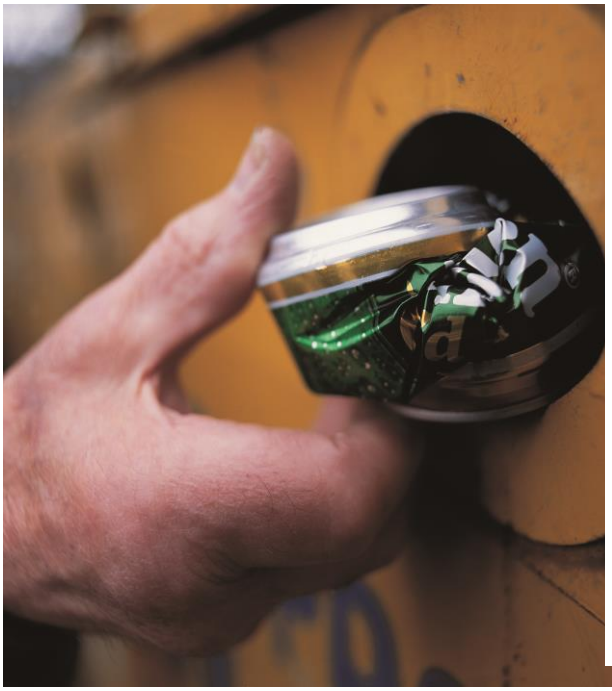
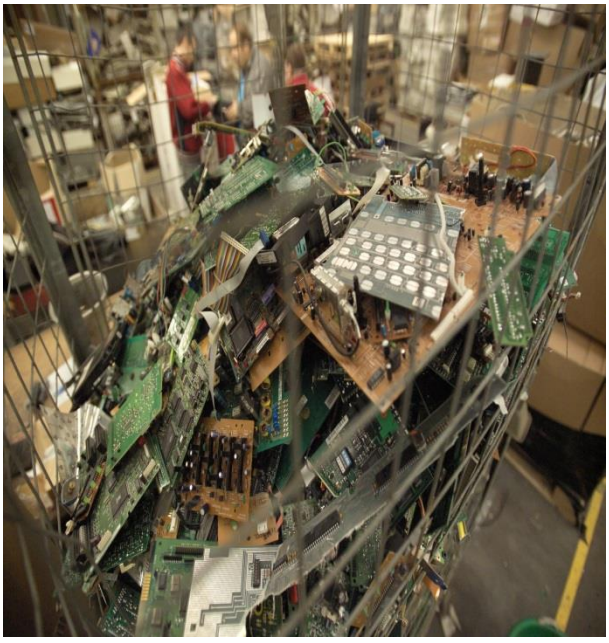
Department
for Environment
Food & Rural Affairs



Digest of Waste and Resource Statistics – 2017 Edition

March 2017



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www.gov.uk/government/collections/waste-and-recycling-statistics

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Enviro.statistics@defra.gsi.gov.uk

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Contents

Foreword

This is the third edition of the Digest. The format and many of the subjects covered are the same as for previous editions, but there is also some new content.

Waste and resource are subjects for which there is a wealth of published data and it can be challenging to readily find the data you want and of interest. The aim of this Digest is to help by bringing together a wide range of key statistics on waste and resource into one publication.

The Digest is aimed at a wide audience, including policymakers, analysts and specialists in the Defra Network, Environment Agency, WRAP, other organisations, the waste sector, academia, other researchers and consultancies.

As ever the authors are indebted to all those who helped develop this edition by suggesting and providing material and commenting on the drafts.

Introduction

The Digest of Waste and Resource Statistics is a compendium of statistics on a range of waste and resource areas, based on data published mainly by Defra, WRAP, the Environment Agency, Office for National Statistics and Eurostat. They are collated in this Digest for ease of use.

The various sets of data are not all for the same time periods but the most recent available data has been used.

The Digest starts with resource use in the UK – this looks at the physical flow of available materials through the economy, followed by sections looking at waste.

Official Statistics

These statistics have been produced to the high professional standards set out in the Code of Practice for Official Statistics, which sets out eight principles including meeting user needs, impartiality and objectivity, integrity, sound methods and assured quality, frankness and accessibility.

More information on the Official Statistics Code of Practice can be found at www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html.

Waste Prevention Metrics

Included in the Digest are 7 data sets which have been chosen as being suitable indicators, taken collectively, for monitoring waste prevention. These are:

- Raw Material Consumption per unit of GDP. (Page 16)
- Waste arising per unit of gross value added for the commercial and industrial sector. (Page 18)
- Waste arisings by sector (construction and demolition, commerce, industry, household). (Page 23)
- Waste from households. (Page 26)
- Hazardous waste arisings by sector. (Page 30)
- Gross value added of the repair and reuse sector. (Page 53)
- GHG emissions from landfill. (Page 69)

These items have been individually labelled ‘waste prevention metric’ within the Digest.

Developing metrics to serve as indicators to monitor progress on waste prevention is a key part of the Waste Prevention Programme for England. More information is available through the link below:

www.gov.uk/government/publications/waste-prevention-programme-for-england

Summary

Resource Use: (Section 1)

- Domestic Material Consumption measures the amount of materials used in the economy.
- In 2014, Domestic Material Consumption was 563 million tonnes – a slight increase from 2013 this was driven by increases in the extraction of non-metallic minerals such as limestone and gypsum.
- In 2014, Domestic Material Consumption (excluding fossil fuels) represented 8.8 tonnes per capita.

Waste from Households: (Section 2)

- Waste arising from households in the UK decreased by 0.4 per cent between 2014 and 2015; the 2015 tonnage is a decrease of 1.0 per cent since 2010.

Food Waste: (Section 5)

- About 10 million tonnes of food and drink was wasted in the food chain in 2013. This is equivalent to around one quarter of the 41 million tonnes of food that is bought annually in the UK.

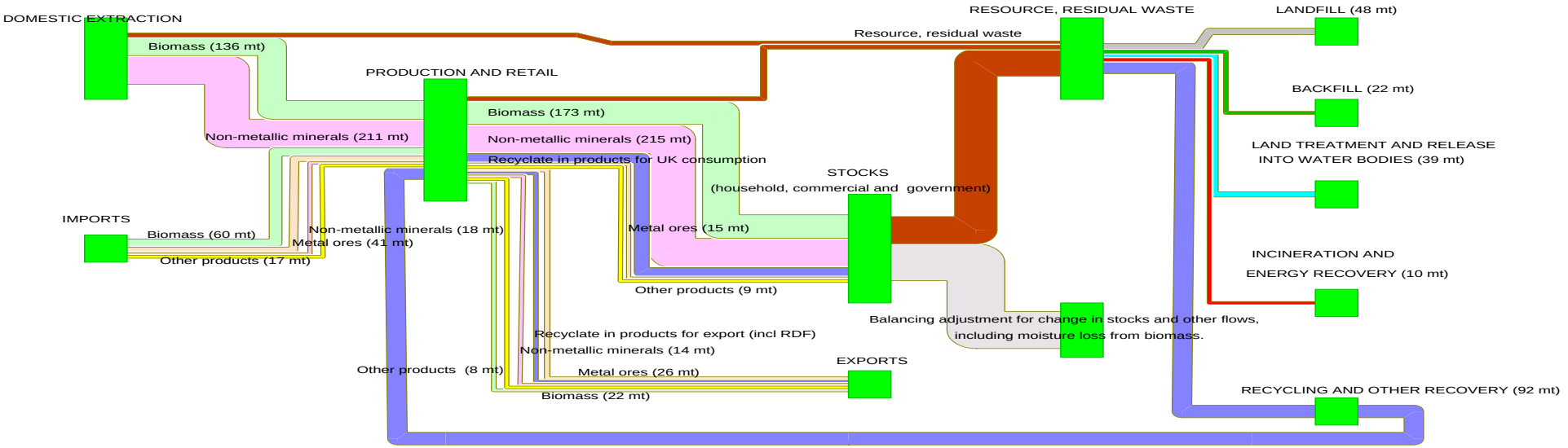
Fly tipping: (Section 9)

- For the 2015/16 year, local authorities dealt with 936 thousand incidents of fly-tipping in England, ranging in size from single black bag to tipper lorry load.
- 67 per cent of all fly-tips in England in 2015/16, 628 thousand incidents, were household waste.
- The cost of clearance of fly tipping incidents was £49.8 million, the most common size being equivalent to a ‘small van load’.

Section 1: Resource flows, efficiency of resource use, electricity from bioenergy

Resource flows

Figure 1.1: Sankey diagram of flow of resource in the UK, 2014, (excluding fossil fuels and energy carriers).



- Figure 1.1 depicts the flow of material resource, including waste, in the UK in one year (2014).
- A Sankey diagram approach is helpful in depicting the 'circular economy' and can quickly illustrate the relative sizes of throughput of resource and the proportion recovered, including recycling. Broadly speaking, the flows are from left to right, apart from 'recycling, other recovery' which flows clockwise.
- Some processes, such as metal re-melt, allow recycling many times in a closed loop, whilst others, such as formation of glass aggregate, recycle materials once to a lower value product.

Notes: Data on landfill, backfill, incineration, land treatment, recycling and other recovery are from Eurostat. Please note that the 'pipes' are not all to scale
The data for domestic extraction, imports and exports is drawn from the material flows within the Environmental Accounts published by ONS
Source: www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2016

UK Domestic Extraction

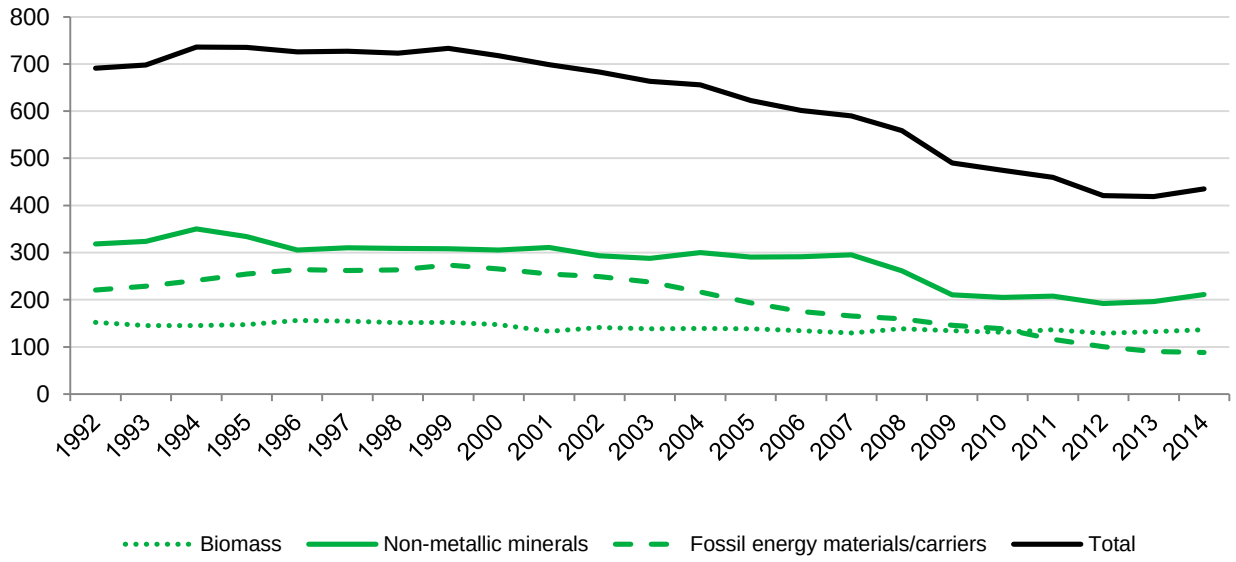
Table 1.1: UK Domestic Extraction, 2005 – 2014.

Million metric tonnes

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Biomass	138	134	130	138	134	131	136	129	132	136
Metal Ores	0	0	0	0	0	0	0	0	0	0
Non-metallic minerals	291	291	295	261	210	205	208	192	196	211
Fossil energy materials/carriers	193	175	165	159	146	139	116	100	90	88
Total	**622**	**601**	**591**	**559**	**490**	**475**	**460**	**421**	**419**	**435**

Figure 1.2: UK Domestic Extraction 1992 – 2014.

Million metric tonnes



- Domestic Extraction shows the amount of resources from the natural environment that are available for use in the economy.
- Since 2000, the quantity of materials extracted for use in the UK has gradually declined and was 563 million metric tonnes in 2014, a 3.8 per cent increase from 2013 (419 million tonnes), this was driven by increases in the extraction of non-metallic minerals such as limestone and gypsum.
- This represented 6.7 tonnes per capita (per person) in 2014.

Notes: Metal ores are not included on the chart as the quantity extracted is small
Since the publication of UK Environmental Accounts 2015, there have been revisions and updates, largely due to revisions in data sources and improvements to methodology

Source: Department for Environment, Food and Rural Affairs; Food and Agriculture Organization of the United Nations; Eurostat; European Forest Institute; Kentish Cobnuts Association; British Geological Survey, www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2016#material-flows
Figure 9.1

UK Imports and Exports

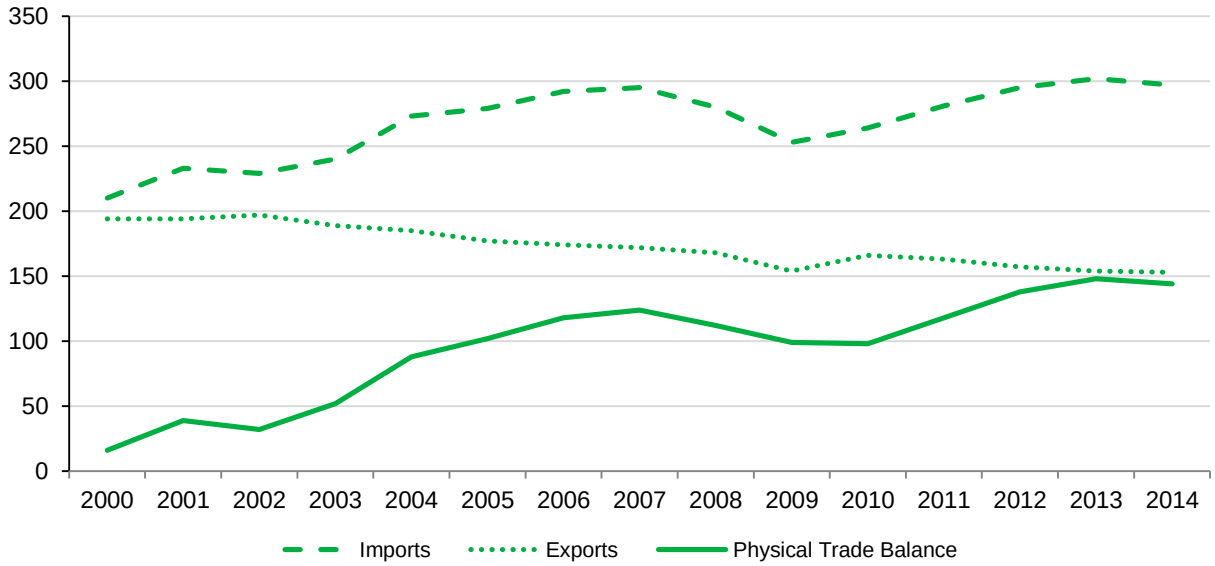
Table 1.2: UK Imports, Exports and Physical Trade Balance 2005 – 2014.

Million metric tonnes

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Imports	**292**	**295**	**280**	**253**	**264**	**281**	**295**	**302**	**297**
Biomass	54	54	52	49	51	50	52	58	60
Metal ores	45	48	43	27	33	33	34	38	41
Non-metallic minerals	16	17	16	13	15	16	14	15	18
Fossil energy	159	159	152	149	148	165	188	175	162
Exports	**174**	**172**	**168**	**154**	**166**	**163**	**157**	**154**	**153**
Biomass	21	21	22	20	22	22	22	21	22
Metal ores	27	27	27	21	24	25	24	25	26
Non-metallic minerals	24	23	21	17	17	17	14	15	14
Fossil energy	94	90	89	88	96	92	89	85	82
Overall Physical Trade Balance	**118**	**124**	**112**	**99**	**98**	**118**	**138**	**148**	**144**

Figure 1.3: UK Imports, Exports and Physical Trade Balance 2000 – 2014.

Million metric tonnes



- Imports and exports show the amount of resources passing through the economy.
- The Physical Trade balance equals Imports minus Exports.
- In 2014, the Physical Trade balance was 144 million tonnes, a decrease from 148 million tonnes in 2013.
- The widening gap between physical imports and exports suggests that the UK is becoming more reliant on the production of materials in other countries.

Notes: Since the publication of UK Environmental Accounts 2015, there have been revisions and updates, largely due to revisions in data sources and improvements to methodology

Source: HM Revenue and Customs, Office for National Statistics
www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2016#material-flows
Figure 9.2

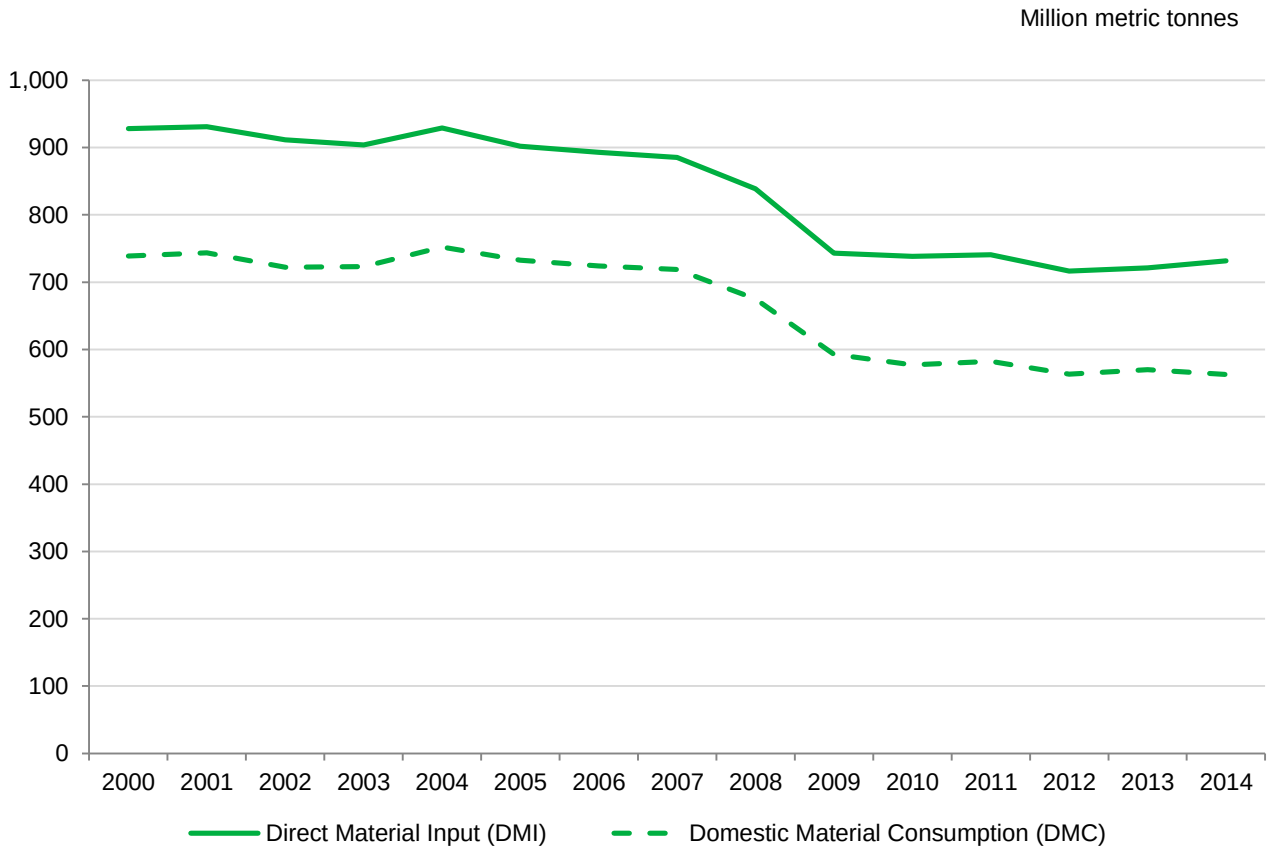
UK Domestic Material Consumption

Table 1.3: UK Direct Material Input (DMI) and Domestic Material Consumption (DMC), 2005 – 2014.

Million metric tonnes

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Direct Material Input (DMI)	902	893	885	839	743	739	741	716	721	731
Domestic Material Consumption (DMC)	**733**	**724**	**719**	**675**	**593**	**577**	**582**	**563**	**570**	**563**
Biomass	174	170	164	171	166	163	167	161	172	173
Metal Ores	17	18	21	16	6	10	9	10	13	15
Non-metallic minerals	288	288	293	259	208	206	209	194	198	205
Fossil fuels	253	248	242	229	213	198	197	198	187	170

Figure 1.4: UK Direct Material Input and Domestic Material Consumption, 2000 to 2014.



- In 2014, DMC was 563 million tonnes, and DMI was 731 million tonnes – a slight increase from 2013. This was caused by an increase in extraction of non-metallic minerals such as limestone and gypsum.
- In 2014, DMI represented 11.4 tonnes per capita and DMC represented 8.8 tonnes per capita.

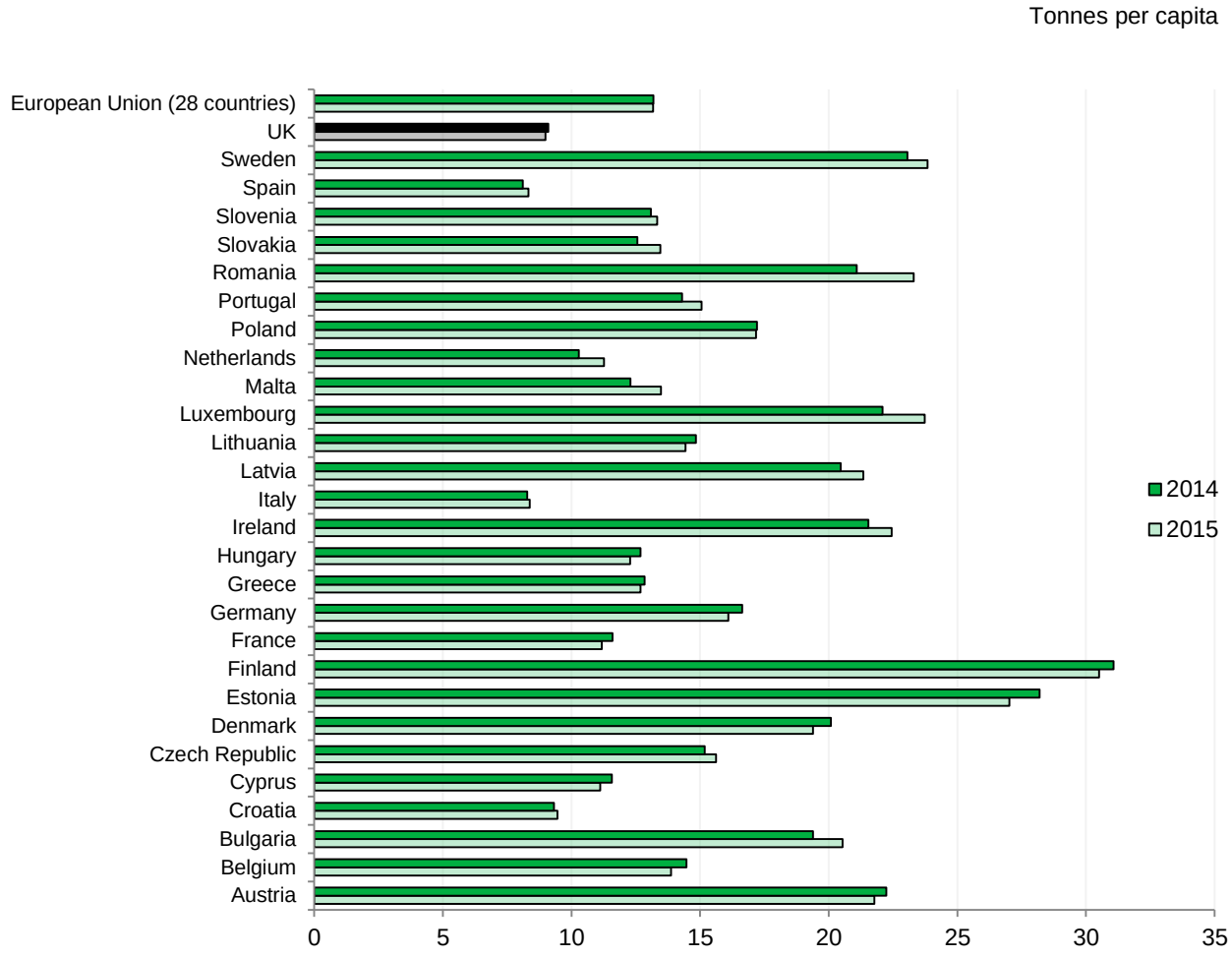
Notes: Direct Material Input (DMI) (Domestic extraction + Imports) measures the total amount of materials available for use in the economy, Domestic Material Consumption (DMC) (Domestic extraction + Imports – Exports) measures the amount of materials used in the economy, and is calculated by subtracting exports from DMI.

Since the publication of UK Environmental Accounts 2015, there have been revisions and updates, largely due to revisions in data sources and improvements to methodology

Source: Office for National Statistics
www.ons.gov.uk/economy/environmentalaccounts/datasets/ukenvironmentalaccountsmaterialflowsaccountunitedkingdom Indicators tab

Domestic Material Consumption (DMC) per capita

Figure 1.5: Domestic Material Consumption per capita, for EU member states, 2014 and 2015[1].



- In 2015, DMC per capita was highest in Finland at 30.5 tonnes per capita
- In 2015, the UK figure of 9.0 tonnes per capita was the third lowest, and below the EU_28 figure of 13.2 tonnes per capita.
- Finland's high level of DMC per capita reflects a low population density and a high resource extraction from woodlands
- **Figures should be treated with some caution, particularly when making comparisons across Member States, as we have not robustly verified the quality of the data from other Member States.**

Notes: [1] **2015 data is provisional**
Source: ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=t2020_rl110

Raw Material Consumption (RMC) and Domestic Material Consumption (DMC), UK

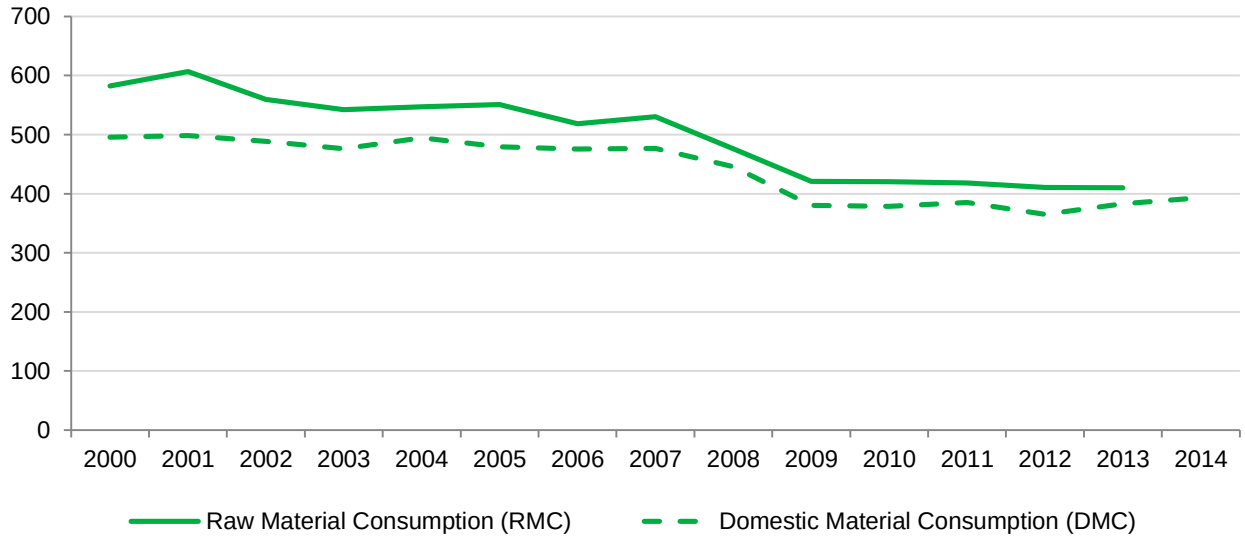
Table 1.4: Raw Material Consumption and Domestic Material Consumption (excluding fossil fuels), UK, 2005 – 2014.

Million metric tonnes

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
DMC	480	476	477	446	380	379	385	365	383	393
RMC	551	518	531	476	421	421	418	410	410	N/A[1]

Figure 1.6: UK Raw Material Consumption and Domestic Material Consumption (excluding fossil fuels), 2000 – 2014.

Million metric tonnes



- In 2013, RMC excluding fossil fuels was 410 million tonnes, which was 7 per cent higher than DMC at 383 million tonnes.
- Estimates peaked in 2001 at 560 million tonnes, which was almost 12 per cent higher than DMC at 498 million.

Notes: A limitation of the DMC indicator is its 'asymmetry': it measures the domestic extraction of material resources in tonnes of gross harvest and ore, whereas the imports are measured according to the weight of goods crossing the boundary independent of how far the imported products have been processed (Eurostat, 2012).

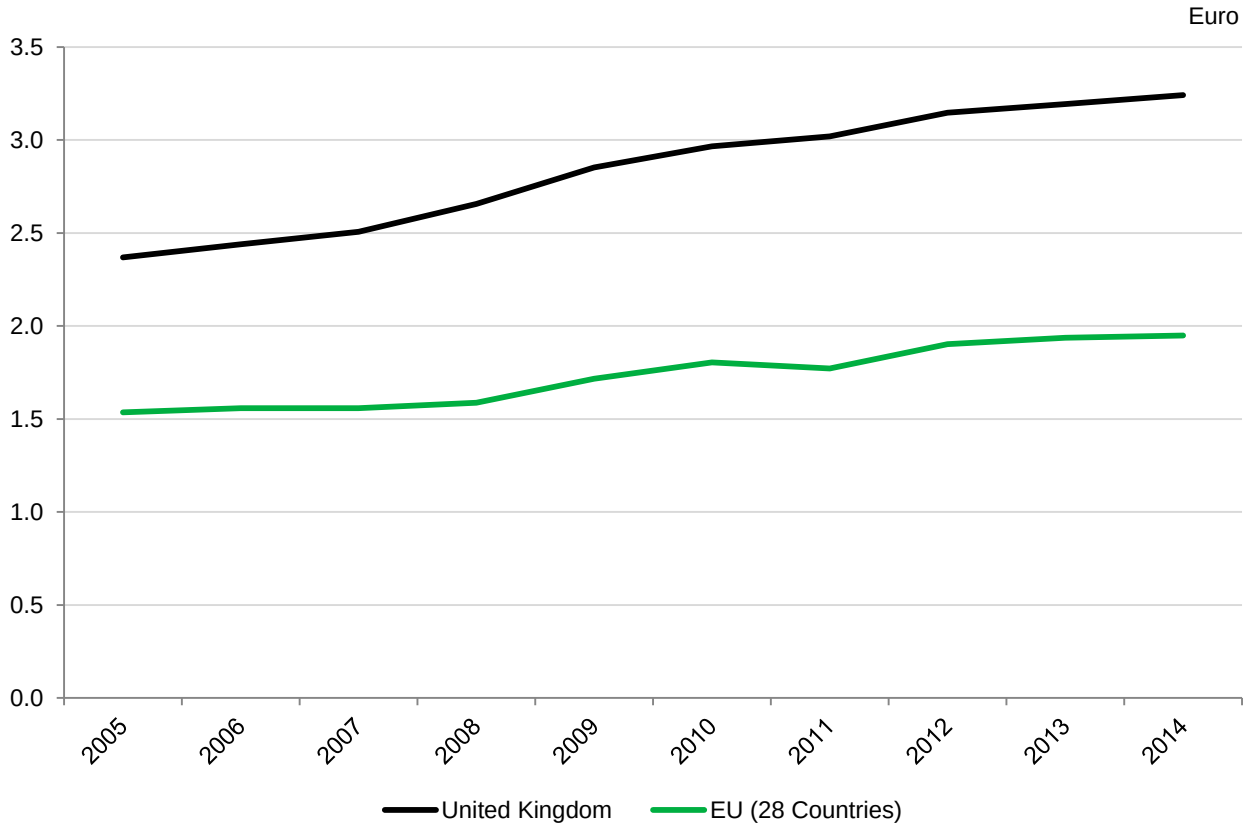
The Raw Material Consumption (RMC) indicator is designed to overcome this asymmetry. In addition to domestic extraction, RMC includes imports expressed or converted into their Raw Material Equivalents (RME) (into equivalents of domestic extraction from the rest of the world to produce the respective goods

[1] - Raw Material Consumption figures for 2014 will be available in Summer 2017
Since the publication of UK Environmental Accounts 2015, there have been revisions and updates, largely due to revisions in data sources and improvements to methodology

Source: ONS
www.ons.gov.uk/economy/environmentalaccounts/articles/ukenvironmentalaccountshowmuchmaterialistheukconsuming/ukenvironmentalaccountshowmuchmaterialistheukconsuming

Growth in the economy and efficiency of resource use

Figure 1.7: Gross Domestic Product per tonne of Domestic Material Consumption, EU_28 and UK, 2005 – 2014.



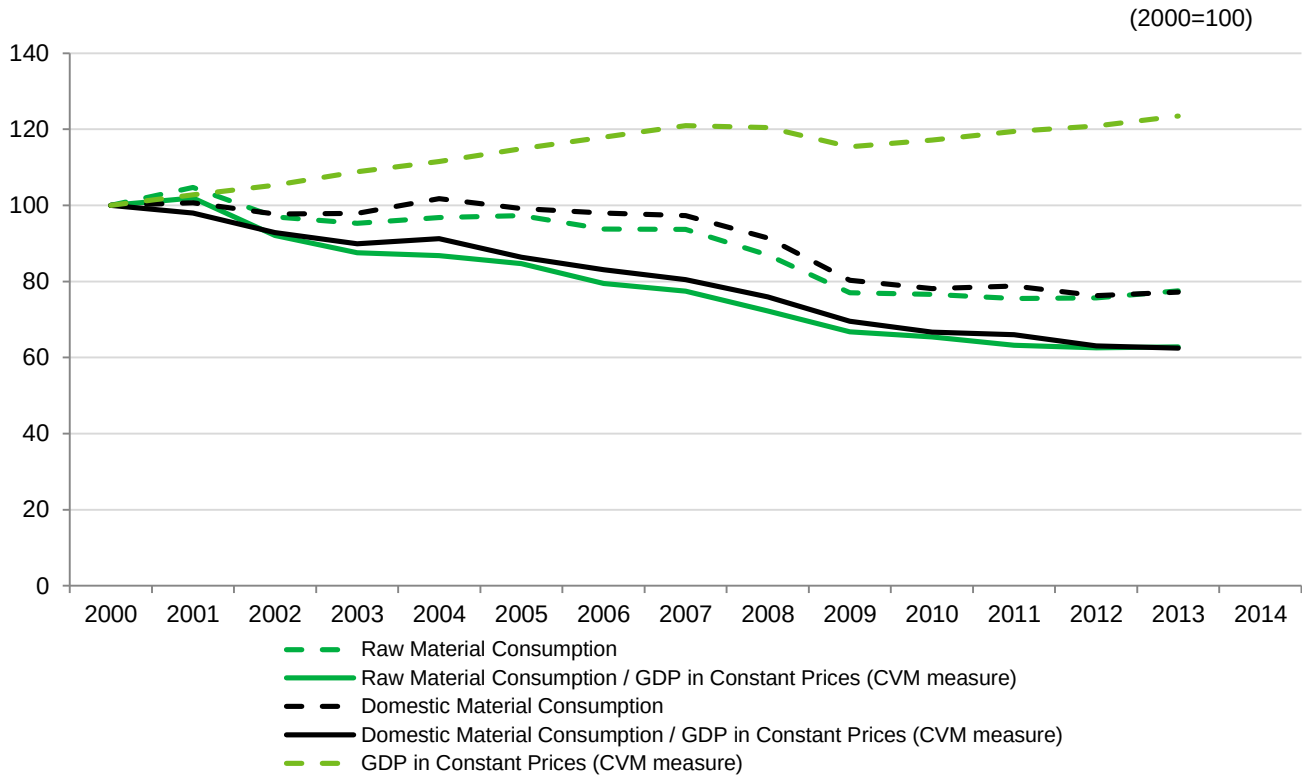
- GDP per tonne of Domestic Material Consumption has shown an increase since 2005 for both the UK and the EU_28. This possibly suggests some weakening in any link between economic growth and DMC.

Notes: Resource productivity is gross domestic product (GDP) divided by domestic material consumption (DMC).

For the calculation of resource productivity Eurostat uses the GDP in units of Euros in chain-linked volumes to the reference year 2010 at 2010 exchange rates

Source: epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdpc100

Figure 1.8: Index values of Raw Material Consumption[1] and Domestic Material Consumption per unit of GDP in constant prices, UK, 2000 - 2014. *(Waste Prevention Metric).*



- Since 2000, raw material resource consumption per unit of GDP has reduced; this suggests that there has been some decoupling of resource use and income generation across the economy.

Notes: GDP given in CVM (Reference Year 2012)

A limitation of the DMC indicator is its 'asymmetry': it measures the domestic extraction of material resources in tonnes of gross harvest and ore, whereas the imports are measured according to the weight of goods crossing the boundary independent of how far the imported products have been processed (Eurostat, 2012).

The Raw Material Consumption (RMC) indicator is designed to overcome this asymmetry. In addition to domestic extraction, RMC includes imports expressed or converted into their Raw Material Equivalents (RME) (into equivalents of domestic extraction from the rest of the world to produce the respective goods

[1] - Raw Material Consumption figures for 2014 will be available in Summer 2017

Since the publication of UK Environmental Accounts 2015, there have been revisions and updates, largely due to revisions in data sources and improvements to methodology

Source: Office for National Statistics: www.ons.gov.uk/economy/grossdomesticproductgdp/timeseries/abmi
www.ons.gov.uk/economy/environmentalaccounts/articles/ukenvironmentalaccountshowmuchmaterialistheukconsuming/ukenvironmentalaccountshowmuchmaterialistheukconsuming
www.ons.gov.uk/economy/environmentalaccounts/bulletins/ukenvironmentalaccounts/2016#material-flows
www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/secondestimateofgdp

Figure 1.9: Raw Material Consumption[1], Domestic Material Consumption and Gross Domestic Product in constant prices, 2000 – 2014.

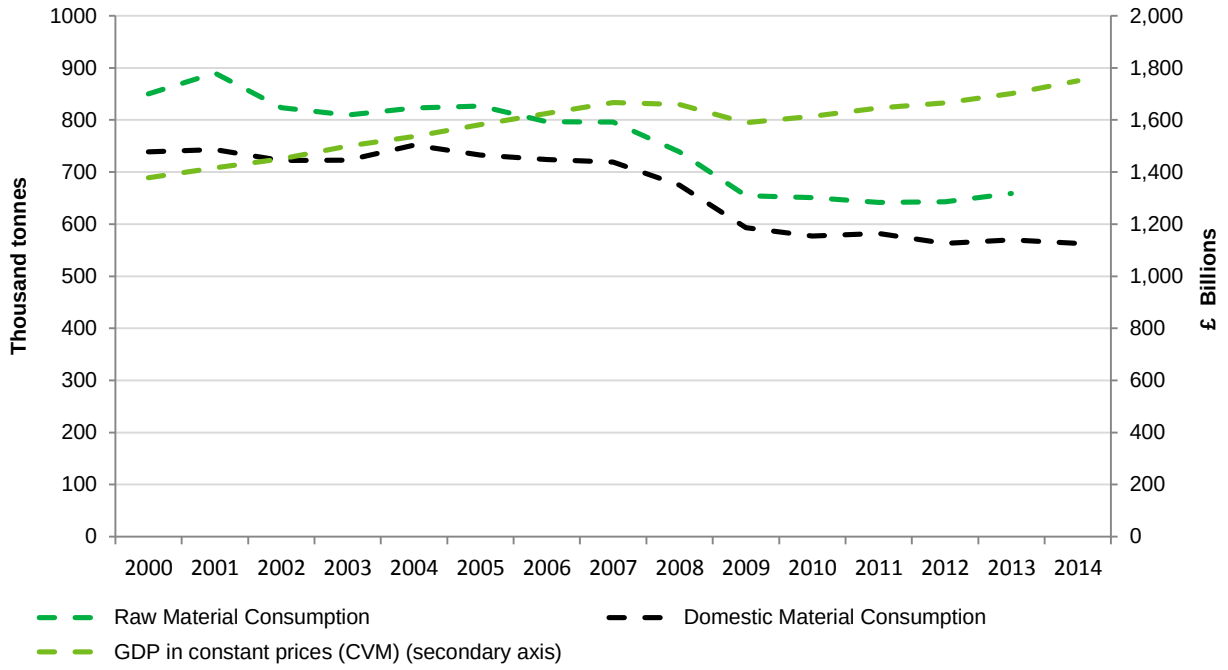
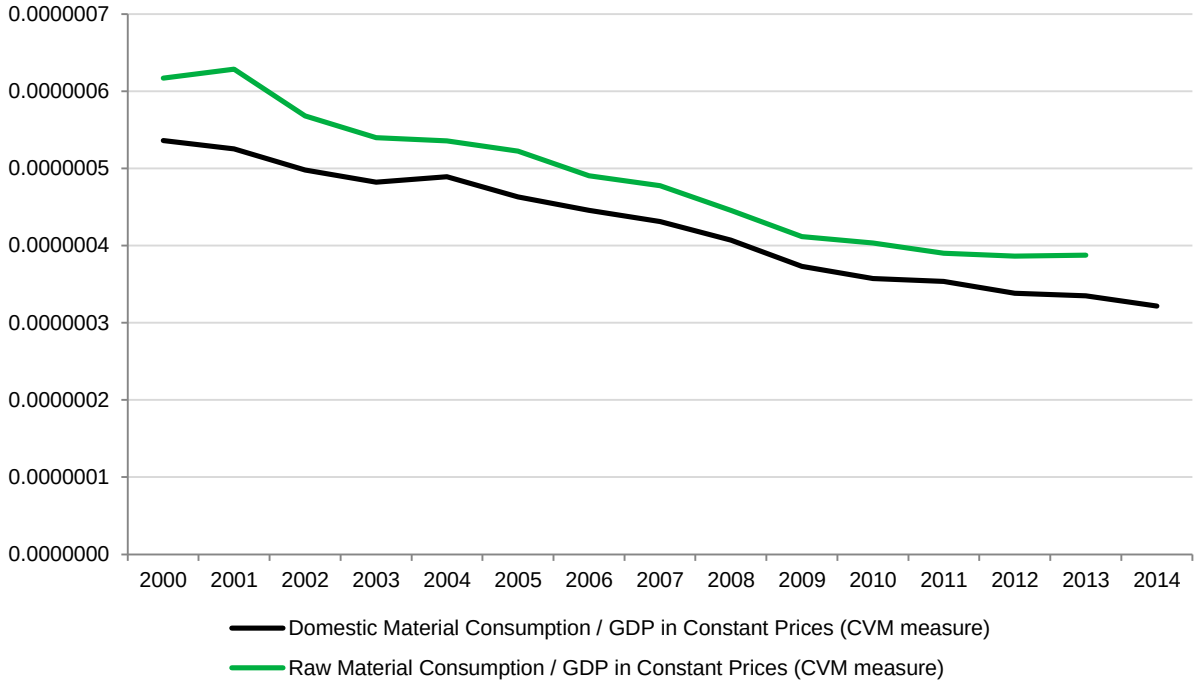


Figure 1.10: Raw Material Consumption[1] and Domestic Material Consumption per unit of GDP in constant prices, 2000 - 2014.

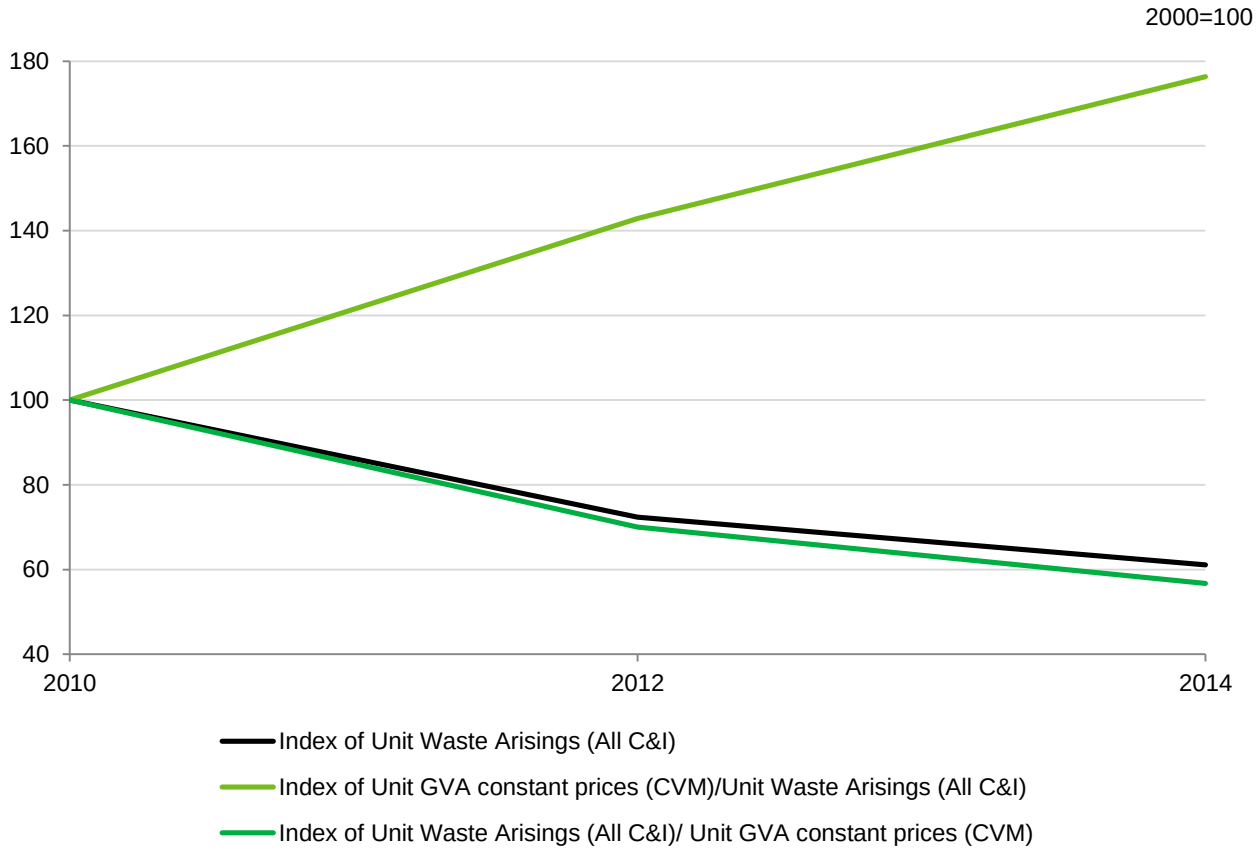


Notes: [1] Raw Material Consumption figures for 2014 will be available in Summer 2017

Source: as per Figure 1.8

Index of GVA and C&I waste

Figure 1.11: Graph comparing index trends in waste arisings, tonnes of waste per £ of GVA and £ of GVA per tonne of waste for the UK's commercial and industrial sectors, 2010 – 2014 (*Index of waste per unit of GVA is also a Waste Prevention Metric*).



- Figure 1.11 uses the chain volume measure of GVA. This measure already takes price fluctuations into account.
- Between 2010 and 2014, GVA per unit of waste arisings increased
- Between 2010 and 2014 waste arisings for commercial and industrial sectors has decreased.

Notes: The metric is based on Defra C&I data and UK National Statistics National Accounts. GVA given in CVM. Combining the two provides a measure of waste intensity per unit of output at a sectoral level.

This data differs to previous editions of the digest, as the source data for waste arisings has changed. Reconcile data is no longer available so UK Waste Statistics return has been used as an alternative.

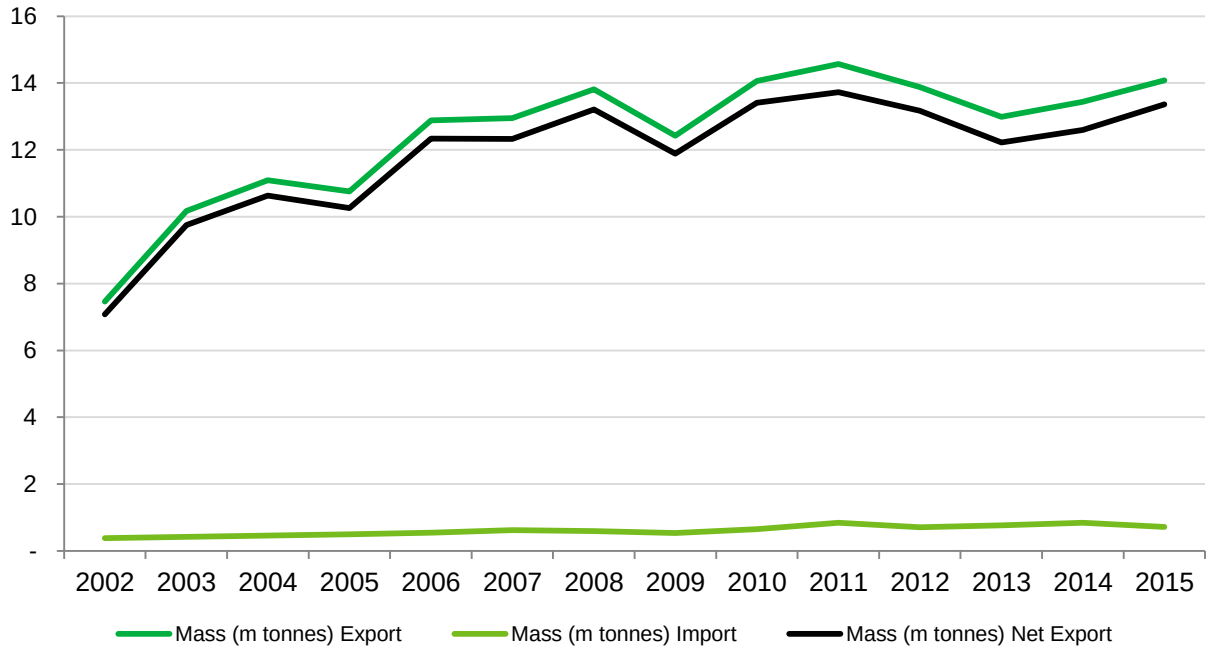
Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wasgen&lang=en

www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/ukgdpolowlevelaggregates

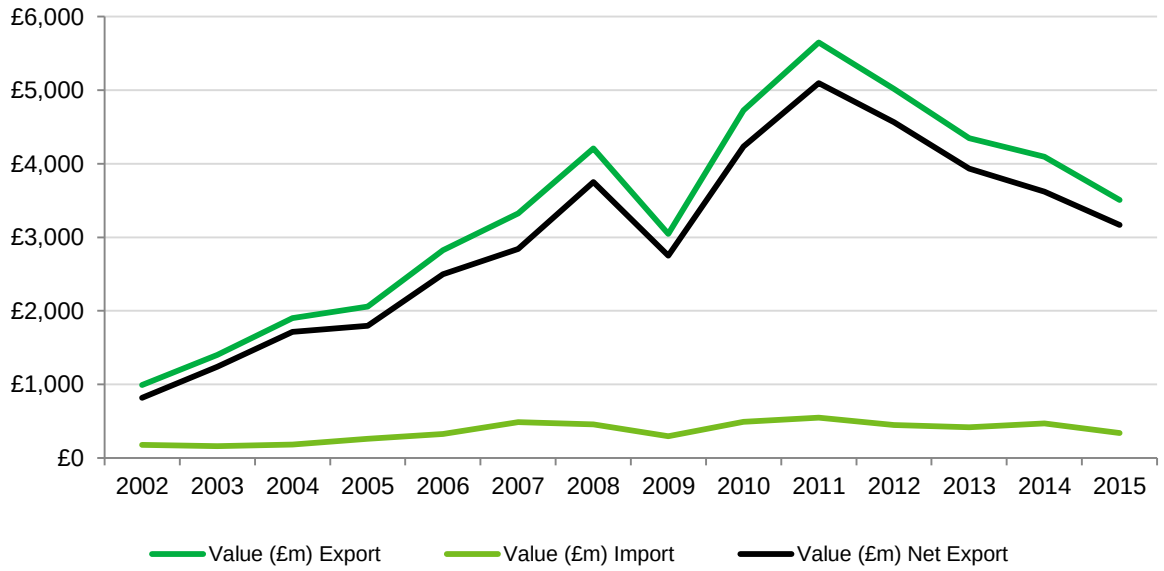
Exports of scrap materials

Figures 1.12 and 1.13: Exports, Imports and Net Exports of scrap materials in million tonnes and £m, UK, 2002 – 2015.

Million tonnes



£m



- As Figures 1.12 and 1.13 show the UK exports more scrap materials than it imports.
- In 2015 the UK exported 14 million tonnes of scrap materials, worth over £3.5 billion.
- In 2014 there was a 0.6 million tonnes increase of all scrap materials exported, but a decrease in the monetary value of these exports (of £586 million).
- Figures here will differ from previous editions of the Digest as an error has been corrected

Notes: Scrap materials - recyclable materials left over from product manufacturing and consumption, which has a monetary value.
Included here is: textiles, rubber, plastic, paper, copper, aluminium, nickel, lead, zinc, tin and ferrous metals
Source: HMRC Trade database
https://www.uktradeinfo.com/Pages/Home.aspx

Electricity from Bioenergy

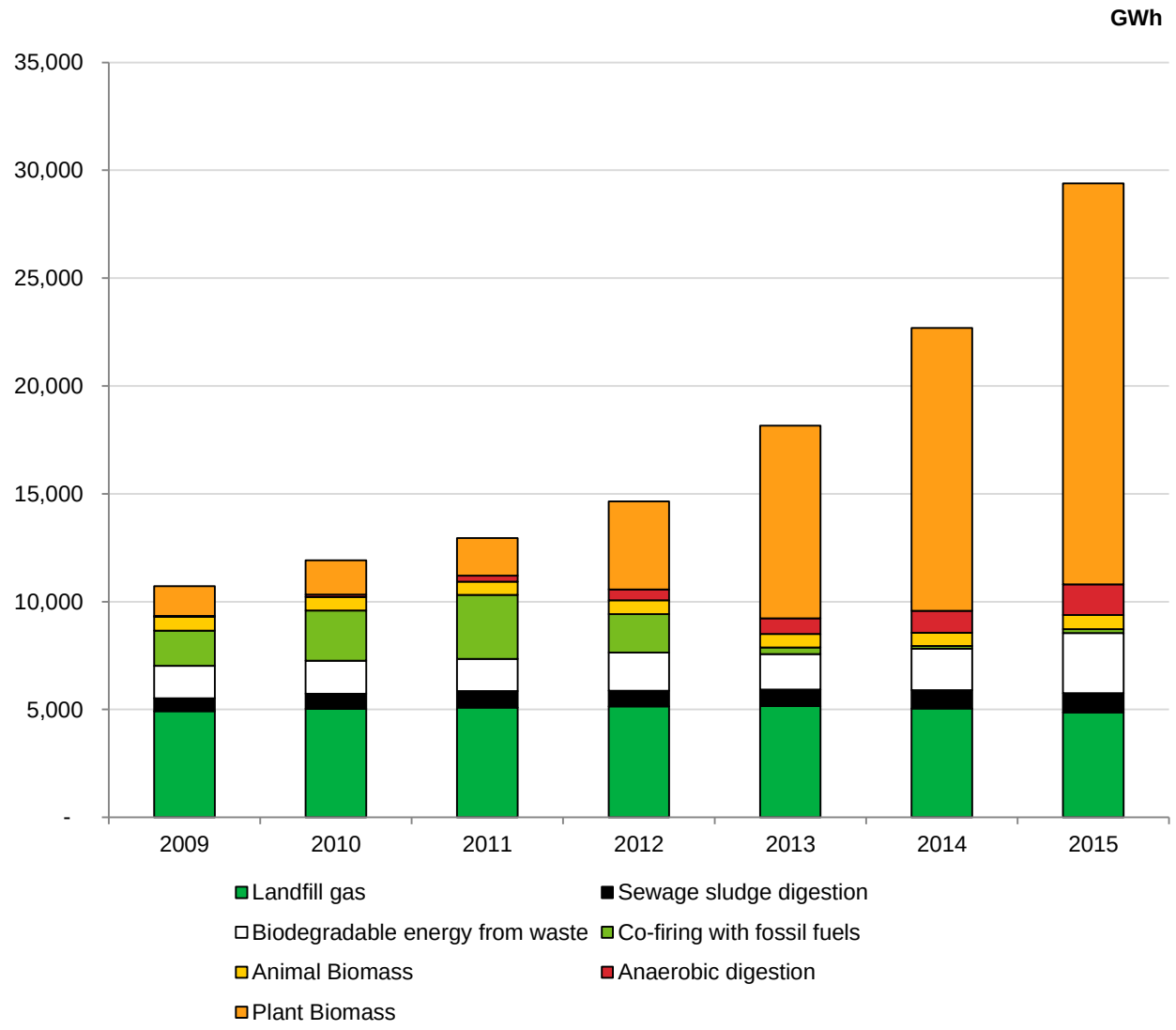
Table 1.5: Electricity generated from Bioenergy, UK, 2010 – 2015, Gigawatt hours.

GWh

	2010	2011	2012	2013	2014	2015
Landfill gas	5,031	5,085	5,145	5,160	5,045	4,872
Sewage sludge digestion	697	764	719	761	846	888
Energy from waste [1]	1,530	1,503	1,774	1,649	1,923	2,782
Co-firing with fossil fuels	2,332	2,964	1,783	309	133	188
Animal Biomass [2]	627	615	643	628	614	648
Anaerobic digestion	111	273	501	722	1,019	1,429
Plant Biomass [3]	1,593	1,749	4,083	8,929	13,105	18,587
Total electricity generated from Bioenergy	**11,921**	**12,953**	**14,648**	**18,158**	**22,685**	**29,394**
Total electricity generated from all sources	**347,896**	**332,461**	**328,270**	**324,725**	**300,823**	**318,712**

[1] –Biodegradable part only,
[2] –Includes the use of poultry litter and meat and bone
[3] -Includes the use of straw combustion and short rotation coppice energy crops.

Figure 1.14: Electricity generated from Bioenergy, UK, 2009 – 2015, Gigawatt hours.



- The amount of electricity generated from Bioenergy in the UK has increased since 2009.
- In 2015, 9.2 per cent of electricity generated was from Bioenergy, an increase from 3.1 per cent in 2009.
- The increase in electricity generated from plant biomass in 2015 accounted for most of the increase in 2015.

Source: www.gov.uk/government/uploads/system/uploads/attachment_data/file/556266/Renewables.pdf

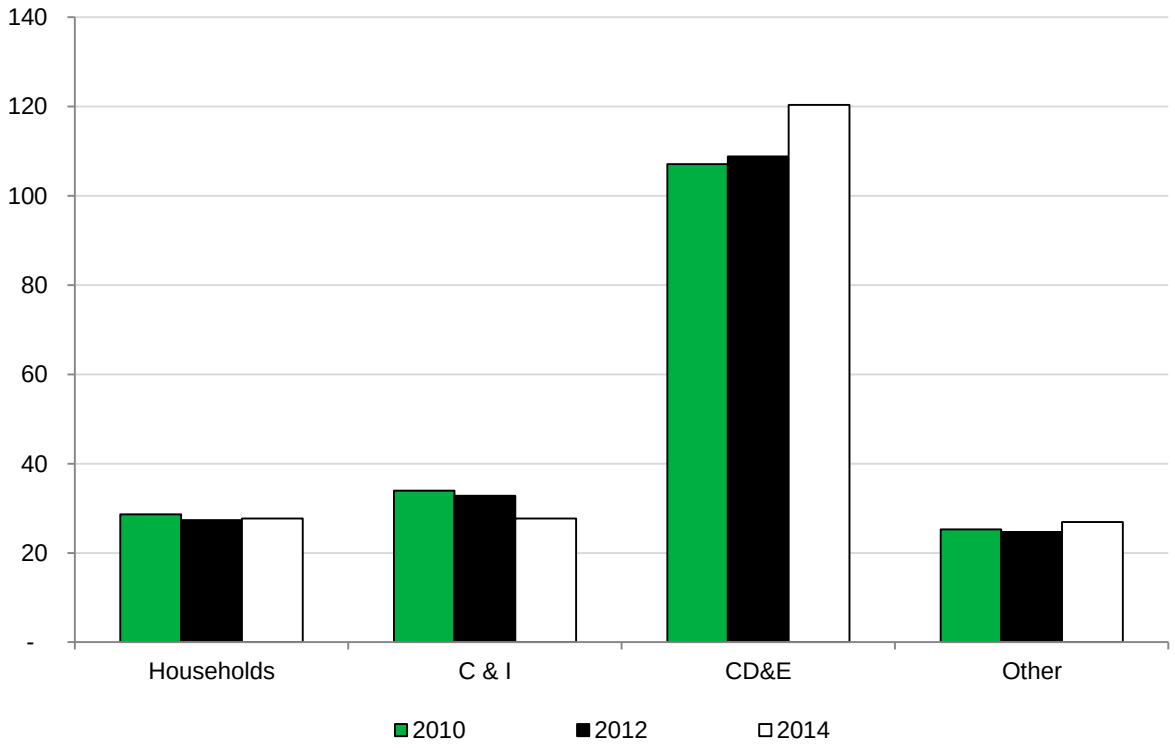
Table 6.1

Section 2: Waste Generation

Waste Arisings

Figure 2.1: Waste arisings by broad sector, UK, 2010 – 2014. (*Waste Prevention Metric).*

Million tonnes



'Other' waste includes waste from the mining and quarrying, and agriculture, forestry and fishing sectors
C&I = Commercial & Industrial
CD&E = Construction, Demolition & Excavation. Includes dredging spoils.
Excludes secondary waste
Includes waste that may go for export
'Households' here is the 'Waste from Households' measure used elsewhere plus an estimate for End of Life Vehicles

- Figure 2.1 shows the amount of waste produced in the UK from 2010-14.
- The Construction, Demolition & Excavation (CD&E) sector produced the largest amount of waste in each year.

Notes: Figures for 2010-14 have been produced on a consistent basis and have been subject to significant revisions since the 2016 edition of the Waste and Resources Digest. Estimates for 2004-08 have been removed from the series as they have not been produced using the same methodology and cannot be revised. Figures for 2010 and 2012 have been revised since previous editions of this publication due to methodological improvements and minor corrections.

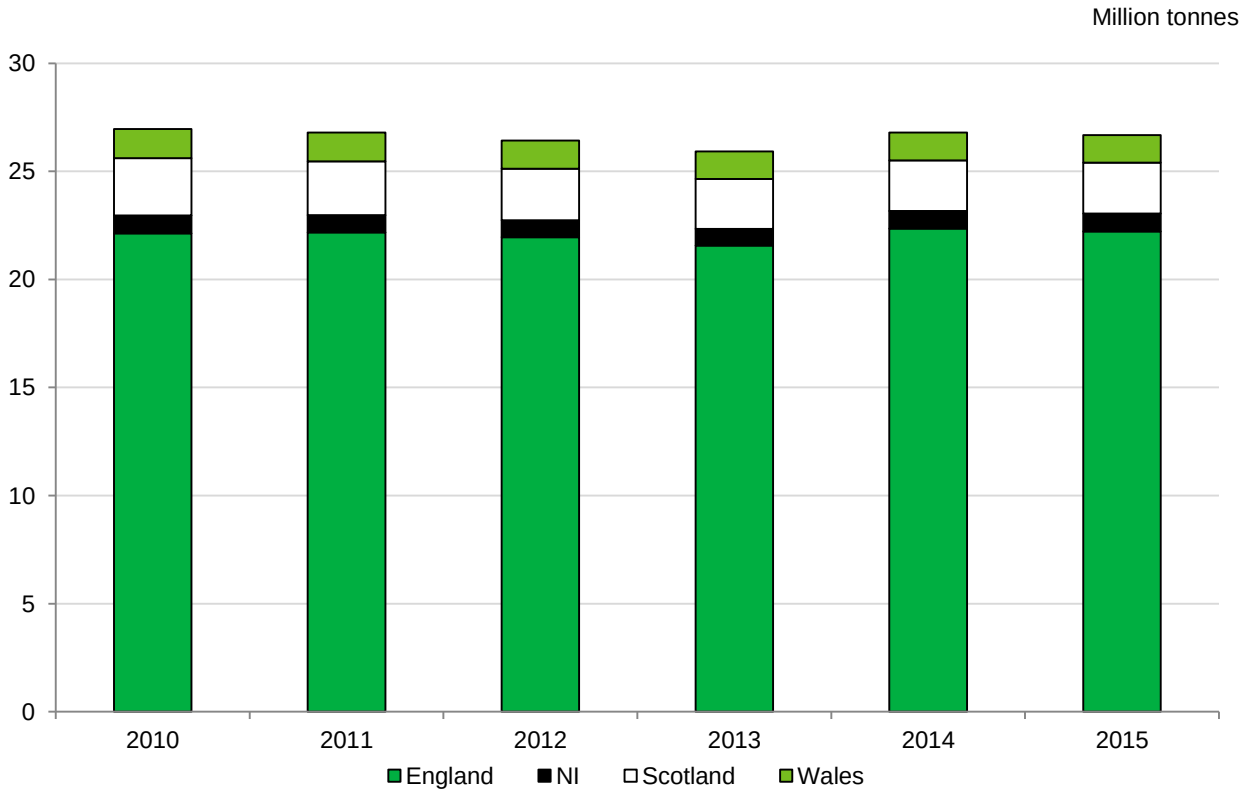
Source: UK Waste Statistics Regulation return. See section 5 and the Methodology section of UK Statistics on Waste.

Waste from Households

Table 2.1: Waste arisings from households (Million tonnes) and household expenditure (2014 prices) UK, 2010 – 2015.

Waste from Households arisings (million tonnes)	2010	2011	2012	2013	2014	2015
UK	27.0	26.8	26.4	25.9	26.8	26.7
England	22.1	22.2	22.0	21.6	22.4	22.2
Scotland	2.6	2.5	2.4	2.3	2.3	2.4
Wales	1.3	1.3	1.3	1.3	1.3	1.3
Northern Ireland	0.8	0.8	0.8	0.8	0.8	0.8
UK total household annual expenditure £th (2014 prices)	27.4	26.8	26.4	27.2	27.6	N/a

Figure 2.2: Waste arisings from households, UK, 2010 – 2015.



- The 'waste from households' calculation was first published by Defra in May 2014. It was introduced for statistical purposes to provide a harmonised UK indicator to be reported against the Waste Framework Directive (2008/98/EC). It is calculated on a calendar year basis by each of the four UK countries using almost identical methodologies.
- The waste from household measure is a narrower measure than the 'household waste' measure which was previously used in England. Waste from households excludes waste not considered to have come directly from households, such as recycling from street bins, parks and grounds.
- Waste arising from households in the UK decreased by 0.4 per cent between 2014 and 2015. The 2015 tonnage represents a decrease of 1.0 per cent since 2010.
- The total weekly average household expenditure in the UK increased by over 1 per cent in 2014 compared to 2013. This cannot be updated as there is no 2015 data.

Notes: Waste from households' includes waste from: Regular household collection, Civic amenity sites, 'Bulky waste' 'Other household waste'. It does not include street cleaning/sweeping, gully emptying, separately collected healthcare waste, asbestos waste. 'Waste from households' is a narrower measure than 'municipal waste' and 'council collected waste'.

Source: Defra, Sept 2014, www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management. Table 1_1

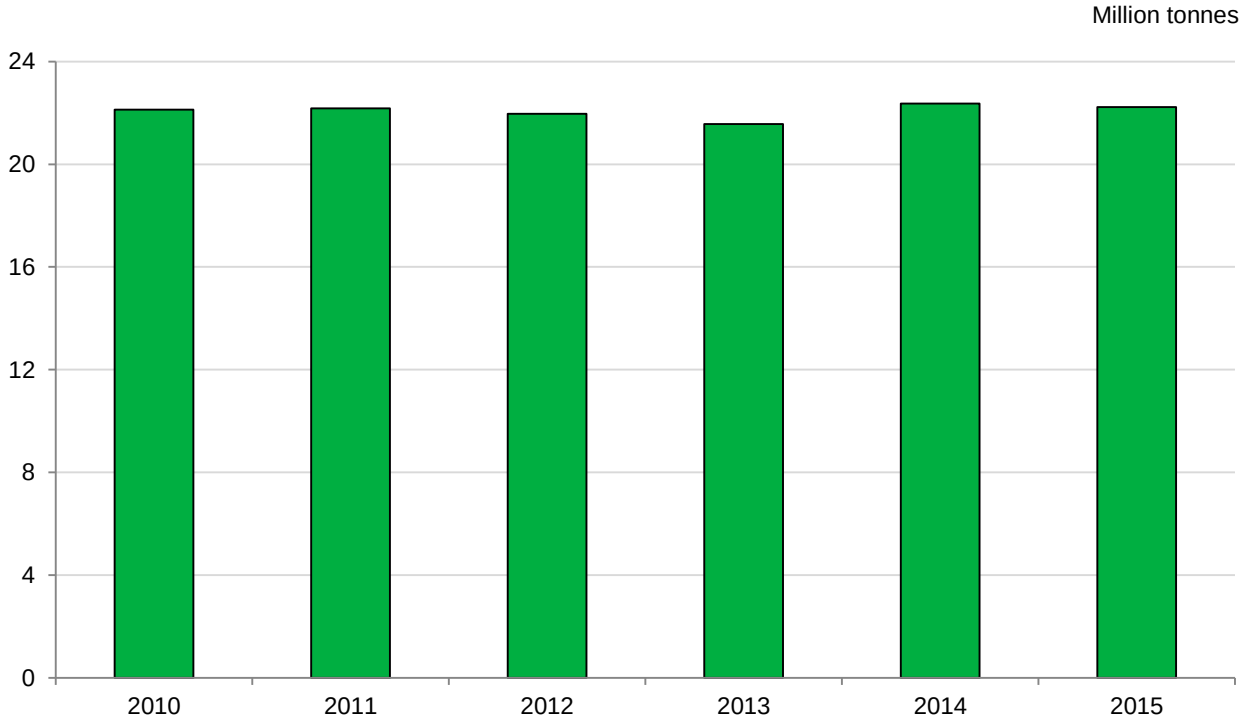
ONS: Total weekly average household expenditure
www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/compendium/familyspending/2015/chapter4trendsinhouseholdexpenditureovertime

Table 4.1 Row 52

Table 2.2: Waste from households, England, 2011 – 2015 *(Waste Prevention Metric).*

	2011	2012	2013	2014	2015
Total waste generated from households (Million tonnes)	22.2	22.0	21.6	22.4	22.2
Waste generated (kg per person)	421	412	402	413	407

Figure 2.3: Waste from households, England, 2010 – 2015.



- Total waste from households amounted to 22.2 million tonnes in 2015, a decrease of 0.6 per cent on 2014.
- In 2015 the amount of 'other organics' sent for recycling has decreased by 5.6 per cent to 3.7 million tonnes. This figure is against an unusually high tonnage reported in 2014 of 3.9 million tonnes. In 2013 the tonnage for 'other organics' was relatively low at 3.6 million tonnes and for both 2011 and 2012 it was 3.8 million tonnes. Garden waste forms part of the organics recycling tonnage and weather has a large influence on the amount of garden waste produced.
- This is equivalent to 407 kg per person, down from 413 kg per person in 2014 (1.4 per cent) but very similar to the three year average of 409 kg per person for 2012 to 2014.
- A breakdown of the previous measure of household waste covering national, regional and local authorities can be downloaded on the gov.uk website.

Source: Defra, Dec 2016, www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables Calendar year data, Table 1 Row 2.

Household waste covering national, regional and local authority breakdown:
ENV18 - Local authority collected waste: annual results tables - GOV.UK

Commercial and Industrial Waste

Table 2.3: Total waste generation from the commercial and industrial sectors, UK and England, 2010-14.

Million tonnes

	UK			England		
	Commercial	**Industrial**	**Total C&I**	**Commercial**	**Industrial**	**Total C&I**
2010	20.0	13.9	33.9	13.1	9.5	22.6
2011	UK 2011 Estimates not available			England 2011 Estimates not available		
2012	16.9	15.9	32.8	12.9	11.3	24.2
2013	UK 2013 Estimates not available			11.6	10.4	21.9
2014	15.1	12.6	27.7	11.1	8.7	19.8

Commercial and Industrial defined using NACE. See methodological section for further details

England 2010 and 2012 estimates have been revised substantially from previous publications due to methodological improvements

- UK Commercial and Industrial sectors generated 27.7 million tonnes of waste in 2014, of which 19.8 million tonnes was in England. A little more than half of this waste was Commercial waste in both the UK and England.
- Waste generation from both the commercial and industrial sectors fell between 2012 and 2014 in the UK. Decreases also occurred in England.

Source: UK Waste Statistics Regulation return. See section 4 of UK Statistics on Waste.

Packaging in UK

Table 2.4: Packaging waste, UK, 2013 – 2014.

	2013			2014			
	Total packaging waste arising (thousand tonnes)	**Total recovered/ recycled (thousand**	**Recovery / recycling rate (%)**	**Total packaging waste arising (thousand tonnes)**	**Total recovered / recycled (thousand tonnes)**	**Recovery / recycling rate (%)**	**2013 - 14 EU Target (%)**
Aluminium	164	71	43.4	177	73	41.0	n/a
Steel	642	391	60.9	559	356	63.7	n/a
Total Metal	**806**	**462**	**57.4**	**736**	**428**	**58.2**	**50.0**
Paper	3,868	3,459	89.4	4,749	3,470	73.1	60.0
Glass	2,399	1,639	68.3	2,399	1,613	67.2	60.0
Plastic	2,260	714	31.6	2,220	842	37.9	22.5
Wood	1,029	436	42.3	1,310	412	31.4	15.0
Other	23			23			n/a
Total recycling		**6,710**	**64.6**		**6,765**	**59.2**	**55.0**
Energy from Waste		838	8.1		566	4.9	n/a
Total	**10,384**	**7,548**	**72.7**	**11,436**	**7,331**	**64.1**	**60.0**

- In 2014 in the UK, 64.1 per cent of packaging waste was either recycled or recovered. This was above the EU target of 60 per cent and compares to 72.7 per cent achieved in 2013. The main driver for this drop is the adoption of a new paper and cardboard 'placed on market' estimate published in a bespoke industry report. This represents a significant increase in the estimated level of waste arisings compared to that assumed for 2012 and 2013.
- Estimates of packaging waste placed on the market are reviewed on an ad-hoc basis by government and industry stakeholders and estimates of recycling rates are based on volumes of Packaging Recycling Notes reported to the Environment Agency.

Source: Defra, EA:

www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management

Table 7.1 and 7.2

Battery Waste

Table 2.5: Recovery rate for batteries, UK, 2010 – 2015.

	Collection rate Target (%)	Collection rate (%)
2010	10.0	9.5
2011	18.0	18.0
2012	25.0	28.3
2013	30.0	32.4
2014	30.0	36.4
2015	40.0	40.1

- The UK has been meeting its collection target for batteries since 2011.

Source: Environment Agency npwd.environment-agency.gov.uk/public/batteries/publishedreports.aspx

Hazardous Waste

Table 2.6: Hazardous waste arisings by waste sector[1]. UK. 2010-14 (*Waste Prevention Metric).*

Million tonnes

Sector	2010	2012	2014
Households	1.6	1.3	1.2
C & I	2.2	2.1	1.9
CD&E	0.7	0.9	0.7
Other	0.3	0.4	0.4
Total	4.8	4.7	4.3

[1] Classifications are based on NACE codes.
Construction is defined as NACE code F (which includes dredging). For a list of NACE codes including in C&I, see Glossary on page 82.
'Other' waste includes waste from the mining and quarrying, and agriculture, forestry and fishing sectors – defined as NACE codes A and B

- Table 2.6 shows the amount of hazardous waste produced in the UK from 2010 to 2014
- Figures for 2010-14 have been produced on a consistent basis and have been subject to significant revisions since the 2016 edition of the Waste and Resources Digest. Estimates for 2004-08 have been removed from the series as they have not been produced using the same methodology and cannot be revised.

Notes: Figures for 2010 and 2012 have been revised since previous editions of this publication due to methodological improvements and minor corrections.
Source: UK Waste Statistics Regulation return. See section 5 and Methodology section of UK Statistics on Waste.

Section 3: Waste Hierarchy and destination of waste

Depiction of Waste Hierarchy

Figure 3.1: Waste hierarchy.

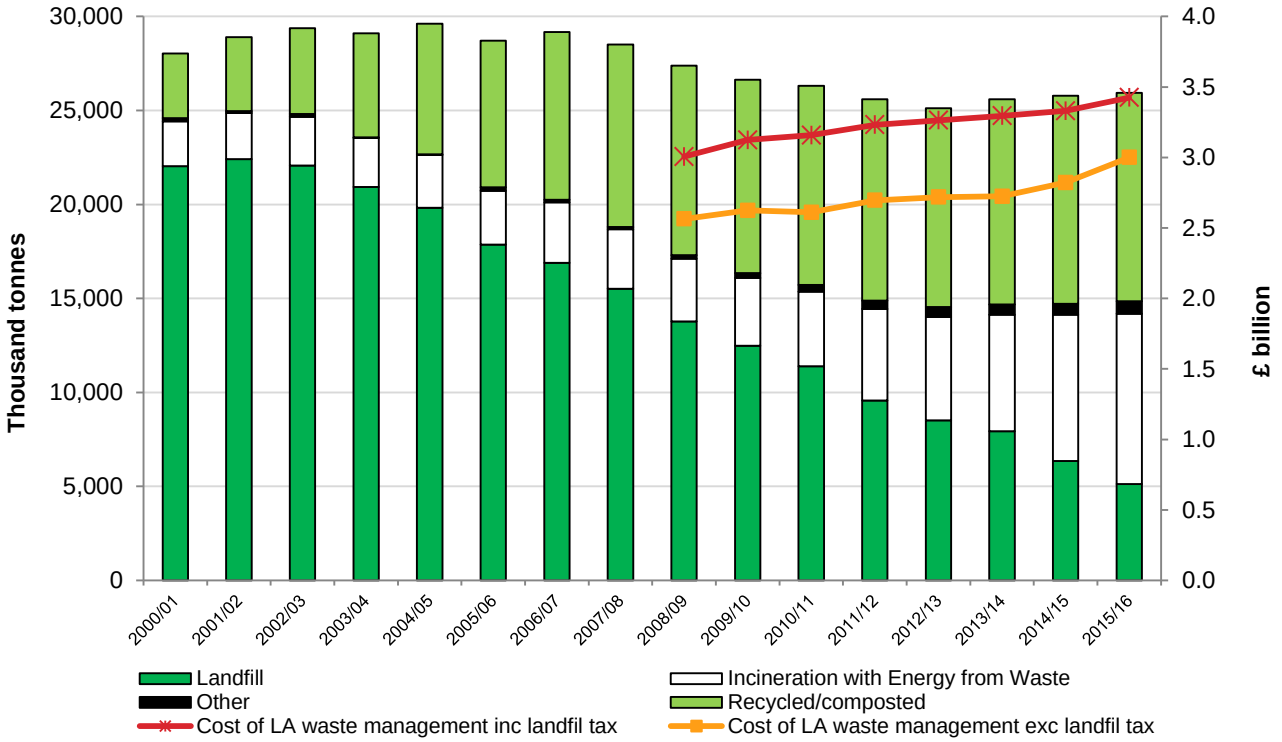
- Article 4 of the revised EU Waste Framework Directive (Directive 2008/98/EC) sets out five steps for dealing with waste, ranked according to environmental impact - the 'waste hierarchy'.
- The definitions of each of the stages can be found in Article 3 of the Directive.
- It gives top priority to preventing waste. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill).
- A very key principle in the backdrop to the hierarchy is to pursue efficient use of resource.

Source: European Commission's Community Strategy for Waste Management
www.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

Destination of waste

Local Authority Collected Waste

Figure 3.2: Local Authority collected waste management, England, 2000/01 – 2015/16.

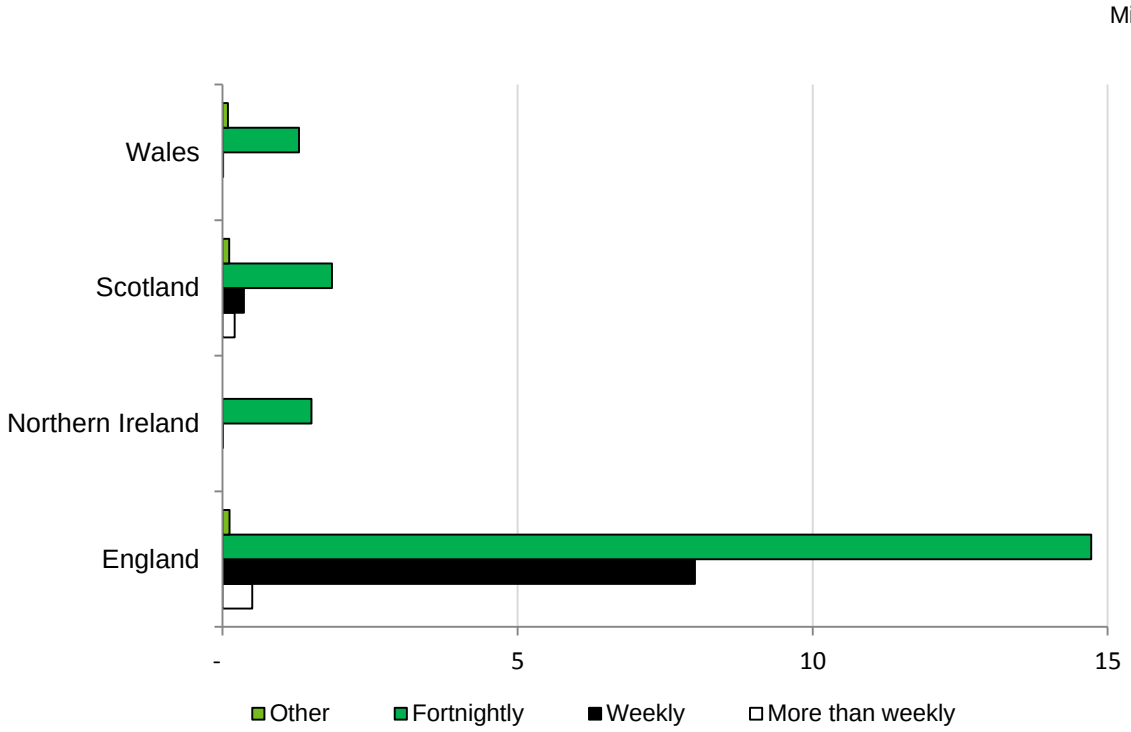


- As a result of extra granularity of data reported through a new question structure in WasteDataFlow, it is not appropriate when referring to the management of waste to compare the current annual data (that is April 2015 to March 2016) with any of the previous annual data.
- Total Local Authority managed waste in 2015/16 was 26.1 million tonnes, up by 1.2 per cent on 2014/15 when it was 25.8 million tonnes.
- Cost of local authority waste management covers net current expenditure on waste collection, recycling, waste minimisation, waste disposal (including landfill tax) and climate change costs.
- In 2015/16 the cost of local authority waste management was around £3.4 billion in England. The cost excluding landfill tax amounted to just over £3 billion.

Notes: Local authority collected waste is a combination of waste from households and waste from streets, parks and grounds and some business generated waste.
The definition of 'Incineration with Energy from Waste' is broader than that used for EC reporting.
Source: Defra, DCLG
Local authority waste management:
www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables
See Table 2 of the Local authority collected waste generation from April 2000 to March 2016 (England and regions) and local authority data April 2015 to March 2016.
Cost of local authority waste:
www.gov.uk/government/collections/local-authority-revenue-expenditure-and-financing. See Revenue outturn data (RO5) cultural, environmental, regulatory and planning services. The cost is based on net current expenditure. The cost of LA waste without landfill tax was derived by deducting the landfill tax from the waste disposal part of the cost.

Local authority household residual waste collection schemes from kerbside

Figure 3.3: Frequency of local authorities collecting residual waste from households by household numbers, UK countries, 2015/16.



- Figure 3.3 represents WRAP's best understanding of the residual waste collection schemes offered by UK local authorities.
- Collections that are offered to a small proportion of households within a Local Authority (less than 5 per cent or fewer than 3,000 households, whichever is lowest) are not included in the analysis.
- In Northern Ireland residual waste is collected fortnightly, for all but around 2,000 households who have a weekly collection.
- In Wales it is mainly fortnightly but 22.5 thousand households have a weekly collection.
- Other includes 3-weekly collections.

Notes: In any authority a scheme may not be available to every household. Where an authority operates more than one scheme, each scheme has been included. If an authority provides a weekly and fortnightly collection, and both schemes are above the threshold, it will be counted under both frequencies so the percentages do not necessarily add up to 100 per cent.

Source: WRAP - laportal.wrap.org.uk/Statistics.aspx

Garden Waste

Table 3.1: Household Kerbside garden waste collections, UK, 2015/16.

Percentage of local authorities

	Operate an organic scheme*	Annual charge for the organic scheme
England	97%	42%
Northern Ireland	100%	0%
Scotland	81%	0%
Wales	100%	18%
UK	95%	35%

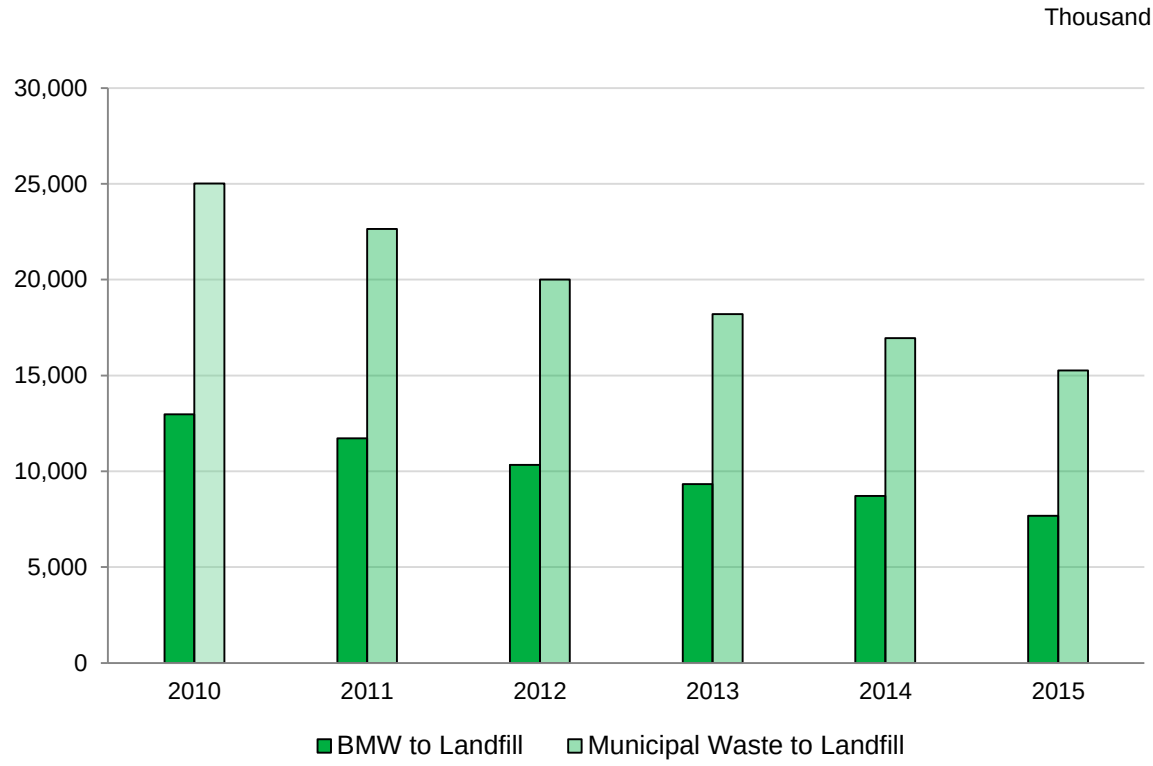
- Table 3.1 represents WRAP's best understanding of household kerbside garden waste collection scheme offered by UK local authorities.
- In Northern Ireland garden waste collection is provided without a charge by all local authorities.
- In Wales it is provided by all local authorities, but with 18 per cent of them charging for the service.

Notes: * Food and card waste may also be collected with garden waste

Source: WRAP - laportal.wrap.org.uk/Statistics.aspx

Municipal Waste to landfill including Biodegradable Municipal Waste (BMW)

Figure 3.4: Municipal waste to landfill, Biodegradable municipal waste to landfill, UK, 2010 – 2015.



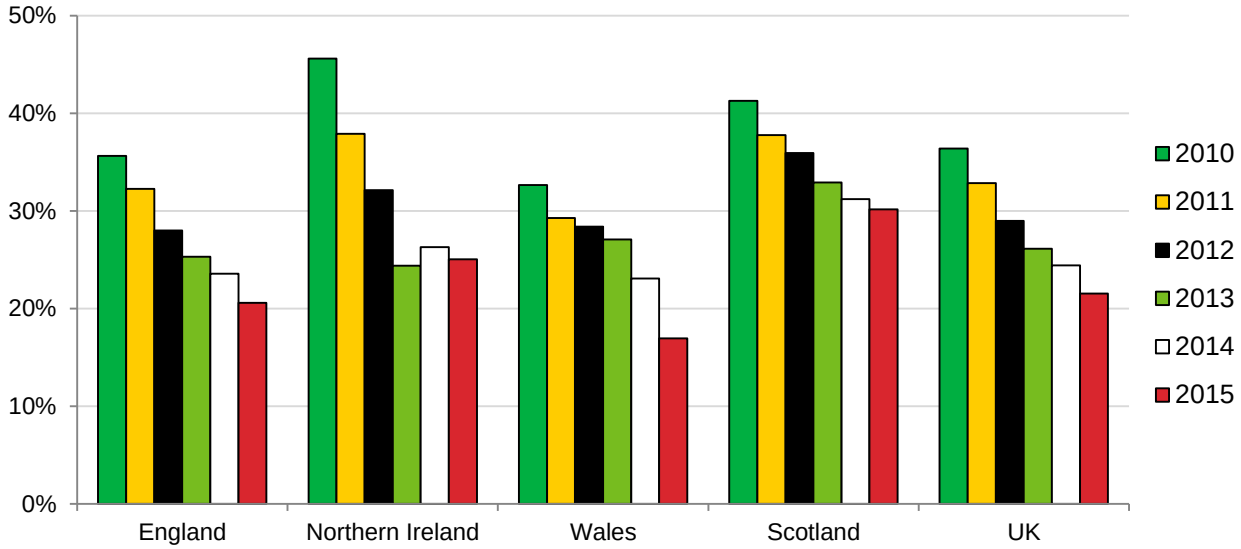
- The tonnage of municipal waste sent to landfill has decreased from 25 million tonnes in 2010 to 15 million tonnes in 2015.
- Of this municipal waste sent to landfill, 7.7 million tonnes was Biodegradable Municipal Waste in 2015.

Notes: Municipal waste here comprises waste from households and other waste which, because of its nature or composition, is similar to waste from households.

Source: Waste Data Interrogator, Defra Statistics
www.gov.uk/government/uploads/system/uploads/attachment_data/file/593040/UK_statsonwaste_statsnotice_Dec2016_FINALv2_2.pdf
- Table 2.1

Biodegradable Municipal Waste (BMW) to landfill in UK

Figure 3.5: BMW to landfill as % of 1995 baseline, 2010-15.



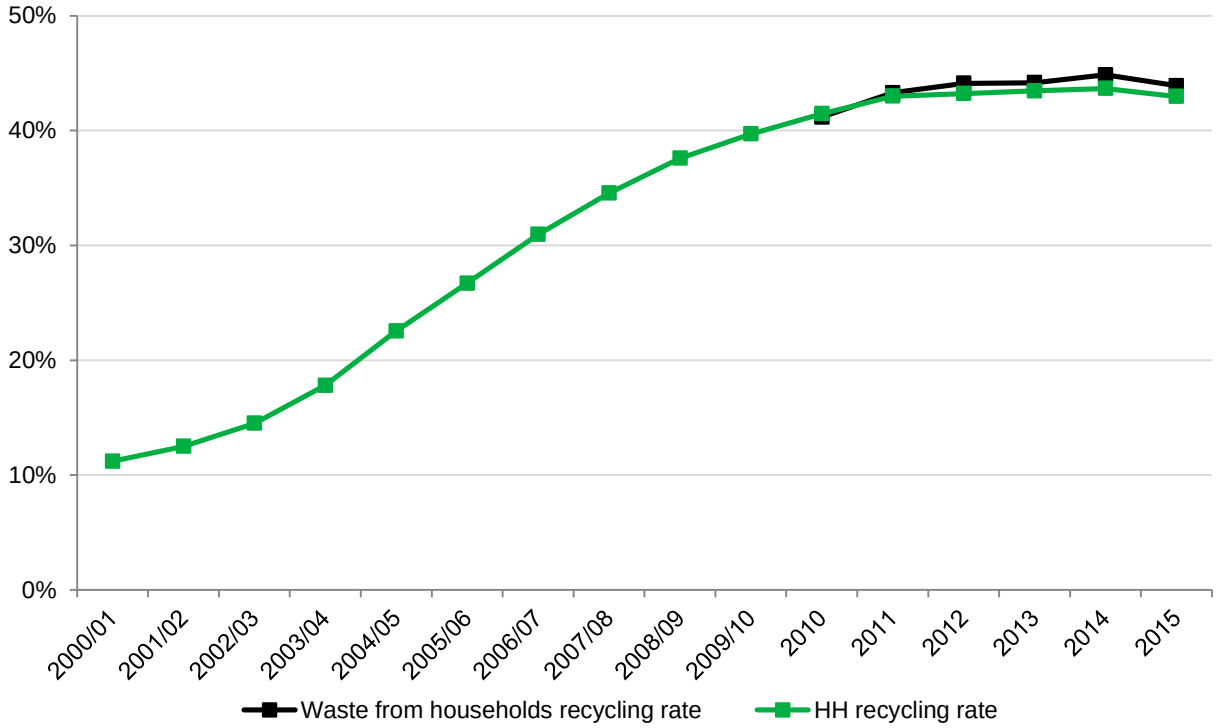
- The Landfill Directive (1999/31/EC) aims to prevent or reduce as far as possible negative effects of landfilling waste, in particular on surface water, groundwater, soil, air, and on human health by introducing stringent technical requirements for waste and landfills. Biodegradable waste decomposes in landfill to produce methane, a potent greenhouse gas. 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 per cent of the 1995 baseline by 2010
    - No greater than 50 per cent of the 1995 baseline by 2013
    - No greater than 35 per cent of the 1995 baseline by 2020
- The UK has met the interim targets for 2010 and 2013.
- BMW sent to landfill in the UK has fallen every year since the series began in 2010 and in 2015 represented 22 per cent of the 1995 baseline.

Notes: Biodegradable Municipal Waste 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 EWC (European Waste Classification) 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.

Source: UK Statistics on Waste section 2

Waste from households: recycling

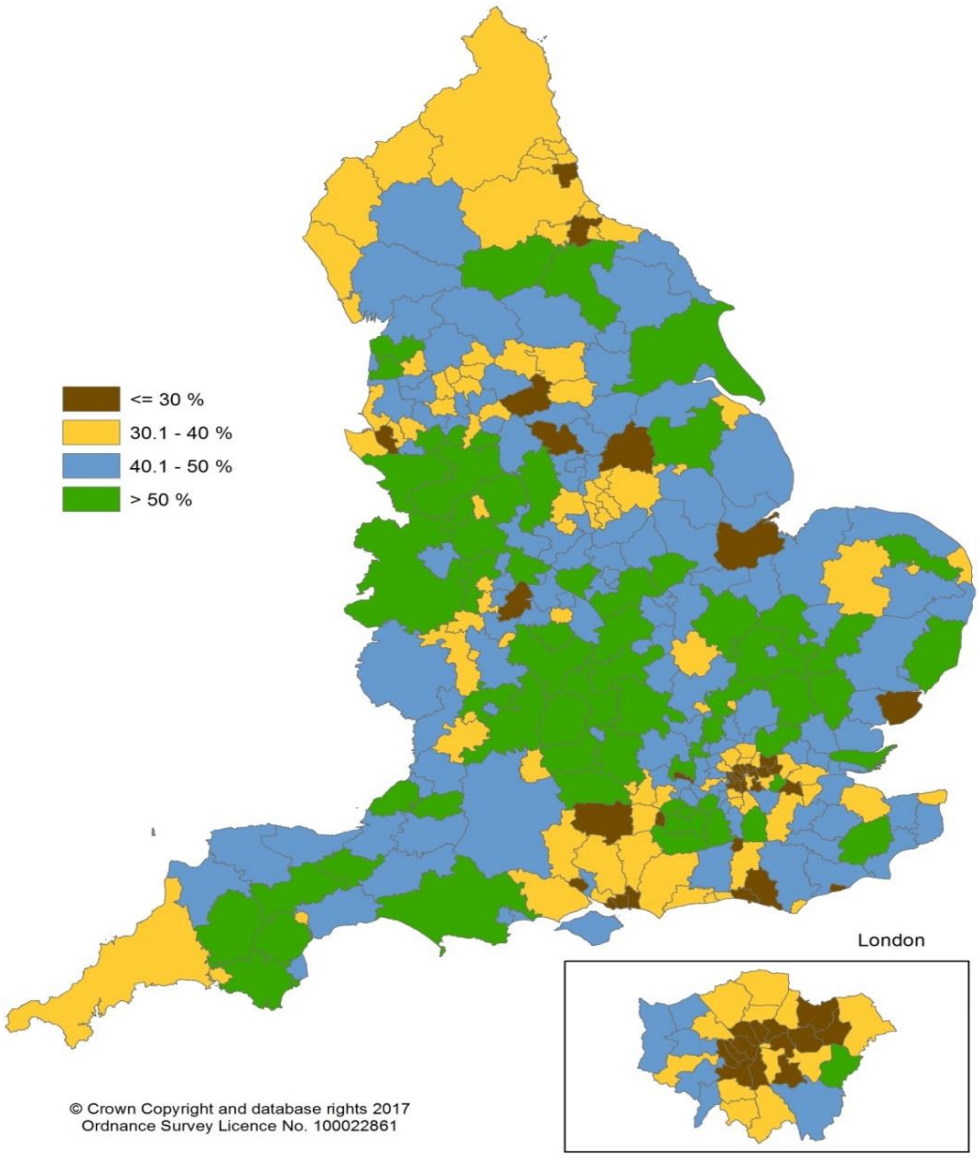
Figure 3.6: Waste from households recycling rate, England, 2000/01 to 2015.



- The waste from household measure was introduced in May 2014 and is based on a calendar year. It is a narrower version of the **'**Household waste' measure which was previously used and excludes waste not considered to have come directly from households, such as recycling from street bins, parks and grounds. It is therefore not possible to link the two measures over time as their definitions are different and they do not measure exactly the same thing. It has been backdated to 2010.
- The annual rate of 'waste from households' recycling for 2015 was 43.9 per cent in 2015. This is a decrease of 0.9 percentage points, from 44.8 per cent in 2014. Recycling rates had previously been increasing each year. This is the first time the 'waste from households' recycling rate has been lower than 44 per cent since 2011.

Source: Defra, Dec 2016
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/577716/FINAL_Stats_Notice_Nov_2016.pdf
– Figure 1

Figure 3.7: Percentage of household waste sent for recycling, preparation for reuse or composting, England, 2015/16.



- At Local Authority level, recycling rates ranged from 15 per cent to 67 per cent.
- There is a tendency for recycling rates to be similar in adjacent areas although high and low recycling rates are spread across England.

Notes: Preparation for reuse is the following:

a) A waste product or component of a waste product has undergone a checking, cleaning or repairing recovery operation and

b) The waste product or component of a waste product can be re-used for its original purpose.

Source: Waste Dataflow, snapshot taken in October
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/577716/FINAL_Stats_Notice_Nov_2016.pdf
Figure 6

Treatment of waste

Tables 3.2 and 3.3 All waste at final treatment, split by method, UK and England, 2010-14 – tonnages.

Million tonnes and % change between 2012 and 2014

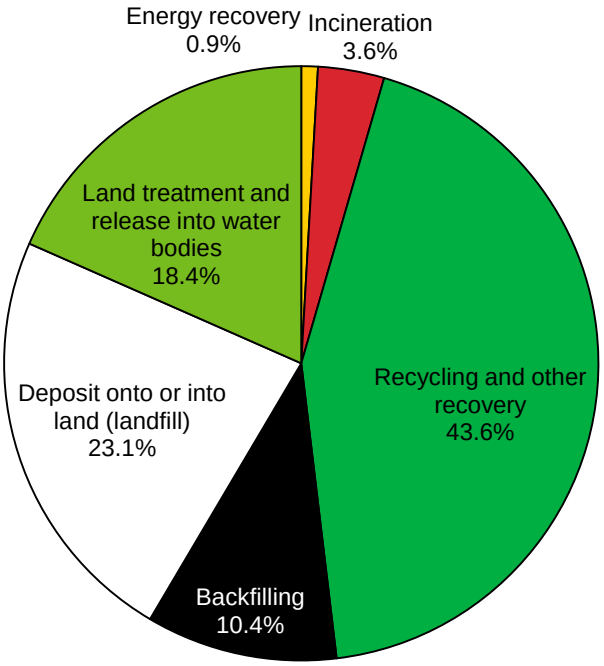
		Energy recovery	Incineration	Recycling and other recovery	Backfilling	Deposit onto or into land (landfill)	Land treatment and release into water bodies	Total
2010	UK	0.8	5.7	81.2	16.5	50.7	40.1	195.0
2012	UK	1.6	6.1	84.4	14.1	48.5	38.4	193.1
2014	UK	1.9	7.6	91.1	21.7	48.2	38.5	209.0
Change 2012 - 2014	UK	22.3%	23.8%	7.9%	53.8%	-0.7%	0.2%	8.2%
2010	England	0.6	5.4	74.0	10.6	43.6	27.4	161.7
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 2012 - 2014	England	4.7%	22.0%	6.5%	59.2%	-0.1%	1.1%	8.4%

% of total waste tonnage and % point change between 2012 and 2014

		Energy recovery	Incineration	Recycling and other recovery	Backfilling	Deposit onto or into land (landfill)	Land treatment and release into water bodies	Total
2010	UK	0.4%	2.9%	41.6%	8.5%	26.0%	20.6%	100.0%
2012	UK	0.8%	3.2%	43.7%	7.3%	25.1%	19.9%	100.0%
2014	UK	0.9%	3.6%	43.6%	10.4%	23.1%	18.4%	100.0%
Change 2012 - 2014	UK	0.1%	0.5%	-0.1%	3.1%	-2.1%	-1.5%	
2010	England	0.4%	3.3%	45.8%	6.6%	26.9%	16.9%	100.0%
2012	England	0.8%	3.6%	46.6%	7.3%	25.2%	16.4%	100.0%
2014	England	0.7%	4.1%	45.8%	10.8%	23.2%	15.3%	100.0%
Change 2012 - 2014	England	0.1%	0.5%	-0.8%	3.4%	-2.0%	-1.1%	

Figure 3.8 Waste split by final treatment method, UK, 2014.

Percentages



'Energy recovery' refers to facilities where the main purpose is generation of energy, or formal R1 accreditation has been awarded. 'Recycling and other recovery' refers to the Eurostat category 'Recovery other than energy recovery - Except backfilling'. More information on the treatment categories used can be found in the Eurostat publication 'Manual on Waste Statistics' Link to 'Manual on Waste Statistics'

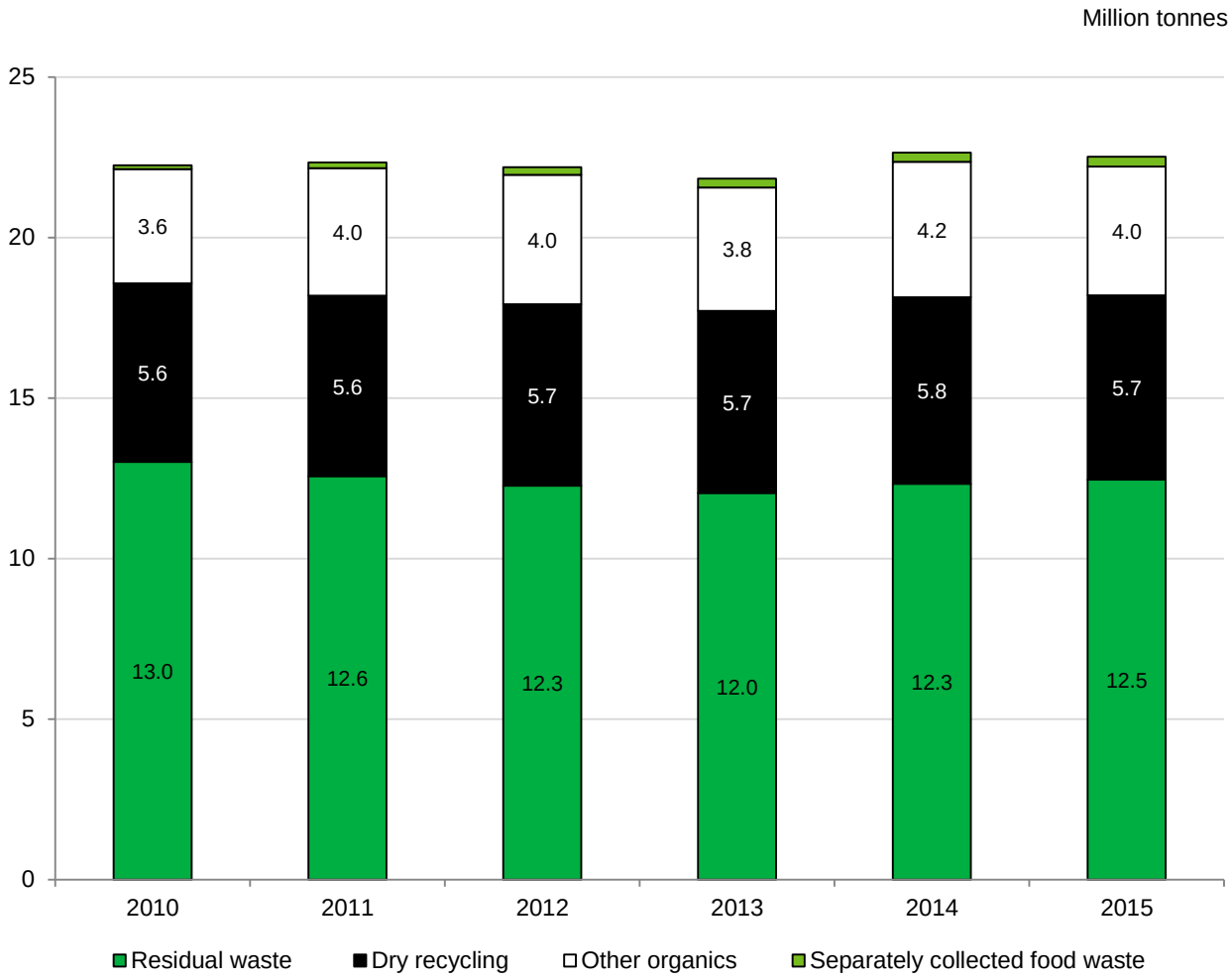
Notes: 'Energy recovery' refers to facilities where the main purpose is generation of energy, or formal R1 accreditation has been awarded 'Recycling and other recovery' refers to the Eurostat category 'Recovery other than energy recovery - Except backfilling' Includes waste that may have been imported

Source: : UK Waste Statistics Regulation return. Tables 5.4 and 5.5, Figure 5.2 of UK Statistics on Waste.

Section 4: Waste Composition

Composition of waste from households

Figure 4.1: Composition of waste from households, England, 2010 – 2015.

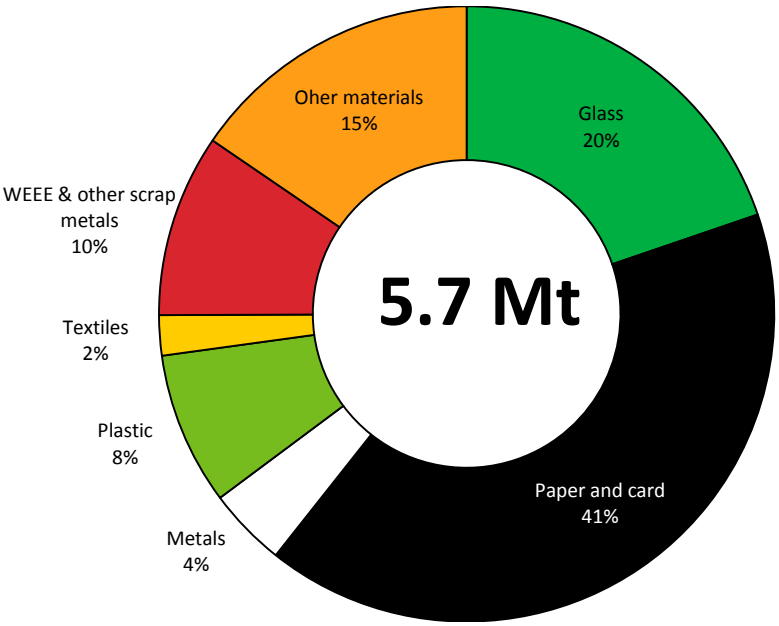


- At the aggregate level, the composition of 'waste from households' has changed very little since 2010.
- Between 2014 and 2015, separately collected food waste sent for composting increased by 5.8 per cent, but total organic recycling and dry recycling fell by 4.8 per cent and 1.1 per cent respectively. There was a small increase of 1.0 per cent in the amount of residual waste from households ('black bag waste') in the same period.

Notes: ***Residual waste*** includes waste from households' regular collections e.g. black bags, bulky waste, household civic amenity waste, 'other household waste' and rejects from recycling.
Dry recycling includes paper and card, glass, plastic, waste electrical and electronic equipment (WEEE), scrap metals as well as other materials.
Other organics includes green garden waste, mixed garden and food waste, wood for composting and other compostable waste
Source: WasteDataFlow
www.gov.uk/government/uploads/system/uploads/attachment_data/file/577716/FINAL_Stats_Notice_Nov_2016.pdf
- Figure 2

Composition of dry recycling

Figure 4.2: Composition of 'Waste from Households' dry recycling in England, 2015.



- In 2015, approximately 5.7 million tonnes of dry recycling came from households in England.
- The composition of dry recycling has remained similar since 2010 with minimal variation across the different quarters of the year.

Notes: Dry recycling includes furniture, wood, mattresses and other recycled materials.

Source: WasteDataFlow
www.gov.uk/government/uploads/system/uploads/attachment_data/file/577716/FINAL_Stats_Notice_Nov_2016.pdf - Figure 4

Composition, biodegradability and recyclability of Municipal Solid Waste (MSW) to landfill

Table 4.1: Calculated Composition and biodegradability of Municipal Solid Waste to landfill in 2011, England and Wales, for European Waste catalogue codes 19.12.12 and 20.03.01.

	EWC code 19.12.12	EWC code 20.03.01	Total
Tonnes per annum (2011)	8,431,131	9,088,763	17,519,894
Composition (%)	**Mean of EWC code 19.12.12**	**Mean of EWC code 20.03.01**	**Weighted Average**
Paper	10.3	10.6	10.5
Card	9.1	7.7	8.4
Plastic film	9.4	8.4	8.9
Dense plastics	13.2	9.6	11.3
Sanitary waste	1.3	3.1	2.2
Wood	10.0	5.3	7.6
Textiles and shoes	5.9	5.6	5.7
Glass	1.3	3.0	2.2
Food waste	8.2	21.3	15.0
Garden waste	1.8	3.5	2.7
Other organic	1.3	2.1	1.7
Metals	3.2	3.7	3.5
WEEE	1.4	1.5	1.5
Hazardous waste and batteries	1.1	0.9	1.0
Carpet, underlay and furniture	7.0	5.0	6.0
Other combustibles	2.7	1.4	2.0
Bricks, plaster and soil	7.9	4.1	5.9
Other non-combustible	1.7	1.5	1.6
Fines < 10mm	3.3	1.8	2.5
Total	100.0	100.0	100.0
Est biodegradability	46.3	56.1	51.4
Est. combustibility	84.4	86.1	85.3
Est recyclability	23.8	27.2	25.6

- The primary aim of this analysis was to provide information about municipal solid waste landfilled, in terms of its composition and the amount of biodegradable material landfilled, under a range of European Waste Catalogue codes, with particular emphasis on codes 19.12.12 and 20.03.01, given their importance with municipal waste (see ‘notes’ below).
- The results suggest that the combined biodegradability of material landfilled under the two EWC codes is around 51 per cent, and the combined estimated recyclability is around 26 per cent.

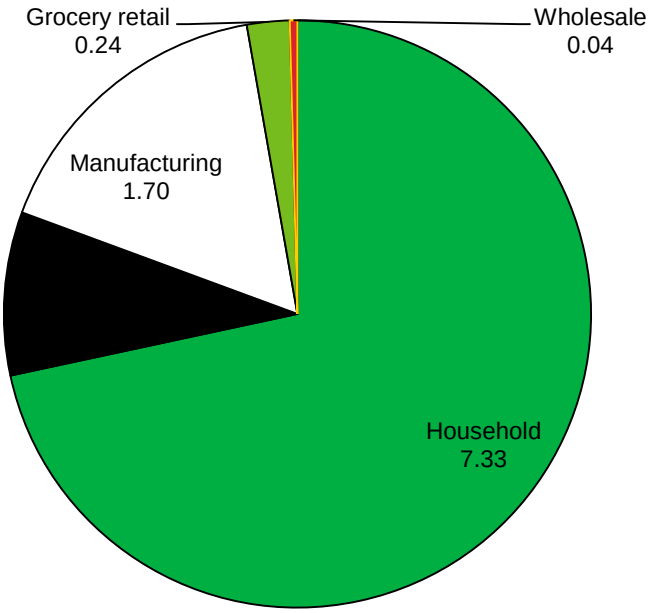
Notes: Municipal waste' here is waste from households and other waste which, because of its nature or composition, is similar to waste from households.
EWC (European Waste Catalogue) code 19.12.12 is other wastes from mechanical treatment of wastes; EWC code 20.03.01 is mixed municipal wastes. Material recorded under these two codes accounts for around 96 per cent of the material recorded under mixed waste codes that could be regarded as municipal waste.
Source:
http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17447

Section 5: Food Waste

UK food and drink waste through the food chain

Figure 5.1: Food and drink waste, UK, 2015.

Million tonnes



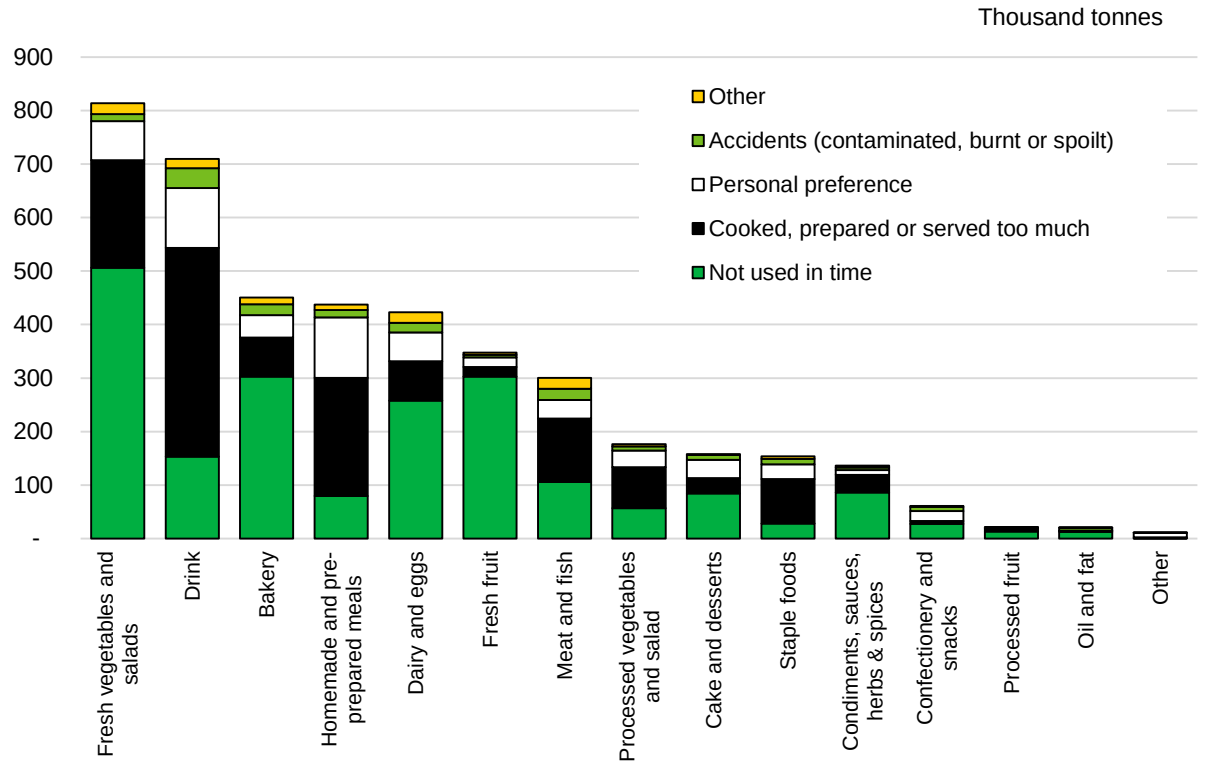
- Around 10 million tonnes of food and drink is wasted in the food chain annually. This is equivalent to around one quarter of the 41 million tonnes of food bought. Around 60 per cent of this is avoidable. The total food waste had a value of over £17 billion in 2015 and is associated with around 20 million tonnes of greenhouse gas (GHG) emissions.
- By weight, household food waste made up 70 per cent of the UK post-farm-gate total, manufacturing 17 per cent, hospitality and food service 9 per cent and retail 2 per cent. Around 85 per cent (by weight) of the avoidable food waste arises in households and food manufacture.
- Levels of household food waste in the UK in 2015 were equivalent to 75.2 kg per person per year. In 2015 the average UK household with children spent £60 per month on food that could have been eaten but was thrown away.
- In addition to food ending up as waste, 710,000 tonnes of food surplus from manufacturing and retail is either being redistributed via charitable and commercial routes (47,000 tonnes in 2015), or being diverted to produce animal feed (660,000 tonnes in 2015).

Notes: Avoidable waste is food and drink thrown away because it is no longer wanted or has been allowed to go past its best. The vast majority of avoidable food is composed of material that was, at some point prior to disposal, edible. Possibly avoidable waste is food that some but not all people would eat, and unavoidable waste is elements that are not suitable for consumption. Further details can be found in the glossary.

Source: Handy Facts and Figures on Waste in the UK and other associated WRAP reports: www.wrap.org.uk/content/uk-handy-waste-facts-and-figures-retail-sector, www.wrap.org.uk/content/household-food-waste-uk-2015-0

UK avoidable household food and drink waste by food group and reason for disposal 2012

Figure 5.2: Food and drink waste, UK, 2012.

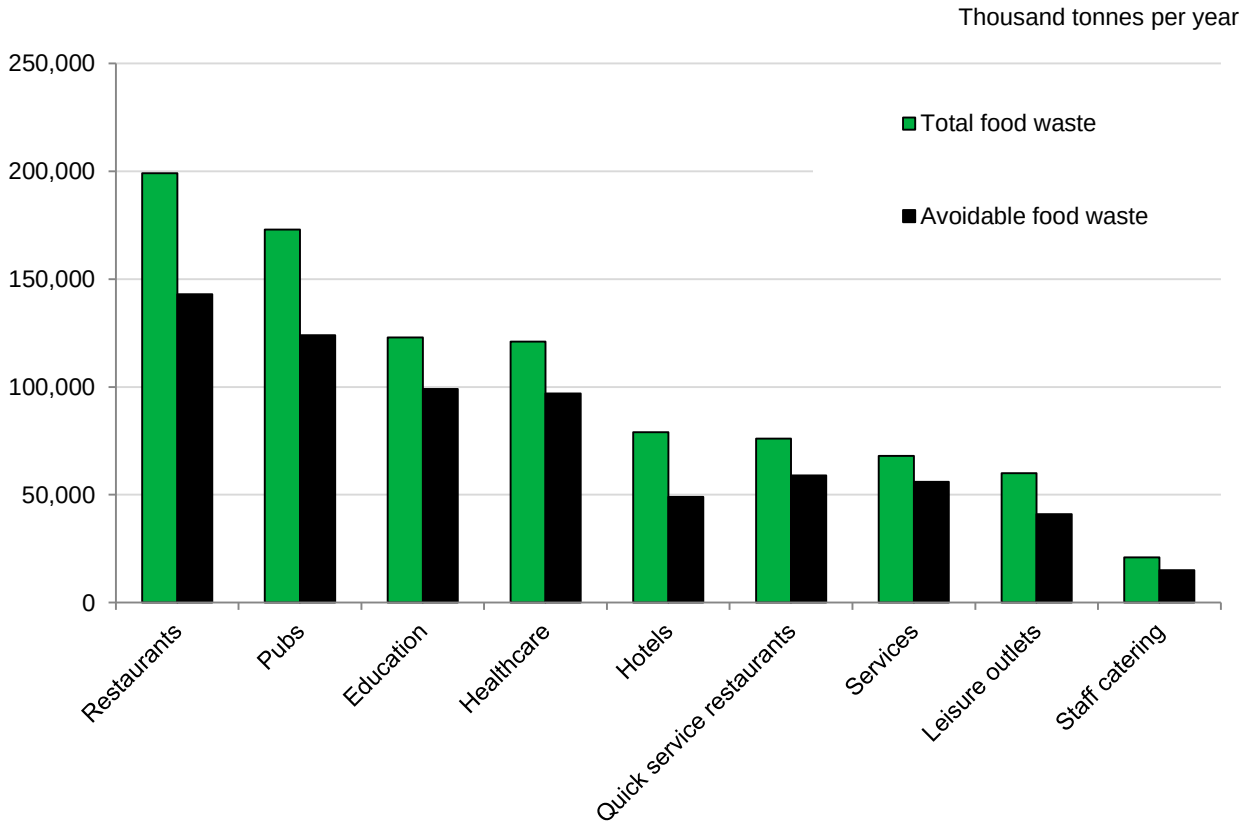


- 4.4 million tonnes of avoidable food waste was disposed of in the UK in 2015 by UK households, very similar to the 4.2 million tonnes in 2012 which also looked at the reasons for this.
- 48 per cent was not used in time, 32 per cent was due to too much being cooked or served, 14 per cent down to personal preference. Of this total avoidable food waste, 19 per cent was fresh vegetables and salad and 17 per cent was drink.
- Of the 2 million tonnes of food not used in time. 40 per cent was fresh vegetables, salad and fresh fruit, bakery was 15 per cent and dairy and eggs a further 13 per cent.
- Of the 1.3 million tonnes of food wasted because too much food was cooked or served, nearly a third was drink, homemade and pre-prepared meals was 17 per cent and fresh vegetables and salad was 15 per cent.
- Over 0.3 million tonnes of fresh fruit was wasted, around 0.8 million tonnes of vegetables and salad, 0.4 million tonnes of bakery and 0.4 million tonnes of dairy and eggs mainly due to not being used in time.
- Over half of drinks and homemade and pre-prepared meals were wasted due to too much being cooked or served.

Notes: Avoidable waste is food and drink thrown away because it is no longer wanted or has been allowed to go past its best. The vast majority of avoidable food is composed of material that was, at some point prior to disposal, edible. Further details can be found in the glossary
Source: Household food and drink waste in the UK 2012, WRAP, 2013
www.wrap.org.uk/sites/files/wrap/hhfdw-2012-summary.pdf
Food statistics pocketbook - GOV.UK

Hospitality sector food waste, UK

Figure 5.3: Food waste from the hospitality sector, UK, 2013[1].



- 0.92 million tonnes of food waste originates from the hospitality and food service sector. This is equivalent to one in six of the 8 billion meals served each year.
- 75 per cent or 0.68 million tonnes of this food waste is avoidable. 40 per cent of all food waste is associated with 'carbohydrate foods', including: potato and potato products, (21 per cent); bread and bakery (12 per cent); and pasta/rice (7 per cent).
- On average 21 per cent of food waste arises from spoilage; 45 per cent from food preparation and 34 per cent from consumer plates.
- A quarter of all food waste that is unavoidable mainly consists of fruit and vegetable peelings
- The cost of food and drink waste from the hospitality sector was around £2.5 billion in 2011 rising to £3.0 billion by 2016.

Source: WRAP

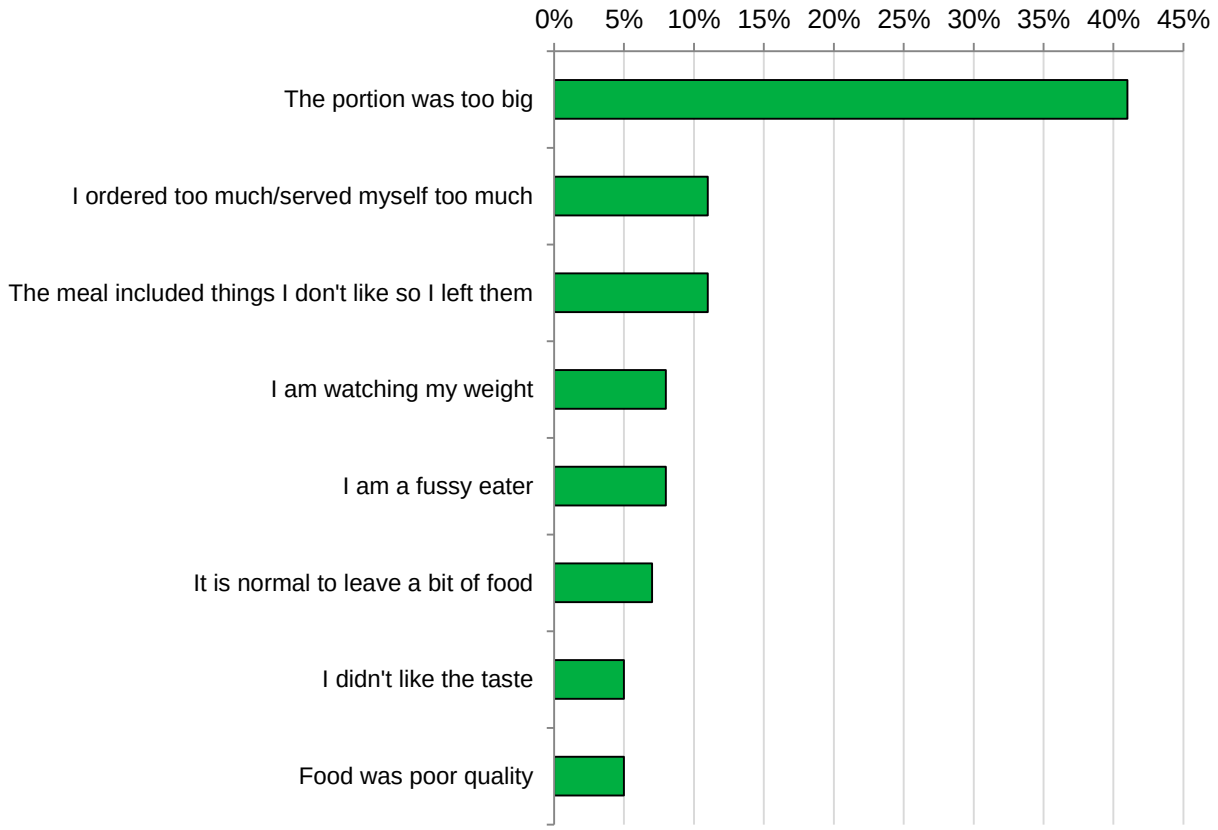
[1] Information is based on a 2013 WRAP Report which drew together a number of pieces of research. HaFS waste estimates have been compiled from waste reviews and surveys carried out in 2011 and 2013, and datasets collected between 2009 and 2012.

www.wrap.org.uk/content/food-waste-hospitality-and-food-service-sector
www.wrap.org.uk/content/overview-waste-hospitality-and-food-service-sector

Understanding out of home consumer food waste

Figure 5.4: Reasons why food was left, UK, 2012.

Percentages



- Over half of meal leavers eating out linked leaving food to various aspects of portion sizes. Two fifths (41 per cent) of meal leavers stated that one of the reasons why they had left food was because the portion size was too big and 11 per cent stated that they ordered/served themselves too much.
- The research showed that customers take into account the cost and value of what they have actually ordered to decide whether to leave food and what part of the meal to leave .Parts of the meal which tend to be left are the main dish and the accompanying sides while appetisers, starters and desserts were less likely to be left.
- Those that left food at the end of their meal mainly stated leaving chips (32 per cent) and vegetables (18 per cent). This is true across all types of venue though chips are even more likely to be left in quick service restaurants (45 per cent) and pubs (38 per cent).
- A bigger proportion of meal leavers tend to leave food when eating out in either pubs, hotels or restaurants than other venues..

Source: WRAP
www.wrap.org.uk/sites/files/wrap/OOH%20Report.pdf

Percentage of Local authorities collecting food waste

Figure 5.5: Percentage of local authorities collecting food waste, UK countries, 2014/15.

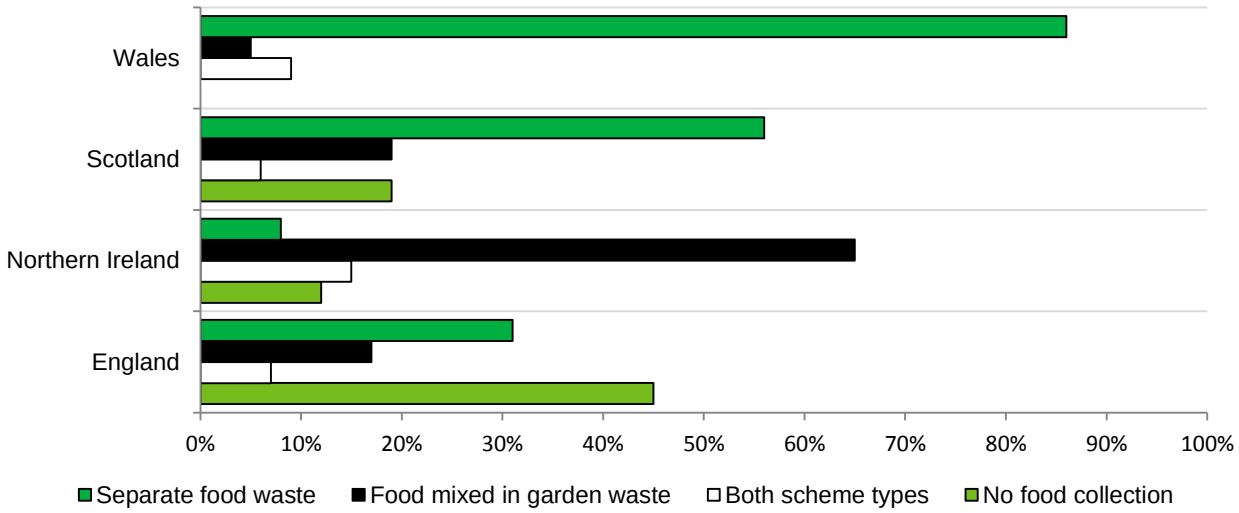
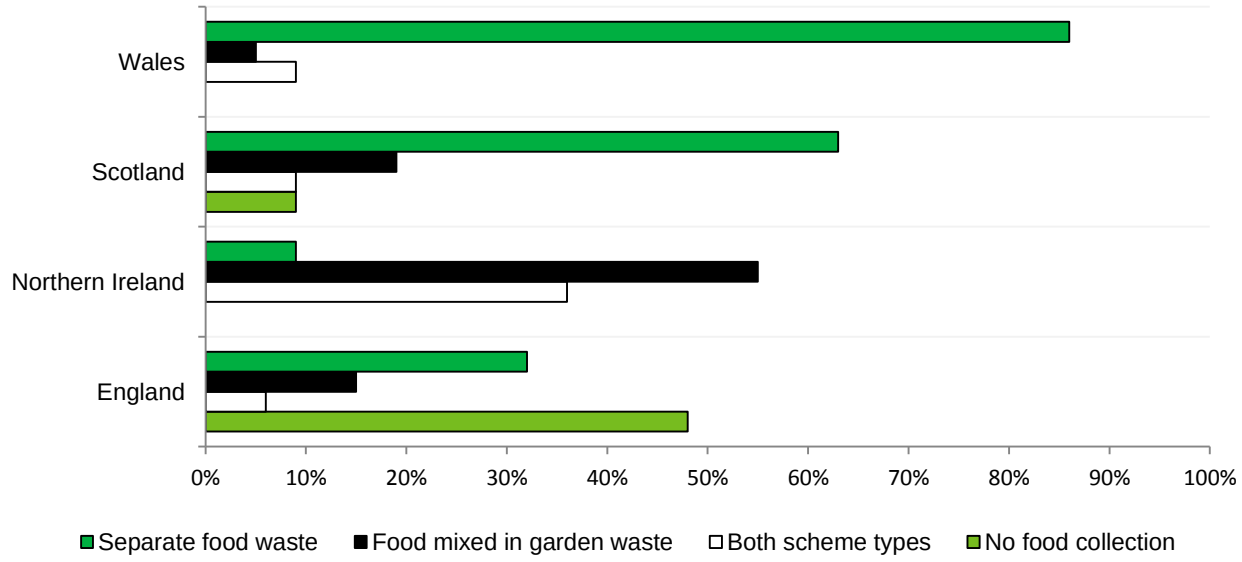


Figure 5.6: Percentage of local authorities collecting food waste, UK countries, 2015/16.



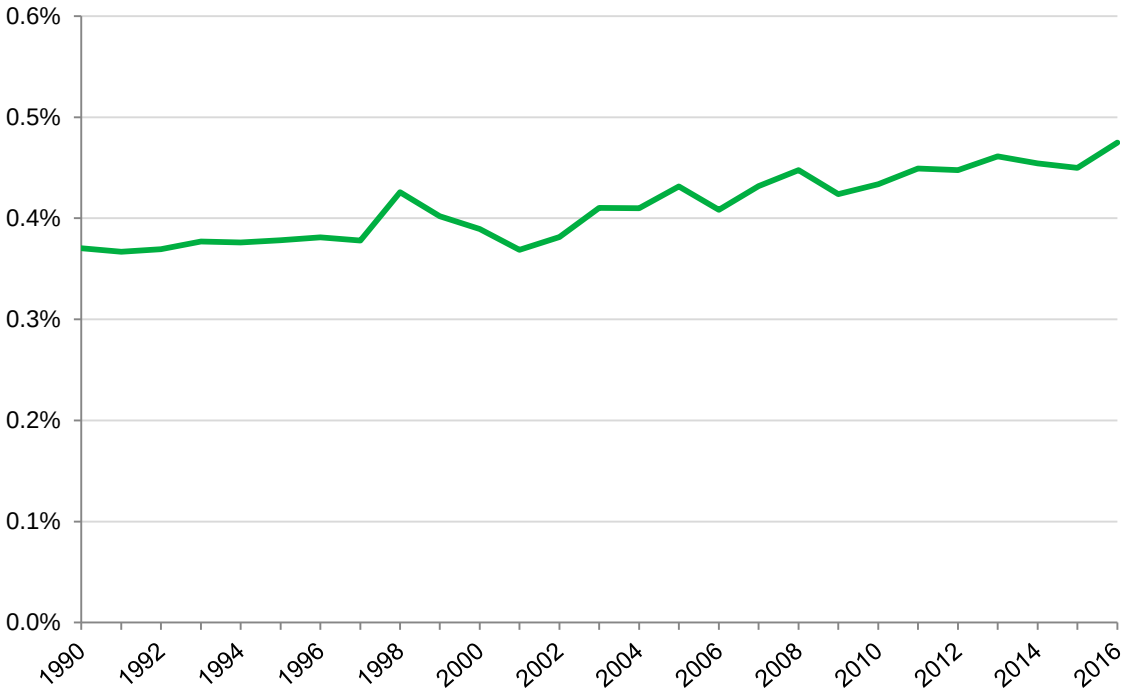
- Figures 5.5 and 5.6 covers the types of collection schemes operated by all authorities in the UK.
- 86 per cent of local authorities in Wales have separate food waste collections, with 5 per cent running both separate food waste and food mixed in with garden waste schemes.
- In England, Scotland and Northern Ireland some local authorities just collected food waste mixed in garden waste.

Notes: In any authority a scheme may not be available to every household.
Source: WRAP
WRAP Dry recycling performance benchmarks

Section 6 Economic characteristics of the waste management sector

Gross Value Added of the waste management sector as a percentage of the whole economy.

Figure 6.1: GVA of the waste management sector as a percentage of the economy's GVA, UK, 1990 – 2016.



- Figure 6.1 uses the chain volume measure of GVA. This measure already takes price fluctuations into account.
- In 2016 the GVA that the waste sector generated showed a slight increase (0.47 per cent of the economy's GVA).

Source: Office for National Statistics – National Accounts – GVA given in CVM
www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/ukgdpolowlevelaggregates

Gross Value Added by waste management sector

Table 6.1: GVA by waste management sectors, UK, 2008 – 2015.

£m (2015 values)

	2008	2009	2010	2011	2012	2013	2014	2015
Waste collection	2,134	2,453	2,369	2,675	2,856	2,682	2,993	3,434
Waste treatment and disposal	1,585	1,109	1,251	1,666	1,221	1,426	1,702	1,686
Materials recovery	1,939	1,336	2,030	2,110	1,886	1,288	1,817	1,454

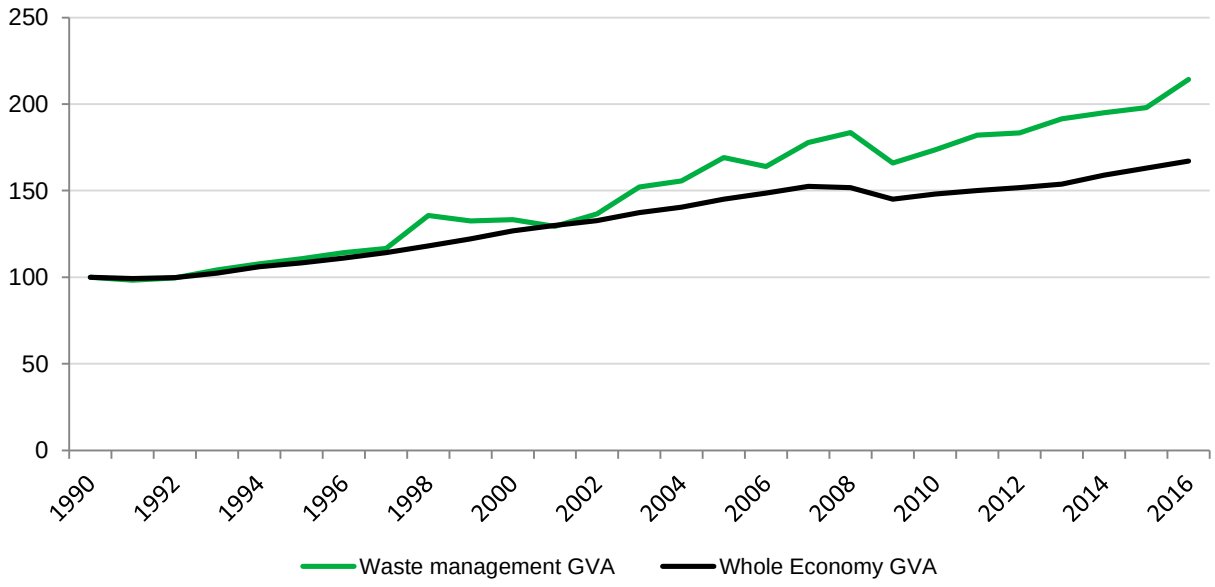
- For comparison purposes, all values have been converted to 2015 figures.
- Between 2008 and 2015 Gross Value Added (GVA) of the all waste sectors fluctuated.

Source: Office for National Statistics – Annual Business Survey
www.ons.gov.uk/businessindustryandtrade/business/businessservices/datasets/uknonfinancialbusinesseconomyannualbusinesssurveysectionsas

GVA of waste management sector

Figure 6.2: Index of GVA over time of the waste management sector and the whole economy in constant prices[1], UK, 1990 – 2016.

(1990=100)



[1] – UK National Accounts Chain Value Measure (CVM) – waste sector defined by SIC 38

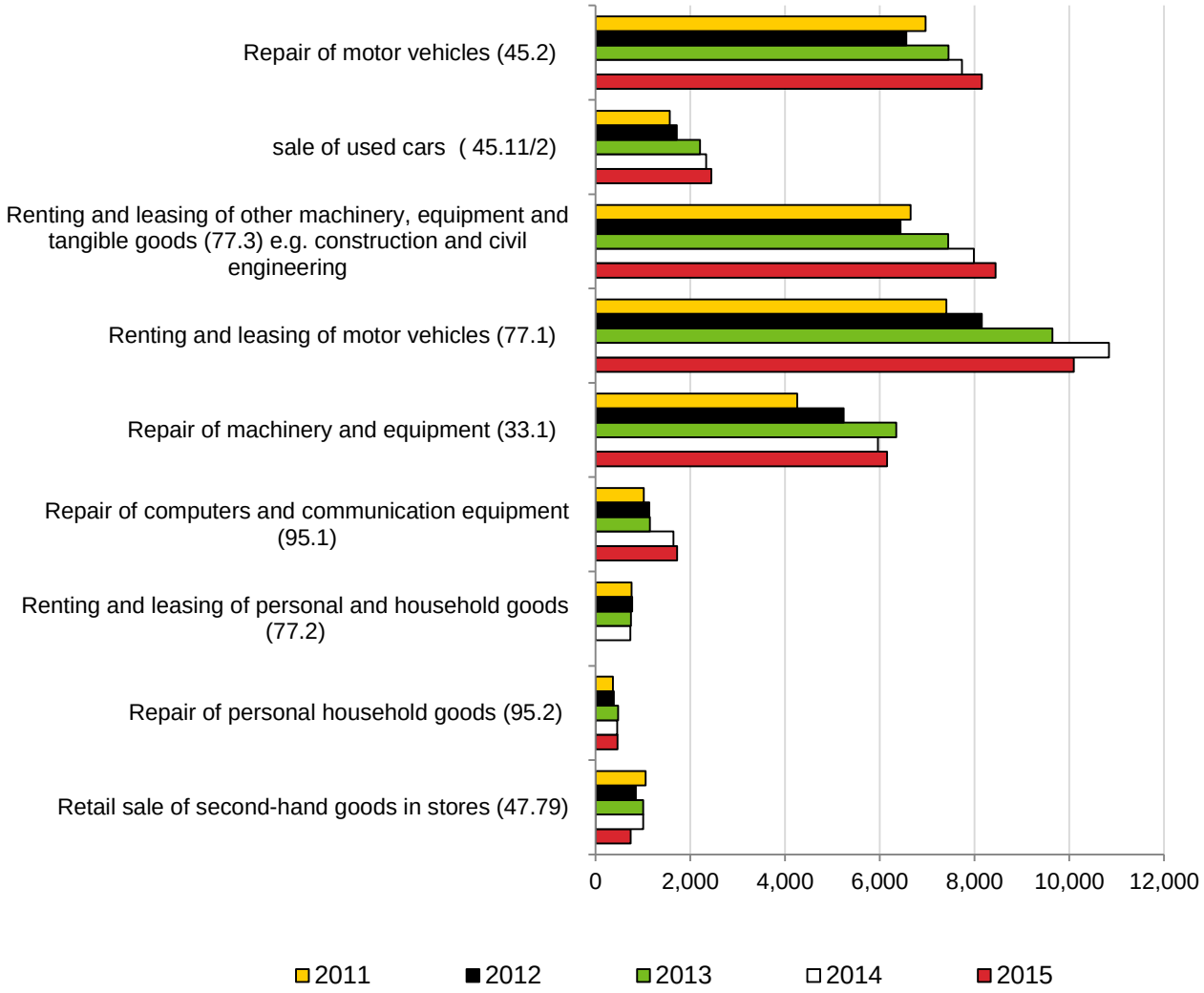
- Figure 6.2 uses the chain volume measure of GVA. This measure already takes price fluctuations into account.
- Between 1990 and 2016 Gross Value Added (GVA) of the waste sector fluctuated more than that of the whole economy.
- Over the past decade the GVA of the waste and resource management sector has grown at a faster rate than the wider economy. Following the downturn in 2009, the GVA of the waste sector has steadily increased and in 2016 increased by 8 per cent from the previous year.

Source: Office for National Statistics – National Accounts – GVA given in CVM
www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/ukgdpolowlevelaggregates

GVA for repair, re-use and leasing sectors

Figure 6.3: GVA for repair, re-use and leasing sectors[1], UK, 2011 – 2015 *(Waste Prevention Metric*).

£ million



- Repair, renting and leasing of motor vehicles makes up around 50 per cent of the total GVA from the repair, reuse and leasing sector covered in the above chart.

[1] GVA at basic prices

Source:
www.ons.gov.uk/businessindustryandtrade/business/businessservices/datasets/uknonfinancialbusinesseconomyannualbusinesssurveysectionsas

Exports of Refuse-Derived Fuel

Table 6.2: Exports of Refuse-Derived Fuel (RDF) from England and Wales[1], 2010 – 2015.

Thousand tonnes

	2010	2011	2012	2013	2014	2015
Export of refuse – derived fuel	9	250	961	1,799	2,374	2,819

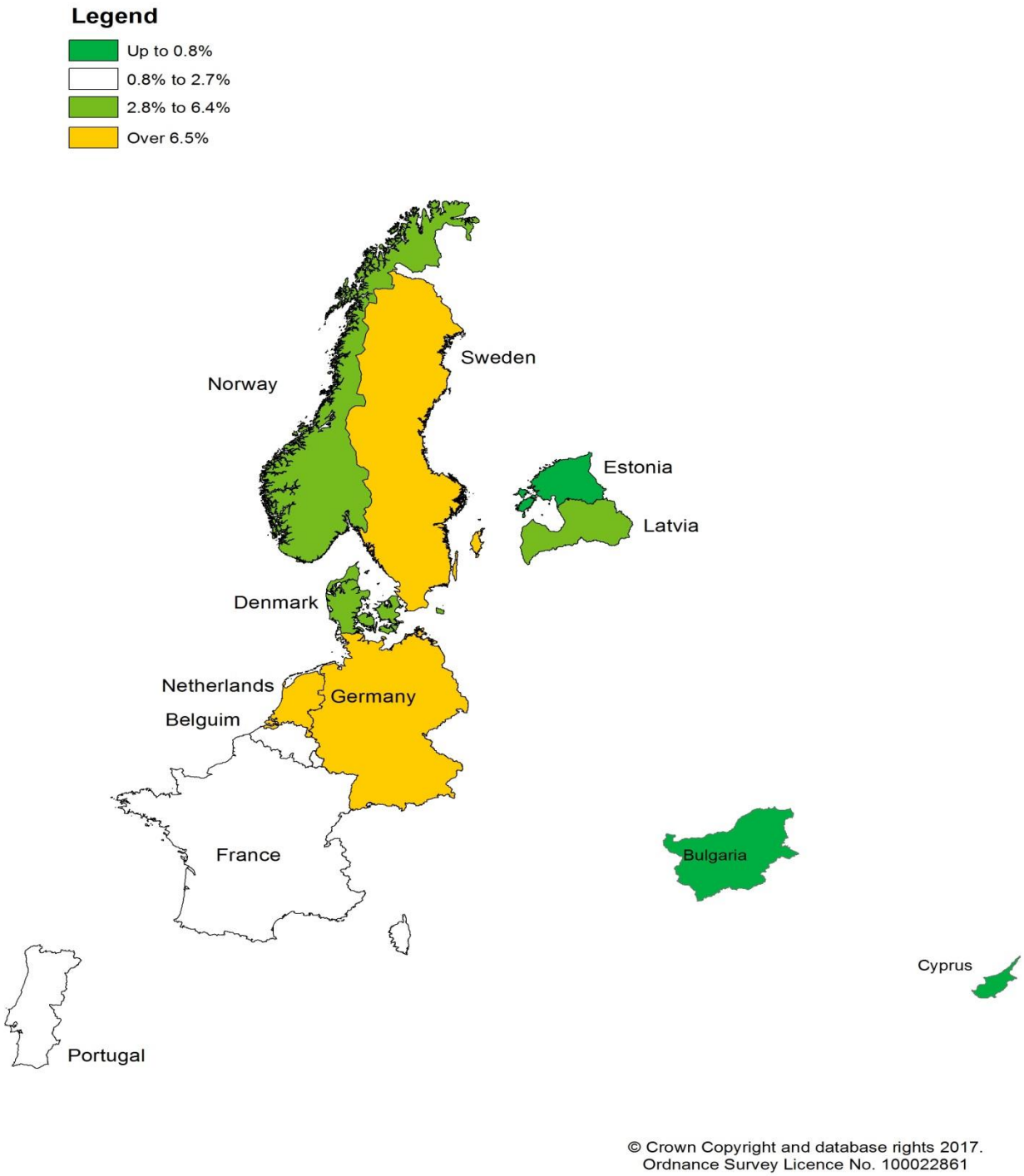
- Refuse derived fuel consists of residual waste that is subject to a contract with an end-user for use as a fuel in an energy from waste facility. The contract must include the end-user's technical specifications relating as a minimum to the calorific value, the moisture content, the form and quantity of the RDF[2].
- Exports of refuse derived fuel to energy from waste facilities elsewhere in the European Union have increased dramatically in recent years as it becomes a more favoured management route for waste.

[2] This is a new definition for RDF in England that will be trialled with industry for a six month period during 2016. Following the trial, a decision will be made on the permanent introduction of the definition

Notes: There were no exports prior to 2010.
[1] Until October 2014 this data included exports from England and Wales, from November 2014 this data is exports from England only

Source: Environment Agency.
www.geostore.com/environment-agency/WebStore?xml=environment-agency/xml/ogcDataDownload.xml
International Waste Shipments

Figure 6.4: Destination of RDF exports from England, 2015.

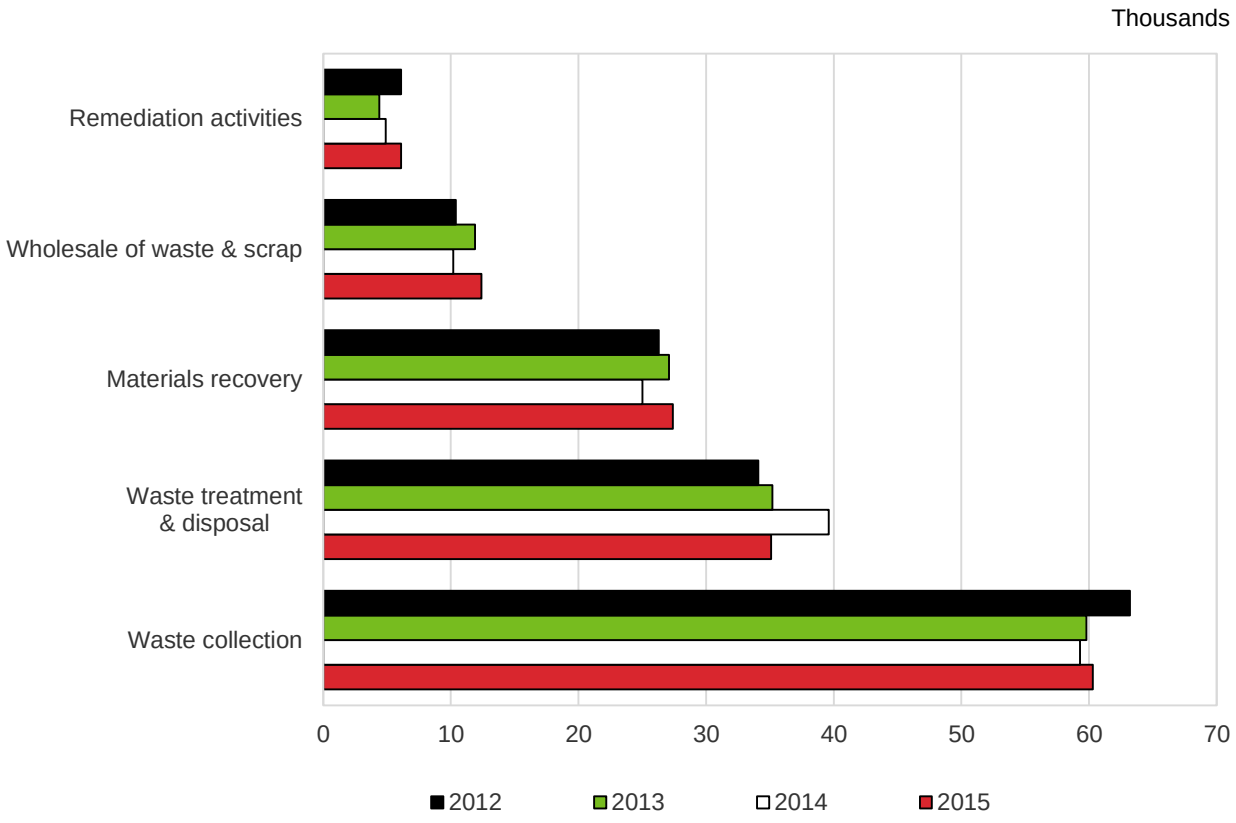


Source: Environment Agency.
www.geostore.com/environment-agency/WebStore?xml=environment-agency/xml/ogcDataDownload.xml - International Waste Shipments

Employees in the waste sector

Employees in the waste sector, GB

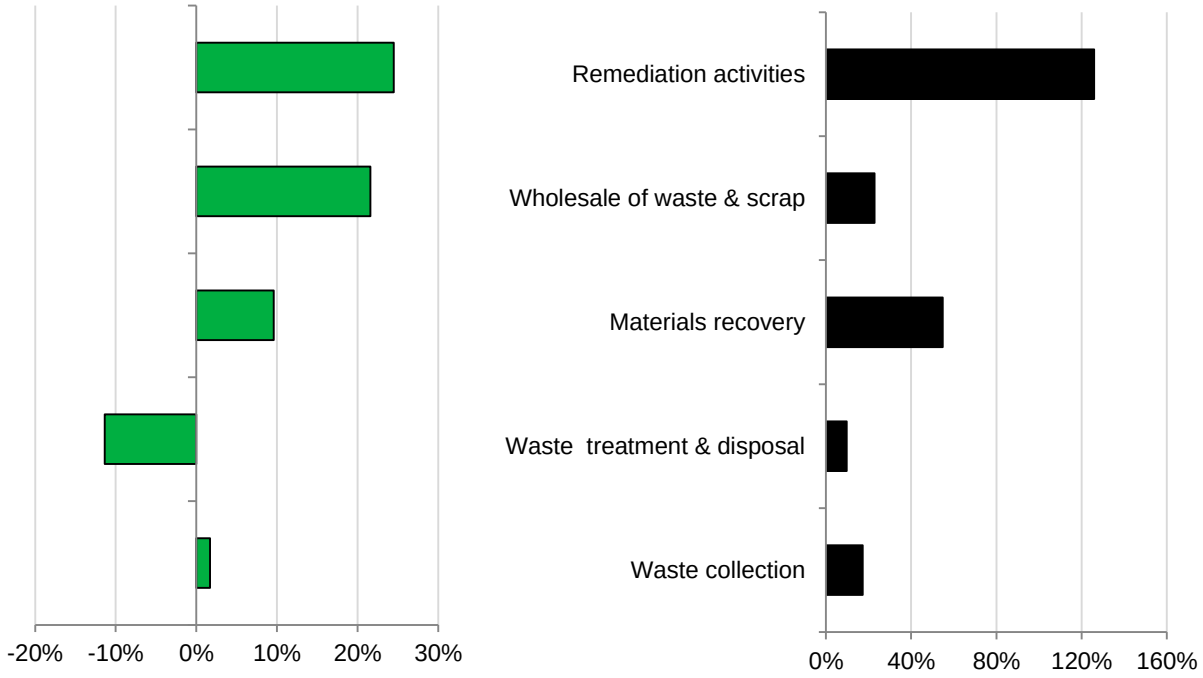
Figure 6.5: Employees in the waste sector, GB, 2012 – 2015.



- Total number of employees in the waste industry covers both full time and part time employees, from the private and public sectors.
- The waste collection industry covers employees in both hazardous and non-hazardous waste. The materials recovery industry covers both dismantling of wrecks and also recovery of sorted materials.
- The waste treatment and disposal industry also covers hazardous and non-hazardous waste
- In 2015, 4 out of the 5 sectors experienced increases in the number of employees compared to 2014.
- Employees data presented are estimated and subject to standard errors, therefore should be treated with caution.

Source: ONS
Industry (2, 3 & 5 - digit SIC) - Business Register and Employment Survey (BRES): Table 2 - Office for National Statistics
Table2: Annual employee and employment estimates for GB and UK in September 2014 split by 2,3 and 5 digit SIC codes (SIC2007). Results given by full-time/part-time and public/private splits.

Figure 6.6: **Percentage change in employees in the waste industry in Great Britain, between 2009-2015 and 2014-2015.**



- Figure 6.6 is based on the percentage growth in the number of employees in the waste industry between 2009 - 2015, and 2014 - 2015.
- The percentage growth covers both full and part time employees in both public and private sectors of the waste industry.
- Between 2009 and 2015, all sectors within the waste industry experienced increases in employment numbers
- The Remediation activities saw the largest increase in employment since 2009
- Between 2014 and 2015 employee numbers in the Waste treatment and disposal sector decreased by over 11 per cent. However the increase in numbers in the other four sectors led to an overall increase in numbers within the industry.
- Employees data presented are estimated and subject to standard errors, therefore should be treated with caution.

Source: ONS
Industry (2, 3 & 5 - digit SIC) - Business Register and Employment Survey (BRES): Table 2 - Office for National Statistics

Employees in the waste sector, UK

Figure 6.7: Employees in the waste sector index, UK, 2000 – 2016.

(2000 = 100)

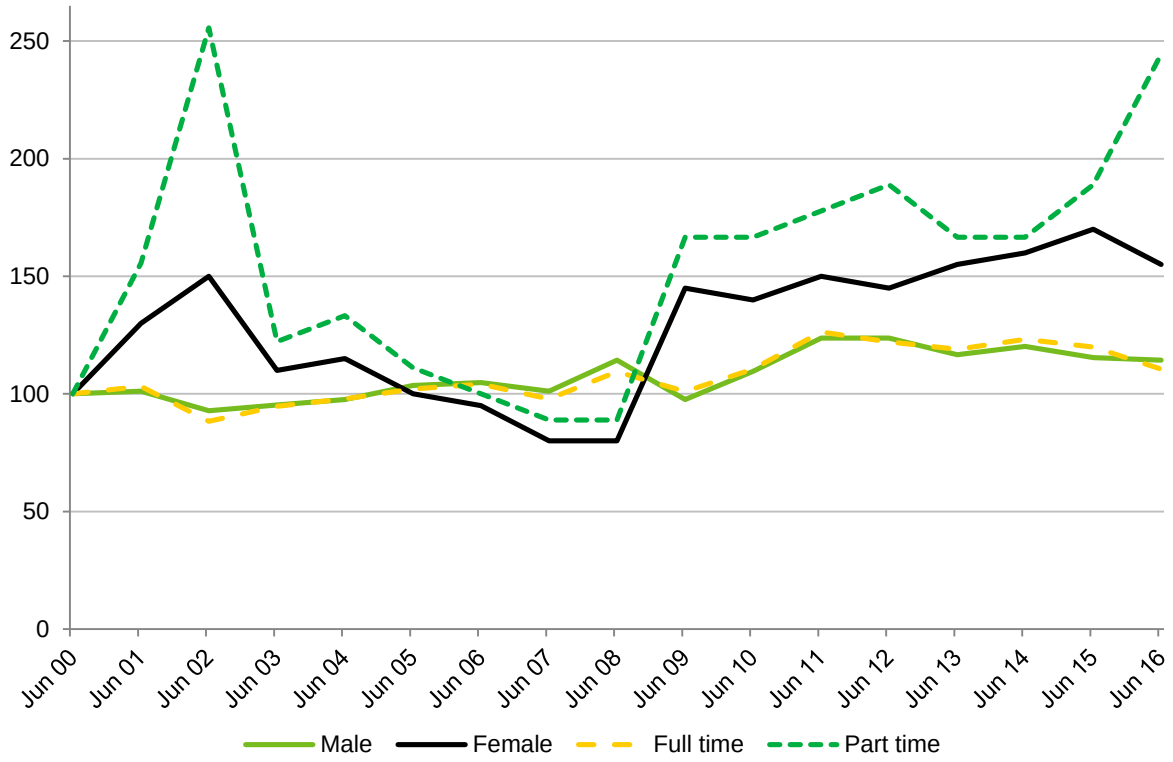
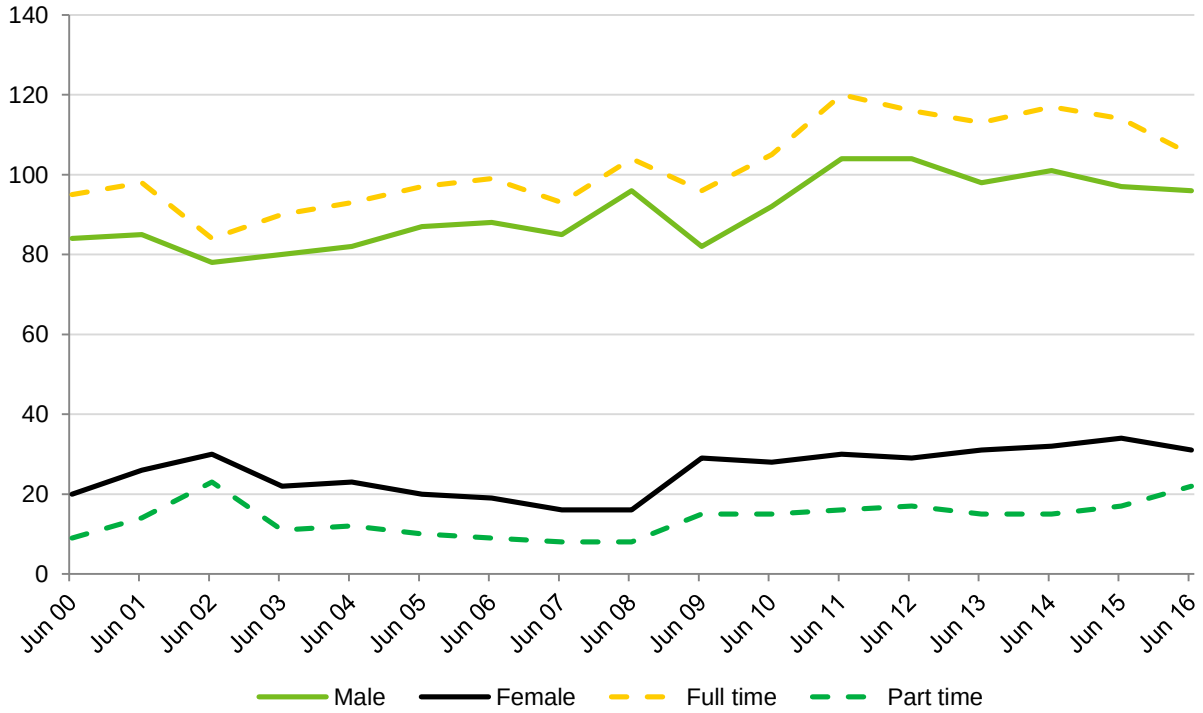


Figure 6.8: Employees in the waste sector, UK, 2000 – 2016.

Thousands



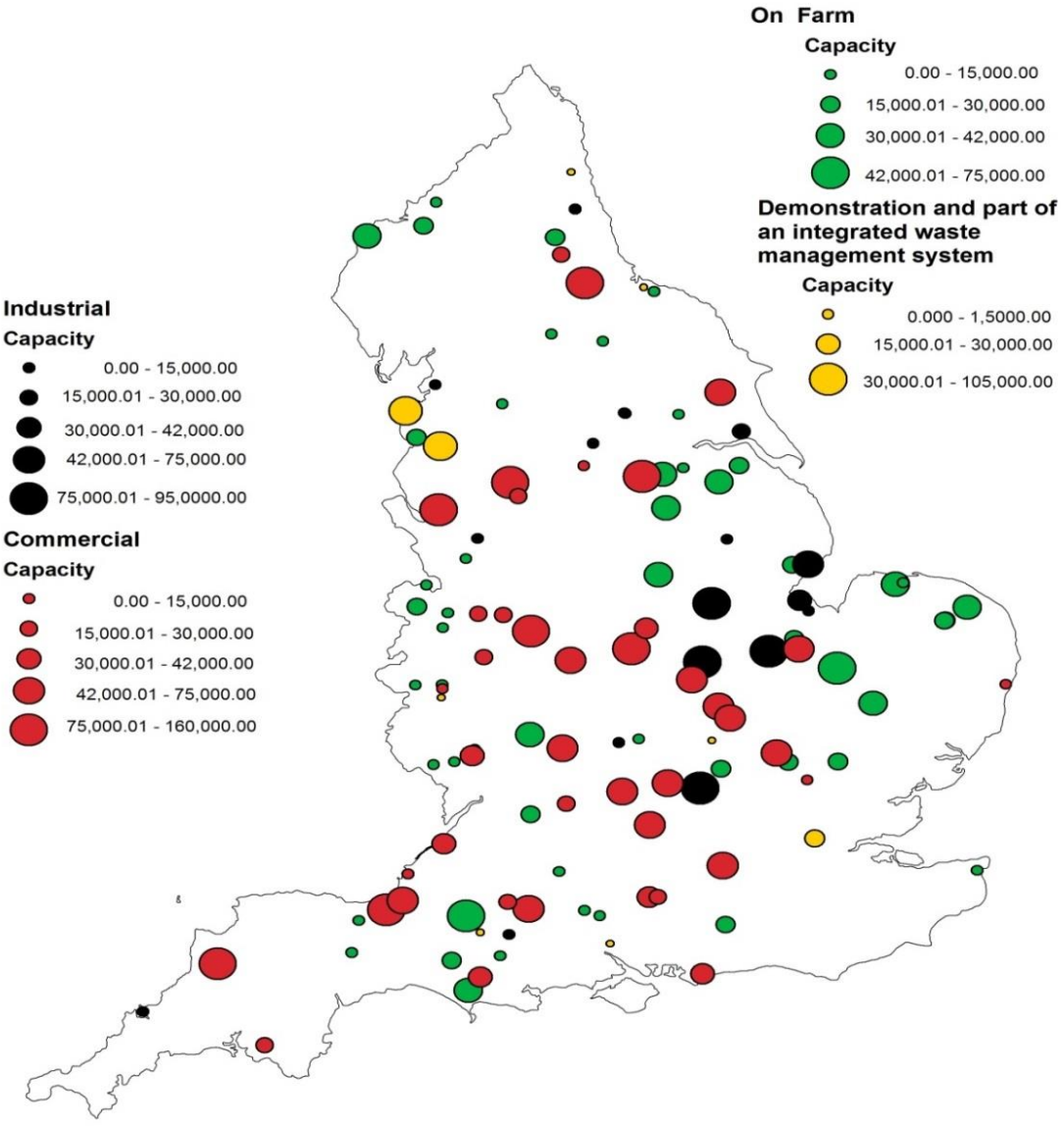
- Figures 6.7 and 6.8 cover all employee jobs in both public and private sectors of the waste industry in the UK excluding the Wholesale waste & scrap sector.
- Data is based on June series of each year and covers full and part time jobs as well as number of male and female jobs in the waste industry.
- The index for male employees (both part time and full time) is very similar to that of full time employees and has been steady over the years. While the index for female employees (also covering full and time) follows similar index pattern to that of part time employees.
- In 2015, part time employees in the waste industry increased by nearly 30 per cent from the previous year, mainly due to an increase in part time male employment. The number of full time female employees decreased within the same period
- Employees data presented are estimated and subject to standard errors, therefore should be treated with caution.

Source: ONS
www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employeejobsbyindustryjobs03

Section 7: Waste Infrastructure

Anaerobic digestion

Figure 7.1: Anaerobic Digestion sites, England, 2015.

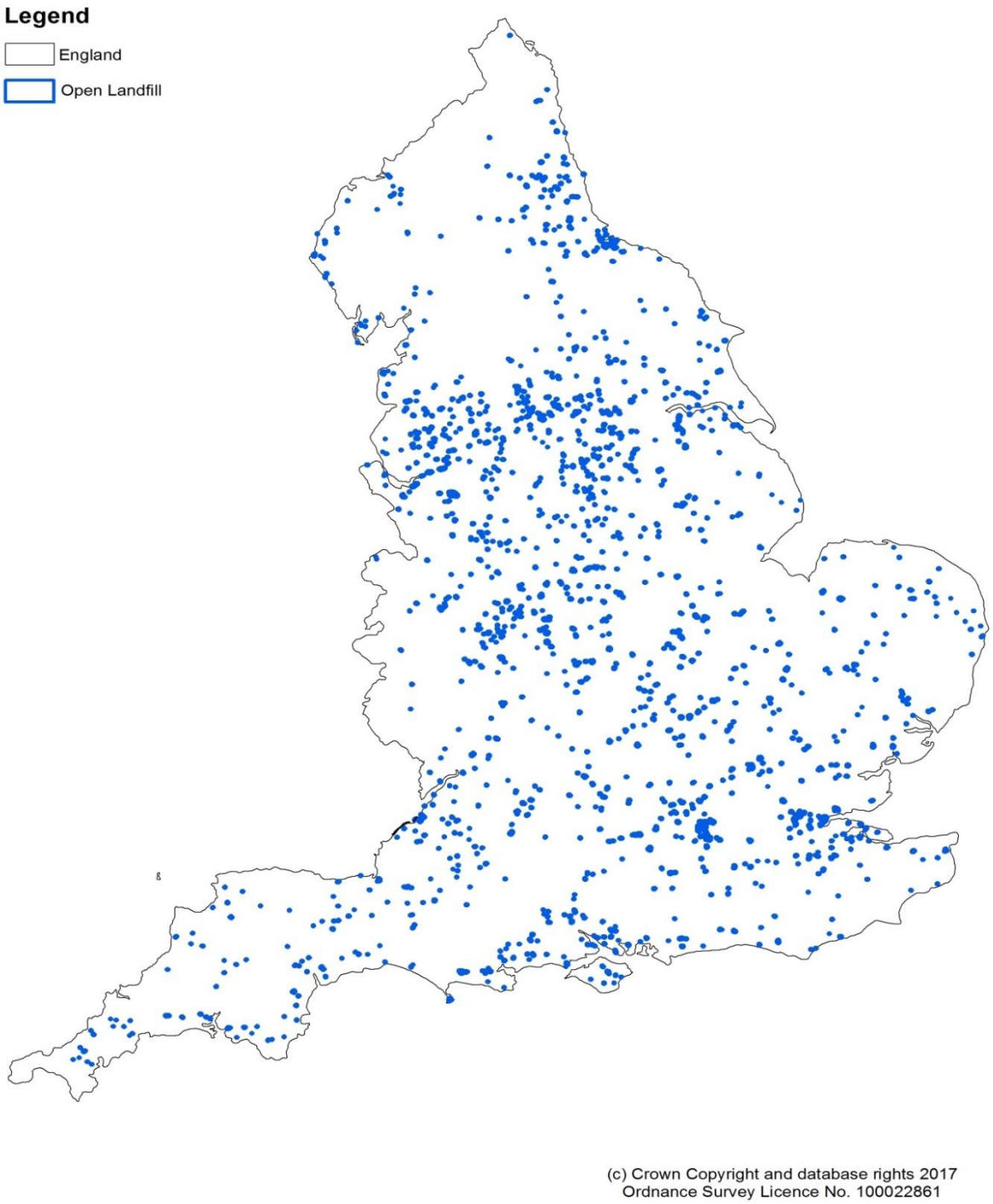


- As at 28th February 2015, there were 122 operational anaerobic digestion sites.
- Listed capacity (tonnage) is operational capacity, not throughput. This reflects the potential capacity of the digester

Notes: data here is updated after verification from contractor, it may differ from other sources
Source: www.wrap.org.uk/content/operational-ad-sites

Landfill sites

Figure 7.2: Permitted Waste sites (landfill sites that are currently authorised by the Environment Agency under Environmental Permitting Regulations), England, 2015.



Source: Environment Agency
www.geostore.com/environment-agency/WebStore?xml=environment-agency/xml/ogcDataDownload.xml

Number and Capacity of Final Treatment facilities, UK and England

Table 7.1: Number and capacity of 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 MSW	5	4
	Capacity (000t/yr.)	4,862	2,803
	of which dedicated to the processing of MSW	2,317	1,967
Incineration	Number of facilities	83	60
	Capacity (000t/yr.)	9,859	9,040
Recovery other than energy recovery (includes backfilling)	Number of facilities	2,660	1,699
	Permitted Capacity	:	:
Deposit onto or into land (landfill)	Number of facilities (includes closed facilities)	608	493
	Rest (remaining) Capacity (000 m^3)	602,223	484,370

: = Not available
000 t/yr. = thousand tonnes per year
MSW – Municipal Solid Waste – for further details please see Glossary
Energy recovery refers to facilities where the main purpose is generation of energy, or formal R1 accreditation has been awarded. Excludes recovery facilities operating solely under a waste exemption.

- Table 7.1 contains information on the number and capacity of various facilities for the final treatment of waste. Defra collates summaries from the environment agencies of all four UK countries of facilities authorised by mandatory permit or license. 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 identified as intermediate (which includes most anaerobic digesters) are excluded from Table 7.1. 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.
- 'Energy recovery' in table 7.1 refers to facilities where the main purpose is generation of energy, or 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'.

Notes: R1 accreditation is an EC standard based on efficiency factors. Application is voluntary, so the number of plants meeting R1 standards may be in excess of the number actually accredited.

Recovery operations covered by simple exemptions or simple registrations are not included. These operations are classed as low risk or low volume and do not have to report activity to Environment Agencies.

The permitted capacity of Energy Recovery and Incineration facilities includes municipal, commercial and industrial waste, and will be higher than the actual volume of waste treated.

Source: UK Waste Statistics Regulation return. See section 6 of UK Statistics on Waste.

Permitted estate at end of 2015, England

Table 7.2: Permitted estate at the end of 2015, England.

Waste management method	Sites permitted at end 2015	Sites that accepted waste in 2014	Million tonnes managed in 2014
Landfill	493	343	43.9
Transfer	3,063	2,364	44.9
Treatment	2,688	2,052	64.1
Metal recycling	2,474	1,277	13.2
Incineration	141	78	10.4
Use of waste	226	122	2.0
Land disposal	317	191	12.6
Total	**9,402**	**6,427**	**191.1**

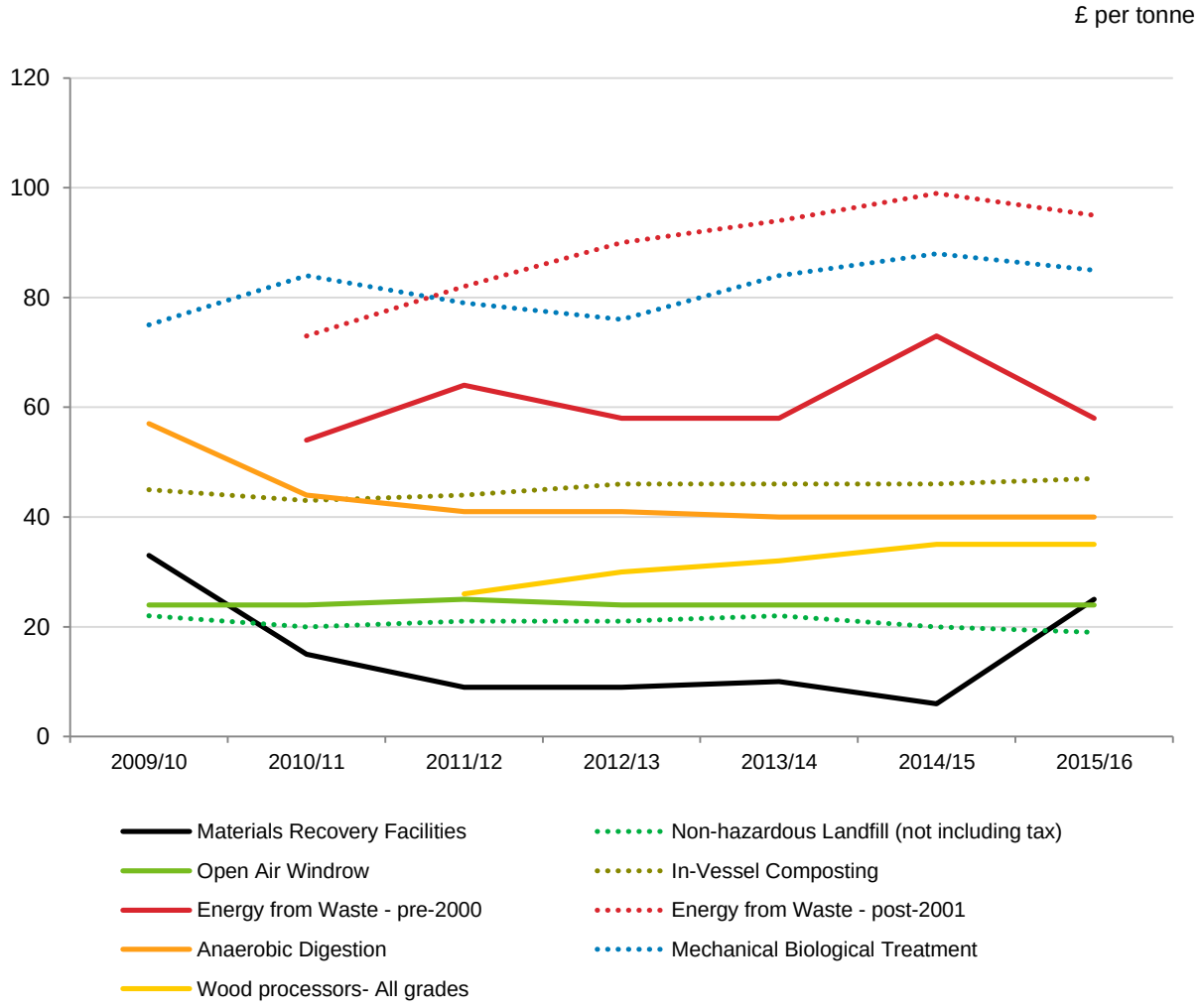
- In 2015 there were around two-thirds of permitted sites accepting waste.
- Three quarters of permitted Transfer sites were accepting waste in 2015, whilst only half of metal recycling sites accepted waste.

Notes: There is a possibility of waste being double-counted because an item of waste can pass through more than one facility
This data is based on permitted waste site monitoring returns. Some sites may not have submitted their returns in 2014 but may have accepted waste.

Source: Environment Agency, Waste management 2015
www.gov.uk/government/uploads/system/uploads/attachment_data/file/563883/Waste_management_2015_summary.pdf

Gate Fees

Figure 7.3: Median Gate Fees for various waste streams, UK, 2009/10 – 2015/16.



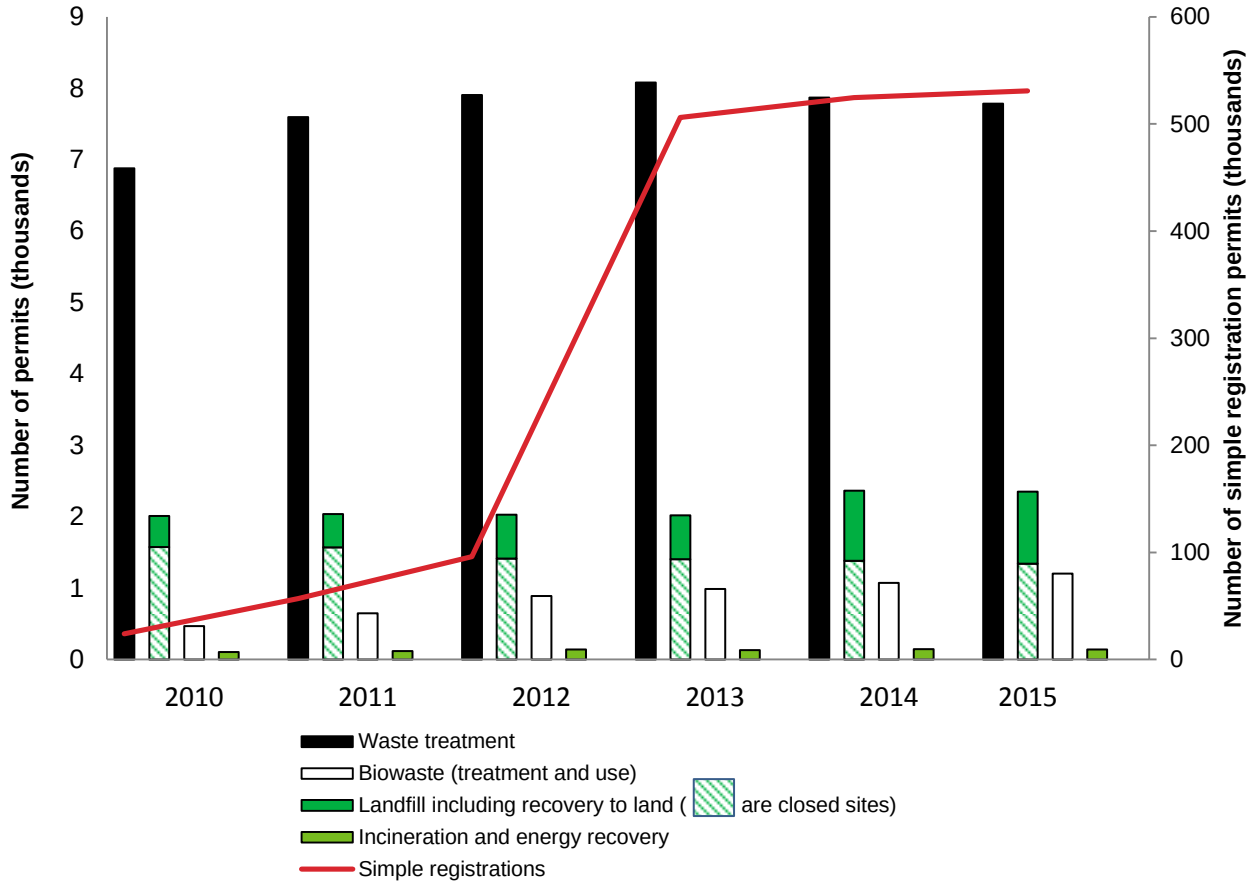
- Gate Fees for non-hazardous landfill are shown excluding landfill tax, which pushes the median cost per tonne to over £100. This additional tax would make energy from waste a preferable method.
- Materials Recovery Facilities have the lowest gate fees, but they also have the largest range of gate fees (-£62 to £89).
- Anaerobic Digestion and In Vessel Composting sites would be competing for the same waste types.
- Figure 7.3 shows Anaerobic Digestion to have a lower median price, but they have similar ranges of prices.

Notes: Energy from Waste – pre- 2000 are plants built before 2000, which were built in a different way to those built post-2000. Operating costs tend to be lower in the 'older' facilities.

Source: WRAP
www.wrap.org.uk/sites/files/wrap/Gate_Fees_Report_2013_h%20(2).pdf

Waste Management Infrastructure, England.

Figure 7.4: Number of waste sector permits, England, 2010 – 2015.



- The waste industry in England holds over 11,000 Environmental Permitting Regulations (EPR) permits issued by the Environment Agency; 81 per cent of all EPR permits.
- The number of permitted waste facilities increased by 21 per cent between 2010 and 2015. The increases are mostly in the waste treatment and biowaste sectors.
- Simple waste operations are exempt from needing a permit. These exemptions need to be registered. These simple registrations increased significantly in 2013 because the transitional requirements for agricultural exemptions ended and many farmers registered new simple waste registrations in the middle of that year.

Notes: Sites can hold more than 1 permit

Treatment includes composting and recycling

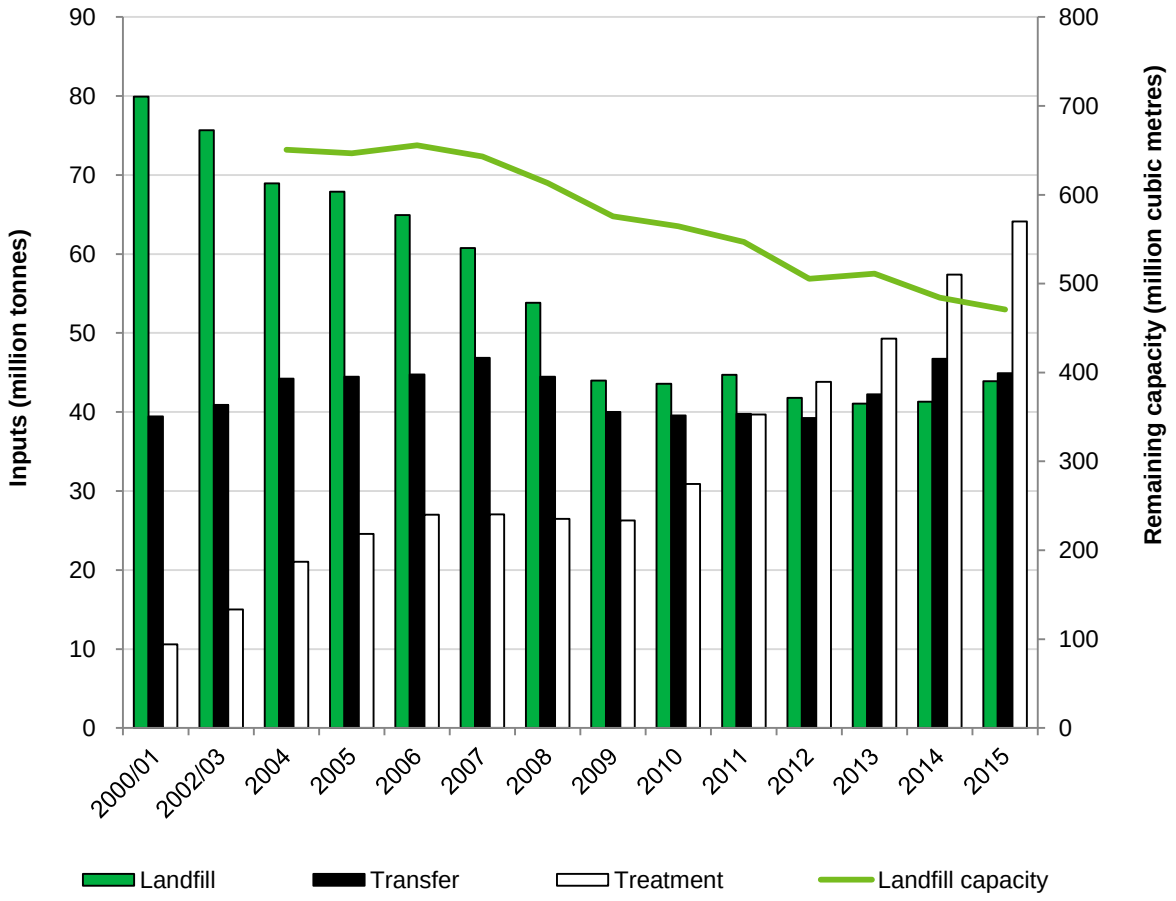
Examples of simple registrations are: storing and bulking-up plastic packaging in a container at a place before it's moved to another site to be recovered, storing sewage sludge at a farm before it's spread on land or anaerobic digestion of manure and plant tissue waste in a dedicated AD plant to produce a digestate

For more information: www.gov.uk/guidance/register-your-waste-exemptions-environmental-permits

Source: Environment Agency

www.gov.uk/government/uploads/system/uploads/attachment_data/file/553539/Regulating_the_waste_industry_2015_evidence_summary.pdf

Figure 7.5: Waste Management Throughput and Capacity, England, 2000/01 – 2015.



- In recent years more waste has been re-used and recycled, and less landfilled.
- All sites with an EPR permit recovered 65 per cent of their waste in 2015, compared to 39 per cent in 2000.

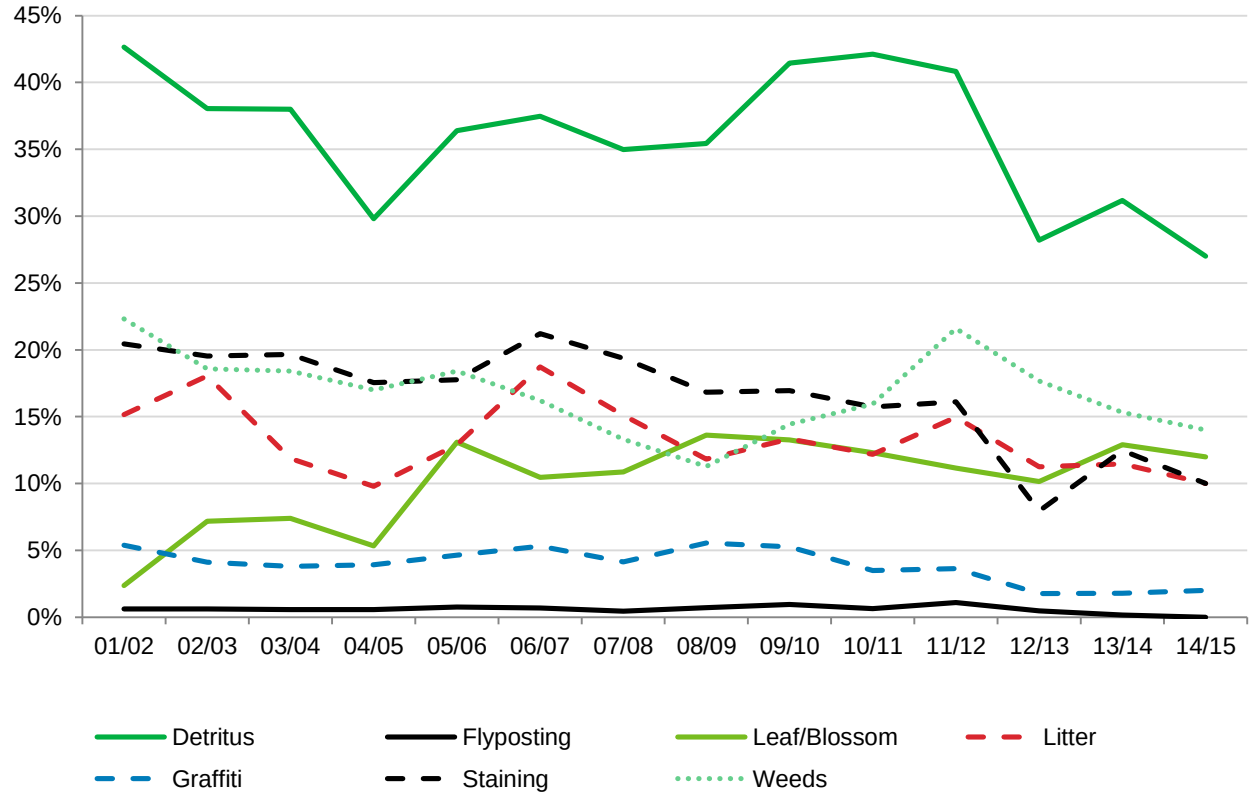
Notes: [1] Sites can hold more than one permit
Treatment includes composting, incineration and recycling

Source: Environment Agency
www.gov.uk/government/uploads/system/uploads/attachment_data/file/553539/Regulating_the_waste_industry_2015_evidence_summary.pdf

Section 8: Environmental issues relating to waste

Local Environment Quality - percentage of survey sites below an acceptable standard

Figure 8.1: Percentage of survey sites below an acceptable standard[1], England, 2001/02 - 2014/15.



[1]An acceptable standard is Grade B and above – Predominantly free with some minor instances of the issue to none of the issues present

- Overall, there has been an improvement in sites with detritus and leaf/blossom
- Flyposting seems to have scored consistently well.

Notes: Due to a change in site selection methodology between 2012/13 and 2013/14 onwards, it is not possible to make any comparisons between these years.

Source: KBT, The Local Environmental Quality Survey of England 2014/15 (LEQSE) www.keepbritaintidy.org/Documents/Files/LEQSE%202014/KBT_LEQSE%202014_Online%20Final.pdf – Figure 4

Carrier Bags

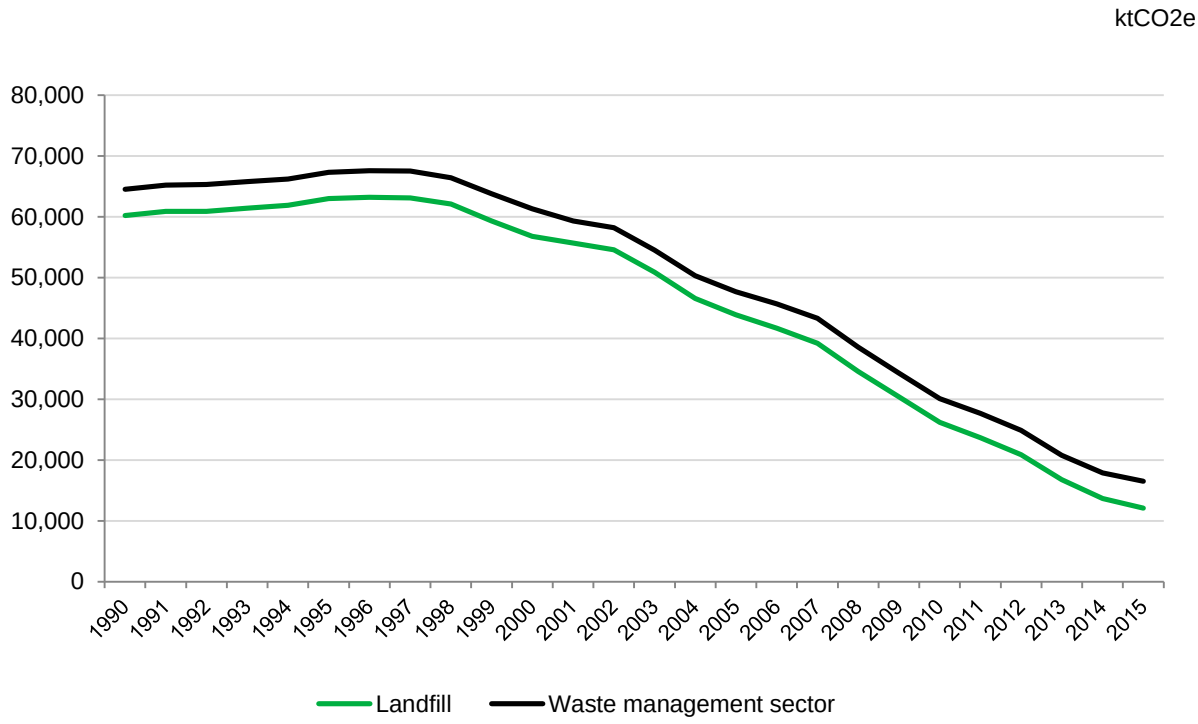
Figure 8.2: Carrier bags, England, 2015-16.

- In the six months from July 2015, 1.1 billion single –use carrier bags were sold by large retailers who registered and reported data
- 61 per cent of these were issued by the 7 main retailers (Asda, Marks and Spencer's, Sainsburys, Tesco, The Co-operative group, Waitrose and WM Morrison)
- The net proceeds after taking VAT and any costs into account amounted to £41.3 million
- More than two-thirds of retailers voluntarily provided additional information on the amount donated and the type of good causes supported; at least £29 million was donated to good causes environment, education, health, arts, charity, heritage and sports as well as local causes chosen by staff and customers

Source: www.gov.uk/government/publications/carrier-bag-charge-summary-of-data-in-england-for-2015-to-2016/single-use-plastic-carrier-bags-charge-data-in-england-for-2015-to-2016

Emissions from landfill

Figure 8.3: Historical trend of methane (CH_4) emissions from landfill and waste management sector, UK, 1990 – 2015 *(Waste Prevention Metric).*



- The above chart shows CH_4 emissions measured as 'carbon dioxide equivalents'.
- The amount of CH_4 emitted from landfills depends on the difference between methane generation and methane capture at landfill.
- Emissions have decreased since 1995 due to reductions in waste sent to landfill due to the introduction of landfill tax and an increase in recycling, the waste PFI programme, as well as improvements in landfill management and the introduction of CH_4 capture technology.

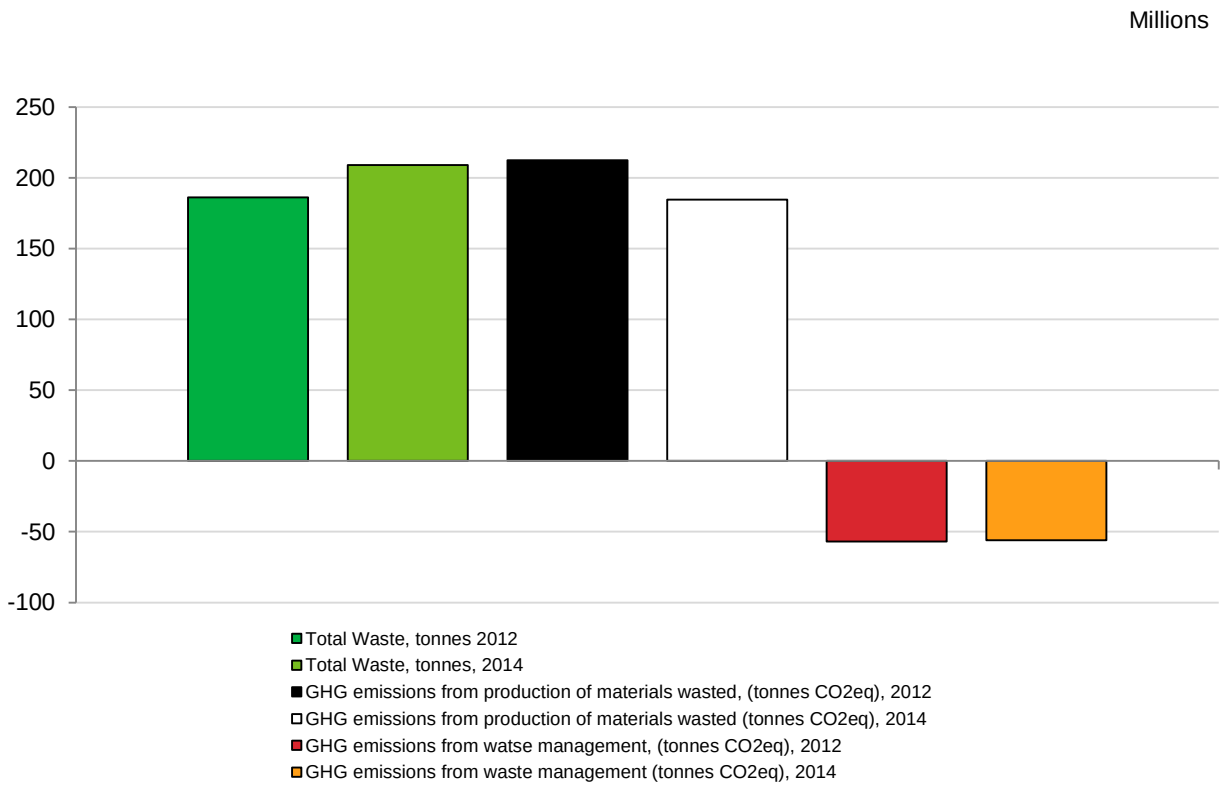
Notes: DECC have updated the global warming potential (GWP) of the non-CO2 GHGs (the GWP is the number used to multiply emissions of non-CO2 GHGs to convert them into CO2 equivalent). The GWP of methane increased (meaning that methane emissions expressed in terms of CO2 equivalent are higher than they previously were)

Source: BEIS
www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2015

Carbon Metric Factors

This section of the Digest presents data on carbon emissions from waste management.

Figure 8.4: Waste weight and GHG emissions 2012 and 2014.

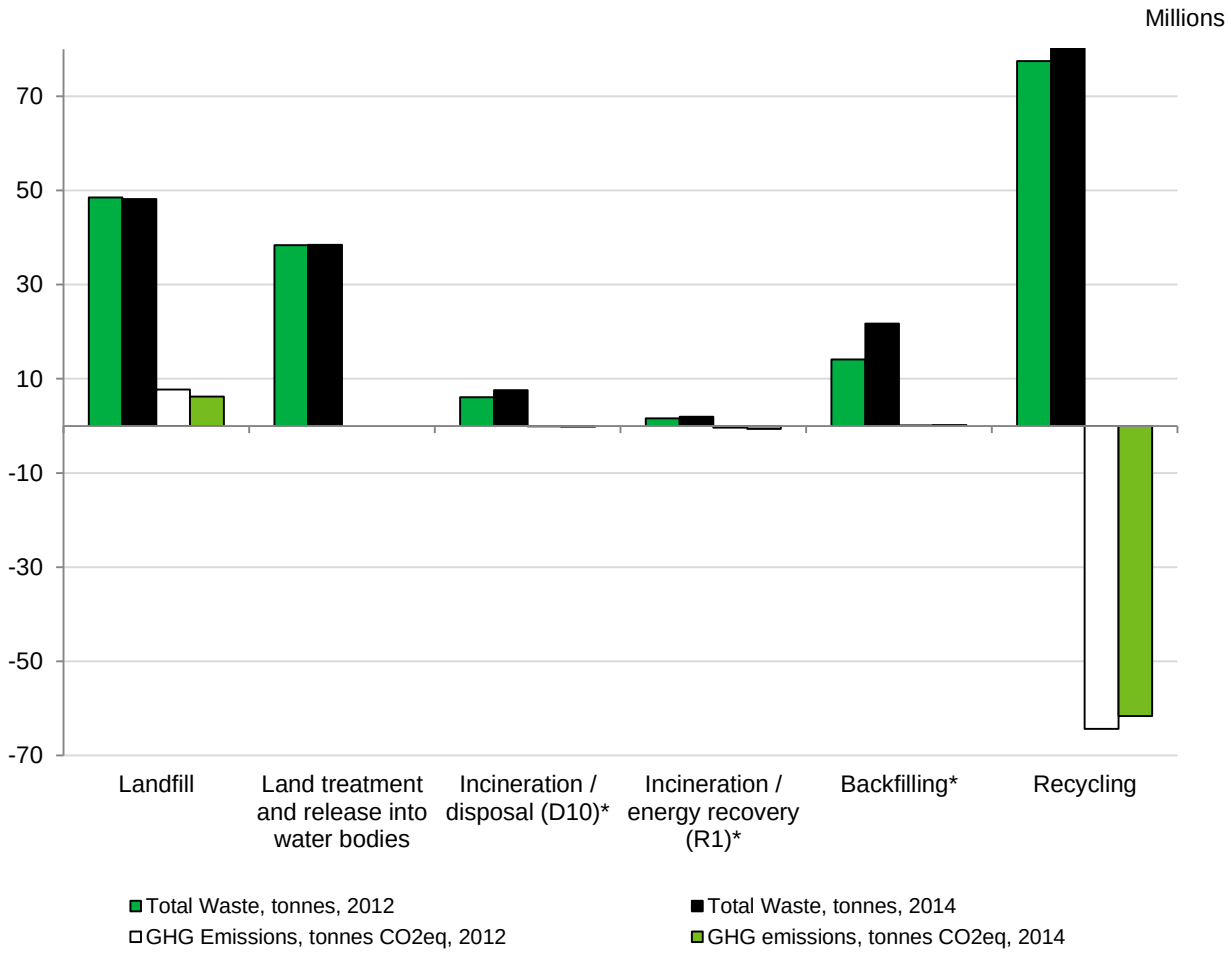


- Figure 8.3 shows total waste arisings, in million tonnes and total greenhouse gas emissions resulting from the production of materials which become waste and from waste treatment activities, measured in million tonnes of carbon dioxide equivalent (CO_2 eq).
- Emissions associated with materials discarded in 2014 were approximately 185 million tonnes of CO_2 eq, and the eventual treatment all of this waste avoids emissions of around 56 million tonnes of CO_2 eq. The majority of this benefit is from avoiding raw materials through recycling.

Notes: These are estimates based on a life cycle perspective and cover global emissions associated with materials discarded in the UK – they are not confined to emissions from the UK alone. For example, the emissions associated with imported products include embedded emissions.

Source: WRAP
Factors: www.ukconversionfactorscarbonsmart.co.uk/ as factors per tonne
Waste arisings: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wastrt&lang=en

Figure 8.5: Waste weight and GHG emissions 2012 and 2014.



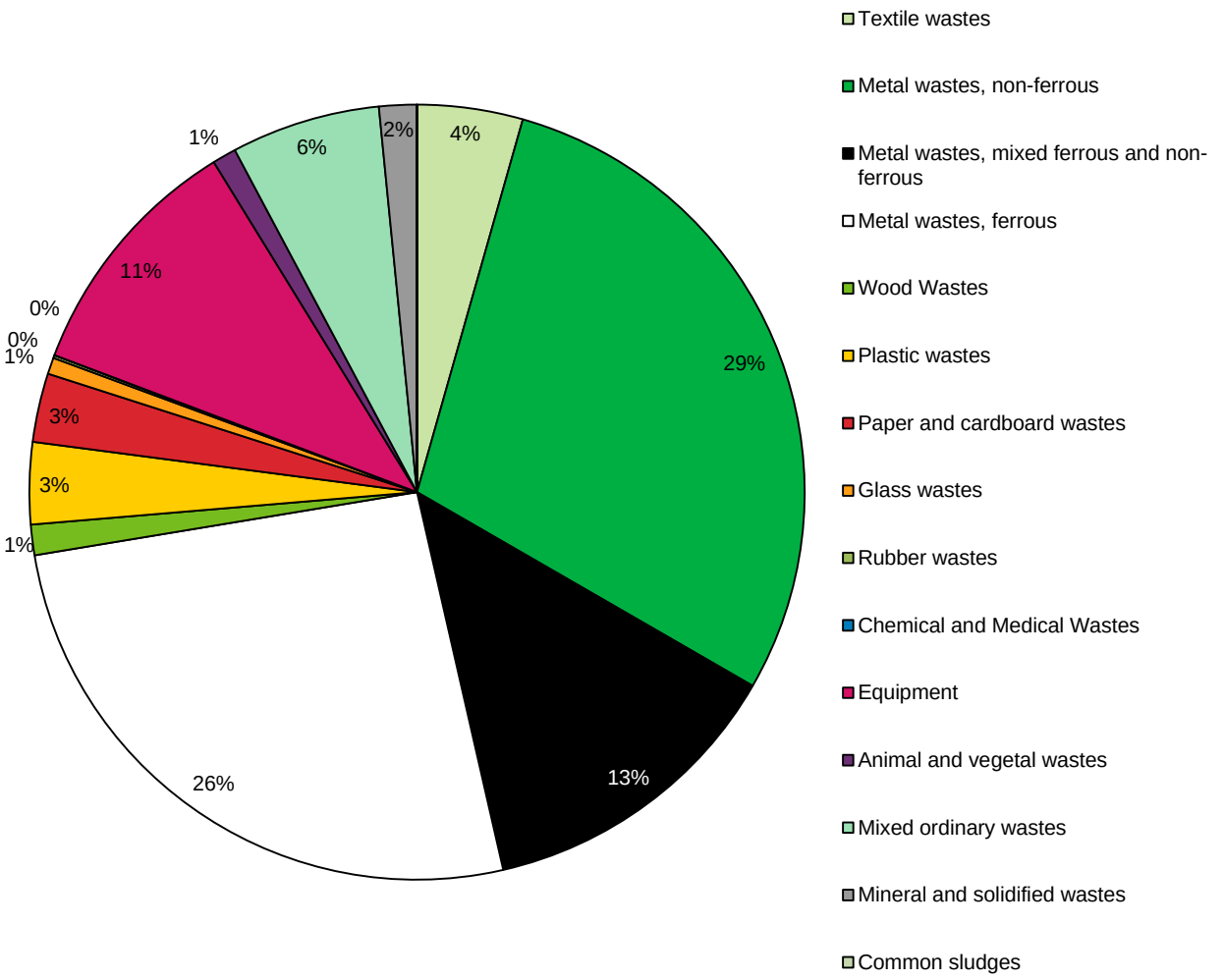
- Figure 8.4 shows total waste going into each waste management activity and the emissions from each of the activities.
- Depositing waste onto or into land results in emissions of around 7 million tonnes of CO_2 eq over and above those resulting from production.
- Land treatment and release into water bodies is largely dredging spoils and mineral wastes, the treatment of which results in negligible emissions.
- Recycling avoids emissions of around 62 million tonnes of CO_2 eq compared to providing an equivalent amount of materials from primary sources (e.g. mining).

Notes: * Incineration/disposal means thermal treatment of waste in an incineration plant or a co-incineration plant, incineration/energy recovery is incineration that fulfils the energy efficiency criteria laid down in the WFD, backfilling is a recovery operation where waste is used in excavated areas as a substitute for other non-waste materials

These are estimates based on a life cycle perspective and cover global emissions associated with materials discarded in the UK – they are not confined to emissions from the UK alone. For example, the emissions associated with imported products include embedded emissions.

Source: As for Figure 8.3

Figure 8.6: Contribution of Recycling GHG Benefits, 2014.



- The above chart shows that in 2014, over half of the emissions avoided by recycling come from animal and vegetal waste, metals and textiles. As some of these materials and wastes are traded internationally, the savings from recycling also extend beyond UK territorial emissions.

Source: As for Figures 8.3 and 8.4

Section 9: Behaviours regarding waste

The Recycling Tracker is an annual survey of UK households run by WRAP, designed to gather evidence on consumers' current attitudes, knowledge and behaviour in relation to recycling (both dry recyclables/packaging and food).

In the 2016 wave, 3,610 interviews were undertaken across the UK: in England (1,810), Scotland (850), Wales (650) and Northern Ireland (300). The sample is representative of adults aged 18+ who have some responsibility for waste disposal and recycling in the household. The analysis has compared respondents' self-reported recycling behaviour to the known kerbside service provision in their area.

Key Findings for 2016:

Recycling behaviour.

- Two thirds of households (66%) express uncertainty about how to correctly dispose of one or more items.
- Just over half of UK households (56%) are mistaken about at least one item they think they are disposing of correctly.
- Almost half (49%) of UK households dispose of one or more items in the residual bin that are collected for recycling in their area.
- Just over two-thirds (68%) of UK households add one or more items to their recycling collection that are not accepted locally.
- The majority of households (88%) have at least some room for improvement as only one in eight households (12%) do not put any items in the residual bin that could be recycled, nor do they put any items in the recycling that are not accepted.

Table 9.1: Behavioural groups

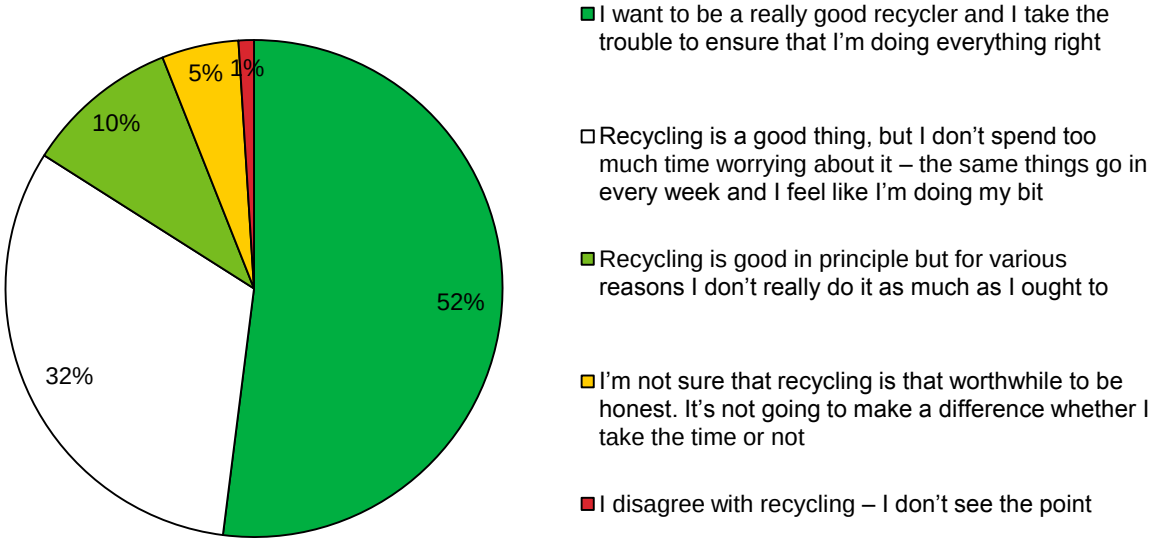
1	Top recyclers	12%	Do not contaminate or miss opportunities to recycle. Use their kerbside service to its fullest potential
2	Minor issues	20%	Get the vast majority of their recycling right but contaminate or miss opportunities to recycle with a small number of items
3	Medium Issues	15%	Get most of their recycling right but contaminate or miss opportunities to recycle with some items.
4	High contamination, no missed capture	21%	Not responsible for any missed capture, but add multiple items to the recycling collection that are not accepted locally.
5	High missed capture, no contamination	10%	Not responsible for any contamination but add multiple items to the residual waste that are collected locally for recycling
6	Disengaged	21%	Responsible for both contamination and missed capture with multiple items

- The number of items collected for recycling also has an impact on behaviour. The more items collected, the higher the proportion of households who have no room for improvement. By contrast, the fewer the number of items collected, the higher the likelihood that non-targeted materials will be placed in the recycling.
- There are a number of other barriers to recycling, including a lack of recycling bin capacity, food residue on items and a lack of information about outcomes (i.e. what happens to recycling and what the local benefits are).
- A lack of motivation is also a barrier for some, including households feeling that they do enough already.

Recycling attitudes

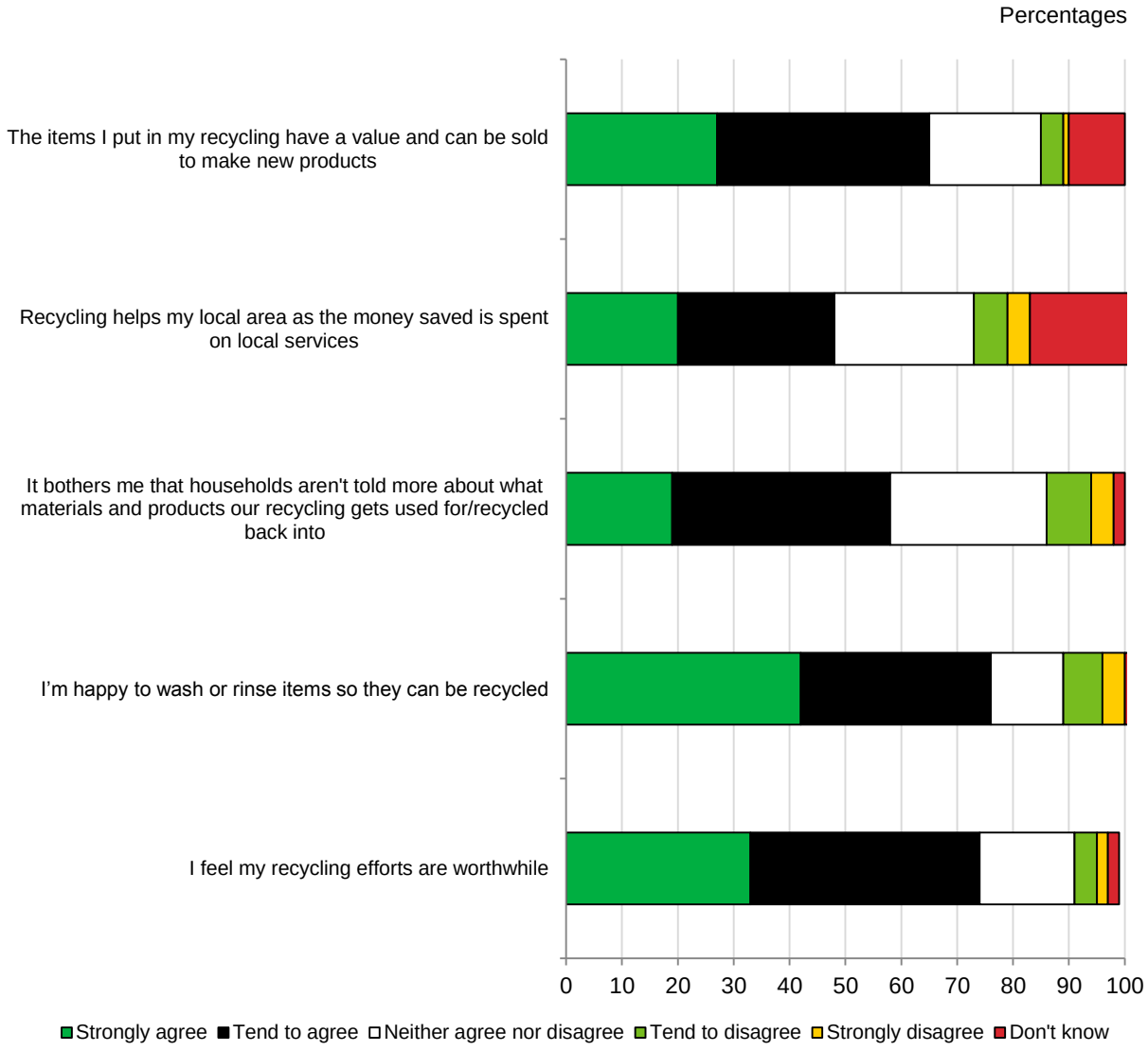
- Figure 9.1 shows when asked to select one of five statements most closely describing their own recycling outlook, just over half (52 per cent) identify with the statement "I want to be a really good recycler and I take the trouble to ensure I'm doing everything right"
- Around one third (32 per cent) identify with "recycling is a good thing but I don't spend too much time worrying about it", and one in ten (10 per cent) with "recycling is good in principle but for various reasons I don't really do it as much as I ought to".

Figure 9.1: Recycling self- description.



- Respondents were also asked the extent to which they agree or disagree with a series of statements about recycling (Figure 9.2). The results highlight a widespread feeling that their recycling efforts are worthwhile – with a third of households (33 per cent) strongly agreeing with this sentiment and a further 41 per cent tending to agree (74 per cent agreement overall).
- However, fewer households (48 per cent) agree with the statement 'recycling helps my local area as the money saved is spent on local services'. While only one in ten (10 per cent) disagree with the statement, a significant proportion say that they either 'don't know' (18 per cent) or neither agree nor disagree (25 per cent).
- On the subject of rinsing items for recycling, just over two in five (42 per cent) strongly agree that 'I'm happy to wash or rinse items so they can be recycled', although close to one in three (34 per cent) give a more conditional response of 'tend to agree'.
- Just over one in ten (11 per cent) disagree with this statement.

Figure 9.2: Attitudinal statements.

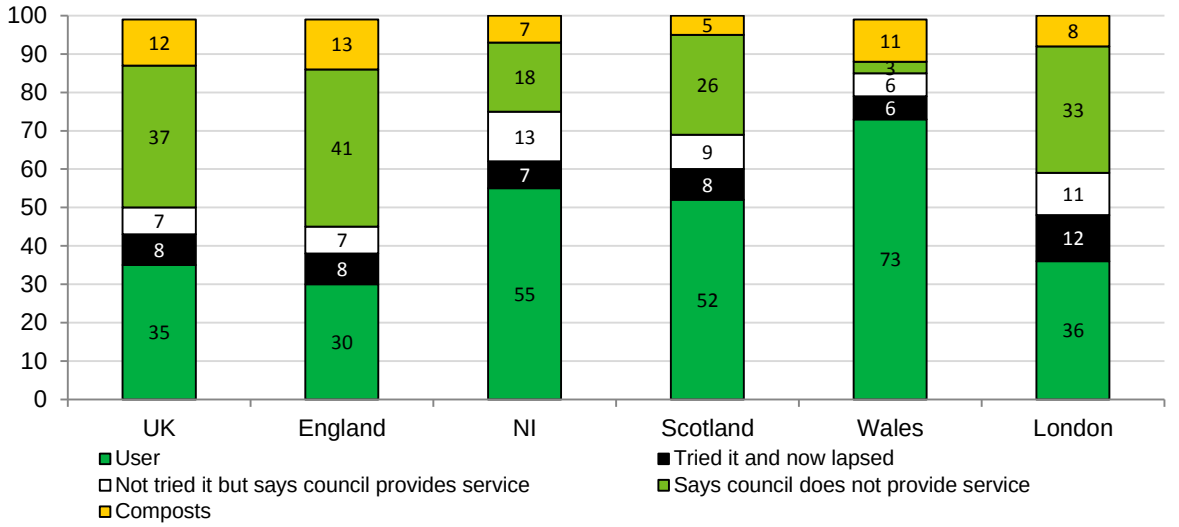


Food Waste – recycling behaviour.

The proportion of households reporting to use a separate food waste collection varies considerably across the UK nations:

Figure 9.3: Food Waste recycler profile.

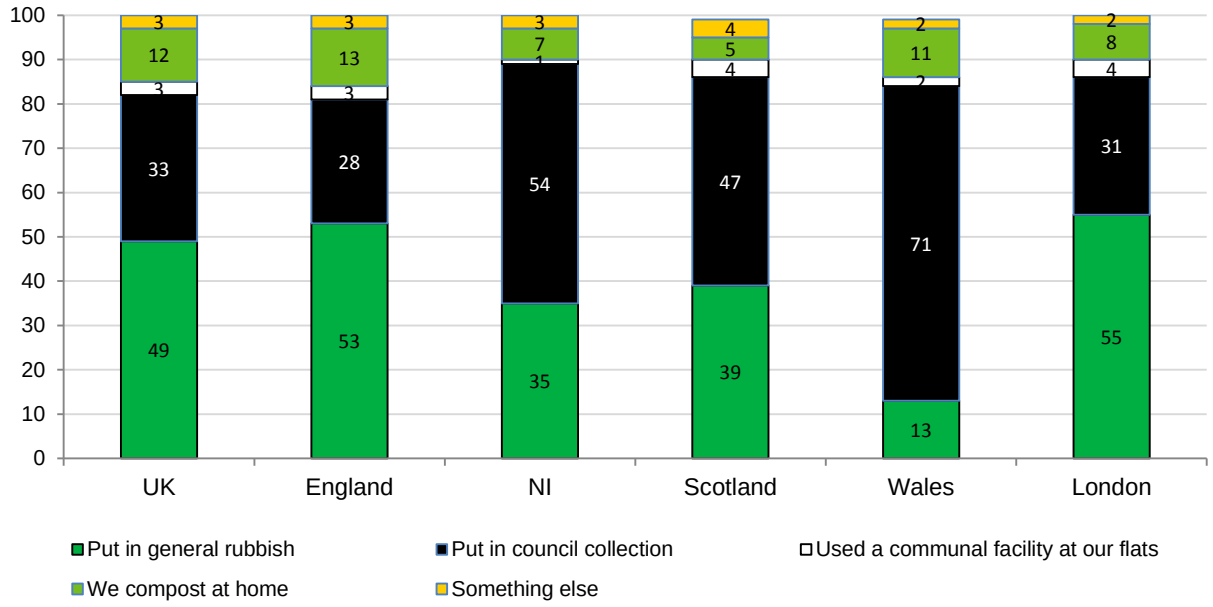
Percentages



- It also varies across age groups - from 24 per cent of those aged 18-24 to 43 per cent of those aged 65+.
- Among food waste recyclers, a challenge is extending recycling across more items - almost half (49 per cent) say they put some items of food in the residual bin. (Figure 9.4)

Figure 9.4: Food waste disposal routes.

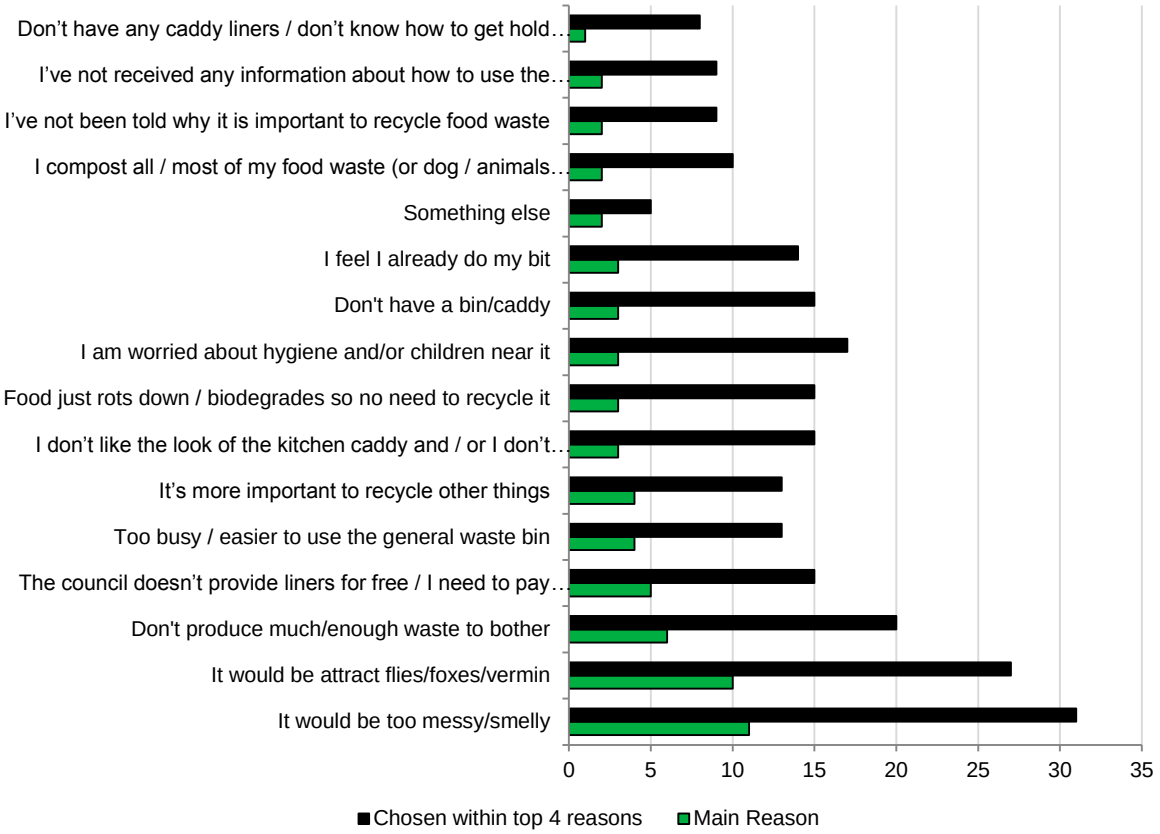
Percentages



- Among non-users, the primary barriers are a perception of the process being messy or smelly, or that it would attract flies/vermin/foxes.
- Food waste recyclers find participating in the service much less unpleasant than non-users assume it to be.

Figure 9.5: Main reasons why food waste collection not used.

Percentages



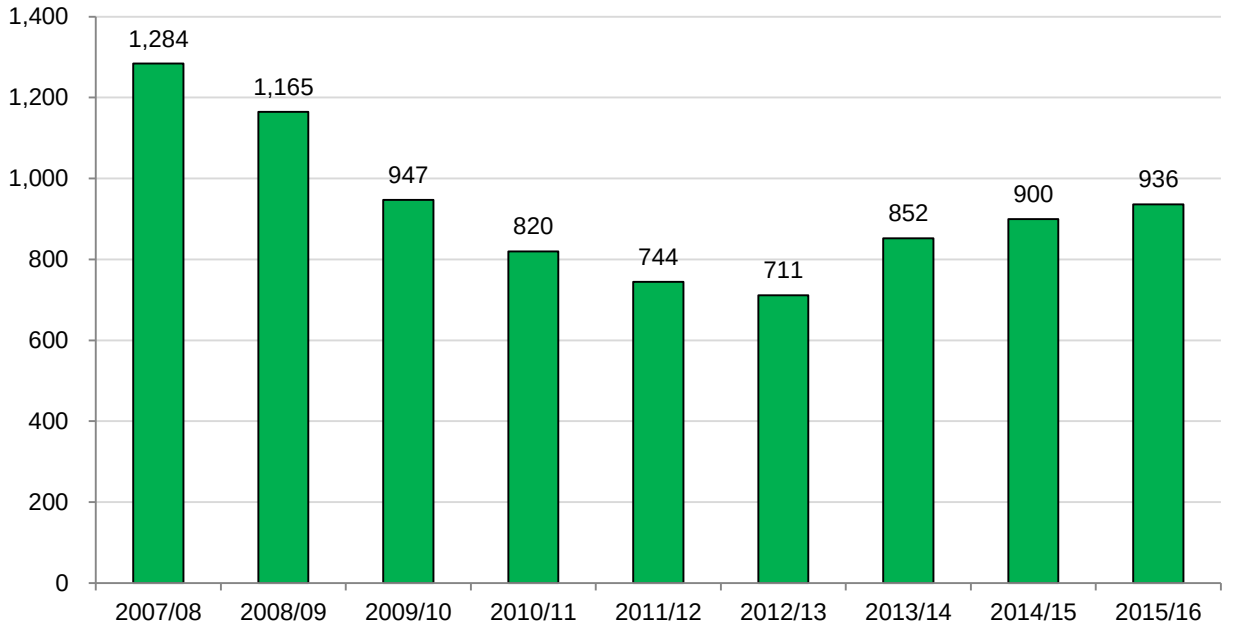
- While there remain gaps in householders' understanding about the reasons why food waste recycling is important and what happens to it post-collection, small improvements are recorded relative to 2015.

Source: www.wrap.org.uk/sites/files/wrap/Recycling%20Tracker%20Report%202016_0.pdf

Section 10: Fly tipping, Waste Crime and Pollution Incidents

Fly tipping

Figure 10.1: Trends in number of fly tipping incidents, England, 2007/08 – 2015/16.

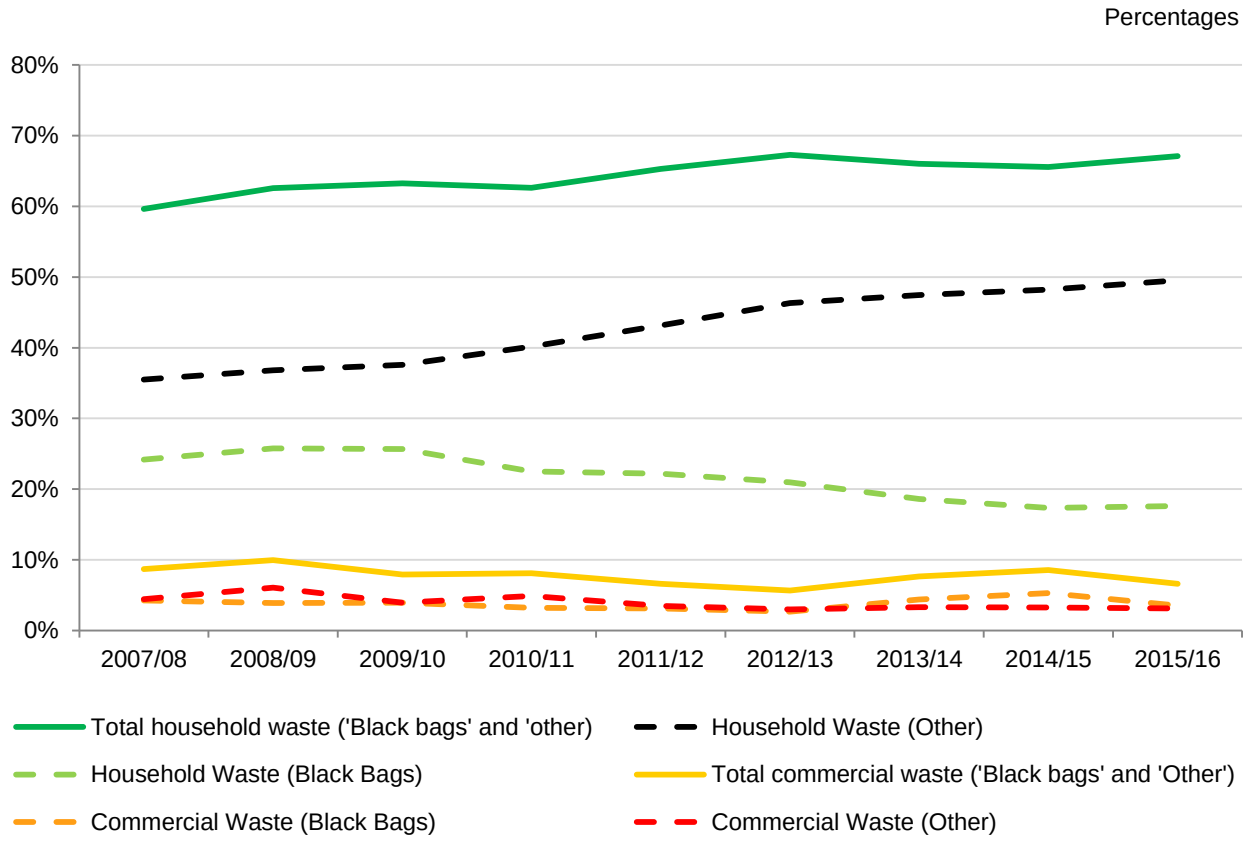


- Local Authorities dealt with 936 thousand incidents of fly-tipping in 2015/16 in England, a 4.0 per cent increase on 2014/15.
- The estimated cost of clearance of fly-tipping to local authorities in England in 2015/16 was nearly £50 million, a decrease of 0.3 per cent (£143 thousand) from the clearance costs reported in 2014/15.
- Size of fly-tips range from single black bags to significant/multi loads. Most fly-tipping incidents were equivalent to a 'small van load'.

Notes: Some local authorities have introduced new technologies such as on-line reporting and electronic applications, along with increased training for staff – this may have accounted for some of the increase in reported incidents.

Source: WasteDataFlow
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf- Figure 1

Figure 10.2: Breakdown of most common fly-tipping waste types: Household and commercial waste in England, 2007/08 to 2015/16.

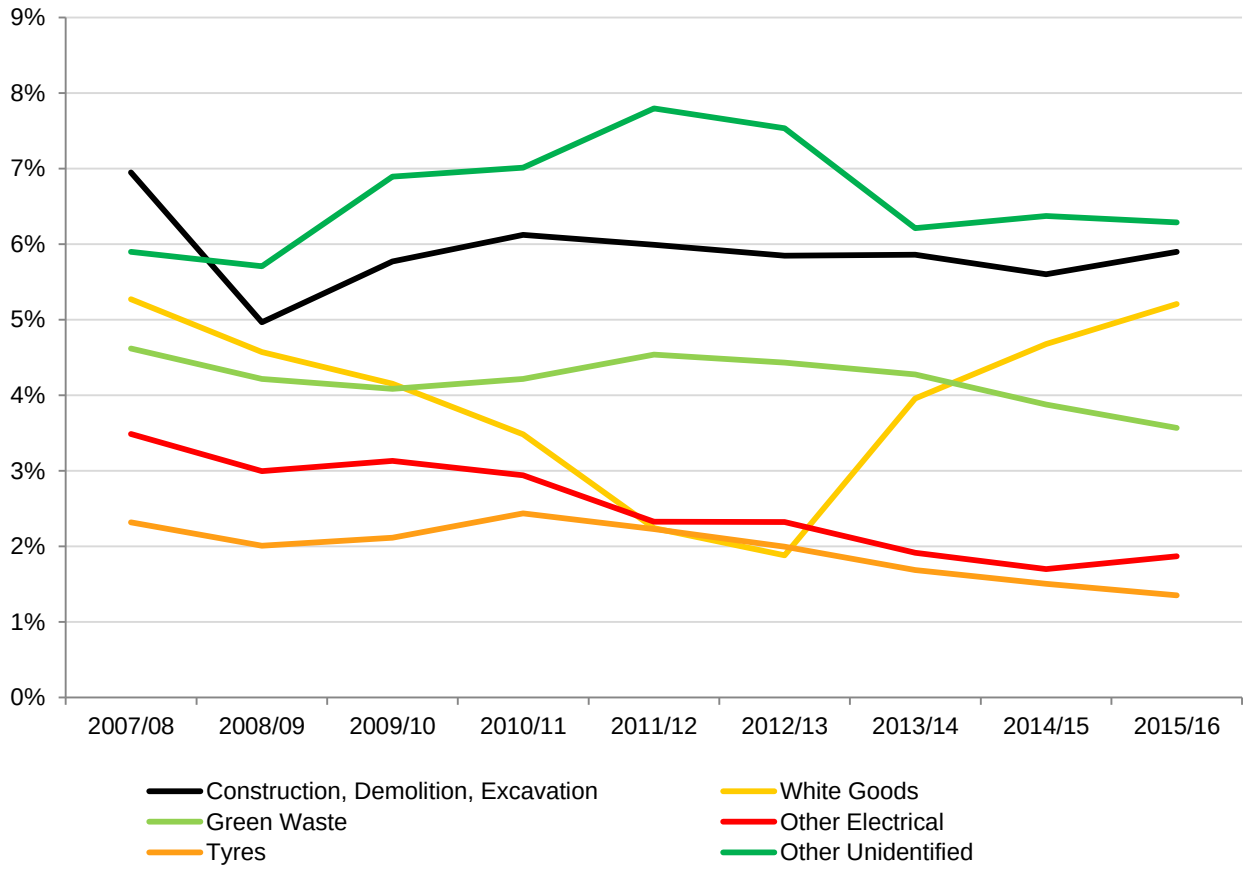


- 67 per cent of all fly-tips in England in 2015/16 were household waste. This was nearly 628 thousand incidents, an increase of 6.5 per cent.
- The number of Household black bag incidents increased by 5.5 per cent in 2015/16, and the number of incidents of other Household waste also increased by 6.9 per cent.
- The second most common waste type in 2015/16 was total commercial waste with 62 thousand incidents, accounting for 7 per cent of total incidents. This was a 19 per cent decrease on 2014/15 where 77 thousand incidents of commercial waste had been reported.
- The decrease in 2015/16 in total commercial waste incidents is due to a 31 per cent reported decrease in commercial black bags.

Source: WasteDataFlow
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf - Figure 4

Figure 10.3: Types of fly-tipping other than household and commercial waste in England, 2007/08 to 2015/16, as a proportion of total incidents.

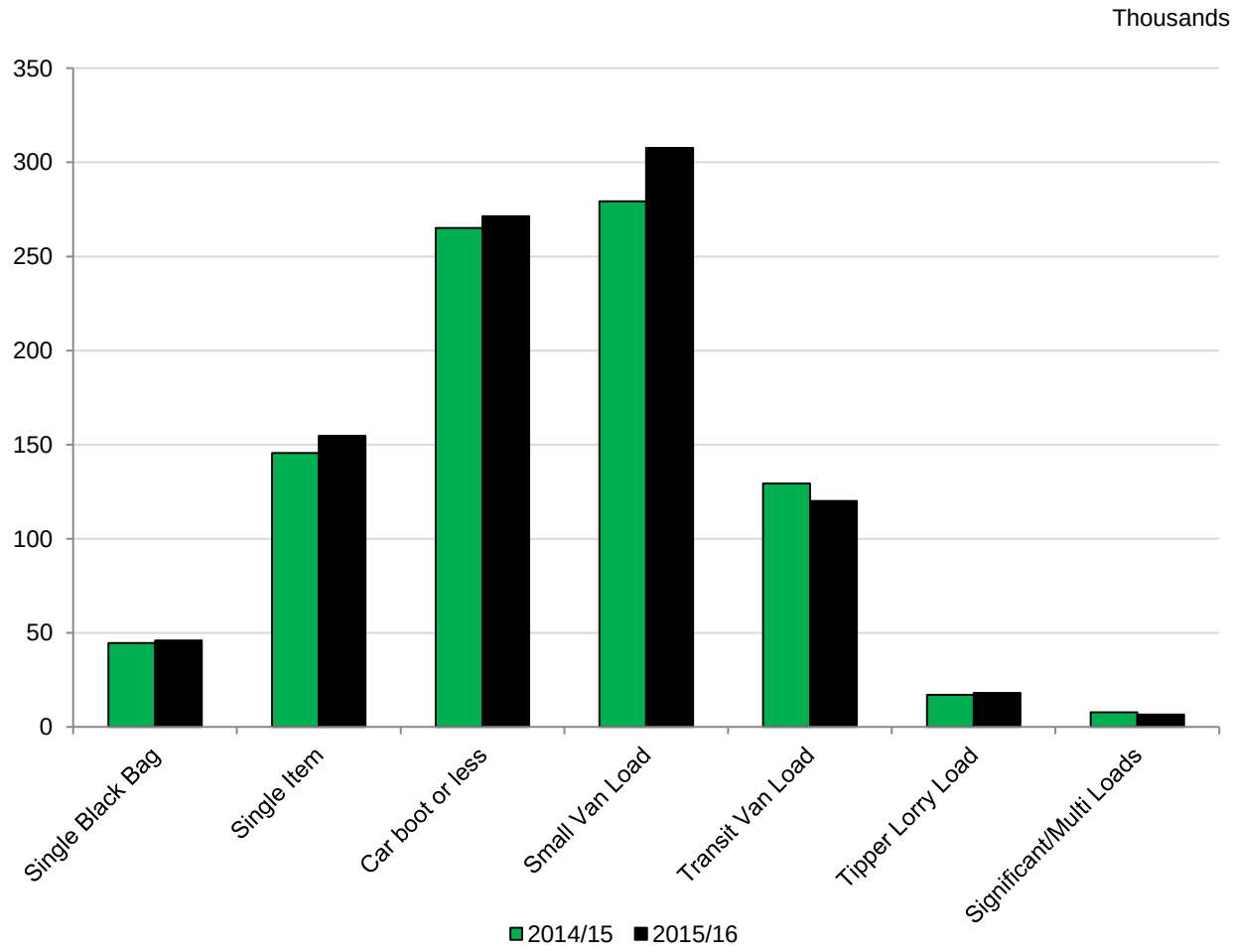
Percentages



- A notable increase is for white goods, which has been increasing since 2012/13, white goods had another smaller increase for the 2015/16 year with 49 thousand incidents compared to 42 thousand incidents in 2014/15.
- Since 2007/08, green waste has been steadily declining over time, and accounts for 4 per cent of total incidents in 2015/16.
- Tyres have also been decreasing over time, and accounts for 1 per cent of total incidents in 2015/16.
- Since 2014/15, other unidentified incidents have increased by 2.6 per cent and still account for 6 per cent of total incidents.

Source: WasteDataFlow
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf - Figure 5

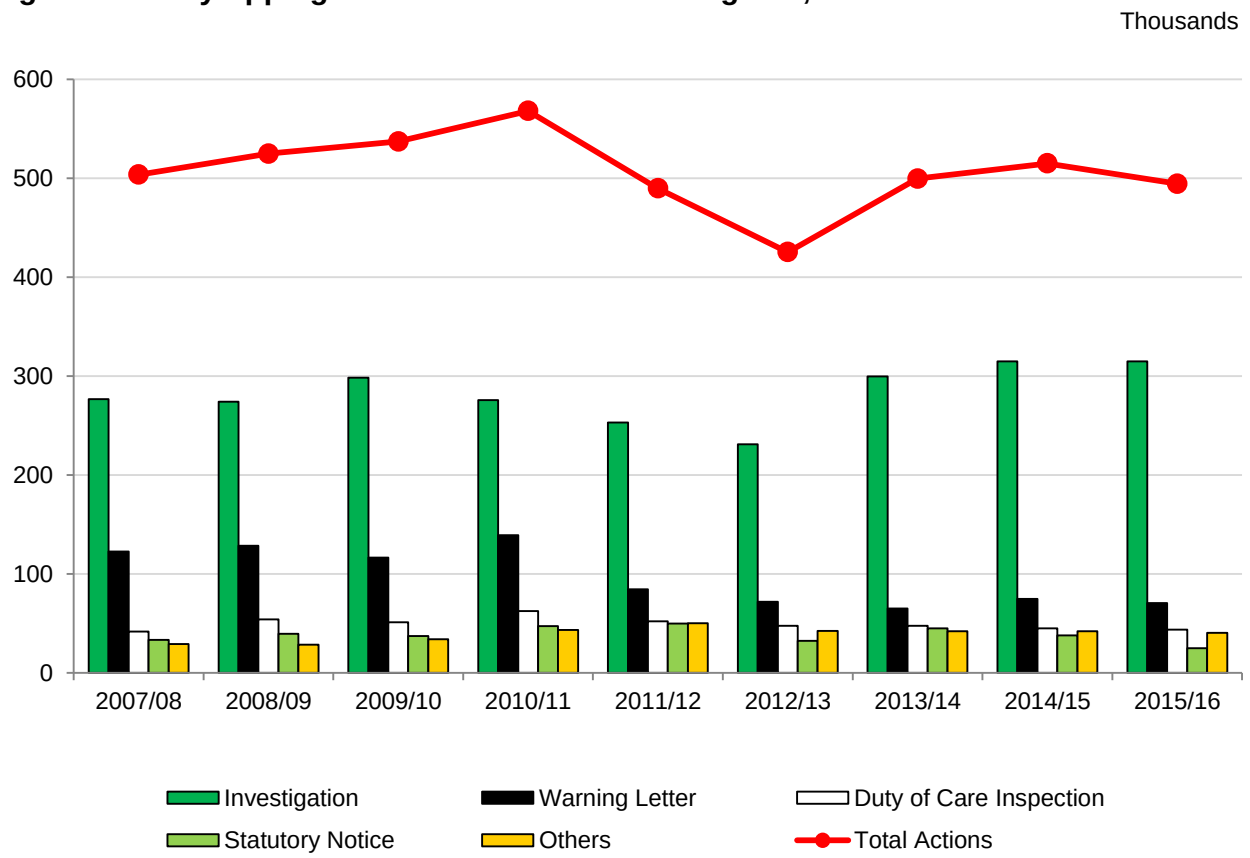
Figure 10.4: Fly-tipping incidents by size in England, 2014/15 to 2015/16.



- A third of incidents were reported to be the size of a 'small van' in 2015/16. Incidents of this size are consistently the most common over time.
- Single items, which cover items such as furniture, mattresses etc. accounted for 17 per cent of total incidents and has increased by 6.2 per cent from 146 thousand incidents in 2014/15 to 155 thousand incidents in 2015/16.
- The estimated cost of clearance of fly-tipping to Local Authorities in England in 2015/16 was nearly £49.8 million.

Source: WasteDataFlow
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf - Figure 6

Figure 10.5: Fly-tipping enforcement actions in England, 2007/08 to 2015/16.



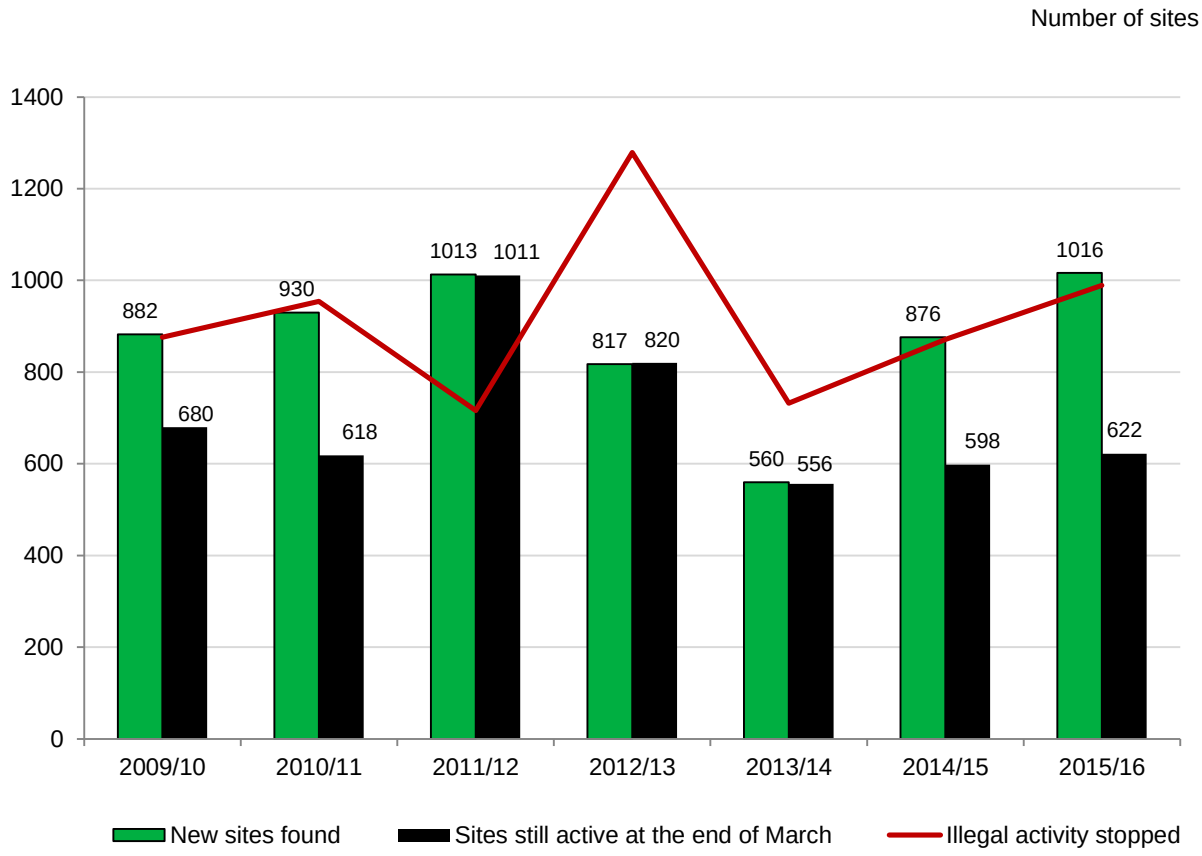
- 494 thousand enforcement actions were carried out in England in 2015/16, a 4.0 per cent decrease since 2014/15. Local authorities spent £16.9 million on enforcement actions in England in 2015/16, down from £17.6 million in 2014/15.
- Local authorities issued 70 thousand warning letters in 2015/16, a 5.6 percent decrease from the 75 thousand warning letters in 2014/15. 25 thousand statutory notices were issued in 2015/16, a 34 per cent decrease from 38 thousand in 2014/15.
- Local authorities in England carried out 315 thousand investigations in 2015/16, the same amount of investigations as 2014/15.
- 36 thousand fixed penalty notices were issued in 2015/16, accounting for 7 per cent of all enforcement actions, a 5.9 per cent decrease from 38 thousand in 2014/15.

Source: WasteDataFlow
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595773/Flytipping_201516_statistical_release.pdf - Figure 7

Waste Crime

Illegal Waste Sites

Figure 10.6: Reported Illegal Waste Sites, England, 2009/10 – 2015/16.

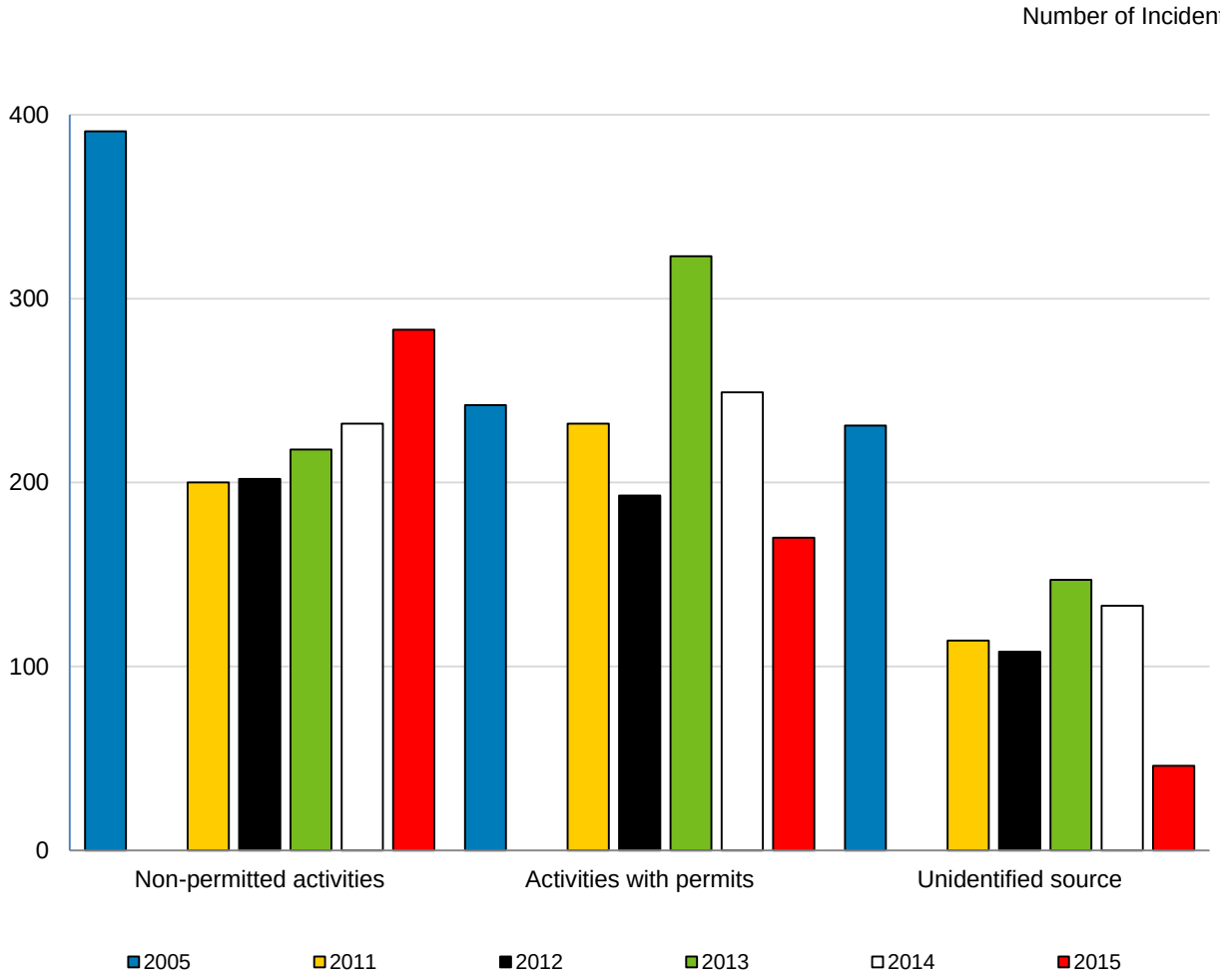


- Sites are illegal if they do not have a permit when they should, or do not meet all legal requirements.
- In 2015/16 illegal activity was stopped at 989 sites. The main activity being carried out was treating waste (such as composting or recycling activities). This was at 42 per cent of sites.
- During 2015/16 illegal activity was stopped within 90 days at 50 per cent of new sites, which exceeded the national target of 45 per cent.
- The top 3 types of waste found at illegal sites were household and commercial waste, end-of-life vehicles and construction and demolition waste. These waste types made up more than two-thirds of the waste types found on sites where illegal activity was stopped.

Source: Environment Agency
www.gov.uk/government/uploads/system/uploads/attachment_data/file/553539/Regulating_the_waste_industry_2015_evidence_summary.pdf

Pollution Incidents

Figure 10.7: Serious Pollution Incidents (caused by activities with permits and those without permits), England, 2005, 2011 – 2015.

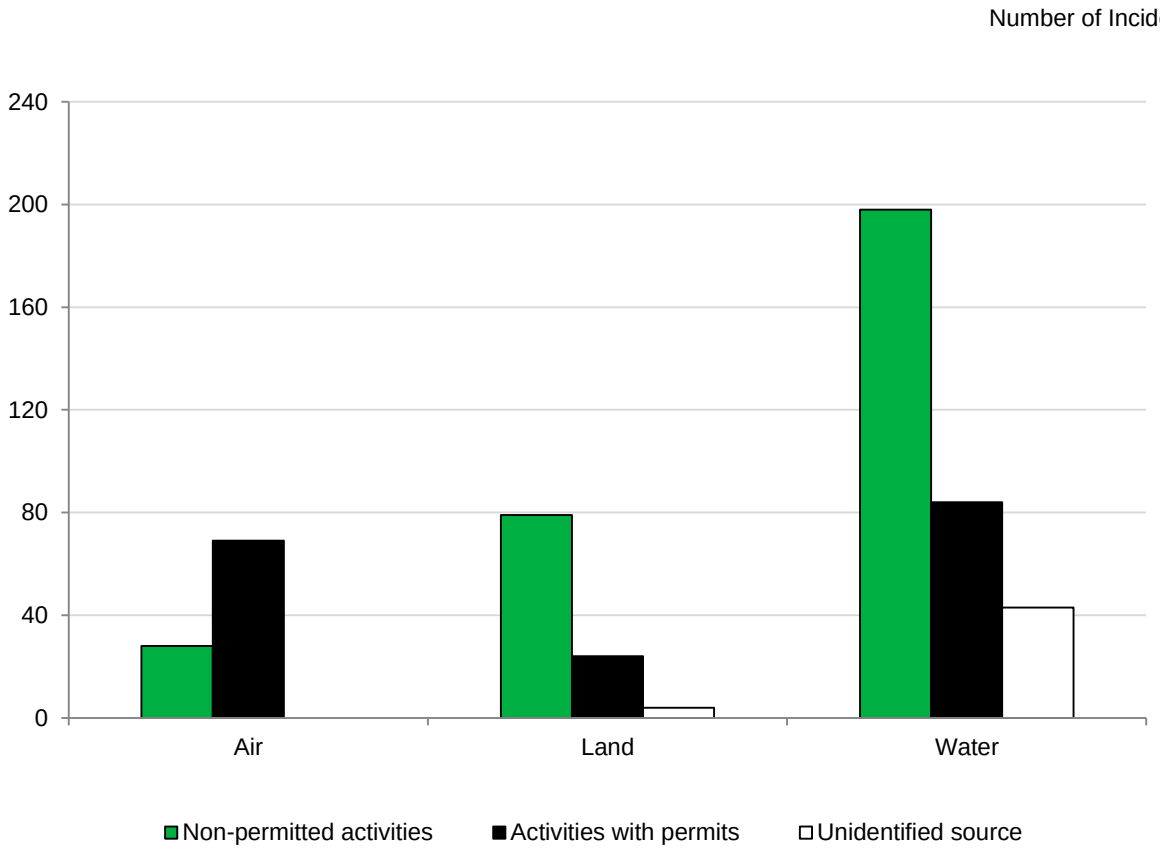


- The total number of serious pollution incidents decreased by 19 per cent in 2015 (614 incidents in 2014 and 499 incidents in 2015).
- In 2015, there has been a 32 per cent decrease in incidents from sites with permits (from 249 incidents in 2014 to 170 incidents in 2015), but incidents from non-permitted[1] sites increased by 22 per cent (from 232 incidents in 2014 to 283 incidents in 2015), continuing a rising trend in incidents from these sites.

Notes: [1] Non-permitted sites or activities are sites that do not require a permit under EPR – they may not require a permit, may be regulated by other legislation, or may be sites that are operating illegally

Pollution incidents are classified according to their impact on the environment and people, from category 1 (the most serious) to category 4 (little or no impact). Categories 1 and 2 are included here.
Source: Environment Agency
www.gov.uk/government/uploads/system/uploads/attachment_data/file/553537/Pollution_incidents__2015_evidence_summary.pdf

Figure 10.8: Serious Pollution incidents to land, air and water, England, 2015.



- Of all the serious pollution incidents in 2015, 65 per cent had an impact on water and 19 per cent had an impact on air[1].
- Activities with permits caused 26 per cent of incidents affecting water, and 71 per cent of incidents affecting air.
- Non-permitted activities caused 61 per cent of incidents affecting water, and 29 per cent of incidents affecting air.

Notes: [1] A single incident may affect multiple environmental media (i.e. air, land, water).

Source: Environment Agency

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/553537/Pollution_incidents__2015_evidence_summary.pdf

Figures 10.9- 10.11: Serious pollution incidents to all media in England.

Figure 10.9: Waste treatment (non-hazardous sector).

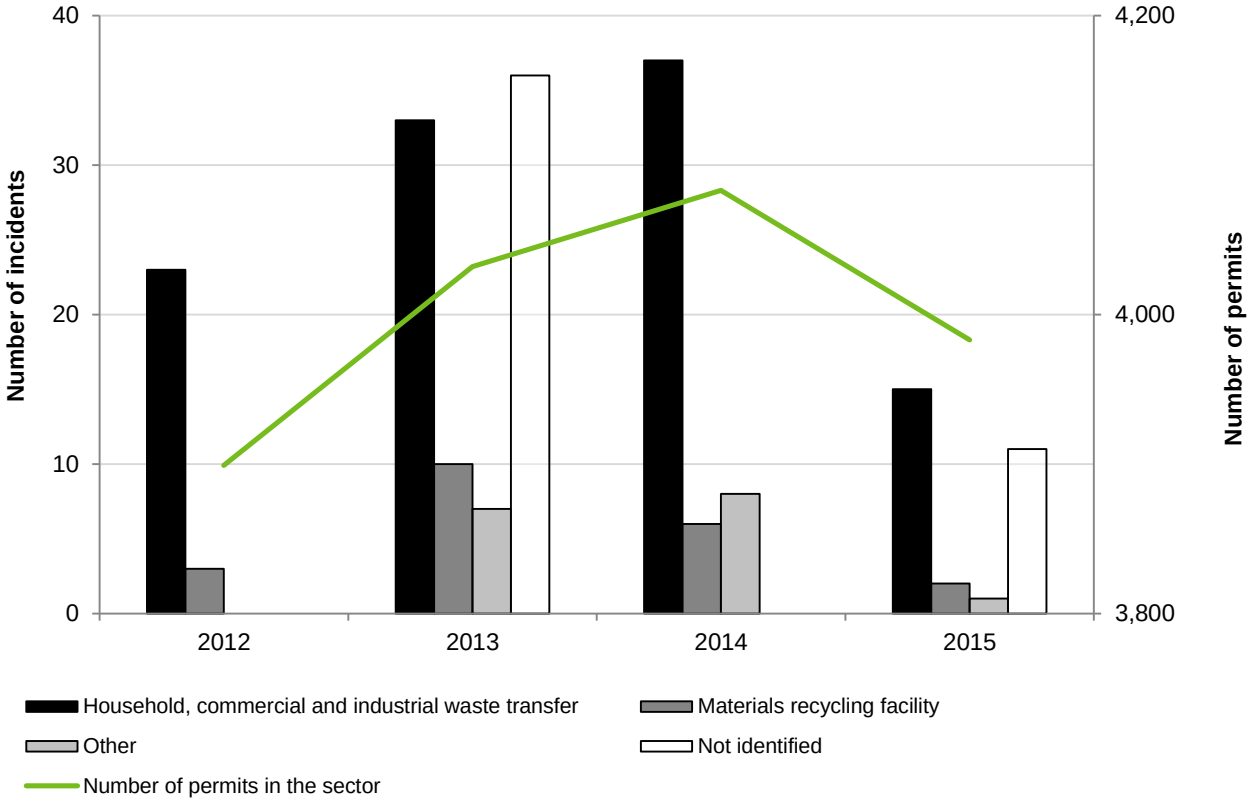


Figure 10.10: Biowaste sector.

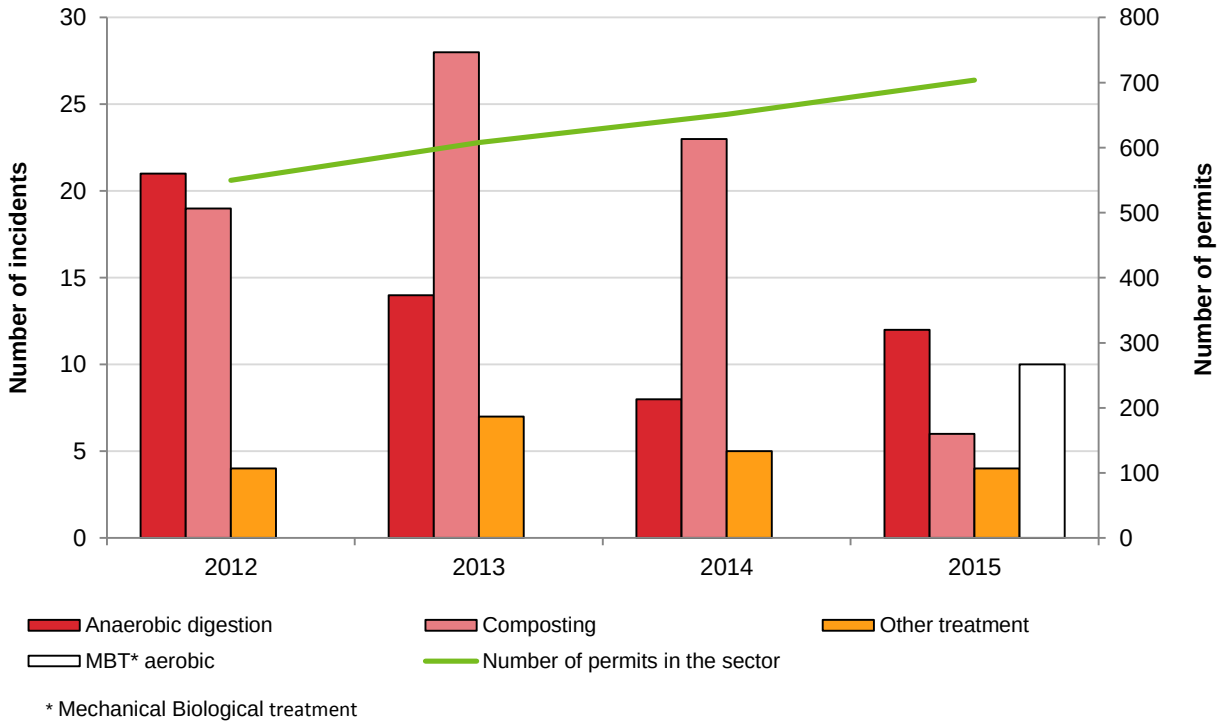
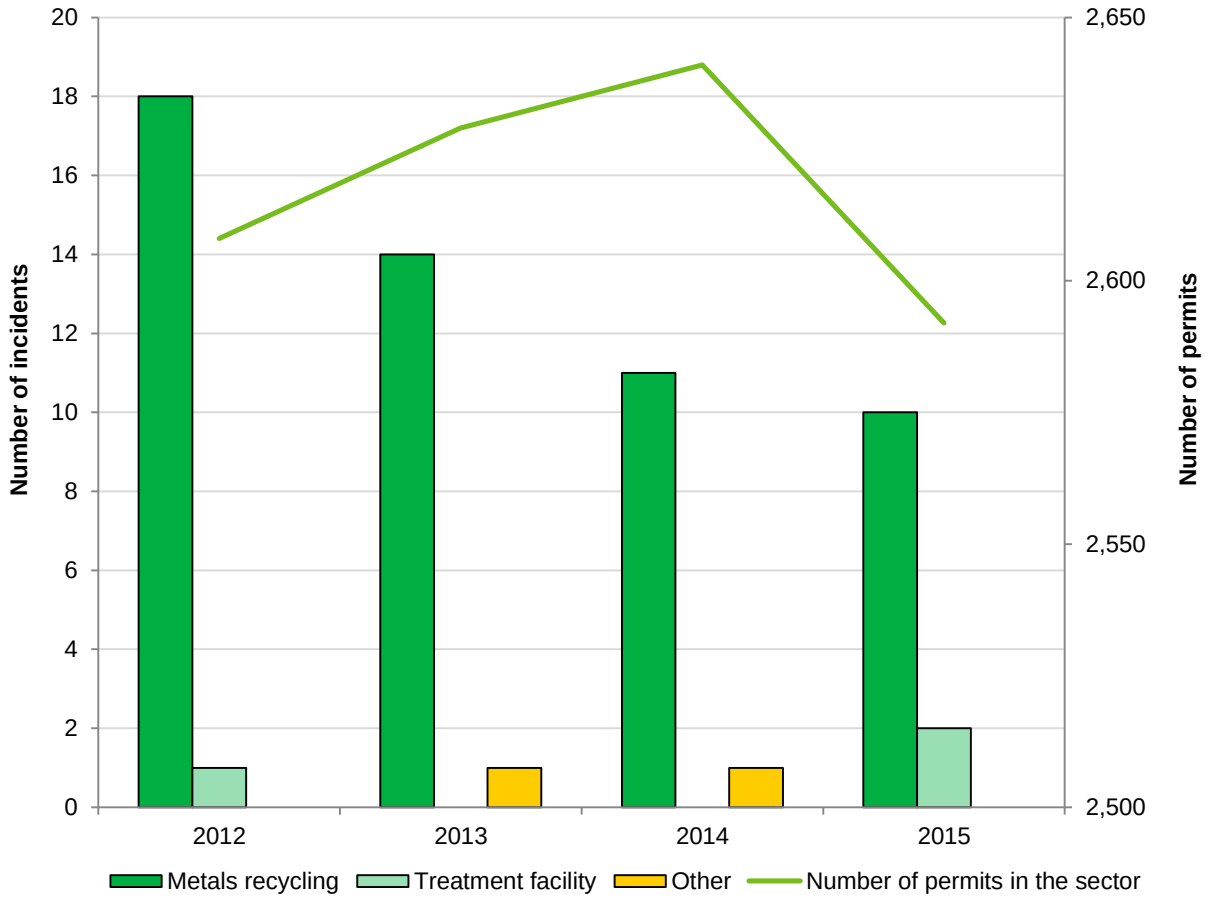


Figure 10.11: Metals recycling sector.



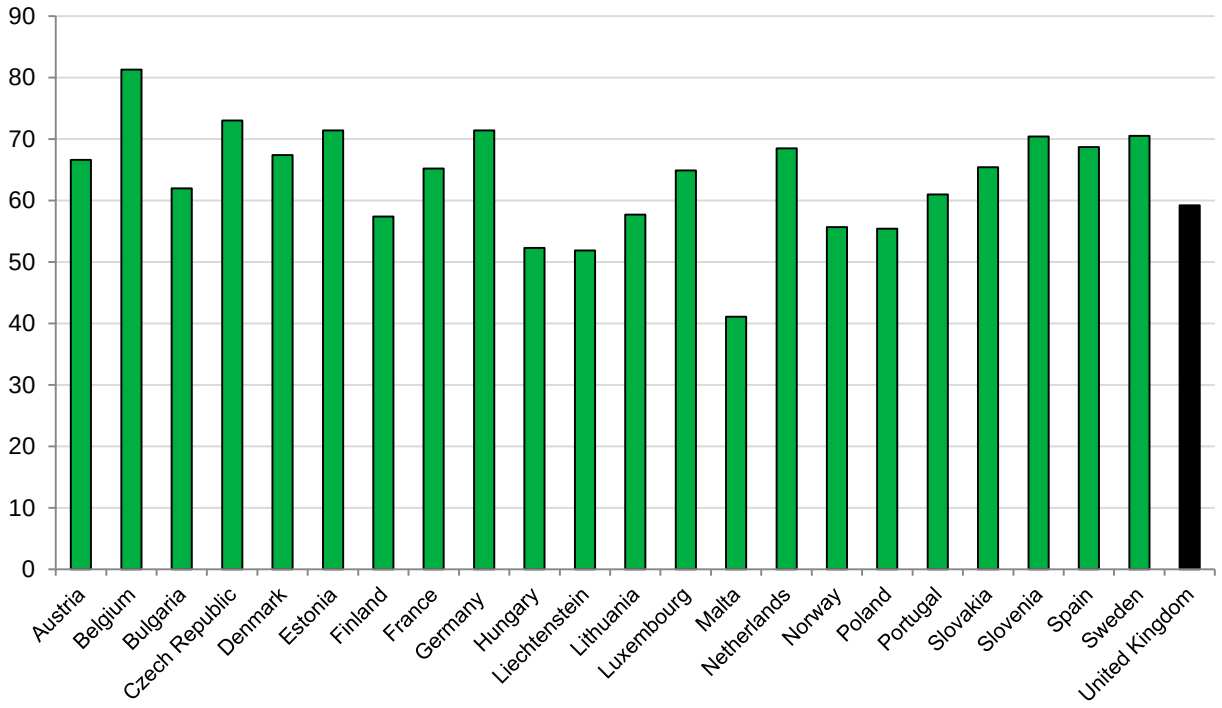
- The number of serious pollution incidents from each of these 3 waste sectors was lower in 2015 than in 2014.
- These three sectors were three of the top 5 sectors causing serious pollution incidents in 2015.
- There was a large decrease in serious pollution incidents caused by landfill sites in 2015, which meant that landfill sites dropped out of the top 5 sectors.

Source: Environment Agency
www.gov.uk/government/uploads/system/uploads/attachment_data/file/553537/Pollution_incidents__2015_evidence_summary.pdf

Section 11: EU and UK comparisons

Recycling rate for packaging waste

Figure 11.1: Recycling rates for packaging waste, 2014.

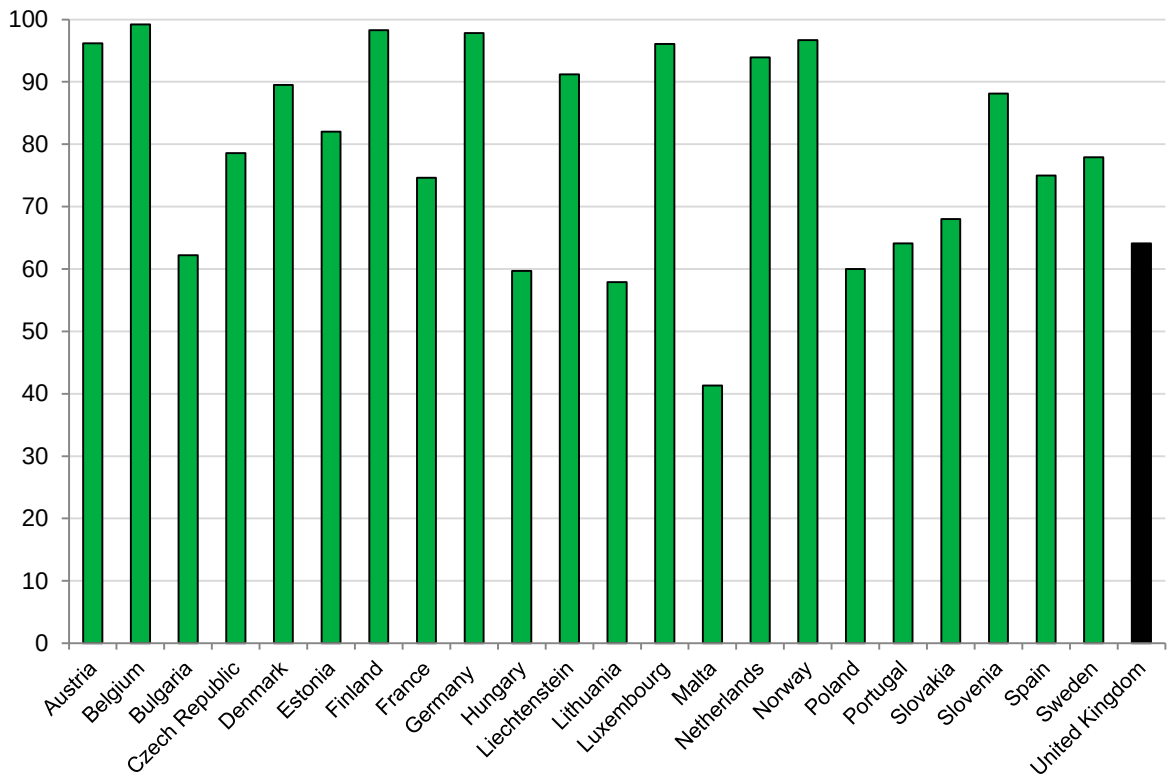


- The UK recycling rate for packaging waste in 2014 was 59.2 per cent, lower than the rate in 2013 (64.6 per cent).
- Belgium had the highest rate for recycling packaging waste at 81.3 per cent; with Malta having the lowest rate at 41.1 per cent.
- **Figures should be treated with some caution, particularly when making comparisons across Member States, as we have not robustly verified the quality of the data from other Member States**.

Source: Eurostat

Recovery rates for packaging waste

Figure 11.2: Recovery rates for packaging waste, 2014.

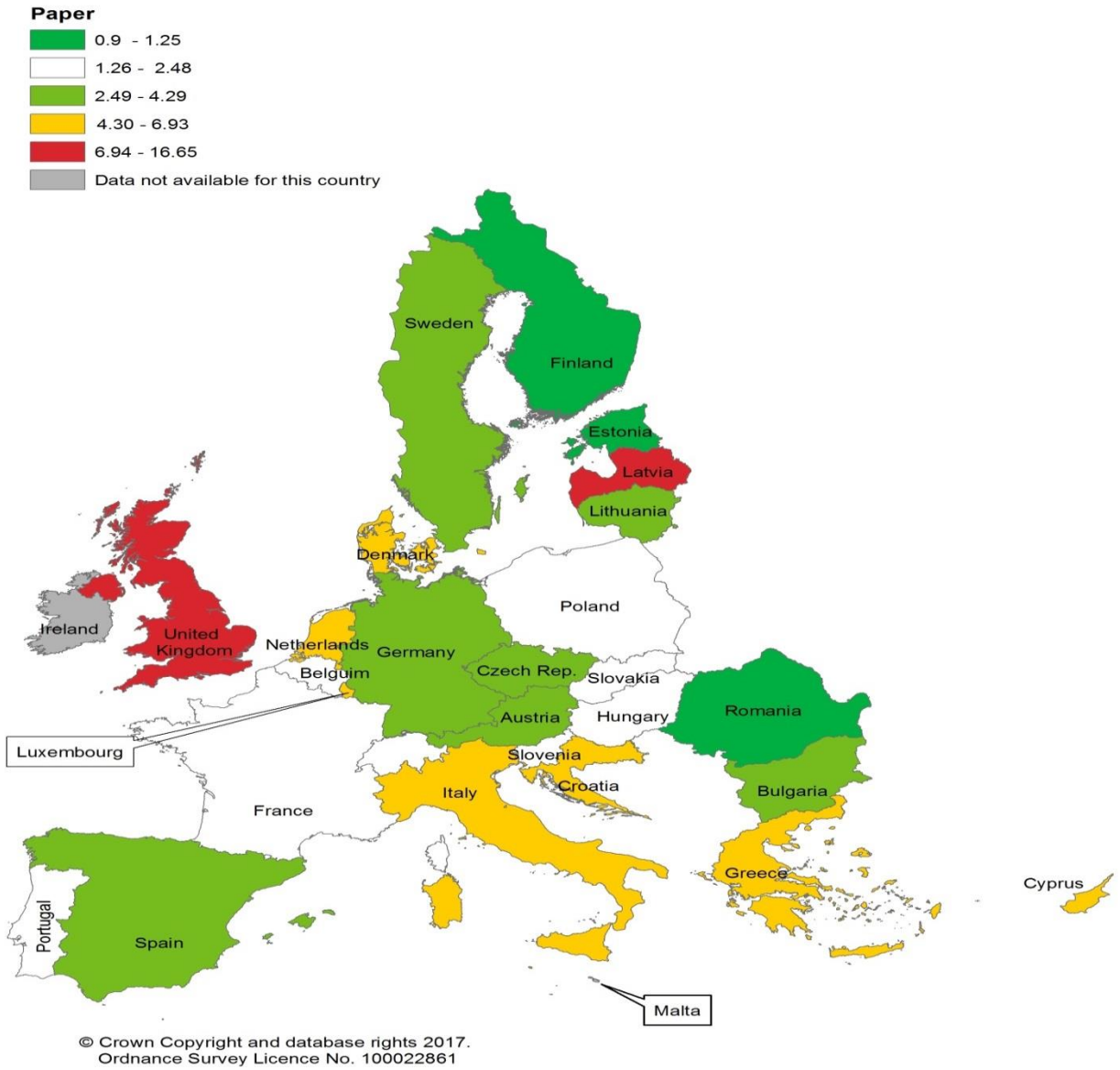


- The UK recovery rate for packaging waste in 2014 was 64.1 per cent, which was lower 72.7 per cent in 2013.
- Belgium had the highest rate for recovery of packaging waste at 99.2 per cent, with Malta having the lowest rate at 41.3 per cent.
- Almost all countries saw an increase in their packaging recovery rates between 2003 and 2014, except for Sweden and Liechtenstein which both have seen a slight decrease over that time period.
- **Figures should be treated with some caution, particularly when making comparisons across Member States, as we have not robustly verified the quality of the data from other Member States.**

Source: Eurostat

Material Productivity

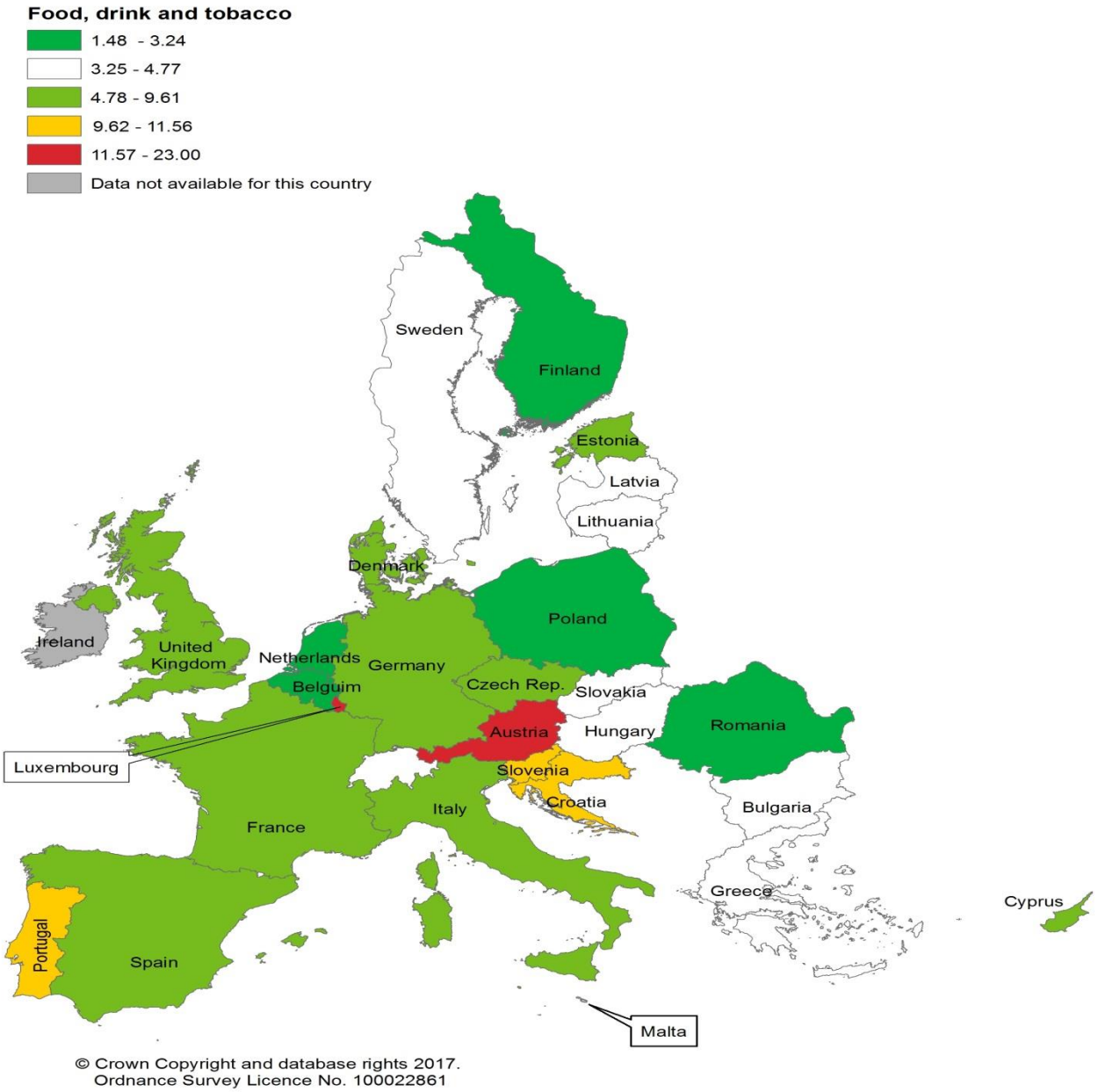
Figure 11.3: Gross value added by paper industry[1] per tonne of waste that paper industry produces, € per tonne, 2014.



- The UK rate of €16.65 per tonne of paper waste, is above the EU_28 average of €3.28 per tonne.
- Malta has the highest rate at €41.73 per tonne of paper waste, with Romania having the lowest rate at €0.90 per tonne.

Notes:[1] paper and paper products and printing and reproduction of recorded media
Source: Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

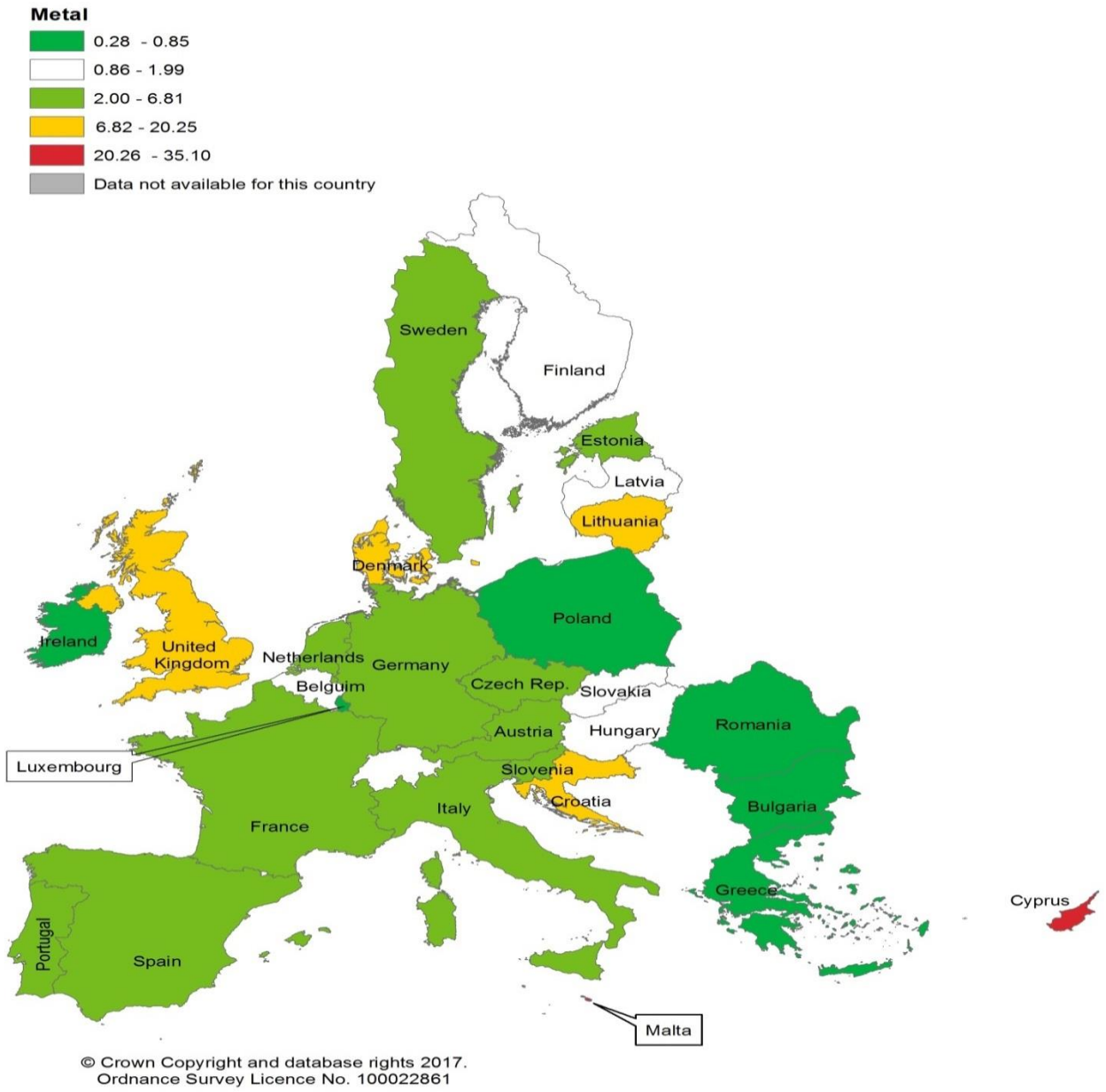
Figure 11.4: Value added by food, drink and tobacco industry per tonne of waste that food, drink and tobacco industry produces, € per tonne, 2014.



- The UK rate of €8.53 per tonne of food, drink and tobacco waste is above the EU_28 average of €5.54 per tonne.
- Luxembourg has the highest rate at €23.00 per tonne of food, drink and tobacco waste, with Netherlands having the lowest rate at €1.48 per tonne.

Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

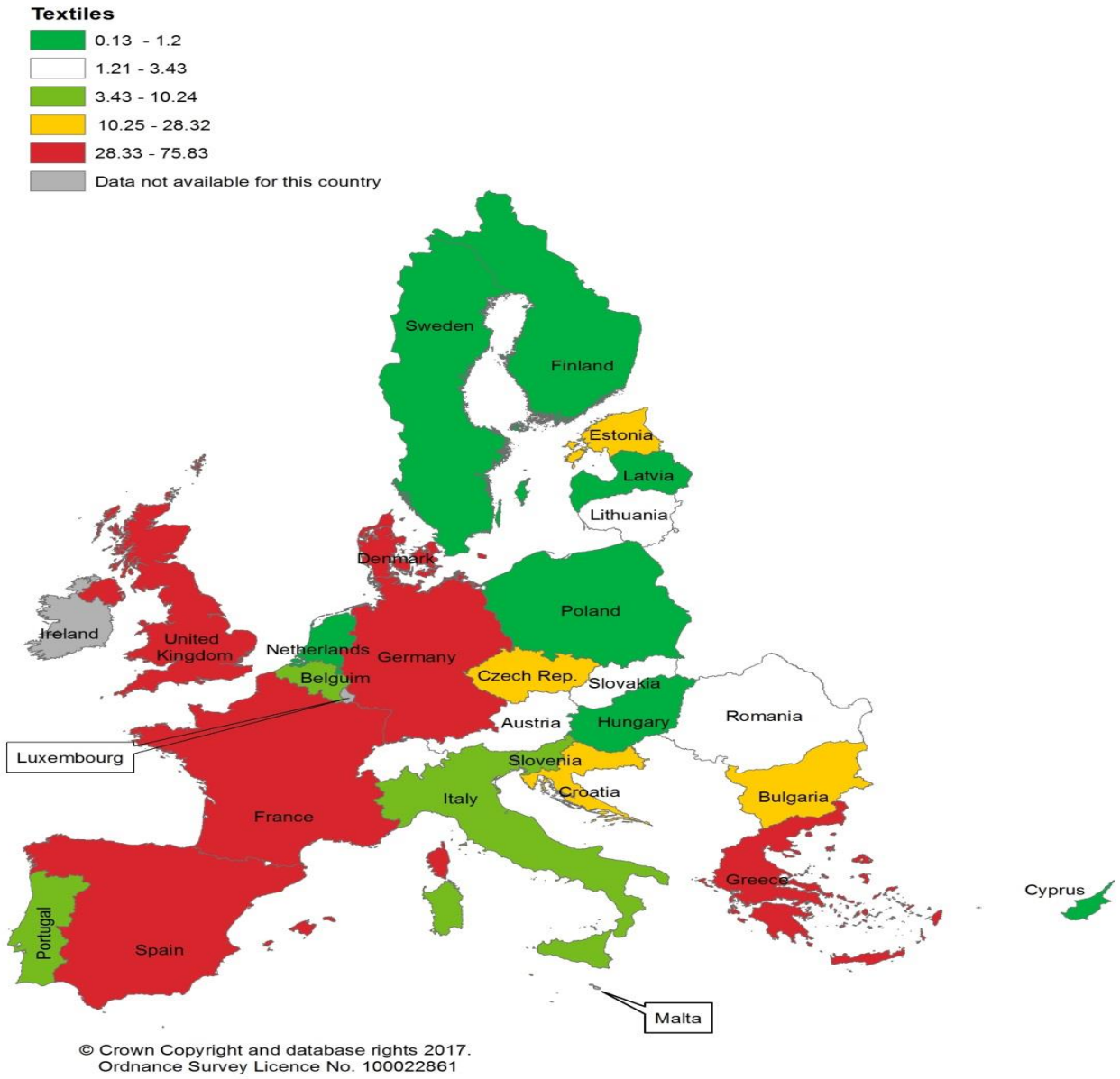
Figure 11.5: Value added by metal industry[1] per tonne of waste that metal industry produces, € per tonne, 2014.



- The UK rate of €15.10 per tonne of metal waste, is above the EU_28 average of €3.26 per tonne.
- Denmark has the highest rate at €18.85 per tonne of metal waste, with Cyprus having the lowest rate at €0.16 per tonne.

Notes: [1] Manufacture of basic metals and manufacture of fabricated metal products except machinery and equipment
Source: Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

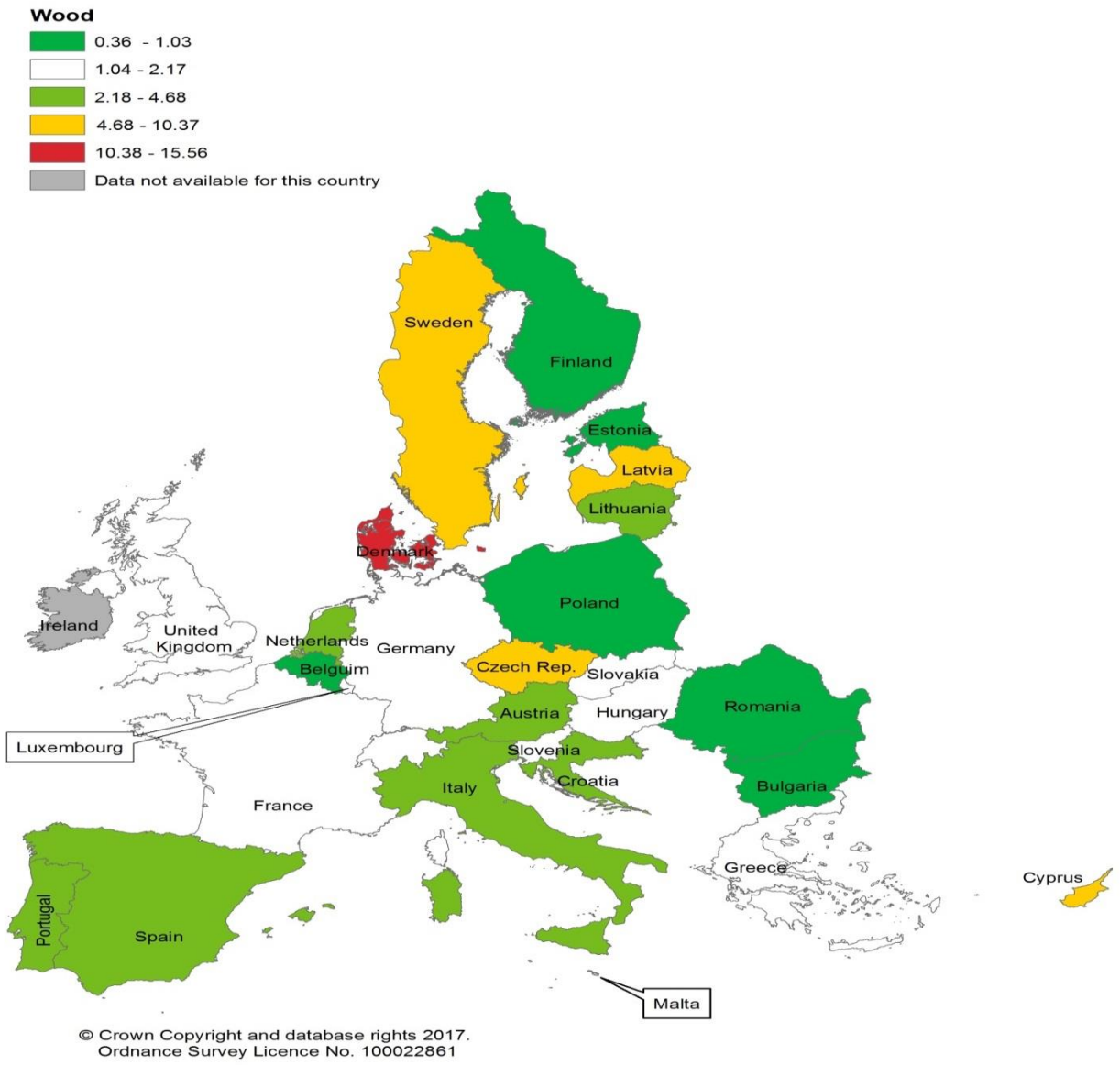
Figure 11.6: Value added by textile[1] industry per tonne of waste that textile industry produces, € per tonne, 2014.



- The UK rate of €8.71 per tonne of textile waste, is below the EU_28 average of €24.80 per tonne.
- Germany has the highest rate at €75.83 per tonne of textile waste, with Netherlands having the lowest rate at €0.14 per tonne.

Notes: [1] Manufacture of textiles, wearing apparel, leather and related products
Source: Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

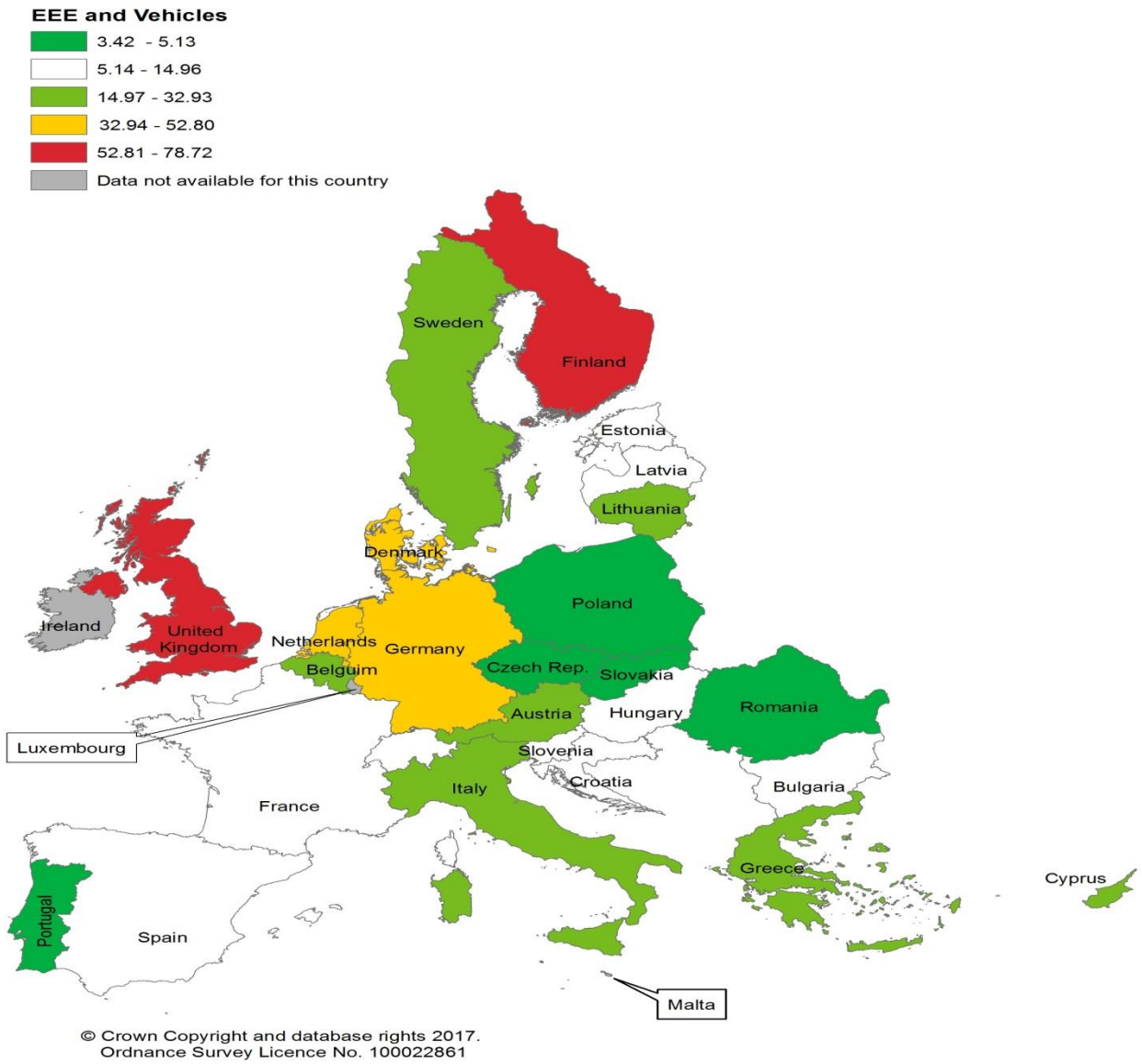
Figure 11.7: Value added by wood[1] industry per tonne of waste that wood industry produces, € per tonne, 2014.



- The UK rate of €1.78 per tonne of wood waste, is below the EU_28 average of €1.97 per tonne.
- Denmark has the highest rate at €15.56 per tonne of wood waste, with Romania having the lowest rate at €0.36 per tonne.

Notes: [1] Manufacture of wood and of products of wood and cork, except furniture, manufacture of articles of straw and plaiting materials
Source: Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

Figure 11.8: Value added by EEE industry[1] per tonne of waste that EEE industry produces, € per tonne, 2014.



- The UK rate of €64.29 per tonne of EEE and vehicle waste, is above the EU_28 average of €22.5 per tonne.
- Finland has the highest rate at €78.726 per tonne of EEE and vehicle waste, with Romania having the lowest rate at €3.42 per tonne.

Notes: [1] Manufacture of computer, electronic and optical products, electrical equipment, motor vehicles and other transport equipment
Source: appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_ind_r2&lang=en
appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=env_wasgen

Glossary

Resource terms:

DMC: **Domestic Material Consumption** is (Domestic extraction + Imports – Exports) and measures the amount of materials used in the economy, and is calculated by subtracting exports from DMI.

DMI: **Direct Material Input** is (Domestic extraction + Imports) and measures the total amount of materials that are available for use in the economy.

GDP: **Gross Domestic Product** is an integral part of the United Kingdom's (UK) National Accounts and provides a measure of the total economic activity in the country.

GVA: **Gross Value Added** is a key component of GDP. It measures the contribution to the economy of each individual producer, industry or sector.-

CVM - **chained volume measures** is updated every year, meaning that, in practice, every series to be presented in real terms is estimated both in current prices and prices of the previous year (PYPs). The growth rates of the series in successive years on the same prices (for example 2006 estimated in current prices and 2007 in PYPs) are linked together in a chain of short series (known as chain-linking) to give a full real terms time series. CVMs are more responsive to major structural changes in the economy and, given the fact that the industry and product mixes of the economy are changing more rapidly now than in the past, they provide a more accurate picture of change in the economy than constant price series rebased every five years.

RMC: **Raw Material Consumption** is Domestic extraction and includes imports expressed or converted into their Raw Material Equivalents

RME: **Raw Material Equivalents** are the equivalents of domestic extraction from the rest of the world to produce the respective goods

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Waste terms:

AD: **Anaerobic digestion**. This process works by bacteria, which thrive in the absence of oxygen, breaking down the bio-degradable fraction of the waste to produce a stable residue.

BMW: **Biodegradable Municipal Waste.** It is the fraction of Municipal Waste that will degrade within a landfill, giving rise to landfill gas emissions, primarily methane. It includes, amongst other materials, food waste, green waste, paper and cardboard

CH_4:.**methane.** It is a colourless, odourless gas with a wide distribution in nature

C&I: **Commercial and Industrial waste.** This is waste from mainly manufacturing and service industries.

C&D: **Construction and Demolition** is a waste stream that is primarily received from construction sites. Some examples of C&D waste include, but are not limited to, concrete, rebar, wood, panelling, linoleum, and carpet

EfW: **Energy from Waste.** The process of creating energy in the form of electricity or heat from the incineration of waste materials

EU_28: Member States of the European Union as at July 2013

EWC: **European Waste Catalogue.** is a hierarchical list of waste descriptions established by the European Commission. These are used by industry to record their waste activities.

Fly-tipping: - refers to dumping waste illegally instead of using an authorised method

GWh – **Gigawatt-hours**. It is a Unit of electrical energy equal to one billion (10^9) watt hours, which is a unit of energy equivalent to one watt (1 W) of power expended for one hour (1 h) of time

Incineration: is a waste treatment technology that involves the combustion of organic materials and substances. Incineration and other high temperature waste systems are described as "thermal treatment". Incineration of waste materials converts the waste into incinerator bottom ash, flue gases, particulates, and heat, which can in turn be used to generate electric power.

IVC: **In Vessel Composting**. This can be used to treat food and garden waste mixtures. These systems ensure that composting takes place in an enclosed environment, with accurate temperature control and monitoring. There are many different systems, but they can be broadly categorised into six types: containers, silos, agitated bays, tunnels, rotating drums and enclosed halls.

KBT: **Keep Britain Tidy**. It is a British campaign run by the Keep Britain Tidy environmental charity.

LEQSE: **Local Environmental Quality Survey of England.** It is a report that tells just how clean our country is in a scientific, statistically robust way

MBT: **Mechanical Biological Treatment**. MBT describes a number of different processes dealing with the biological treatment of waste. It is the combination of both biological and physical processes, which can be arranged in a number of different ways

MRF: **Materials Recovery Facility**. Line of business where recyclable material is processed, separated, and sold. This is a facility where recyclable materials are sorted and processed for sale. This process includes separating recyclable materials (manually or by machine) according to type, and baling or otherwise preparing the separated material for sale. Operating costs and revenues for MRF's are accounted for as a separate line of business.

MSW: **Municipal Solid Waste.** This is "Regular" waste from non-industrial sources, such as residential homes, restaurants, retail centres, and office buildings. Typical MSW includes paper, discarded food items, and other general discards. Green waste is considered MSW and includes garden clippings, leaves, trees, etc.

OAW: **Open Air Windrow**. This is a composting method used for processing garden waste, such as grass cuttings, pruning and leaves in either an open air environment or within large covered areas where the material can break down in the presence of oxygen.

Waste from Households: includes waste from: Regular household collection, Civic amenity sites, 'Bulky waste' 'Other household waste'. It does not include street cleaning/sweeping, gully emptying, separately collected healthcare waste, or asbestos waste. It is a narrower measure than 'municipal waste' and 'council collected waste'. It was first published by Defra in May 2014. It was introduced for statistical purposes to provide a harmonised UK indicator with a comparable calculation in each of the four UK countries and to provide a consistent approach to report recycling rates at UK level on a calendar year basis under the Waste Framework Directive (2008/98/EC).

WEEE: **Waste Electrical and Electronic Equipment Regulations.** Recycling of WEEE is a specialist part of the waste and recycling industry. The Waste Electric and Electronic Equipment (WEEE) Regulations 2013 became law in the UK on the 1st of January 2014

WRAP: **Waste and Resources Action Programme**. This is a UK based non-profit recycling advocate

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Food Waste terms

Avoidable waste: Food and drink that is thrown away untouched or opened/started but not finished (e.g. whole apples, yoghurts, half loaves of bread, unused slices of bacon etc.) or food and drink we cook or serve too much of

Possibly Avoidable waste: Food that some but not all people would eat (e.g. bread crusts) or that can be eaten when a food is prepared in one way but not in another (e.g. potato skins).

Unavoidable waste: This is elements of food that has not been edible under normal circumstances, such as bones, cores, peelings egg shells, banana skins and tea-bags