

Generation and treatment of waste in Europe 2008

Steady reduction in waste going to landfills

In 2008, the EU-27 generated more than 2.6 billion tonnes of waste, of which 98 million tonnes, or 3.7%, were hazardous. Thus, the level of waste produced remained similar to that in previous years.

About 58% of all waste produced consisted of mineral waste and soils from construction and mining activities.

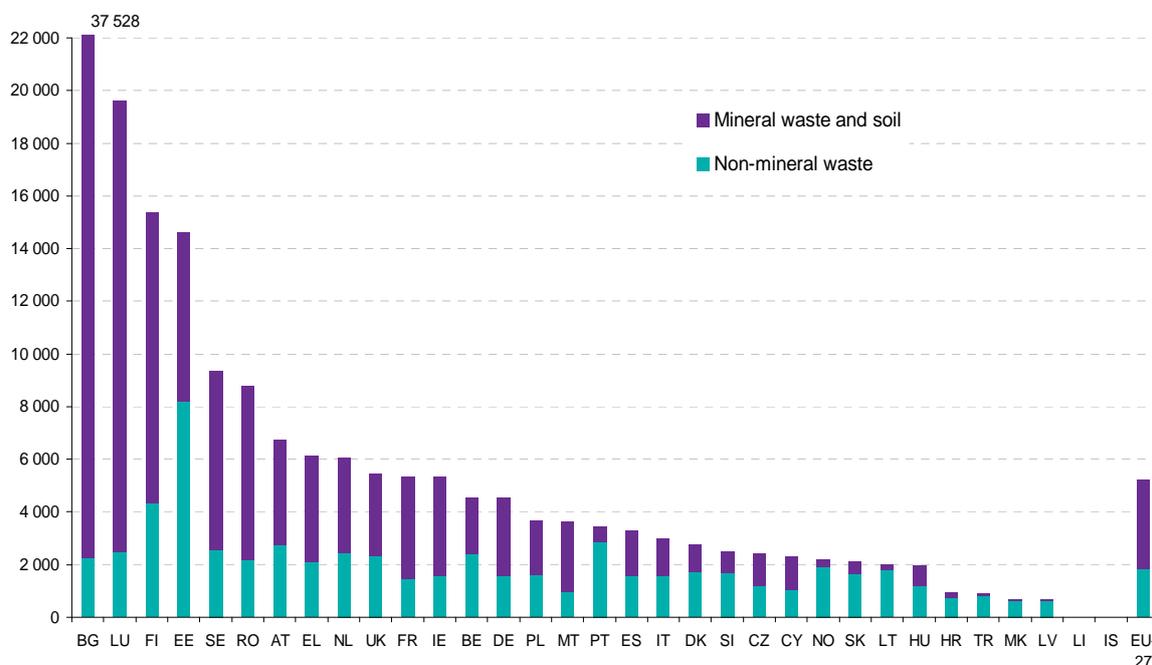
Disposal at landfills is still the predominant waste treatment option, but the volume dealt with in this way declined by 67 million tonnes, or 5%, between 2004 and 2008.

At the same time, there has been significant growth in recovery (other than energy recovery), by 192 million tonnes or 21%, in particular for mineral waste.

Incineration and energy recovery have also shown steady growth, by 21 million tonnes, or 20%.

As a result, 49% of waste treated in 2008 was disposed of, 46% was recovered and 5% was incinerated.

Figure 1: Waste generation for mineral and non-mineral waste, 2008 (kg per capita)



Source: Eurostat (online data code: [env_wasgen](#), [tsdpc210](#) and [demo_gind](#))

Waste generation in EU-27 amounts to 5.2 tonnes per capita

Table 1: Total waste generation by economic activity (NACE Rev. 2) and households, 2008 (1 000 tonnes)

	Total waste from economic activities and households		Agriculture, forestry and fishing (NACE A)	Mining and quarrying activities (NACE B)	Manufacturing industry (NACE C)	Energy activities (NACE D)	Construction and demolition activities (NACE F)	Other economic activities (NACE E, G-U)	Households
	Total	of which Hazardous waste							
EU-27	2 615 220	97 680	45 050	726 740	342 710	90 880	859 490	328 930	220 950
Belgium	48 622	5 919	288	503	10 090	1 087	15 442	16 753	4 459
Bulgaria	286 093	13 043	754	267 559	3 447	7 655	1 829	1 943	2 907
Czech Republic	25 420	1 510	255	167	5 293	1 920	10 651	3 959	3 176
Denmark	15 155	420	41	2	1 454	1 358	5 674	4 111	2 514
Germany	372 796	22 323	1 351	28 288	52 322	11 708	197 207	46 515	35 405
Estonia	19 584	7 538	240	7 198	3 772	5 424	1 099	1 412	440
Ireland	23 637	743	19	2 061	4 026	292	:	15 095	1 677
Greece	68 644	253	:	38 152	5 703	11 181	6 828	2 826	3 954
Spain	149 254	3 649	11 356	25 716	19 369	4 872	44 926	18 584	24 431
France	345 002	10 893	1 313	1 195	21 640	1 004	252 980	37 559	29 311
Italy	179 034	6 655	349	1 263	43 086	3 090	69 732	29 043	32 472
Cyprus	1 843	24	127	505	138	2	431	207	433
Latvia	1 495	67	75	3	501	20	12	278	606
Lithuania	6 835	116	1 288	3	2 758	51	412	961	1 363
Luxembourg	9 592	199	2	10	673	1	8 282	347	276
Hungary	20 080	671	468	272	4 789	3 050	5 240	2 795	3 466
Malta	1 499	55	3	0	17	0	1 099	212	169
Netherlands	99 591	4 724	3 464	270	15 824	1 318	59 477	9 757	9 482
Austria	56 309	1 330	459	678	13 077	569	31 390	6 317	3 819
Poland	140 340	1 469	1 350	33 666	56 746	19 541	6 930	15 228	6 879
Portugal	36 480	3 368	160	1 891	9 001	255	8 085	11 932	5 157
Romania	189 311	524	17 035	140 677	11 064	7 058	318	4 695	8 464
Slovenia	5 038	153	132	55	1 735	354	1 376	673	714
Slovakia	11 472	527	789	151	4 469	1 151	1 302	1 838	1 772
Finland	81 793	2 163	2 739	31 796	16 948	1 531	24 455	2 648	1 674
Sweden	86 169	2 063	314	58 702	11 927	1 508	3 310	6 014	4 393
United Kingdom	334 127	7 285	681	85 963	22 837	4 885	100 999	87 223	31 539
Iceland	:	:	:	:	:	:	:	:	:
Liechtenstein	0.35	0.01	0.00	0.01	0.03	0.00	0.00	0.30	0.00
Norway	10 427	1 336	184	113	3 689	46	1 498	2 531	2 365
Croatia	4 172	221	19	34	1 727	136	129	2 127	:
FYROM	1 362	6	:	:	1 362	:	:	:	:
Turkey	64 770	1 024	:	:	10 741	25 525	:	50	28 454

Source: Eurostat (online data code: [env_wasgen](#))

In 2008, waste generated in the European Union (EU-27) amounted to a total of 2.62 billion tonnes, which corresponds to 5.2 tonnes of waste per capita. Thus, total waste produced remained at a level similar to that in 2004 (2.69 billion tonnes) and 2006 (2.73 billion tonnes).

The variation in waste generation across countries was considerable (see Fig. 1), ranging from 660 kg/cap in Latvia up to 37 528 kg/cap in Bulgaria. The huge differences can be explained to a large extent by the Member States' economic structure.

As illustrated in Figure 1, the mineral waste and soils totals reported accounted for most of the differences between countries. The high waste generation per inhabitant in Bulgaria is due to enormous amounts of mineral waste from mining and processing of coal and lignite, metallic minerals (e.g. iron, manganese, copper, chromium, zinc) and non-metallic minerals.

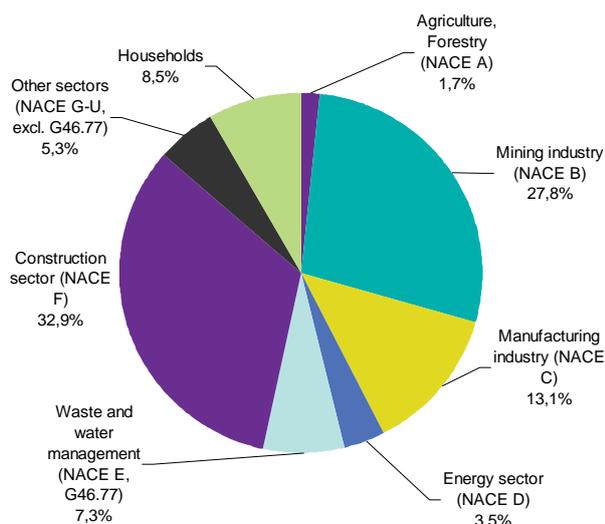
High amounts of mineral waste were also generated by the mining industry in Romania, Sweden, Finland and Estonia, accounting for 73 %, 68 %, 39 % and 37 % of national waste production respectively.

Waste generation in Luxembourg is dominated by mineral waste from the construction sector, which accounted for 70 % to 85 % of total waste produced in recent years.

Mining and construction activities produce 61 % of waste total

The economic sectors generating the highest amounts of waste were the construction sector (NACE F), accounting for 859 million tonnes, or 32.9 % of the total, and the mining sector (NACE B), producing 727 million tonnes of waste, or 27.8 % of the total. In all, 97 % of the waste produced in these sectors, or 1.53 billion tonnes respectively, were mineral waste or soils (excavated earth, road construction waste, demolition waste, dredging spoils, waste rocks, tailings, etc.). This explains the high share of mineral waste and soils, 65 % in relation to total waste produced (Fig. 3).

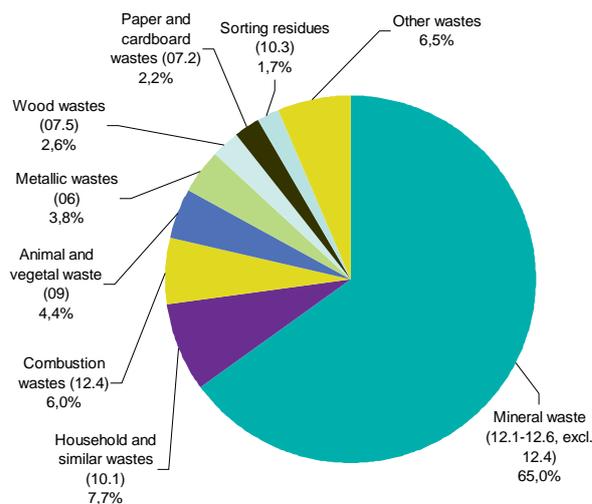
Figure 2: Total waste generation in the EU-27 by economic activity (NACE Rev. 2) and households, 2008 (%)



Source: Eurostat (online data code: [env_wasgen](#))

Manufacturing industry accounted for 13.1 %, or 343 million tonnes, of waste generated; 191 million tonnes originated from the NACE section E and class G46.77, which comprise water supply, wastewater treatment, waste recovery and disposal. In all, 91 million tonnes of waste (3.5 %) resulted from energy production (NACE D), 86 million of which were combustion waste. Households contributed 8.4 % or 221 million tonnes to the total.

Figure 3: Total waste generation in the EU-27 by waste category, 2008 (%)

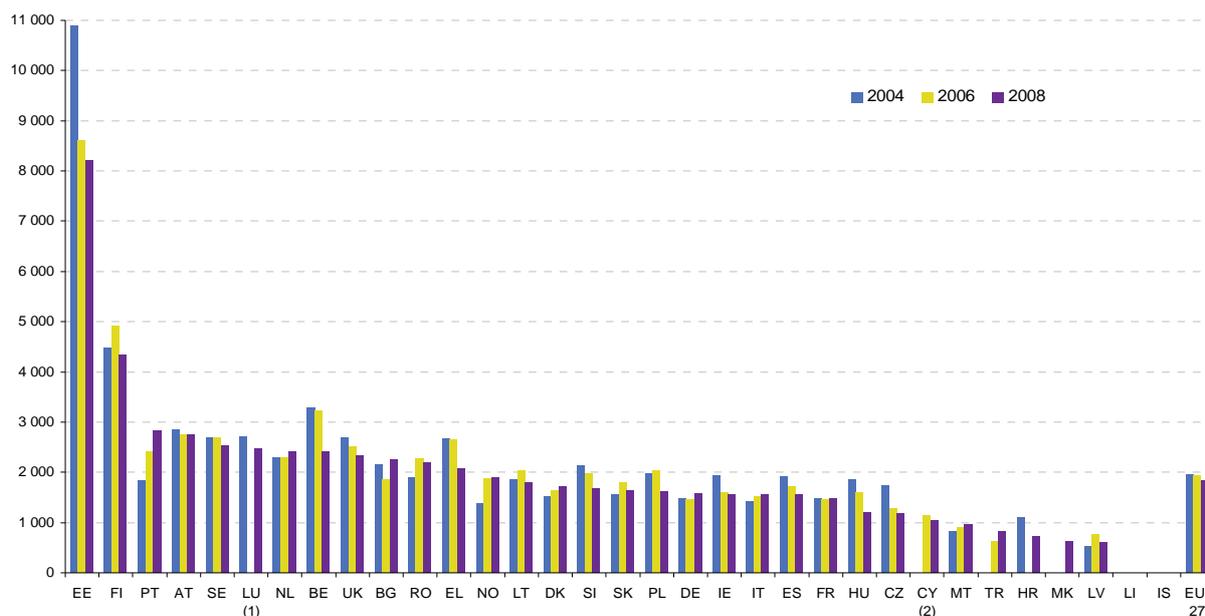


Source: Eurostat (online data code: [env_wasgen](#))

The most significant waste categories (apart from mineral waste and soils) were household and similar waste (7.7 %), combustion waste (6.0 %), animal and vegetal waste (4.4 %). Metallic waste accounted for 3.8 %, wood waste for 2.6 % and paper/ board waste for 2.2 % of total waste production. Sorting residues, which include refuse-derived fuels, contributed 1.7 %, with an upward trend.

Non-mineral waste generation is used as Sustainable Development Indicator

Figure 4: Non-mineral waste generation, 2004 to 2008 (kg per capita)



(1) 2006 data are unreliable.

(2) 2004 data are unreliable.

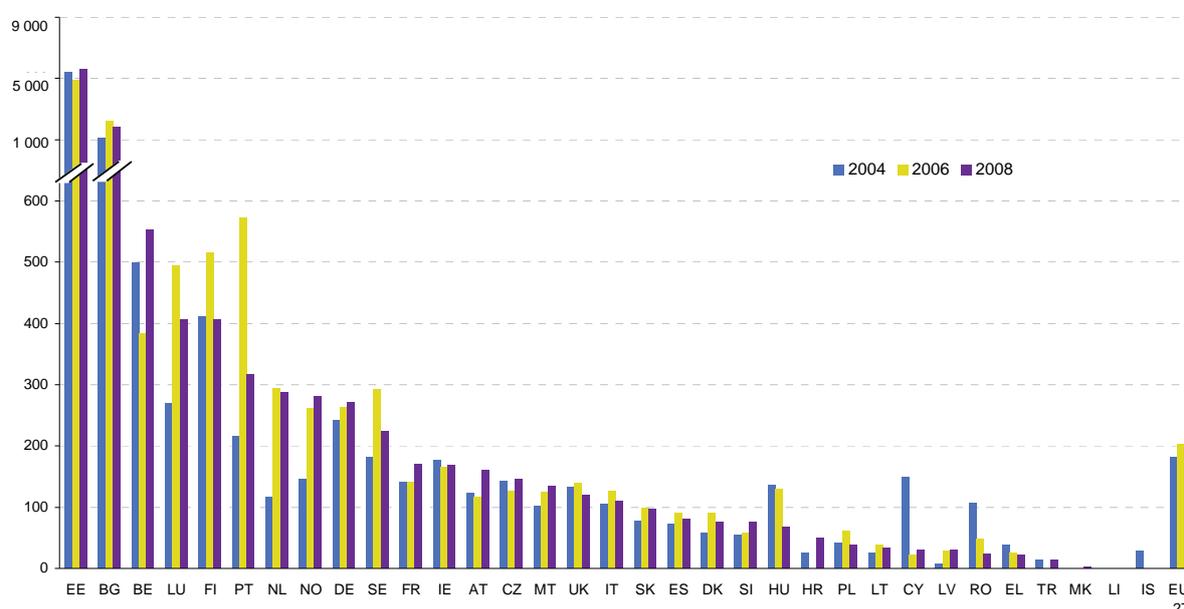
Source: Eurostat (online data code: [tsdpc210](#))

Figure 4 presents the Sustainable Development Indicator ‘Non-mineral waste generation’ (SDI tsdpc210) by countries. The indicator shows waste generation per capita, excluding mineral waste and soils. It serves as a proxy for trends in waste production as it reflects general trends more accurately than total waste generated and increases comparability across countries. In 2008, generation of non-mineral waste in the EU-27 amounted to 1 843 kg/cap, with country values ranging between 606 kg/cap in Latvia and 8 216 kg/cap in Estonia. Compared with 2004 (1 951 kg/cap) and 2006

(1 931 kg/cap), the indicator for the EU-27 has remained fairly stable, showing only a slight decrease. The high level of waste recorded in Estonia was mainly due to large amounts of hazardous waste from the energy and the refinery sector, derived from the use of oil shale as the main source of energy production. In Finland, it is mainly wood waste from wood processing, manufacture of pulp and paper and forestry that led to waste generation clearly above the EU average. Non-hazardous wood waste amounted to 2 334 kg/cap in Finland in the year 2008.

Hazardous waste generation amounts to 98 million tonnes or 196 kg/cap

Figure 5: Hazardous waste generation, 2004 to 2008 (kg per capita)



Source: Eurostat (online data code: [env_wasgen](#) and [demo_gind](#))

Hazardous waste represents only a small share of the total, but may pose risks to human health and the environment if not managed and disposed of safely. In 2008, 98 million tonnes or 3.7% of total waste generated was classified as hazardous, which corresponds to 196 kg/cap. In previous years, the total amounted to 89 million tonnes (2004) and 101 million tonnes (2006).

Production of hazardous waste varies considerably across countries. The extremely high rate of 5 623 kg/cap in Estonia in 2008 was due to the use of oil shale for energy production. In Bulgaria, about 94% of the hazardous waste total of 1 711 kg/cap comprised tailings from the processing of copper ore. The country's hazardous waste total, 13 million tonnes, accounts for 13% of

the EU-27 total. In other countries, hazardous waste generation in 2008 ranged from 3 kg/cap in the former Yugoslav Republic of Macedonia to 553 kg/cap in Belgium.

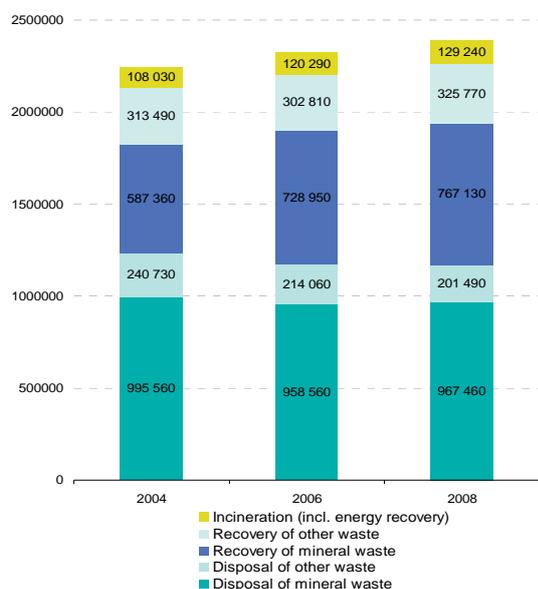
Variations in the production of hazardous waste over time and across countries is again strongly influenced by the categories ‘mineral waste’ and ‘contaminated soils and polluted dredging spoils’. The waste generated varies considerably, depending on specific infrastructure projects and remediation activities. Changes in the generation of mineral waste and contaminated soils are thus the main reasons for fluctuations in Belgium, Luxembourg, the Netherlands, Hungary and Romania.

Table 2: Total waste treatment by operation, 2008 (1 000 tonnes)

	Total waste treatment	Energy recovery	Incineration without energy recovery	Recovery other than energy recovery	Disposal other than incineration
EU27	2 391 070	81 690	47 550	1 092 900	1 168 950
BE	28 731	4 453	3 883	17 345	3 050
BG	279 608	94	61	2 700	276 752
CZ	18 864	556	69	13 442	4 798
DK	14 636	3 320	0	10 283	1 034
DE	367 256	23 316	13 895	255 337	74 708
EE	17 388	257	0	5 456	11 675
IE	16 247	104	21	10 415	5 707
EL	67 523	135	29	5 251	62 108
ES	137 687	2 552	490	70 355	64 291
FR	322 629	12 056	8 612	194 549	107 424
IT	127 894	2 459	5 157	87 826	32 452
CY	1 843	8	14	745	1 076
LV	1 386	18	0	646	721
LT	5 417	194	52	1 361	3 810
LU	11 632	38	135	5 311	6 147
HU	15 823	767	65	5 307	9 684
MT	1 419	0	6	43	1 371
NL	98 049	2 456	6 369	67 619	21 606
AT	48 353	3 904	1 594	32 150	10 706
PL	140 456	3 122	670	107 179	29 486
PT	22 044	1 432	400	8 812	11 400
RO	158 507	1 333	55	8 172	148 947
SI	5 242	314	16	3 040	1 873
SK	9 243	586	66	3 875	4 715
FI	74 851	9 631	170	22 855	42 195
SE	81 352	8 411	87	9 818	63 036
UK	316 991	171	5 635	143 008	168 178
IS	:	:	:	:	:
LI	:	:	:	:	:
NO	9 537	2 091	514	4 542	2 390
HR	3 351	321	25	384	2 621
MK	1 503	0	0	323	1 180
TR	60 236	143	81	14 632	45 380

Source: Eurostat (online data code: [env_wastrt](#))

Figure 6: Development of waste treatment in the EU-27 by waste category, 2004 to 2008 (1 000 tonnes)



Source: Eurostat (online data code: [env_wastrt](#))

Strong increase seen in recovery of mineral waste

In 2008, the total amount of waste treated in the EU-27 amounted to 2.39 billion tonnes (see Table 2). This total includes the treatment of imported waste and excludes the amount of waste that was exported to non-EU countries for recovery or disposal. The total amounts treated increased by 146 million tonnes, or 6.5 %, between 2004 and 2008. (see Fig. 6)

In all, 1.1 billion tonnes or 46 % of treated waste was sent to recovery operations other than energy recovery. Compared with 2004, recovery has shown significant growth, of 192 million tonnes or 21 %, mainly due to the rise in mineral waste recovery, by 180 million tonnes (31 %).

The strongest increase within non-mineral waste was reported for 'animal and vegetal wastes'. The recovery of these has grown by about 15 million tonnes, or 30 % since 2004, and amounted to 67 million tonnes, or 6.1 % of total recovery in 2008. Animal and vegetal wastes consisted mainly (at about 90 %) of vegetal wastes from agriculture, forestry and food processing.

For the most common recyclable materials, i.e. metals, paper and cardboard, glass and plastics, one would expect clear growth as a result of the implementation of European waste legislation. In fact, the amounts recovered showed only modest growth or, in the case of plastic waste, even a decrease compared with 2004. This is because of the increasing volumes of recyclable waste exported to non-EU countries, the amounts of which are not covered by waste statistics.

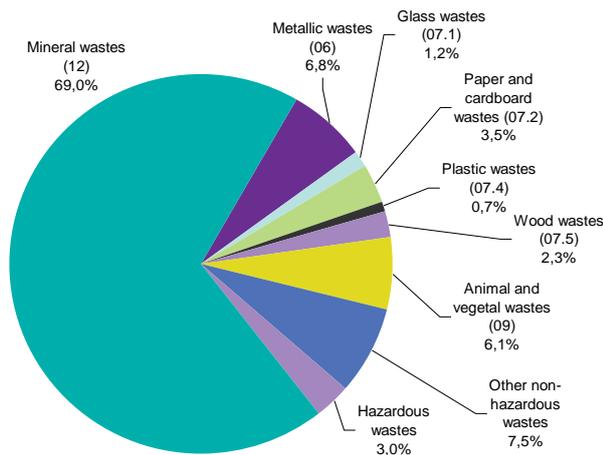
The recovery of metal waste amounted to 74 million tonnes in 2008, or 6.8 % of the total waste recovered, and showed a slight increase over recent years.

The recovery of paper and cardboard waste accounted for 38 million tonnes, or 3.5 % of the total waste recovered in 2008, and was slightly higher than in 2004.

The quantity of recovered glass and plastic waste in 2008 amounted to 12.8 million tonnes (1.2 %) and 7.2 million tonnes (0.7 %) respectively.

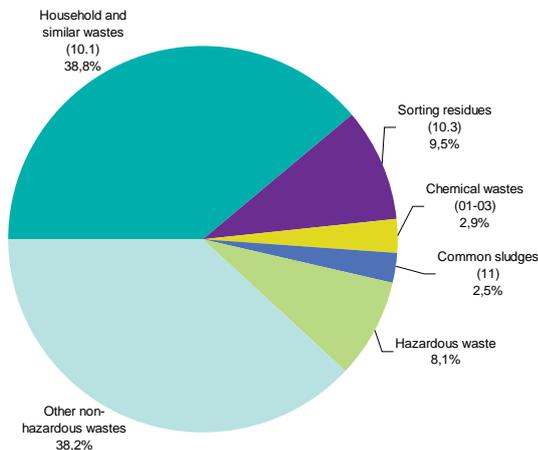
The recovery of wood waste has slightly decreased over recent years and amounted to about 25 million tonnes, or 2.3 % of total recovery in 2008.

Figure 7: Recovered waste in the EU-27 by waste category, 2008 (excl. energy recovery) (%)



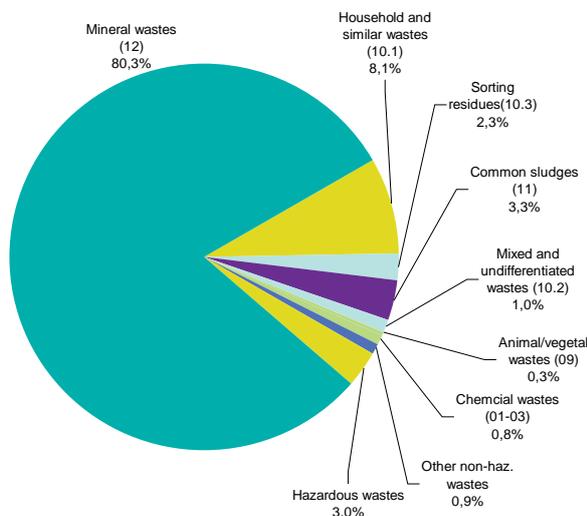
Source: Eurostat (online data code: [env_wastrt](#))

Figure 8: Incinerated waste in the EU-27 by waste category, 2008 (%)



Source: Eurostat (online data code: [env_wastrt](#))

Figure 9: Landfilled waste in the EU-27 by waste category, 2008 (%)



Source: Eurostat (online data code: [env_wastrt](#))

Rising trend in household and similar waste incinerated

Incineration with or without energy recovery accounted for 5% or 129 million tonnes of treated waste in 2008. The amount of waste incinerated has increased by 21 million tonnes, or 20% since 2004.

The overall growth results mainly from the steadily rising incineration of household and similar waste and the increased use of refuse-derived fuels and biomass waste for energy recovery.

In 2008, 38.8% of waste incinerated was household and similar waste. Sorting residues (including refuse-derived fuels) accounted for 9.5%, non-hazardous chemical waste for 2.9%, and common sludges for 2.5% of incinerated waste. About 8.1% of waste incinerated was hazardous.

Waste disposal steadily decreasing

In 2008, 1.17 billion tonnes or 49% of the EU-27 total was disposed of by operations other than waste incineration. In all, 80.3% of this waste was non-hazardous mineral waste. About 97% of this was disposed of at dedicated landfills or, as far as mining waste is concerned, on heaps, in ponds or other dedicated installations in mining facilities. The other disposal operations covered, i.e. 'land treatment (D2)' and 'release into water bodies' (D6, D7) are applied to a significant extent only in the Netherlands and the United Kingdom, where about 32 million tonnes of common sludges were disposed of by such operations.

Compared with 2004, waste disposal other than incineration for 2008 was lower by about 67 million tonnes, or 5%. The disposal of non-mineral waste decreased by 39 million tonnes (16%), while the disposal of mineral waste declined by 28 million tonnes (3%).

The disposal of household and similar waste declined by about 20 million tonnes or 17% between 2004 and 2008, and stood at a total of 94 million tonnes in 2008.

METHODOLOGICAL NOTES

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 1980s by the Joint Eurostat/OECD Questionnaire. The [Regulation \(EC\) No 2150/2002](#) on waste statistics of the European Parliament and of the Council establishes a coherent framework for the production of statistics on waste generation and treatment by Member States.

Data sources

All the data presented here were collected pursuant to the Waste Statistics Regulation. According to the Regulation, data on waste generation has to be broken down according to economic activity (NACE Rev 2) and 48 waste categories, both hazardous and non-hazardous. Data on waste treatment has to be broken down into 5 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 Iceland, Liechtenstein, Norway, Croatia, the Former Yugoslav Republic of Macedonia and Turkey.

Data availability

The figures presented in this publication have been extracted from Eurostat's free dissemination database and reflect the state of data availability on the 14/07/2011.

Abbreviations and symbols

Country abbreviations

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

: not available

NACE Rev. 2 codes: economic activities

A	Agriculture, forestry and fishing
B	Mining and quarrying
C	Manufacturing
D	Electricity, gas, steam and air conditioning supply
E	Water supply; sewerage, waste management and remediation activities
F	Construction
G_Q	Services
G46.77	Wholesale of waste and scrap
	Households

Waste codes used in this publication

01.1	Spent solvents
01.2	Acid, alkaline or saline waste
01.3	Used oils
01.4	Spent chemical catalysts
02	Chemical preparation wastes
03.1	Chemical deposits and residues
03.2	Industrial effluent sludges
05	Health care and biological wastes
06	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
08.1	Discarded vehicles
08.41	Batteries and accumulators wastes
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	<i>Dredging spoils</i>
12.1 to 12.5	<i>Mineral wastes (excluding combustion wastes, contaminated soils and polluted dredging spoils)</i>
excl 12.4	
12.4	Combustion wastes
12.6	<i>Contaminated soils and polluted dredging spoils</i>
13	Solidified, stabilised or vitrified wastes

The indicator 'Non-mineral waste generation' covers all waste except the categories in italics (12.1 to 12.5 excl. 12.4, 11.3; 12.6).

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

For detailed information on classifications, please refer to 'Ramon', Eurostat's Metadata Server (http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=D_SP_PUB_WELC).

More detailed data and metadata are available in Eurostat dissemination database:

http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database

and in the data centre on waste:

<http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/introduction>

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Further information

Eurostat Website: <http://ec.europa.eu/eurostat>

Data on 'Environment Statistics'

<http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/data/database>

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