Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

2021 WASTE DATA QUALITY REPORT

HOUSEHOLD WASTE GENERATED AND MANAGED

27th September 2022

Every day SEPA works to protect and enhance Scotland's environment, helping communities and businesses thrive within the resources of our planet.



We call this **One Planet Prosperity**

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1 Introduction

This report describes the methodologies to produce summary household waste data for Scotland for the 2021 calendar year. The report should be used alongside the 2021 Household waste data official statistics and associated data tables.

The 2021 data are presented as follows:

- The Household waste data for Scotland and associated data tables are presented in a summary and commentary document. This narrative describes the major trends and provides an interpretation of the data. They are located at http://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/.
- Scotland's Environment Household Waste Discover Data tool presents the waste from household sources in an interactive and visual format and is found on Scotland's Environment web at http://www.environment.scotland.gov.uk/get-interactive/data/household-waste/
- Scotland's Environment Waste Discover Data tool presents the WFAS in an interactive and visual format and is found on Scotland's Environment web at http://www.environment.scotland.gov.uk/get-interactive/data/waste-from-all-sources/. This tool covers the total waste managed, whether it be waste from households, waste from construction and demolition, or waste from commerce and industry. This tool includes waste generated and waste management methods including waste recycled, incinerated, composted and waste landfilled.

It should be noted that to provide consistency across the datasets for the WFAS Discover tool, additional years of waste generation and management data are updated at the same time. The statistical release and Excel landfill data tables are released about six months before the annual update of the WFAS Discover tool. This is because the landfill and incineration data come from discrete datasets and can be prepared and published earlier.

In some cases, the quantities of household waste and WFAS are counterintuitive. For example, there may be more household waste than WFAS for a given reporting category. This is a product of using different datasets and corresponding methodologies which are not comparable. If such an inconsistency exists, attempts have been made in this document to outline possible reasons for the inconsistency and steps that are planned to address the shortcomings.

It should be noted that this approach differs from the household data tables, in which waste generated and waste managed is balanced, with the exception of waste sent to interim storage. For example: in the household tool, 'incineration' reports net inputs to incinerators to avoid double-counting of incinerator outputs. SEPA in partnership with Zero Waste Scotland and the Scottish Government is currently reviewing Scotland's waste data strategy. Part of this review is to identify and address gaps in the reporting dataset.

Data sources referred to at various parts of the document are listed below. The agency that carries out the analysis of the dataset is provided in brackets.

Appendix 1 provides a fuller description of the WasteDataFlow data source including any links to return forms and guidance.

Appendix 2 and Appendix 3 list the waste categories used in the household waste methodology (SEPA).

Appendix 4 provides a summary of factors used for modelling 2011 – 2013 local authority composting data (SEPA)

Appendix 5 lists carbon factors used to produce the carbon metric (ZWS)

Appendix 6 list waste composition factors used for the carbon metric (ZWS / SEPA)

Appendix 7 provides a glossary of terms and Appendix 8 provides a list of acronyms.

1.1 Revisions Policy

Revisions could occur for various reasons, including when data from third parties is unavailable or provisional at the time of publishing or if there are subsequent methodological improvements or refinements.

The figures are accurate at the time of publication. However, the data may be updated if further revisions are necessary. Normally these revisions will be published concurrent with the next release.

Where there have been changes in methodology for the waste data tables, the complete dataset is to be revised for all years to ensure that comparisons between years are valid.

2 Progress against Targets

2.1 Introduction

The Scottish Government's Making Things Last – A Circular Economy Strategy for Scotland sets out the Scottish Government's vision for a zero waste society. This vision describes a Scotland where **all** waste is seen as a resource, where waste is minimised, where valuable resources are not disposed of in landfills, and where most waste is sorted, leaving only limited amounts to be treated.

This policy document sets a number of objective and measurable targets for tracking progress against the objectives specified in the plan. Some of these targets are derived from EU directives such as the Waste Framework Directive. A summary of these targets are provided in Table 1 below.

Scotland's strategic plan to deliver Scotland's zero waste and circular economy ambitions is under review, and currently the subject of a public consultation.

Table 1. Scottish Government Policy Targets

Target	Year	Set by
60% recycling/composting and preparing for re-use of household waste	2020	Scottish Government
Recycling and preparing for re-use of 50% by weight of household waste and similar.	2020	EU

2.2 Recycling/composting and preparing for re-use of household waste

The method used to prepare the household waste recycling/composting and preparing for re-use figure is based on waste from households reported in WasteDataFlow (see section 3).

The total waste reused, composted, and recycled for all 32 Scottish local authorities is calculated as follows:

Figure 1. Scottish household recycling rate calculation

$$\text{Percentage household waste recycled} = \frac{\text{Household waste recycled}}{}$$

				Household waste generated

The meaning of household waste changed in 2011 with the introduction of the Zero Waste Plan. The household recycling figures use the revised meaning for 2011 – 2021[1]. The household waste recycling figures for 2004 – 2010 are based on the old definition of household waste. Changes in the definition of household waste include:

- compost like output from mechanical and biological treatment (MBT) of household wastes previously counted as recycled was re-classified as 'Other recovery';
- metals and ash from incineration previously counted as recycled was re-classified as 'Other recovery';
- street-sweeping, gully waste, healthcare waste, and beach-cleansing waste were re-classified from household to commercial waste.

2.3 The preparing for re-use and the recycling by weight of waste materials such as paper, metal, plastic, and glass from household waste and similar

Previously, we reported to Eurostat under Article 11(2)(a) of the Waste Framework Directive (Directive 2008/98/EC) specifies that member states must meet a recycling target of 50% by weight for the recycling of waste materials such as paper, metal, plastic, and glass from households. This calculation of this metric is depicted in Figure 2 below. This measure is used by Defra in it's UK Statistics on waste publication. The key differences between the Scotland recycling rate and the Waste from households recycling rate are summarised in Table 2 below.

Further information about differences between the national recycling measures of the four UK countries may be found in the Recycling Explainer published by Defra in consultation with the environmental agencies of the four UK countries.

Figure 2. Waste from households recycling rate (by material) calculation

Waste from households generated (EU) (tonnes)	=	Waste from households generated (tonnes)	minus	waste soils and waste construction and demolition waste from households recycled
Percentage waste from households recycled (EU)	=	Household waste recycled minus Waste Soils and Mixed waste from	* 100	

[1] The Zero Waste Plan changes were introduced for reporting in the April-June 2011 quarter onwards. The January-March 2011 data for all 32 local authorities was re-analysed to be consistent with the other three quarters for the year

construction and demolition from households recycled	
Household Waste Generated (EU)	

Table 2. Comparison of Scotland national recycling measure vs EU (Defra) waste from households measure

Measure	Scotland national method	UK waste from households
Include waste sent to non-PAS compost facility	✘	✓
Include construction waste from householders	✓	✘
Include metals from incineration recycled	✘	✓

3 Household waste

3.1 Introduction

This section describes how we report on household waste generated in Scotland; and Scottish household waste managed in Scotland or elsewhere. Data is taken from all 32 Scottish local authority returns using the web-based reporting tool WasteDataFlow (WDF). Further details of the WDF dataset can be found in Appendix 1. Throughout this section reference is made to question numbers on WDF.

In 2021 local authorities submitted returns annually. All returns were checked and verified by SEPA staff for data entry errors, consistency with previous returns and consistency with the site returns dataset.

All waste collected is reported in WDF in the same return period in which it is sent to management. This allows balancing of the waste generated and waste managed for a period. The waste generated figures may include treated waste stockpiled prior to final management. The waste managed figures exclude treated waste held in stockpile at the end of the reporting year.

3.2 Methodology

3.2.1 WasteDataFlow question 100

Local authorities report waste managed in WDF using question 100 (Q100). Data entry is via building a graphical ‘tree’ that depicts the movement of waste in a chain. Each ‘branch’ of the tree is associated with a waste facility and tonnage inputs to and outputs from each facility are reported.

Question 100 covers the following waste management categories:

- Wastes sent direct to landfill, incineration and composting facilities, and waste sent to the same facilities following the sorting/treatment of mixed wastes e.g. at a materials recovery facility (MRF) or mechanical biological treatment (MBT) plant
- Segregated recyclates sent direct to reprocessors and reuse facilities, and waste sent to the same facilities following the sorting/treatment of mixed wastes (e.g. MRFs, MBT)

A “primary facility” in Q100 is a facility where the authority records waste as sent direct from collection. When entering data, the input tonnages to the facility at this level are broken down into three waste sources by local authorities: Household, Commercial, Industrial. The household tonnages are directly obtained from the data for these facilities.

Where the facility is not a primary facility (e.g. the waste sent to landfill is recorded as an output from another facility such as a materials recycling facility), the household waste tonnage is not specifically recorded. In this instance the household waste was calculated by applying the percentage household waste at the primary level in the tree to the total tonnage of waste sent to the facility. For example, if waste inputs to a MRF facility are 80% household wastes, the output rejects from the MRF sent to landfill will be designated as 80% household in origin.

3.2.2 Waste categories

A list of SEPA reporting categories and corresponding WDF waste types are provided in Appendix 2and Appendix 3. The mapping of these categories follows the approach taken by UK reporting to Europe for waste statistics regulation reporting.

For intelligibility, in the 2021 official statistics commentary document for household waste generated and managed, the statistical waste categories "Metallic wastes, ferrous ", "Metallic wastes, non-ferrous", and "Metallic wastes, mixed ferrous and non-ferrous" have been combined into the one category "Metallic wastes" , and the statistical waste categories "Mineral waste from construction and demolition" and "Soils" have been combined into one "Construction and soils" category. This is a change from the 2019 publication. The Household Waste Discover Data tool retains the all the statistical categories.

3.2.3 Household waste generated

Household waste generated were taken from the household tonnage inputs to primary level facilities in question 100.

3.2.4 Household waste landfilled

Household waste sent to landfill was derived from the waste recorded as sent to a landfill facility in Q100.

3.2.5 Household waste recovered by incineration, recovered by co-incineration, disposed by incineration

The quantity of household waste incinerated in the Household Waste Discover Data tool is the net tonnage input to the incinerator. This is to provide consistency with the waste reported in the official statistics publication[2]. This differs from the WFAS Waste Discover Data tool, in which gross inputs to incineration[3] are reported.

Incineration tonnages were allocated to the *incineration by recovery* category where the incineration facility meets the R1 Waste Framework Directive criteria for incineration efficiency. Similarly, where waste was incinerated in a co-incineration process, tonnages were allocated to the *incineration by co-incineration* category in the data tables. Where the incinerator was not recognised as meeting the Waste Framework Directive criteria for incineration efficiency, the incineration tonnages were allocated to the *incineration by disposal* category. It was assumed that all waste exported outside the UK was sent for *incineration by recovery*, and waste exported to an England incinerator was sent to *incineration by disposal* or *incineration by co-incineration*.

3.2.6 Household waste recycled

The quantity of household waste recycled is the net sum of household waste recorded as sent to reprocessor facilities in Q100. This includes waste sent direct to a reprocessor from collection and also the recyclable materials sent to a reprocessor following sorting of mixed wastes at a waste treatment facility (e.g. MRFs, MBT).

[2] http://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/household-waste-data/
[3] Net incineration is the gross inputs, less outputs such as bottom ash and metals which are disposed/recycled

Under Scotland's Zero Waste Plan the compost-like output (CLO) from MBT of household waste, and recycled metal and ash from incineration of household waste do not count towards household recycling targets and are excluded from household waste recycling figures but they are included under "other diversion from landfill" unless these materials are landfilled. These materials are also excluded from the recycling data in the household waste data tables.

3.2.7 Household waste prepared for reuse

The quantity of household waste prepared for reuse is the net sum of household waste recorded as sent to reuse facilities in Q100, either directly or as outputs from a sorting facility.

3.2.8 Household organic waste recycled through biological treatment

The quantity of household organic waste recycled through biological treatment is the net sum of household waste recorded as sent to organic recycling facilities in Q100. There are three categories of organic recycling facilities in Q100: windrow composting, in-vessel composting, and anaerobic digestion facilities.

In 2021 only PAS100/110-accredited facilities were considered for the recycling data in line with Scotland's Zero Waste Plan. This change stems from the Scottish Government policy to improve quality of recycling, first introduced with the publication of the Zero Waste Plan in 2011. Waste composted or digested that has not reached the quality standards set by PAS100/110 and diverted from landfill was considered under "other diversion from landfill".

3.2.9 Household waste managed by other methods

Under Scotland's Zero Waste Plan the compost-like output (CLO) from MBT, and recycled metal and ash from incineration of household waste do not count towards household recycling targets and are excluded from household waste recycling figures. These materials have been allocated into the "Other waste managed" category in the household waste data tables. Also included in this category is any process loss during waste treatment, and process loss of organic waste composted in which the compost product is disposed.

3.2.10 Final destination reporting

The geographic allocation (Scotland / Outwith Scotland) for household recycling / disposal / recovery relies on the accurate reporting of the final destination of waste materials. For example, a final destination for glass bottles would be the site where the bottles are reprocessed into new materials. A final destination for rejected material from a MRF might be landfill or incineration.

SEPA guidance requires authorities to report the final destination of the waste in Q100 (i.e. the facility where waste is recycled). Waste often goes through a complex chain of sites before reaching its final destination. This, together with the reluctance of some operators to report where waste is sent due to commercial reason, means many authorities struggle to obtain final destination information for the WDF report. Although the roll out of Q100 has improved final destination reporting, many authorities still continue to report MRFs as final destinations. The geographic information for household waste managed, in particular the household waste recycled, should therefore be treated with caution in the waste data tables. It is

anticipate that the UK waste tracking system[4], when implemented will provide more detailed and accurate data on the destination of waste managed by local authorities.

3.2.11 2011 - 2013 Composting and Other Diversion

In 2014 the meaning of recycling changed in Scotland. After 2014 waste that was composted at PAS100 / PAS110 certified facilities counted towards

recycling, and waste sent to facilities which were not certified did not count towards recycling but were part of the "Other diversion from landfill" category.

From 2014 to 2019 the old and new method were published in the statistical bulletin side by side. However, as we move further away from the old composting measure, it becomes less important, and a back series is helpful for understanding changes over a long period of time. For 2011 – 2013 the waste that met the PAS 100/110 standard was modelled to produce a back series. For each authority, the proportion of waste that was sent to a PAS 100/110 facility on average in 2014-2015 was applied to the waste sent for composting for each of the years 2011, 2012 and 2013. The formula for calculating the non-PAS tonnes is depicted in Figure 3 below. The final factors used for each authority are listed in Appendix 4. For example, if an authority sent 60% of it's waste to a PAS 100/110 facility in 2014-15, then for the back series years of 2011, 2012 and 2013, 60% of waste sent for composting were counted as recycled. The non-PAS 100/110 tonnes were allocated to the "Other Diversion" category.

Figure 3. non-PAS ratio calculation

$$\text{non-PAS / PAS ratio} = \frac{\text{Waste sent to non-PAS 100 / 110 facilities in 2014 and 2015}}{\text{Waste sent to all composting / AD facilities in 2014 and 2015}}$$

3.2.12 Carbon Metric

The carbon metric is a measure of the whole-life carbon impacts of waste, from resource extraction and manufacturing emissions, right through to waste management emissions, regardless of where in the world these impacts occur. The carbon impact of waste was developed by Zero Waste Scotland (https://www.zerowastescotland.org.uk/content/what-carbon-metric).

Calculation of the carbon metric depends upon the waste category and how it is managed. The waste category for each management type is multiplied by the carbon factor listed in Appendix 5. The carbon factors were provided by Zero Waste Scotland, and the methodology on how they are produced may be found in the carbon metric technical report on Zero Waste Scotland's web site.

The Household and similar wastes category, which comprise mixed residual waste, was first divided up into individual waste categories before multiplying by the carbon factor. This was achieved by using the composition of residual waste published in

[4] https://www.gov.uk/government/collections/waste-management-smart-tracking-of-waste-govtech-catalyst

Zero Waste Scotland's 2014 waste composition study[5]. Not all Scottish local authorities were included in the 2014 waste composition study. Therefore, the average waste composition across all Scottish authorities was applied to each authority. It should be noted that the waste composition for authorities can vary, depending on the amount of source segregated collections undertaken in a local authority area. Therefore, care should be taken when comparing local authority carbon metric data.

It is almost certain that, due to the introduction of source segregated food waste collections, the food waste composition will have decreased since 2014. To account for this, the amount of food waste over segregated and residual waste streams was assumed to be constant over any year. For each year, the amount of food waste in the residual waste stream was then calculated by subtracting the amount of waste in the segregated waste stream for that year from the amount of food waste across both the segregated and residual waste streams in 2014. The final waste composition used for each year is list in Appendix 6 on page 32. It should be noted that, due to the infrequency of waste composition studies, the variation due to sampling error for waste composition is unknown. Zero Waste Scotland has a planned program for regular waste composition studies which will provide a better estimate of year to year variation of the waste composition, and, consequently the variation in the carbon metric analysis.

[5] https://www.zerowastescotland.org.uk/content/composition-municipal-waste-scotland

4 Further information

Contacting Us

If you have any queries on the contents of this document or the accompanying waste data tables, please contact the Dataflows Unit by email, phone or in writing.

By Email

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Appendix 1. Datasets used in the 2021 methodology

In 2021, all 32 Scottish local authorities reported on a quarterly or annual basis using an electronic return system called WasteDataFlow[6] (WDF). WDF is a UK wide system administered by Defra. Local authorities are responsible for entering data, which cannot be modified by SEPA. Data entry is via a series of numbered questions[6].

In 2021 there was a 100% response rate. SEPA reviewed annual data using a verification tool and informed local authorities where possible of inconsistencies required checking. Data checking included the consistency of reported tonnages collected and managed for residual waste, segregated recycling, and organic wastes.

Further details of the changes to reporting brought about with the introduction of Question 100 during 2013 are provided in section3.2.1 on page 10.

Where waste is reported per person, such as waste generated per person and Carbon impact (TCO2e per person), the population data was sourced from Scotland's Mid-2021 Population Estimates Scotland (nrscotland.gov.uk).

[6] www.wastedataflow.org/documents/guidancenotes/Scotland/GeneralGuidance/Scotland WDF User Guidance Rev Oct 12.PDF

Appendix 2. Segregated Household waste categories for SEPA reporting and WasteDataFlow

SEPA Statistical Category	WasteDataFlow	Hazardous (H) / non-hazardous (NH)
Animal and mixed food waste	Waste food only	NH
Animal and mixed food waste	25% of Mixed garden and food waste	NH
Animal and mixed food waste	Vegetable oil	NH
Batteries and accumulators wastes	Automotive batteries	H
Batteries and accumulators wastes	Post-consumer, non-automotive batteries	NH
Combustion wastes	Incinerator bottom ash	NH
Construction and demolition waste	Rubble	NH
Construction and demolition waste	Plasterboard	NH
Discarded electrical and electronic equipment	WEEE - Large domestic apps	H
Discarded electrical and electronic equipment	WEEE - Small domestic apps	H
Discarded electrical and electronic equipment	WEEE - Cathode ray tubes	H
Discarded electrical and electronic equipment	WEEE - Fridges and freezers	H
Discarded machines and equipment components	WEEE - Fluorescent tubes and other light bulbs	H
Discarded vehicles	Bicycles	NH
Glass wastes	Green glass	NH
Glass wastes	Brown glass	NH
Glass wastes	Clear glass	NH
Glass wastes	Mixed glass	NH
Health care and biological wastes	Adsorbent Hygiene Products (AHP)	NH
Household and similar wastes	Furniture	NH
Household and similar wastes	Bric-a-brac	NH
Household and similar wastes	Mattresses	NH
Metal wastes, ferrous	Steel cans	NH
Metal wastes, mixed ferrous and non-ferrous	Mixed cans	NH
Metal wastes, mixed ferrous and non-ferrous	Other scrap metal	NH
Metal wastes, non-ferrous	Aluminium cans	NH
Metal wastes, non-ferrous	Aluminium foil	NH
Mixed and undifferentiated materials	Cardboard beverage packaging	NH
Mixed and undifferentiated materials	Co-mingled materials	NH
Mixed and undifferentiated materials	Other materials	NH
Off-specification chemical wastes	Aerosols	NH
Off-specification chemical wastes	Fire extinguishers	H

Off-specification chemical wastes	Gas Bottles	H
Off-specification chemical wastes	Ink and toner cartridges	NH
Off-specification chemical wastes	Paint	NH
Paper and cardboard wastes	Paper	NH
Paper and cardboard wastes	Card	NH
Paper and cardboard wastes	Books	NH
Paper and cardboard wastes	Mixed paper and card	NH
Paper and cardboard wastes	Yellow pages	NH
Plastic wastes	Mixed plastics	NH
Plastic wastes	Mixed plastic bottles	NH
Plastic wastes	PET	NH
Plastic wastes	HDPE	NH
Plastic wastes	PVC	NH
Plastic wastes	LDPE	NH
Plastic wastes	PP	NH
Plastic wastes	PS	NH
Plastic wastes	Other plastics	NH
Plastic wastes	Video tapes, DVDs and CDs	NH
Rubber wastes	Car tyres	NH
Rubber wastes	Van tyres	NH
Rubber wastes	Large vehicle tyres	NH
Rubber wastes	Mixed tyres	NH
Soils	Soil	NH
Textile wastes	Textiles only	
Textile wastes	Footwear only	
Textile wastes	Textiles and footwear	NH
Textile wastes	Carpets	NH
Used oils	Mineral oil	H
y	Green garden waste only	NH
Vegetal wastes	Other compostable waste	NH
Vegetal wastes	75% of Mixed garden and food waste	NH
Wood wastes	Wood for composting	NH
Wood wastes	Wood	NH
Wood wastes	Chipboard and MDF	NH
Wood wastes	Composite wood materials	NH

Appendix 3. Mixed household waste categories for SEPA reporting and WasteDataFlow

SEPA Statistical Category	WasteDataFlow	Hazardous (H) / non-hazardous (NH)
Household and similar wastes	Collected household waste: Regular Collection	NH
Household and similar wastes	Collected household waste: Bulky Waste	NH
Household and similar wastes	Collected household waste: other	NH
Household and similar wastes	Civic amenity sites waste: Household	NH
Other mineral wastes	Asbestos Waste separately collected	H

Appendix 4. non-PAS 100 / 110 to PAS 100 / 110 for Scottish local authorities – average over 2014 - 2015

Authority	non-PAS ratio
Aberdeen City	0.0000
Aberdeenshire	0.0000
Angus	0.0000
Argyll and Bute	0.4741
City of Edinburgh	0.0895
Clackmannanshire	0.0000
Dumfries and Galloway	0.5928
Dundee City	0.0000
East Ayrshire	0.0074
East Dunbartonshire	0.1267
East Lothian	0.0000
East Renfrewshire	0.0074
Falkirk	0.0000
Fife	0.0267
Glasgow City	0.0000
Highland	0.0628
Inverclyde	0.0000
Midlothian	0.0075
Moray	0.0000
Na h-Eileanan Siar	1.0000
North Ayrshire	0.0077
North Lanarkshire	0.0073
Orkney Islands	1.0000
Perth and Kinross	0.0470
Renfrewshire	0.0000
Scottish Borders	0.0000
Shetland Islands	1.0000
South Ayrshire	0.1081
South Lanarkshire	0.0350
Stirling	0.0000
West Dunbartonshire	0.0044
West Lothian	0.0126

Appendix 5. Carbon Metric Factors, 2013 - 2021

All factors in units of CO2eq per tonne of material

Year	SEPA Reporting Category	Generated	Recycled / Composted	Incinerated	Landfilled	Other diversion
2021	Animal and mixed food waste	3,744.00	-16.81	1.23	988.56	18.57
2021	Animal faeces, urine and manure					
2021	Batteries and accumulators wastes	12,105.68	-578.62			
2021	Chemical wastes	1,319.60	4,040.40	382.06		
2021	Combustion wastes				8.48	-2.17
2021	Common sludges					
2021	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	41.06	4.17	
2021	Discarded vehicles	6,850.00	-1,616.15	328.00		
2021	Dredging spoils					
2021	Glass wastes	1,210.00	-754.96	48.40	4.18	
2021	Health care and biological wastes			211.38	420.00	
2021	Household and similar wastes	3,205.07	-648.10	382.06	451.78	18.57
2021	Metallic wastes, ferrous	2,912.76	-1,761.76			
2021	Metallic wastes, mixed ferrous and non-ferrous	3,884.08	-2,530.94	41.06	4.18	-2,489.88
2021	Metallic wastes, non-ferrous	12,936.56	-9,955.04			
2021	Mineral waste from construction and demolition	19.11	2.21	41.06	2.54	
2021	Mixed and undifferentiated materials	1,885.75	-1,202.76	43.26	107.18	
2021	Other mineral wastes					
2021	Paper and cardboard wastes	874.32	-546.46	-93.23	499.33	
2021	Plastic wastes	3,175.54	-532.04	1,887.67	4.17	
2021	Rubber wastes	3,100.00	-514.49	1,810.60		
2021	Sludges and liquid wastes from waste treatment					
2021	Soils		0.99		1.24	
2021	Sorting residues					
2021	Spent solvents					

2021	Textile wastes	20,443.78	-5,828.03	216.09	570.65	
2021	Used oils	1,401.00	-725.00			
2021	Vegetal wastes		-50.03	-14.05	213.69	18.57
2021	Waste containing PCB					
2021	Wood wastes	510.12	-284.07	-143.92	860.88	
2020	Animal and mixed food waste	3,744.00	-16.69	1.08	988.64	17.46
2020	Animal faeces, urine and manure					
2020	Batteries and accumulators wastes	12,106.67	-578.62			
2020	Chemical wastes	1,320.46	4,039.54	382.30		
2020	Combustion wastes				8.48	-3.17
2020	Common sludges					
2020	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	41.30	4.26	
2020	Discarded vehicles	6,850.00	-1,620.83	328.00		
2020	Dredging spoils					
2020	Glass wastes	1,210.00	-754.96	48.63	4.26	
2020	Health care and biological wastes			210.13	420.00	
2020	Household and similar wastes	3,207.23	-649.11	382.30	451.82	17.46
2020	Metallic wastes, ferrous	2,919.54	-1,768.47			
2020	Metallic wastes, mixed ferrous and non-ferrous	3,890.59	-2,537.33	41.30	4.26	-2,496.03
2020	Metallic wastes, non-ferrous	12,943.34	-9,961.28			
2020	Mineral waste from construction and demolition	20.10	2.21	41.30	2.54	
2020	Mixed and undifferentiated materials	1,892.53	-1,209.48	40.56	107.26	
2020	Other mineral wastes					
2020	Paper and cardboard wastes	879.46	-546.53	-94.19	499.33	
2020	Plastic wastes	3,182.30	-535.76	1,885.20	4.26	
2020	Rubber wastes	3,100.00	-514.49	1,807.45		
2020	Soils		1.01		1.26	
2020	Sorting residues					
2020	Spent solvents					
2020	Textile wastes	20,443.78	-5,828.03	216.09	570.65	
2020	Used oils	1,401.00	-725.00			
2020	Vegetal wastes		-49.99	-14.32	213.72	17.46

2020	Wood wastes	514.47	-286.80	-145.32	860.97	
2019	Animal and mixed food waste	3,744.00	-18.05	-0.55	988.64	18.10
2019	Animal faeces, urine and manure					
2019	Batteries and accumulators wastes	12,106.67	-578.62			
2019	Chemical wastes	1,320.46	4,039.54	384.92		
2019	Combustion wastes				8.48	-3.17
2019	Common sludges					
2019	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	43.92	4.26	
2019	Discarded vehicles	6,850.00	-1,620.83	328.00		
2019	Dredging spoils					
2019	Glass wastes	1,210.00	-754.96	51.25	4.26	
2019	Health care and biological wastes			196.06	420.00	
2019	Household and similar wastes	3,207.23	-650.95	384.92	451.82	18.10
2019	Metallic wastes, ferrous	2,919.54	-1,768.47			
2019	Metallic wastes, mixed ferrous and non-ferrous	3,890.59	-2,537.33	43.92	4.26	-2,493.41
2019	Metallic wastes, non-ferrous	12,943.34	-9,961.28			
2019	Mineral waste from construction and demolition	20.10	2.21	43.92	2.54	
2019	Mixed and undifferentiated materials	1,892.53	-1,209.48	10.04	107.26	
2019	Other mineral wastes					
2019	Paper and cardboard wastes	879.46	-546.53	-105.07	499.33	
2019	Plastic wastes	3,182.30	-535.76	1,857.38	4.26	
2019	Rubber wastes	3,100.00	-514.49	1,771.90		
2019	Soils		1.01		1.26	
2019	Sorting residues					
2019	Spent solvents					
2019	Textile wastes	20,443.78	-5,828.03	216.09	570.65	
2019	Used oils	1,401.00	-725.00			
2019	Vegetal wastes		-51.03	-17.45	213.72	18.10
2019	Wood wastes	514.47	-286.80	-161.16	860.97	
2018	Animal and mixed food waste	3,744.00	-28.09	-2.54	1,015.22	-2.30
2018	Animal faeces, urine and manure					
2018	Batteries and accumulators wastes	12,107.10	-578.62			

2018	Chemical wastes	1,320.83	4,039.17	388.10		
2018	Combustion wastes				8.48	-3.60
2018	Common sludges					
2018	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	47.10	4.30	
2018	Discarded vehicles	6,850.00	-1,629.51	328.00		
2018	Dredging spoils					
2018	Glass wastes	1,210.00	-754.96	54.44	4.30	
2018	Health care and biological wastes			178.95	420.00	
2018	Household and similar wastes	3,204.87	-653.64	388.10	465.23	-2.30
2018	Metallic wastes, ferrous	2,922.47	-1,782.71			
2018	Metallic wastes, mixed ferrous and non-ferrous	3,893.40	-2,550.18	47.10	4.30	-2,503.08
2018	Metallic wastes, non-ferrous	12,946.27	-9,963.95			
2018	Mineral waste from construction and demolition	20.53	2.21	47.10	2.54	
2018	Mixed and undifferentiated materials	1,895.46	-1,212.38	-27.07	107.30	
2018	Other mineral wastes					
2018	Paper and cardboard wastes	881.69	-546.56	-118.29	510.61	
2018	Plastic wastes	3,185.23	-553.12	1,823.55	4.30	
2018	Rubber wastes	3,100.00	-514.49	1,728.70		
2018	Soils		1.02		1.28	
2018	Sorting residues					
2018	Spent solvents					
2018	Textile wastes	20,443.78	-5,828.03	216.09	599.23	
2018	Used oils	1,401.00	-725.00			
2018	Vegetal wastes		-60.67	-21.26	213.73	-2.30
2018	Wood wastes	516.35	-287.98	-180.40	925.27	
2017	Animal and mixed food waste	3,744.00	-19.23	-7.53	1,003.56	19.69
2017	Animal faeces, urine and manure					
2017	Batteries and accumulators wastes	12,107.10	-578.62			
2017	Chemical wastes	1,320.83	4,039.17	396.10		
2017	Combustion wastes				8.48	-3.59
2017	Common sludges					

2017	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	55.10	4.56	
2017	Discarded vehicles	6,850.00	-1,621.13	328.00		
2017	Dredging spoils					
2017	Glass wastes	1,210.00	-754.96	62.43	4.56	
2017	Health care and biological wastes			136.01	420.00	
2017	Household and similar wastes	3,204.94	-655.69	396.10	461.34	19.69
2017	Metallic wastes, ferrous	2,922.43	-1,771.21			
2017	Metallic wastes, mixed ferrous and non-ferrous	3,893.36	-2,539.77	55.10	4.56	-2,484.67
2017	Metallic wastes, non-ferrous	12,946.23	-9,962.30			
2017	Mineral waste from construction and demolition	20.53	2.21	55.10	2.54	
2017	Mixed and undifferentiated materials	1,895.42	-1,212.16	-120.17	107.56	
2017	Other mineral wastes					
2017	Paper and cardboard wastes	882.23	-546.56	-151.46	504.03	
2017	Plastic wastes	3,185.19	-537.12	1,738.68	4.56	
2017	Rubber wastes	3,100.00	-514.49	1,620.28		
2017	Soils		1.08		1.35	
2017	Sorting residues					
2017	Spent solvents					
2017	Textile wastes	20,443.78	-5,828.03	216.09	599.07	
2017	Used oils	1,401.00	-725.00			
2017	Vegetal wastes		-51.81	-30.80	213.80	19.69
2017	Wood wastes	516.32	-287.56	-228.70	925.18	
2016	Animal and mixed food waste	3,744.00	-20.69	-11.87	993.20	18.23
2016	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2016	Batteries and accumulators wastes	12,107.63	-578.62	0.00	0.00	0.00
2016	Chemical wastes	1,321.28	4,038.72	403.06	0.00	0.00
2016	Combustion wastes	0.00	0.00	0.00	8.48	-4.12
2016	Common sludges	0.00	0.00	0.00	0.00	0.00
2016	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	62.06	4.57	0.00
2016	Discarded vehicles	6,850.00	-1,623.86	328.00	0.00	0.00
2016	Dredging spoils	0.00	0.00	0.00	0.00	0.00

2016	Glass wastes	1,210.00	-754.96	69.39	4.57	0.00
2016	Health care and biological wastes	0.00	0.00	98.64	420.00	0.00
2016	Household and similar wastes	3,206.08	-661.01	403.06	457.83	18.23
2016	Metallic wastes, ferrous	2,926.05	-1,774.82	0.00	0.00	0.00
2016	Metallic wastes, mixed ferrous and non-ferrous	3,896.85	-2,543.23	62.06	4.57	-2,481.17
2016	Metallic wastes, non-ferrous	12,949.85	-9,965.84	0.00	0.00	0.00
2016	Mineral waste from construction and demolition	21.06	2.21	62.06	2.54	0.00
2016	Mixed and undifferentiated materials	1,899.04	-1,215.77	-201.21	107.57	0.00
2016	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2016	Paper and cardboard wastes	884.91	-546.60	-180.33	498.30	0.00
2016	Plastic wastes	3,188.80	-539.16	1,664.80	4.57	0.00
2016	Rubber wastes	3,100.00	-514.49	1,525.90	0.00	0.00
2016	Soils	0.00	1.08	0.00	1.36	0.00
2016	Sorting residues	0.00	0.00	0.00	0.00	0.00
2016	Spent solvents	0.00	0.00	0.00	0.00	0.00
2016	Textile wastes	20,443.78	-5,828.03	216.09	598.93	0.00
2016	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2016	Vegetal wastes	0.00	-53.06	-39.11	213.81	18.23
2016	Wood wastes	518.65	-289.07	-270.74	924.88	0.00
2015	Animal and mixed food waste	3,744.00	-21.94	-15.48	984.54	16.98
2015	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2015	Batteries and accumulators wastes	12,106.48	-578.62	0.00	0.00	0.00
2015	Chemical wastes	1,320.29	4,039.71	408.86	0.00	0.00
2015	Combustion wastes	0.00	0.00	0.00	8.48	-2.98
2015	Common sludges	0.00	0.00	0.00	0.00	0.00
2015	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	67.86	4.56	0.00
2015	Discarded vehicles	6,850.00	-1,617.82	328.00	0.00	0.00
2015	Dredging spoils	0.00	0.00	0.00	0.00	0.00
2015	Glass wastes	1,210.00	-754.96	75.19	4.57	0.00
2015	Health care and biological wastes	0.00	0.00	67.49	420.00	0.00
2015	Household and similar wastes	3,203.63	-663.99	408.86	454.89	16.98
2015	Metallic wastes, ferrous	2,918.22	-1,767.00	0.00	0.00	0.00

2015	Metallic wastes, mixed ferrous and non-ferrous	3,889.33	-2,535.71	67.86	4.57	-2,467.86
2015	Metallic wastes, non-ferrous	12,942.02	-9,958.05	0.00	0.00	0.00
2015	Mineral waste from construction and demolition	19.91	2.21	67.86	2.54	0.00
2015	Mixed and undifferentiated materials	1,891.21	-1,207.95	-268.74	107.57	0.00
2015	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2015	Paper and cardboard wastes	879.17	-546.52	-204.39	493.53	0.00
2015	Plastic wastes	3,180.99	-534.73	1,603.24	4.56	0.00
2015	Rubber wastes	3,100.00	-514.49	1,447.26	0.00	0.00
2015	Soils	0.00	1.08	0.00	1.36	0.00
2015	Sorting residues	0.00	0.00	0.00	0.00	0.00
2015	Spent solvents	0.00	0.00	0.00	0.00	0.00
2015	Textile wastes	20,443.78	-5,828.03	216.09	598.82	0.00
2015	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2015	Vegetal wastes	0.00	-54.15	-46.03	213.80	16.98
2015	Wood wastes	513.63	-285.78	-305.77	924.62	0.00
2014	Animal and mixed food waste	3,744.00	-22.18	-17.80	979.26	16.74
2014	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2014	Batteries and accumulators wastes	12,109.19	-578.62	0.00	0.00	0.00
2014	Chemical wastes	1,322.62	4,037.38	412.57	0.00	0.00
2014	Combustion wastes	0.00	0.00	0.00	8.48	-5.67
2014	Common sludges	0.00	0.00	0.00	0.00	0.00
2014	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	71.57	4.82	0.00
2014	Discarded vehicles	6,850.00	-1,630.34	328.00	0.00	0.00
2014	Dredging spoils	0.00	0.00	0.00	0.00	0.00
2014	Glass wastes	1,210.00	-754.96	78.90	4.83	0.00
2014	Health care and biological wastes	0.00	0.00	47.56	420.00	0.00
2014	Household and similar wastes	3,209.49	-668.82	412.57	453.16	16.74
2014	Metallic wastes, ferrous	2,936.65	-1,785.18	0.00	0.00	0.00
2014	Metallic wastes, mixed ferrous and non-ferrous	3,907.02	-2,553.02	71.57	4.83	-2,481.45
2014	Metallic wastes, non-ferrous	12,960.45	-9,974.81	0.00	0.00	0.00
2014	Mineral waste from construction and demolition	22.61	2.21	71.57	2.54	0.00
2014	Mixed and undifferentiated materials	1,909.64	-1,226.19	-311.96	107.83	0.00

2014	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2014	Paper and cardboard wastes	893.21	-546.70	-219.79	490.47	0.00
2014	Plastic wastes	3,199.37	-544.79	1,563.83	4.82	0.00
2014	Rubber wastes	3,100.00	-514.49	1,396.93	0.00	0.00
2014	Soils	0.00	1.14	0.00	1.43	0.00
2014	Sorting residues	0.00	0.00	0.00	0.00	0.00
2014	Spent solvents	0.00	0.00	0.00	0.00	0.00
2014	Textile wastes	20,443.78	-5,828.03	216.09	598.75	0.00
2014	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2014	Vegetal wastes	0.00	-54.28	-50.46	213.88	16.74
2014	Wood wastes	525.44	-293.16	-328.20	924.72	0.00
2013	Animal and mixed food waste	3,744.00	-20.95	-14.25	987.74	17.97
2013	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2013	Batteries and accumulators wastes	12,109.21	-578.62	0.00	0.00	0.00
2013	Chemical wastes	1,322.64	4,037.36	406.89	0.00	0.00
2013	Combustion wastes	0.00	0.00	0.00	8.48	-5.69
2013	Common sludges	0.00	0.00	0.00	0.00	0.00
2013	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.46	-180.52	65.89	4.83	0.00
2013	Discarded vehicles	6,850.00	-1,630.41	328.00	0.00	0.00
2013	Dredging spoils	0.00	0.00	0.00	0.00	0.00
2013	Glass wastes	1,210.00	-754.96	73.22	4.83	0.00
2013	Health care and biological wastes	0.00	0.00	78.08	420.00	0.00
2013	Household and similar wastes	3,194.73	-622.23	406.89	479.69	17.97
2013	Metallic wastes, ferrous	2,936.78	-1,785.32	0.00	0.00	0.00
2013	Metallic wastes, mixed ferrous and non-ferrous	3,907.16	-2,553.15	65.89	4.83	-2,487.26
2013	Metallic wastes, non-ferrous	12,960.58	-9,974.91	0.00	0.00	0.00
2013	Mineral waste from construction and demolition	22.63	2.21	65.89	2.54	0.00
2013	Mixed and undifferentiated materials	1,909.77	-1,226.32	-245.78	107.83	0.00
2013	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2013	Paper and cardboard wastes	893.32	-546.70	-196.21	495.15	0.00
2013	Plastic wastes	3,199.50	-544.87	1,624.17	4.83	0.00
2013	Rubber wastes	3,100.00	-514.49	1,474.00	0.00	0.00

2013	Soils	0.00	1.14	0.00	1.43	0.00
2013	Sorting residues	0.00	0.00	0.00	0.00	0.00
2013	Spent solvents	0.00	0.00	0.00	0.00	0.00
2013	Textile wastes	20,443.78	-5,828.03	216.09	598.86	0.00
2013	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2013	Vegetal wastes	0.00	-53.22	-43.67	213.88	17.97
2013	Wood wastes	525.53	-293.21	-293.86	924.97	0.00
2012	Animal and mixed food waste	3,744.00	-21.00	-15.00	985.00	18.00
2012	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2012	Batteries and accumulators wastes	12,109.00	-579.00	0.00	0.00	0.00
2012	Chemical wastes	1,323.00	4,037.00	409.00	0.00	0.00
2012	Combustion wastes	0.00	0.00	0.00	8.00	-6.00
2012	Common sludges	0.00	0.00	0.00	0.00	0.00
2012	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.00	-181.00	68.00	5.00	0.00
2012	Discarded vehicles	6,850.00	-1,631.00	328.00	0.00	0.00
2012	Dredging spoils	0.00	0.00	0.00	0.00	0.00
2012	Glass wastes	1,210.00	-755.00	75.00	5.00	0.00
2012	Health care and biological wastes	0.00	0.00	69.00	420.00	0.00
2012	Household and similar wastes	3,195.00	-624.00	409.00	479.00	18.00
2012	Metallic wastes, ferrous	2,937.00	-1,786.00	0.00	0.00	0.00
2012	Metallic wastes, mixed ferrous and non-ferrous	3,907.00	-2,553.00	68.00	5.00	-2,486.00
2012	Metallic wastes, non-ferrous	12,961.00	-9,975.00	0.00	0.00	0.00
2012	Mineral waste from construction and demolition	23.00	2.00	68.00	3.00	0.00
2012	Mixed and undifferentiated materials	1,910.00	-1,227.00	-266.00	108.00	0.00
2012	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2012	Paper and cardboard wastes	894.00	-547.00	-203.00	494.00	0.00
2012	Plastic wastes	3,200.00	-545.00	1,606.00	5.00	0.00
2012	Rubber wastes	3,100.00	-514.00	1,450.00	0.00	0.00
2012	Soils	0.00	1.00	0.00	1.00	0.00
2012	Sorting residues	0.00	0.00	0.00	0.00	0.00
2012	Spent solvents	0.00	0.00	0.00	0.00	0.00
2012	Textile wastes	20,444.00	-5,828.00	216.00	599.00	0.00

2012	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2012	Vegetal wastes	0.00	-54.00	-46.00	214.00	18.00
2012	Wood wastes	526.00	-293.00	-304.00	925.00	0.00
2011	Animal and mixed food waste	3,744.00	-21.00	-15.00	987.00	18.00
2011	Animal faeces, urine and manure	0.00	0.00	0.00	0.00	0.00
2011	Batteries and accumulators wastes	12,109.00	-579.00	0.00	0.00	0.00
2011	Chemical wastes	1,323.00	4,037.00	408.00	0.00	0.00
2011	Combustion wastes	0.00	0.00	0.00	8.00	-6.00
2011	Common sludges	0.00	0.00	0.00	0.00	0.00
2011	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	1,754.00	-181.00	67.00	5.00	0.00
2011	Discarded vehicles	6,850.00	-1,631.00	328.00	0.00	0.00
2011	Dredging spoils	0.00	0.00	0.00	0.00	0.00
2011	Glass wastes	1,210.00	-755.00	74.00	5.00	0.00
2011	Health care and biological wastes	0.00	0.00	74.00	420.00	0.00
2011	Household and similar wastes	3,195.00	-623.00	408.00	479.00	18.00
2011	Metallic wastes, ferrous	2,937.00	-1,786.00	0.00	0.00	0.00
2011	Metallic wastes, mixed ferrous and non-ferrous	3,907.00	-2,553.00	67.00	5.00	-2,487.00
2011	Metallic wastes, non-ferrous	12,961.00	-9,975.00	0.00	0.00	0.00
2011	Mineral waste from construction and demolition	23.00	2.00	67.00	3.00	0.00
2011	Mixed and undifferentiated materials	1,910.00	-1,227.00	-255.00	108.00	0.00
2011	Other mineral wastes	0.00	0.00	0.00	0.00	0.00
2011	Paper and cardboard wastes	894.00	-547.00	-200.00	494.00	0.00
2011	Plastic wastes	3,200.00	-545.00	1,616.00	5.00	0.00
2011	Rubber wastes	3,100.00	-514.00	1,463.00	0.00	0.00
2011	Soils	0.00	1.00	0.00	1.00	0.00
2011	Sorting residues	0.00	0.00	0.00	0.00	0.00
2011	Spent solvents	0.00	0.00	0.00	0.00	0.00
2011	Textile wastes	20,444.00	-5,828.00	216.00	599.00	0.00
2011	Used oils	1,401.00	-725.00	0.00	0.00	0.00
2011	Vegetal wastes	0.00	-53.00	-45.00	214.00	18.00
2011	Wood wastes	526.00	-293.00	-299.00	925.00	0.00

Appendix 6. Waste composition for carbon metric, 2013 – 2021

Composition of residual waste used for carbon metric estimates

Year	Composition - waste category	Composition (%)
2021	Animal and mixed food waste	23.93%
2021	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.08%
2021	Glass wastes	6.36%
2021	Health care and biological wastes	9.52%
2021	Household and similar wastes	6.53%
2021	Metallic wastes, mixed ferrous and non-ferrous	4.12%
2021	Mineral waste from construction and demolition	3.26%
2021	Paper and cardboard wastes	14.74%
2021	Plastic wastes	15.38%
2021	Rubber wastes	0.00%
2021	Textile wastes	5.98%
2021	Vegetal wastes	5.49%
2021	Wood wastes	2.62%
2020	Animal and mixed food waste	23.88%
2020	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.09%
2020	Glass wastes	6.36%
2020	Health care and biological wastes	9.52%
2020	Household and similar wastes	6.53%
2020	Metallic wastes, mixed ferrous and non-ferrous	4.12%
2020	Mineral waste from construction and demolition	3.26%
2020	Paper and cardboard wastes	14.75%
2020	Plastic wastes	15.39%
2020	Rubber wastes	0.00%
2020	Textile wastes	5.98%
2020	Vegetal wastes	5.49%
2020	Wood wastes	2.63%
2019	Animal and mixed food waste	25.29%
2019	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.05%
2019	Glass wastes	6.23%
2019	Health care and biological wastes	9.31%
2019	Household and similar wastes	6.48%
2019	Metallic wastes, mixed ferrous and non-ferrous	4.04%
2019	Mineral waste from construction and demolition	3.22%
2019	Paper and cardboard wastes	14.44%
2019	Plastic wastes	15.07%
2019	Rubber wastes	0.00%
2019	Textile wastes	5.87%
2019	Vegetal wastes	5.38%
2019	Wood wastes	2.60%
2018	Animal and mixed food waste	25.49%

2018	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.05%
2018	Glass wastes	6.21%
2018	Health care and biological wastes	9.28%
2018	Household and similar wastes	6.47%
2018	Metallic wastes, mixed ferrous and non-ferrous	4.03%
2018	Mineral waste from construction and demolition	3.22%
2018	Paper and cardboard wastes	14.40%
2018	Plastic wastes	15.03%
2018	Rubber wastes	0.00%
2018	Textile wastes	5.85%
2018	Vegetal wastes	5.37%
2018	Wood wastes	2.59%
2017	Animal and mixed food waste	24.72%
2017	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.07%
2017	Glass wastes	6.28%
2017	Health care and biological wastes	9.40%
2017	Household and similar wastes	6.50%
2017	Metallic wastes, mixed ferrous and non-ferrous	4.08%
2017	Mineral waste from construction and demolition	3.24%
2017	Paper and cardboard wastes	14.57%
2017	Plastic wastes	15.20%
2017	Rubber wastes	0.00%
2017	Textile wastes	5.91%
2017	Vegetal wastes	5.42%
2017	Wood wastes	2.61%
2016	Animal and mixed food waste	24.24%
2016	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.08%
2016	Glass wastes	6.33%
2016	Health care and biological wastes	9.47%
2016	Household and similar wastes	6.52%
2016	Metallic wastes, mixed ferrous and non-ferrous	4.10%
2016	Mineral waste from construction and demolition	3.25%
2016	Paper and cardboard wastes	14.67%
2016	Plastic wastes	15.31%
2016	Rubber wastes	0.00%
2016	Textile wastes	5.95%
2016	Vegetal wastes	5.46%
2016	Wood wastes	2.62%
2015	Animal and mixed food waste	24.75%
2015	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.07%
2015	Glass wastes	6.28%
2015	Health care and biological wastes	9.39%
2015	Household and similar wastes	6.50%
2015	Metallic wastes, mixed ferrous and non-ferrous	4.07%
2015	Mineral waste from construction and demolition	3.24%
2015	Paper and cardboard wastes	14.56%
2015	Plastic wastes	15.19%

2015	Rubber wastes	0.00%
2015	Textile wastes	5.91%
2015	Vegetal wastes	5.42%
2015	Wood wastes	2.61%
2014	Animal and mixed food waste	25.29%
2014	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.05%
2014	Glass wastes	6.23%
2014	Health care and biological wastes	9.31%
2014	Household and similar wastes	6.48%
2014	Metallic wastes, mixed ferrous and non-ferrous	4.04%
2014	Mineral waste from construction and demolition	3.22%
2014	Paper and cardboard wastes	14.45%
2014	Plastic wastes	15.08%
2014	Rubber wastes	0.00%
2014	Textile wastes	5.87%
2014	Vegetal wastes	5.38%
2014	Wood wastes	2.60%
2013	Animal and mixed food waste	26.20%
2013	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.03%
2013	Glass wastes	6.15%
2013	Health care and biological wastes	9.17%
2013	Household and similar wastes	6.45%
2013	Metallic wastes, mixed ferrous and non-ferrous	3.99%
2013	Mineral waste from construction and demolition	3.20%
2013	Paper and cardboard wastes	14.25%
2013	Plastic wastes	14.87%
2013	Rubber wastes	0.00%
2013	Textile wastes	5.79%
2013	Vegetal wastes	5.31%
2013	Wood wastes	2.58%
2012	Animal and mixed food waste	23.86%
2012	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.09%
2012	Glass wastes	6.37%
2012	Health care and biological wastes	9.53%
2012	Household and similar wastes	6.53%
2012	Metallic wastes, mixed ferrous and non-ferrous	4.12%
2012	Mineral waste from construction and demolition	3.26%
2012	Paper and cardboard wastes	14.75%
2012	Plastic wastes	15.39%
2012	Rubber wastes	0.00%
2012	Textile wastes	5.98%
2012	Vegetal wastes	5.49%
2012	Wood wastes	2.63%
2011	Animal and mixed food waste	21.20%
2011	Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	2.14%
2011	Glass wastes	6.61%
2011	Health care and biological wastes	9.93%

2011	Household and similar wastes	6.63%
2011	Metallic wastes, mixed ferrous and non-ferrous	4.27%
2011	Mineral waste from construction and demolition	3.33%
2011	Paper and cardboard wastes	15.32%
2011	Plastic wastes	15.98%
2011	Rubber wastes	0.00%
2011	Textile wastes	6.20%
2011	Vegetal wastes	5.69%
2011	Wood wastes	2.68%

Appendix 7. Glossary

Anaerobic digestion: A process commonly used to break down biodegradable wastes (e.g. food and green wastes) in the absence of oxygen

BSI PAS 100 / 110 – a national compost/digestate benchmark that specifies the minimum requirements for the process of composting/anaerobic digestion, the selection of material from which compost/digestate is made, and standards for the compost/digestate product quality. PAS 100 is applicable to composting facilities while PAS 110 is applicable to anaerobic digestion facilities. The use of this standard to improve the quality of compost/digestate in Scotland became Scottish Government policy in 2011, with 2014 being the first year it was applied to the household official statistics.

Carbon Impact – a measure of the whole-life carbon impacts of waste, from resource extraction and manufacturing emissions, right through to waste management emissions, regardless of where in the world these impacts occur. The carbon impact of waste was developed by Zero Waste Scotland (https://www.zerowastescotland.org.uk/content/what-carbon-metric).

Compost like output (CLO) – partially digested waste outputs generated from the biological treatment of residual municipal solid wastes at a process that involves both mechanical and biological treatment. Outputs typically do not conform to composting standards such as PAS 100/110.

Household waste – waste generated by households (see full definition in Paragraph 1.2 of the *Zero Waste Plan - guidance for local authorities* on the WasteDataFlow web site).

In-vessel composting: A group of methods which confine the composting of organic waste materials within a building, container, or vessel

Kerbside Collection – A service provided by local authorities to households, of collecting and disposing of household waste and recyclables, which are presented to the authority on the kerb. It includes individual household waste containers, as well as communal bin stores provided to multiple tenants.

Mechanical biological treatment: A type of waste processing plant that combines sorting and biological treatment

Materials recovery facility: A waste management plant which separates recyclable materials from mixed wastes

Other diversion from landfill – describes the fate of waste material not recycled or landfilled. It includes:

- household waste treated by incineration, including any incinerator bottom ash and metals from bottom ash that are diverted from landfill,
- weight loss that occurs during the composting/digestion of waste to PAS 100/110 and non PAS 100/110 compost/digestate where the output is landfilled,
- CLO that is not landfilled,
- weight loss that occurs during mechanical and biological treatment processes (e.g. production of CLO and RDF),

- from 2014, any waste composted/digested that has not reached the quality standards set by PAS 100/110 and is not landfilled.

Segregated recyclate – waste materials collected for recycling separately from residual waste collections. This includes collection of single materials as well as co-mingled materials.

TCO2e – tonnes of carbon dioxide equivalent, which is a measure that allows the comparison of greenhouse gases relative to one unit of CO_2.

Waste composted - is waste recycled by biological treatment through composting at a composting plant or through digestion at an anaerobic digestion facility.

Waste generated - is waste collected by or on behalf of local authorities that is managed within the relevant reporting year. This might include treated waste stockpiled prior to final management.

Waste landfilled – includes all household waste that is disposed of at a landfill site instead of being recycled or diverted from landfill through other methods. It also includes incinerator ash that is landfilled, plus any recycling and composting rejects that occur during collection, sorting or further treatment that go to landfill.

Waste managed - includes all wastes recycled, diverted from landfill and landfilled within the relevant reporting year. This includes stockpiled waste from a previous year sent to final management but excludes treated waste stockpiled prior to final management.

Waste recycled - includes recyclable materials that have been recycled or reused and also biodegradable materials that have been composted or digested. The amount of waste recycled, reused and composted is that accepted by the reprocessor facility. As such it excludes any recycling rejects that occur during collection, sorting or further treatment. From 2015, the composting figures using thenew calculation methodology do not include any waste composted that has not reached the quality standards set by PAS 100/110.

WasteDataFlow: A web-based reporting tool used by Scottish local authorities to report the wastes they manage

Appendix 8. Acronyms

CLO: Compost-Like Output

Defra: Department of the Environment Food and Rural Affairs

EWC: European Waste Catalogue

EWC- STAT: European Waste Catalogue for Statistics

MBT: Mechanical biological treatment

MRF: Materials recovery facility

PAS: Publicly Available Specification for Composted Materials

SEPA: Scottish Environment Protection Agency

WFAS: Waste From All Sources

WDF: WasteDataFlow

Appendix 9. Version Control

Version	Description	Date
1	Initial published report	27/9/2022