Department for Environment Food & Rural Affairs

Government Statistical Service

# Commercial and Industrial Waste Arisings Methodology Revisions for England

**October 2018**

UK estimates for waste generation from commercial and industrial (C&I) sectors are compiled in accordance with EU Waste Statistics Regulation (WStatR) reporting requirements. Data sources and detailed approaches may differ slightly between UK countries, but overarching principles will be consistent.

For the purpose of WStatR, C&I is defined as a specific collection of economic activities described by NACE ("statistical classification of economic activities in the European Community"). Those considered to be C&I are: C, D, E36, E37 & E39 (excluding sewage sludge) and G-U (excluding G46.7.7)[1].

Following the discontinuation of historical Defra C&I sector surveys after 2009, Defra commissioned a project to provide a new methodology to calculate waste generated by C&I in England, in order to continue to meet reporting requirements. This produced the 'Reconcile' methodology, along with estimates for 2010 and 2012 specifically formatted to contribute-to the Waste Statistics Regulation return and to provide a repeatable methodology. The project report[2] was published in August 2014.

In the original process of repeating the 'Reconcile' methodology using Defra systems, several areas of double-counting were identified, and so the methodology was reworked to correct for these, resulting in a substantial reduction to the C&I arisings figures for England in the December 2016 publication of UK Statistics on Waste. Concerns raised by industry following these data revisions identified outstanding issues with the methodology.

Defra took this opportunity to develop a further modified version alongside industry experts, which was felt to improve the transparency of the methodology and better reflect current waste management processes. While the original 'Reconcile' methodology had reliable estimates for landfilled and incinerated waste and organic recycling, the estimates for dry recycling relied on multiple assumptions regarding intermediate treatment sites (such as MRFs) and tonnages processed under exemption, which result in considerable uncertainty. To improve the transparency of this aspect of the methodology, we have sourced alternative "end-point" data sources for key dry recyclates and removed the previous exemptions-based methodology.

The review also called into question one of the fundamental assumptions to the 'Reconcile' methodology to exclude waste input to transfer stations, in addition to secondary waste (essentially waste generated from the treatment of waste), on the basis that it would be captured at other points in the waste treatment chain. Upon detailed investigation, it was discovered that large tonnages (e.g. around 7 million tonnes in 2012) of waste enter transfer stations as 'mixed municipal waste' (EWC code 20 03 01; i.e. black bag waste) but are re-categorised as secondary waste (largely 19 12 12) before being sent on for treatment or disposal. This is due to increased sorting and early-stage treatment at transfer stations, coinciding with an increase in

[1] http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

[2] http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=19118&FromSearch=Y&Publisher=1&SearchText=ev0804&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

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separation of refuse derived fuel (RDF) for export. We have therefore made additional improvements to capture these missed tonnages, which were not accounted for in the original methodology.

*Note: The new methodology makes no attempt to estimate waste processed under exemption that is not captured within the recycling data at end-point. Therefore, figures may underestimate the "true" tonnages of C&I waste arisings, but are the best estimate we can produce from the available data.*

A key presentational change will also be made to the commercial and industrial waste arisings figures. Eurostat require a wet-to-dry adjustment to be made to the submitted figures for sludges, which has a substantial impact on the total C&I figures because they include sewage and water treatment, and results in a reduction of several million tonnes a year. From consultation with industry, it was clear that the non-adjusted figures are of more value to the waste industry and so, while the adjustment will still be required for figures submitted to Eurostat as part of the WStatR return, Defra will from now on publish the non-adjusted figures as the headline C&I waste arisings figures. The Defra published C&I figures also exclude sewage sludge (which is included as dry weight for the purposes of the WStatR return).

The new methodology has been used to generate the 2015 and 2016 figures, as well as to revise the historical estimates and produce consistent estimates for 2011 to complete the time series. This has resulted in an increase in the C&I estimates from the revisions published in December 2016, but lower estimates when compared to the originally published figures. Comparing figures on a like-for-like basis (i.e. without the wet-to-dry weight adjustment for sludges) the total C&I arisings estimate for England in 2012 from the original 'Reconcile' project was 43.8 million tonnes. This was reduced to around 30 million tonnes (24.2 million tonnes with wet-to-dry adjustment) in December 2016, but has now been revised to 33.9 million tonnes. The 2014 figure was originally calculated as around 25 million tonnes (published as 19.8 million tonnes including wet-to-dry adjustment in December 2016), and has now been revised to 31.7 million tonnes.

Additional minor revisions have been made to figures in the October 2018 release, as a result of developing the methodology to produce the material type breakdown that is required for WStatR. For example, it was necessary to reconcile figures from WasteDataFlow and Waste Data Interrogator at the material type (EWC code) level.

The latest methodology has been developed with considerable input from industry experts and sense-checked against alternative data sources. Defra believe the latest estimates to be the most reliable figures that can be reasonably produced with the currently available data. Full details of the revised methodology are summarised in the table on p3.

Defra will continue to work with industry to ensure that C&I estimates remain relevant to the constantly evolving industry. We welcome feedback from users on the methodological changes and data revisions – please contact us using the details provided at the bottom of the page.

**Defra**

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**Summary of the principles for the calculation of the C&I estimates, including data sources**

| Endpoint | Source | Details and assumptions |
|---|---|---|
| Incineration | EA Incineration data | Total incinerated excluding EWC Chs 01 (Mining), 02 01* (Agriculture/Forestry/Fishing), 17 (Construction) and 19 (Secondary Waste). |
| RDF exports | EA data | Originated as EWC code 20 03 01 ("mixed municipal waste"). |
| Landfill & On/In Land | Waste Data Interrogator (EA) | Tonnes received at facilities with origin region in England, excluding Chs 01, 02 01*, 17 and 19. Assumes that WDI captures all tonnages at permitted sites (although in reality not all sites submit returns). Assumes that double-counting between sites is avoided by excluding transfer stations, treatment facilities not listed in the first column and Chapter 19 waste. Tonnes removed from these excluded sites with destination region outside England are also included, as these would otherwise not be captured. |
| Recycling: Compost and Metal Recycling Sites | | |
| Treatment: Biological, Anaerobic Digestion Chemical & Physical-Chemical | | |
| Exports from transfer stations and excluded (non-endpoint) treatment sites | | |
| EWC codes 19 12 10, 19 12 11* and 19 12 12 received at landfill or incinerated. | EA WDI/Incineration data | Captures mixed municipal waste (20 03 01) that is sorted within transfer sites and re-categorised as secondary waste (Ch 19) when it leaves. (Not captured in the WDI data above, which excludes both transfer stations and Ch 19 waste). This occurs largely due to sorting of 20 03 01 for RDF, "producing" 19 12 10 (RDF), plus associated sorting residues (19 12 11* and 19 12 12). These waste codes have therefore been included at landfill and incineration. 19 12 12 tonnages are reduced by 20% as interrogation of the WDI data at site level indicated that ~20% of 19 12 12 originates from construction waste (Ch 17) rather than municipal waste. |
| Paper and board recycling | Trade association data; HMRC export data; Defra Statistics | Assumes 88% UK paper and board waste is generated in England (based on % processed in England paper mills). Assigned to EWC codes 15 01 01 (paper and cardboard packaging) and 20 01 02 (paper and cardboard) based on trade association insight. |
| Glass recycling | National Packaging Waste Database (EA) returns and historical accreditation reports | Assumes 88% glass recycling and 71 % plastic recycling is packaging (based on accreditation reports for 2010-2013). These factors are applied to NPWD returns data (for reprocessors and exporters) and tonnages assigned to Chs 15 and 20 accordingly. Assumes % packaging waste received is the same for reprocessors and exporters, and that the % glass recycling that is packaging has not been altered by the introduction of separate "Glass Re-melt" and "Glass Other" categories from 2013 onwards. |
| Plastic recycling | | |
| Metal recycling | NPWD (reprocessor returns only) | Captures metal packaging received at reprocessors in England, which is assumed not to overlap with waste received at metal recycling sites. This is consistent with EA methodology for the Waste Statistics Regulation return. |
| Wood recycling | Wood Recycling Association (WRA); Anthesis report | Assumes total "municipal" wood arisings have been constant from 2010-2016, in the absence of alternative data. (Tolvik (2011) projected little change in wood waste arisings 2010-2015[3]). Uses managed tonnage of recycling plus export from WRA and assumes that 84% of this is generated |

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82571/consult-wood-waste-researchreview-20120731.pdf

| | | |
|---|---|---|
| | | in England and that 58% is C&I/LACW (based on 2014/15 estimates produced by Anthesis[4]). Tonnages assigned to EWC codes 15 01 03 and 20 01 38 based on industry insight. |

**Subtractions**

| | | |
|---|---|---|
| 19 12 10, 19 12 11* & 19 12 12 removed from included Treatment sites, with fate "Landfill", "Incineration" or "Recovery" | WDI (EA) | Deducted to avoid double-counting of Ch 19 waste that is re-coded as a result of sorting at included treatment sites (this happens to large tonnages at Biological Treatment, for example). Therefore without this deduction, some tonnages of Ch 19 received at landfill and incineration, and RDF exports, would be double-counting of 20 03 01 received at treatment. Assumes that fate "Recovery" is used for RDF. As explained above, it is assumed that 20% 19 12 12 originates from Ch 17 waste rather than 20 03 01 and so the tonnage for 19 12 12 is reduced by 20%. |
| 16 01 03, 16 01 04*, 16 01 06, 16 01 17, 16 01 18 removed from Metal Recycling sites, with fate "Transfer" or "Treatment". | WDI (EA) | Accounts for specific end-of-life vehicle and metal waste codes, which were assumed by the original Reconcile methodology to be partially double-counted between metal recycling sites. |
| Waste from Households (WfH) | WDF | Residual waste assigned to EWC code 20 03 01. Recyclates mapped to EWC code based on WDF material description. Note: total tonnage subtracted is always smaller than the published WfH generation for several reasons: i) End-point rather than generation figures are used from the WfH data; ii) Some waste types captured in WDF may not appear in the WDI data; iii) Tonnages for a particular waste type may be higher in WDF than in WDI. In this scenario, the C&I tonnages are set to zero, to avoid negative figures. |

[4] https://blog.anthesisgroup.com/uk-wood-waste-energy-market