

Scottish Government Response to: Stop, Sort, Burn, Bury?

The Independent Review of the Role of Incineration in the Waste Hierarchy in Scotland

Second Report: Decarbonisation of Residual Waste Infrastructure in Scotland

Ministerial Foreword



As the Minister responsible for Circular Economy, I am pleased to publish the Scottish Government's response to Stop, Sort, Burn, Bury? Second Report: Decarbonisation of Residual Waste Infrastructure in Scotland.

A circular approach to our economy, where we move from a 'take, make, and dispose' model, to one where we keep materials in use, is imperative if we are to tackle the nature and climate crises.

Scotland produces around 4.4 million tonnes of residual waste, that is 'black bag waste' sent to landfill or incineration each year, and the generation and

management of Scotland's household waste alone is responsible for 5.9 million tonnes of carbon dioxide (tCO₂e). This simply isn't sustainable and we must change.

Moving to a circular economy is first and foremost about reducing consumption, maintaining the value of materials by repairing and reusing items and recycling materials when they cannot be repaired or reused. We are taking action to accelerate our circular economy transition. We will be bringing forward a Circular Economy Bill this parliamentary term that will establish the legislative framework to support Scotland's transition to a zero waste and circular economy, significantly increase reuse and recycling rates, and modernise and improve waste and recycling services. This year we will also publish a Waste & Circular Economy Route Map that will set out how we intend to deliver our system-wide, comprehensive vision for Scotland's circular economy.

While we make the transition to a circular economy, we need to ensure that we treat the residual waste we do produce in a way that minimises environmental impacts and is firmly aligned with our emissions reduction ambitions.

I am grateful to Dr Church for extending his role as Independent Chair of the Review to oversee the important work to consider options to decarbonise the residual waste sector. I would also like to once again thank all those who shared their views, evidence and experience with Dr Church and the review team. The second report has provided a robust consideration of options and a set of recommendations that will inform policy decisions to reduce the impact of Scotland's residual waste and support us on our journey towards a circular economy.

A handwritten signature in brown ink that reads "Lorna Slater".

Lorna Slater MSP

Minister for Green Skills, Circular Economy and Biodiversity

Contents

1. Introduction	4
2. Summary of main findings and recommendations	6
3. Responses to recommendations.....	8
3.1 Reducing the incineration of fossil-based plastics (recommendations 13, 17 & 19)	8
3.2 Deploying heat and power networks (recommendation 14).....	10
3.3 Data and modelling (recommendation 15)	11
3.4 Including incineration in UK Emissions Trading Scheme (recommendation 16).....	12
3.5 Reducing export of plastic waste (recommendation 18).....	13
3.6 Deploying carbon capture and use technologies (recommendations 20 & 21)	14
3.7 Landfill gas capture and management (recommendations 22 & 23).....	15
4. Summary of actions and next steps	17

1. Introduction

1. The Waste Management sector has made strides in reducing greenhouse gas emissions. In 2020, the Waste Management sector accounted for 1.4 MtCO₂e of greenhouse gas emissions in Scotland (3.4% of the Scottish total of 40 MtCO₂e), largely from landfill (1.0 MtCO₂e). This represents a 77% reduction since 1990, which has largely been achieved through reductions in household and similar waste, the progressive introduction of methane capture and oxidation systems within landfill management, and diversion of waste away from landfill through increased recycling and the diversion of residual waste to incineration¹.

2. Scotland is moving away from our current ‘take, make, and dispose’ model of the economy towards a circular economy, where we keep materials in use. Moving toward a circular economy will support emissions reductions but while we make this transition, we need to ensure that how we manage our residual (‘black bag’) waste² supports our emissions reduction targets and minimises any other environmental impact.

3. That is why the Scottish Government commissioned a review of the role of incineration in the waste hierarchy in Scotland (the Review). We set out this commitment in our Programme for Government³, reaffirming it in the Bute House Agreement⁴, and appointed Dr Church in November 2021 as Independent Chair to oversee the Review.

4. Dr Church’s First Report⁵ of the Review was published in May 2021 and set out 12 full recommendations. This prioritised analysis of national capacity requirements, considered the societal impacts of residual waste treatment, including health and community impacts and considered how emissions from existing infrastructure could be reduced and residual heat may be reused.

¹ In the Scottish Greenhouse Gas Statistics, emissions from Energy from Waste cannot be separately identified and are reported under Power Stations in the Energy Supply sector, not the Waste Management sector. This is in line with the definitions set out by the Intergovernmental Panel on Climate Change (IPCC). Our response to the first report committed to working with BEIS to enable Energy from Waste emissions to be separately identified in future reporting.

² Scotland currently produces around 4.4 million tonnes of residual waste each year, see Summary Table in SEPA (2021) [Waste from All Sources: Data Tables](#)

³ Scottish Government (2021) *A Fairer, Greener Scotland: Programme for Government 2021-22*, Available at: [A Fairer, Greener Scotland: Programme for Government 2021-22 - gov.scot \(www.gov.scot\)](#)

⁴ Scottish Government (2021), *Scottish Government and Scottish Green Party - Shared Policy Programme*, Available at: [Scottish Government and Scottish Green Party - Shared Policy Programme - gov.scot \(www.gov.scot\)](#)

⁵ Church, C (2022), *Stop, Sort, Burn, Bury - incineration in the waste hierarchy: independent review*, Available at: [Stop, Sort, Burn, Bury - incineration in the waste hierarchy: independent review - gov.scot \(www.gov.scot\)](#)

5. We published our response to the First Report in June 2022, accepting all of the full recommendations⁶.

6. The First Report also made two provisional recommendations, pending the outcome of additional work. The First Report prioritised a timely analysis of capacity to inform planning and investment decisions, which meant there was insufficient time to fully consider options to decarbonise existing residual waste infrastructure. The Review, therefore, commissioned additional work to consider options to decarbonise Scotland's residual waste infrastructure.

7. At the invitation of the Minister for Green Skills, Circular Economy and Biodiversity, Dr Church stayed on as independent chair to oversee this further work and delivered his Second Report to the Scottish Government in December 2021. Dr Church's Second Report⁷ (the Report) builds on the first and considers options to decarbonise the Residual Waste Infrastructure in Scotland by addressing four questions:

- What does the current carbon impact of disposal of waste look like?
- What are the possible options to decarbonise residual waste infrastructure?
- What are the most effective and feasible options to improve existing waste management infrastructure in terms of carbon performance?
- What combination of options is the most feasible for Scotland?

8. To answer these questions, Dr Church's team considered stakeholder feedback gathered through the first report's Call for Evidence, which is summarised in the evidence document⁸ published alongside the First Report; two additional stakeholder events; and additional contributions from stakeholders. The review also received a report from Eunomia⁹, which set out to assess the effectiveness of options to decarbonise existing waste infrastructure. The additional contributions and the Eunomia report were published alongside the Review's Second Report.

9. The scope of the Second Report was residual waste infrastructure greenhouse gas (GHG) emissions (primarily carbon dioxide from incinerators and methane from landfill), for the treatment of household, and some commercial and

⁶ Scottish Government (2022) *Independent review of the role of incineration in the waste hierarchy: Scottish Government response*, Available at: [Independent review of the role of incineration in the waste hierarchy: Scottish Government response - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/documents/2022/06/Independent-review-of-the-role-of-incineration-in-the-waste-hierarchy-Scottish-Government-response-2022-06-22.pdf)

⁷ Church. C (2023), *Stop, Sort, Burn, Bury? Independent Review of the Role of Incineration in the Waste Hierarchy in Scotland Second Report: Decarbonisation of Residual Waste Infrastructure in Scotland*, Available at: [Decarbonisation of residual waste infrastructure: report - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/documents/2023/01/Decarbonisation-of-residual-waste-infrastructure-report-2023-01-20.pdf)

⁸ Church. C (2022) *Stop, Sort, Burn, Bury? Independent Review of the Role of Incineration in the Waste Hierarchy in Scotland Evidence Document*, Available at: [Stop, Sort, Burn, Bury - incineration in the waste hierarchy: independent review - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/documents/2022/06/Stop-Sort-Burn-Bury-independent-review-2022-06-22.pdf)

⁹ Eunomia (2022) *Opportunities to Decarbonise the Waste Treatment Infrastructure*, Available at: [Decarbonisation Report \(www.gov.scot\)](https://www.eunomia.com/reports/2022/06/Opportunities-to-Decarbonise-the-Waste-Treatment-Infrastructure-2022-06-22.pdf)

industrial wastes, with a focus on waste incineration infrastructure (including that in construction and likely to be developed).

10. Dr Church delivered his second and final report⁷ to Ministers on 16 December 2022 and we published this on 3 February 2023.

2. Summary of main findings and recommendations

11. The Second Report sets out nine new recommendations and confirms two provisional recommendations made in the First Report. It reiterates that the best approach to decarbonising residual waste treatment is avoiding residual waste in the first place, through waste reduction and source segregated recycling. However, for unavoidable residual waste, the most feasible options appear to be:

- advanced sorting (also called pre-treatment) to remove recyclable material from residual waste ahead of incineration;
- using heat, for example through connection to heat networks; and
- deployment of carbon capture use or storage (CCUS).

12. The Report suggests that, while the source segregated collection of materials is preferable, it would be beneficial to remove additional recyclable material, particularly plastics, from residual waste through advanced sorting. Moreover, the report notes that advanced sorting would be a quicker and more reliable route to decarbonising the waste sector than heat networks and CCUS. As such, the review makes three recommendations (Recommendations 13, 17 & 19), to tighten requirements for pre-treatment (confirmed from previous report) and to stop plastics from being incinerated by 2030 through policies to reduce plastic production and use, promote source segregation of all plastic wastes, and implement advanced sorting of residual waste.

13. However, the Report is also conscious of the difficulties in increasing the pre-treatment of waste and recommends that when implementing policies described above, the Scottish Government ensures there is no increase, and ideally a decrease, in the amount of plastics exported (recommendation 18).

14. The review notes that any policy measure that places a cost on emitting GHGs could be used to promote the various approaches to decarbonising residual waste management infrastructure set out above. It, therefore, recommends that the Scottish Government supports the inclusion of incineration in the UK Emissions Trading Scheme (Recommendation 16).

15. The review notes that heat networks offer only a partial solution for decarbonisation as many incinerators will struggle to connect to heat users. However, heat networks do have a wider role to play in decarbonisation, whatever

energy source is used, so their connection to incineration plants is beneficial. Therefore, the Report confirms the First Report's provisional position that heat networks should be pursued where possible but not seen as a reason to build an incinerator (Recommendation 14).

16. The review also notes that capturing carbon dioxide emissions from incineration – both fossil and biogenic – is an apparently attractive solution and earlier deployment will result in greater benefits. The review, therefore, recommends that where incinerators already have planning permission, decision-making prioritises the facilities where CCUS is most feasible (recommendation 20). In addition, the review recommends that the Scottish Government consider support for emerging Carbon Capture and Utilisation (CCU) technologies that could overcome current challenges to deployment for facilities already in operation (Recommendation 21).

17. In considering the modelling commissioned for the review, the review noted that how emissions from incineration are typically reported does not necessarily provide a systemic view of the resource and waste management sector. The review, therefore, recommends that the Scottish Government consider how biogenic carbon is included in future resource and waste management sector modelling and how this influences decision-making (Recommendation 15).

18. The Report also commented on landfill gas capture. It recommended that the Scottish Government ensures maximum capture of landfill gas for open and closed landfill sites and develop new approaches to do this as methane levels decrease (Recommendation 22). It also recommends that the Scottish Government consult with landfill owners and operators to address the consequences of the withdrawal (in 2037) of current financial incentives for landfill gas management (Recommendation 23), which may impact how much gas is collected and used.

3. Responses to recommendations

3.1 Reducing the incineration of fossil-based plastics (recommendations 13, 17 & 19)

Recommendation 17: The Scottish Government and SEPA should put in place by 2025 robust arrangements to stop fossil-based plastic from being incinerated in Scotland from the beginning of 2030, except where required for hazardous waste disposal.

Recommendation 19: The Scottish Government should implement Recommendation 17 through policies to reduce plastic production and use, promote source segregation of all plastic wastes, and implement advanced sorting of residual waste.

Recommendation 13: The Scottish Government should immediately strengthen existing requirements for pre-treatment and work with local authorities and industry to apply them to all existing and future incineration facilities to remove as much recyclable material as feasible, with a particular focus on plastics.

19. **The Scottish Government accepts these recommendations in principle.** Our ambition is to end the unnecessary incineration of plastics. This requires action across the lifecycle of plastics, including promoting responsible production and consumption, segregation, and treatment. Our Waste & Circular Economy Route Map will set out the actions we are taking and will take across these stages, building on the proposals that were set out in the recent consultation.

20. The most important and cost-effective measure for decarbonising the waste sector is to not produce waste in the first place. Our 2022 Waste & Circular Economy Route Map consultation¹⁰ set out a range of proposed measures to accelerate progress towards Scotland's ambitious waste prevention and recycling targets; and included proposals to undertake a programme of research on waste prevention, behaviour change, fiscal incentives and material-specific priorities, to avoid unnecessary waste.

21. Where waste production is unavoidable, we have a range of measures both in place and coming forward that will reduce the amount of plastics in residual waste by tackling the consumption of single use plastics, increasing the recyclability of plastics, and increasing the proportion of plastics collected at source for recycling. These measures include a ban on some of the most problematic single use plastic products, implementing the UK's first Deposit Return Scheme for single-use drinks containers, delivering the packaging extended producer responsibility reforms and

¹⁰ [Delivering Scotland's circular economy - route map to 2025 and beyond: consultation - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/delivering-scotland-s-circular-economy-route-map-to-2025-and-beyond-consultation/pages/20/)

investing in better local authority recycling services through the £70 million Recycling Improvement Fund.

22. We will also consider, as part of our Waste & Circular Economy Route Map, how to build on current measures and minimise as far as possible the amount of plastics sent for incineration to support decarbonisation of the waste sector. The consultation also proposed a co-design process for high-performing, high quality household recycling services; this is an opportunity to fully consider approaches to avoid plastics entering residual waste, including the role of separate collection of materials. Proposals set out through the 2022 Circular Economy Bill consultation indicated that any future statutory guidance for reuse and recycling services in Scotland would be informed by findings and outputs from this co-design process, to understand opportunities for better service design.

23. Where plastics and other recyclable materials enter the waste stream, the Report notes that even with improvements in the amount of plastics collected for recycling, it may still be beneficial to sort any remaining plastics from the residual waste. In Scotland, incinerator operators are already required to ensure, as far as is practicable, that waste for incineration does not contain hard plastics. This generally relies on efforts at the source segregation stage as, currently, residual waste pre-treatment is often not practicable due to high treatment costs and a lack of market for the generally low-quality materials recovered from residual waste.

24. While our goal remains to decrease their prevalence, we will continue to explore ways to create favourable market conditions for these materials. Our Waste & Circular Economy Route Map consultation set out a clear principle that we must take responsibility for our own waste, as part of our transition to a circular economy. To deliver this objective, it proposed a package of measures to boost domestic reprocessing opportunities in Scotland, including the implementation of extended producer responsibility (EPR) schemes, which contain plastic film and flexible recycling collection requirements to be taken forward as part of UK-wide packaging EPR reforms¹¹; greater transparency in the end destination of recycling collected; and a residual waste plan, taking account of emerging and future recycling technologies and other developments. These proposals are specifically intended to support the creation of a range of important economic opportunities to reprocess and reuse materials in Scotland.

25. A significant volume of low-quality plastics is still being produced, and established domestic reprocessing markets do not yet exist for these materials. Importantly, there are some plastics that contain hazardous materials, such as persistent organic pollutants, that must be incinerated to irreversibly destroy the chemicals.

26. Our primary focus will continue to be placed on measures to limit plastics from entering the waste stream through, for example, improved product design and

¹¹ [EPR Consultation Government response template \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

strengthening source segregation. Given the challenges noted above, implementing any further policies to increase the amount of material captured from residual waste will need careful consideration to ensure feasibility and avoid unintended consequences, such as improper disposal and stockpiling or increasing the export of waste.

27. We will, therefore, explore how best to deliver the outcome defined in Recommendation 17 and identify any additional actions required, as part of the proposed work set out in our Route Map consultation to deliver Recommendation 19. This will include progressing a co-design process for high-performing, high quality household recycling services to fully consider approaches to avoid plastics entering residual waste; and working closely with the waste and resources sector, through a sector-led plan, to accelerate the reduction of the carbon impacts of existing incineration plants. We will also explore how best to incentivise the recovery of more plastics from residual waste, including the inclusion of incineration in the UK Emissions Trading Scheme.

3.2 Deploying heat and power networks (recommendation 14)

Recommendation 14: The Scottish Government and local authorities should continue to work with industry to deploy combined heat and power for as many existing incineration facilities as possible.

28. The Scottish Government accepts this recommendation.

29. We have new statutory targets for heat networks in the Heat Networks (Scotland) Act, 2021. In meeting these, more broadly our ambition for the heat networks sector is that it delivers affordable, clean heat supporting delivery of emission reduction and fuel poverty targets; develops local supply chains and attracts new public and private investment; and contributes to the development, and operation, of an integrated and resilient energy system.

30. We will continue to incentivise and support the deployment of combined heat and power, including for incineration facilities. Our £300 million Heat Network Fund, which launched in February 2022, is already supporting heat network projects that help local authorities and private companies make use of existing waste heat, including from incineration facilities. The Heat Network Fund is available over this parliamentary session to support the rollout of new zero emission heat networks and communal heating systems, as well as the expansion and decarbonisation of existing heat networks across Scotland. This fair and open fund aims to stimulate investment and maximise Scotland's vast potential in the low carbon sector, whilst contributing to the positive progress on reducing Scotland's greenhouse gas emissions.

31. The Scottish Government also launched its Heat Network Support Unit (HNSU) in 2022. The HNSU supports the growth of heat networks by addressing key challenges in the pre-capital stages of heat network development and building capacity across the public sector to deliver successful projects. Working primarily with public sector organisations, the HNSU identifies and supports prospective heat network projects. It offers advice and grant funding for pre-capital stages of works, for example developing feasibility studies and Outline Business Cases, as well as for procuring technical, financial and legal advisors.

32. More broadly, local authorities are required under the Heat Network Scotland Act to carry out a review to identify heat network zones prior to their designation. Local Heat and Energy Efficiency Strategies will be the principal mechanism for locally-led heat planning, providing a place based and tailored approach to the heat transition. The Local Heat and Energy Efficiency Strategies (Scotland) Order 2022 requires each local authority to publish its first Local Heat and Energy Efficiency Strategy and its first Local Heat and Energy Efficiency Delivery Plan on or before 31 December 2023. The Local Heat and Energy Efficiency Strategy (LHEES) guidance and methodology forms the basis of the heat network zoning review stage, providing step by step guidance including on the use of local knowledge to consider sources of recoverable heat, such as those from incinerators, when considering potential for heat networks.

33. Additionally, in summer 2023, we will also make available to local authorities further information on the availability of surplus or waste heat to support the identification of heat network zones and the development of LHEES. This will highlight to local authorities that there is often useful information on local incinerators available in the relevant Heat and Power Plans produced by individual incinerators.

34. As an initial step, we intend to consult on a requirement for potential heat suppliers – for the type of heat source where heat can be recovered and supplied cost effectively – to provide information when formally requested to do so; and that this information be shared with relevant authorities and relevant licenced heat network providers.

3.3 Data and modelling (recommendation 15)

Recommendation 15: The Scottish Government should consider how biogenic carbon is included in future resource and waste management sector modelling and how this influences decision making.

35. The Scottish Government accepts this recommendation.

36. The reporting of carbon dioxide emissions depends on whether they originate from mineral sources (e.g. fossil fuels) or biogenic sources (e.g. plants) as described in the UK Greenhouse Gas Inventory, 1990 to 2020 (section 1.8.2.3)¹².

37. Official statistics on Scottish greenhouse gas emissions¹³ are published annually and are used to monitor progress towards Scotland's statutory emissions reduction targets. These statistics are based on a disaggregation of the UK Greenhouse Gas Inventory, which is overseen by the UK Government Department for Energy Security and Net Zero (DESNZ) and compiled in line with international scientific guidance. Decisions around the UK Inventory are a matter for DESNZ and are informed by the UK National Inventory Steering Committee, which includes representation from Scottish Government officials. Any Scottish Government reporting of emissions should be consistent with the UK inventory.

38. However, while we cannot deviate from internationally agreed reporting practices, we note that for modelling involving emissions related to the resources and waste sector, it is important to understand how biogenic carbon is accounted for and how this could influence policy decisions. For example, the capture and storage of biogenic carbon could lead to net negative emissions. We will, therefore, consider how biogenic carbon is included in future research commissioned by the Scottish Government.

3.4 Including incineration in UK Emissions Trading Scheme (recommendation 16)

Recommendation 16: The Scottish Government should support inclusion of incineration (with or without energy recovery) in the UK Emissions Trading Scheme as one important decarbonisation policy tool.

39. The Scottish Government accepts this recommendation.

40. The Scottish Government is working closely with the UK Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs in the Northern Ireland Executive on the further development of the UK Emissions Trading Scheme (ETS). The four nations together constitute the UK ETS Authority, which oversees the UK ETS.

41. Last year, the Authority consulted on changes to the UK ETS. This included a call for evidence on expanding the scope of the ETS to include waste incineration

¹² [Final UK greenhouse gas emissions national statistics: 1990 to 2020 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020)

¹³ [Scottish Greenhouse Gas Statistics 2020 - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/scottish-greenhouse-gas-statistics-2020/pages/introduction.aspx)

and energy from waste by the mid-late 2020s. Any decisions on whether to include waste in the ETS are dependent on the outcome of the consultation.

42. The Authority will publish a government response to this consultation this year, which will set out its positions, developed jointly by all four parts of the Authority, on the potential inclusion of waste incineration and energy from waste within the UK ETS.

3.5 Reducing export of plastic waste (recommendation 18)

Recommendation 18: In implementing the recommendations of the Review, the Scottish Government should do what is within its powers to ensure that there is no increase (and ideally a significant decrease) in the export of plastic waste from Scotland.

43. **Scottish Government accepts this recommendation.**

44. We want to be able to manage more of our own waste within Scotland and strengthen public confidence in where their recycling goes.

45. As we collect more materials for recycling, we will need to ensure we have the domestic reprocessing capability to manage these materials. That is why we will continue to work with potential investors in plastic reprocessing capacity in Scotland; the direct investments we are making through the Recycling Improvement Fund to support greater quantity and quality of recyclate collected; and the impact of our Deposit Return Scheme and the packaging extended producer responsibility reforms in increasing the quantity and quality of plastic recyclate, and producing a high-quality feedstock for reprocessing will create a significant economic opportunity. In addition, our recent Waste Route Map consultation proposed steps to increase transparency of where recycling goes, including proposals to support new data collection and reporting for local authorities and businesses.

46. However, international waste export legislation is a reserved matter for the UK Government. We also need to see the UK Government respond positively to the Committee on Climate Change's call for it to "step up" in areas where key powers are reserved. This includes making progress on the Climate Change Committee's recommendation to "phase out" exports of waste by 2030, which would support Scotland's transition to a fully circular economy. In the meantime, we will continue to work with the UK Government to support the delivery of its existing commitment to ban plastic waste exports to non-OECD countries, while urging it to go further and consider banning the export of plastic waste from the UK to all countries.

3.6 Deploying carbon capture and use technologies (recommendations 20 & 21)

Recommendation 20: In considering which plants with planning permission to construct, financiers, developers and planning authorities should prioritise those plants where deployment of currently available CCUS technology is most feasible.

Recommendation 21: The Scottish Government should consider support for emerging carbon capture and use technologies that could overcome challenges to deployment for facilities already in operation, or required for more remote facilities.

47. The Scottish Government accepts these recommendations in principle.

It is important to note that once planning permission has been granted, planning authorities may not have the opportunity to influence which facilities are prioritised for development. We would, however, urge those involved in the development of these facilities to consider Recommendation 20 and take account of how the facility and its location would fit within and support the wider context of taking a strategic approach to managing residual waste arisings.

48. The Scottish Government supports the development of Carbon Capture Utilisation Storage (CCUS) as a common whole-system decarbonisation infrastructure with the flexibility to adapt over time to play a central role across the decarbonisation strategies of key sectors. National Planning Framework 4, as adopted and published on 13 February 2023, supports the circular economy and encourages, promotes and facilitates development that is consistent with the waste hierarchy.

49. However, we note that some existing incineration facilities are likely to face barriers to the deployment of CCUS and it is, therefore, useful to consider which emerging technologies and approaches could help overcome these. We have commissioned a feasibility study into the deployment of negative emissions technologies (NETs) in Scotland, as committed to in the Climate Change Plan update. In line with Recommendation 21, this will examine a broader suite of technologically advanced NETs, including EfW CCS, and consider which offer implementable and effective options for achieving our negative emissions envelopes.

50. In addition, our Programme for Government 2020/21 committed to consulting stakeholders on the scope, operation and governance of a £5 million CO₂ Utilisation Challenge Fund. This Fund launched in April 2022 and is currently open for expressions of interest. The Fund aims to support the development and demonstration of technologies that can utilise carbon dioxide and transform it into products that have market and commercial value. We are working with Scottish Enterprise to administer this fund to boost early-stage work and explore technologies and innovations that can capture and create value in CO₂, reduce emissions and develop new income streams for Scottish businesses in this emerging market. We

aim to fund projects that can demonstrate circular economy principles, innovation, economic impact, and support our storage ambitions.

51. It is important to note that the Scottish Government supports the deployment of CCUS where appropriate and, in line with the report's recommendation, only for existing incineration facilities or where facilities have been granted planning permission.

52. This is reflected in our National Planning Framework 4, which was formally adopted on 13 February, which states that development proposals for energy-from-waste facilities will not be supported except under limited circumstances where a national or local need has been sufficiently demonstrated (e.g. in terms of capacity need or carbon benefits) as part of a strategic approach to residual waste management. Any proposal needs to be both consistent with climate change mitigation targets and in line with circular economy principles. This includes the requirement to show consideration was given to methods to reduce carbon emissions of the facility (for example through carbon capture and storage) and supplying an acceptable decarbonisation strategy aligned with the Scottish Government decarbonisation goals.

3.7 Landfill gas capture and management (recommendations 22 & 23)

Recommendation 22: The Scottish Government and landfill owners and operators should ensure maximum capture of landfill gas for open and closed landfill sites, and develop new approaches to do this as methane levels decrease.

Recommendation 23: The Scottish Government should consult with landfill owners and operators to address the consequences of the withdrawal of current landfill gas management financial incentives after 2037.

53. **The Scottish Government accepts these recommendations.**

54. We will roll out the expansion of the existing landfill gas capture programme to mitigate the negative effects of landfill and the environmental impact of closed landfill sites from this year.

55. As we continue to divert biodegradable waste away from landfill, and as the landfills age, the amount of landfill gas produced from sites will continue to decrease. It is, therefore, important to consider new approaches to managing decreasing levels of landfill gas. We will undertake research to explore options and approaches to managing decreasing levels of landfill gas.

56. It is also important to understand how changes to incentives could impact landfill gas capture in the future. We will, therefore, liaise with industry to understand the consequences of the current landfill management financial incentives.

4. Summary of actions and next steps

Summary of recommendations for Scottish Government	Key actions and timelines
13, 17 & 19. Reduce incineration of fossil-based plastics	<p>Implementation of DRS (March 2024)</p> <p>Continue delivery of the Recycling Improvement Fund (ongoing)</p> <p>Deliver extended producer responsibility for packaging, working with the other UK administrations (from 2024)</p> <p>Continue to work with the other parts of the ETS Authority regarding the inclusion of incineration in the UK ETS (ongoing)</p> <p>Develop proposal, set out in our Route Map Consultation, to work with the waste and resources sector, through a sector-led plan, to accelerate the reduction of the carbon impacts of existing incineration plants, including through stopping fossil-based plastic from being unnecessarily incinerated.</p>
14: Deploying heat and power networks	<p>Delivery of Heat Network Fund (ongoing)</p> <p>Support expansion of heat networks, where effective, through Heat Network Support Unit (ongoing)</p>
15. Data and modelling	<p>Consider how biogenic carbon is included in future research commissioned by Scottish Government (2024).</p>
16. Including incineration in UK Emissions Trading Scheme	<p>Continue to work with the other parts of the ETS Authority regarding the inclusion of incineration in the UK ETS. The Authority consulted on this issue as part of a wider consultation on the ETS last year and intends to publish a response later this year.</p>
18. Reducing export of plastic waste	<p>Continue to work with the UK Government to accelerate the ban on exporting plastic waste to non-OECD countries (ongoing)</p>

	Continue to work with potential investors in plastic reprocessing capacity in Scotland (ongoing).
20 & 21. Deploying carbon capture and use technologies	<p>Commitment to undertake a detailed feasibility study of opportunities for developing NETs in Scotland ready for the early 2030s. This will identify specific sites and applications of NETs, including developing work to support policy on Direct Air Capture and its role within NETs in our future energy system. The feasibility study research is underway. The final report containing recommendations to government and proposed NETs implementation pathways is expected in mid-2023.</p> <p>Continue to disperse £5 million CO2 Utilisation Challenge Fund (ongoing).</p>
22 & 23. Landfill gas capture and management	<p>Expand the existing landfill gas capture program (from 2023).</p> <p>Undertake research to explore approaches to managing decreasing levels of landfill gas and on landfill gas capture, and liaise with industry to understand the consequences of the current landfill management financial incentives (2023/2024).</p>



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