UK Statistics on Waste

The purpose of this release is to announce UK estimates which have been calculated to comply with EU legislation. It includes data on:

Recycling rate from Waste from Households – updated with 2016 data (now including IBA metals as recycling)

Biodegradable municipal waste sent to landfill – updated with 2016 data

Packaging waste – updated with 2015 data and provisional 2016 data

Recovery rate from construction and demolition – not updated; latest data 2014

Waste from commercial and industrial (C&I) activities - substantially revised with provisional estimates for 2010-2016.

Total waste generation and final treatment of all waste – not updated; latest data 2014

Waste infrastructure – not updated; latest data 2014

There is a detailed separate dataset available here for all sections.

Key points

- The **UK recycling rate for Waste from Households** (WfH; including IBA metal) was 45.2% in 2016, increasing from 44.6% in 2015. There is an EU target for the UK to recycle at least 50% of household waste by 2020.

- The recycling rate for WfH increased in all UK countries in 2016. The recycling rate for England was 44.9%, compared with 43.0% in Northern Ireland, 42.8% in Scotland and 57.3% in Wales.

- **UK biodegradable municipal waste (BMW) sent to landfill** in 2016 was similar to that in 2015, remaining at approximately 7.7 million tonnes or 22% of the 1995 baseline value. The UK is therefore still on track to meet the EU target to restrict BMW landfilled to 35% of the 1995 baseline by 2020.

- In 2016, 71.4% of **UK packaging waste** was either recycled or recovered compared to 64.7% in 2015. This exceeds the EU target to recycle or recover at least 60% of packaging waste.

- Revised figures estimate **UK generation of commercial and industrial (C&I) waste** at 41.9 million tonnes in 2014, of which 32.8 million tonnes was generated in England. Provisional estimates for England only indicate that waste generation has since fallen to around 32.2 million tonnes in 2016.

Data revisions in this update:

Previously published **commercial and industrial waste generation estimates** for 2010 and 2012-2014 for England have been substantially revised following consultation with industry and a detailed review of the methodology.

Minor revisions have been made to historical Waste from Households estimates to ensure consistency between all UK countries following the inclusion of incineration bottom ash metals in recycling estimates.

For further details on these revisions, please see the relevant section of this release or the Methodology section.

1 Waste from Households (WfH) - updated

WfH is the agreed harmonised UK measure used to report household recycling to comply with the Waste Framework Directive (2008/98/EC). Under this Directive the UK and other EC Member States must meet a target to recycle 50% of household waste by 2020. The UK currently defines 'household waste' using the WfH measure.

A methodological change has been introduced in this release, with metal recovered and recycled after incineration (incinerator bottom ash metal; IBAm) now included in the recycling tonnage, where it would previously have been classed as 'recovery'. This has been facilitated through the new Q100 reporting structure for waste treatment, which all local authorities have been using since April 2015. At an overall UK level this change in methodology raised the recycling rate for 2016 by around 0.6 percentage points (equivalent to 160 thousand tonnes; see table below). For more details on this change refer to the Methodology section.

Figure 1. Recycling rate from Waste from Households, UK and country split, 2010-16
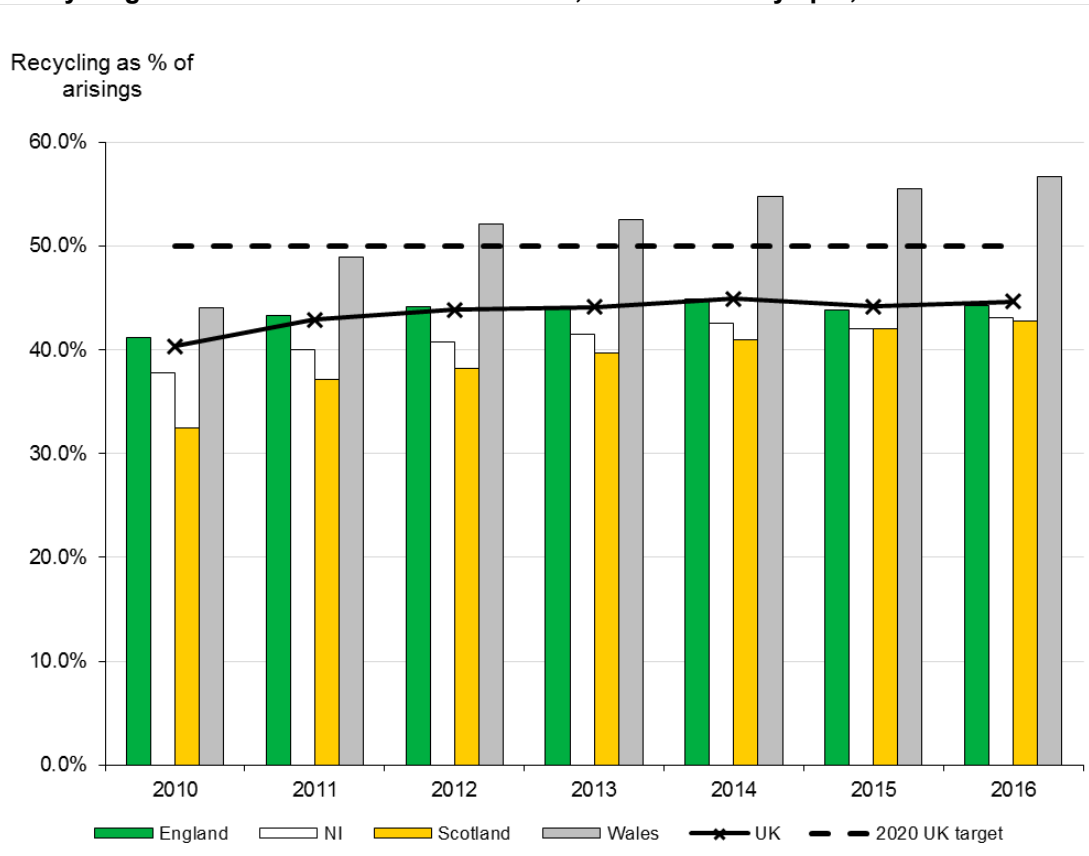
Source : WasteDataFlow, Defra Statistics

Table 1. Waste from Households, UK and country split, 2010-16

thousand tonnes and % rate

Year	Measure	UK total	England	Northern Ireland	Scotland	Wales
2010	Arisings	26,954	22,131	829	2,649	1,344
	Of which recycled (excl. IBAm)	10,878	9,112	314	861	591
	Recycling rate	**40.4%**	**41.2%**	**37.8%**	**32.5%**	**44.0%**
2011	Arisings	26,792	22,170	810	2,482	1,329
	Of which recycled (excl. IBAm)	11,492	9,596	324	921	651
	Recycling rate	**42.9%**	**43.3%**	**40.0%**	**37.1%**	**49.0%**
2012	Arisings	26,428	21,956	783	2,383	1,306
	Of which recycled (excl. IBAm)	11,594	9,684	319	911	681
	Recycling rate	**43.9%**	**44.1%**	**40.7%**	**38.2%**	**52.1%**
2013	Arisings	25,929	21,564	781	2,311	1,274
	Of which recycled (excl. IBAm)	11,433	9,523	324	916	669
	Recycling rate	**44.1%**	**44.2%**	**41.5%**	**39.6%**	**52.5%**
2014	Arisings	26,797	22,355	808	2,349	1,285
	Of which recycled (excl. IBAm)	12,035	10,025	344	962	704
	Recycling rate	**44.9%**	**44.8%**	**42.5%**	**41.0%**	**54.8%**
2015	Arisings	26,677	22,225	821	2,354	1,278
	Of which recycled (excl. IBAm)	11,789	9,746	344	989	709
	Recycling rate (excl. IBAm)	**44.2%**	**43.9%**	**42.0%**	**42.0%**	**55.5%**
	Of which recycled (incl. IBAm)	11,891	9,843	z	990	713
	Recycling rate (incl. IBAm)	**44.6%**	**44.3%**	**z**	**42.1%**	**55.8%**
2016	Arisings	27,306	22,770	850	2,378	1,307
	Of which recycled (excl. IBAm)	12,192	10,067	366	1,017	741
	Recycling rate (excl. IBAm)	**44.6%**	**44.2%**	**43.0%**	**42.8%**	**56.7%**
	Of which recycled (incl. IBAm)	12,352	10,219	z	1,018	749
	Recycling rate (incl. IBAm)	**45.2%**	**44.9%**	**z**	**42.8%**	**57.3%**

Source: WasteDataFlow, Defra Statistics

z = Not applicable (In N. Ireland no local authority collected municipal waste went directly to incinerators)
England and Scotland have included IBA metals for data from 2015 onwards, when Q100 was introduced.
For England this is from April 2015, when Q100 came into full use by all local authorities.
For Wales, Q100 was introduced in 2012. Wales figures for 2012-2014 have been revised in this release to remove IBA metals. These are included for 2015 and 2016 in line with the other UK countries.

England figures for 2015 revised in February 2018. See Methodology section for more details

Percentages calculated from unrounded figures; Breakdowns for individual countries may not exactly sum to UK totals due to rounding

The UK waste from households recycling rate (including IBA metal) was 45.2% in 2016, increasing from 44.6% in 2015. **This increase was seen in all UK countries.** There is an EU target for the UK to recycle at least 50% of household waste by 2020.

The recycling rate for WfH increased in all UK countries in 2016. The recycling rate for England was 44.9%, compared with 43.0% in Northern Ireland, 42.8% in Scotland and 57.3% in Wales.

England is responsible for the vast proportion of UK WfH, generating 22.8 million tonnes (83% of the UK total) in 2016. WfH generation increased in all UK countries in 2016, following decreases for England and Wales in 2015.

The inclusion of incineration bottom ash (IBA) metal in the WfH recycling data causes a small increase in WfH recycling rates. For example, for 2016, the UK WfH recycling rate including IBA metals is 45.2%, a 0.6 percentage point increase from 44.6% if IBA metals are excluded.

2 Biodegradable municipal waste (BMW) sent to landfill - updated

UK estimates for biodegradable municipal waste (BMW) to landfill have been calculated in accordance with the Landfill Directive (1999/31/EC), which aims to prevent or reduce as far as possible negative effects of landfilling waste. BMW is the fraction of municipal waste that will decompose within a landfill to produce methane, a potent greenhouse gas. Amongst other materials it will include food waste, green waste, cardboard and paper. Within the Landfill Directive the UK has three targets to meet, measured as a percentage of the tonnage of BMW generated in 1995 ('the 1995 baseline'). These require the tonnage of BMW to landfill to be:

- No greater than **75%** of the 1995 baseline by 2010
- No greater than **50%** of the 1995 baseline by 2013
- No greater than **35%** of the 1995 baseline by 2020

For this reporting obligation, the UK countries have agreed a set of European Waste Catalogue (EWC) classification codes to represent 'municipal waste'. Countries use broadly similar, but non-identical sets of factors, for the proportion of each EWC code that is biodegradable, based upon composition studies of landfill waste. See Methodology section for more details.

Figure 2. Biodegradable municipal waste (BMW) to landfill as a percentage of 1995 baseline, UK and country split, 2010-16
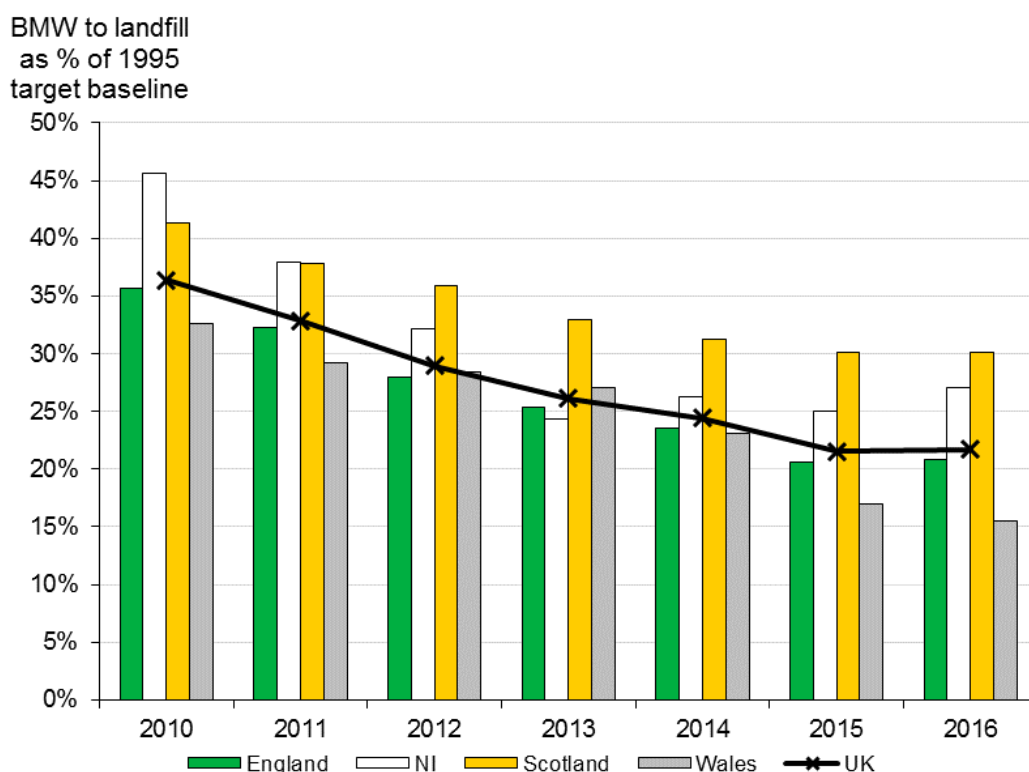
Source: Waste Data Interrogator, Defra Statistics

UK BMW sent to landfill in 2016 was 7.7 million tonnes, representing 22% of the 1995 baseline value. There is an EU target to restrict BMW landfilled to no greater than 35% of the 1995 baseline by 2020. UK comfortably met the interim targets for 2010 (75%) and 2013 (50%).

There was no change in the UK percentage of BMW to landfill between 2015 and 2016, with the figure remaining at 22% of the target baseline. Prior to this, UK tonnages of BMW to landfill reduced each year between 2010 and 2015 and levels have fallen considerably since 1995.

England is responsible for over three quarters (78%) of UK BMW to landfill, generating 6.0 million tonnes of the 7.7 million tonne UK total in 2016.

Table 2. BMW to landfill, UK and country split, 2010-16

thousand tonnes

Year	Measure	UK total	England	Northern Ireland	Scotland	Wales
1995	BMW generated (baseline)	35,688	29,030	1,225	3,595	1,837
2010	Municipal waste to landfill	25,019	20,298	893	2,508	1,319
	of which is BMW to landfill	12,982	10,339	558	1,484	600
2011	Municipal waste to landfill	22,654	18,421	734	2,335	1,164
	of which is BMW to landfill	11,719	9,360	464	1,358	538
2012	Municipal waste to landfill	20,016	16,187	622	2,185	1,023
	of which is BMW to landfill	10,337	8,129	394	1,292	522
2013	Municipal waste to landfill	18,201	14,780	472	1,995	954
	of which is BMW to landfill	9,326	7,347	299	1,183	497
2014	Municipal waste to landfill	16,955	13,714	511	1,868	862
	of which is BMW to landfill	8,711	6,843	322	1,122	424
2015	Municipal waste to landfill	15,258	12,215	484	1,916	642
	of which is BMW to landfill	7,682	5,980	307	1,084	311
2016	Municipal waste to landfill	15,734	12,381	524	1,929	899
	of which is BMW to landfill	7,747	6,049	331	1,081	286

Source: Waste Data Interrogator, Defra Statistics
The 1995 target baseline was modelled and agreed in 2010
Individual countries may not exactly sum to UK total due to rounding

Table 3. Municipal waste to landfill, by main waste types, UK and country split, 2016

thousand tonnes

Waste Type (EWC code)	UK total	England	Northern Ireland	Scotland	Wales
Wastes from mechanical treatment of waste (19 12 12)	8,478	7,505	216	417	340
Mixed municipal waste (20 03 01)	5,338	3,639	294	1,223	181
Other (all other EWC codes)	1,918	1,237	13	289	378
Total	**15,734**	**12,381**	**524**	**1,929**	**899**

Source: Waste Data Interrogator, Defra Statistics
Individual countries may not exactly sum to UK total due to rounding

The vast majority of municipal waste received at landfill is classified as "mixed" waste categories, from which it is not possible to identify individual material streams, e.g. food waste. The two main waste categories are 'wastes from mechanical treatment of waste' (EWC code 19 12 12) and 'mixed municipal waste' (EWC code 20 03 01), which together make up around nine tenths of municipal waste received at landfill).

In 2016, 8.5 million tonnes of municipal waste sent to landfill in the UK was categorised as 'wastes from mechanical treatment of waste', and 5.3 million tonnes was categorised as 'mixed municipal waste'. This equates to 54% and 34% of the total municipal sent to landfill in 2016, respectively. Data on the biodegradable faction of these waste codes can be found in the underlying dataset.

3   Packaging waste - updated

UK estimates of recovery/recycling rates for packaging materials have been calculated for reporting against material specific targets set by the EC Directive 94/62/EC on packaging and packaging waste. The Packaging and Packaging Waste Directive (as amended) set minimum recovery targets (60%) and recycling targets (55%) for packaging waste, to be met by 31 December 2008, as well as material-specific recycling targets. These are 60% for glass, 60% for paper and cardboard, 50% for metals, 22.5% for plastics, and 15% for wood. Since 2008, Member States must continue to meet these minimum targets, but they have the freedom to set higher domestic targets if they so choose.

Table 4. Packaging waste and recycling / recovery, split by material, UK 2016 (provisional figures)

	Packaging waste arising (thousand tonnes)	Total recovered / recycled (thousand tonnes)	Achieved recovery / recycling rate (%)	EU target recovery / recycling rate (%)
Metal	736	506	68.7%	50.0%
of which: Aluminium	177	90	50.8%	z
of which: Steel	559	416	74.4%	z
Paper and cardboard	4,749	3,892	81.9%	60.0%
Glass	2,399	1,609	67.1%	60.0%
Plastic	2,260	1,015	44.9%	22.5%
Wood	1,310	405	30.9%	15.0%
Other materials	23	0	0.0%	z
Total (for recycling)	**11,476**	**7,427**	**64.7%**	**55.0%**
Energy from Waste	**z**	767	6.7%	z
Total (for recycling and recovery)	**11,476**	**8,194**	**71.4%**	**60.0%**

Source: Defra Statistics

z = Not applicable
Arisings estimates made at point of manufacture. For further details see Methodology section
Percentages calculated using unrounded figures
Figures are provisional and subject to change following review by Eurostat after submission in June 2018

In 2016, 71.4% of UK packaging waste was either recycled or recovered. This was above the EU target of 60% and higher than the 64.7% achieved in 2015. Equivalent figures for 2012-2015 can be seen in the accompanying dataset.

Recycling accounted for 7.4 million tonnes of the 11.5 million tonnes of packaging waste arisings in 2016, with a further 0.8 million tonnes recovered by use in 'energy from waste' incineration. Paper and cardboard had the highest waste arisings, at 4.7 million tonnes.

The highest recycling rate achieved in 2016 was 81.9% for paper and cardboard, followed by 68.7% for metal and 67.1% for glass.

4 Recovery rate from non-hazardous construction and demolition (C&D) waste (not updated)

UK estimates of recovery rates from non-hazardous C&D waste have been calculated for reporting against the EC Waste Framework Directive. Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, there is not a significant impact on the final recovery rate. Under this Directive there is a target for the UK to recover at least 70% of non-hazardous C&D waste by 2020, which it is currently meeting.

Table 5. Recovery rate from non-hazardous construction and demolition waste, UK and England, 2010-14

million tonnes and % rate

	UK			England		
	Generation	**Recovery**	**Recovery rate**	**Generation**	**Recovery**	**Recovery rate**
	M tonnes	**M tonnes**	**%**	**M tonnes**	**M tonnes**	**%**
2010	49.5	43.4	87.6%	43.9	39.7	90.5%
2011	50.0	43.8	87.6%	44.1	39.9	90.6%
2012	51.2	45.3	88.6%	45.3	41.3	91.1%
2013	51.9	46.6	89.8%	46.3	42.1	91.1%
2014	55.0	49.4	89.9%	49.1	44.9	91.4%

Source: Defra Statistics

Excludes excavation waste because this outside the scope of the target
Percentages calculated using unrounded figures

In 2014 the UK generated 55.0 million tonnes of non-hazardous C&D waste, of which 49.4 million tonnes was recovered. This represents a recovery rate of 89.9%.

The recovery rate from non-hazardous C&D waste remained at similar levels from 2010 to 2014 and has consistently been comfortably above the minimum target of 70%, which the UK must meet in 2020.

5   Waste from commercial and industrial (C&I) activities – revised & updated

UK and England estimates for waste generation by the C&I sectors have been calculated as part of the Waste Statistics Regulation returns for 2010, 2012 and 2014. The term 'commercial and industrial' spans a range of economic activities (based on the European NACE statistical classification of economic activities in the European Community) including manufacturing, industrial processes and service based enterprises.

Note: C&I waste generation is extremely difficult to estimate owing to data limitations and data gaps. As a result, C&I estimates for England have a much higher level of uncertainty than WfH (or other Local Authority Collected Waste) and users should exercise caution in application of the figures and interpreting trends over time. All estimates have been revised substantially from previous publications following a thorough review of the England methodology (for details see [here](#)).

All figures will remain provisional until they have been approved by Eurostat following the submission of the 2016 Waste Statistics Regulation return in June 2018. Additionally, minor revisions may be necessary when the waste type breakdown is produced for the WStatR, e.g. owing to differences in point of tonnage recording between WasteDataFlow and Waste Data Interrogator. Figures presented below are "as received" tonnages and do not include an additional adjustment from wet weight to dry weight for sludges, which is a Eurostat requirement for the figures submitted as part of the WStatR.

Table 6. Total waste generation from the commercial and industrial sectors, UK and England, 2010-16 (provisional estimates)

million tonnes

	UK	England
2010	42.4	29.7
2011	:	32.4
2012	44.2	34.2
2013	:	32.9
2014	41.9	32.8
2015	:	32.1
2016	:	32.2

Source: Defra Statistics

: = Not available
All figures have been revised from those in previous publications
Figures are provisional and subject to change following review by Eurostat after submission in June 2018
Methodology relies on known tonnages of waste processed at permitted sites and recycling facilities. It makes no attempt to estimate waste that may be processed at exempt sites and does not overlap with recycling data. For more details see [here](#).

The UK C&I sectors generated 41.9 million tonnes of waste in 2014, of which 32.8 million tonnes (around 80%) was produced in England. This is a reduction from 2012, when the UK C&I waste arisings figure was 44.2 million tonnes, of which 34.2 million tonnes was generated by England.

Provisional estimates for England only indicate that waste generation has fallen further since 2014, to around 32.1 million tonnes in 2015 and 32.2 million tonnes in 2016.

6   Total Waste Generation and Final Treatment of All Waste (not updated)

Note: These figures have not been backdated to reflect the updates to England C&I estimates. These will be updated alongside the generation of the 2016 Waste Statistics Regulation Return in June 2018 and revisions will be published in this release once the figures have been approved by Eurostat. In the interim, caution should be exercised when interpreting the proportions of waste generated by each sector.

UK and England tonnage estimates for generation and final treatment of all waste have been calculated in order to report against the EC Waste Statistics Regulation return for 2014. In line with the Regulation requirements, total waste generation is split by material and NACE economic activity responsible for generating it. In line with the Regulation requirements, total waste generation is split by material and NACE economic activity responsible for generating it. Users should be aware that 'total waste' includes all waste produced by the economy and is therefore much broader than frequently analysed subsets such as 'municipal waste' or 'Waste from Households'. Users should also consider the varying natures and impacts of different waste materials included within total waste.

Figure 3. Waste generation split by source, UK, 2014
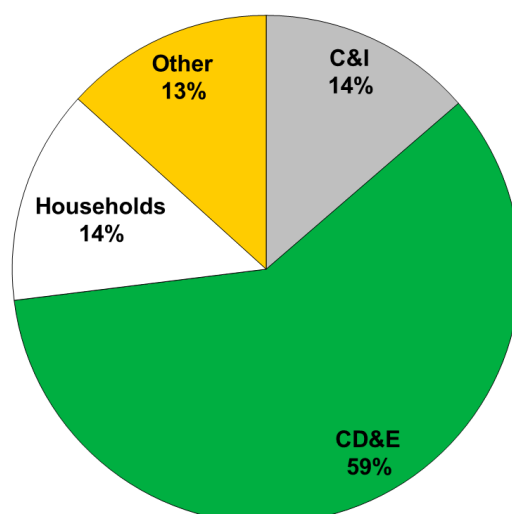
Source: Defra Statistics

Percentages may not sum to exactly 100% due to rounding
C,D&E figures include excavation waste and dredging
Household figures are based on the WfH measure, but also include End of Life Vehicles

Construction, demolition and excavation (CD&E; including dredging) generated over half (59%) of total UK waste in 2014. The remaining waste generation was fairly evenly split between Commercial and Industrial (C&I), 'Households' and 'Other' activities. Each of these categories accounted for between 13% and 14% of total waste generation. In England, the share of CD&E was higher at 64% of the total. The 'Households' contribution was similar, with C&I and 'Other' slightly lower than the UK.

Note: The 'Households' measure quoted here is the WfH measure (used for household recycling reporting against the Waste Framework Directive) with an adjustment made to account for end of life vehicles.

Table 7. Waste generation tonnages split by responsible economic activity, UK and England, 2012-14

		Commercial & industrial	Construction, demolition & excavation (includes dredging)	Households	Other	Total
UK	**2012**	32.8	108.8	27.4	24.7	193.8
UK	**2014**	27.7	120.4	27.7	26.9	202.8
UK	**Change**	-15.6%	10.6%	1.2%	9.0%	4.6%
England	**2012**	24.2	93.8	22.7	16.3	157.1
England	**2014**	19.8	107.6	23.2	17.1	167.6
England	**Change**	-18.1%	14.6%	1.8%	4.8%	6.7%

Source: Defra Statistics

Includes waste that may go for export
'Other' consists of waste from mining, agriculture, forestry and fishing
Percentages calculated from unrounded figures; Breakdowns may not exactly sum to totals due to rounding

The UK generated 202.8 million tonnes of total waste in 2014. This represents an increase of 4.6% from 2012. England generated 167.6 million tonnes of total waste in 2014, an increase of 6.7% from 2012 and 83% of the UK total.

Table 8. All waste at final treatment, split by method, UK and England, 2012-14 - tonnages

		Energy recovery	Incinerat--ion	Recycling and other recovery	Backfilli--ng	Deposit onto or into land (landfill)	Land treatment and release into water bodies	Total
2012	UK	1.6	6.1	84.4	14.1	48.5	38.4	**193.1**
2014	UK	1.9	7.6	91.1	21.7	48.2	38.5	**209.0**
Change	UK	22.3%	23.8%	7.9%	53.8%	-0.7%	0.2%	**8.2%**
2012	England	1.2	6.0	76.5	12.0	41.3	26.9	**164.0**
2014	England	1.3	7.3	81.4	19.1	41.3	27.2	**177.7**
Change	England	4.7%	22.0%	6.5%	59.2%	-0.1%	1.1%	**8.4%**

Source: Defra Statistics

Includes waste that may have been imported
'Energy recovery' refers to facilities where the main purpose is generation of energy, and formal R1 accreditation has been awarded
'Recycling and other recovery' refers to the Eurostat category 'Recovery other than energy recovery -
Except backfilling'. See Methodology section for more details.
Percentages calculated from unrounded figures; Breakdowns may not exactly sum to totals due to rounding

'Recycling and other recovery' is the most common final waste treatment type in the UK in 2014, accounting for 91.1 million tonnes (43.6%) in 2014. Landfill is the second most used waste treatment in the UK, with 23.1% (48.2 million tonnes) of waste disposed of at landfill in 2014.

Backfilling showed the largest percentage change in tonnage, increasing by 53.8% from 14.1 million tonnes in 2012 to 21.7 million tonnes in 2014.

Figure 4. Waste generation tonnage split by waste material, UK, 2014
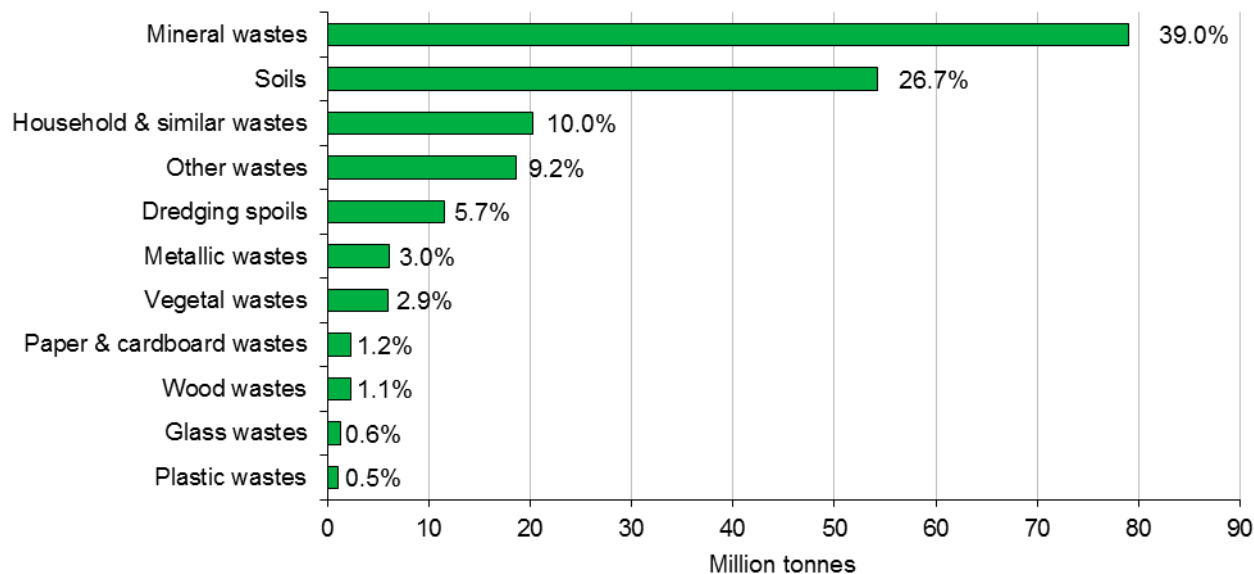
Source: Defra Statistics

Includes waste that may go on to be exported
Any type of waste can be generated by any economic activity. E.g. 'Household & similar wastes' are not solely generated by 'Households'.
Percentages may not sum to exactly 100% due to rounding
A more detailed material split is available in the accompanying dataset

In 2014, the largest tonnages of waste (79.0 million) were 'Mineral Wastes', followed by 'Soils' (54.2) million tonnes. These two categories represent 39% and 27% respectively of all waste generated in the UK and together make up around two thirds (66%) of the total.

Note: the chart above and table below split all waste generated in the UK by waste materials, which are categorised by European Waste Catalogue (EWC) codes. Care should be taken when interpreting this information as some categories, e.g. 'Household & similar wastes' will include mixtures of waste. As a result, an individual material stream such as 'Plastic wastes' will not represent total tonnages of plastic waste, because there will also be some in mixed waste streams (e.g. black bag waste) that are categorised as 'Household and similar wastes'.

Table 9. Final treatment methods for waste, split by material, UK, 2014 - proportion of tonnages

% proportion of treatment type tonnages

Waste material	Energy recovery	Incineration	Recycling and other recovery	Backfilling	Deposit onto or into land (landfill)	Land treatment and release into water bodies
Metallic wastes	0%	0%	16%	0%	0%	0%
Glass wastes	0%	0%	2%	0%	0%	0%
Paper & cardboard wastes	0%	0%	5%	0%	0%	0%
Plastic wastes	0%	0%	3%	0%	0%	0%
Wood wastes	32%	2%	2%	0%	0%	0%
Vegetal wastes	0%	0%	5%	0%	0%	0%
Household & similar wastes	1%	81%	1%	0%	17%	0%
Mineral wastes	0%	0%	50%	6%	7%	68%
Soils	0%	0%	10%	91%	45%	0%
Dredging spoils	0%	0%	0%	0%	0%	32%
Other wastes	66%	17%	7%	2%	31%	0%
All wastes	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Waste Statistics Regulation return

Includes waste that may have been imported
'Energy recovery' refers to facilities where the main purpose is generation of energy, and formal R1 accreditation has been awarded
'Recycling and other recovery' refers to the Eurostat category 'Recovery other than energy recovery - Except backfilling'. See Methodology section for more details
'Other wastes' include residues following physical treatment and incineration of waste, residues from industrial processes and sewage
Percentages calculated from unrounded figures

The majority (81%) of incinerated waste is 'Household & similar wastes'. Energy recovery has a different profile with almost a third (32%) of the waste accepted is wood, with the remainder being a variety of materials all bundled under 'Other wastes'.

The vast majority (91%) of 'Backfilling' is 'Soils', with 'Mineral wastes' being the next biggest contributor at 6%.

Soils make up 45% and 'Mineral wastes' 7% of the tonnage received by landfills, demonstrating that it is not just residual waste using this outlet. The two other main components of landfilled waste are 'Household & similar wastes' (17% of the total) and 'Other wastes' (31%). The 'Other wastes' category includes 'Sorting residues' which will typically be mixed wastes following processing to remove recyclates.

Half (50%) of waste recorded as 'Recycling and other recovery' is 'Mineral wastes'. This is typically construction wastes such as bricks, stone and road planings that are converted into usable aggregates. 'Metallic wastes' is the second biggest material group at 16%, partially a reflection of their high value. The remaining tonnage going to 'Recycling and other recovery' consists of a variety of material types that each make a small contribution.

A more detailed material split along with 2010 and 2012 data and England only figures are available in the accompanying dataset.

Note: Generation and final treatment are at opposite ends of what can be a complex and multiple staged treatment process. Different methodology is used to estimate generation and final treatment figures. Furthermore, final treatment excludes some treatment processes identified as predominantly intermediate, which nevertheless may effectively be the final treatment for some waste. As a result, there is no direct reconciliation between generation and final treatment of total waste. Users should also be aware that in most cases it is not possible to estimate the final treatment of waste generated by specific economic activities. Users should take care to understand the material and economic activity categories. Further information is available in the [Methodology](#) *and* [Useful Links](#) *sections.*

7 Waste Infrastructure (not updated)

Defra collates summaries from the environment agencies of all four UK countries on facilities authorised by mandatory permit or license. Capacity is based on the level authorised by permit or license with the exception of some small scale incinerators where the permit did not feature capacity. In these cases, operational capacity is used. Please see the [Methodology section](#) for more detail.

Table 10. Number and capacity of permitted final treatment facilities, UK and England, 2014

Facility type	Measure	UK	England
Energy recovery	Number of facilities	29	13
	of which dedicated to the processing of municipal solid waste	5	4
	Capacity (thousand tonnes/year)	4,862	2,803
	of which dedicated to the processing of MSW	2,317	1,967
Incineration	Number of facilities	83	60
	Capacity (thousand tonnes/year)	9,859	9,040
Recovery other than energy recovery (includes backfilling)	Number of facilities	2,660	1,699
	Capacity	:	:
Deposit onto or into land (landfill)	Number of facilities (includes closed facilities)	608	493
	Rest (remaining) capacity (thousand m³)	602,223	484,370

Source: Defra Statistics
: = Not available
Energy recovery refers to facilities where the main purpose is generation of energy and formal R1 accreditation has been awarded
Excludes: Recovery facilities operating solely under a waste exemption; Facilities permitted only for intermediate treatment (including most anaerobic digesters); Facilities that were formally closed throughout 2014 (except landfills).

DATA USES, METHODOLOGY, GLOSSARY, FEEDBACK AND REFERENCES

User Statement

Data on waste generation and management is collected to monitor policy effectiveness, particularly the commitments in the [Waste Review](#) and to support policy development. The data also meet legislative reporting targets on recycling targets set out in the Waste Framework Directive (2008/98/EC), the Packaging and Packaging waste Directive (94/62 EC) and supply data for the Waste Statistics Regulation (2002/2150/EC). The data are used extensively by local and central government, the waste industry, academia and the public.

Feedback

We welcome feedback on the data from all users including how and why the data is used. This helps us to understand the value of the statistics to external users. Please use the contact details at the bottom of the first page of this notice.

Methodology

Waste from Households (WfH)

UK estimates for WfH have been calculated in accordance with the EC Waste Framework Directive. The WfH measure has been chosen as the UK interpretation of the EC term 'household waste', which they define as "waste generated by households". Waste management and recycling is a devolved matter and different countries have used their own data to adopt to the EU definition. The statistics are the best estimates that provide the conformity to the EU definition.

WfH includes waste from:
- Regular household collection
- Civic amenity sites
- 'Bulky waste'
- 'Other household waste'.
-
WfH excludes waste from:
- Street cleaning/sweeping
- Gully emptying
- Separately collected healthcare waste
- Soil, Rubble, Plasterboard & Asbestos waste

All UK countries base the WfH measure on output from the WasteDataFlow database, which records Local Authority Collected Waste. Whilst the general approach and principles of the calculation is consistent across UK countries, there may be some differences in the specifics of the calculations as there are some differences in the structure and wording of some of the questions.

Users should be aware that individual UK countries other than England publish their own independent national household recycling estimates other than WfH recycling. Local Authorities in England may also use an alternative measure.

There is a change this year in how **metal recovered and recycled after incineration** of waste is treated and reported, with the tonnage of incinerator bottom ash (IBA) metal now included within the recycling total for authorities, instead of being reported as 'recovery. The amount varies between authorities depending upon the amount of the residual waste being incinerated and the metal content of the residual waste.

Inclusion of IBA metal has been facilitated through the new Q100 reporting structure for waste treatment which all local authorities have been using since April 2015. This has provided the opportunity for more complete recording of waste treatment, including outputs from incineration. The majority of local authorities are reporting more fully, but not in all cases. While reporting and

associated quality assurance are developing and being refined, the figures need to be regarded as more indicative until it becomes fully established and embedded.

This methodological change for IBA metal has been applied to all UK countries from 2015. England data only includes IBA metal from April 2015, when Q100 came into full use by all local authorities. For Wales, Q100 was introduced in 2012 and Wales figures for 2012-2014 have been revised in this release to remove IBA metals, in line with the other UK countries. Northern Ireland did not have any incinerators that burnt local authority collected municipal waste in these years and so their figures are unaffected by the change.

At an overall UK level this change in methodology raised the recycling rate for 2016 by around 0.6 percentage points (equivalent to 160 thousand tonnes).

Biodegradable municipal waste (BMW) to landfill

UK estimates for BMW to landfill have been calculated in accordance with the Landfill Directive and a consistent approach is used by all UK countries. BMW is the fraction of municipal waste that will degrade within a landfill site. Amongst other materials it will include food waste, green waste, cardboard and paper. Tonnage data is collated from mandatory returns made for landfills to the Environment Agencies of each of the four UK countries. Tonnages are split by European Waste Catalogue (EWC) categorisation codes, as determined by landfill operators. For this reporting obligation, the UK countries have agreed a set of EWC codes to represent 'municipal waste'. Scotland applies a factor to EWC code 19 12 12 on the basis that only a proportion is 'municipal', however other countries do not do this. Scotland also includes one additional EWC code. Factors on the proportion of waste that is biodegradable are applied to each code. Countries use broadly similar, but non-identical sets of factors. The factors are multiplied by the tonnages and then summed to give final country level estimates for BMW to landfill. New factors were adopted by England in 2014 for the two EWC codes that dominate Municipal Waste, based upon a commissioned study of landfill waste composition (available here). All England figures published here have been produced using these new factors. Wales adopted these new factors from 2013 and have now backdated their estimates for 2010-2012.

Packaging waste

UK estimates for recovery/recycling from packaging have been compiled in accordance with the packaging and packaging waste directive reporting requirements. All estimates are made at a UK level and cannot be broken down into individual UK countries. Estimates of packaging waste arisings ('placed on the market') have been updated based on research done since 2014. The arisings figures exclude exports, but include filled and unfilled imports. Because these estimates are recorded at point of manufacture, materials are all separately identifiable and therefore may appear large in comparison to material type estimates based on collected waste (such as those in the Waste Statistics Regulation return), where a substantial proportion of packaging waste will be captured under mixed waste categories.

Estimates of tonnages recycled are based on Packaging Recovery Notes (PRNs) and Packaging Export Recovery Notes (PERNs) reported to the Environment Agency and held in the National Packaging Waste Database (NPWD). PRNs and PERNs are sold by accredited reprocessors and exporters to packaging producers. All packaging producers that have a turnover of at least £2m and handle at least 50 tonnes of packaging per year are obligated to obtain sufficient PRNs/PERNs to evidence that they meet an individual target. The targets are set by Defra to ensure that the aggregated obligation for all producers is sufficient to ensure the UK meets the Directive targets. The tonnage recorded against 'Total (for recovery)' is incinerated in facilities that have either been granted formal R1 accreditation (an EC standard on efficiency factors) by the relevant Environment Agency, or meet the Directive description of 'Energy from Waste': "the use of combustible packaging waste as a means to generate energy through direct incineration with or without other waste but with recovery of the heat".

Recovery rate from non-hazardous construction and demolition (C&D) waste

UK estimates for recovery rate from non-hazardous C&D waste have been calculated in accordance with the EC Waste Framework Directive. Accurately quantifying C&D waste is challenging and whilst the absolute tonnage figures are subject to a relatively high level of uncertainty, sensitivity analysis suggests there is not a significant impact on the final recovery rate. Whilst efforts were made to synchronise approaches across UK countries, methodologies are not identical. The England methodology was originally devised in conjunction with industry. Estimates are dependent on several key assumptions relating to the role of permitted sites, simple registrations and the volume of aggregate production. The England methodology has recently been reviewed and improved. All figures in this publication have been backdated to use the revised methodology. Within the UK, some C&D waste is transferred across borders for treatment, primarily into England. This may slightly inflate the England recovery rate and deflate rates for Devolved Administrations.

Waste from commercial and industrial (C&I) activities

UK estimates for waste generation from C&I sectors have been compiled in accordance with the Waste Statistics Regulation reporting requirements. Data sources and detailed approaches may differ slightly between UK countries, but overarching principles will be consistent.

For the purpose of this statistics release, C&I is defined as a specific collection of economic activities described by NACE ("statistical classification of economic activities in the European Community"). Those considered to be C&I here are: C, D, E36, E37, E39 and G-U (excluding G46.7.7). (For details see http://ec.europa.eu/competition/mergers/cases/index/nace_all.html).

While considerable effort has been spent reviewing the methodology for England, this remains a very challenging area. Data revisions published in December 2016 identified outstanding issues with the original 'Reconcile' methodology. Defra took this opportunity to develop a further modified version alongside industry experts, which was felt to improve the transparency of the methodology and better reflect current waste management processes. Previously published estimates for 2010 and 2012-2014 for England have been substantially revised and England estimates for 2011, 2015 and 2016 have been produced using the same methodology. The latest methodology has been developed with considerable input from industry experts and sense-checked against alternative data sources. As the historical data has been revised using the same methodology, some conclusions can be drawn from changes between years; however caution should still be exercised. Full details of the revised methodology are available here.

Note: The historical waste generation and waste treatment figures produced in line with WStatR reporting requirements, and which use these C&I estimates, will be revised in line with the new methodology alongside the production of the 2016 figures in June 2018. All C&I waste arisings figures published in this release will remain provisional until the figures have been approved by Eurostat following submission of the 2016 figures and backdated revisions to 2010, 2012 and 2014 data.

Waste Statistics Regulation (WStatR) – Total waste generation, final treatment of total waste and waste infrastructure

UK estimates for generation and final treatment of total waste and waste infrastructure have been calculated in accordance with the EC Waste Statistics Regulation. The final datasets are built up from a large number of estimation processes and draw upon data from WasteDataFlow, Environment Agency (EA) permitted site returns and many other sources. Whilst efforts are made to synchronise approaches across UK countries, methodological differences do exist for construction, demolition & excavation (CD&E) and C&I waste. All sludges and dredging spoils have been reported dry weight (requiring conversion in some cases). The estimates are primarily designed for reporting at a UK level rather than comparison between UK countries.

The CD&E figures include excavation waste and dredging spoils that are out of scope for the recovery rate shown in Section 3 of this release. 'Household' figures are based on the same WfH measure shown in Section 1, but in addition include an estimate for End of Life Vehicles in order to meet the reporting requirements of the EC Waste Statistics Regulation. Where specific materials (such as glass and plastic) are reported, they represent separately identifiable materials. Residual waste categories will also include some of these materials in a less usable form. Estimates for tonnages received by landfill here are based on EA permitted site returns and differ from estimates published in HMRC Landfill Tax Bulletins which are sourced from landfill tax receipts.

Treatment categories are specified in the Eurostat Manual on Waste Statistics.

Recovery means 'any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function.' **Recycling** is a subset of recovery and means 'any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material (e.g. composting, anaerobic digestion etc.) but excludes the use as fuels and the use for backfilling operations.'

Energy recovery refers to facilities where the main purpose is generation of energy, and formal R1 accreditation has been awarded. Only a subset of these are dedicated to the processing of 'municipal waste'. Facilities without formal R1 accreditation are reported as 'Incineration' rather than 'Energy Recovery'.

Backfilling means 'a recovery operation where waste is used in excavated areas (such as underground mines, gravel pits) for the purpose of slope reclamation or safety or for engineering purposes in landscaping and where the waste is substituting other non-waste materials which would have had to be used for the purpose.'

Disposal means 'any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy' (e.g. landfill, incineration).

Waste generation and treatment are estimated by separate processes and use multiple different data sources based largely administrative data sources. Elements of the calculations will use assumptions where there are data gaps so the figures for generation and treatment will not exactly correlate.

Both generation and final treatment of waste can also be split into hazardous and non-hazardous wastes. The full datasets for 2010-2014, for England and UK, can be found in the accompanying dataset.

Information on **infrastructure** is based on mandatory reporting of permitted and licensed sites for waste treatment which is collated by the environment agencies in each of the countries in the UK. Categories are defined according to EC guidance. The 'Energy Recovery' category only includes facilities where the primary function is generating energy (e.g. cement kilns) and Municipal Waste Incinerators that have applied for and been granted formal R1 accreditation (an EC standard on efficiency factors) by the relevant Environment Agency. Small scale 'LAPPC' (Local Authority Pollution Prevention and Control) incinerators in England have not been included as sufficiently detailed data is not available.

The data excludes facilities that were formally *closed* throughout 2014 (except landfills) but may include facilities which despite being permitted were non-*operational* in 2014. Facilities permitted only for treatment operations that are identified as intermediate (which includes most anaerobic digesters) are excluded.

Recovery operations covered by simple exemptions or simple registrations are not included. These operations are classed as low risk or low volume and operators do not have to report activity to Environment Agencies. The permitted capacity of Energy Recovery and Incineration facilities includes municipal and C&I waste, and will be higher than the actual volume of waste treated (shown in Section 6 of this release).

Revisions Policy

Defra will provide information about any revisions made to published information in this statistics release and the associated datasets. Revisions could occur for various reasons, including when data from third parties is unavailable or provisional at the time of publishing or if there are subsequent methodological improvements or refinements.

Useful links

Scottish Government environment statistics	*http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment*
Welsh Government statistics	*http://wales.gov.uk/statistics-and-research/?lang=en*
Northern Ireland Department of Agriculture, Environment and Rural Affairs	*https://www.daera-ni.gov.uk/articles/northern-ireland-local-authority-collected-municipal-waste-management-statistics*
Eurostat	http://ec.europa.eu/eurostat
Environment Agency	*https://www.gov.uk/government/organisations/environment-agency*
Waste Data Interrogator	https://data.gov.uk/dataset/waste-data-interrogator-2016
Wastedataflow portal	*http://www.wastedataflow.org/login.aspx?ReturnUrl=%2fnews%2fwelcome.aspx*
Estimates of Commercial and Industrial Waste Generation in England ('Reconcile' project)	*http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=19118&FromSearch=Y&Publisher=1&SearchText=ev0804&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description*
Feb 2018 England C&I Methodology revisions paper	*https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/683007/England_CommercialandIndustrial_WasteArisings_Methodology_Revisions_Feb2018_FINAL.pdf*
Analysis of biodegradability of residual waste project	*http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=1&ProjectID=19389*
Manual on Waste Statistics	*http://ec.europa.eu/eurostat/documents/3859598/5915865/KS-RA-10-011-EN.PDF/39cda22f-3449-4cf6-98a6-280193bf770c*
EWC-STAT (used for Waste Statistics Regulation waste types)	*http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:253:0002:0041:EN:PDF*
List of NACE codes (used for Waste Statistics Regulation economic activities)	*http://ec.europa.eu/competition/mergers/cases/index/nace_all.html*
List of Waste (European Waste Catalogue codes)	*http://ec.europa.eu/environment/waste/framework/list.htm*
National Packaging Waste Database	*http://npwd.environment-agency.gov.uk/*