonnes of hazardous waste were treated in the EU in 2020, with more than two-thirds of this treated in just four EU Member States, Germany (21.4 million tonnes or 28.7 % of EU total), Bulgaria (13.8 million tonnes or 18.5 %), and France (8.2 million tonnes or 10.9 %) and Sweden (7.0 million tonnes or 9.3 %), see Figure 7.

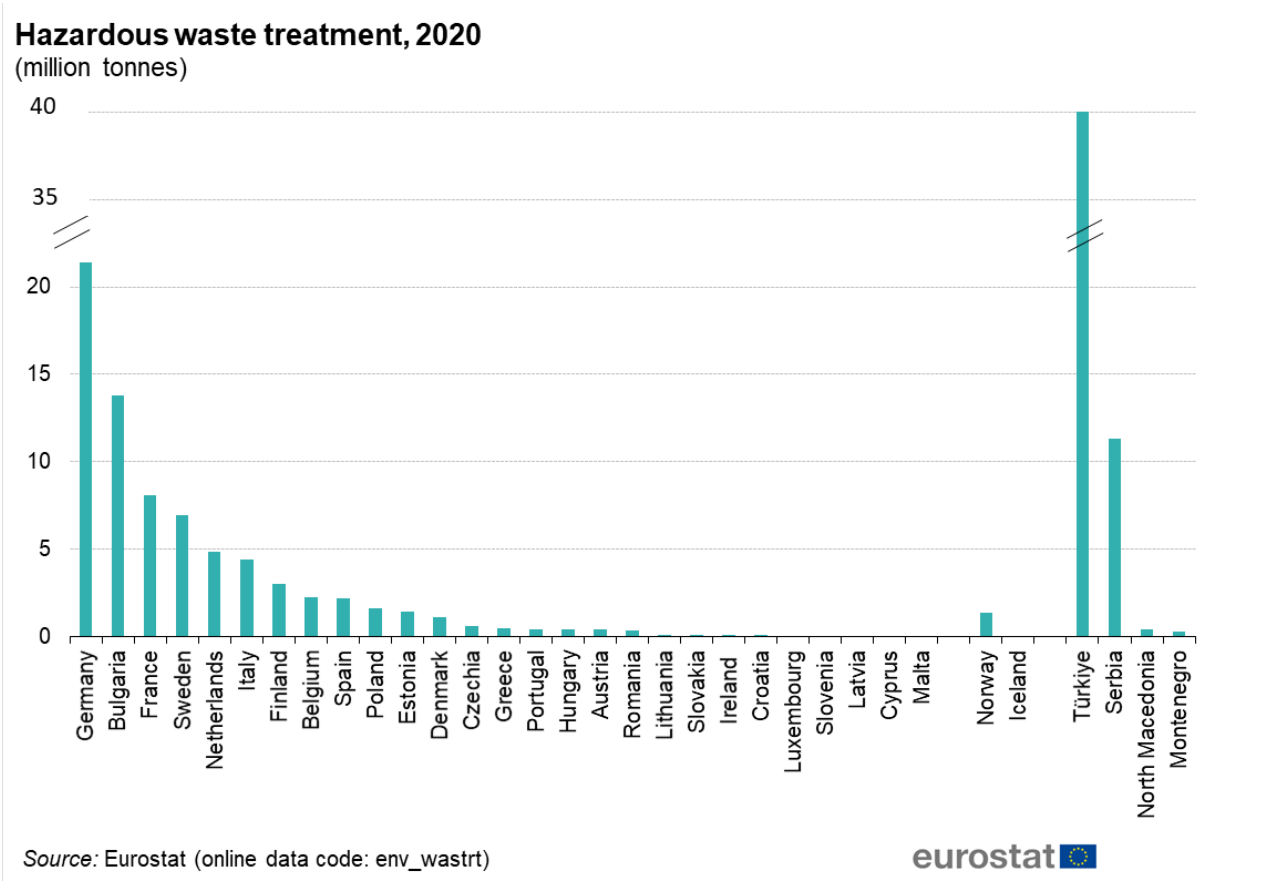


Figure 7: Hazardous waste treatment, 2020 (million tonnes) Source: Eurostat (env_wastrt)

In 2020, 47.5 % of the hazardous waste treated in the EU was recovered: 38.5 % by recycling or backfilling (64 kg per inhabitant) and 8.3 % by energy recovery (14 kg per inhabitant, see Figure 8). The remaining 52.5 % were incinerated without energy recovery (5.8 % or 10 kg per inhabitant), landfilled, in other words deposited into or onto land
or through land treatment(22.1 % or 37 kg per inhabitant) or disposed of by other way (25.4 % or 42 kg per inhabitant).

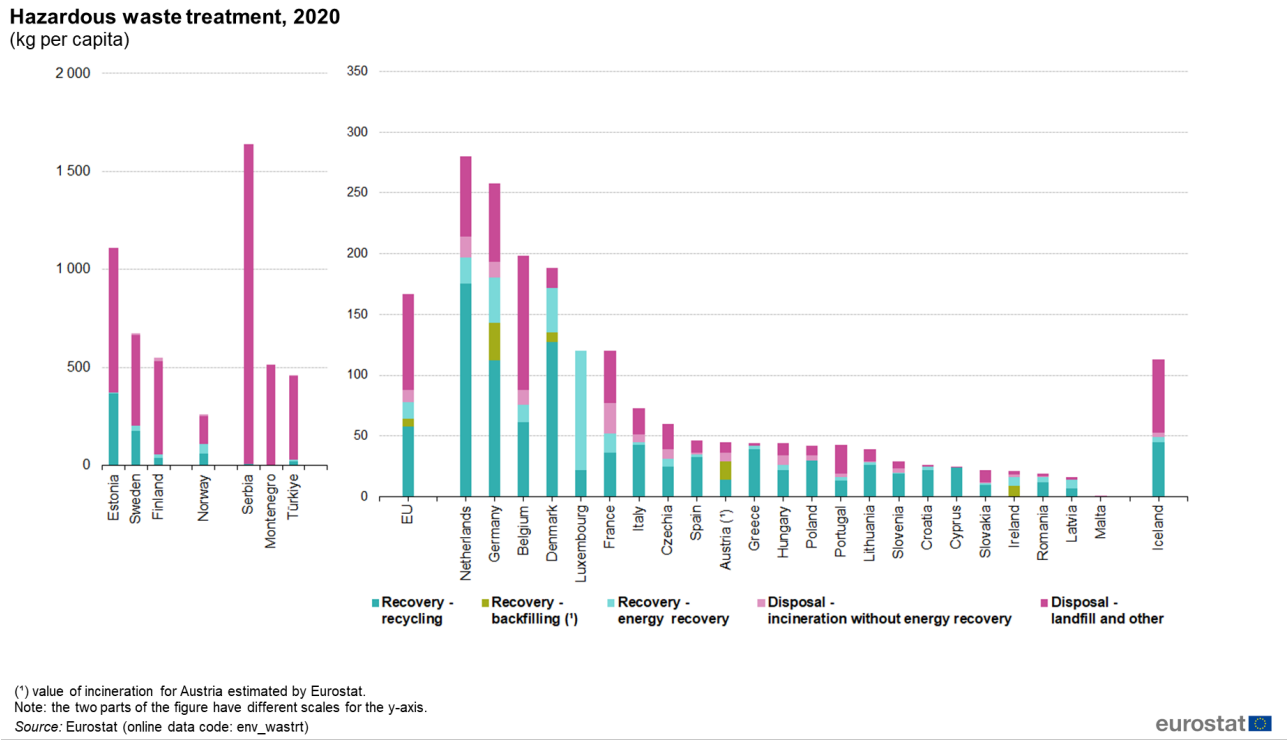


Figure 8: Hazardous waste treatment, 2020 (kg per capita) Source: Eurostat (env_wastrt)

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 2 years. Data on waste generation and treatment are currently available for even reference years from 2004 to 2020.

Context

EU waste management policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency by extracting high-quality resources from waste as much as possible. The European Green Deal aims to promote growth by transitioning to a modern, resource-efficient and competitive economy. For more information see "Waste and recycling" [1] .

The Waste Framework Directive (Directive 98/2008/EC article 4) 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:

- 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 statistics — 2020 edition
- Environmental statistics and accounts in Europe (2010)

Main tables

- Waste (t_env_was), see:

Waste generation and treatment (t_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

- European Commission — DG Environment — Waste in the EU
- European Environment Agency — Waste and material resources
- Thematic strategy on the prevention and recycling of waste