Scottish Environment Protection Agency

Buidheann Dìon Àrainneachd na h-Alba

Calculation Methodology for Waste Management Infrastructure Capacity Estimates

2018 data (published December 2020)

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1. Introduction

This document describes how SEPA uses operator-provided waste data to populate the waste management infrastructure capacity requirements for the Scottish Government's circular economy strategy for Scotland, *Making Things Last*, supported by Scottish Planning Policy (pages 41-44).

The data are published annually on SEPA's website: https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-site-information/

Additional waste management infrastructure is required in Scotland to (a) sort and process recyclable materials which have been separately collected and (b) manage the remaining residual waste in a way which maximises resource value and minimises the impact of disposal on the environment.

The estimates provided by this methodology set out the national shortfall in the operational waste management capacity required to meet ZWP targets in 2025.

To ensure that all authorities in Scotland collectively plan for waste management facilities to meet the requirements of the ZWP, the capacity shortfall is allocated to groups of local authorities or Strategic Development Plan (SDP) areas. Further information on the SDP areas is found here. These allocated capacities must be read in conjunction with the policy set out in the Scottish Planning Policy (SPP) and should not be treated as a limit to development.

The methodology assesses the quantity of waste currently landfilled and determines how waste will be managed in 2025 given the targets for recycling 70% and landfilling no more than 5% of the waste from all sources and in light of the ban on sending biodegradable waste by 2025 (see Appendix 1). An assessment of the quantity of additional capacity required to manage waste either by recycling/composting or other recovery is made. The majority of the material being sent for "other recovery", including incineration, will comprise residual waste.

In 2013, the Scottish Government set waste prevention targets which aim to reduce waste generated by 15% by 2025 against the 2011 baseline (Appendix 1). Thus, the workings in this document assume that there will be a 15% reduction in waste generated compared to 2011 data. All recycling and landfill targets are in accordance with these 2025 estimated figures.

2. Overview of methodology

2.1. Definitions

2025 total additional capacity: Estimated additional waste infrastructure required to meet the 2025 recycling and landfill targets. This includes both recycling infrastructure and residual waste infrastructure such as incineration. It may also be referred to as total additional diversion capacity.

2025 recycling additional capacity: Estimated additional waste recycling infrastructure required to meet the 2025 recycling and landfill targets.

2025 residual additional capacity: Estimated additional non-landfill waste infrastructure for the disposal of residual waste required to meet the 2025 landfill target.

2025 waste generated: This is estimated as 85% of the waste generated in 2011, as per the policy of 15% reduction in waste generated by 2025 using 2011 as a baseline.

2025 waste landfilled: This is estimated as 5% of the 2025 waste generated, as per the policy of <5% waste landfilled by 2025.

2025 waste diverted: This is an estimate of the waste generated that is diverted from landfill. It is the difference between 2025 waste generated and 2025 waste landfilled and includes both waste diverted for recycling and waste diverted for other management such as incineration.

2.2. Data Sources

Most of the data was taken from published Spotfire Discover tools for Waste From All Sources, Household Waste, and Waste Sites and Capacity Information. Some of the data was taken from unpublished analyses (for regional breakdowns of C&D waste and waste landfilled).

Published sources
Waste sites and Capacity Tool
Waste From All Sources Data Discover Tool
Household Waste Data Discover Tool
Business waste Excel tables
Household Waste Summary Excel tables
Unpublished sources
Waste landfilled by area in Scotland
Construction and Demolition waste generated by area in Scotland

All the data used in this analysis are held by SEPA and sourced from operator and local authority waste data returns, relevant licence/permit information, and some additional waste data surveys.

Soils were separated from other materials in the data. This is because soils are used in other construction projects so don't need waste management facilities, i.e. they do not need additional capacity. However, soils have been included in the recycling rate calculations as it is appropriate to capture their management.

2.3. Landfill Capacity for Scotland

A ten-year 'rolling' capacity for landfill in Scotland is provided as two separate measurements:

1. The ten-year capacity of existing landfill infrastructure;
2. The ten-year landfill required capacity.

The first measurement is either the remaining capacity of the site or the rate of infill multiplied by ten years (whichever is smaller), summed for the existing landfill infrastructure in Scotland, and all as at the 31st December 2018. This tonnage is then allocated across the SDP and local authority areas by proportion based on their percentage of waste generated.

The second measurement is calculated as the average of the total amount of Scottish waste landfilled in 2018 and the total amount of Scottish waste estimated to be landfilled in 2025, multiplied by ten. This calculation excludes soils. The resulting tonnage is then allocated across the SDP and local authority areas by proportion based on their percentage of waste generated.

2.4. Regional Capacity Calculation

Scotland's additional capacity figures are presented regionally by SDP or Local Authority area(s). The allocation is based on the proportion of waste generated in the specified area in relation to total waste generated in Scotland. Waste tonnages that are not assigned to a particular area (classed as 'rest of Scotland') are not included in the proportional breakdown.

Three types of additional capacity are presented:

1. Tonnes of additional capacity
2. Additional capacity needed to manage source segregated waste
3. Additional capacity needed to manage unsorted waste.

The calculation of these additional capacity measurements is given in the next section.

2.5. Additional Capacity Calculations

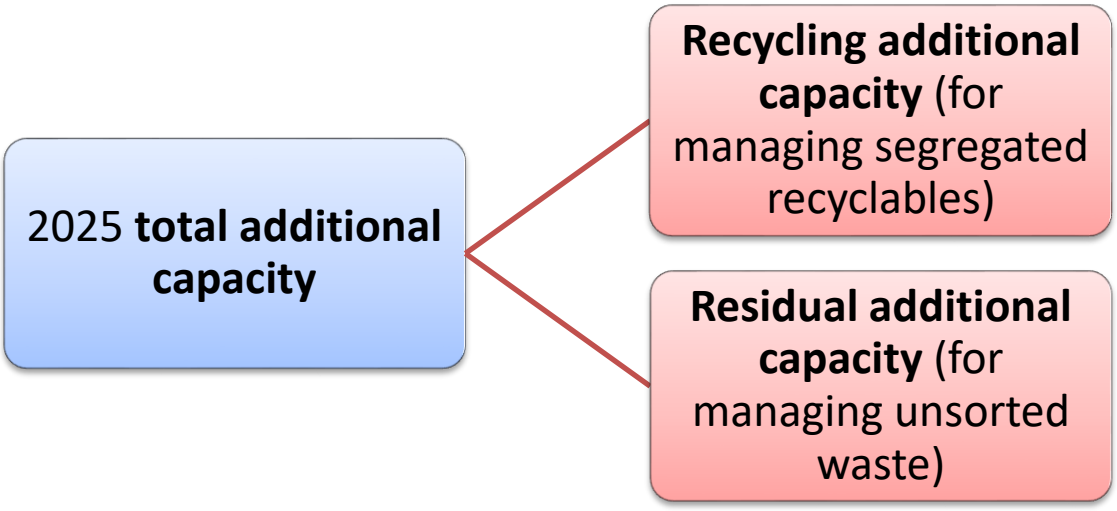
The **2025 waste diverted** is the difference between waste generated in 2025 and waste landfilled in 2025.

2025 waste diverted	=	Waste generated 2025 – waste landfilled 2025

The **2025 total additional capacity** required is taken as the 2025 waste diverted less the 2018 waste diverted. This assumes that in 2018 recycling and incineration facilities are operating at maximum capacity.

2025 total additional capacity	=	2025 waste diverted - 2018 waste diverted

The **2025 total additional capacity** is divided into capacity required for segregated recyclables (“recycling additional capacity”) and additional capacity needed to manage unsorted waste (“residual additional capacity”).



The **2025 recycling additional capacity** required is calculated as the sum of the 2025 recycling capacities for household and commercial and industrial wastes, plus the 2025 recycling capacity for construction and demolition waste if it is greater than zero. If the latter is less than zero, it is not included.

2025 recycling additional capacity	=	Household waste 2025 recycling capacity + Commercial and Industrial waste 2025 recycling capacity + Construction and Demolition waste 2025 recycling capacity (if >0)

The 2025 recycling capacities in the above calculation were estimated in each case by multiplying the 2025 waste generated by the 2025 recycling target of 70% and subtracting the 2018 recycling capacity, assuming that, in 2018, recycling facilities are operating at maximum capacity.

As soils are not included in the data, the 70% recycling target percentage was adjusted to account for the recycling of soil. For example, in 2018, 74% of the Construction and Demolition (C&D) waste recycled was soils (2,857,574 / 3,878,058 tonnes). It is assumed that in 2025, 74% of the C&D waste recycled will also be soils. Therefore, of the 70% 2025 target, 52% will be met through the recycling of soils (74% * 70% = 52%) and the adjusted target is thus 70% - 52% = 18%. Adjustments were also made for household waste and for commercial and industrial (C&I) waste.

2025 recycling capacity (for each of household, C&I and C&D wastes)	=	2025 waste generated * 2025 recycling target (adjusted) – 2018 recycling capacity

The 2025 residual additional capacity needed to manage unsorted waste is the 2025 total additional capacity less the 2025 recycling additional capacity.

2025 residual additional capacity	=	2025 total additional capacity - 2025 recycling additional capacity

2.6. Construction and Demolition (C&D) materials

C&D materials recycled are calculated in two steps. First, subtract the household materials recycled from the total waste materials recycled to leave [C&D+C&I] materials recycled:

Step 1: Total materials recycled – household materials recycled	=	[C&D+C&I] materials recycled

Second, calculate the percentage of C&D waste generated as a proportion of the total [C&D+C&I] waste generated:

Step 2: % C&D waste generated	=	$\frac{\text{C\&D generated}}{\text{[C\&D+C\&I] waste generated}}$

Third, multiply the total [C&D+C&I] materials recycled by the %C&D waste generated to estimate the amount of C&D materials recycled.

2.7. Commercial and Industrial (C&I) materials

C&I materials recycled are taken as the total materials recycled minus household and C&D materials recycled.

Total materials recycled - household materials recycled – C&D materials recycled	=	C&I materials recycled

Appendix 1: Targets

The targets relevant for this methodology are shown in the table below.

Indicator	Target/Target year	Derivation
Reduce waste generated in Scotland	< 93% of 2011 baseline / 2017 < 85% of 2011 baseline / 2025	Scottish Government target[1]
Reduce food waste generated in Scotland	< 67% of 2013 baseline / 2025	Scottish Government target[2]
Recycling/composting and preparing for reuse of waste from households	60% / 2020	Scottish Government target[1]
Preparing for re-use and recycling of waste materials such as at least paper, metal, plastic and glass from household waste and similar.	50% by weight / 2020	Article 11(2)a of the EU Waste Framework Directive[3]
Biodegradable municipal waste to be sent to landfill	< 1.26 million tonnes / 2020	Article 5(2) of the EU Landfill Directive[4]

[1] https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/pages/17/
[2] https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/pages/14/
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098&qid=1571152827688&from=EN
[4] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31999L0031:EN:NOT. Target performance measured as landfilling of EWC Chapter 15 (packaging; selected categories that are similar in composition to household waste); Chapter 19 (selected categories that are similar in composition to household waste); and Chapter 20, all relative to a 1995 baseline.

Indicator	Target/Target year	Derivation
Ban on biodegradable municipal waste sent to landfill	100% ban by 2021 (revised on 19/09/2019 to a 100% ban by 2025)5	Waste (Scotland) Regulations 2012[6]
Preparing for re-use and recycling of construction and demolition waste	70% by weight / 2020	Article 11(2)(b) of the revised EU Waste Framework Directive[3]
Recycling/composting and preparing for reuse of waste from all sources	70% / 2025	Scottish Government target[1]
Percentage of waste from all sources to go to landfill	< 5% / 2025	Scottish Government target[1]

5 https://www.parliament.scot/parliamentarybusiness/28877.aspx?SearchType=Advance&ReferenceNumbers=S5W-25409&ResultsPerPage=10

6 https://www.legislation.gov.uk/sdsi/2012/9780111016657/contents