Waste from all sources – Summary data 2021

This release provides a summary of Scottish waste generated and managed in calendar year 2021. The data in this release represents Waste from all sources (WFAS). Further information including definition of terms is included in the methodology and glossary at the end of this document.

Key points

WFAS – 2021 calendar year[1]

- The estimated total quantity of WFAS generated in Scotland in 2021 was 9.75 million tonnes, a reduction of 14.8% (1.70 million tonnes) from 2018, the most recent available year.
- In 2021, the estimated Scottish WFAS recycled was 5.59 million tonnes, which is 1.48 million tonnes (20.9%) less waste recycled than in 2018.
- The WFAS recycling rate in 2021 was 56.3%, a decrease of 4.4 percentage points from the 60.7% of waste recycled in 2018. This reflects a marked reduction in waste in construction and demolition wastes, such as soils and mineral wastes, which typically have a relatively high recycling rate.
- The decrease in overall waste generated and recycled are primarily due to changes in construction type wastes. For example, the total waste generated for the Soils and Mineral waste from construction and demolition waste categories decreased by 32.8% (1.83 million tonnes) and correspondingly the amount of these wastes recycled decreased by 29.8% (1.17 million tonnes) from 2018. It is likely that the WFAS generated and recycled has been impacted by the effects of COVID-19 and other restrictions.
- The amount of Scottish waste recovered or disposed of by incineration was 1.32 million tonnes, an increase of 168,000 tonnes (14.6%) from 2019, the most recent year available for Scottish waste recovered or disposed.
- The amount of Scottish waste disposed to landfill in 2021 was 3.00 million tonnes, an increase of 11,000 tonnes (0.4%) from 2019[2].
- This is the first full WFAS publication since 2018 due to a cyber-attack on SEPA[3]. Due to the cyber-attack, we do not have a complete set of data for 2019 or 2020, so there is an incomplete time series for some areas of the report. Since the cyber-attack, various tools have been completely re-built to administer, aggregate, analyse, and check waste data returns, which have been received at slightly lower rates in 2021 than previously.
- During 2021, many areas of the Scottish economy and waste management continued to be affected by the pandemic. With so many changes due to COVD-19 and the cyber-attack since 2018, care should be taken when comparing this data with longer term trends.

[1] These statistics were revised on 5th June 2023 to account for the omission of "Other manufacturing" sector for the commercial and industrial waste generated. Revisions to historical data updated for the original publication are detailed in the Revisions Policy section on page 25 of this document.

[2] The waste landfilled figure include a downward revision to 3.00 million tonnes from the 3.20 million tonnes reported in the Waste landfilled in Scotland statistics published in September 2022.

[3] SEPA was subject to a serious and complex cyber-attack on 24th December 2020 (see https://www.sepa.org.uk/about-us/cyber-attack/). This has left a gap in the waste generated and waste recycled time series, with no data available for 2019 and 2020. For waste recovered and waste disposed, 2019 data for waste managed in Scotland was taken from statistics published prior to the cyber-attack or estimated from the available six months of 2019 data recovered following the cyber-attack. Refer to the 2021 waste from all sources quality report on SEPA's waste data web pages for further details.

Data for Scottish WFAS generated and managed by waste category for 2011 - 2021 (with some data gaps for 2019 and 2020) and the trends for WFAS generated, recycled and managed is available from WFAS Discover Data tool on Scotland's Environment website. Annual WFAS summary data tables, including any revisions to historic data, are also available to download in Excel format on SEPA's website.

Media enquiries to: SEPA Communications Department: media@sepa.org.uk

Feedback on this document to: waste.data@sepa.org.uk

This is an Official Statistics publication. These statistics have been produced to the high professional standards defined in the Code of Practice for Official Statistics, which sets out fourteen principles under the pillars of Trustworthiness, Quality and Value. More information on the Official Statistics Code of Practice can be found here: https://code.statisticsauthority.gov.uk/

Lead statistician: Peter Ferrett.

Table 1. Scottish WFAS generated and managed by waste category - summary data 2021 (tonnes)

Waste category [1]	Generated	Recycled	Recovered	Disposed2	Other Management3
Spent solvents	44,801	0	32	119	0
Acid, alkaline or saline wastes	4,667	0	79	0	0
Used oils	36,933	0	0	2	0
Chemical wastes	109,479	0	252	1,626	0
Industrial effluent sludges	57,348	1,563	13,885	14,800	0
Sludges and liquid wastes from waste treatment	306	8,818	0	8,515	1,190
Health care and biological wastes	37,960	0	4,375	10,711	0
Metallic wastes, ferrous	221,476	523,059	0	47	0
Metallic wastes, non-ferrous	19,652	53,344	0	29	0
Metallic wastes, mixed ferrous and non-ferrous	140,813	95,987	0	3	0
Glass wastes	134,429	121,117	0	12,884	0
Paper and cardboard wastes	141,623	241,321	0	664	0
Rubber wastes	41,623	0	11,429	176	0
Plastic wastes	54,669	82,528	0	1,598	0
Wood wastes	325,210	201,148	264,482	34	338
Textile wastes	24,605	93	0	1,781	0
Waste containing PCB	1,010	0	0	0	0
Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	44,178	6,467	0	621	0
Discarded vehicles	103,259	45,040	0	0	0
Batteries and accumulators wastes	9,893	527	0	0	0
Animal and mixed food waste	368,217	300,295	12,154	2,275	885
Vegetal wastes	851,155	575,150	0	10,461	6,060
Animal faeces, urine and manure	107,178	38,275	68,195	24	0
Household and similar wastes	2,271,717	1,369	101,882	991,116	15,306
Mixed and undifferentiated materials	516,749	26,014	0	39,506	0
Sorting residues	17,038	2,583	319,603	1,185,875	0
Common sludges	225,724	412,900	19,160	3,188	0
Mineral waste from construction and demolition	1,241,743	808,978	0	49,417	0
Other mineral wastes	64,685	23,700	0	31,029	0
Combustion wastes	5,809	1,642	0	2,174	0
Soils	2,497,632	1,944,923	0	930,492	0
Dredging spoils	17,772	16,918	0	0	0
Mineral wastes from waste treatment and stabilised wastes	10,721	59,295	0	206,811	0
Total	**9,750,076**	**5,593,053**	**815,527**	**3,505,978**	**23,779**

1. The amount of waste category recycled may be larger than the amount of waste generated because waste may be generated as mixed waste, for example as 'household and similar wastes' or 'Metallic wastes, mixed ferrous and non-ferrous', and at a subsequent stage it is treated to separate it into its component parts before being recycled. Similarly, the amount of waste managed may be less than the amount of waste generated.
2. Different methodologies and datasets are used to estimate the waste generated and waste managed. Consequently, the total waste generated, and waste managed generally do not balance.

3 Waste disposed includes waste landfilled and waste inputs to incineration facilities that have not been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive. Waste recovered includes waste inputs to co-incineration facilities and to incineration facilities that have been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive.

4. Other management comprises compost produced at non-PAS certified composting or anaerobic digestion plants.

Table 2. Key figures to support targets specified in Scotland waste policies*

Indicator	Year	Performance	Target / Target year
1. Recycled construction and demolition waste‡	2011	87.9%	**70% / 2020**
	2012	91.4%	
	2013	93.4%	
	2014	81.7%	
	2015	87.2%	
	2016	99.3%	
	2017	99.3%	
	2018	99.7%	
	2019 and 2020 data unavailable		
	2021	89.4%	
2. Recycled waste from all sources§	2011	52.5%	**70% / 2025**
	2012	50.5%	
	2013	57.2%	
	2014	52.0%	
	2015	57.0%	
	2016	59.4%	
	2017	59.6%	
	2018	60.7%	
	2019 *and 2020 data unavailable*		
	2021	56.3%	
3. Percentage of all waste sent to landfill§	2011	42.8%	**< 5% / 2025**
	2012	44.4%	
	2013	38.1%	
	2014	40.9%	
	2015	36.5%	
	2016	32.3%	
	2017	32.4%	
	2018	32.1%	
	2019 *and 2020 data unavailable*		
	2021	30.2%	
4. Percentage of waste generated compared with 2011	2012	84.1%	**<93% of 2011 baseline / 2017**
	2013	92.5%	**<85% of 2011 baseline / 2025**
	2014	83.6%	
	2015	94.3%	
	2016	89.3%	
	2017	95.8%	
	2018	95.8%	
	2019 *and 2020 data unavailable*		
	2021	81.5%	
5. Landfilled biodegradable municipal waste#	2005	2.04 million tonnes	**< 2.7 million tonnes / 2010**
	2006	1.90 million tonnes	**< 1.8 million tonnes / 2013**
	2007	1.80 million tonnes	**< 1.26 million tonnes / 2020**
	2008	1.58 million tonnes	
	2009	1.34 million tonnes	
	2010	1.48 million tonnes	
	2011	1.34 million tonnes	
	2012	1.33 million tonnes	
	2013	1.16 million tonnes	
	2014	1.14 million tonnes	
	2015	1.09 million tonnes	
	2016	1.15 million tonnes	
	2017	1.09 million tonnes	
	2018	1.02 million tonnes	
	2019	0.70 million tonnes	
	2020	0.73 million tonnes	
	2021	0.85 million tonnes	

* Making Things Last - A Circular Economy Strategy for Scotland (2016).
Figures for the carbon metric impacts of waste, targets and performance are published by Zero Waste Scotland at https://www.zerowastescotland.org.uk/our-work/carbon-metric-publications

‡ C&D recycling rates are from data provided to Europe for reporting under the Waste Framework Directive. Excludes hazardous waste and soil and stone recycled.

§ The definition of recycling changed in 2014 to exclude non PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition.

BMW, biodegradable municipal waste - the biodegradable fraction of municipal waste. This is waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste and paper and cardboard

Data and Trends

Waste Generated

- The total quantity of waste generated in Scotland in 2021 was 9.75 million tonnes, a reduction of 14.8% (1.70 million tonnes) from the last published year of 2018[3]. Most of this decrease is construction type wastes, the total waste generated for the Soils and the Mineral waste from construction and demolition waste categories decreased by 32.8% (1.83 million tonnes)
- In general, the change in waste generated year-on-year since 2011 has varied considerably (see Figure 1 below), primarily due to Construction and Demolition (C&D) waste generated, with year-on-year changes in that waste stream ranging from -31% to +26%. Over the same period, there has been an overall reduction in Commercial and Industrial (C&I) waste generated, with annual changes considerably less variable than C&D waste ranging from -15% to +10%. In comparison, Household waste generated varied by no more than 4% year-on-year during the same period.
- It is likely that the WFAS generated and recycled has been impacted by the effects of COVID-19 and other restrictions.
- Due to a cyber-attack, much of the 2019 and 2020 data is not available so there is an incomplete time series[3]. As this is the first full WFAS publication since 2018, we do not have a complete set of data for 2019 or the COVID-19 lockdown year of 2020.
- The generation of C&D waste is sensitive to large regional projects, which accounts for the large year-on-year variation in C&D waste generated. In the 2018 publication, it was identified that the generation of C&D waste was partly influenced by works associated with the St James Centre in Edinburgh, which commenced in 2015 and completed during 2021, as well as several regional housing projects.
- When C&D waste is excluded, the waste generation trend has been generally downward for the 2011 – 2021 period (see Figure 2 on page 7).
- The largest waste category generated in Scotland in 2021 was Soils (2.50 million tonnes, 25.6% of all waste generated), followed by Household and similar wastes (2.27 million tonnes, 23.3%) and Mineral waste from construction and demolition (1.24 million tonnes, 12.7%) (see Figure 3 below). However, the generation of Soils decreased by 1.79 million tonnes (41.8%) from 2018 and Mineral waste from construction and demolition decreased by 35,000 tonnes (2.7%).
- It should be noted that the category of Household and similar wastes shown in Figure 3 (on page 8), includes some waste generated by businesses as well as households. This category includes mixed waste collected by local authorities and private waste management companies. It does not include all household waste, for example separated recyclable waste will be included under different waste categories (details of Scottish household waste generated and managed in 2021 can be found at https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/). In 2021, there were 1.42 million tonnes of Household and similar wastes generated by households, and 850,000 tonnes generated by Scottish businesses (data not shown). There was an increase of 207,000 tonnes (10.0%) of Household and similar wastes generated between 2018 and 2021. However, since 2011 there has been an overall 871,000 tonne (27.7%) reduction in the generation of these wastes. Most of this reduction (57.6%) is due to a decrease of these wastes generated by business, with the remainder of the reduction (42.3%) from households (data not shown).

Figure 1. Scottish WFAS generated by source 2011-2021

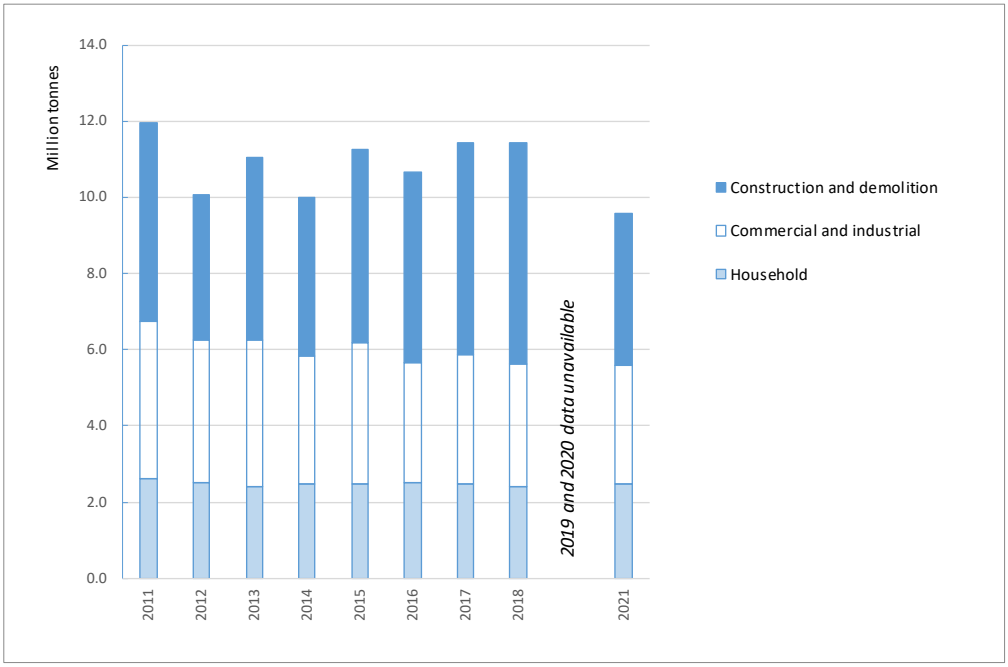
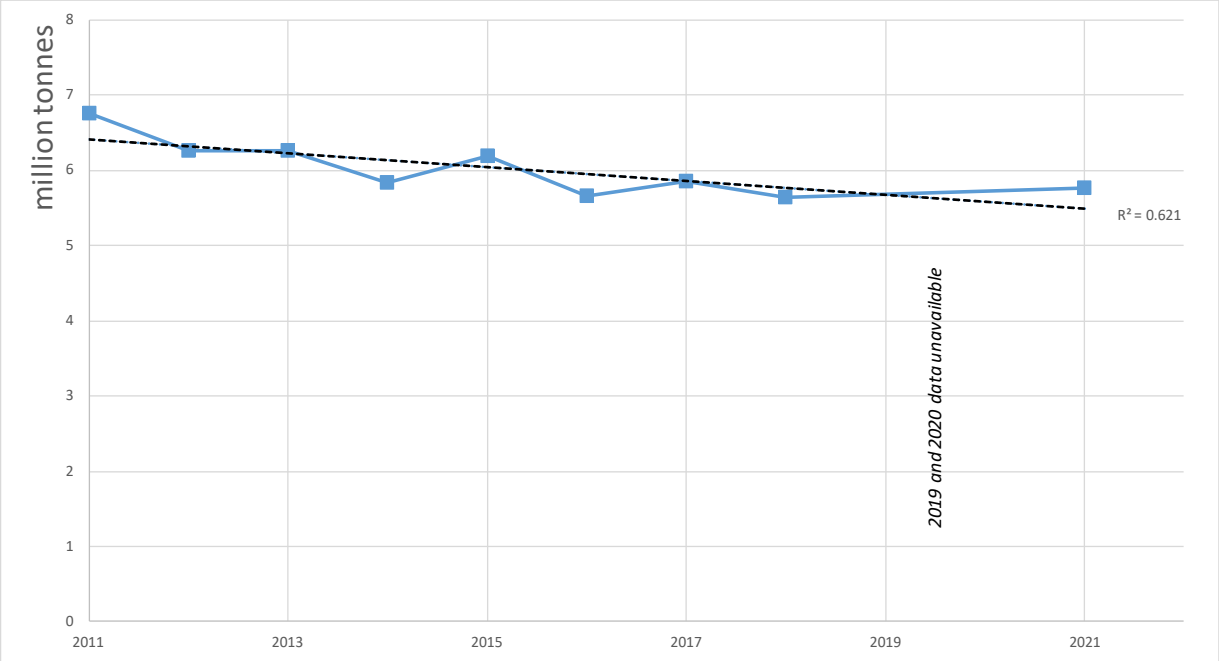


Table 3. Scottish WFAS generated by source 2011 - 2021 (tonnes)

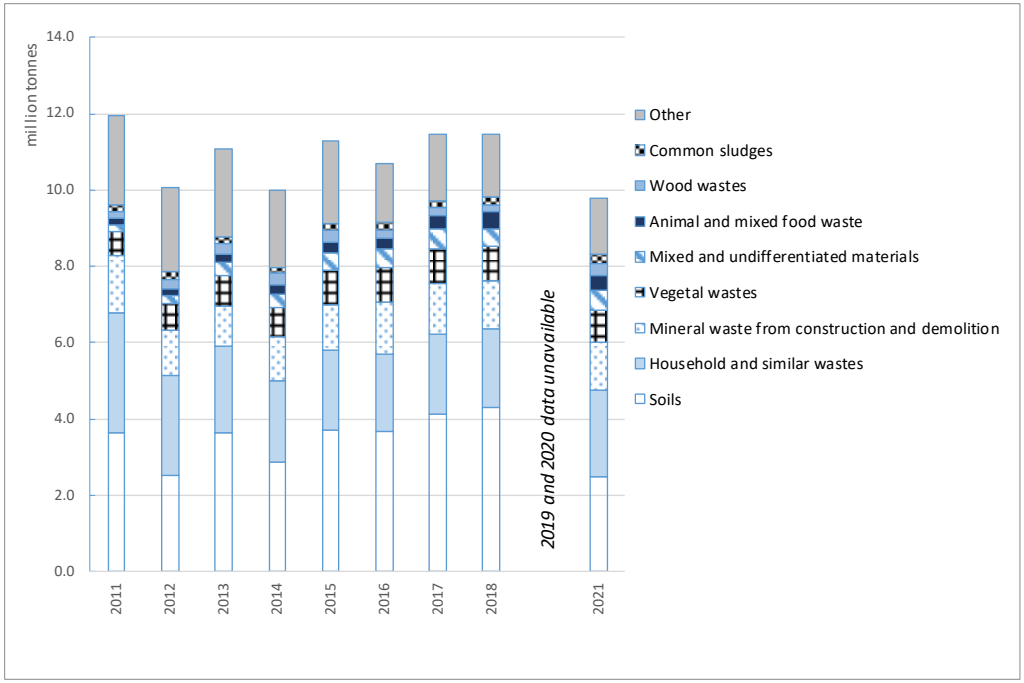
Year	Household	Commercial and industrial	Construction and demolition	Total waste generated
2011	2,606,759	4,156,052	5,195,676	**11,958,486**
2012	2,500,995	3,764,847	3,796,997	**10,062,839**
2013	2,412,651	3,857,040	4,789,809	**11,059,501**
2014	2,459,557	3,369,844	4,172,782	**10,002,184**
2015	2,468,777	3,714,681	5,092,646	**11,276,104**
2016	2,498,975	3,154,992	5,027,759	**10,681,726**
2017	2,460,830	3,399,736	5,592,888	**11,453,454**
2018	2,405,251	3,236,534	5,808,681	**11,450,466**
2019 and 2020 data unavailable				
2021	2,483,304	3,259,301	4,007,471	**9,750,076**

Figure 2. Scottish WFAS generation trend excluding C&D sources 2011-2021



- The long-term reduction in Household and similar wastes generated is partly due to implementation of general policies targeted at reducing waste, including a legislative duty of care that requires all waste producers in Scotland to segregate material for recycling, the implementation of source segregated recycling services to the commercial and public sector as required under the Waste Scotland Regulations (2012), and the roll out of recycling services and reduction in the frequency of residual waste collections by local authorities in Scotland.

Figure 3. Scottish WFAS generated by waste category[1] 2011 - 2021



1. Other comprises waste categories not mentioned individually (see Table 1 on page 3 for full list of waste categories).

Table 4. Scottish WFAS generated by waste category[1] 2011 - 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018		2021
Soils	3,645,768	2,533,319	3,626,817	2,881,718	3,716,879	3,660,454	4,130,084	4,291,346	2019 and 2020 data unavailable	2,497,632
Household and similar wastes	3,143,199	2,621,850	2,288,750	2,108,285	2,092,009	2,043,369	2,075,601	2,064,703		2,271,717
Mineral waste from construction and demolition	1,489,040	1,155,533	1,043,244	1,166,237	1,192,974	1,355,033	1,333,003	1,276,681		1,241,743
Vegetal wastes	622,832	699,061	794,925	780,916	907,833	919,343	935,182	899,584		851,155
Mixed and undifferentiated materials	169,869	225,972	363,261	324,219	449,955	462,024	491,141	463,828		516,749
Animal and mixed food waste	172,413	160,020	187,380	245,236	288,520	309,125	364,984	423,106		368,217
Wood wastes	176,865	243,987	287,019	317,645	282,179	210,176	220,988	190,945		325,210
Common sludges	197,545	211,722	180,334	154,951	177,972	184,547	173,497	197,200		225,724
Other	2,340,955	2,211,376	2,287,770	2,022,977	2,167,783	1,537,654	1,728,974	1,643,074		1,451,928
Total	**11,958,486**	**10,062,839**	**11,059,501**	**10,002,184**	**11,276,104**	**10,681,726**	**11,453,454**	**11,450,466**		**9,750,076**

Other comprises waste categories not mentioned individually (see Table 1 on page 3 for full list of waste categories).

Animal and mixed food waste

- There was a reduction of 55,000 tonnes (13.0%) of separately collected Animal and mixed food waste generated between 2018 and 2021. This decrease was due to a reduction of 62,000 tonnes of these wastes from C&I sources, while during the same period there was an increase of 7,000 tonnes from households (see Figure 4 below). The reduction of the C&I wastes is mainly from the Commerce sector (SIC code G-X) with a decrease of 51,000 tonnes (36.5%, data not shown) in this waste category generated from 2018 to 2021. This commerce sector includes the hospitality sub-sector, which is likely impacted from the COVID-19 lockdowns and restrictions. The overall reduction in Animal and mixed food waste between 2018 and 2021 is against the longer term trend, where in the ten years from 2011 to 2021 there was an increase of 196,000 tonnes (113.6%) (see Figure 4 below).

Figure 4. Separately collected Animal and mixed food waste (tonnes) generated by source 2011 - 2021

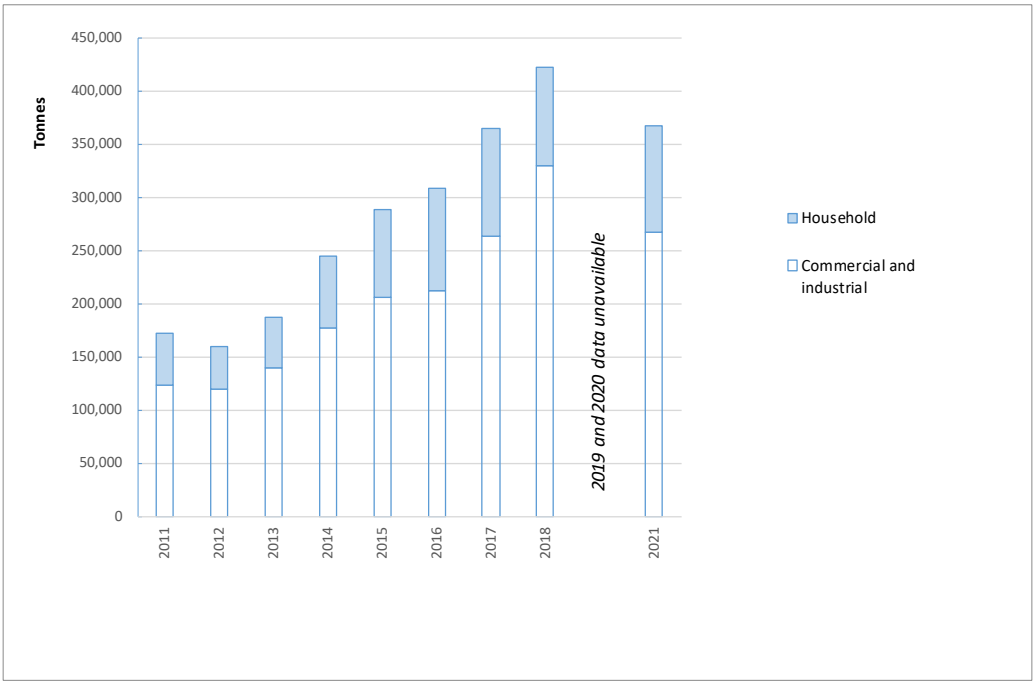


Table 5. Separately collected Animal and mixed food waste generated by source 2011 - 2021 (tonnes)

Year	Commercial and industrial	Household	Total
2011	123,904	48,510	**172,413**
2012	119,204	40,816	**160,020**
2013	139,871	47,509	**187,380**
2014	177,372	67,864	**245,236**
2015	206,116	82,404	**288,520**
2016	212,200	96,925	**309,125**
2017	263,582	101,402	**364,984**
2018	329,787	93,319	**423,106**
2019 and 2020 data unavailable			
2021	267,755	100,462	**368,217**

Paper and cardboard

- There was an increase of 30,000 tonnes (26.8%) in the generation of separately collected Paper and cardboard wastes between 2018 and 2021. The increase was primarily from household sources (12,000 tonnes). The recent increase in the generation of these wastes follows a longer term reduction, particularly from C&I sources (see Figure 5 below). Although separate data is not available for the individual paper or cardboard waste streams, the reduction in print media and increase in paperless offices are likely a contributing factor to the decrease in waste Paper and cardboard generated since 2011.

Figure 5. Separately collected Paper and cardboard waste generated by source 2011 - 2021

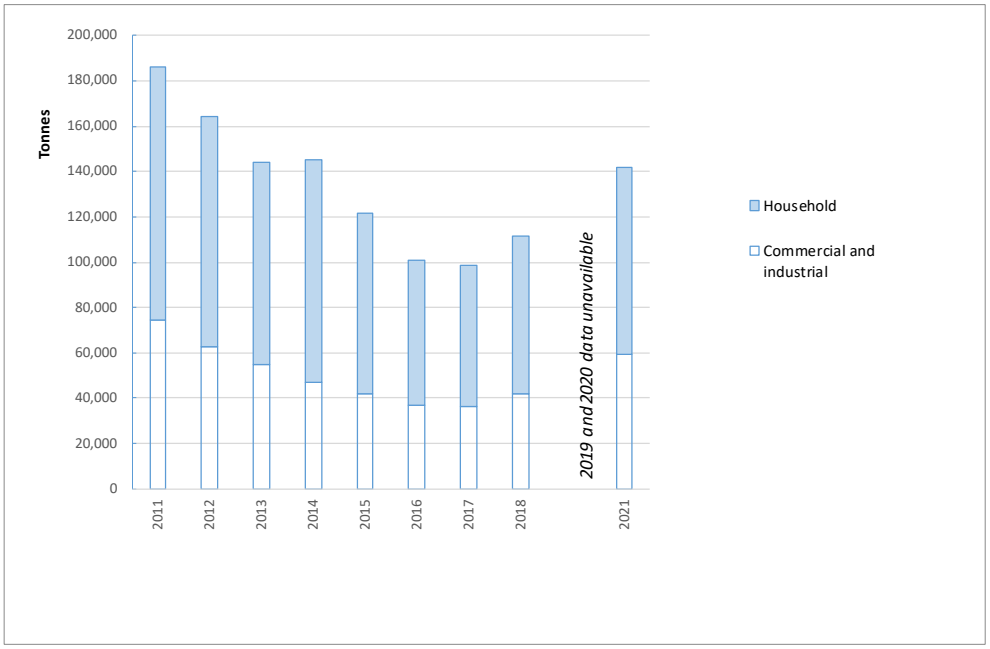


Table 6. Separately collected Paper and cardboard generated by source 2011 - 2021 (tonnes)

Year	Commercial and industrial	Household	Total
2011	74,374	111,933	**186,307**
2012	62,706	101,394	**164,100**
2013	54,630	89,631	**144,261**
2014	47,170	98,102	**145,272**
2015	41,924	79,613	**121,537**
2016	36,782	63,816	**100,598**
2017	36,233	62,178	**98,411**
2018	41,714	70,006	**111,720**
2019 and 2020 data unavailable			
2021	59,534	82,089	**141,623**

Hazardous waste

- The total quantity of hazardous waste generated in Scotland in 2021 was 424,000, a reduction of 23,000 tonnes (5.2%) compared with 2018 (see Figure 6 on page 11). Since 2011, there has been a decrease of 180,000 tonnes (29.8%) in the generation of Scottish hazardous waste, with the bulk of the reduction (79.1%, 143,000 tonnes) from C&D sources (see Figure 6 below). As in previous years, most of the hazardous waste generated in 2021 (85.0%, 361,000 tonnes) was from C&I sources.
- In 2021, the main category of hazardous waste generated (see Figure 7 on page 12) was Chemical wastes (104,000 tonnes, 24.4% of all hazardous waste), primarily waste of EWC code 13 05 07, oil / water wastes from offshore oil activities in the north of Scotland (data not shown).

Figure 6. Scottish hazardous WFAS generated by source 2011 - 2021

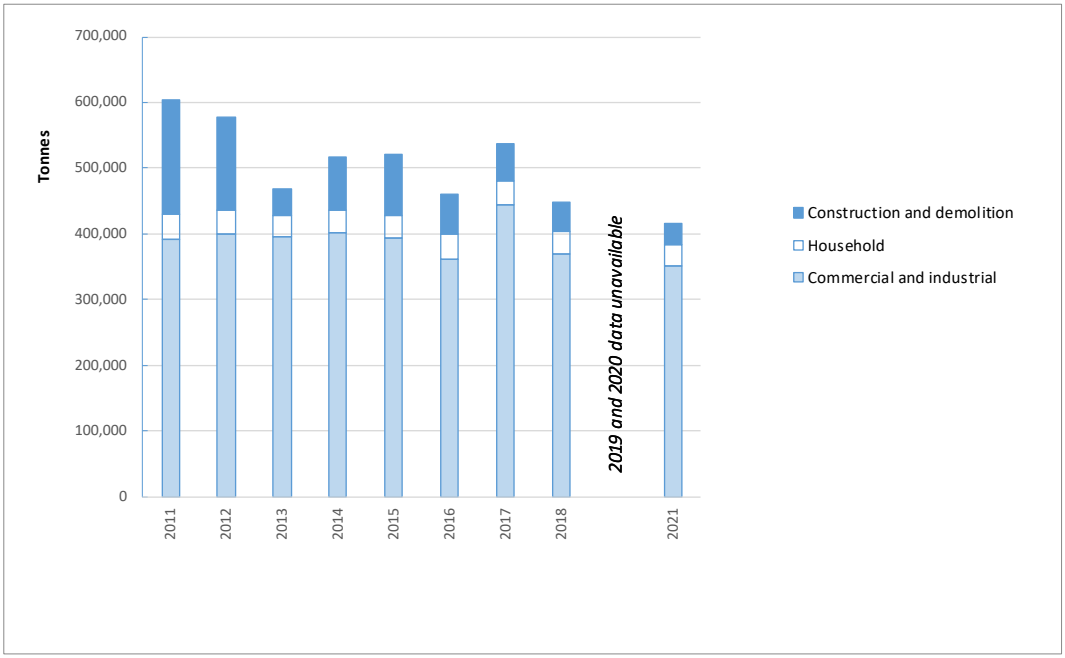
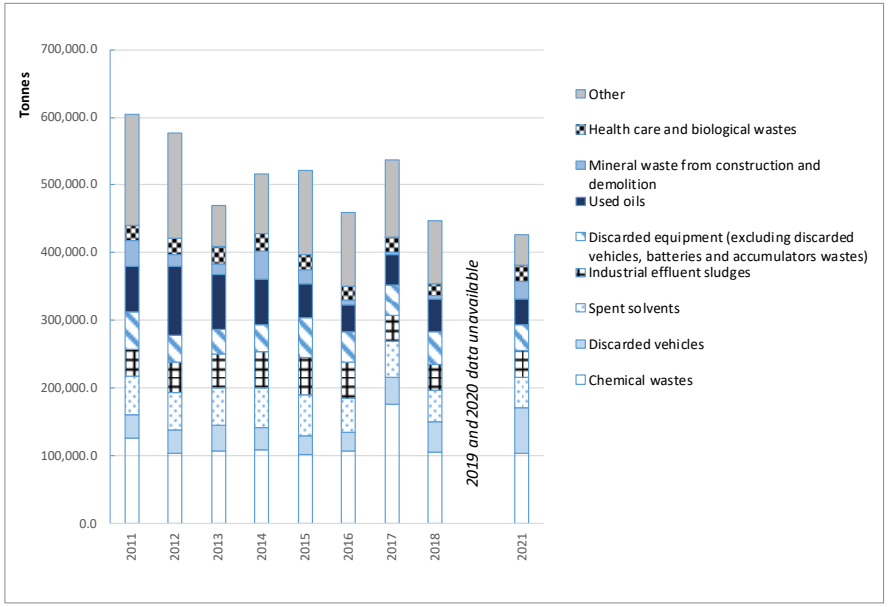


Table 7. Scottish hazardous WFAS generated by source 2011 - 2021 (tonnes)

Year	Household	Commercial and industrial	Construction and demolition	Total hazardous waste generated
2011	37,324	392,564	175,067	**604,955**
2012	35,000	400,600	141,755	**577,354**
2013	32,371	395,309	41,746	**469,426**
2014	32,864	402,342	81,583	**516,788**
2015	34,940	393,520	92,871	**521,330**
2016	38,879	360,946	60,077	**459,902**
2017	37,686	443,228	55,520	**536,434**
2018	34,298	369,886	43,733	**447,917**
2019 and 2020 data unavailable				
2021	31,525	360,649	32,317	**424,491**

Figure 7. Scottish hazardous WFAS generated by waste category[1] 2011 - 2021



1. Other comprises waste categories not mentioned individually (see Table 1 on page 3 for full list of waste categories).

Table 8. Scottish hazardous WFAS generated by waste category[1] 2011 - 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018		2021
Chemical wastes	126,115	104,183	106,619	109,410	101,927	106,253	175,330	105,649	2019 and 2020 data unavailable	103,738
Discarded vehicles	34,432	34,396	38,003	32,811	27,375	28,419	40,455	44,235		67,298
Spent solvents	57,857	54,630	55,985	57,379	60,722	50,891	52,876	47,458		44,801
Industrial effluent sludges	38,104	44,350	48,995	55,117	55,217	52,596	39,468	37,414		39,030
Discarded equipment (excluding discarded vehicles, batteries and accumulators wastes)	55,803	39,639	37,322	39,235	58,914	45,859	43,992	48,904		38,486
Used oils	67,617	102,565	81,071	67,440	49,180	38,403	45,481	47,209		36,933
Mineral waste from construction and demolition	37,606	16,609	15,571	41,070	21,705	6,619	3,095	5,282		26,191
Health care and biological wastes	23,639	25,617	25,601	26,657	22,262	21,483	22,045	17,676		23,892
Other	163,783	155,365	60,258	87,668	124,028	109,378	113,693	94,088		44,122
Total	**604,955**	**577,354**	**469,426**	**516,788**	**521,330**	**459,902**	**536,434**	**447,917**		**424,491**

1 Other comprises waste categories not mentioned individually (see Table 1 on page 3 for full list of waste categories).

Waste Managed

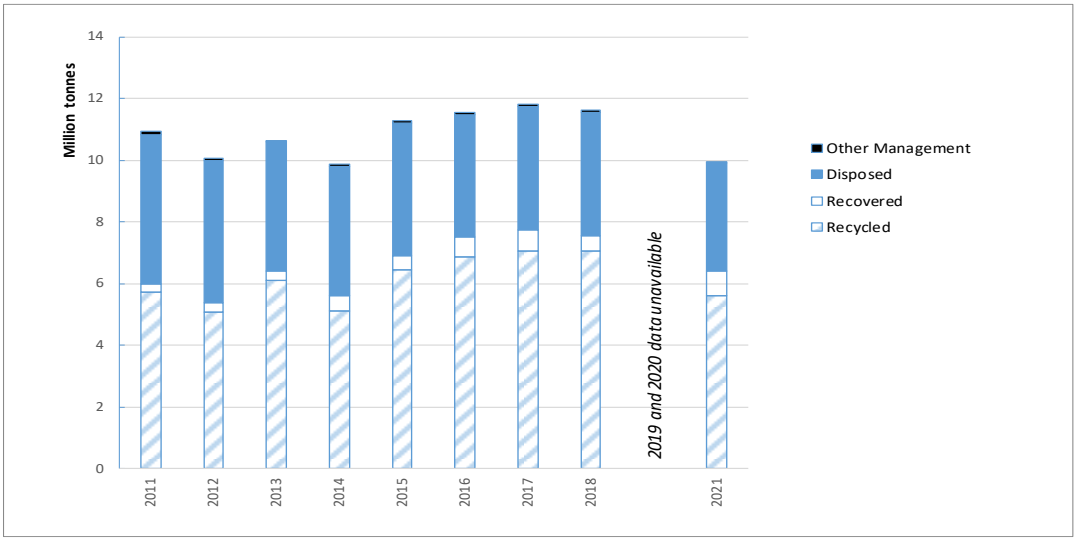
- In 2021, the total amount of Scottish waste recorded as recycled, recovered, disposed, or managed by other management[4] was 9.94 million tonnes which was 188,000 tonnes (1.9%) greater than the amount of waste generated (9.75 million tonnes). In historical publications the gap between waste managed and waste generated was larger, with the waste generated typically between 15% - 30% greater than waste managed. SEPA produced more robust methodology for estimating C&I waste data generated (introduced with the 2011 publication) and for C&D waste aggregates recycled (introduced with 2014 publication and applied to historical data)[5]. With these new methodologies the difference between waste generated and waste managed is less variable, ranging from 9.4% more waste generated than managed in 2011 to 7.5% less in 2016. For further information, please refer to the quality report on SEPA's website[6].
- Waste types managed do not necessarily correspond to the waste categories generated. This is because waste may change form following collection and final management. For example, in 2021 there were 17,000 tonnes of Scottish waste generated in the Sorting residues category. However, in the same period there were 1.51 million tonnes of Sorting residues recorded as managed, primarily disposed by landfill (0.95 million tonnes), recovered by incineration (320,000 tonnes), and disposed by incineration (238,000 tonnes. Sorting residues are typically produced as the result of the mechanical treatment of waste. A treatment plant may take waste inputs such as Mixed and undifferentiated materials (including co-mingled materials such as mixed packaging waste) and Household and similar waste. It can then produce products that can be reused or recycled, such as metal, plastic or glass, and produces reject material that is disposed. Consequently, the tonnage of these materials will be different in the waste generated tables compared to the waste managed tables.

[4] Other management comprises waste composted or anaerobically digested at facilities not accredited to the BSI PAS 100 or PAS 110 standard.

[5] While the C&I methodology is more robust than historical surveys, it relies on aging historical waste surveys for estimates of C&I waste generated at smaller waste sites. Refer to the 2021 waste from all sources quality report on SEPA's waste data web pages for further details. The strategy to improve the robustness of reporting is tied to the introduction of mandatory digital waste tracking (see https://www.gov.uk/government/publications/digital-waste-tracking-service/mandatory-digital-waste-tracking).

[6] https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/

Figure 8. Scottish WFAS managed in 2011 - 2021.



Notes:
1. Recycled includes waste recycled, reused and waste composted. Disposal includes incineration by disposal and waste landfilled. Recovered includes incineration with energy recovery and co-incineration.
2. Waste managed is final management and excludes interim facilities.
3. The definition of recycling changed in 2014 to exclude non PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series.
4. Other management comprises compost produced at non-PAS certified composting or anaerobic digestion plants.

Table 9. Scottish WFAS managed 2011 - 2021 (tonnes)

Year	Recycled	Recovered	Disposed	Other Management	Total
2011	5,738,282	269,479	4,842,589	84,543	**10,934,893**
2012	5,096,155	278,470	4,632,242	76,272	**10,083,139**
2013	6,092,034	333,435	4,173,084	59,286	**10,657,840**
2014	5,134,438	489,553	4,190,809	62,619	**9,877,419**
2015	6,445,063	474,332	4,299,417	81,393	**11,300,205**
2016	6,861,194	663,925	3,955,120	71,431	**11,551,670**
2017	7,042,462	703,765	4,005,282	59,321	**11,810,830**
2018	7,070,035	495,201	4,001,394	86,212	**11,652,841**
2019 and 2020 data unavailable					
2021	5,593,053	815,527	3,505,978	23,779	**9,938,336**

Notes:
1. Recycled includes waste recycled, reused and waste composted. Disposal includes incineration by disposal and waste landfilled. Recovered includes incineration with energy recovery and co-incineration.
2. Waste managed is final management and excludes interim facilities.
3. The definition of recycling changed in 2014 to exclude non PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series.
4. Other management comprises compost produced at non-PAS certified composting or anaerobic digestion plants.

Waste Recycled

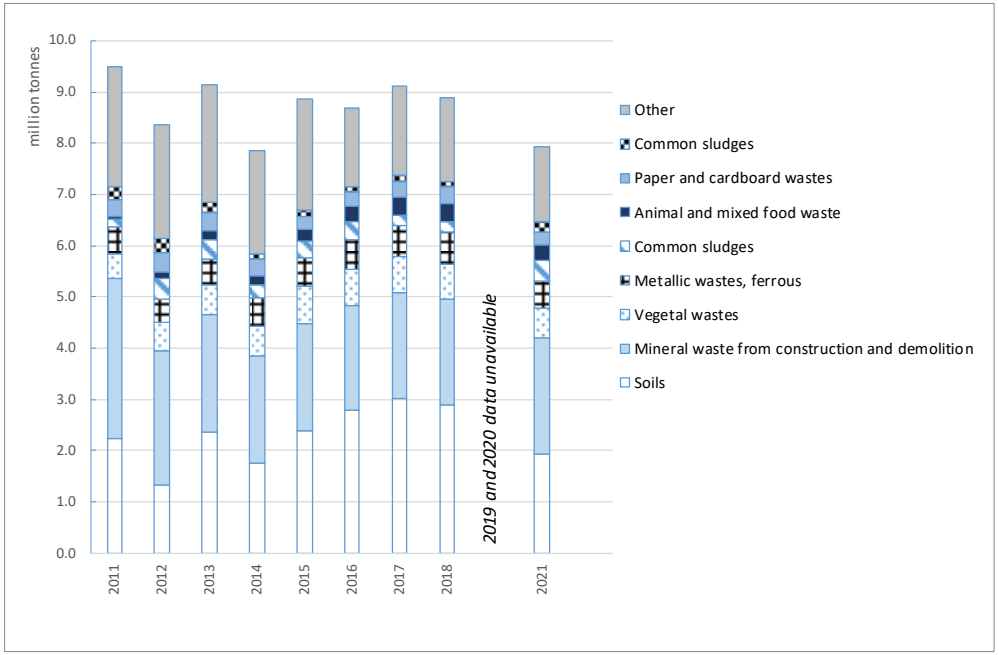
- For the 2021 calendar year, the total tonnage of Scottish WFAS recycled was 5.59 million tonnes, a decrease of 1.48 million tonnes (20.9%) from the 7.07 million tonnes recycled in 2018. To a large extent, this reflects the overall reduction of 1.70 million tonnes in waste generated (and hence potentially available to be recycled).

- As this is the first full WFAS publication since the COVID-19 lockdown and other restrictions, the recycling of these wastes was likely impacted by the effects of COVID-19.
- In 2021, the waste category with the largest amount recycled was Soils (1.94 million tonnes, 34.8% of all waste recycled) followed by Mineral waste from construction and demolition (809,000 tonnes, 14.5%, see Figure 9 on page 16). Excluding these two waste categories, there was a decrease in recycling of 310,000 tonnes (9.8%) from 2018, which included Vegetal wastes (decrease of 97,000 tonnes, 14.4%), Metallic wastes, ferrous (decrease of 100,000 tonnes, 16.1%) and Animal and mixed food waste (decrease of 52,000 tonnes, 14.7%).
- The largest reductions were in recycling of Soils (decrease of 959,000 tonnes, 33.0%) and Mineral waste from construction and demolition (decrease of 208,000 tonnes, 20.5%). These wastes are primarily from the C&D sector, which varies considerably year-on-year depending on construction activities and major projects in the country. The generation of C&D waste is sensitive to large regional projects, which accounts for the large year-on-year variation in C&D waste generated.

Recycled by Composting or Anaerobic Digestion

- In 2021, there were 510,000 tonnes of organic wastes recycled in composting or anaerobic digestion facilities (see Figure 10 on page 17). This is a decrease of 115,000 tonnes (18.4%) from the 626,000 tonnes of organic wastes recycled by composting or digestion in 2018.
- In 2021, the tonnage of Animal and mixed food waste recycled by composting or anaerobic digestion (288,000 tonnes, see Figure 10 on page 17) was 8.6% (27,000 tonnes) less than the amount recycled in 2018. This is against the general upward, and the first time there has not been a year-on-year increase in the biological processing of these wastes since 2011, possibly an impact of COVID lockdowns and other restrictions.

Figure 9. Scottish WFAS recycled by waste category 2011 – 2021.



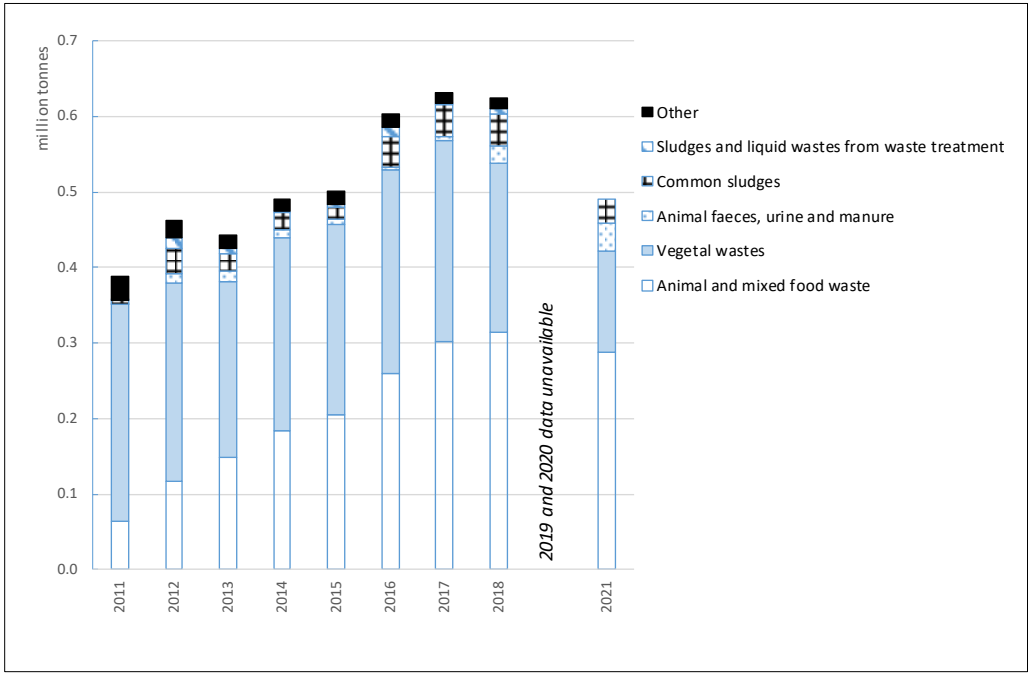
Notes:
1. Recycled includes waste recycled, reused and waste composted.
2. The definition of recycling changed in 2014 to exclude non-PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series.

Table 10. Scottish WFAS recycled by waste category 2011 – 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018		2021
Soils	2,228,954	1,323,499	2,369,425	1,754,540	2,393,660	2,787,153	3,022,056	2,903,935	2019 and 2020 data unavailable	1,944,923
Mineral waste from construction and demolition	983,207	822,194	769,273	691,044	874,064	898,760	1,011,659	1,017,367		808,978
Vegetal wastes	478,229	550,305	582,531	574,855	730,417	708,247	705,840	672,092		575,150
Metallic wastes, ferrous	529,196	462,383	512,965	558,103	555,580	589,981	585,119	623,536		523,059
Common sludges	130,566	403,278	373,788	237,614	328,751	351,840	221,991	215,230		412,900
Animal and mixed food waste	68,721	138,250	172,163	187,537	220,232	281,744	329,788	351,906		300,295
Paper and cardboard wastes	326,879	357,970	345,562	317,014	254,652	285,385	323,742	310,366		241,321
Wood wastes	258,539	287,313	205,098	101,395	134,723	111,706	113,757	112,924		201,148
Other	733,992	750,964	761,227	712,337	952,985	846,379	728,509	862,679		585,279
Total	**5,738,282**	**5,096,155**	**6,092,034**	**5,134,438**	**6,445,063**	**6,861,194**	**7,042,462**	**7,070,035**		**5,593,053**

Notes:
1. Recycled includes waste recycled, reused and waste composted.
2. The definition of recycling changed in 2014 to exclude non-PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series.

Figure 10. Scottish organic WFAS recycled[1] by composting or anaerobic digestion by waste category 2011 - 2021



1. The definition of recycling changed in 2014 to exclude non-PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series

Table 11. Scottish organic WFAS recycled[1] by composting or anaerobic digestion by waste category 2011 - 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018		2021
Animal and mixed food waste	64,551	115,993	147,999	183,015	205,274	259,734	302,829	314,845	2019 and 2020 data unavailable	287,671
Vegetal wastes	285,994	263,251	232,538	257,145	251,379	270,249	264,742	222,713		134,197
Animal faeces, urine and manure	149	12,591	15,026	9,615	7,552	3,653	5,574	24,516		37,778
Common sludges	5,160	33,256	23,204	23,351	15,665	39,447	41,913	41,504		31,498
Sludges and liquid wastes from waste treatment	385	13,705	6,095	1,914	4,412	13,646	2,071	7,331		8,818
Mixed and undifferentiated materials	2,080	12,936	10,187	6,644	2,275	2,040	2,241	1,144		6,301
Sorting residues	0	0	0	0	0	0	0	0		2,583
Other	32,781	23,511	18,177	15,820	16,478	16,846	14,509	13,837		1,635
Total	**391,100**	**475,243**	**453,227**	**497,504**	**503,034**	**605,614**	**633,879**	**625,889**		**510,481**

1. he definition of recycling changed in 2014 to exclude non-PAS compost. Recycling data for 2011 - 2013 has been modelled under the new definition to provide consistency for the time series.

Waste Incinerated

- In 2021, there were 1.32 million tonnes of Scottish waste incinerated. This is an increase of 168,000 tonnes (14.6%) from 2019. This follows a longer-term trend, with an increase of 892,000 tonnes (208.6%) of waste incinerated since 2011.
- Most (89.7%, 1.18 million tonnes) Scottish WFAS incinerated was undertaken at Scottish incineration facilities.
- In 2021, there were 816,000 (61.8%) tonnes of waste recovered by incineration with energy recovery or co-incineration, with the remaining waste (503,000 tonnes, 38.2%) incinerated at disposal facilities[7] (see Figure 11 below).
- The largest waste category incinerated in 2021 was Sorting residues (558,000 tonnes, 42.3% of all waste incinerated), followed by Household and similar wastes (355,000 tonnes, 26.9%) and Wood wastes (264,000 tonnes, 20.1%).

Waste Landfilled

- Scottish waste disposed to landfill in 2021 was 3.00 million tonnes, an increase of 11,000 tonnes (0.4%) from the 2.99 million tonnes landfilled in 2019. This is a slight deviation from the longer-term trend of decreasing disposal to landfill (see Figure 13 on page 21).
- In 2021, the vast majority (98.9%, 2.97 million tonnes) of Scottish waste was landfilled at Scottish landfill facilities.
- As depicted in Figure 14 on page 21, there were 47,000 tonnes of Scottish Hazardous waste disposed to landfill in 2021, which amounts to 1.6% of all Scottish waste landfilled. This was a decrease of 4,000 tonnes (10.0%) compared to 2019. The bulk of Scottish hazardous waste landfilled was Other mineral wastes, which primarily comprises insulating materials such as asbestos (21,000 tonnes, 55.2% of all hazardous waste landfilled), followed by Sludges and liquid wastes from waste treatment (7,000 tonnes, 15.8%).

1. [7] Waste incinerated by disposal is incineration that has not been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive.

Figure 11. Scottish WFAS incinerated by method 2011 - 2021

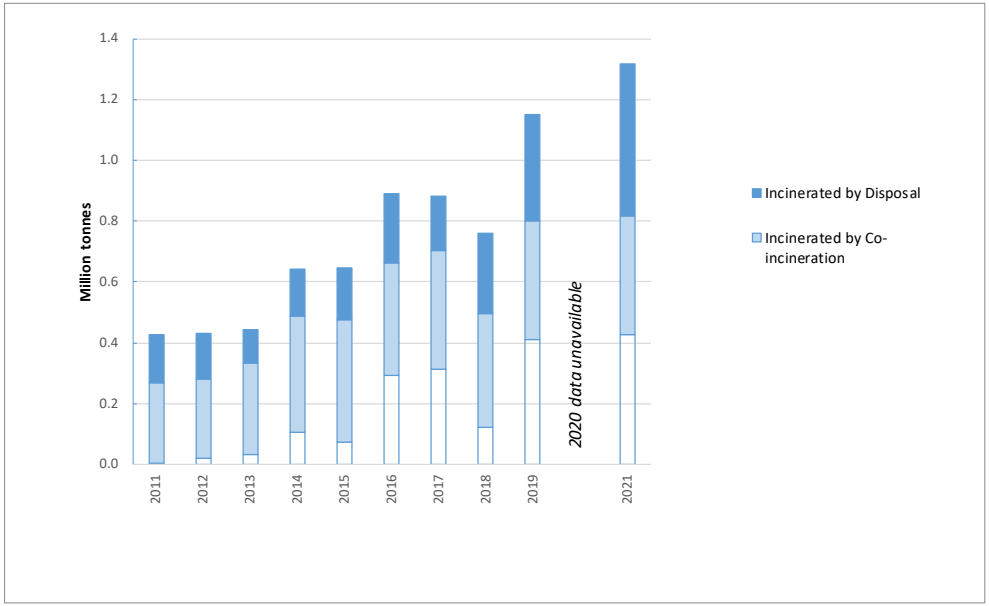


Table 12. Scottish WFAS incinerated by method 2011 - 2021 (tonnes)

Year	Incinerated by Recovery	Incinerated by Co-incineration	Incinerated by Disposal	Total Incinerated
2011	5,192	264,287	157,863	**427,342**
2012	20,507	257,963	153,904	**432,374**
2013	33,759	299,676	111,447	**444,881**
2014	104,693	384,860	153,362	**642,915**
2015	71,892	402,440	171,079	**645,412**
2016	292,447	371,478	227,889	**891,814**
2017	313,256	390,509	178,813	**882,578**
2018	121,257	373,944	263,946	**759,147**
2019	411,114	390,280	349,723	**1,151,117**
2020 data unavailable				
2021	426,511	389,016	503,425	**1,318,952**

Figure 12. Scottish WFAS incinerated by waste category 2011 - 2021

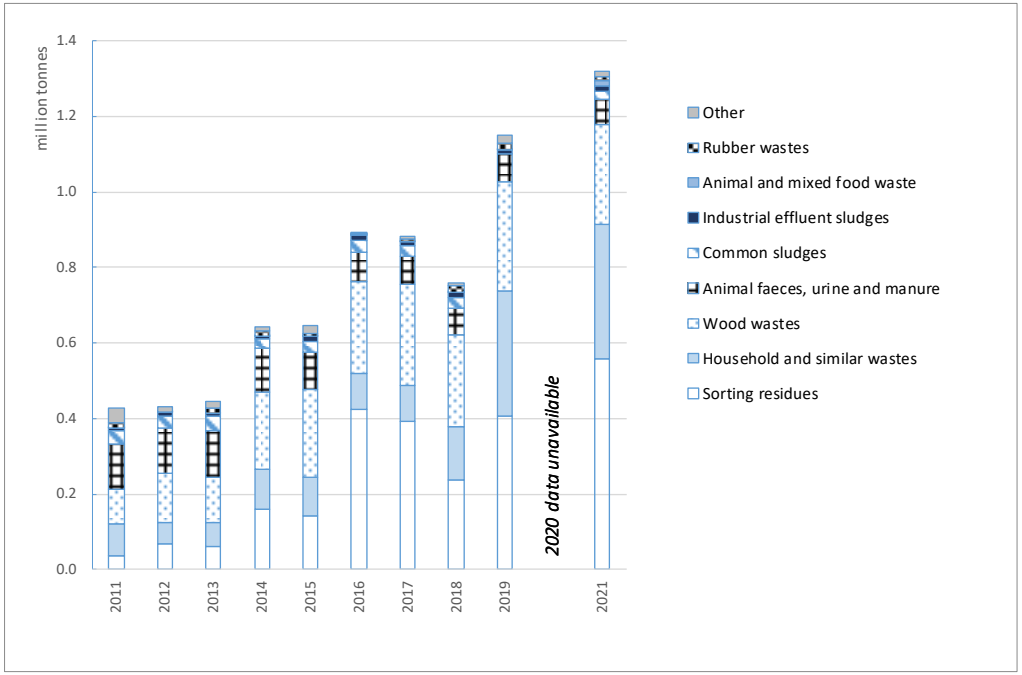


Table 13. Scottish WFAS incinerated by waste category 2011 – 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018	2019		2021
Sorting residues	34,842	67,685	61,258	160,780	141,732	422,781	392,392	236,640	405,889	2020 data unavailable	558,057
Household and similar wastes	87,153	57,733	61,364	102,750	101,820	97,855	95,859	142,946	330,368		355,440
Wood wastes	90,641	127,621	122,523	206,895	233,616	243,311	268,843	242,103	292,088		264,482
Animal faeces, urine and manure	119,309	120,509	123,748	117,431	97,731	75,901	71,819	71,563	72,892		68,195
Common sludges	37,200	33,538	36,060	22,430	28,417	32,156	29,278	26,752	0		19,160
Industrial effluent sludges	3,764	9,231	7,817	6,810	12,990	13,029	9,952	14,651	11,862		16,537
Animal and mixed food waste	344	198	260	159	490	402	270	401	412		12,338
Rubber wastes	15,235	15	15,025	16,183	8,594	2,940	8,367	18,066	16,424		11,429
Other	38,854	15,844	16,827	9,476	20,023	3,439	5,798	6,025	21,183		13,314
Total	**427,342**	**432,374**	**444,881**	**642,915**	**645,412**	**891,814**	**882,578**	**759,147**	**1,151,117**		**1,318,952**

Figure 13. Scottish WFAS disposed to landfill by waste category 2011 - 2021

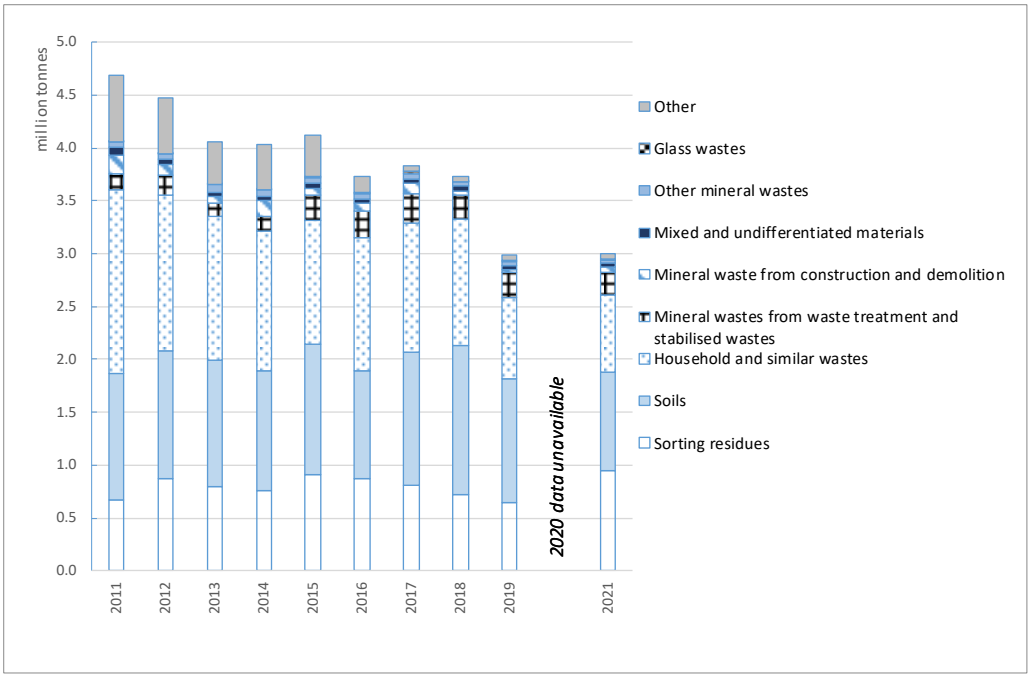


Figure 14. Scottish hazardous WFAS disposed to landfill by waste category 2011 - 2021

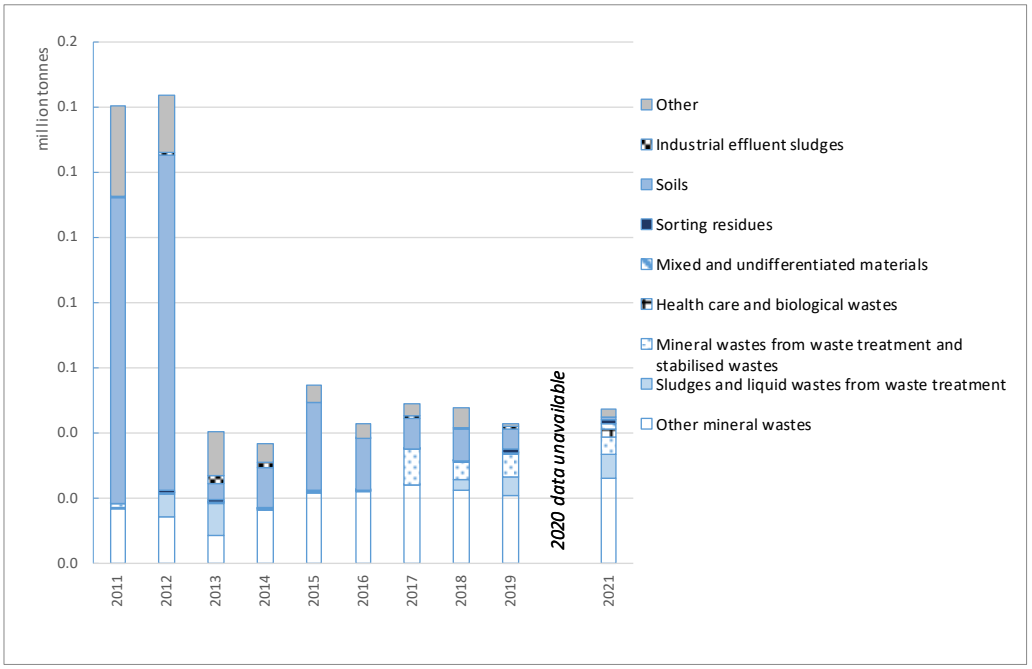


Table 14. Scottish WFAS disposed to landfill by waste category 2011 - 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018	2019		2021
Sorting residues	668,129	868,404	794,755	760,525	907,841	868,012	811,513	721,957	647,349	2020 data unavailable	947,421
Soils	1,202,936	1,217,230	1,198,189	1,132,942	1,239,766	1,026,247	1,255,252	1,414,019	1,173,538		930,492
Household and similar wastes	1,730,846	1,470,708	1,354,709	1,317,644	1,172,084	1,255,523	1,228,146	1,193,340	760,848		737,558
Mineral wastes from waste treatment and stabilised wastes	156,868	191,285	134,874	145,413	233,680	250,375	278,938	231,320	240,603		206,811
Mineral waste from construction and demolition	178,606	95,700	60,527	150,915	61,746	82,855	97,834	36,881	25,897		49,417
Mixed and undifferentiated materials	75,181	47,571	39,881	41,150	53,581	36,377	31,538	46,431	45,038		37,903
Other mineral wastes	50,127	54,963	77,046	50,966	49,364	47,467	54,711	38,435	30,276		31,029
Glass wastes	976	175	164	2,227	13,442	16,829	19,435	2,490	9,456		12,884
Other	621,056	532,302	401,493	435,664	396,833	143,545	49,102	52,575	58,681		49,039
Total	**4,684,726**	**4,478,338**	**4,061,638**	**4,037,447**	**4,128,338**	**3,727,231**	**3,826,469**	**3,737,448**	**2,991,686**		**3,002,552**

Table 15. Scottish hazardous WFAS disposed to landfill by waste category 2011 - 2021 (tonnes)

Waste Category	2011	2012	2013	2014	2015	2016	2017	2018	2019		2021
Other mineral wastes	16,882	14,490	8,517	16,425	21,667	22,125	24,237	22,680	20,896	2020 data unavailable	26,070
Sludges and liquid wastes from waste treatment	357	6,596	9,711	127	193	133	68	3,113	5,610		7,461
Mineral wastes from waste treatment and stabilised wastes	1,033	615	482	189	402	178	10,709	5,299	7,033		5,418
Health care and biological wastes	67	55	68	113	86	0	199	297	432		2,346
Mixed and undifferentiated materials	1	0	0	63	17	27	17	37	135		1,602
Sorting residues	3	869	960	410	0	117	0	26	1,038		1,224
Soils	93,805	102,497	4,788	11,978	27,209	15,859	9,424	9,655	6,191		973
Industrial effluent sludges	452	988	2,625	1,549	3	100	526	678	551		O
Other	27,935	17,397	13,329	5,804	5,221	4,424	3,838	6,147	1,036		2,112
Total	**140,535**	**143,507**	**40,479**	**36,657**	**54,800**	**42,962**	**49,017**	**47,932**	**42,922**		**47,207**

DATA USES, FEEDBACK, REVISIONS POLICY, METHODOLOGY, GLOSSARY OF TERMS AND MEASURES, AND REFERENCES

User Statement

Data on WFAS generation and management are collected to monitor policy effectiveness, particularly the commitments in the Zero Waste Plan, Safeguarding Scotland's Resources, and Scotland's Circular Economy Strategy and to support policy development. The data are also used to meet legislative reporting targets on recycling targets set out in the Waste Framework Directive (2008/98/EC) and Commission Decision establishing rules and calculation methods for verifying compliance with the targets set in the Waste Framework Directive (2011/753/EU) and to supply data for the Waste Statistics Regulation (2002/2150/EC). The data are used extensively by local and central government, the waste industry, researchers, community groups and the general public.

Feedback

We welcome feedback on the data from all users including how and why the data are used. This helps us to understand the value of the statistics to external users. Please see our contact details at the bottom of the first page of this notice or e-mail: waste.data@sepa.org.uk.

Revisions Policy

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

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.

These statistics were revised on 5th June 2023 to account for the omission of “Other manufacturing” sector for the commercial and industrial waste generated.

Since the 2028 publication, revisions were made to Organic waste recycled for 2011, 2012 and 2013. In the previous publication, organic wastes recycled by composting or anaerobic digestion were categorised as recycled via a “new method” or an “old method”. The methodology change was introduced in 2014. From 2014 onwards only organic wastes composted at a PAS 100 or PAS 110 compliant facility were counted as recycled under the new method, with the remainder counted as “other management”. 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 longer period of time. For 2011 – 2013 the wastes that met the PAS 100/110 standard was modelled to produce a back series. For each waste category, the proportion of waste that was sent to a PAS 100/110 facility in 2014 was applied to the waste sent for composting for each of the years 2011, 2012 and 2013. For example, if 60% of waste was sent to a PAS 100/110 facility in 2014, 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” management category.

Following the cyber-attack suffered by SEPA, the calculation for the non-hazardous C&D recycling rate was re-implemented with a revised methodology. For consistency, the methodology was applied across the historical time-series. The revised C&D recycled rates are depicted in Table 17 on page 25. The methodology estimates the waste generated and disposed by landfill or incineration for the following materials: Glass wastes, Metallic wastes, ferrous, Metallic wastes, mixed ferrous and non-ferrous, Metallic wastes, non-ferrous, Mineral waste from construction and demolition, Plastic wastes, and Wood wastes. It is assumed the remainder of these wastes are recycled.

Table 16. Revisions to Scottish organic wastes recycled by composting or anaerobic digestion 2011 – 2013 (tonnes)

Waste category	2011			2012			2013		
	Recycled Old Method	Recycled New Method	Other Management	Recycled Old Method	Recycled New Method	Other Management	Recycled Old Method	Recycled New Method	Other Management
Animal and mixed food waste	66,501	64,551	1,950	119,496	115,993	3,503	152,469	147,999	4,470
Vegetal wastes	321,721	285,994	35,727	296,333	263,251	33,082	261,760	232,538	29,222
Acid, alkaline or saline wastes	1,420	1,420	0	1,199	1,199	0	1,688	1,688	0
Chemical wastes	933	933	0	0	0	0	53	53	0
Industrial effluent sludges	1,137	857	280	2,939	2,215	724	1,040	784	256
Sludges and liquid wastes from waste treatment	657	385	272	23,371	13,705	9,666	10,394	6,095	4,299
Paper and cardboard wastes	2,661	2,660	1	236	236	0	2,394	2,393	1
Plastic wastes	0	0	0	0	0	0	1	1	0
Wood wastes	4,652	4,058	594	7,985	6,966	1,019	4,367	3,810	558
Textile wastes	3,132	3,124	8	2,663	2,656	7	2,228	2,222	6
Animal and mixed food waste	66,501	64,551	1,950	119,496	115,993	3,503	152,469	147,999	4,470
Vegetal wastes	321,721	285,994	35,727	296,333	263,251	33,082	261,760	232,538	29,222
Animal faeces, urine and manure	150	149	2	12,738	12,591	147	15,201	15,026	175
Household and similar wastes	60,593	15,027	45,566	37,352	9,264	28,089	26,812	6,649	20,162
Mixed and undifferentiated materials	2,085	2,080	6	12,971	12,936	34	10,214	10,187	26
Sorting residues	139	0	139	0	0	0	111	0	111
Common sludges	5,160	5,160	0	33,256	33,256	0	23,204	23,204	0
Other mineral wastes	4	4	0	0	0	0	0	0	0
Combustion wastes	69	69	0	32	32	0	139	139	0
Soils	4,606	4,606	0	944	944	0	383	383	0
Dredging spoils	24	24	0	0	0	0	55	55	0
Total	**863,864**	**741,645**	**122,219**	**967,343**	**854,487**	**112,857**	**926,743**	**833,764**	**92,979**

Table 17. Revisions to Scottish 2011 – 2018 non-hazardous C&D recycling rates

Year	Original	Revised
2011	92.90%	87.85%
2012	91.10%	91.36%
2013	91.80%	93.36%
2014	92.70%	81.67%
2015	94.50%	87.19%
2016	95.00%	99.34%
2017	95.00%	99.29%
2018	97.30%	99.67%

Methodology

Data are taken from licenced and permitted waste site returns and exempt activity returns submitted to SEPA, from accredited reprocessor returns, from voluntary returns provided by waste sites on the industry source of data provided to SEPA, from voluntary returns provided by aggregate producers on the quantity of waste used to produce an aggregate product, and from all 32 Scottish local authorities using the web-based reporting tool WasteDataFlow.

Further details on the methodology used to produce the figures are provided in the annual Waste Data Quality Reports on SEPA's web site. Please note that WFAS figures published by countries within the UK may be based on alternative calculation methodologies and as such the figures may not be directly comparable.

As the tonnages of waste managed do not equal the tonnages of waste generated, the recycling and landfill rates referred to in this document (see Table 2 on page 4) are all relative to the total waste managed rather than waste generated. For further information, please refer to the quality report on SEPA's website.

Glossary of terms

BSI PAS 100 / 110 – a national compost benchmark that specifies the minimum requirements for the process of composting, the selection of material from which compost is made, and standards for the compost 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 in Scotland became part of Scottish Government policy in 2011, with 2014 being the first year it has been applied to the household official statistics. For 2011 – 2013 the wastes that met the PAS 100/110 standard was modelled to produce a back series.

Co-incineration facility – an incineration facility in which the main purpose is the generation of energy or production or material products (e.g. cement) and which uses waste as an additional fuel. Note that co-incineration facilities are not eligible to qualify for R1 energy recovery efficiency as specified in the EU Waste Framework Directive.

C&D Waste – waste from the construction and demolition industry

C&I Waste – waste from commercial and industrial sources. Includes waste from business and industrial premises in Scotland, but excludes waste from the construction and demolition industry.

EWC Code – European Waste Catalogue code.

Hazardous Waste – waste with hazardous properties which may render it harmful to human health or the environment. Hazardous waste is also called Special Waste in Scotland as defined in the Special Waste Regulation 1996 (and amendments).

Other Management – waste managed by methods outside of recycling, recovery or disposal. For 2021 this comprised exclusively waste composted at facilities not accredited to the BSI PAS 100/110 standard.

Recycling rate –waste recycled as a percentage of all waste managed. Note that total waste generated is not used to calculate the recycling rate as it does not equal total waste managed due to differences in methodologies used to calculate the report the data.

Waste disposed - waste landfilled and waste inputs to incineration facilities that have not been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive.

Waste generated - waste that directly arises from Scottish business' and households during the reporting year. C&I waste generated are estimated using data from licensed/permitted site returns and complex exempt activity return. C&D waste generated is estimated using data from licensed/permitted site returns, complex exempt activity returns and aggregate survey data. Household waste generated is taken from all 32 Scottish local authority returns using the web-based reporting tool WasteDataFlow (WDF). Waste generated only includes waste that directly arise from the business, for example waste that is taken in by a business from another business and subsequently disposed is excluded from the waste generation.

Waste disposed by incineration – waste inputs to incineration facilities that have not been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive.

Waste landfilled - waste that is disposed of to landfill sites instead of being recycled or recovered. This includes incinerator ash, plus any recycling and composting rejects that occur during collection, sorting or further treatment that are landfilled.

Waste managed - includes all wastes recycled, disposed, recovered and managed by other management within the relevant reporting year.

Waste recovered by incineration – waste inputs to co-incineration facilities and to incineration facilities that incinerate mixed municipal waste and have been demonstrated to meet the R1 energy recovery efficiency specified in the EU Waste Framework Directive.

Waste recycled - recyclable materials that have been recycled or reused and biodegradable materials that have been composted or anaerobically digested to quality standards set by PAS 100/110.

WFAS – waste from all sources. This includes waste from commercial and industrial sources, construction and demolition sources and household sources.