Cabinet Secretary for Net Zero and Energy
Mairi McAllan MSP

Scottish Government
Riaghaltas na h-Alba
gov.scot

T: 0300 244 4000
E: scottish.ministers@gov.scot

Edward Mountain MSP
Convenor
Net Zero, Energy and Transport Committee
Netzero.committee@parlaiment.scot

29 May 2024

Dear Edward,

I write to inform the committee of publication of our fourth annual Climate Change Plan Monitoring Report, for 2024. I have attached a copy our report alongside this letter, for the committee's consideration.

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, placed a framework for climate change plans on to a statutory footing, with sector by sector reports on progress and the inclusion of matters relevant to a just transition. This report outlines the Scottish Government's progress against each of the 43 policy indicators outlined in the Climate Change Plan Update (2020).

This report should be viewed in the context of the latest advice from the Climate Change Committee – that meeting the interim 2030 target set by Parliament on a cross-party basis, is out of reach. We are now considering legislative options to address this, which will look to introduce a target based approach on five yearly carbon budgets, whilst maintaining our commitment to being a Net Zero nation by 2045.

Our current legal framework sets out targets which are very susceptible to year on year fluctuation, with numerous contributing factors, including variations in winter temperatures which affect heat demand and global events. This opinion is shared by the Climate Change Committee (CCC) , who outlined this in a letter sent to me earlier this month. Their letter set out that "these fluctuations are smoothed within multi-year budgets, which therefore provide a more reliable indicator of underlying progress". This advice, along with ongoing engagement with the CCC on targets, will continue to inform our proposed legislative changes.

I hope that you find this report helpful, and I look forward to working with the committee going forward.

MAIRI MCALLAN

Scottish Ministers, special advisers and the Permanent Secretary are covered by the terms of the Lobbying (Scotland) Act 2016. See www.lobbying.scot

CLIMATE CHANGE PLAN

Monitoring Report

May 2024

Scottish Government
Riaghaltas na h-Alba

1. Introduction

This annual monitoring report is the fourth progress report on the Climate Change Plan update (CCPu) which updated the 2018 Climate Change Plan (CCP) and was finalised in March 2021. The report is a statutory requirement set out in the Climate Change (Scotland) Act 2009.

The 2009 Act, as amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, is one of the most ambitious and comprehensive legislative frameworks on climate change in the world. The Act increased the ambition of Scotland's emissions reduction targets (from the Climate Change (Scotland) Act 2009), committing to reaching net zero by 2045 in response to the global climate emergency and The Paris Agreement under the United Nations Framework Convention on Climate Change.

The 2019 Act also placed the monitoring framework for climate change plans on to a statutory footing for the first time, with sector by sector reports on progress and the inclusion of matters relevant to a just transition. Two monitoring reports were published on the 2018 CCP prior to the commencement of the 2019 Act; in 2018 and 2019. No monitoring report was produced in 2020, as this fell during the process of updating the CCP. Monitoring reports were produced in 2021, 2022 and 2023.

Scotland's climate ambition is exemplified by the ambitious policies laid out in our landmark CCPu, including over 200 policies. As highlighted in the sector reports, many of these policies and proposals have been further developed since via delivery plans. These include:

- An updated third edition of the Agricultural Reform Route Map to support our Vision for Agriculture published in March 2024,
- Introduction of the Agriculture and Rural Communities (Scotland) Bill in September 2023,
- Introduction of the New Build Heat Standard in April 2024 and consultation on proposals for a Heat in Buildings Bill,
- Commitment to publish a final version of the roue map to achieving a 20% car kilometre reduction.

Overview

This set of monitoring reports on the CCP is complementary both to the CCPu (which in itself updates the 2018 CCP) and the most recent Official Statistics on Scotland's greenhouse gas emissions (which are for 2021), and is best read alongside these documents.

The Monitoring Framework for each of the sectors of the CCPu is structured on three levels: greenhouse gas emissions statistics provide the highest level measure of progress at an economy wide and sectoral level; a suite of policy outcome indicators measure the success of policies in achieving the changes that are needed; and a policy tracker monitoring implementation of specific policies and proposals.

Climate Change Plan

The Scottish Government remains fully committed to delivering net zero by 2045 and our next Climate Change Plan will set out our approach to delivering on Scotland's net zero targets in a way which is fair and just for everyone.

Despite delay of our draft Climate Change Plan, we are resolutely focused on developing and delivering climate policy that supports and reflects our climate ambitions. In April 2024, the Scottish Government announced plans to accelerate action on climate with a significant package of new measures to help achieve net zero by 2045. These new policies sit alongside extensive ongoing work as outlined in the Climate Change Plan update (CCPu), and will be built upon through the next Climate Change Plan and the Green Industrial Strategy.

Greenhouse Gas Emissions Statistics

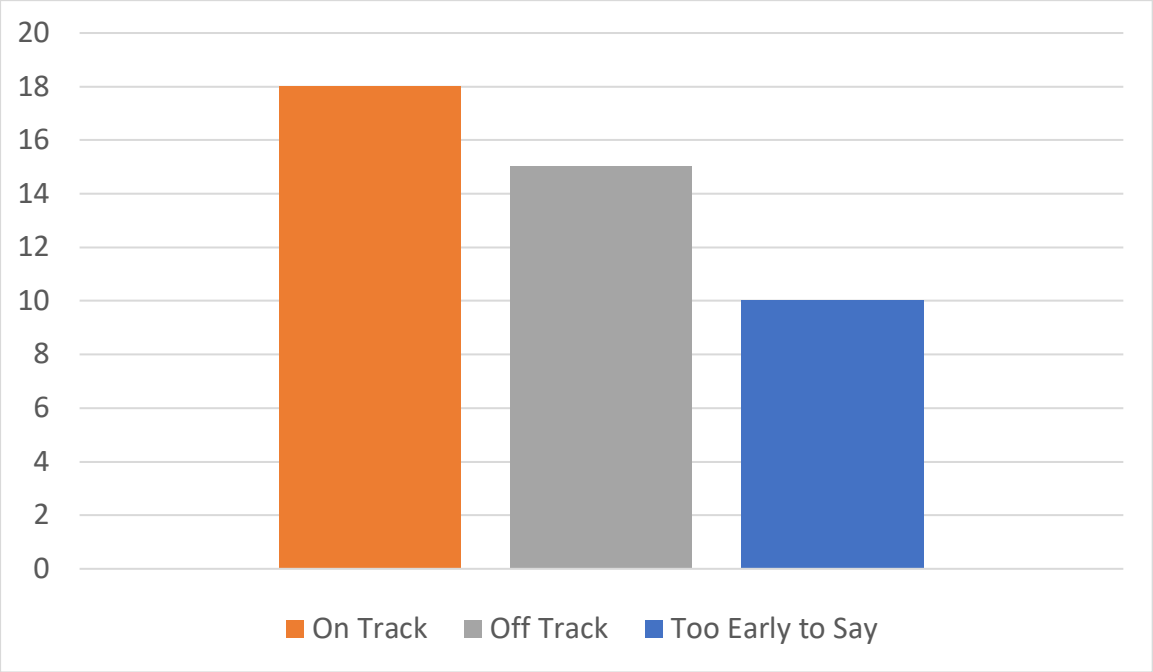
Official Statistics on Scottish greenhouse gas emissions determine progress towards national emissions reduction targets and also provide information on total annual emissions at a sectoral level.

Statistics are published annually, typically in June, and two years in arrears. For example, the most recent figures, published in 2023, cover emissions during 2021.

Policy Outcome Indicators

The CCP includes key policy outcomes for each sector, defined as a measurable change on the ground resulting from a policy or combination of related policies. The Framework measures progress towards achieving these with a set of policy outcome indicators. A policy outcome indicator is a specific, objective measure closely aligned to achieving the outcome. It will underpin monitoring of long-term progress towards the outcome, but should also be responsive to change in the near term, so that it can be used to evaluate whether the CCP is on track. Specific milestones (or targets) are set, where appropriate, for the level of the indicator to be achieved at a given time.

In the CCPu, the set of outcome indicators from the 2018 CCP were reviewed to ensure that they reflect the updated policy commitments and to improve the quality and clarity of indicators. This led to new outcome indicators being identified, others being revised, and a few being removed where they were no longer appropriate or there were significant issues with robustness. In the last year of reporting, we have amended several indicators meaning there are now 43 indicators in total. An explanation of where indicators have been amended is included in each sector's chapter. The following figure and table show the overview of progress against all policy outcome indicators across the sectors.



Summary Table 1: Progress against policy outcome indicators

	On Track	Off Track	Too Early to Say
Chapter 1: Electricity			
Electricity grid intensity (CO_2e per kilowatt hour)	X	-	-
Installed capacity of renewable generation (GW)	X	-	-
Renewable capacity at planning stages (GW: 3 categories)	X	-	-
Loss of Load Expectation (hours per year)	X	-	-
Chapter 2: Buildings			
Number of existing domestic properties using low and zero greenhouse gas emissions heating (LZDEH) systems	-	-	X
Services sector fossil fuel heat consumption	-	-	X
% of non-electrical heat consumption met from renewable sources			X
Energy intensity of residential buildings (MWh per household)	-	X	-
Emissions intensity of non-domestic buildings (tonnes of CO_2e per £ million Gross Value Added)	X	-	-
% of homes with an EPC[1] (EER,[2] or equivalent) of at least C	-	X	-
% new homes built with a calculated space heating demand of not more than 20 kWh/m²/yrT	X	-	-
Percentage of households in fuel poverty	-	X	-

[1] Energy Performance Certificate
[2] Energy Efficiency Rating

Chapter 3: Transport			
% reduction in car kilometres	-	X	-
% of new car registrations that are ULEV	X	-	-
% of new van registrations that are ULEV	-	X	
% of new HGV registrations that are ULEV		-	X
% of new bus registrations that are ULEV	X	-	-
% reduction in emissions from scheduled flights within Scotland	-	-	X
% of ferries that are low emissions	X	-	-
% of single track kilometres electrified	-	X	-
% of train kilometres powered by alternative traction	-	X	-
Chapter 4: Industry			
Industrial energy productivity (£GVAm per GWh)	-	X	-
Industrial emissions intensity (tCO_2e per £GVAm)	-	X	-
% of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network	-	-	X
Chapter 5: Waste			
Total amount of landfilled waste (tonnes)	-	X	-
Total amount of biodegradable landfilled waste (tonnes)	X	-	-
Number of closed landfill sites with exploratory landfill gas capture/ flaring	-	X	-
Household and non-household food waste reduced (tonnes)	-	X	-
Total waste generated (tonnes)	X	-	-
Chapter 6: LULUCF			
Hectares of woodland created per year	-	X	-
Woodland ecological condition	-	-	X
Woodland Carbon Code: Projected carbon sequestration (validated credits)	X	-	-
Annual volume (in millions of cubic metres) of Scottish produced sawn wood and panel boards used in construction	-	-	X
Hectares of peatland restored per year	-	X	-
Peatland Carbon Code: Projected emissions reduction (validated units)	-	X	-
Chapter 7: Agriculture			
Increased engagement with Farm Advisory Services on environmental issues and climate change	X	-	-
Use of Nitrogen fertilisers	X	-	-
Spreading precision of Nitrogen fertilisers	X	-	-
Nitrogen use efficiency for crop production	-	-	X
Time taken from birth to slaughter and increased efficiency through improved health and reduced losses	x	-	-

Improvement in covered slurry storage	X	-	-
Precision application of manure and slurry	-	-	X
Area of woodland on agricultural land	X	-	-

Policy Tracker

The CCPu includes a set of specific policies and proposals for each sector to achieve the policy outcomes. Part C of each policy chapter monitors progress towards implementing policies and developing proposals. This consistently records progress and next steps for policies, and where possible includes implementation indicators for specific policies.

2. Chapter 1: Electricity

2.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the Climate Change Plan update (CCPu) for this sector was for 1.6 MtCO2e, and the outturn emission statistics for 2021 (published in 2023) show a position of 1.6 MtCO2e. These figures therefore show that the sector was within its envelope in 2021.

The CCPu sets out the following three policy outcomes for this sector, the indicators for which are summarised below:

The electricity system will be powered by a high penetration of renewables, aided by a range of flexible and responsive technologies.	On Track	Off Track	Too Early to Say
Electricity grid intensity (CO_2e per kilowatt hour)	X	-	-
Installed capacity of renewable generation (GW)	X	-	-
Renewable capacity at planning stages (GW: 3 categories)	X	-	-

Scotland's energy supply is secure and flexible, with a system robust against fluctuations and interruptions to supply.	On Track	Off Track	Too Early to Say
Loss of Load Expectation (hours per year)	X	-	-

Scotland secures maximum economic benefit from the continued investment and growth in electricity generation capacity and support for the new and innovative technologies which will deliver our decarbonisation goals.

There are no existing indicators for this policy outcome. More information is provided in Part C.

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

Scotland has made significant progress decarbonising the electricity sector, and has maintained an electricity grid intensity of below 50 gCO2e/kWh for the years 2017-2021. The overall downward trend from a carbon intensity of 320 gCO2e/kWh in 2010, is chiefly the result of the closure of two coal fired power stations in 2013 and 2016, as well as reduced reliance on gas for power generation.

Scotland's renewable electricity generation has grown rapidly over the last twenty years. In 2022, the equivalent of 113% of Scotland's gross electricity consumption was generated from renewable sources, an increase of 26 percentage points compared to 2021.

Our climate change targets mean that we need to continue our progress and move from a low to a zero-carbon electricity system, with the potential for Negative Emission Technologies (NETs) to deliver negative emissions from electricity generation, for example through the use of bioenergy for electricity generation combined with carbon capture and storage (BECCS).

In further decarbonising our electricity system, we must address the remaining sources of emissions arising from Scottish electricity generation, while maintaining security of supply and a resilient electricity system. The focus of the CCP electricity emissions is on targeting and reducing these remaining sources of emissions. Our Fourth National Planning Framework (NPF4) signals a turning point for planning, placing climate and nature at the centre of our planning system and making clear our support for all forms of renewable, low-carbon and zero emissions technologies.

The Scottish Government have responsibility for determining applications for consent made under the UK Electricity Act 1989 and granting deemed planning permission for certain electricity generating stations and overhead electric lines.

Any development not meeting the criteria for consenting under the UK Electricity Act 1989, requires planning permission from the relevant Local Authority. The Town and Country Planning (Scotland) Act 1997 allows Scottish Ministers to 'call-in' applications for planning permission made to Local Authorities for their own determination. In practice, Scottish Ministers rarely exercise such powers and generally only use them where a development raises issues of national significance.

However, markets, policies and regulation affecting the electricity sector are largely reserved to the UK Government under the UK Electricity Act (1989). The UK Government holds authority on decisions regarding the generation, transmission (grid), and supply of electricity (retail market); coal ownership and exploitation; nuclear energy and safety; energy conservation (except schemes to promote energy efficiency); interconnectors (The Office of Gas and Electricity Markets (Ofgem) make decisions on investment and use of interconnection) and the electricity market.

This means that achieving our targets is dependent on the UK government taking the right decisions and actions and acting with urgency to do so. In particular, the Scottish Government is calling for a reform to the Contract for Difference mechanism and to

transmission charging. Noting that the legislative and regulatory levers required to deliver carbon capture and storage (CCS) are reserved to the UK Government, in order reduce the use of unabated fossil fuels for electricity generation, we will continue to work with the UK Government on options for accelerated decarbonisation of unabated combined-cycle gas turbine (CCGT). We are asking the UK Government, as a matter of urgency, to begin working with us on consenting reforms to enable a more efficient determinations process in Scotland. To modernise and accelerate consenting of electricity infrastructure, we are also seeking further powers from the UK Government. We are working constructively with the UK Government on the development of CCUS in the UK and will continue to input into the Track-2 sequencing process to ensure it does not unfairly disadvantage Scotland and considers Scottish statutory emissions reduction targets.

Developments in monitoring arrangements since last report

N/A

2.2 Part B – Progress to policy outcome indicators

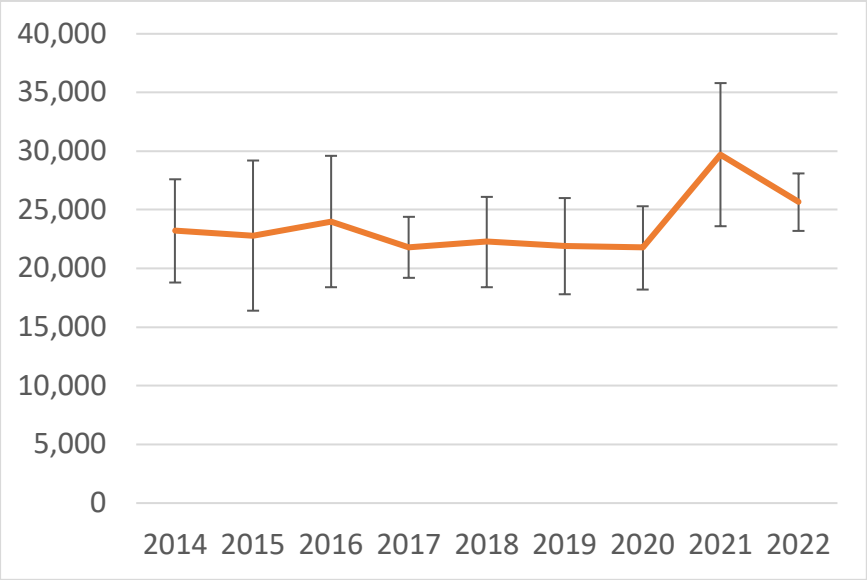
Policy Outcome: Cross-sectoral social and economic
Indicator: Full-time equivalent (FTE) employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics
Assessment: Too Early to Say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



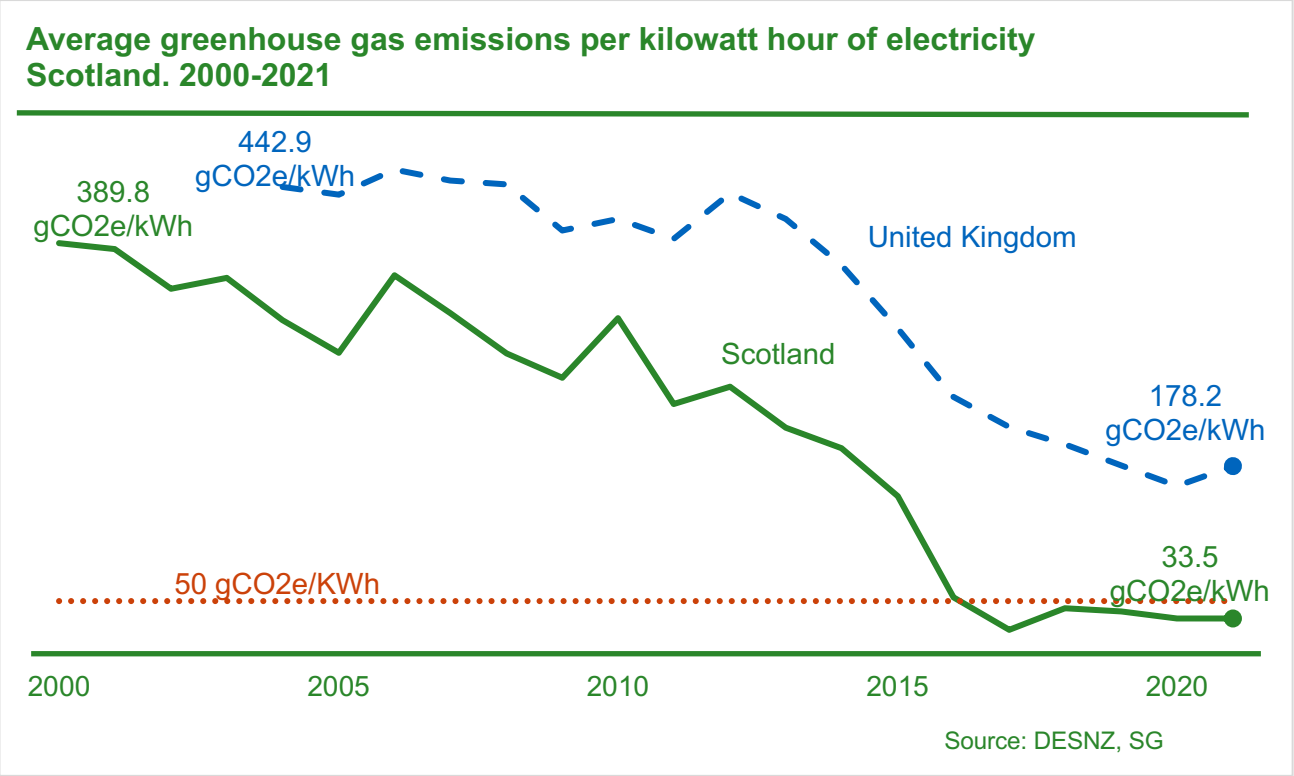
Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 1
Indicator: Electricity grid intensity (CO_2e per kilowatt hour)
On-Track Assessment (Milestones/Targets): Maintain below 50g CO_2e per kilowatt hour

Most Recent Data: 2021
Data Source(s): Department for Energy Security & Net Zero (DESNZ) Energy Trends, Scottish Greenhouse Gas Statistics

Assessment: On Track

Commentary:



- Scottish grid emissions are calculated by taking emissions from the electricity sector divided by total electricity generated.
- Scotland has maintained an electricity grid intensity of below 50 gCO2e/kWh since 2017.
- 2021 saw grid emissions remain similar to 2020 levels at 33.5 gCO2e/kWh.
- The overall downward trend observed from a carbon intensity of 320 gCO2e/kWh in 2010, is chiefly a result of the closures of Cockenzie and Longannet coal fired power stations in 2013 and 2016 respectively, as well as a reduced reliance on gas for power generation.
- With the closure of Hunterston B Nuclear power station in 2022, Scotland now has just one nuclear power plant left at Torness that is due to close in 2028.
- Emissions from power generation are now concentrated in one large gas fired power plant at Peterhead and a handful of small sites across the country, primarily on the Islands.

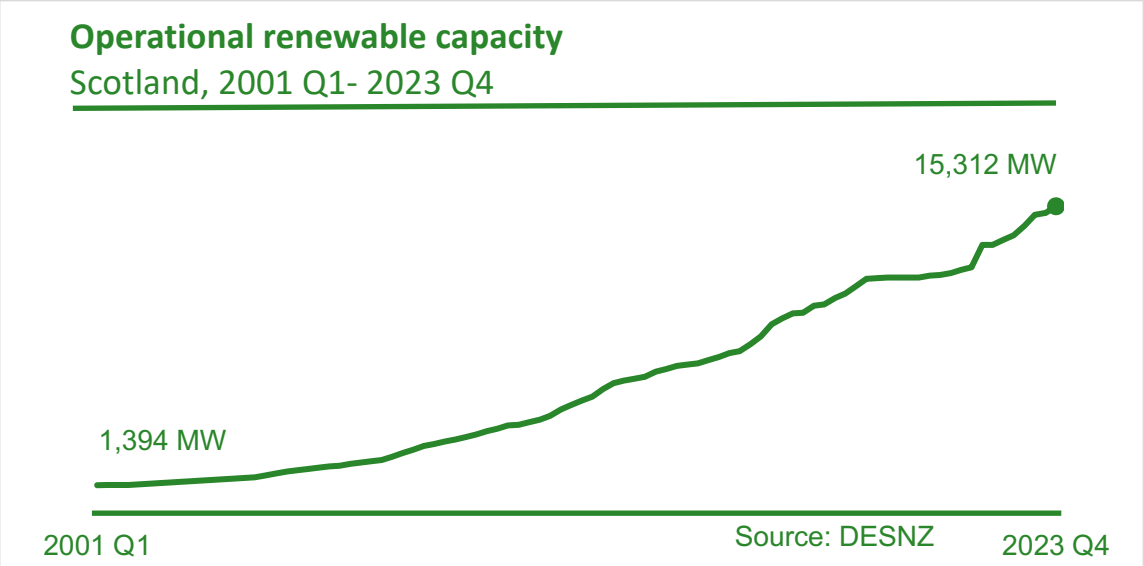
- Our expectation is that with an increased penetration of renewables, and no planned expansion of unabated fossil fuel power generation, Scottish grid intensity will remain consistently below 50 gCO2e/kWh in the future.

Policy Outcome: 1
Indicator: Installed capacity of renewable generation (GW)
On-Track Assessment (Milestones/ Targets): Year-to-year change

Most Recent Data: 2023 Q3
Data Source(s): Department for Energy Security and Net Zero (DESNZ) Energy trends, DESNZ Renewable Energy Planning Database (REPD)

Assessment: On Track

Commentary:



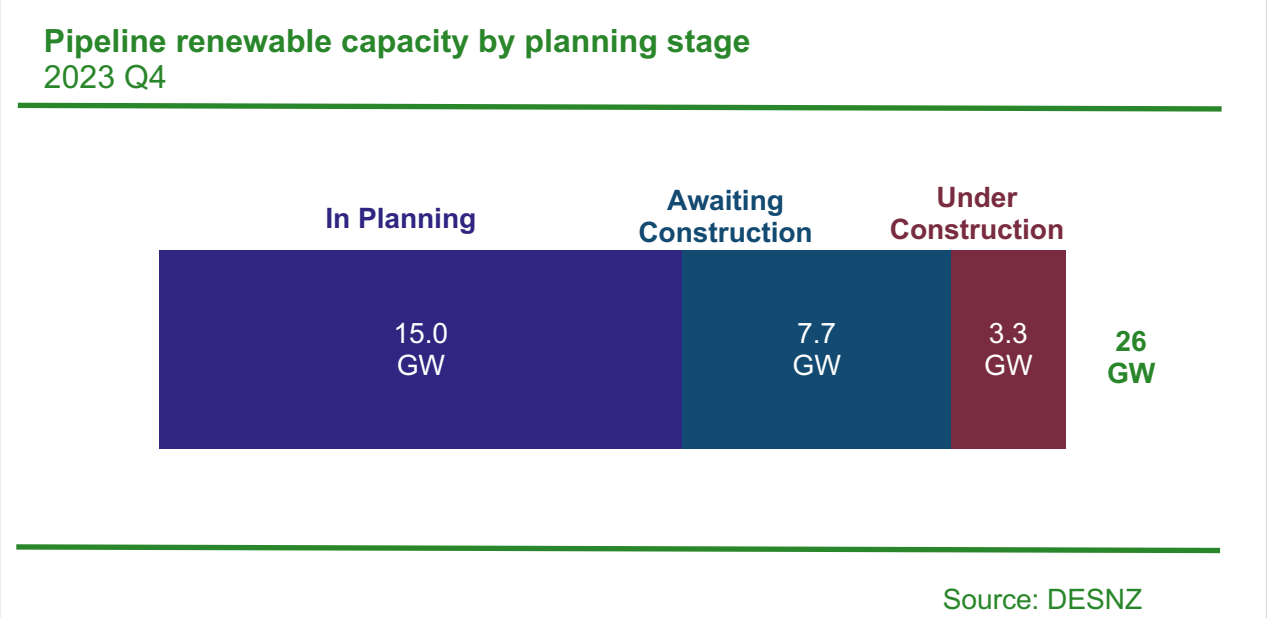
- Scotland had 15 GW (15,312 MW) of installed renewable electricity generation capacity operational in 2023 Q4. This is an increase of 1.4 GW since 2022 Q4.
- The bulk of this capacity (9.5 GW) is onshore wind with the next largest capacity coming from offshore wind (3 GW).
- The capacity of other renewable technologies has also risen. Solar capacity has increased from 264 MW in 2015 to 600 MW in 2023 Q4.
- It is expected that renewables capacity will continue to increase in the 2020s and 2030s.

Policy Outcome: 1
Indicator: Renewable capacity at planning stages (GW: 3 categories)
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2023 Q4
Data Source(s): DESNZ Renewable Energy Planning Database (REPD)

Assessment: On Track

Commentary:



- As of December 2023, over 500 renewable electricity projects with a capacity of 26 GW are in the pipeline. 3.3 GW of these are under construction, most of which are wind farm projects. 7.7 GW are awaiting construction and 15.0 GW in planning.
- Pipeline estimates do not include all of the potential 28GW of offshore wind that the ScotWind leasing round, or Innovation and Targeted Oil and Gas (INTOG), could add. This is due to projects not yet being included in the REPD, which is used for calculating pipeline capacity, as these projects are still subject to planning and consenting decisions.

Policy Outcome: 1
Indicator: Loss of Load Expectation (hours per year)
On-track Assessment (Milestones/Targets): Maintain Great Britain (GB) standard below 3 hours per year

Most Recent Data: September 2023
Data Source(s): National Grid Winter Outlook

Assessment: On Track

Commentary:

- Loss of Load Expectation (LOLE) is a measure of security of supply of the GB electricity system. This is measured through the number of probability projected hours of a year in which demand could exceed supply, and which would require measures be taken by National Grid Electricity System Operator.
- Their modelling indicates that across the scenarios the GB grid should remain within the GB standard of 3 hours LOLE per year.

2.3 Part C - Information on implementation of individual policies

Outcome 1: The electricity system will be powered by a high penetration of renewables, aided by a range of flexible and responsive technologies

Policy: Support the development of a wide range of renewable technologies by addressing current and future challenges, including market and policy barriers.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Onshore Wind: In December 2022, the Scottish Government published its onshore wind policy statement, setting an ambition of 20 GW of onshore wind by 2030. The Scottish Government continues to maintain its focus on tackling barriers to deployment, – such as aircraft and seismological radar issues – working in partnership with the industry and other stakeholders through our onshore wind strategic leadership group.

Through the onshore wind strategic leadership group an onshore wind sector deal was developed and agreed with industry, in 2023. The onshore wind sector deal is a joint commitment between industry and the Scottish Government to enable the delivery of the 20 GW ambition, whilst ensuring maximum benefits to the people of Scotland.

Offshore Wind: In January 2022, Crown Estate Scotland (CES) announced the winners of the ScotWind leasing round. The developer ambitions for ScotWind add up to around 28 GW of offshore wind across 20 projects.

The INTOG leasing round is a first of its kind, with 13 projects granted exclusivity agreements on 24 March 2023. The INTOG leasing round could also potentially add around 5.5 GW of capacity - up to 449 MW for innovation projects and 5 GW for targeted oil and gas decarbonisation.

INTOG presents significant opportunities to decarbonise oil and gas production in Scotland while, crucially, enabling the offshore wind sector to expand and test new technologies.

Our Offshore Wind Policy Statement (2020) set out the Scottish Government's ambition for 8-11 GW of offshore wind in Scotland by 2030. This is currently being reviewed in light of the significant ambition demonstrated by industry via the ScotWind and INTOG leasing rounds.

In August 2023, the First Minister announced strategic commercial and grant investment of up to £500 million will be delivered over the next five years to stimulate and support private investment in the infrastructure and manufacturing facilities critical to the growth of our world-leading offshore wind sector.

It will provide market certainty, helping to create a highly productive, competitive economy, providing thousands of new jobs, embedding innovation and boosting skills. To do this we have worked with public sector partners to develop a framework which will achieve strategic alignment of public sector investment in offshore renewables supply chain and infrastructure development.

We are engaging with the Strategic Investment Model (SIM) to move from project-led to sector level investment that better supports growth in port and supply chain capacity and capability.
Our approach has already proven successful, as illustrated by Sumitomo Electric Industries' decision to locate its first European high voltage cable factory at Nigg– creating hundreds of jobs and bringing an estimated £350 million inward investment to Scotland.

Solar: We are clear on the importance of solar in contributing to the decarbonisation of Scotland's energy supply, and of the potential of solar to help deliver flexibility and resilience for the electricity system. In October 2023 we proposed a potential solar ambition of 4-6 GW by 2030 and we are continuing to engage with industry on this proposed ambition. The ambition would be largely in line with the calls from industry, is roughly 10% of the UK Government's ambition of 70GW by 2035 and would support deployment of this important renewable energy source which would help increase the diversity of Scotland's energy mix.

We are working with industry to agree on a voluntary level of community benefit that is reflective of the sector's costs but maximises the benefits flowing to communities from the energy transition.

Support for deployment of solar continues to be provided through our Home Energy Scotland (HES) Grant and Loan scheme and the Community and Renewable Energy Scheme (CARES).

Hydro: Pumped Hydro Storage is a well-established technology with a long lifespan. National Planning Framework 4 (NPF4) recognises Pumped Hydro Storage as being of national importance that can support the transition to a net zero economy. The perceived barriers to further deployment are that it requires high upfront costs and long lead times, there is lack of revenue certainty and currently a lack of market signals. We have consistently urged the UK government to provide an appropriate market mechanism for hydro power, to ensure its potential is fully realised. Our support for the introduction of a cap and floor mechanism (similar to the funding mechanism for interconnectors) administered by Ofgem was set out in the Scottish Government's consultation response to the UK Government's consultation on Long Duration Electricity Storage (LDES).
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Onshore wind: The Onshore Wind Sector Deal was signed with industry on the 21 September 2023. The sector deal has set target dates for the various commitments within it and the Onshore Wind Strategic Leadership Group meets quarterly to track the delivery of the commitments in the deal.

Solar: The Solar Vision for Scotland, which will be published in the forthcoming ESJTP, will set out the commitments that we have already taken and that we are still to deliver, to enable greater deployment of solar in Scotland. We are continuing to engage with the solar industry on the proposed ambition of 4-6GW of solar by 2030.

Hydro: On 9 January 2024, UK Government published a consultation setting out their intention to develop a cap and floor mechanism for long duration energy storage. The consultation closed on 5 March 2024. Whilst we welcome the proposals it is vital that the UK Government continues to engage with industry to ensure the finer details of this mechanism can maximise the generation and economic potential PHS.

Timeframe and expected next steps: The ESJTP is due to be published by summer 2024.

Timeframe and expected next steps:

- Onshore Wind – Deliver commitments set out in the onshore wind sector deal in line with agreed timeline.
- Offshore Wind – Deliver commitments set out in the offshore wind policy statement in line with agreed timeline
- Solar – Published a final Solar Vision in the forthcoming ESJTP.
- Hydro – Await outcome of the UK Government's Long Duration Energy Storage LDES consultation.

Policy: Support improvements to electricity generation and network asset management, including network charging and access arrangements that encourage the deployment and viability of renewables projects in Scotland.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: We welcomed the UK Electricity Networks Commissioner's report on how to accelerate the deployment of transmission infrastructure and we welcomed the UK Government's response to it, which was published as part of its Transmission Acceleration Action Plan. The UK Government has established the Electricity Networks Delivery Forum, to oversee implementation of the Transmission Acceleration Action Plan (TAAP) and the joint UK Government and Ofgem Connections Action Plan (CAP). We are using this forum to continue to push for reform and ensure that the proposals are robust, fit for purpose and tailored to GB as a whole. We also continue to press for urgent reforms to the transmission charging arrangements through Ofgem's strategic review of transmission charging and its transmission charging task force.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We will continue to work with UK Government, Electricity System Operator (and National Energy System Operator once established in summer 2024), Ofgem, network companies and wider stakeholders to implement the necessary reforms.

Policy: Publish a revised and updated Energy Strategy, reflecting our commitment to net zero and key decisions on the pathways to take us there.
Date announced: March 2020
Progress on implementation since time of last report / CCPu: Following intensive stakeholder engagement in 2022, the draft Energy Strategy and an Energy Just Transition Plan (ESJTP) was published for consultation on 10 January 2023, setting out over 150 actions to help deliver the transition to a net zero energy system, as well as consulting on a range of questions. The consultation closed on 9 May and received

over 1,500 responses, which confirmed broad support for our net zero energy vision and level of ambition. On 28 September we published an independent consultation analysis.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: In September 2023, Gillian Martin, Energy Minister made a statement to Parliament confirming that a final ESJTP would be published by Summer 2024.

Policy: Develop and publish a Hydrogen Policy Statement by the end of 2020, followed by a Hydrogen Action Plan during 2021.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu: The final Hydrogen Action Plan was published in December 2022.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: There are no specific indicators in the CCPu.
Timeframe and expected next steps: The actions set out within the Hydrogen Action Plan cover this Parliamentary term.

Policy: A new renewable, all energy consumption target of 50% by 2030, covering electricity, heat and transport.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:

- Provisional figures for 2021 indicate that the equivalent of 23.7% of total Scottish energy consumption came from renewable sources. It decreased from 26.8% in 2020.
- Renewable energy generated decreased by over 3,500 GWh between 2020 and 2021.
- Renewable electricity contributes about four-fifths of all Scotland's renewable energy, followed by renewable heat and biofuels in transport.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing.

Policy: Introduce a new framework of support for energy technology innovation, delivering a step change in emerging technologies funding to support the innovation and commercialisation of renewable energy generation, storage and supply.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Scottish Government established the Scottish Marine Energy Industry Working Group as a platform for sector collaboration, aiming to unify priorities and uphold Scotland's competitive edge. The group reconvened to generate papers outlining opportunities, barriers, and collective actions to bolster sector progress. Published in January 2023, these papers contain industry recommendations that influenced the formulation of a marine 'vision' for Scotland's future, as detailed in the draft ESJTP. This draft also presents inquiries regarding heightened ambition for marine energy and potential immediate actions for attainment.

The Scottish Government will continue to support the Wave Energy Scotland programme, as it drives further innovation and international collaboration, and prepares for the larger-scale demonstration of wave energy technology in Scotland.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The current consultation of the ESJTP provides an opportunity to engage further with the sector and to develop our strategic approach to marine energy.

Policy: Renewed focus on developing local energy projects and models, including through Community and Renewable Energy Scheme (CARES), supporting the achievement of 2 GW of renewable energy being in Local Community ownership by 2030.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Local and community energy projects and models continue to be supported through the Scottish Government CARES Programme.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: An annual report on Community and Locally Owned Energy in Scotland monitors progress towards the Scottish Government's ambition of 2 GW of community and locally owned energy by 2030. This report is produced by EST on behalf of the Scottish Government through the CARES contract. As of December 2022, an estimated 908 MW of community and locally owned renewable energy capacity was operational in Scotland. This represents 45% progress towards the 2030 target.
Timeframe and expected next steps: The CARES contract that began in 2021 and continues to run until 2025 has a focus on heat decarbonisation. The CARES 'Off Electricity Grid Communities Fund' closed in March 2024. Other support such as the Community Buildings Fund, and Community Heat Development Programme, were launched in 2022 and will run until the end of the contract, subject to funding availability. The Scottish Government commissioned ClimateXChange to undertake research into opportunities to progress community and local energy policy in Scotland. Their report was published in January 2024, and we will carefully consider its recommendations to inform our policy and ongoing support for community and local energy.

Policy: We will carry out detailed research, development and analysis during 2021 to improve our understanding of the potential to deliver negative emissions from the electricity sector.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Research has been undertaken to better understand the potential for negative emissions technologies in Scotland, including a published Feasibility Study. See NETs chapter for more detail.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing – see NETs chapter

Policy: We will continue to review our energy consenting processes, making further improvements and efficiencies where possible, and seeking to reduce determination timescales for complex electricity generation and network infrastructure applications.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Energy Consents Unit are always reviewing its current processes and engaging with planning authorities and statutory consultees with the aim of streamlining processes. Scottish Power Energy Networks (SPEN) and Scottish Southern Electricity Networks (SSEN) have worked with Energy Consents Unit officials to consider the challenges around the consenting of major grid developments through a short life working group. This group produced a list of recommendations and actions to accelerate consenting timescales for grid networks. The Onshore Wind Sector Deal, signed in September 2023, envisages streamlined applications to the Energy Consents Unit for projects with 50+ MW capacity. Energy Consents Unit is undertaking further work on standardisation of consent conditions.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
The Onshore Wind Sector Deal includes an aim to determine applications for new sites and for re-powering existing sites within 12 months (or 24 months, with a public inquiry). Applications to extend the operational life of existing facilities will be decided within 5 months and applications to amend existing consents within 9 months (absent a public inquiry).
The Short Life Working Group recommended a similar ambition to determine section 37 applications for National Development within 12 months.
Timeframe and expected next steps:
The UK Government's response to Nick Winser's report made it clear that legislative changes to the consenting regime in Scotland are necessary to accelerate the determinations process. We are working closely together with the UK Government to agree a wide-ranging set of proposals for consultation, which can enable the milestones described above.

Policy: We will deliver the actions from our Offshore Wind Policy Statement, published in 2020. These actions, ranging from support for supply chain, planning, innovation and skills, will support the development of between 8 and 11 GW off offshore wind capacity by 2030.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The ScotWind leasing round results, announced in January 2022, revealed an ambitious total generating capacity around 28 GW. While the exact scale of future developments remains unclear pending planning and consenting processes, we are committed to seizing the opportunities offered by ScotWind and realising the goals set forth in our 2020 Offshore Wind Policy Statement. We recognise the need to align our ambitions with market trends and are utilising the draft ESJTP to inform any future recommendations.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing.

Policy: Accelerate our work with aviation, energy and other stakeholders to ensure that all radars are wind turbine tolerant/neutral during the coming decade
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The finalised Onshore Wind Policy statement was published in December 2022. The Onshore Wind Aviation Radar Delivery 2030 group (OnWARD 2030) has now been formed, led by RenewableUK, and formed at the request of the DESNZ led Aviation Management Board. The aim of this group is to create a more collaborative and strategic relationship between the aviation and renewables industries; delivering mutual benefit and allowing for strategic solutions to barriers for deployment.
The Scottish Government has ensured ongoing official representation on the Air Defence and Offshore Wind Programme Board, within the OWIC Aviation and Radar workstream. This sustained engagement aims to address both defence and civil radar concerns and coordinate efforts to mitigate impacts effectively. The onshore wind sector deal has a number of commitments under the technical theme relating to aviation. These are being progressed by OnWard 2030 and the Scottish Government.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: OnWARD 2030 meets regularly and feeds into the UK Government led Aviation Management Board. The Scottish Government is an active member of both of these groups. In addition the Onshore Wind Strategic Leadership Group is monitoring delivery of the Onshore Wind Sector Deal, which contains a number of aviation related commitments in the 'Technical Barriers' section or the deal.
Timeframe and expected next steps: Onshore wind – ongoing.

Policy: Review and publish an updated Electricity Generation Policy Statement ahead of the next CCP.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The draft ESJTP set out a strategic vision for the future of the electricity sector in Scotland and actions to deliver that, and the ESJTP will build on this.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The ESJTP will be published by summer 2024, and will provide further detail on the future of Scotland's electricity sector.

Outcome 2: Scotland's electricity supply is secure and flexible, with a system robust against fluctuations and interruptions to supply

Policy: Support the development of technologies which can deliver sustainable security of supply to the electricity sector in Scotland and ensure that Scottish generators and flexibility providers can access revenue streams to support investments.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Scottish Government provided £550,000 of match funding (through the Low Carbon Infrastructure Transition Programme) to support demonstration of wind energy providing services (including frequency response and black start) at the Dersalloch Wind Farm in Ayrshire, and we have engaged with ESO to apply lessons learned from Dersalloch. The Scottish Government welcomed the UK Government's recently closed consultation on LDES, to which we provided a response.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Further work and analysis is needed to detail delivery of the proposed LDES mechanism, and we will continue to call on the UK Government and Ofgem to work with the Scottish Government and industry to ensure this policy works for all.

Policy: Press the UK Government for market mechanisms and incentives which recognise locational value, both for energy and for security of supply, and which do not create undue barriers for investment in Scotland.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Scottish Government have continued to engage with UK Government, Scottish industry and other key stakeholders on the Review of Electricity Market Arrangements (REMA) following our response to the first REMA consultation. We also commissioned an external study through ClimateXChange to investigate the potential impacts of locational marginal pricing (LMP) in Scotland. We also formed a short-life expert advisory panel made up of a range of industry experts to add rigour to this study. This study and our broader stakeholder engagement will be used to inform our final position in the ESJTP and our response to the second REMA consultation.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We expect the UK Government to publish their second REMA consultation this month (March 2024) and Scottish Government will provide a Ministerial response in due course. The Scottish Government will set out our position on wholesale market reform in the ESJTP.

Policy: Collaborate on actions to support investment in new pumped storage hydro capacity.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: In January 2024 the UK Government published its consultation on an appropriate support mechanism for long duration energy storage (LDES), including pumped hydro storage (PHS). Scottish

Ministers provided a response on 5 March 2024, welcoming the use of a cap and floor mechanism, which we have long called for, while setting out specific concerns regarding the proposed approach to the mechanism.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We expect the UK Government to publish its LDES consultation response in a timely fashion following its closure on 5 March.

Policy: Work with all parties to secure maximum benefits from the move towards smarter and more flexible electricity systems and networks, as set out in the UK Smart Systems and Flexibility Plan (2017).
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: In 2022 the Scottish Government engaged with the Distribution Network Operators (DNOs) to support the development of the electricity distribution price control (Revenue = Incentives + Innovation + Outputs. ED2 stands for: Electricity Distribution 2. RIIO ED2) business plans. This led to a fair RIIO ED2 outcome for the DNOs and consumers which can support the network investment necessary to meet the Scottish Government's decarbonisation goals. The Scottish Government established a forum to enable developers to directly communicate any concerns with the DNOs through a local electricity network engagement group. This will identify consider and address overlapping, and strategic issues and opportunities related to the decarbonisation of heat and transport. In 2022 research was taken forward to understand the impact of heat decarbonisation on the electricity networks.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing.

Policy: Encourage and support increased interconnection which can enhance Scottish system security while considering effects on domestic capacity and investment.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Orkney 'Needs Case' was provisionally approved by Ofgem in March 2023. Western Isles 'Needs Case' – was approved. In May 2023 Ofgem provisionally approved SSEN Transmission's proposed Fort Augustus to Skye overhead line replacement.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Shetland HVDC is due to be connected this year. The Scottish Government is exploring how best to support existing work to establish new interconnectors between islands and the mainland (such as the Shetlands HVDC connection).

Policy: Launch a call in 2021 for evidence and views on technologies that can transform our electricity system, including energy storage, smart grid technologies, and technologies to deliver sustainable security of supply. This will help ensure that our funding and interventions support world leading activity in Scottish based companies.
Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu: Requirement for a call for evidence has been superseded by research commissioned into security of supply and the consultation process that is being undertaken as part of the draft ESJTP.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Our position on the role and support of storage and flexibility will be published in the final ESJTP, to be published by summer. The final security of supply report was published in December 2023.

Policy: Develop a series of whole system energy scenarios to guide infrastructure investment decisions for Scotland.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Energy Systems Catapult have produced a comprehensive set of Scotland-specific whole energy system scenarios providing options to reach the 2030 and 2045 energy system targets. These scenarios are not exclusive pathways to net zero, nor are they 'preferred options'. They provide important insights to inform discussions on the trade-offs needed to meet statutory targets.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The final report was published in September 2022. Scottish whole energy system scenarios (climatexchange.org.uk)

Policy: Ensure that sustainable security of electricity supply is included as a priority within future Scottish Government energy innovation funding programmes.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Scottish Government provided £550,000 of match funding through the Low Carbon Infrastructure Transition Programme to support demonstration of wind energy providing services including frequency response and black start, at the Dersalloch wind farm in Ayrshire. This is the first example in the world of a commercial wind farm demonstration black start and it highlights opportunities to operate the electricity system in line with net zero ambitions.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: National Grid ESO is continuing to work with industry to apply lessons learned from Dersalloch.

Outcome 3: Scotland secures maximum economic benefit from the continued investment and growth in electricity generation capacity and support for the new and innovative technologies which will deliver our decarbonisation goals.

Policy: Press the UK Government to further reform and maintain the Contracts for Difference (CfD) mechanism in a manner which better captures the economic benefits and total value added for the Scottish and UK supply chains.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: In the fifth Cf Allocation Round 5 (AR5) in September, no contracts were awarded to offshore wind generators because of the strike price being set too low – despite prior warnings from industry. Consequently, Scottish Ministers urged the UK Government to listen and engage with industry and take urgent action to ensure that Round 6 of the Contracts for Difference properly reflects the fundamentally important role renewable energy has in the net zero objectives of not just Scotland, but the UK. It must so as part of a wholesale package of reform that delivers for our shared net zero and just transition ambition, for our communities, environment and economy. The Scottish Government continues to press the UK Government to maintain the CfD mechanism in a manner that captures economic benefits for Scottish and UK supply chains. This included responding to the UK Government consultation which proposed changes to various elements of the CfD regime in February 2023 , and further consultation on CfD Sustainable Industry Rewards in January 2024.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: UKG confirmed that annual auctions will take place. The process for Supply Chain Plans has been strengthened since consultation in 2021.
Timeframe and expected next steps: CfD Allocation Round 6 opened on 27 March 2024. The budget for the sixth CfD allocation round was confirmed by the UK Chancellor at Spring Budget, and amounts to over £1bn, including £800 million for offshore wind.

Policy: Introduce new requirements for developers to include supply chain commitments when applying to the ScotWind leasing process run by
Crown Estate Scotland.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: As part of the ScotWind bidding round, applicants were required to submit a Supply Chain Development Statement (SCDS) to Crown Estate Scotland, outlining the supply chain activity they commit to undertaking within Scotland, the UK and overseas. We welcome the commitment of developers to invest an average projection of £1.5 bn in Scotland per project across the 20 ScotWind offshore wind projects.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing.

3. Chapter 2: Buildings

3.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the CCPu for this sector was for 7.6 MtCO2e, whereas the outturn emission statistics for 2021 (published in 2023) show a position of 9.0 MtCO2e. These figures show that the sector was outside its envelope in 2021.

The CCPu sets out the following three policy outcomes for this sector, the indicators for which are summarised below:

The heat supply to our homes and non-domestic buildings is very substantially decarbonised, with high penetration rates of renewable and zero emissions heating	On Track	Off Track	Too Early to Say
Number of existing domestic properties using low and zero direct emissions heating (LZDEH) systems (1.1)	-	-	X
Services sector fossil fuel heat consumption (1.2)	-	-	X
% of non-electrical heat consumption met from renewable sources (1.3)	-	-	X

Our homes and buildings are highly energy efficient, with all buildings upgraded where it is appropriate to do so, and new buildings achieving ultra-high levels of fabric efficiency.	On Track	Off Track	Too Early to Say
Energy intensity of residential buildings (kWh per household) (2.1)	-	X	-
Emissions intensity of non-domestic buildings (tCO_2e per £ million Gross Value Added) (2.2)	X		-
% of homes with an EPC[3] (EER,[4] or equivalent) of at least C (2.3)	-	X	-
% new homes built with a calculated space heating demand of not more than 20 kWh/m^2/year (2.4)	X	-	-

The heat transition is fair, leaving no-one behind and stimulates employment opportunities as part of the green recovery.	On Track	Off Track	Too Early to Say
% of households in fuel poverty (3.1)	-	X	-

[3] Energy Performance Certificate
[4] Energy Efficiency Rating

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

The Scottish Government published the Heat in Buildings Strategy in October 2021, which set out our vision for decarbonising Scotland's buildings by 2045. We remain committed to this vision and continue to lay the foundations which will support the growth of the clean heat and energy efficiency sectors in Scotland. This includes introducing the New Build Heat Standard in April, consulting on proposals for a Heat in Buildings Bill to decarbonise the existing building stock and a new Social Housing Net Zero Heat Standard for the social housing sector. We also continue to keep under review our delivery and support schemes as part of our commitment to ensuring a just transition to net zero.

The emissions reported in Part A of 9.0 MtCO2e for 2021 relate to the period when the Heat in Buildings Strategy was first published.

Part B reports on progress against the indicators for the buildings sector, as set out in Part A. We have marked indicator 2.4, percentage of new homes built with a calculated space heating demand of not more than 20 kWh/m²/yr, as "on track", reflecting improvements of the standards for building fabric set by building regulations. Meanwhile, we have marked three indicators as "too early to say": number of existing domestic properties using low and zero direct emissions heating, services sector fossil fuel heat consumption and percentage of non-electrical heat consumption met from renewable sources. This is due to these targets/indicators being reviewed, the outcome of which will depend on our response to the Heat in Buildings Bill consultation and the development of the next CCP. Three indicators are currently marked as "off track": energy intensity of residential buildings, percentage of homes with an EPC, percentage of households in fuel poverty. We set out our reasons for marking these indicators as "off track" in Part B.

Part C shows that significant steps have been made towards progressing key commitments in the buildings sector as set out in the CCPu.

Developments in monitoring arrangements since last report

We said last year that the constraints of devolution coupled with the Scottish Government's stated view that hydrogen will not play a central role in the overall decarbonisation of domestic heat meant that we were removing outcome 3 from our Buildings chapter. However, we continue to report against it in section C given the important and welcome progress being made with the H100 demonstrator.

In November 2023, we published a Heat in Buildings monitoring and evaluation framework to track progress against the strategy. We will report against this framework annually from October 2024, which will fulfil a requirement under the Climate Change (Scotland) Act 2009. We will continue to evolve the framework and look to align it with our Climate Change Plan Monitoring and reporting.

As set out in last year's report, we are continuing to explore alternative and potentially more suitable approaches to using the Renewable Heat Target (RHT) to measure progress against our strategy. As such, we invited views on a more suitable metric as part of our recent consultation.

3.2 Part B - Progress to Policy Outcome Indicators

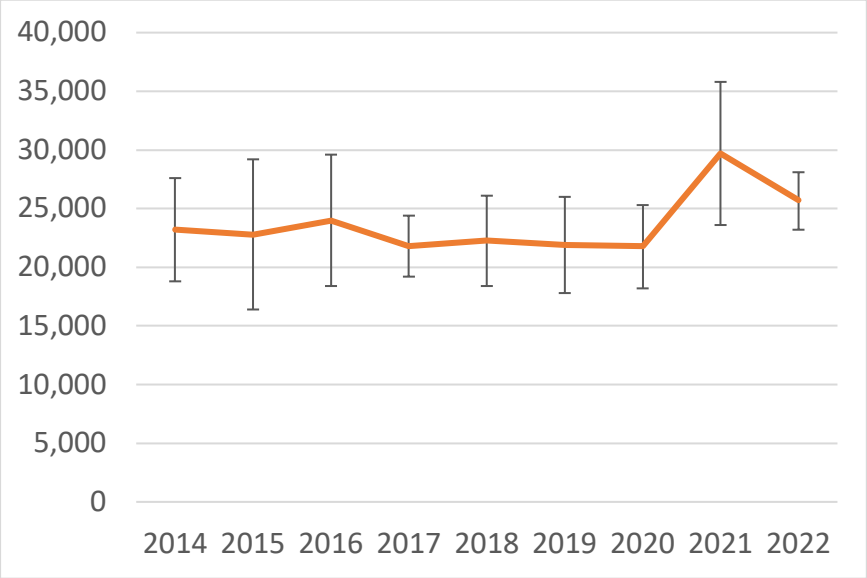
Policy Outcome: Cross-sectoral social and economic
Indicator: FTE employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics
Assessment: Too early to say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 1
Indicator: Number of existing domestic properties using low and zero direct emissions heating (LZDEH) systems.

On-track Assessment (Milestones/Targets): Under review

Most Recent Data: 323,000 domestic properties use low and zero direct emissions heating (LZDEH) systems as of 2022.
Data Source(s): SHCS 2022- Chapter 01 Key Attributes of the Scottish Housing Stock - tables and figures, Table KA7b. Comprises households for which their primary heating fuel is (a) Electricity, (b) Communal Heating, or (c) Biomass.

Assessment: Too early to say

Commentary:
In 2022, there were 323,000 households using low and zero direct emissions heating (LZDEH) systems (and which this document will refer to from here as 'clean heating systems'[5] for the sake of simplicity). These were households with either electricity, communal heating or biomass as their primary heating fuel.

The last year for which comparable data is available is 2019 (due to the COVID-19 pandemic, fieldwork for the 2020 SHCS was suspended and the methodology for the 2021 SHCS was also impacted).

In 2019, there were 312,000 domestic properties using LZDEH systems. The number of households using LZDEH systems was similar between 2019 and 2022.

The target for this indicator is under review and so progress towards the target is assessed as too early to say. In the Climate Change Plan update (CCPu) and subsequent Heat in Buildings Strategy, we highlighted that reducing carbon emissions in line with our very ambitious targets would require the equivalent of converting over one million homes to clean heating by 2030. While the Scottish Government remains committed to decarbonising all of Scotland's buildings by 2045, we also recognise that we must do so in a way that is fair and feasible. The cost of living crisis and surge in energy prices meant that we have reassessed what would be fair and feasible to achieve over the short term.

We recently consulted on proposals for a Heat in Buildings Bill[6]. However, it has long been clear that much more than legislation in devolved matters is needed to achieve the progress required. That includes reforms to pricing of electricity, greater control over capital investment and levers over products and suppliers – all of which lie in UK Government hands – alongside other powers in Scotland including social housing standards, funding support and standards for new buildings. We have also taken account of dramatically increased cost pressures which have affected households and public funding.

[5] A 'clean heating system' does not produce any greenhouse gas emissions at the point of use.
[6] Proposals for a Heat in Buildings Bill: Consultation - Scottish Government consultations - Citizen Space

The Scottish Government has made clear its plan to make meaningful, tangible progress towards our goals and in a way that is fair, affordable and feasible.

The outcome of the consultation will support the development of policies to include in the next Climate Change Plan (CCP) which we intend to publish in draft as soon as possible, ahead of March 2025. This Plan will cover the period 2025-2040, and will set out any updates to sector envelopes in line with our emissions reduction pathway out to 2040.

Policy Outcome: 1
Indicator: Commercial[7] sector fossil fuel heat consumption
On-track Assessment (Milestones/Targets): Under review

Most Recent Data: Commercial sector fossil fuel heat consumption was 11,172 GWh in 2021.
Data Source(s): Scottish Energy Statistics Hub (SESH) > Energy Efficiency > Heat Consumption > Data – Non-electrical heat demand by sector (GWh). Internal analysis was conducted to remove Bioenergy & Wastes from the figure of 12,940 GWh presented on SESH.

Assessment: Too early to say

Commentary:
In 2021, commercial sector fossil fuel heat consumption was 11,172 GWh. This includes consumption of coal, manufactured fuels, petroleum products and gas. This is a 4% decrease compared to 2020, when commercial sector fossil fuel heat consumption was 11,684 GWh[8]. This reduction may reflect elevated energy prices in the latter half of 2021, as well as other factors such as improvements to energy efficiency, changes in economic activity and fuel switching.

The target for this indicator is under review and so progress towards the target is assessed as too early to say. As with indicator 1.1, the target will depend on the outcome of the Heat in Buildings Bill consultation and development of the next CCP. Over half of Scotland's non-domestic buildings already use low or zero emissions sources and we remain committed to transitioning all other buildings to clean heating systems by 2045.

[7] Commercial sector heat consumption includes consumption other than Industrial, Transport and Domestic consumption, and will include some Agriculture and Public Sector consumption depending on the end-use.
[8] Note the 2020 figure has been revised upwards (from 11,170 GWh) since the 2023 Monitoring report.

Policy Outcome: 1
Indicator: % of non-electrical heat consumption met from renewable sources
On-track Assessment (Milestones/Targets): Our consultation on proposals for a Heat in Buildings Bill also sought views on including powers requiring a new or amended renewable heat target. We are currently analysing the responses to the consultation. In the meantime, we will continue to report against this indicator.

Most Recent Data: May 2024 publication
Data Source(s): Renewable Heat Dataset from Energy Saving Trust

Assessment: Too early to say

Commentary:
In order to comply with existing statutory requirements, our Heat in Buildings Strategy set out a provisional target (22%) for the proportion of non-electrical heat demand in buildings supplied by renewable sources (either directly, or via a heat network). The Renewable Heat Target (RHT), as currently defined, is an important factor in monitoring Scotland's wider 2030 renewable ambitions. However, we believe that reporting against the Heat in Buildings Monitoring and Evaluation Framework which we published in November 2023 will provide a more useful and relevant means for tracking progress against the Heat in Buildings Strategy.

Our Heat in Buildings Strategy made clear that the scope of the RHT does not include industrial heat. However, we only provide the proportion of **all** non-electrical heat demand met by renewable sources below. This is because it is not possible to robustly estimate the amount of some fuels (including gas) used for industrial purposes and thus to separate these out. Neither is it always possible to determine whether renewable heat output is used for industrial purposes.

Accordingly, we are not presenting in this year's report (as we did last year) an upper and lower estimate of the proportion of non-industrial, non-electrical heat demand met by renewables due to the change in method used to estimate non-electrical heat demand (please see the methodology section below for more details).

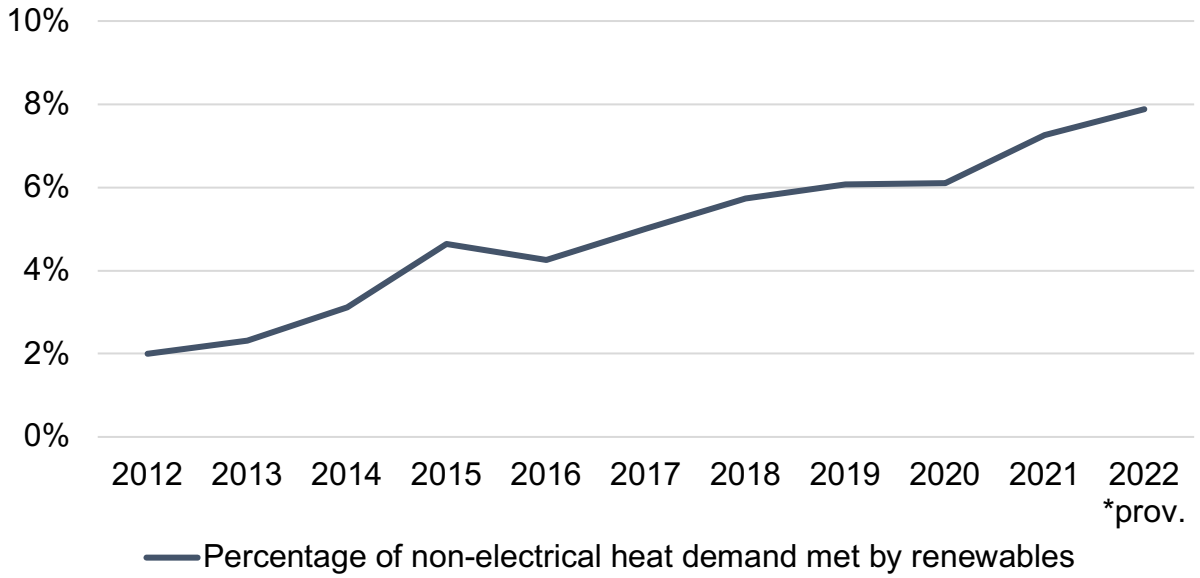
In 2022, the percentage of non-electrical heat demand met by renewable sources was estimated at 7.9%[9]. The non-electrical heat demand estimated for 2022 is provisional as sub-national consumption estimates for non-gas fuels will not be available until released by the Department for Energy Security and Net Zero (DESNZ) in September 2024.

Renewable heat output in 2022 was 4% higher than the previous year, while estimated demand was 5% lower. These estimates demonstrate a continued rise in renewable heat output over the longer term, increasing by 70% since 2016. Demand for non-electrical heat has fallen in recent years and is lower than any year in the time series, which goes back to 2005.

[9] 5.6 TWh of renewable heat output was produced in 2022, when provisional demand for non-electrical heat was estimated at 71.3 TWh.

Figure 1 presents a time series of the percentage of non-electrical heat demand met by renewable sources from 2012 to 2022. The headline percentage reported for 2022 is dependent on overall non-electrical heat demand. This continues to underline the importance of improving the energy efficiency of Scotland's buildings in contributing to progress against this metric.

Figure 1: Percentage of non-electrical heat demand met by renewable sources, 2012-2022



* Non-electrical heat demand data for 2022 is provisional as it is based on 2022 gas consumption and 2021 consumption for all other non-gas fuels.

Renewable technologies:

There was moderate growth in overall renewable heat output in 2022, increasing 199 GWh to 5,620 GWh. Most of the increase (143 GWh) came from heat pump and biomass installations (increasing 73 GWh and 70 GWh respectively). Nearly all (70 GWh) of the 73 GWh growth from heat pumps in 2022 was from sites which were newly operational in 2022. The rest was from changes in operation at existing sites.

Although heat pumps provided the biggest contribution to the increase in 2022, they make up a relatively small share of total renewable heat output (644 GWh, 11%). This is because heat pumps are mostly installed in domestic settings where capacities are likely to be small and have lower running hours compared to other potential heat uses. Similar to previous years, heat pumps remain the technology with the most installations overall and the biggest increase in the number of installations.

Biomass was the second largest contributor to the increase in 2022 with output increasing by 70 GWh. However, the majority of the growth in biomass output was in the industrial sector, rather than in domestic or non-domestic sectors. This technology continues to make up the largest share of total output (3,737 GWh, 67%) and capacity (1,808 MW, 79%). This is likely due to biomass installations being typically larger and/or having higher running hours throughout the year.

Biomethane is the technology with the second largest share of total renewable heat output (920 GWh, 16%). Biomethane output increased by 52 GWh, with nearly all biomethane sites in operation in 2021 reporting an increase in output.

Future reporting:

The first report against the Heat in Buildings Monitoring and Evaluation Framework will be published in October 2024.

While we are considering alternative approaches to measure our progress on heat decarbonisation, and have recently consulted on this as part of proposals for a Heat in Buildings Bill, we will continue to report on renewable heat statistics against the provisional target as required by the Climate Change (Scotland) Act 2009.

Statistics on renewable heat in Scotland are compiled by Energy Saving Trust and will be updated, following publication, on the Energy Statistics Hub.

Methodology:

The method we used last year to estimate non-industrial, non-electrical heat demand relied on applying the end-use estimates for energy consumption across the UK (produced by DESNZ) to the consumption figures for Scotland. However, the end-use estimates are derived from the English Housing Survey and the Business Energy Efficiency Survey 2014-15. Also, the splits of energy use for petroleum in services and industrial settings were applied to petroleum in agriculture although this fuel is primarily used for agricultural vehicles.

Due to these issues, a revised method has been used to estimate non-electrical heat demand. This is based on the measured final energy consumption statistics published by DESNZ. Combustion fuels (petroleum, gas, coal, bioenergy and wastes, and manufactured fuels) always produce heat when they are consumed. The specific use of that heat for transport vehicles (petroleum for road transport and rail transport, petroleum for agriculture, coal for rail transport, bioenergy and wastes for transport) is separated out in the DESNZ statistics. All other combustion fuel consumption can be assumed to be used for heat; therefore non-electrical heat demand is defined as the final consumption of:

- Coal – industrial, commercial, domestic, public sector
- Manufactured fuels – industrial, domestic
- Petroleum – industrial, commercial, domestic, public sector
- Gas – domestic, industrial, commercial and other
- Bioenergy and wastes – domestic, industrial and commercial

The final energy consumption statistics for 2022 will be published by DESNZ in September 2024. To estimate the provisional non-electrical heat demand for 2022, the gas consumption figure for 2022 from the Regional and local authority gas consumption statistics has been used alongside the 2021 figures from the final energy consumption statistics for non-gas combustion fuels (as detailed above).

Policy Outcome: 2
Indicator: Energy intensity of residential buildings (kWh per household)
On-track Assessment (Milestones/Targets): To fall by at least 30% by 2032 (relative to 2015).

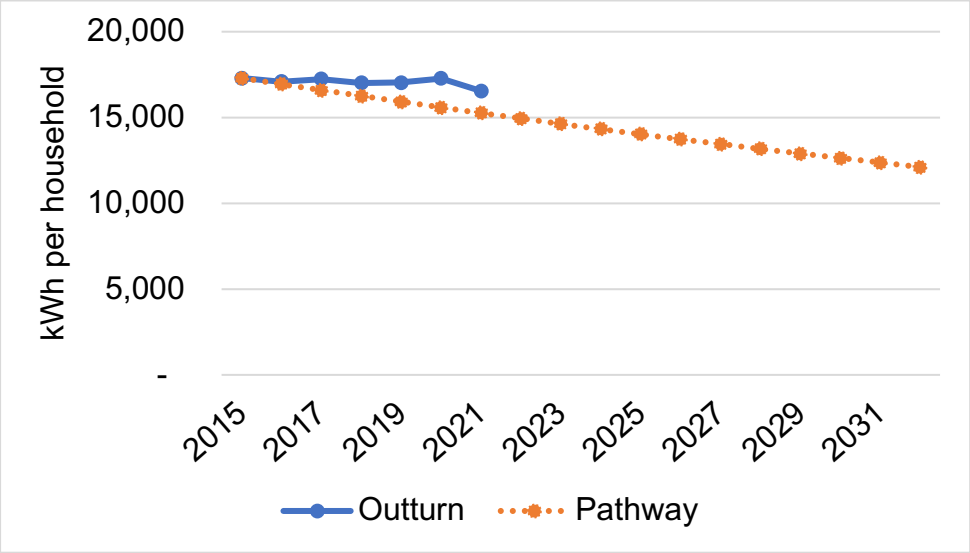
Most Recent Data: Residential energy intensity was 16,545 kWh per household in 2021
Data Source(s): Sub-national total final energy consumption data - GOV.UK (www.gov.uk)
Households and Dwellings in Scotland, 2021 | National Records of Scotland (nrscotland.gov.uk)

Assessment: Off-track

Commentary:
In 2021, household energy intensity was 16,545 kWh per household. This is a reduction of 4.4% compared to 2015, and 4.3% compared to 2020. This reduction may reflect factors such as improvements to the energy efficiency of domestic properties, varying levels of home working due to changes to restrictions as a result of COVID-19, as well as the impact of increased energy prices in the latter half of 2021.

A simple pathway to meet the 2032 target is shown below. As the recorded energy intensity of households in 2021 is above the target of 15,254 kWh per household, by 1,290 kWh per household, progress is currently rated as off track. However, there was a narrowing in the gap in 2021 after a spike in household energy intensity in 2020, likely driven by a rise in home working.

Household energy intensity (kWh per household)



Policy Outcome: 2
Indicator: Emissions intensity of non-domestic buildings (tCO_2e per £ million Gross Value Added)
On-track Assessment (Milestones/Targets): To fall by at least 10% by 2020, 20% by 2025, and 30% by 2032 (relative to 2015)

Most Recent Data: 23.52 tCO_2e/£mGVA in 2021
Data Source(s): Supporting documents - Scottish Greenhouse Gas Statistics 2021 - gov.scot (www.gov.scot)
Supporting documents - GDP Quarterly National Accounts: 2023 Quarter 3 (July to September) - gov.scot (www.gov.scot)

Assessment: On-track

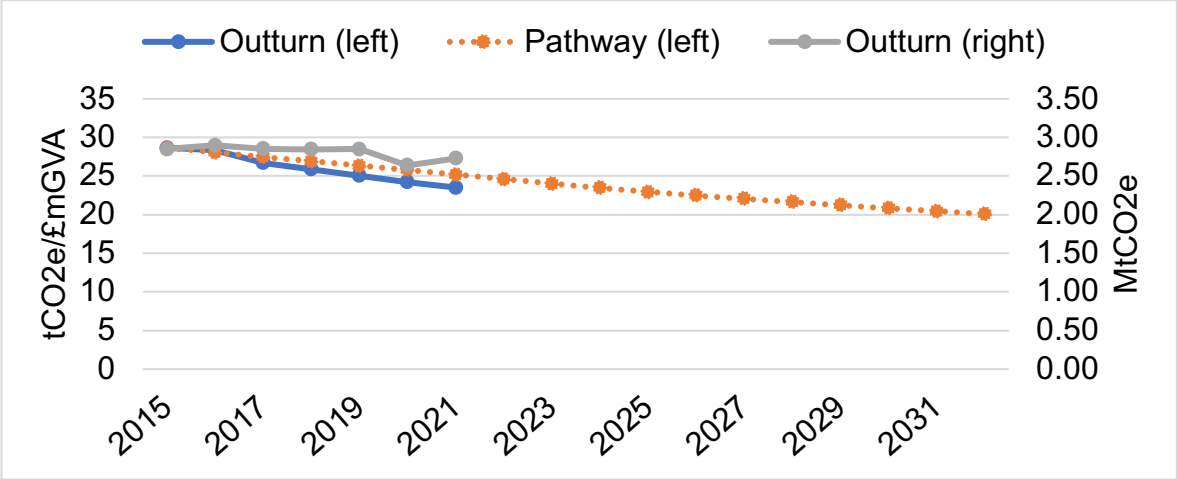
Commentary:
The emissions intensity of the Services sector was 23.52 tCO_2e/£mGVA in 2021, representing a decrease of 3% (0.70 tCO_2e/£mGVA) compared to 2020[10]. This is because while Services emissions increased by 3% (from 2.64 $MtCO_2e$ to 2.73 $MtCO_2e$), Services GVA increased at a greater rate, rising by 7% (from £108,855m to £116,014m). This represents a continuing downward trend in Services emissions intensity since 2015.

The 2018 CCP set an ambition in the Services sectors to reduce emissions intensity by 10% by 2020, 20% by 2025, and 30% by 2023, relative to a 2015 baseline of 28.7 tCO_2e/£mGVA. In last year's monitoring report we committed to reviewing this indicator. This review will take place alongside a fuller review of all indicators when the next Climate Change Plan (CCP) is published, to ensure they are fit for purpose under the new plan and to avoid making successive changes to the set of indicators.

A simple pathway to meet the 2020, 2025 and 2032 targets is shown below. As the recorded emissions intensity of the Services sector in 2021 is below the target of 25.2 tCO_2e/£mGVA by 1.7 tCO_2e/£mGVA, progress is currently considered to be on-track. To note, the figure also plots the outturn of Services emissions in $MtCO_2e$ on the right-hand side axis.

Emissions intensity of the Services sector (tCO_2e/£mGVA) and Services sector emissions ($MtCO_2e$)

[10] The figure for 2020 is 24.2 tCO_2e/£mGVA. This is lower than the figure presented in last year's Monitoring Report (31.1 tCO_2e/£mGVA). The emission intensity of Scotland's service sector for years prior to 2021 was calculated using an unpublished sectoral breakdown of quarterly national accounts. The emission intensity for 2021 and previous years has now been revised to use the published breakdown of GVA for Scotland's service sector.


Outturn (left)
Pathway (left)
Outturn (right)
tCO2e/£mGVA
MtCO2e
35
30
25
20
15
10
5
0
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
2015
2017
2019
2021
2023
2025
2027
2029
2031

Policy Outcome: 2
Indicator: % of homes with an Energy Performance Certificate (EPC) (EER, or equivalent) of at least C
On-track Assessment (Milestones/Targets): To reach 100% by 2033, subject to technical feasibility and cost-effectiveness

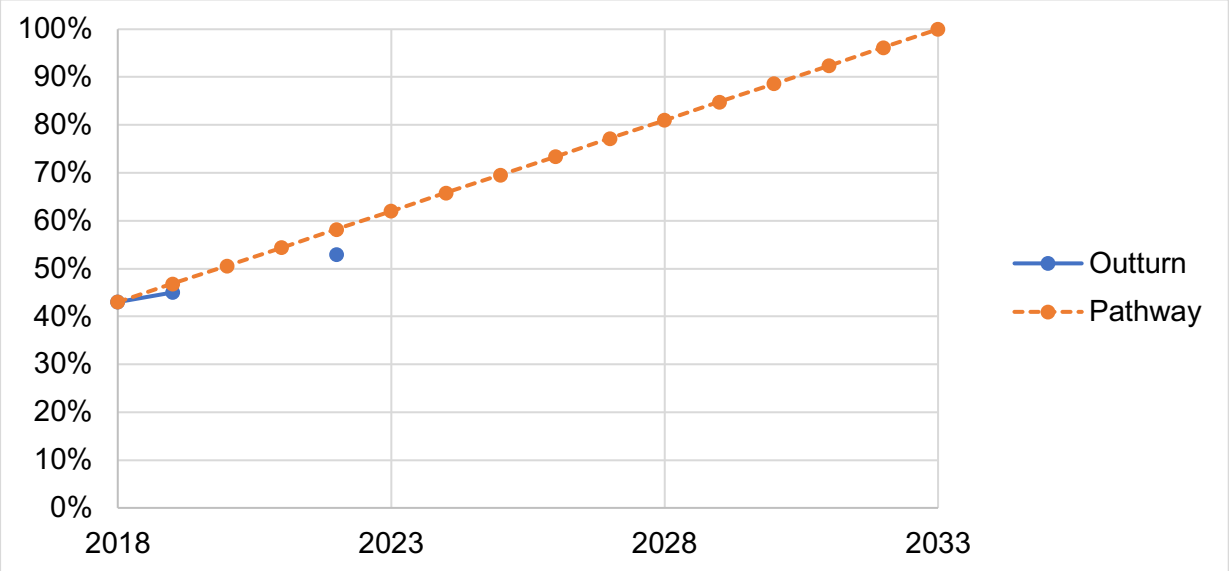
Most Recent Data: 52% of Scottish homes rated as EPC band C or better under Standard Energy Procedure (SAP) 2012 (RdSAP v 9.93) in 2022.
Data Source(s): Scottish House Condition Survey (SHCS) 2022.

Assessment: Off-track

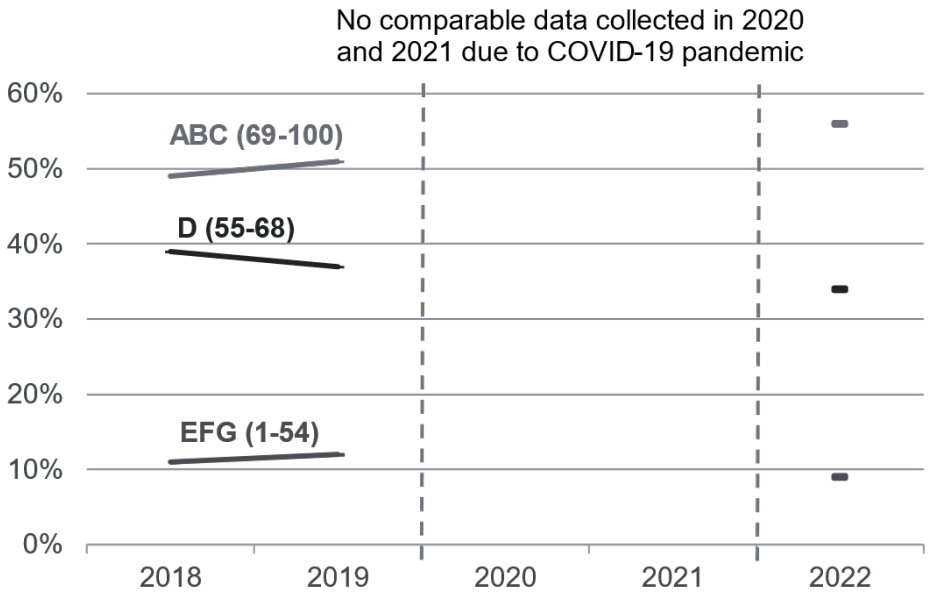
Commentary:
In 2022, 52% of Scottish homes were rated as EPC band C or better under SAP 2012 (RdSAP v9.93), compared to 45% in 2019. The proportion of properties in the lowest EPC bands (E, F or G) under SAP 2012 (RdSAP v9.93), was 12% in 2022, down from 15% in 2019.

A simple pathway to meet the 2033 target is shown below. Although there has been continued improvement in the energy efficiency of Scotland's building stock, as the proportion of dwellings with an EPC rating of C or better is lower than the estimated, simple pathway approach, this indicator is assessed as being off-track. The recent Scottish Housing Condition Survey results highlight progress on energy efficiency, and our recent consultations (referred to above) have sought views on potential measures which would build on this progress.

Dwellings with an EPC rating of C or better (SAP 2012), outturn and simple pathway



Distribution of the Scottish housing stock by grouped EPC band, from 2018 to 2022



Indicator: % new homes built with a calculated space-heating demand of not more than 20 kWh/m^2/yr

On-track Assessment (Milestones/Targets): Positive year-to-year change

Most Recent Data: Analysis of new-build domestic Energy Performance Certificates (EPCs) lodged in 2023.
Data Source(s): EPC data for Q1 to Q4 2023 lodged with the Scottish Energy Performance Certificate Register (SEPCR)

Assessment: On-track

Commentary:
Without applying any moderation to remove potentially erroneous values, 2,501 records reported a space-heating demand intensity of 20 kW/m^2/year or less. This represents 12.3% of new-build domestic EPCs lodged for 2023. In both absolute and relative terms, this is an increase on previous years[11].

Distribution of space-heating demand intensity of new-build EPCs lodged in 2023 (kW/m^2/year)

Minimum	1st Quartile	Median	3rd Quartile	Maximum
0.00	25.78	33.92	41.72	766.19

Removing the 0.5% of lodged records with the lowest space-heating demand intensity and the 0.5% with the highest space-heating demand intensity in effect removes all records with a space-heating demand intensity of less than approximately 3.1 kW/m^2/year, and removes all records with a space-heating demand intensity of greater than approximately 105.8 kW/m^2/year. This leaves 2,400 records (12%) with a space-heating demand intensity of 20 kW/m^2/year or less. Last year we reported data for 2021, when this adjusted figure was 7.7%. Subsequent analysis for 2022 finds this figure to be similar, at 7.6%.

Minimum	1st Quartile	Median	3rd Quartile	Maximum
3.11	25.92	33.92	41.63	105.78

Whilst positive year-to-year change is occurring, further significant improvement in the indicator is likely linked to review and improvement to the minimum standards for building fabric set by building regulations.

Implementation of the February 2023 energy standard for new homes included improvement in the minimum levels of insulation for all new homes, improving element values by 13% to 23%. This will reduce space heating demand further and increase the percentage of new homes delivered that achieve or improve upon the indicator value.

[11] Our previous CCP Monitoring Report, for 2023, reported data for this indicator for the period Q1 to Q4 2021 and showed that 1,829 records reported a space-heating demand intensity of 20 kW/m^2/year (8.1% of EPCs lodged during this period). Subsequent analysis finds that the corresponding figures for 2022 are 1,877 records (8.1%).

As data to report on this indicator relies on information available on completed new homes, it is too soon to assess the impact of the changes made in February 2023.

Policy Outcome: 3
Indicator: % of households in fuel poverty
On-track Assessment (Milestones/Targets): 2030: No more than 15%, 2035: No more than 10%, 2040: No more than 5%

Data Source(s): 2022 Scottish House Condition Survey Chapter 3[12][13]

Assessment: Off-track

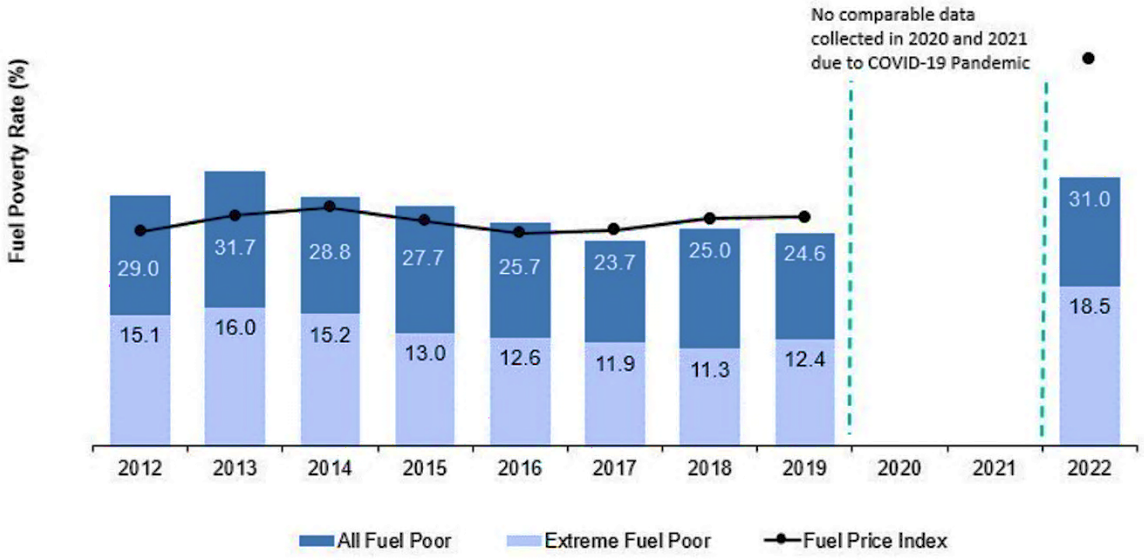
Commentary:
In 2022, 791,000 households (31% of all households) were estimated to be in fuel poverty, of which 472,000 (18.5% of all households) were in extreme fuel poverty. This is higher than the 2019 estimates of 24.6% (613,000 households) and 12.4% (311,000 households) respectively.

The increase in fuel prices has been the greatest driver of fuel poverty rates between 2019 and 2022. While the Scottish Government continues to help people make their homes warmer and easier to heat through our energy efficiency delivery programmes, and support those in fuel crisis, the powers to make a real difference remain with the UK Government. We have called repeatedly for the introduction of a social tariff to provide the right and fair support for some of the most vulnerable people in society.

[12] Scottish House Condition Survey results for 2022 have been assessed to be comparable in the most part to 2019 and earlier years. However, as noted in section 1.1.5 of the Methodological and Technical notes there is evidence to suggest that social and private rented households, who have higher rates of fuel poverty, may be under-represented in the 2022 achieved sample and owner-occupied households, who have lower rates of fuel poverty, may be over-represented. Due to this, national level estimates of fuel poverty may be slightly under-estimated, however we expect any effects to be minor, especially in the context of other key drivers of fuel poverty such as fuel prices.

[13] From 2021 methodological improvements were introduced to the measurement of fuel poverty in the SHCS. Analysis had shown that some methodological improvements such as adding imputed housing costs have worked to increase the fuel poverty rate, while others such as including the incomes of all members in the household have worked to decrease the fuel poverty rate. This has had a broadly neutral effect on the overall national fuel poverty rate. As such while the 2022 rate was calculated using an updated methodology, comparisons can be drawn with previous rates, although caution is urged when drawing any conclusions in relation to the overall national fuel poverty rate, due to slight tenure bias in the achieved 2022 sample.

Estimates of Fuel Poverty and Extreme Fuel poverty since 2012



3.3 Part C - Information on implementation of individual policies

Outcome 1: The heat supply to our homes and non-domestic buildings is very substantially decarbonised, with high penetration rates of renewable and zero emissions heating

Outcome 2: Our homes and buildings are highly energy efficient, with all buildings upgraded where it is appropriate to do so, and new buildings achieving ultra-high levels of fabric efficiency

Policy: Energy Company Obligation (ECO) requires obligated energy supply companies to deliver energy efficiency measures in homes. Historically these have mainly been insulation-based measures and gas boiler replacements.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Scottish Government formally proposed replacing ECO in Scotland in 2021 with a more flexible and simpler to administer scheme for energy suppliers. However the UK Government expressed their preference for continuing a GB-wide scheme and regulations establishing the ECO4 scheme were approved in 2022.

While Scotland's overall share of measures has declined compared with previous ECO schemes, Scottish households have benefitted from a higher share of clean heat and microgeneration measures. The Scottish Government continues to work with local councils, energy suppliers and other local delivery partners to support take-up of ECO finance in Scotland.

With support from the Scottish Government, 31 out of 32 Scottish councils have published an ECO4 Statement of Intent to enable local ECO flex schemes to operate. As of December 2023, Scotland has benefitted from the second highest share of ECO4 Flex referrals across Britain (7,076 measures or 17% of the GB total). We estimate that these measures helped attract around £40 million in ECO finance over the last nine months of the ECO4 scheme. This has included a higher share of heat pump and renewable installations funded by energy suppliers, particularly in rural areas such as Dumfries and Galloway.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Scotland has the second highest number of flex measures installed of any UK region, with around 17% respectively of all the ECO4 flex measures in Great Britain.

Timeframe and expected next steps: Decisions about the design of the ECO scheme in Scotland require the approval of the UK Government and we continue to engage with them about this.

Policy: Energy Efficient Scotland Delivery Schemes:
- Area Based Schemes
- Warmer Homes
  Scotland.

- Home Energy Scotland Advice Service
- Home Energy Scotland Grant and Loan Scheme for zero emissions heating technologies and energy efficiency measures
- Business Energy Scotland
- Small and Medium Enterprises (SME) Loans and cashback scheme for zero emissions heating technologies and energy efficiency measures
- Social Housing Net Zero Heat Fund (SHNZF)

Date announced: 2020-2021 PfG

Progress on implementation since time of last report / CCPu:

Area Based Schemes - The programme continues to target fuel poor households living in 'hard to treat' properties requiring external wall or complex cavity wall insulation.

In 2022-2023, the Area Based Schemes (ABS) programme delivered improvements that benefitted around 6,800 fuel poor households and we anticipate that this provided around £68.3 million in lifetime savings. The reduction in emissions is likely to have been around 152 ktCO_2e over their lifetime.

Warmer Homes Scotland - In October 2023, the successor to our Warmer Homes Scotland scheme was launched. The refreshed scheme continues our approach to supporting those at risk of fuel poverty through the net zero transition with a whole house approach and focus on clean heating allowing deep retrofit of individual homes.

Home Energy Scotland Advice Service - During 2022-2023, Home Energy Scotland (HES) supported over 138,000 unique households in Scotland with energy efficiency, clean heating and fuel poverty advice. Of these households, over 71,000 were vulnerable to fuel poverty.

Home Energy Scotland Grant and Loan Scheme for zero emissions heating technologies and energy efficiency measures - The Home Energy Scotland (HES) Grant and Loan Scheme, which was launched in December 2022, has continued to deliver funding to households for clean heating systems and energy efficiency measures. Funding was increased between 2023-2024 to increase output and measures delivered.

HES received over 6,000 applications since launching to the end of August 2023, with over 1,900 funding offers issued for heat pump installations in this period. This reflects a 22% increase in funding offers for heat pumps as compared to the previous year under the HES Loan and Cashback scheme.

Business Energy Scotland - Business Energy Scotland remains in high demand. We introduced measure specific fast track energy assessments in 2023-2024 to enable more businesses to quickly access advice and financial support.

SME Loan and Cashback scheme for zero emissions heating technologies and energy efficiency measures - The SME Loan and Cashback scheme continues to deliver funding to Scottish organisations for the implementation of energy efficiency and renewable heating technologies. In 2022-2023 over 300 projects were supported through the scheme.

Social Housing Net Zero Heat Fund (SHNZF) - The Social Housing Net Zero Heat Fund launched in August 2020 for social landlords to retrofit their existing housing stock. The fund supports both the deployment of clean heating and "fabric first" enhancements, helping landlords deliver warmer and more energy efficient homes.

To date the fund has awarded £58 million to 64 social housing projects across Scotland.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Area Based Schemes and Warmer Homes Scotland - Since 2013, the programme has supported over 118,000 households (as of March 2023) to improve the warmth and energy efficiency of their home. Area Based Schemes (ABS) has been particularly effective in enabling improvements to mixed tenure blocks of flatted and terraced properties.

The Scottish Government has maintained our investment in ABS at £64 million as part of the 2024-2025 Budget. This is expected to help around 7,000 fuel poor households to benefit from warmer homes and reduced heating costs.
Since 2015, Warmer Homes Scotland has supported over 35,000 households.

Home Energy Scotland Advice Service - The Scottish Government will continue to fund the service in 2024-2025.

Home Energy Scotland Grant and Loan Scheme for zero emissions heating technologies and energy efficiency measures - Measures supported and funding amounts available through the Home Energy Scotland (HES) Grant and Loan are currently under review to ensure alignment with forthcoming regulations.

Business Energy Scotland - Since launching in 2022, Business Energy Scotland has provided energy assessment reports to over 2,000 Scottish businesses, identifying on average 24% cost savings per business.

SME Loan and Cashback scheme for zero emissions heating technologies and energy efficiency measures - since the scheme started, it has paid out almost £50 million in loan and cashback finance and supported over 2,000 projects.

Social Housing Net Zero Heat Fund (SHNZF) - N/A

Timeframe and expected next steps: N/A

Policy: Review support programmes: we will review existing Scottish Government funding schemes to ensure that they support the deployment of low and zero emissions heat. We will expand the provision of loans to the SME sector, and enhance the wider energy efficiency and heat advice service and provision of tailored start-to-end support.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu:

The new Warmer Homes Scotland scheme, launched on 2 October 2023, follows a whole house retrofit process and a clean heating first approach to maximise the number of households able to install clean heating were not detrimental to fuel poverty objectives.
As part of a refresh in 2023 to the Social Housing Net Zero Heat Fund, the intervention rate for the costs of clean heating systems was increased to 60% while energy efficiency measures will continue to be supported at 50%.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Procure a new national delivery scheme, to replace the existing Warmer Homes Scotland contract, to open in 2022.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The successor scheme for Warmer Homes Scotland was successfully procured and the new contract commenced on 2 October 2023. As of 29 February 2024, 693 households have had completed installations through the second phase of Warmer Homes Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: From April 2024, we will review the scheme's progress against its stated aims.

Policy: Energy Efficiency Standard for Social Housing: will be met by social landlords by 2020.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Scottish Housing Regulator (SHR), who has responsibility for monitoring social landlord's performance with EESSH1, reports that 88% of social rented homes met the 2020 milestone at 31 March 2022.
EESSH was reviewed in 2018-19 with a view to setting a new milestone for 2032, known as EESSH2. The Scottish Government has recently consulted on proposals for a new Social Housing Net Zero Standard to align with net zero targets and replace EESSH2.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We are currently analysing responses to the consultation.

Policy: New Build Heat Standard (NBHS): requiring new buildings, applying for a building warrant from 2024 onwards, to use clean heating systems.
Date announced: 2020-2021 PfG + CCPu
Progress on implementation since time of last report / CCPu: Regulations have been passed and Building Standards Technical Handbooks detailing the provisions have been updated. The New Build Heat Standard means that no new buildings - constructed under a building warrant applied for from 1 April 2024 - will be built with

polluting heating systems, like gas and oil boilers. Instead, these new buildings will be required to use clean heating systems which produce zero or negligible levels of greenhouse gas emissions at point of use.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: This policy came into force from 1 April 2024.

Policy: Review of energy standards within building regulations. The review investigates the potential for further, significant improvement on 2015 standards and how building standards can support other carbon and energy policy outcomes, including our decarbonisation of heat agenda.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The review commenced in 2020 and its outcomes were published in June 2022. We have published revised standards and guidance applicable to new construction from 1 February 2023, which set more challenging energy and emission targets for new development and enable early adoption/response to the components of the 2024 New Build Heat Standard.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
The revised standards and guidance from 1 February 2023 are expected to improve outcomes reported under indicator 2.4 – '% new homes built with a calculated space heating demand of not more than 20 kWh/m²/yr' from 2024 onward.
Timeframe and expected next steps:
There is a Ministerial commitment to Parliament on further review of standards to deliver 'a Scottish equivalent to Passivhaus', including laying of regulations in December 2024. This further review is underway and consultation on proposals is planned for summer 2024.

Policy: Heat in Buildings regulation: Put in place regulation to increase uptake of zero emissions heating systems and improve energy efficiency standards across owner occupied and private rented homes to come into force from 2025.
Date announced: Heat in Buildings Strategy
Progress on implementation since time of last report / CCPu: We consulted on proposals for a Heat in Buildings Bill from 28 November to 8 March. This consultation set out our proposals to prohibit the use of polluting heating systems in all privately owned and privately rented homes and non-domestic properties after 2045 and to introduce a minimum energy efficiency standard in privately owned and privately rented homes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A.
Timeframe and expected next steps: We are currently analysing responses to the consultation.

Policy: Low Carbon Infrastructure Transition Programme (LCITP) - supports investment in decarbonisation of business and the public sector.
Date announced: 2020-2021 PfG

Progress on implementation since time of last report / CCPu: The LCITP is now closed to applications but is supporting projects that are currently under construction that will deliver significant carbon savings including strategically important low carbon heat networks.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The LCITP formally drew to a close in April 2022.
Timeframe and expected next steps: N/A

Policy: Expanded £1.6 billion Heat in Buildings capital funding over the next parliament building on the Low Carbon Infrastructure Transition Programme (LCITP) and existing energy efficiency and zero emissions heat support programmes.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu:
To the end of 23/24 we have allocated around £1 billion.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Capital funding allocations will be subject to future budget decisions.

Policy: Non Domestic Public Sector Energy Efficiency (NDEE) Framework: a four year framework launched in March 2016, designed to support public and third sector organisations to procure Energy Efficiency retrofit work. The Framework will continue for a further four years commencing in 2020. NDEE Support Unit accelerates the number of projects and delivery timescales of public sector energy efficiency projects using the NDEE Framework and supports our wider ambitions around energy demand reduction.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The current framework contract will come to an end on 31 March 2024. We are currently in the process of procuring a new framework and project support unit.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Launch late 2024-2025.

Policy: The Renewable Heat Incentive (RHI) - a GB-wide scheme created by the UK Government (with the agreement of the Scottish Government). UK Government is extending both the domestic and non-domestic RHI out to 2022.
Date announced: August 2020
Progress on implementation since time of last report / CCPu:
1,133.3 MW of accredited capacity under the non-domestic RHI (NDRHI) between November 2011 and March 2023[14].
1,813 GWh of heat had been paid for between April 2014 and March 2023 under the domestic RHI scheme in Scotland[15].

[14] Renewable Heat Incentive statistics - GOV.UK (www.gov.uk), March 2023
[15] Renewable Heat Incentive statistics - GOV.UK (www.gov.uk), March 2023

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The domestic RHI closed from 31 March 2022. The non-domestic RHI closed to new applicants on 31 March 2021, but the UK Government extended the deadline for commissioning for eligible tariff guarantee or extension applications from 31 March 2022 to 31 March 2023.

Policy: UK Green Gas Support Scheme – a GB-wide Green Gas Scheme is planned to come into force in 2022, stimulating biomethane injection into the gas grid
Date announced: UK Government announcement.
Progress on implementation since time of last report / CCPu:
The UK Government's Green Gas Support Scheme (GGSS) provides tariff-based support for plants producing biomethane via anaerobic digestion which is injected into the gas grid. The scheme is funded by the Green Gas Levy which is applied to all licenced fossil fuel gas suppliers. It follows the non-domestic RHI after it closed. The GGSS opened on 30 November 2021 and was originally open for applications until November 2025, but has now recently been extended to 31 March 2028 following UK Government consultation on a mid-scheme review.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: UK Clean Heat Grant - a GB-wide Clean Heat Grant is planned to come into force in 2022, supporting uptake of heat pumps (and limited biomass boilers) via upfront grants.
Date announced: UK Government announcement
Progress on implementation since time of last report / CCPu: The UK Government launched the Boiler Upgrade Scheme, (formally the Clean Heat Grant) in April 2022. The Boiler Upgrade Scheme (BUS) provides upfront capital grants to support the installation of heat pumps and biomass boilers in homes and non-domestic buildings in England and Wales. The scheme will run until 2025. The Scottish Government opted out of the Boiler Upgrade Scheme in favour of boosting our existing programmes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Statistics for the scheme published monthly[16].
Timeframe and expected next steps: N/A

Policy: Support for Heat Networks: continue providing funding towards the capital costs of heat networks through Scotland's Heat Network Fund and through low interest loans offered by the District Heating Loan Fund.
Date announced: Originally: CCP 2018, updated 2023
Progress on implementation since time of last report / CCPu: Scotland's Heat Network Fund continues to be open to support the establishment and expansion of district and communal heating systems utilising clean heat sources. Together with the funding awarded under the Low Carbon Infrastructure Transition Programme, £19.4 million

[16] Boiler Upgrade Scheme statistics - GOV.UK (www.gov.uk)

(as of March 2024) has been awarded to heat network projects since the CCP was published.
Following a review of our support for heat networks and the financial position of projects in development, the District Heating Loan Fund will close to new applications in 2024. This will help prioritise capital budgets for awarding grants through Scotland's Heat Network Fund to help deliver strategically important heat networks with funding gaps.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps We expect demand for Scotland's Heat Network Fund to increase due to the activity of the Heat Network Support Unit and growth of the heat network market.

Policy: Implement the provisions of the Heat Networks (Scotland) Act 2021 to create a strong regulatory framework to support delivery in 2024.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu:
We published a review of the Heat Network Delivery Plan in March 2024. This report will provide a further update on progress towards meeting the provisions of the Act and other supporting policies.
The Heat Networks (Supply Targets) (Scotland) Regulations 2023 came into force on 24 November 2023. This means the combined supply of thermal energy (heating and cooling) supplied by heat networks in Scotland must reach at least 7 TWh by 2035.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The Heat Networks (Heat Network Zone and Building Assessment Reports) (Scotland) Regulations have been introduced alongside guidance and proformas. These regulations have introduced duties on local authorities to identify areas particularly suitable for the development of heat networks and for those responsible for public sector buildings to provide data on their energy use and current heating systems.
Timeframe and expected next steps: Work continues on the development of the heat network licensing and consenting regime. Ofgem has been appointed as the Scottish licensing authority and we are working to introduce the new regulator regimes in alignment with the planned UK regulations by Spring 2025.
We will provide a further update on progress through a review of the Heat Network Delivery Plan by March 2026.
We will review the 2035 and, if appropriate, other heat network targets once more evidence is available. The 2021 Act allows Ministers to modify these targets, if appropriate.

Policy: Continue supporting the development of heat network projects in Scotland through the Heat Network Support Unit, which is a collaboration between organisations offering advice, guidance and funding to heat networks projects in the pre-capital stages of development.
Date announced: Maintained
Progress on implementation since time of last report / CCPu:

The Scottish Government launched its Heat Network Support Unit (HNSU) in 2022 to support prospective heat network projects in the pre-capital development stages. It is a partnership between the Scottish Government, Zero Waste Scotland and Scottish Futures Trust and acts as the successor to the Heat Network Partnership.

Since September 2022, the HNSU has supported 28 projects across Scotland.
In September 2023, the Scottish Government in collaboration with the Danish Board of District Heating, the Danish Energy Agency and the Royal Danish Embassy in London launched a new 12-month District Heating Mentoring Programme for 2023-2024. This programme brings together senior members from Danish district heating companies with 19 Scottish local authorities to share knowledge and learning about district heating.
In November 2023, the HNSU launched its Strategic Heat Network Support for local authorities. This support includes both funding and advise to help local authorities build on their Local Heat and Energy Efficiency Strategies (LHEES) to develop their approach to establishing district heating networks in their areas.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
The HNSU will continue to support projects in the financial year 2024-2025.

Policy: Net Zero Carbon Public Sector Buildings Standard will be introduced in 2021 and progressively rolled out across the public sector, as announced in the Programme for Government 2019.
Date announced: 2020-2021 PfG + CCPuProgress on implementation since time of last report / CCPu:
The original Standard Document Suite was launched in 2021 to address new buildings and major refurbishment. In August 2023, the scope of the Standard was extended to include the transition of existing buildings. As such, documents in this suite will be progressively re-released to reflect this update.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We intend to review the Standard every five years from 2025 to account for relevant developments.

Policy: Local Heat and Energy Efficiency Strategies (LHEES) will be in place by the end of 2023, setting out preferred heat solutions zones, guiding building owner decision making about replacement heating systems, and forming the basis for local delivery plans targeting heat and energy efficiency investment.
Date announced: 2020-2021 Programme for Government (PFG) + CCPu
Progress on implementation since time of last report / CCPu: The LHEES (Scotland) Order 2022 placed a duty on all local authorities to publish a Local Heat and Energy Efficiency Strategy and Delivery Plan by the end of 2023 and update them every five years. Thirteen of 32 local authorities have published their LHEES (as of May 2024). We continue to provide multi-year funding (until 2027/28) for local authorities to resource the development of their LHEES, as well as capacity building training and

support from Zero Waste Scotland. We are closely engaged with the local authorities and are monitoring their progress.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The statutory deadline for publishing LHEES sits with the local authorities themselves.
Timeframe and expected next steps: We expect the majority of local authorities to have published final LHEES by the end of Summer 2024. We are working to align Scottish Government delivery programmes with the emerging LHEES Delivery Plans. For example, our Heat Network Support Unit is working with local authorities to take the indicative heat network zones identified through LHEES and develop them into projects through feasibility and business case support.

Policy: Assessment of Energy Performance and Emissions Regulations (Non-Domestic Buildings) - The Assessment of Energy Performance of Non-domestic Buildings (Scotland) Regulations 2016 require assessment of the energy performance and emissions of larger non-domestic buildings (those over 1,000 m²). A review programmed for 2021 will investigate and consult upon amended scope of standards and more challenging improvement targets to create a viable pathway for all existing non-domestic buildings to deliver the level of energy demand and emissions reductions needed.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Our consultation on proposals for a Heat in Buildings Bill set out a proposed regulatory framework to decarbonise non-domestic buildings.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
We are currently analysing the responses to our consultation.

Policy: Support for community low and zero emissions heat projects through CARES.
Date announced: CCPu
Progress on implementation since time of last report / CCPu:
CARES continues to provide advice and funding to assist community groups in developing renewable energy, heat decarbonisation and energy efficiency projects in Scotland. Heat decarbonisation is a key focus of the current CARES contract, with support available to eligible applicants.
The Scottish Government commissioned ClimateXChange to undertake research into opportunities to progress community and local energy policy in Scotland. Its report was published in January, and we will carefully consider the recommendations to inform our policy and ongoing support for community and local energy.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Strategic policy direction is provided to the contract delivery body through the Scottish Government's contract manager to ensure CARES is aligned with Scottish Government objectives, with feedback on progress monitored through regular engagement and reporting commitments.

CARES has advised over 1,000 organisations and provided over £61 million in funding to communities throughout Scotland, supporting over 800 projects to install 58.6 MW of renewable energy.
Timeframe and expected next steps:
The current CARES contract runs from April 2021 – March 2025. Learning is gathered from the projects supported and used to inform future support.

Policy: Salix financing facility to support investment in non-domestic buildings retrofit.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The Scottish Government has worked in partnership with Salix Finance to develop and launch Scotland's Public Sector Heat Decarbonisation Fund in 2023. This scheme provides grant funding to local authorities, universities and arm's-length external organisations to decarbonise their buildings.
Salix Finance continues to deliver the Public Sector Energy Efficiency Loan Scheme on behalf of Scottish Government.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
We have recently finished reviewing the first round of applications for projects that we expect to start in 2024-2025.

Policy: Work with social landlords to bring forward the review of the existing Energy Efficiency Standard for Social Housing (EESSH2) with a view to strengthening and realigning the standard with net zero requirements.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Scottish Government has been working with a stakeholder review group, since September 2022, on a review of EESSH2. We have recently consulted on proposals for a new Social Housing Net Zero Standard.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
The Scottish Government is currently analysing the responses to the consultation.

Policy: Work with our partners, including the UK Government, local authorities and utility providers to determine the best approach to heat decarbonisation for buildings currently heated by natural gas.
Date announced: CCPu
Progress on implementation since time of last report / CCPu:
Work is underway to develop an understanding of the decarbonisation options for buildings currently using gas. Local authorities have published Local Heat and Energy Efficiency Strategies (LHEES) which set out the long-term plan for decarbonising heat in buildings and improving their energy efficiency across their local authority area. LHEES will identify strategic heat decarbonisation zones and set out the principal measures for reducing buildings emissions within each zone.

We also continue to call on the UK Government to accelerate decisions on the role of hydrogen and the future of the gas network, and to follow through on its commitment to publish proposals on rebalancing gas and electricity prices, which we believe will help to influence the cost of clean heating systems and their uptake.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

As of May 2024, 13 of 32 local authorities have published their LHEES

Timeframe and expected next steps:

We expect the majority of local authorities to have published final LHEES by the end of Summer 2024.

Policy: Review the system of building assessments and reports on energy performance and heat to ensure a system that is fit for purpose in meeting net zero emissions objectives for heat in buildings.

Date announced: CCPu

Progress on implementation since time of last report / CCPu:

In Summer 2023 we consulted on revised proposals for EPC reform, building on feedback from previous consultations. We are currently analysing the feedback to this consultation and will publish the government response alongside our response to the consultation on proposals for a Heat in Buildings Bill.

In January 2024, we started a review of the existing EPC Operational Framework to ensure that it is fit for purpose in meeting net zero emissions objectives for heat in buildings.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps:

We are currently analysing consultation feedback.

Policy: Work with stakeholders to further understand and support the application and use of low and zero emissions heating within designated historic environment assets and traditional buildings.

Date announced: CCPu

Progress on implementation since time of last report / CCPu:

We published recommendations from the Tenements Short Life Working Group on options to decarbonise tenement buildings, to which we will issue a response in due course.

We also commissioned research from Energy Saving Trust (EST) into heat decarbonisation solutions for buildings which have multiple owners and mixed uses.

We have also commissioned research into clean heating options for challenging building types, which we expect to publish over the Summer.

We continue to work closely with Historic Environment Scotland and the historic environment sector more widely on policy development.

The Scottish Ministers will continue to press UK Government to remove/reduce VAT for retrofitting of traditional buildings to encourage energy efficient improvements in traditional homes

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps: Our consultation on proposals for a Heat in Buildings Bill set out how we intend to provide flexibility for certain types of properties, including historic and traditional buildings, and set out how we intend to provide this in future regulation.

Policy: Develop and introduce future regulation for non-domestic buildings and launch a consultation on these proposals.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Our proposed regulatory approach for non-domestic buildings was included within the consultation on proposals for a Heat in Buildings Bill.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A.
Timeframe and expected next steps
The Scottish Government are currently analysing consultation feedback.

Policy: Undertake work to identify the capacity and output of renewable electricity generation required in Scotland to support the projected rollout of heat pumps.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: As part of research we have commissioned into the energy transition in Scotland, we have assessed potential ranges of energy demand and generation, including for electricity, out to 2045 under three future energy scenarios[17]. These scenarios have informed the roadmap included in the draft Energy Strategy and Just Transition Plan and further assessments are underway as part of the next CCP.

These scenarios suggest that if current renewables deployment ambitions are met, Scotland will continue to be a net exporter of electricity to the rest of Great Britain (GB), even after accounting for increased demand from electrification (including from heat pumps) across Scotland. This is further evidenced by National Grid ESO Future Energy Scenarios[18], which explores decarbonisation pathways for the GB energy system and also suggests that even under high electrification scenarios, Scotland will continue to be a net exporter of electricity due to the significant increases in renewable electricity generation capacity that are projected.

We will continue to update our assessments.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing

Policy: Consider whether to extend Permitted Development Rights (PDR) for zero-emission heat networks (HNs) and micro-renewable technologies.
Date announced: CCPu 2020

[17] Scottish whole energy system scenarios | Climate XChange
[18] Future Energy Scenarios (FES) | ESO (nationalgrideso.com)

Progress on implementation since time of last report / CCPu:
We are carrying out a multi-phase review of permitted development rights (PDR) in Scotland. Phase 3 of the review has focussed on new and extended PDR for domestic and non-domestic renewable energy equipment. The measures brought forward streamline the planning process for various low carbon technologies and alteration/replacement windows by removing the need to apply for planning permission to install them. Legislation was laid in the Parliament on 28 March 2024 and subject to Parliamentary scrutiny is due to come into force on 24 May 2024.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Work is in part dependent on progress with the wider legislative framework on heat networks.
Timeframe and expected next steps:
We are continuing to explore delivery of improvements via (i) exemption from heat network consenting, and (ii) inclusion in the scope of PDR, if more appropriate. We will know more about our plans to take this forward following our consultation on consenting proposals, which is planned over Summer.

Policy: Undertake work to better understand the impact on electricity networks of projected heat pump deployment. Work with the Distribution Network Operators through the Heat Electrification Partnership to build an evidence base to inform business planning. Work with industry and networks to understand need for heat pumps systems to be smart enabled, and identify options to integrate smart systems into our delivery programmes; and to explore how innovation can help to improve the consumer experience.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Scottish Government established a Local Electricity Networks Coordination Group (LENCG) in 2023 which brings together the networks companies and the heat and transport sectors to help tackle challenges relating to the electricity network, with a particular focus on identifying barriers these sectors face in connecting to the grid. The LENCG aims to foster transparency among industry stakeholders and the networks companies through effective communication, data flows, and support for implementing solutions to barriers. It is also an important forum for identifying where further investment in the networks is required to meet current and future demand, and further enable the uptake of low carbon technologies such as heat pumps to help support wider Scottish Government policies and ambitions. We commissioned research published in October 2023 which looked into the network investment costs of the heat and transport transition in Scotland. It will form part of the evidence base for how we approach decarbonising our buildings in Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
Through the LENCG, the Scottish Government will continue to work with the Distribution Network Operators and wider stakeholders in the heat sector to facilitate effective communication and continue to build the evidence base for current and future demand.

Policy: Support heat networks through: Introducing a Non-Domestic Rates Relief for renewable and low carbon heat networks until 2023-2024.
Date announced: CCPu
Progress on implementation since time of last report / CCPu:
We carried out a review of rates relief for district heat networks during 2023.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
From April 2024, we will introduce a 90% rates relief for district heat networks, where at least 80% of the thermal energy generated by that network in any given year is derived from renewable generation.
Timeframe and expected next steps: A review of rates relief regulations for district heating networks will take place in 2027.

Policy: Through National Planning Framework 4 (NPF4), ensure that local development plans take account of where a Heat Network Zone has been identified.
Date announced: CCPu
Progress on implementation since time of last report / CCPu: As set out in last year's report, NPF4 (adopted in February 2023) sets out that Local Development Plans (LDP) should take into account the area's Local Heat & Energy Efficiency Strategy (LHEES). The spatial strategy should take into account areas of heat network potential and any designated Heat Network Zones.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Complete

Policy: Explore how local tax powers could be used to incentivise or encourage the retrofit of buildings, and commission further analysis to identify potential options.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We will continue to explore options to incentivise buildings retrofit / transition to clean heat using local tax powers.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We are considering policy options in the non-domestic buildings sector ahead of the next review of non-domestic business rates in 2026.

Policy: Design future delivery programmes to ensure significantly accelerated retrofit of buildings, with new programmes to be in place from 2025.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: In October 2023, the successor to our Warmer Homes Scotland scheme was launched. The refreshed scheme continues our approach to supporting those at risk of fuel poverty through the net zero transition with a whole house approach and focus on clean heating allowing deep retrofit of individual homes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

N/A
Timeframe and expected next steps:
Our delivery programmes will continue to evolve to meet the scale of change required and align with any regulations we introduce.

Outcome 3: Our gas network supplies an increasing proportion of green gas (hydrogen and biomethane) and is made ready for a fully decarbonised gas future.

Policy: Hydrogen for heat demonstrator – providing £6.9m support for SGN's H100 hydrogen for domestic heat demonstrator.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: SGN's H100 project continues to make good progress towards their expected launch date of Summer 2025. Key contracts have been awarded, and customer sign-ups have reached over 300 households. Scottish Government representatives remain engaged with this work, attending monthly board meetings and inputting providing views on risk and policy where appropriate.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The H100 Fife hydrogen network is scheduled to go live in 2025.

Policy: Work with UK Government on product standards, with a view to making new gas boilers hydrogen-ready.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Product standards for boilers are a reserved matter but the Scottish Government continues to engage with the UK Government on this policy area, while calling for the phase-out of gas boilers to be expedited from the mid-2030s.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: 2026

Outcome 4: The heat transition is fair, leaving no-one behind and stimulates employment opportunities as part of the green recovery

Policy: Develop a long-term public engagement strategy and begin implementation of early actions.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
We published the Heat in Buildings Public Engagement Strategy (PES) in December 2023.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: In Chapter 5 of our strategy, we set out the indicators we will use to track Scottish public awareness and understanding of clean heating and public engagement in the heart transition.
Timeframe and expected next steps: The PES covers the period 2023 to 2026 and will be reviewed at the end of 2026. The next steps are to progress short term actions which include: launching the strategic partnership group, undertaking marketing campaigns and progressing work to improve the consumer journey.

Policy: Smart Meter installation: All homes and businesses will be offered a smart meter by 2020 under a UK Government initiative, providing the opportunity for a greater understanding of final energy consumption.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The smart meter programme is owned and led by the UK Government who have responsibility for the policy, regulatory and commercial framework. The UK Government introduced a four-year 'Targets Framework' on 1 January 2022, which sets energy suppliers annual smart meter installation targets.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The UK Government has set expectations for suppliers to achieve a minimum installation coverage in homes of 74% by the end of 2025. These targets are binding obligations set out in licence conditions and Ofgem is responsible for regulation and enforcement. There are now over 34.8 million smart and advanced meters in homes and small businesses across Great Britain. Latest statistics show over half (61%) of energy meters in Great Britain are now smart meters. Latest data (March 2023) show that 43% of domestic electricity meters in Scotland are smart meters[19].
Timeframe and expected next steps: The UK Government is currently in Year 3 of the four-year smart meter Targets Framework. Following the completion of this framework, work will continue towards making smart meters available for all consumers who wish to install them. The Smart Metering Implementation Programme is in the process of looking into the future of the smart metering framework, including maintaining smart meter functionality, ensuring 4G compatibility, and understanding the appropriate pace of new smart metering installations. The UK Government is also envisaging consulting on regulatory options for encouraging new installations in the near future.

[19] Smart meters in Great Britain, quarterly update March 2023 - GOV.UK (www.gov.uk). The figure reported here is not comparable with the figure reported last year (due to a change in data source). This year's data is drawn from DESNZ's Q1 2023 Smart Meters Statistics publication, which provides the regional breakdown of smart meter penetration.

Policy: Work with the Scottish Cities' Alliance and the seven cities on the opportunities to accelerate activity on heat and energy efficiency.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Verity House Agreement was signed by the Scottish Government and Convention of Scottish Local Authorities (COSLA) on 30 June 2023, setting out a vision for a more collaborative approach to delivering shared priorities for the people of Scotland. Aligned with the Verity House Agreement, we have worked with the Scottish Cities Alliance and COSLA to develop a Climate Delivery Framework between national and local government to agree shared approaches to delivering action on climate change. The framework will enable better alignment between national and local targets and to jointly address the challenges and barriers to delivery. This includes the establishing of the Scottish Climate Intelligence Service (SCIS), which will help councils build capacity and capability for the development of area-wide programmes of emissions reduction. SCIS is being delivered by a partnership between Edinburgh Climate Change Institute and the Improvement Service.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing

Policy: Provide capital investment for Scottish colleges for equipment to deliver training for energy efficiency and heat.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Thanks to previous investment, infrastructure in Scottish Colleges broadly matches the current levels of training demand. However, training is not equally available across all geographic areas. The Scottish Government has therefore invested in a new mobile heat pump training centre which launched in August 2023 and is available to any college in Scotland to deliver on site heat pump training.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The Scottish Government will continue to work in partnership with the sector to ensure that appropriate support and training provision are aligned at a local level with business needs and future local demands.

Policy: Respond to the recommendations of the Expert Advisory Group on a heat pump sector deal for Scotland, by Q1 2022
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Scottish Government's response was published on 11 November 2022.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Complete

Policy: Bring forward and support demonstrator projects, such as: hybrids and high temperature heat pumps; the use of hydrogen for space and water heating; projects to understand the impact of heat transition on existing energy networks.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: In November 2022 the Scottish Government launched the Green Heat Innovation Support Programme that makes available funding for Scottish based companies to develop ideas that support growth of the clean heat sector. This includes funding for feasibility studies as well as large-scale research & development and capital investment projects.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: As at February 2024 the programme has provided £912,000 in funding to support the research and development of innovation projects within the clean heat and energy efficiency sector.
Timeframe and expected next steps: Through the programme we will continue to identify opportunities that can support research and development in Scotland's heat transition.

Policy: Publish a 'Heat Network Investment prospectus' in 2021/22 - a first-cut of heat network zones across Scotland, combined with information on decarbonisation needs of existing networks.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Further to the First National Assessment of Potential Heat Network Zones published in April 2022, local authorities have also carried out assessments at a local level through their Local Heat and Energy Efficiency Strategies (LHEES).
The projects receiving pre-capital and capital support via the Heat Networks Support Unit and the Scotland's Heat Network Fund are included in our quarterly reports to give potential investors, the supply chain and building owners considering connecting to a heat network a clear view on the pipeline of projects the Scottish Government is supporting.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps Guidelines on decarbonisation plans for existing heat networks will be developed as part of the heat networks consent regime. Existing heat networks will need to demonstrate and follow a path to decarbonisation as part of their consent. The consent regime is expected to go live in Spring 2025.

Policy: Establish a short life working group on finance for the heat transition.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We established an independent Green Heat Finance Task Force in 2021 to explore potential new and innovative financing mechanisms to attract private financing at scale to support the transition to clean heat. The Taskforce published its Part 1 Report in November 2023.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The publication of the Taskforce Part 2 report is expected this year.
Timeframe and expected next steps:
The Taskforce will publish its Part 2 report during 2024/2025.

Policy: Establish principles to underpin our commitment to 'no-one being left behind' in the heat transition, ensuring our approach neither increases the fuel poverty rate nor increases the depth of existing fuel poverty. This will include the effective design and targeting of our fuel poverty and heat in buildings programmes.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Heat in Buildings Strategy sets out the principles that will guide our delivery programmes, to assess the impacts of our programmes on fuel poverty rates, and to ensure we only take forward actions where they are found to have no detrimental impact on fuel poverty rates, unless additional mitigating measures can also be put in place.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Ensure Local Heat and Energy Efficiency Strategies are developed through extensive engagement with local communities.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We published Guidance setting out what is required when developing an LHEES in October 2022. The Guidance included a requirement for extensive engagement as local authorities develop their LHEES, including with local communities.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Complete

Policy: Continue delivery of energy efficiency investment to support fuel poor households and conduct further modelling and analysis to better understand the potential impact of the heat transition on fuel poor households and the scale of, and options for, mitigation that may be required.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
We continue to provide a broad range of delivery programmes to provide advice and support to people related to energy efficiency and clean heating, including to support those least able to pay, delivered through our Warmer Homes Scotland and Area Based schemes.
The Heat in Buildings Monitoring and Evaluation Framework, published in November 2023, is designed to demonstrate the extent to which our Heat in Buildings policies and programmes are delivering emission reductions and achieving wider outcomes, including people not being pushed into fuel poverty as we decarbonise our homes. This framework will also support the development of a separate Fuel Poverty Monitoring and Evaluation Framework this year to monitor progress against our Fuel Poverty Strategy.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps: development of separate Fuel Poverty Monitoring and Evaluation Framework this year.

Policy: Urge the UK Government to rebalance levy costs on energy bills to make gas and electric systems relatively more cost comparable.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The UK Government has committed to making progress by the end of 2024 in rebalancing the price of gas and electricity by moving policy costs away from electricity and onto fossil fuels when current high gas prices fall. We continue to press the UK Government on this.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Ongoing

4. Chapter 3: Transport

4.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the Climate Change Plan update (CCPu) for this sector was for **10.2 $MtCO_2e$**, whereas outturn emission statistics for this year (published in June 2023) show a position of **11.6 MtCO2e**. On the basis of comparing these figures, the sector was **outside** its envelope in 2021.

The CCPu sets out the following eight policy outcomes for the sector, the indicators for which are summarised below:

To address our overreliance on cars, we will reduce car kilometres by 20% by 2030	On Track	Off Track	Too Early to Say
% reduction in car kilometres		X	

We will phase out the need for new petrol and diesel cars and vans by 2030	On Track	Off Track	Too Early to Say
% of new car registrations that are Ultra Low Emission Vehicles (ULEV)	X		
% of new van registrations that are ULEV		X	

To reduce emissions in the freight sector, we will work with the industry to understand the most efficient methods and remove the need for new petrol and diesel heavy vehicles by 2035	On Track	Off Track	Too Early to Say
% of new heavy goods vehicle (HGV) registrations that are ULEV			X

We will work with the newly formed Bus Decarbonisation Taskforce, comprised of leaders from the bus, energy and finance sectors, to ensure that the majority of new buses purchased from 2024 are zero-emission, and to bring this date forward if possible.	On Track	Off Track	Too Early to Say
% of new bus registrations that are ULEV			X

We will work to decarbonise scheduled flights within Scotland by 2040.	On Track	Off Track	Too Early to Say
% reduction in emissions from scheduled flights within Scotland			X

Proportion of ferries in Scottish Government ownership which are low emission has increased to 30% by 2032	On Track	Off Track	Too Early to Say
% of ferries that are low emissions	X	-	-

There are no indicators for this policy outcome. More information is provided in Part C.

Scotland's passenger rail services will be decarbonised by 2035.	On Track	Off Track	Too Early to Say
% of single track kilometres electrified	-	X	-
% of train kilometres powered by alternative traction	-	X	-

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, such as low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

Transport emissions partially bounced back in 2021 as COVID-19 lockdowns and restrictions started to ease, resulting in the sector's emissions falling outside its envelope (10.2 MtCO2e). This reinforces the magnitude of work still to be done to ensure transport emissions are consistently within its envelope.

Again the main source of transport emissions in 2021 was cars – accounting for over 40%. Following a draft route map, and the undertaking of a consultation, the Scottish Government will bring forward publication of the final route map for 20% car use reduction in car use in autumn 2024 to include a timeline for implementing demand management.

ULEV uptake is also crucial in driving down emissions from cars. ULEV cars represented 16.2% of all new car registrations made in Scotland in the 12 month period to September 2023, this is an increase on the year before which suggests progress is being made in meeting the overall target of phasing out new petrol and diesel cars by 2030. To date over £180 million funding through the Low Carbon Transport Loan has supported the switch to low carbon vehicles, and over £65 million has been invested in growing and developing the ChargePlace Scotland network. By 2023, there was over 2,600 charge points available in Scotland.

Scotland's Zero Emission Truck Taskforce published its HGV Decarbonisation Pathway for Scotland in March 2024 following a series of meetings over the past 18 months. The group consisting of senior leaders across government, haulage, manufacturing, energy, union and finance sectors have identified 4 key challenges posed by the transition to zero emission trucks:

- Energy infrastructure
- Financial models
- Confidence in technological and commercial change
- Workforce skills

Key messages from the task force include working collaboratively, embracing proven and commercially viable technology, and enabling smaller fleet operators to collaborate in order to reduce risk and create opportunities. The taskforce also published milestones, with the aim that all new HGVs sold in the UK must be zero emission by 2040.

There will be investment of over £370 million in 2024-25 to support concessionary bus travel for children, young people aged under 22, disabled people and everyone aged 60 and over. Overall, investment to-date means more than 2 million people in Scotland can now travel for free on buses. Since the introduction of the Young Person's Free Bus Travel Scheme in January 2022, over 116 million journeys have been made by young people across Scotland.

The 2023 Programme for Government included an amendment to the 2021 Bute House Agreement which committed to an Active Travel budget of £320 million by 2024-25. We have now put in place a more sustained and stable growth plan for Active Travel with a record amount of £220 million proposed in the draft budget for 2024-25, building on the investment already made in recent years. The Active Travel Transformation Project was established to ensure that our increasing investment in Active Travel results in transformative change – one which delivers infrastructure quickly and efficiently to a high standard and in a planned and cohesive fashion, enabling people to make walking, wheeling and cycling their primary mode of transport for short, everyday journeys.

Rail continues to improve and performs very well compared with other mode types with average emissions of 35.5 gCO2e per passenger kilometre in 2022 (UK data).

The figures for rail cover both diesel and electric trains. Other than coach travel, rail remains the most carbon- efficient means of transport in 2022, generating circa 80% less carbon per passenger kilometre than private cars.

Additionally, each tonne of freight moved by rail generates circa 75% less carbon emissions than heavy goods vehicles.

Developments in monitoring arrangements since last report

N/A

4.2 Part B - Progress to Policy Outcome Indicators

Policy Outcome: Cross-sectoral social and economic
Indicator: Full Time Equivalent (FTE) employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

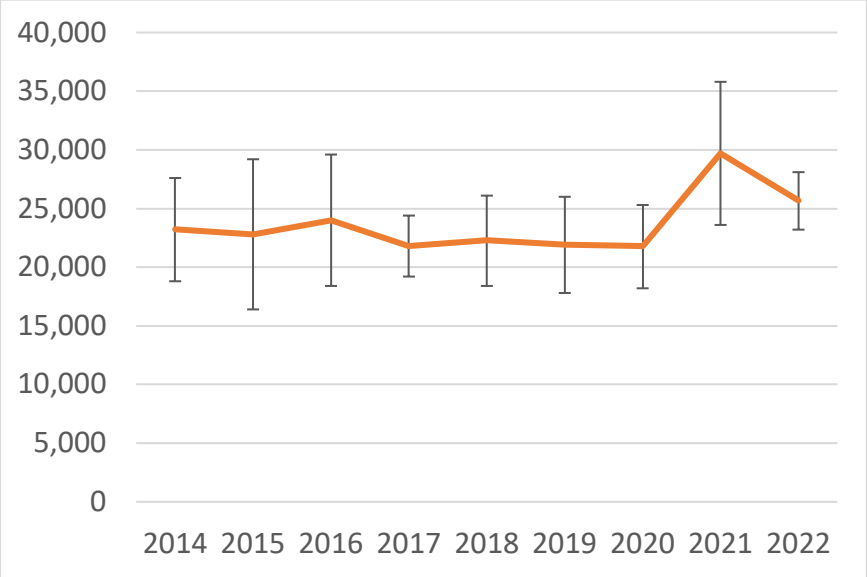
Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics (ONS)

Assessment: Too early to say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 1
Indicator: % reduction in car kilometres
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: -6.3% (2019-2022)
Data Source(s): Scottish Transport Statistics 2023

Assessment: Off track

Commentary:
Following significant pandemic-related car traffic reductions in 2020, the latest figures show that car use continued to rebound with car kilometres increasing by 10.7% between 2021 and 2022. Nevertheless the 6.3% reduction against the 2019 baseline reflects ongoing changes to travel patterns, including increased use of digital connectivity which enables people to work and connect with others remotely.

There remains uncertainty regarding travel patterns in the longer term, but it is expected car traffic will continue to rise in subsequent years before interventions to deliver reductions in car traffic start to make an impact.

Sustained reductions in car use could occur towards the end of 2020s, if large-scale urban demand management measures are designed and implemented in the intervening period.

We also have in place our early route map interventions, including free bus travel for the under-22s and Low Emission Zones. These will be supported by further enhancements to transport, place based interventions, and digital connectivity.

Policy Outcome: 2
Indicator: % of new car registrations that are Ultra Low Emissions Vehicles (ULEV)
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 16.2% (Year to Q3 2023)
Data Source(s): Department for Transport (DfT) and Driver and Vehicle Licencing Agency (DVLA)

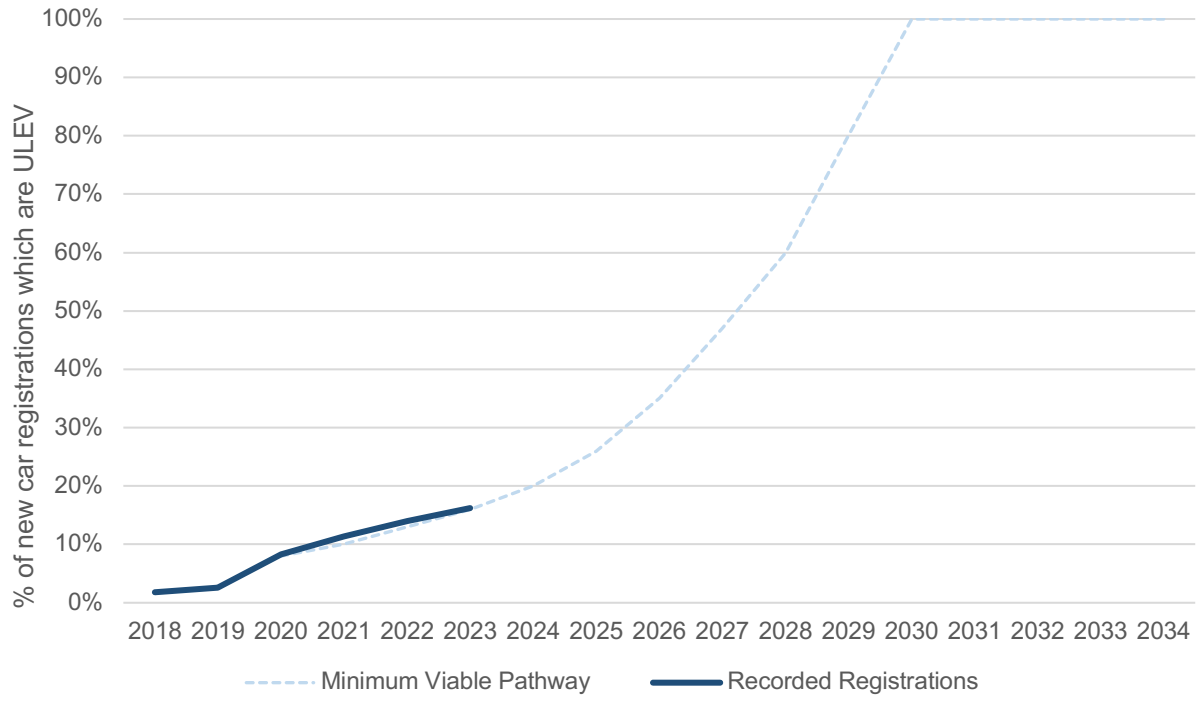
Assessment: On track

Commentary:
ULEVs accounted for 16.2% of new car registrations in the 12 months to September 2023, up from 14.0% in the previous 12-month period.

More than 25,000 new ULEV car registrations made in Scotland over the 12 months to September 2023 was a new record high. Compared to the previous year, that is an increase of 33% and means that the number of new ULEV car registrations in Scotland has increased annually since records began in 2010.

As of Q3 2023, the rate of ULEV car registrations was slightly above the minimum viable pathway (the minimum rate of ULEV car registrations considered to be required to remain on-track for achieving this policy outcome). Therefore, this policy outcome is deemed to be on-track. This pathway may be reviewed and amended in future years.

Actual ULEV car registrations and the minimum viable pathway



Policy Outcome: 2
Indicator: % of new van registrations that are ULEV
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 3.8% (Year to Q3 2023)
Data Source(s): Department for Transport (DfT) and Driver and Vehicle Licensing Agency (DVLA)

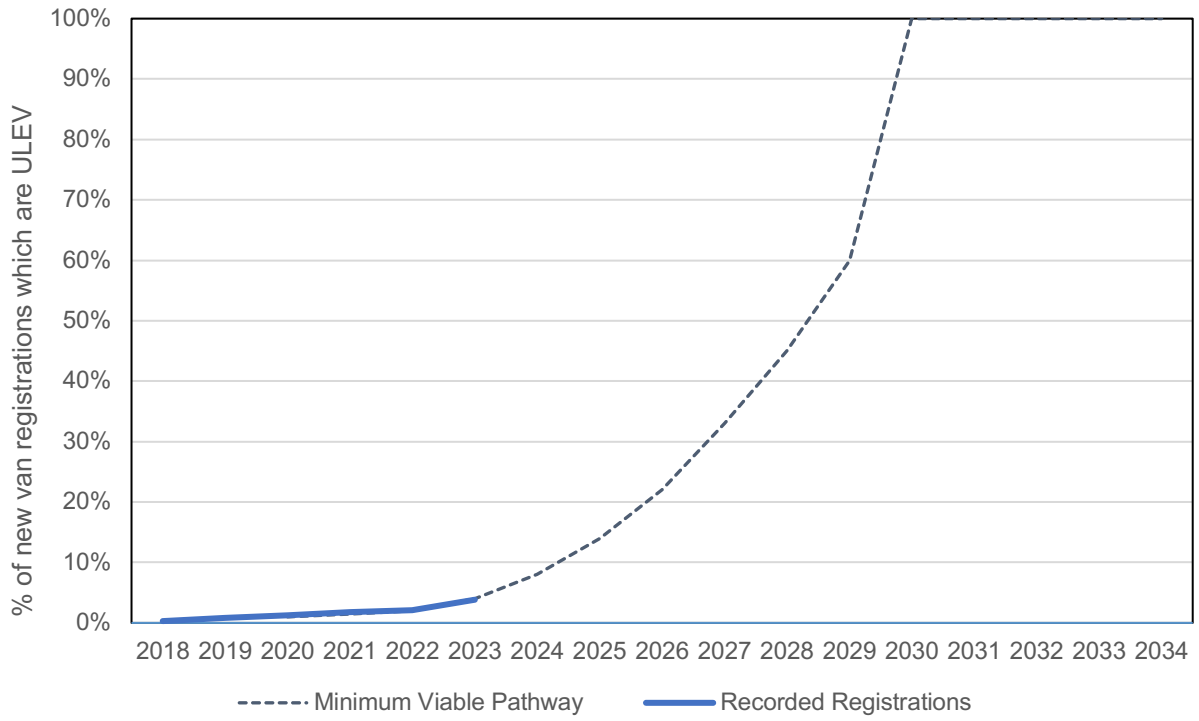
Assessment: Off track

Commentary:
ULEV van registrations was 3.8% of all new van registrations in the 12 months to September 2023, up from 2.1% in the previous 12-month period.

Despite accounting for a small proportion of all new van registrations, ULEV van registrations rose by around 72% compared with the previous 12-month period. Overall, this was in the region of 850 new ULEV vans.

ULEV van registration fell slightly below the minimum viable pathway in 2023 (4.0%), meaning that progress towards this policy outcome should be marked as off-track. This pathway may be reviewed and amended in future years.

Actual ULEV Van Registrations and the Minimum Viable Pathway



Policy Outcome: 3
Indicator: % of new HGV registrations that are ULEV
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 0.7%
Data Source(s): Department for Transport (DfT) and Driver and Vehicle Licensing Agency (DVLA)

Assessment: Too early to say.

Commentary:
There was only 27 ULEV HGV registrations made in the 12 months to September 2023. Technological and energy infrastructure development for HGVs is still in its infancy with long distance vehicles not yet commercially available, hence the minimal progress made to date (less than 1% of all new HGV registrations each year have been ULEV).

However, Scotland's Zero Emission Truck Taskforce published its HGV Decarbonisation Pathway for Scotland in March 2024, setting out actions for the public and private sector to increase the rate of transition to zero emission HGVs.

Policy Outcome: 4
Indicator: % of new bus registrations that are ULEV
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 40.4% (Year to Q3 2023)
Data Source(s): Department for Transport (DfT) and Driver and Vehicle Licensing Agency (DVLA)

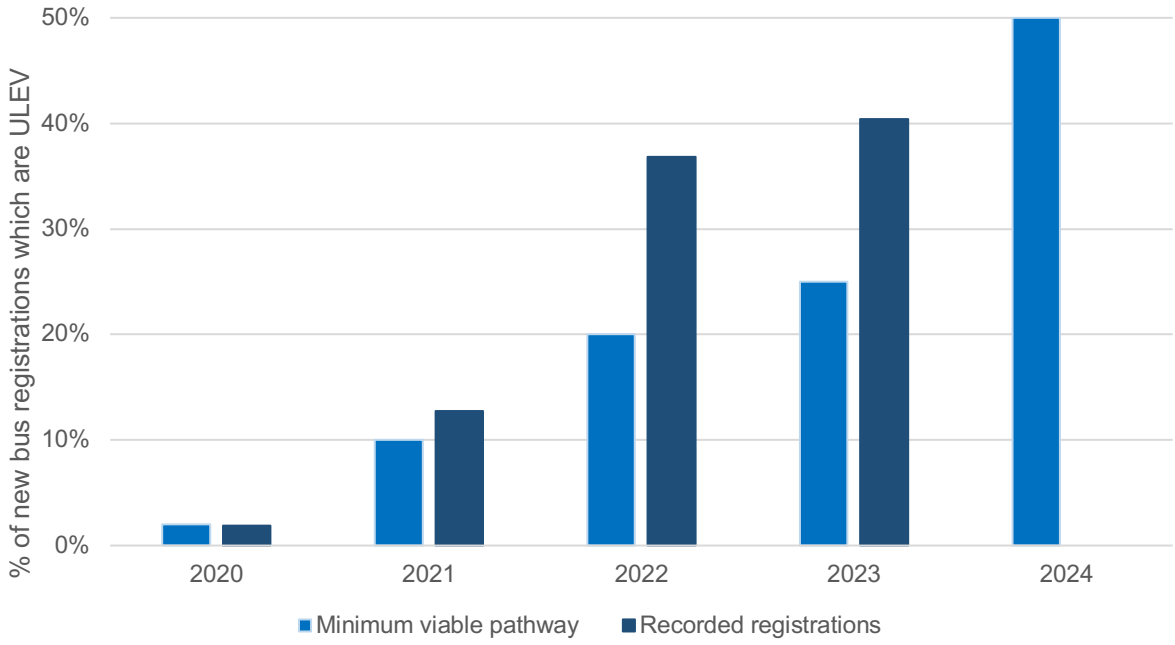
Assessment: On track

Commentary:
ULEVs accounted for more than 40% of new bus registrations in the 12 months to September 2023, up from 37% in the previous 12-month period. Since the last update there was a total of 281 new ULEV buses registered, an increase of 45%.

Currently the rate of new ULEV buses is comfortably above the minimum viable pathway (25% in 2023) - the minimum rate of new ULEV buses required each year in order to remain on track for achieving this policy outcome. Therefore, progress towards this policy outcome is considered to be on track.

Through the Scottish Ultra Low Emission Bus Scheme (SULEBS) and the Scottish Zero Emission Bus Challenge Fund (ScotZEB), almost £113 million has been awarded from the Scottish Government to bus operators in Scotland to support the acquisition of 548 new zero-emission buses and their supporting infrastructure.

Actual ULEV Bus Registrations and the Minimum Viable Pathway



Policy Outcome: 5
Indicator: % reduction in emissions from scheduled flights within Scotland
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: +4% (2022-2023)
Data Source(s): Loganair

Assessment: Too early to say

Commentary:
Emissions from Loganair's scheduled flights within Scotland increased by 4% over the year to 2023 while the number of scheduled flights fell by 4% over the same period. Data provided by Loganair does not provide conclusive explanations for these trends.

Connectivity with the Highlands and Islands is vital for many reasons, for example, helping to reduce inequalities, deliver inclusive economic growth and enable access to lifeline services such as healthcare. It is equally important that emissions from flying be reduced, which will require new or upgraded aircraft (such as hydrogen, electric or hybrid) and significantly increased use of Sustainable Aviation Fuels (SAF).

Loganair operates the vast majority of flights across the Highlands and Islands and it is therefore welcome that it recently signed a Memorandum of Understanding with Cranfield Aerospace Solutions that aims to have the first operational hydrogen-electric aircraft flying in Kirkwall by 2027. According to reports, this could become the world's first commercial zero emission air service. Loganair's goal remains for its entire fleet to comprise zero-emission aircraft by 2040.

The Scottish Government's Aviation Statement is expected to be published shortly after this Monitoring Report. It will build on a public consultation that highlighted strong support for decarbonising aviation through the development of low and zero emission aircraft and investing in SAF. As aviation is reserved, the Statement will also take into account the UK Government's 'Jet Zero strategy' for decarbonisation, which applies throughout the UK and therefore influences the policy choices the Scottish Government can make. The Scottish Government will continue to be in dialogue with the UK Government so that Scotland can fully benefit from Jet Zero, including by helping us to achieve our target of domestic flights emission being Net Zero by 2040.

Policy Outcome: 6
Indicator: % of Government owned ferries that are low emissions
On-track Assessment (Milestones/Targets): Progress to target [30% by 2032]

Most Recent Data: 8% of the current Scottish Government Fleet consists of low emission vessels.
Data Source(s): Caledonian Maritime Assets Ltd (CMAL) & Transport Scotland

Assessment: On track

Commentary:
A final draft version of the Vessels and Ports plan was published for consultation in January 2024, as a first part of the Islands Connectivity Plan. This set out proposals for fleet modernisation and port upgrades to 2045 and includes a section on emissions and environmental impact.

The Small Vessel Replacement Programme, which is approaching business case decision, will increase the number of low emission vessels within the Scottish Government's ferry fleet. Delays to the business case process have altered the trajectory slightly from that suggested last year, but should not affect the achievability of the target. The programme will deliver vessels that utilise the latest proven battery and on shore charging technologies.

The indicative share of low emission ferries in each year is set out below. This trajectory has been updated to align with current programme timelines, but as plans and programmes are in place to deliver a sufficient number of low emissions vessels by 2032, progress towards the target is currently considered to be on-track.

Expected share of vessels in Scottish Government fleet that are low/zero emission:

2018 - 8%
2019 - 8%
2020 - 8%
2021 - 8%
2022 - 8%
2023 - 8%
2024 - 8%
2025 - 7%
2026 - 7%
2027 - 14%
2028 - 21%
2029 - 24%
2030 - 24%
2031 - 24%
2032 - 30%

Policy Outcome: 8
Indicator: % of single track kilometres electrified
On-track Assessment (Milestones/Targets): Progress to target [70% by 2034]

Most Recent Data: In December 2023 27 single track kilometres of electrification was commissioned as part of the Barrhead Electrification project. This increased the length of electrified route from 885[20] single track kilometres to 912 single track kilometres. The total route length in Scotland is 2,695[21] single track kilometres. Electric train operations already make up 76% of passenger journeys and 58% of passenger vehicle miles in Scotland.
Data Source(s): Office of Rail and Road

Assessment: Off track

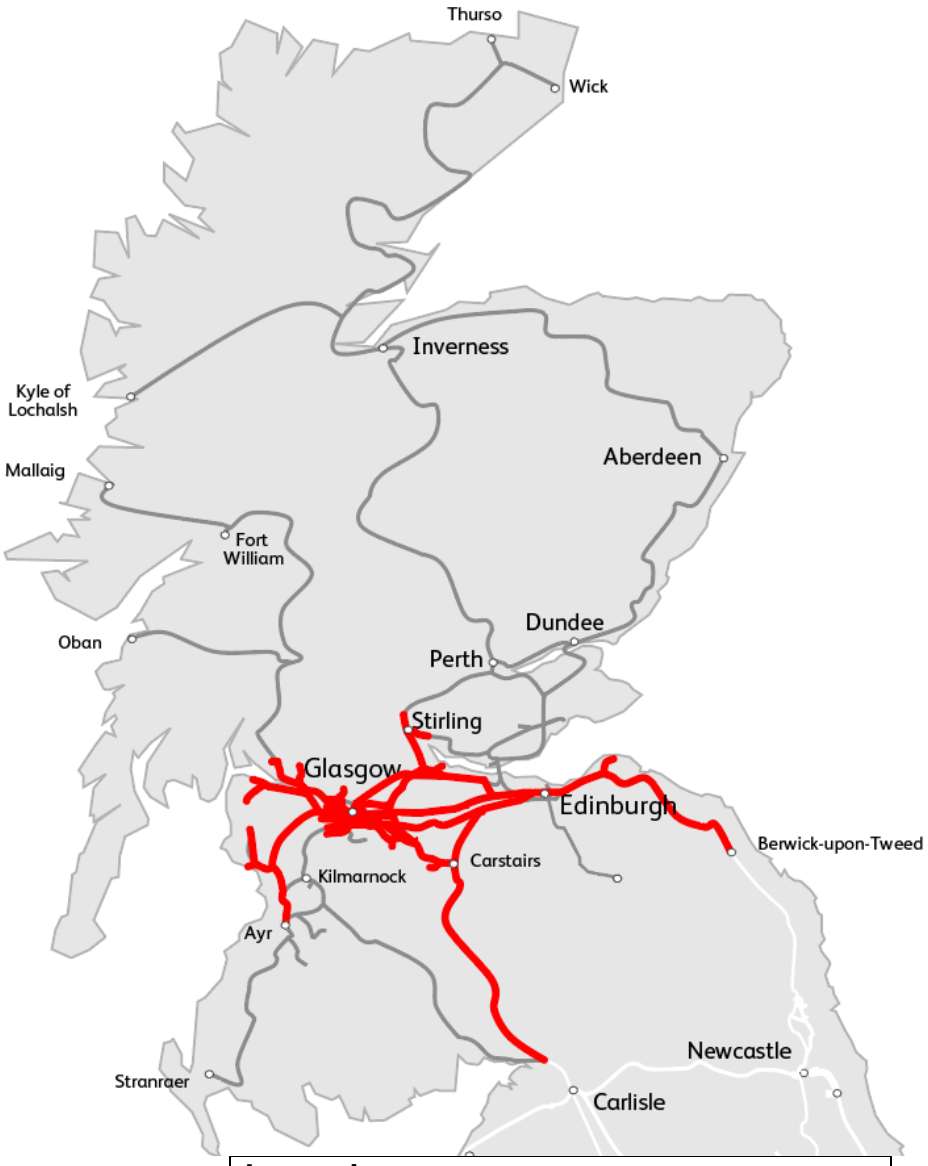
Commentary:
Scotland has already proved successful in delivering electrification projects efficiently. However, significant upfront capital investment is required to electrify the network. The major infrastructure cost components of electrification are:

- Clearance of structures and route.
- Installation of Overhead line electrification.
- Power feeding and substations.
- Development, design and project management.

These can limit the routes on which electrification can be cost effective and provide value for money. The economic case for electrification is best on lines which are more intensively used. This is because capital costs for electrification are driven by the extent of electrification whilst benefits are driven by the utilisation of this infrastructure.

Significant delivery challenges exist in respect of available budget given that the capital cost of the rail decarbonisation (including electrification) programme is forecast to exceed available budgets.

[20] ORR Rail infrastructure and assets, April 2022 to March 2023.
[21] ORR Rail infrastructure and assets, April 2022 to March 2023.


Thurso
Wick
Inverness
Kyle of Lochalsh
Mallaig
Aberdeen
Fort William
Dundee
Oban
Perth
Stirling
Glasgow
Edinburgh
Berwick-upon-Tweed
Carstairs
Kilmarnock
Ayr
Newcastle
Stranraer
Carlisle
Legend:
Electrified network with electric trains operation
Non-electrified network with diesel trains operation

Policy Outcome: 8
Indicator: % of train kilometres powered by alternative traction
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: While untested on the Scottish network, battery trains are increasingly being operated internationally. Scotland is uniquely positioned to become a leading nation in the production of reliable, competitive, sustainable hydrogen owing to the combination of its natural resources, infrastructure and skilled energy workforce. The Hydrogen Policy Statement[22] published in 2020 confirmed that both renewable and low-carbon hydrogen will play an increasingly important role in Scotland's energy transition to net zero.
Data Source(s): Transport Scotland, The Hydrogen Action Plan

Assessment: Off track

Commentary:
The Hydrogen Action Plan[23] provides an overview of some of the sectors where hydrogen might be more or less likely adopted as a route to decarbonisation based on current alternatives and available opportunities. Subject to price and availability, hydrogen in the transport sector could act as a complementary energy source alongside electrification, providing an option for heavy duty vehicles and parts of the rail network, where full electrification is challenging.

The use of battery-electric trains with discontinuous electrification as the end-state for routes where freight does not operate is an option for decarbonisation. This approach offers the opportunity to decarbonise the railway at a lower capital cost than with full electrification. Depending on the extent of electrification required to operate these hybrid trains, for some routes where freight is a factor, this provides an interim or transitional solution which would allow early benefits realisation and optimisation of value for money by significantly reducing capital costs to the taxpayer.

Testing to date has shown that Hydrogen trains only deliver 34% of the efficiency of electric trains (though this is an improvement over diesel). It is expected that technology advancements will be made in the coming years to improve the efficiency of hydrogen fuel cells but it remains a considerable way behind electrification.

[22] Scottish Government Hydrogen Policy Statement
[23] Scottish Government Hydrogen Action Plan

4.3 Part C - Information on implementation of individual policies

Outcome 1: To address our overreliance on cars, we will reduce car kilometres by 20% by 2030

Policy: If the health pandemic has moved to a phase to allow more certainty on future transport trends and people's behaviours – and work and lifestyle choices future forecasting – in 2021 we will publish a route-map to meet the 20% reduction by 2030.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Following a public consultation, Transport Scotland is currently working with local authority partners to prepare a final post-consultation version of the route map for publication later this year, and are developing a resource guide to aid local authorities and partners to deliver car reduction in their area.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The only indicator to-date is year to year change in % car km reduction, publication of the draft route map, and commitment to publication of the final route map. We will publish a monitoring and evaluation framework alongside publication of the final route map.
Timeframe and expected next steps: The finalised route map, consultation analysis, monitoring and evaluation framework, and resource guide for local authorities will be published in autumn 2024.

Policy: Commit to exploring options around remote working, in connection with our work on 20-minute neighbourhoods and work local programme.
Date announced: 2020-2021 Programme for Government (PfG)
Progress on implementation since time of last report / CCPu: Transport Scotland and the Scottish Government commissioned and published research through which we explored options around remote options: one a socio-economic analysis of home working (published October 2021), and another on the emissions impact of home working (published August 2021).

The National Planning Framework 4 (NPF4), adopted February 2023, sets out a series of spatial principles for Scotland 2045 including 'local living', bringing thinking about 20 Minute Neighbourhoods into everyday decisions in the future planning of our places.

We consulted on a draft of Local living and 20 minute neighbourhoods – planning guidance in April 2023. Following an analysis of consultation responses, revised Planning Guidance: Local living and 20 minute neighbourhoods was published in April 2024. The guidance has been developed to support the implementation of NPF4 Policy 15: Local living and 20 minute neighbourhoods . The guidance includes resources and support on how to deliver neighbourhoods that support the ability to live well locally.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Following the publication of Planning Guidance: Local living and 20 minute neighbourhoods the case studies contained within will be updated as practice emerges and projects develop. These will be hosted, alongside

other practice examples of place based interventions that support local living, on the Ourplace.scot website.

Policy: COVID-19 has impacted on how we work. We launched a Work Local Challenge to drive innovation in work place choices and remote working to support flexible working and our Net Zero objectives.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: The Work Local Challenge Programme ran between July 2020 and March 2022 to support innovation and address the challenges caused by the shift in workplace settings and working patterns resulting from the COVID-19 pandemic. The programme is now closed – funding came to an end and the projects are all concluded.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: We will work with the UK Government on options to review fuel duty proposals, in the context of the need to reduce demand for unsustainable travel and the potential for revenue generation.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: Scottish Ministers have written on several occasions to UK Government ministers requesting meaningful engagement on plans for structural reform of reserved motoring taxation, which the UK Government itself acknowledged is inevitable and required in their recent Net Zero Review. To date, the UK Government has been unwilling to set out its plans or a timescale for engagement.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Timeframes on engagement are at the discretion of the UK Government, who have so far been unwilling to discuss. However, Scottish Government ministers and officials will continue to press for meaningful dialogue.

Policy: We will work with local authorities to continue to ensure that their parking and local transport strategies have proper appreciation of climate change, as well as the impact on all road users, including public transport operators, disabled motorists, cyclists and pedestrians.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Transport Scotland has engaged with local authority and Regional Transport Partnerships (RTP) stakeholders on development of updated Local Transport Strategy (LTS) guidance. Draft guidance was published 22 March 2023 for stakeholder review until 15 June and a working group with stakeholders was formed to finalise the guidance post consultation.

Additionally, Transport Scotland has commissioned research through ClimateXChange to better understand the environmental, social and economic benefits of sustainable travel to local highstreets and town centres. The findings will be particularly valuable to local policy makers, local businesses and individuals and

will support the Scottish Government policy to reduce car km in Scotland by 20% by 2030. ClimateXChange recently published research commissioned by Transport Scotland on 'Reducing car use through parking policies'. The research identified five parking intervention types as having an impact on car KM reduction, modal split and car ownership, four (parking standards, parking pricing, parking levies and parking capacity reductions) positively and one (park and ride) negatively.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: The finalised LTS Guidance is due to be published by mid 2024. Stakeholder engagement was carried out during the drafting process to ensure the guidance is suitable for those developing a LTS. Transport Scotland officials will be available to guide local authorities through the development of their LTS if required post publication.

Policy: To support the monitoring requirement for the National Transport Strategy set out in the Transport (Scotland) Act 2019, and to further our understanding of how and why people travel, we will develop a data strategy and invest in data.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: None
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: None
Timeframe and expected next steps: On hold, no current plan.

Policy: Continue to support the Smarter Choices, Smarter Places (SCSP) programme to encourage behaviour change. Continue to support the provision of child and adult cycle training, and safety programmes including driver cycling awareness training through Bikeability.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Smarter Choices, Smarter Places (SCSP) programme was brought to a close at the end of March 2024 as part of wider changes delivered through the Active Travel Transformation Programme.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No.
Timeframe and expected next steps: N/A

Policy: We will grant fund CoMoUK to increase awareness of the role and benefits of shared transport and look at the barriers to uptake of car clubs
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: CoMoUK's Scotland Co-Mobility Programme did not secure ongoing funding and was phased out at the end of June 2023.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No.
Timeframe and expected next steps: N/A

Policy: Support transformational active travel projects with a £500 million investment, over five years, for active travel infrastructure, access to bikes and behaviour change schemes. Enabling the delivery of high quality, safe walking, wheeling and cycling infrastructure alongside behaviour change, education and advocacy to encourage more people to choose active and sustainable travel. Support the use of E-bikes and adapted bikes through interest free loans, grants and trials
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: This commitment will be completed in next FY: Active travel budgets over recent years have been used to deliver a range of infrastructure projects (Places for Everyone, National Cycle Network, Cycling Walking Safer Routes), behaviour change projects (Cycling Friendly, Bikeability etc) and Access to Bikes Programmes (free bikes for children projects, etc):
2020-21 - £100.5m
2021-22 - £115m
2022-23 - £150m
2023-24 - £189m
2024-25 - £220m (proposed in draft budget)
Programme for Government 2023 further committed to £320m of Active Travel investmentby 2024-25. We have now put in place a more sustained and stable growth plan for Active Travel with a record amount of £220 million proposed in the draft budget for 2024-25, building on the investment already made in recent years.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: We have re-purposed almost £39 million of active travel funding for the Spaces for People; this is enabling local authorities to put in place the temporary measures such as pop-up cycle lanes and widening walkways that are needed to allow people to physically distance during transition out of the COVID-19 lockdown.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: Programme has delivered changes and is now closed.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Support increased access to bikes for all including the provision of public bike and e-bike share.
Date announced: National Transport Strategy 2 (NTS2) Delivery Plan 2021
Progress on implementation since time of last report / CCPu:
Under Access to Bikes we funded the Free Bikes for Schoolchildren commitment. The pilot programme funded 10 pilot projects to test various delivery models and informed the creation of the Free Bikes Partnership run by Cycling Scotland. The pilot projects delivered 3800 bikes and the Free Bikes Partnership a further 612 in FY 2023-24. In FY 2023-24, the Energy Saving Trust provided interest free loans for the purchase of 439 e-bikes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No

Timeframe and expected next steps: N/A

Policy: Mobility as a Service and increased use of peer to peer car sharing which will help reduce the number journeys made by car. To do this we are harnessing innovation within our transport system through investing up to £2 million over three years to develop 'Mobility as a Service' (MaaS) in Scotland.
Date announced: PfG 2018
Progress on implementation since time of last report / CCPu: Launched in 2019, our £2 million MaaS Investment Fund is now closed for applications. Funds were awarded to five MaaS projects, all of whom have now submitted their final reports to Transport Scotland. Programme valuation in now underway and due to complete in Spring 2024 whereon findings will be used to inform future policy and investment requirements.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: TBC

Policy: We will work to improve road safety, ensuring people feel safe with appropriate measures in place to enable that. We will publish Scotland's Road Safety Framework to 2030, following consultation on an ambitious and compelling long-term vision for road safety where there are zero fatalities or serious injuries on Scotland's roads by 2050.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu:
The Road Safety Framework to 2030 was publish in February 2021.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
The framework sets out a vision for Scotland to have the best road safety performance in the world by 2030 and an ambitious long term goal where no one is seriously injured or killed on our roads by 2050. It sets challenging targets for the years ahead as we strive to meet our vision to 2030. The targets, along with our progress as of 2022 (which is comparative to the 2014-18 baseline), can be found below.

We expected an increase in road casualties due to traffic returning to our roads following the pandemic. However, the rise in fatalities has been higher than anticipated, hence the reason why there is a zero percent achievement in the number of people killed in 2022.

50% reduction in people killed (achieved – 0%)
50% reduction in people seriously injured (achieved – 36%)
60% reduction in children (aged <16) killed (achieved – 17%)
60% reduction in children (aged <16) seriously injured (achieved – 33%)

For the first time, mode and user specific targets for key priority groups (listed below) have been created to focus attention by partners on our priority areas:

40% reduction in pedestrians killed or seriously injured (achieved – 42%)
20% reduction in cyclists killed or seriously injured (achieved – 36%)
30% reduction in motorcyclists killed or seriously injured (achieved – 28%)

20% reduction in road users aged 70 and over killed or seriously injured (achieved – 18%)
70% reduction in road users aged between 17 to 25 killed or seriously injured (achieved – 40%)

Percentage of motorists driving/riding within the posted speed limit
The casualty rate for the most deprived 10% SIMD areas is reduced to equal to the least deprived 10% SIMD areas
Timeframe and expected next steps:
We are continuing to monitor progress through our governance groups and delivering a number of road safety initiatives to reverse the rise in fatalities. We will continue to monitor progress via our Annual Delivery Report.

Policy: We are committed to taking forward policy consultation in advance of drafting supporting regulations and guidance to enable local authorities to implement workplace parking levy (WPL) schemes that suit their local circumstances.
Date announced: 2019-2020
Progress on implementation since time of last report / CCPu: Regulations came into force in March 2022 and guidance was published in June 2022, so local authorities are now able to use their discretionary powers to implement WPL schemes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The milestones (regulations in force and guidance published) have been completed in 2022.
Timeframe and expected next steps: The policy milestones have been completed. It is now a decision for local authorities whether to take forward local schemes.

Policy: We will bring forward a step change in investment with over £500 million to improve bus priority infrastructure to tackle the impacts of congestion on bus services and raise bus usage. We will launch the Bus Partnership Fund in the coming months to support local authorities' ambitions around tackling congestion.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: We have provided £26.9 million of funding for bus priority through the Bus Partnership Fund since it commenced. This has delivered bus gates, enforcement cameras and traffic light equipment to help buses get through them more quickly in North Ayrshire, Glasgow, Inverness and Edinburgh. It has also made a number of temporary measures, such as bus lanes, permanent in Edinburgh and Glasgow. Bus gates in Aberdeen City Centre have reduced journey times for passengers by up to 25% benefitting over 600,000 passengers each month. A bus gate at Raigmore Hospital in Inverness is also due to open at the end of March. A number of business cases have also been completed which identify further bus priority measures.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Monitoring and evaluation plans are being developed and undertaken for bus priority measures.
Timeframe and expected next steps: Due to budget constraints the Bus Partnership Fund has been paused for 2024-25. However, future funding availability will be considered as part of annual budget setting processes and prioritisation exercises.

This pausing presents an opportunity to recast bus priority work within a longer term more integrated public transport vision.

Policy: We remain committed to delivering a national concessionary travel scheme for free bus travel for under 19s, and have begun the necessary preparations including planning, research, legal review and due diligence.
Date announced: 2020/21 PfG & Budget 2020
Progress on implementation since time of last report / CCPu:
The Young Persons Free bus Travel Scheme was extended to all aged under 22. The Scheme went live on 31 January 2022 with the potential to benefit up to 930,000 young people.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.
By the end of January 2024, there were over 715,000 valid Young Scot or National Entitlement Card (NEC) cardholders able to access free bus travel. Since that time, over 116 million journeys have been made under the scheme, showing huge interest and usage of the scheme and representing significant cost savings for young people accessing education and work.
Timeframe and expected next steps:
Scottish Government focus remains on encouraging as many young people as possible to take advantage of the free bus travel offer.

To understand the impact of the young persons' scheme, the Scottish Government have committed to ongoing evaluation of the scheme during the first five years of its operation.

The Year One Evaluation of the scheme was conducted between April and August 2023, and follows on from the Baseline Study which took place prior to scheme commencement to allow for comparison and measuring of progress against outcomes. The Year One Evaluation was published on 14 December 2023 and can be found on the Transport Scotland website.

Policy: We are also carrying out a review of discounts available on public transport to those under the age of 26 – due for completion end of December 2020 (with consultation planned on young people's views on the impacts of COVID 19 and post lockdown measures on public transport usage and behaviour).
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: Scottish Government has carried out analysis on a range of options including the cost of extending free bus travel and on concessionary travel across all modes of public transport to those under the age of 26. This included cost and benefit analysis. The review has concluded and was published on the Transport Scotland website on 22 September 2022 at Under 26 Concessionary Fares Review | Transport Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A - Completed.

Policy: Delivery of our first Active Freeways – segregated active travel routes on main travel corridors connecting communities and major trip attractors.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: A high level transport appraisal has been undertaken as part of the second Strategic Transport Projects Review, with Active Freeways forming on of 45 recommendations for future transport infrastructure investment.The outcomes from the review were published in December 2022.Dundee City Council is working on development of a network of Active Freeways and Aberdeen, Glasgow and Edinburgh are working on their own high quality active travel networks for their respective cities.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Local indicators may be developed by respective local authorities. The impact of improved local active travel infrastructure will be included in wider national monitoring.
Timeframe and expected next steps: Further development and delivery to be supported as part of wider increase in funding of active travel projects and programmes.

Outcome 2: We will phase out the need for new petrol and diesel cars and vans by 2030

Policy: We will consider and develop new financing and delivery models for electric vehicle charging infrastructure in Scotland and work with the Scottish Future Trust (SFT) to do so.
Date announced: Boosted 2019-2020 PfG
Progress on implementation since time of last report / CCPu: We have worked with SFT and local authorities to develop public EV charging strategies and expansion plans that identify alternative financing and operating models for public EV charging, shifting the focus to a network that is invested in and operated by the private sector.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: £30 million of private sector investment in public EV charging to be levered though the programme, supporting growth of the public charging network to 6,000 chargers by 2026.
Timeframe and expected next steps: Procurement of private sector charge point operators to work with local authorities to grow and operate the public charging network in Scotland.

Policy: We have invested over £30 million to grow and develop the ChargePlace Scotland network which is now the 4th largest in the UK. We will continue to develop the capacity of the electric vehicle charging network.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Complete – we have now invested over £65 million to develop the Charge Place Scotland network.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Complete.
Timeframe and expected next steps: N/A

Policy: Our Low Carbon Transport Loan has provided over £220 million of funding to date to support the switch to low carbon vehicles. We will continue to support the demand for ultra-low emission vehicles (ULEVs) through our Low Carbon Transport Loan scheme, which is now focused on used electric vehicles.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: This scheme is now focused on supporting the nascent used EV market.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No, this is an ongoing support package.
Timeframe and expected next steps: Ongoing monitoring of this scheme to ensure is meets its intended policy objective.

Policy: We will continue to promote the uptake of ULEVs in the taxi and private hire sector.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: We continue to promote and support the taxi sector make the change to ULEVs, we have expanded the loan scheme to support both used private hire and hackney vehicles.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No, this is an ongoing support package.
Timeframe and expected next steps: Ongoing monitoring of this scheme to ensure is meets its intended policy objective.

Policy: Continue to promote the benefits of EVs to individuals and fleet operators (exact nature of promotion to be decided annually).
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: We continue to promote and support the uptake of EVs through a range of consumer incentive schemes.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No, this is an ongoing support package.
Timeframe and expected next steps: Ongoing monitoring of this scheme to ensure is meets its intended policy objective.

Policy: We will work with public bodies to phase out the need for any new petrol and diesel light commercial vehicles by 2025.
Date announced: 2019-2020 PfG
Progress on implementation since time of last report / CCPu: We have continued to support public bodies to decarbonise their fleets, through funding installation of EV charging infrastructure for fleets and working with the Energy Savings Trust to provide guidance and tools. Through the Fleet Manager Forum have promoted best practice and provided opportunities for fleet managers to learn from peers and understand the range of services and technologies available from the private sector.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: This policy relates to new vehicles entering the public fleet after 2025.
Timeframe and expected next steps: We will continue to work with the public sector on actions that continue to decarbonise public sector fleets, shifting our focus to pilot projects that demonstrate alternative financing and operating models and the value of aggregating transport across the public sector and more widely.

Policy: We will support the public sector to lead the way in transitioning to EVs, putting in place procurement practices that encourage EVs. In the Programme for Government we committed to work with public bodies to phase out the need for any new petrol and diesel light commercial vehicles by 2025.
Date announced: 2019-2020 PfG
Progress on implementation since time of last report / CCPu: :We have continued to support the public sector to explore new approaches to procuring works and services that support the uptake of EVs, including supporting Scotland's emergency services to establish a new EV charging back office framework that will make it easier to share access to EV charging across organisations and supporting fleet pathfinder projects exploring options to lever private finance into installation of fleet EV charging infrastructure.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: This policy relates to new vehicles entering the public fleet after 2025.

Timeframe and expected next steps: We will continue to support actions that demonstrate new approaches to procuring and operating zero emission fleets and infrastructure across the public sector.

Policy: Create the conditions to phase out the need for all new petrol and diesel vehicles in Scotland's public sector fleet by 2030.
Date announced: 2019-2020 PfG
Progress on implementation since time of last report / CCPu: We have continued to provide financial support to the public sector to decarbonise their fleets and have provided additional technical support and guidance through the Energy Savings Trust.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: This policy relates to new vehicles entering the public fleet after 2030.
Timeframe and expected next steps: We will continue to work with public bodies providing support and guidance, identifying projects that demonstrate how to continue decarbonisation of public sector fleets.

Policy: We will continue to invest in innovation to support the development of ULEV technologies and their adoption.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Transport Scotland worked closely with Scottish Enterprise to fund innovation through the Can Do Innovation Fund as well as providing funding via a Zero Emission Mobility Innovation Fund. In total over 15 projects were funded supporting small to medium-sized enterprises (SMEs) and large companies to innovate. Transport Scotland also created an Academic Network providing early stage funding for businesses to work with academic expertise across Scotland's universities.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A –funding for innovation programmes ceased in FY23/24 following a reprioritisation of limited government funding and resources to support the adoption of existing zero emission technologies such as Electric Vehicles.

Policy: Take forward the initiatives in respect of connected and autonomous vehicles set out in A Connected and Autonomous Vehicles (CAV) Roadmap for Scotland.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Project CAV Forth trial commenced in May 2023 with Transport Scotland taking part as a partner until its completion in July 2023. This saw the launch of a globally significant self-driving commercial bus service on Scotland's trunk road network. Transport Scotland were a partner and provided a monitoring function from the Traffic Scotland Control Centre during the time period noted and were able to gain significant learning as the roads authority for much of the route. The service continues as CAVForth 2 in which Transport Scotland are not a partner but remain a supportive roads authority and we continue to access project information and learning.

Transport Scotland has also continued to liaise with UK Government in relation to the Autonomous Vehicles Bill, which was launched in November 2023, that will provide the legal framework for the deployment of autonomous vehicles in the UK.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A - Transport Scotland has delivered all of its commitments as a partner in Project CAV Forth.
Timeframe and expected next steps: Transport Scotland will continue to look for opportunities to take forward the initiatives set out in the CAV Roadmap for Scotland including liaison with UK Government on the Autonomous Vehicles Bill.

Policy: With local authorities and others, evaluate the scope for incentivising more rapid uptake of electric and ultra-low emission cars and vans.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: Through our EV Infrastructure Fund we have continued to support local authorities to develop local and regional EV charging strategies that identify where additional EV charging is required to meet future needs and support development of EV charging tariffs that are fair, sustainable and enabling.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Procurement and delivery of EV Infrastructure Fund projects and implementation of fair, sustainable and enabling tariffs over the next 18 to 24 months.

Outcome 3: To reduce emissions in the freight sector, we will work with the industry to understand the most efficient methods and remove the need for new petrol and diesel heavy vehicles by 2035.

Policy: To support businesses we will establish a Zero Emission heavy duty vehicle (ZE HDV) programme and will invest in a new zero drivetrain testing facility in 2021.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: The ZE HDV programme consisted of policy analysis, supply chain analysis, the funding of innovation using Scottish Enterprise's Can Do Innovation fund and the creation of two projects to create vehicle and component testing facilities in Scotland. The component testing facility, DER-IC is located at the University of Strathclyde and is on track to open in 2024. This is a facility for testing of vehicle components required for transport decarbonisation.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Milestones were set for the various projects.
Timeframe and expected next steps: The ZE HDV programme is continuing but has been refocused due to financial and resource constraints to look at fleets, buses and road haulage in particular.

Policy: Explore the development of green finance models to help business and industry to invest in new road transport technologies.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Research commissioned to better understand new financing models to include an assessment of how developed/mature the markets are for different business models. Various actions within the HGV Decarbonisation Pathway (published March 2024) focus on this topic. Development of the Scottish Zero Emission Bus Challenge Fund 2 predicated on involvement of green finance in addition to public investment. Work underway with public sector fleet to encourage greater engagement with commercial finance.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Continued engagement with the finance, energy and vehicle sectors.

Policy: We will engage with industry to understand how changing technologies and innovations in logistics (including consolidation centres) can help to reduce carbon emissions, particularly in response to the increase in e-commerce.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Zero Emission Truck Taskforce published its HGV Decarbonisation Pathway for Scotland in March 2024 with collaborative actions focusing on unlocking transition. This was a collaboration among senior industry leaders alongside government.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Implementation of actions for Scottish Government and others within the pathway; expectation to update the pathway in 3 years as technology matures.

Policy: Continue to investigate the role that other alternative fuels, such as hydrogen, and biofuel can play in the transition to a decarbonised road transport sector. Consider the scope for testing approaches to alternative fuels infrastructure and supply.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: We commissioned research on the potential opportunities for Scotland in alternative fuels in the decarbonisation of transport. The research suggested the most promising opportunities were around alternative fuels for aviation and maritime. Exploration of the opportunity around sustainable aviation fuel is ongoing with industry (as noted in Outcome 5 below).
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Aviation and maritime sector teams to continue to explore the role of alternative fuels.

Policy: Launched the new Hydrogen Accelerator (H2A) Programme to attract technical experts to help scale up and quicken the deployment of hydrogen technologies across Scotland.
Date announced: CCPu 2018
Progress on implementation since time of last report / CCPu: The Hydrogen Accelerator ran from 2020 to March 2024 and supported projects in the development of hydrogen for transport including a hydrogen rail demonstrator which was showcased at COP26.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: Funding for the Hydrogen Accelerator ended in March 2024.

Outcome 4: We will work with the newly formed Bus Decarbonisation Taskforce, comprised of leaders from the bus, energy and finance sectors, to ensure that the majority of new buses purchased from 2024 are zero-emission, and to bring this date forward if possible.

Policy: We have introduced a revised green incentive of the Bus Service Operators Grant.
Date announced: April 2019
Progress on implementation since time of last report / CCPu: this policy ran until 31 March 2022 when the Network Support Grant replaced the Bus Service Operators Grant, where there is no longer a green incentive given the numbers of zero emission buses now coming into operation.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: a five year transition period was introduced for any qualifying buses that came into operation prior to 1 April 2022.
Timeframe and expected next steps: the incentive will totally cease from 31 March 2027.

Policy: We launched a £9 million Scottish Ultra Low Emission Bus Scheme (SULEBS).
Date announced: August 2020
Progress on implementation since time of last report / CCPu: SULEBS ran in 2020 and 2021.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Through SULEBS, 272 zero-emission vehicles and their supporting infrastructure were acquired by Scottish bus operators, supported by over £50 million of government subsidy.
Timeframe and expected next steps: Scheme was superseded by the Scottish Zero Emission Bus Challenge fund (ScotZEB).

Policy: In the context of the National Transport Strategy Delivery Plan and Transport Act, we will examine the scope for climate change policies, in relation to buses, across the public sector in high-level transport legislation strategies and policies.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The Scottish Government has now delivered all the bus powers within the 2019 Act to enable local transport authorities to consider all the powers available to them, including partnership working, franchising and local authority run services which sits alongside their ability to subsidise services.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Further regulations will be laid throughout 2024 alongside guidance, which will give the partnership and franchising powers full effect.

Policy: We will work to align government financial support of £120 million over the next 5 years with private sector investment to drive forward a fully decarbonised future for Scotland's bus fleet and support the Scottish supply chain.
Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu: The first round of the Scottish Zero Emission Bus Challenge Fund (ScotZEB) awarded £62m to bus operators to acquire 276 zero-emission buses and their supporting infrastructure. In May 2023, ScotZEB 2 was launched with an initial budget of up to £58m available.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Through Scottish Government interventions SULEBS and ScotZEB, we have supported the acquisition of zero emission buses and their supporting infrastructure, bringing the total number of zero emission buses up from 20 to nearly 600. The Bus Decarbonisation Taskforce, of which the Scottish Government was a member, published the Pathway to Zero Emission Buses in Scotland in 2022. The Pathway outlines the roadmap by which bus operators, manufacturers, energy companies and financiers and government can work together to bring about a rapid, substantive shift towards a zero emission bus market in Scotland. ScotZEB 2 is government's contribution to that roadmap.
Timeframe and expected next steps: ScotZEB 2 is in the final stages of decision making and an announcement is expected in the coming weeks.

Outcome 5: We will work to decarbonise scheduled flights within Scotland by 2040

Policy: We will aim to create the world's first zero emission aviation region in partnership with Highlands and Islands Airports Limited (HIAL). This will include taking action to decarbonise airport operations in the HIAL region.
Date announced: Green New Deal 2019
Progress on implementation since time of last report / CCPu: HIAL continues to lead on our commitment to make the Highlands and Islands a zero emission aviation region. Following the publication of its Sustainability Strategy and completion of a Net Zero Roadmap and energy audit at Inverness Airport, HIAL continues with its programme of activity to decarbonise airport operations and infrastructure.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: We will continue to support HIAL to complete decarbonisation of its airport operations and to develop the infrastructure, equipment and training needed for hydrogen and electric aircraft. We will explore options for accessing UK Government funding, through its JetZero strategy, for these purposes.

Policy: We will begin trialling low or zero emission planes in 2021.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: As noted in the 2020 report, this commitment has been delivered with a test flight taking place in 2021.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: The Scottish Government will continue to engage with Aviation sector to encourage sustainable growth post COVID-19.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Transport Scotland continues to lead on route development support in line with our PfG commitment to work with Scotland's airports to help restore lost connectivity and grow international connectivity, while not returning to previous levels of emissions. This involves close working with Scotland's airports and in 2023 we supported the launch of new routes to Atlanta with Delta Air Lines, and Calgary with WestJet, with further new routes beginning in 2024. Many of these services will be operated using the latest generation aircraft, which are less polluting.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: We intend to publish an Aviation Statement soon which will set out the further steps we will take to try to improve connectivity while reducing aviation emissions.

Policy: Explore the potential for the purchase of zero/low emission aircraft by the Scottish Government, for lease back to operators, with more detailed assessment in the forthcoming Aviation Strategy.

Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu:
This option was explored in our consultation on the aviation strategy, with mixed support. Zero/low emission aircraft are not yet commercially available and we will make a decision at a later date taking into account budgetary and environmental considerations.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No

Timeframe and expected next steps: This is noted above. Any purchase of hydrogen/electric aircraft would be for use on our public service obligation (PSO) routes to replace the aircraft that are current owned by Highlands and Islands Airports Limited (HIAL).

Policy: Explore options for incentivising the use of more sustainable aviation fuel (SAF) as we develop our Aviation Strategy, recognising that significant levers in this area are reserved.

Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu: Ministers have established an expert working group on SAF to provide advice on possible policy options, recognising that many relevant levers are reserved. It involves stakeholders from the aviation sector and officials from across the Scottish Government and agencies, and will take account of a SAF supply chain mapping study published by Scottish Enterprise.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No

Timeframe and expected next steps:The Group will report in time to inform the Scottish Government's next Climate Change Plan.

Outcome 6: Proportion of ferries in Scottish Government ownership which are low emission has increased to 30% by 2032.

Policy: Continue to examine the scope for utilising hybrid and low carbon energy sources in the public sector marine fleet as part of our vessel replacement programme.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The forthcoming Islands Connectivity Plan (ICP) will set out the Scottish Government's long-term objectives and policies for ensuring necessary and sustainable transport links for our islands.

The first of the ICP documents – namely the ICP Strategic Approach and the Vessels and Ports Plan, have now been published for formal public consultation. Following this, the ICP will consider further elements including onward and connecting travel and carbon reduction.

The long-term decarbonisation of the fleet relies on one or more emerging technologies reaching technical and commercial maturity in the coming years – a challenge faced by the whole maritime transport sector.

Where zero emission technology is not currently feasible, new vessels can take advantage of the latest technology and design concepts to maximise efficiency and reduce emissions

The Scottish government will continue to monitor developments and opportunities to harness the benefits of alternative fuel to lower emissions and contribute towards meeting Net Zero targets.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: This is an ongoing process.
Timeframe and expected next steps: N/A

Policy: Working with the UK Government to support proposals at the International Maritime Organisation (IMO) to significantly lower shipping carbon emissions in the global sector, including the option of introducing a global levy on marine fuel to fund research in cleaner technologies and fuels.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu:
Transport Scotland officials continue to work with UK Government officials in the Department for Transport to support consultations and calls for evidence into a number of options for reducing shipping emissions across UK waters, and to support the UK Government position as a member state at IMO to support global shipping decarbonisation proposals.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: This is an on-going process.
Timeframe and expected next steps: N/A

Outcome 7: By 2032 low emission solutions have been widely adopted at Scottish ports

Policy: Working with individual ports and the British Ports Association to consider a process for encouraging shared best practice initiatives for reducing emissions across the sector.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Scottish Government continue to work closely with the main ports trade association, the British Ports Association (BPA), along with individual ports, to assess technology developments to assist ports to reduce emissions. Additionally, we have also worked with the Department for Transport and our maritime stakeholders to share UK Government funding packages through the UKSHORE initiative, with many Scottish stakeholders successful in being awarded grants.
Various key large port operators (including Aberdeen, Clydeport and Forth Ports) have also published plans to transfer their operations to Net Zero.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
On-going process, with funding restrictions for smaller port operators an issue, along with the technology limitations in terms of viability of clean fuels and ship design.
Timeframe and expected next steps:
Transport Scotland officials hold regular meetings with BPA, with an additional three meetings per annum with Scottish ports to discuss a range of issues affecting the sector, including how they are working towards decarbonising their facilities.

Policy: Working with the ports sector and with its statutory consultees through the Harbour Order process to ensure future port developments are environmentally underpinned.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Ensuring key environmental agencies are fully consulted before considering any Harbour Order applications.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: On-going process.
Timeframe and expected next steps: There are currently a number of draft Harbour Order applications being considered, and the environmental impact of any proposed works is fully explored by statutory consultees Scottish Environment Protection Agency (SEPA), NatureScot and the Local Authority.

Outcome 8: Scotland's passenger rail services will be decarbonised by 2035.

Policy: Our commitment to decarbonise (the traction element of) Scotland's railways by 2035 will be delivered through investment in electrification and complementary alternative traction systems. Transport Scotland has published the Rail Services Decarbonisation Action Plan (July 2020) which will be updated as appropriate. Work is ongoing by industry partners to develop the initial schemes.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: The Glasgow – Barrhead Railway Line has been electrified with, electrically powered trains operating from December 2023. Construction work to electrify the line to East Kilbride is underway.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The milestone for this policy is rail decarbonisation by 2035. 27 single track kilometres of electrification was commissioned as part of the Barrhead Electrification project. This increased the length of electrified route from 885[24] single track kilometres to 912 single track kilometres. The total route length in Scotland is 2,695[25] single track kilometres.
Timeframe and expected next steps: The Rail Services Decarbonisation Action Plan is in the process of being refreshed. Significant delivery challenges exist in respect of available budget on the basis that the capital cost of the rail decarbonisation programme is forecast to exceed available budgets.

Policy: We will establish an international rail cluster in Scotland to unlock supply chain opportunities using the interest at Longannet as a catalyst. This will be built around existing strengths in rail in Scotland and will seek to enhance the innovation and supply chain in the decarbonisation of our rolling stock and wider network.
Date announced: Rail Services Decarbonisation Action Plan July 2020.
Progress on implementation since time of last report / CCPu: To date 693 individuals have registered with the rail cluster project, 470 registered companies and 287 SME's registered.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A - Scottish Enterprise are leading on the potential redevelopment of the former Longannet Power Station site.
Timeframe and expected next steps: Rail Cluster Builder Phase 2 contract is due to complete summer 2025

Policy: Continue to deliver our Rail Freight Strategy.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: On-going work continues, in conjunction with industry partners and third-party investors, to increase rail freight on the Scottish network.
We have also been working with Network Rail on their delivery plans. These plans show how the industry will deliver the Scottish Ministers specification (HLOS) for rail, which have many benefits for rail freight and include a number of targets. Included is the requirement to grow rail freight by 8.7% with an expectation that 10% may be

[24] ORR Rail infrastructure and assets, April 2022 to March 2023.
[25] ORR Rail infrastructure and assets, April 2022 to March 2023.

achievable in the current rail control period (2024-2029). Network Rail has also started work on the industry's longer-term rail freight growth plan.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: There are no official annual targets or indicators but Network Rail monitors the targets for the control periods, including the control period just finished (2019 – 2024) on a quarterly basis. For the last rail control period (just finished) targets included a requirement to grow rail freight on the Scottish network by 7.5% by end March 2024. This target was previously on track to be met but factors including the Covid-19 pandemic, recessions, industrial action, the cost of living crisis and slowing down of investment have impacted progress.

Timeframe and expected next steps: There are no defined or specific Scottish Government/Transport Scotland timescales for completing the actions. Network Rail's regulatory targets have their own associated milestones and timescales and evaluation will take place at the end of the control period (post end March 2024). Work has started on the long term industry plan for rail freight growth in Scotland.

5. Chapter 4: Industry

5.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the 2018 CCPu (Climate Change Plan Update) for this sector was for 11.3 $MtCO_2e$ and the outturn emission statistics for this year (published in June 2023) show a position of 9.6 MtCO2e. On the basis of comparing these figures, the sector was within its envelope in 2021.

The CCPu sets out the following two policy outcomes for the sector, the indicators for which are summarised below:

Scotland's industrial sector will be on a managed pathway to decarbonisation, whilst remaining highly competitive and on a sustainable growth trajectory.	On Track	Off Track	Too Early to Say
Industrial energy productivity (£GVAm per GWh)	-	X	-
Industrial emissions intensity (tCO_2e per £GVAm)	-	X	-

Technologies critical to further industrial emissions reduction (such as carbon capture and storage and production and injection of hydrogen into the gas grid) are operating at commercial scale by 2030.			
% of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network	-	-	X

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition.

Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

There has been a considerable decline in Scotland's industrial emissions since 1990, falling by 51% (to 9.6 MtCO2e) between 1990 and 2021. Research estimates[26] that emissions from Scotland's large industrial sites could feasibly reduce by 80% or more by 2045, while maintaining output.

In 2020, 25% of total Scottish Greenhouse Gas (GHG) emissions came from the industry envelope. This dropped to 23% in 2021. 72% of emissions in 2020 in the industry envelope were associated with combustion (i.e. energy), suggesting 28% come from industrial processes. For 2021, 74% of emissions came from combustion, suggesting 26% came from industrial processes (chemical/mineral/metal production processes).

Our CCPu estimates that by 2032 industrial emissions need to decrease by 43% on 2018 levels to meet Scotland's Climate Change targets, whilst ensuring Scottish industry remains globally sustainable and competitive. The latest data for 2021 suggest annual industrial emissions had reduced by 18% against 2018 levels (9.6MtCO2e from 11.7MtCO2e). However, caution should be made when interpreting the longer-term implications of this, given the substantial impact the COVID-19 pandemic had on the Scottish economy and overall emissions. A further reduction of 3.1MtCO2e from 2021 levels would be required to meet the 2032 target of 6.5MtCO2e, however large uncertainties exist around the immediate emissions trajectory.

The balance of reserved and devolved responsibilities for industrial decarbonisation means that progress is often dependent on UK Government and/or international policy and markets. For example, UK Government decision-making on where to focus its support to develop Carbon Capture, Utilisation and Storage (CCUS) infrastructure, and the lack of clarity this is delivering for Scottish projects, has direct implications on Scotland's ability to reduce emissions and realise its net zero objectives.

Significant parts of the industrial sector are subject to the UK Emissions Trading Scheme (ETS), which remains the key carbon pricing tool across the UK. The UK ETS is managed by the ETS Authority, comprising of the UK Government and the three Devolved Governments. The Authority is currently consulting on strengthening the ETS through reviewing Free Allowances and introducing Market Stability Mechanisms and will respond to these consultations later this year.

There remains a significant risk of carbon leakage: if the Scottish industrial sector were to have a less supportive policy environment for decarbonisation than their competitors in the rest of the UK, Europe and beyond, they could be faced with higher costs as a result of carbon pricing mechanisms which could push production, and therefore jobs, overseas.

[26] Deep decarbonisation pathways for Scottish industries: research report - gov.scot (https://www.gov.scot/publications/deep-decarbonisation-pathways-scottish-industries/)

Developments in monitoring arrangements since last report

There have been no changes to the methodology since the last report.

5.2 Part B - Progress to Policy Outcome Indicators

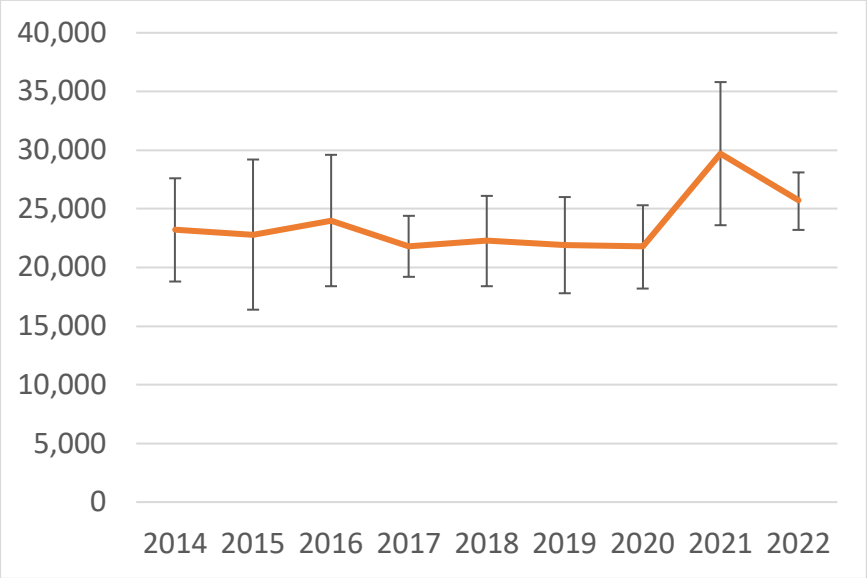
Policy Outcome: Cross-sectoral social and economic
Indicator: FTE employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics
Assessment: Too Early to Say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

- LCREE only shows employment in roles in Industries directly involved in the transition to Net Zero.
- The Office for National Statistics (ONS) also releases experimental statistics on a wider perspective of green activity in the economy with their experimental estimates of green jobs.
- These statistics reflect green activities in both LCREE and non-LCREE sectors. The latest publication was in September 2023.
- This found that 38% of working adults in Scotland described any part of their job as green in a survey carried out in May 2023. This was the highest across

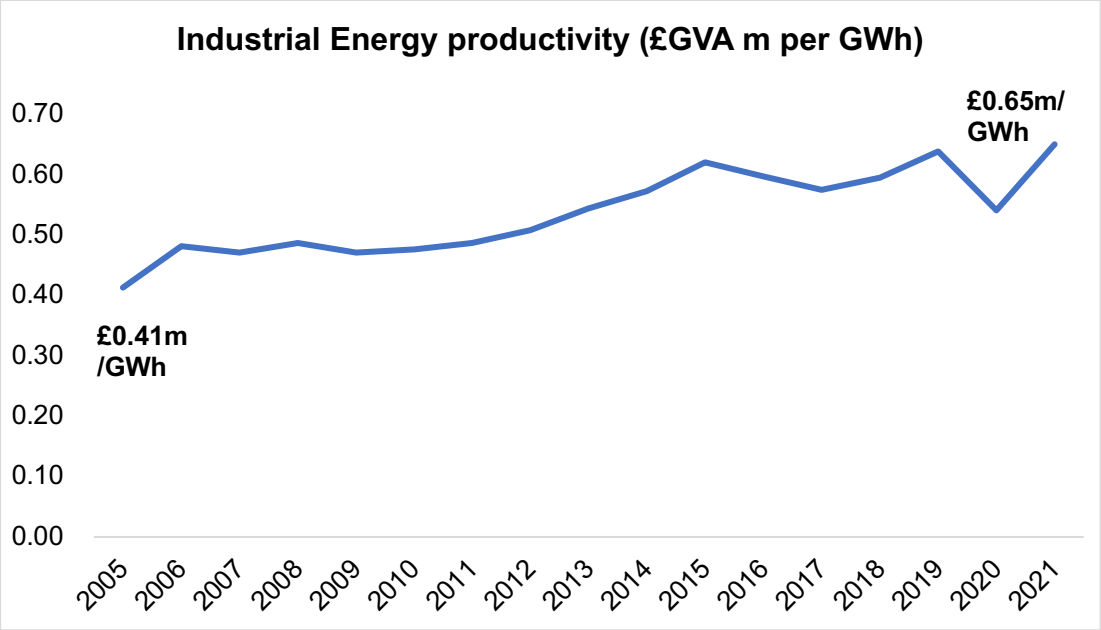
Great Britain, with 36% and 26% of working adults describing any part of their job as green in Wales and England respectively.

- Across Great Britain, the age group most likely to describe any part of their job as green were those in the 30-49 age bracket.
- The highest greenhouse gas emissions per employee were found in the electricity and gas sector, followed by the mining and quarrying sector and the agriculture, forestry, and fishing sector.

Policy Outcome: 1
Indicator: Industrial energy productivity (£GVAm per GWh)
On-track Assessment (Milestones/Targets): [Increase 30% by 2032, to £0.81m/GWh][27]

Most Recent Data: 2021
Data Source(s): Department for Energy Security and Net Zero (DESNZ) sub-national energy consumption statistics, DESNZ Energy
Consumption in the UK statistics, Scottish Government Quarterly National Accounts Sectoral breakdown (unpublished)

Assessment: Off track – however, it should be noted that there is a high level of uncertainty with this assessment rating. The most recent data for 2021 reflects some recovery from the significant disruption to Gross Value Added (GVA) across the Scottish economy during the COVID-19 pandemic, however this remains below the peak level recorded in 2019. In addition, fundamental decisions on the Scottish CCUS Cluster status could have a material impact on the assessment of this indicator.



Commentary:

- Industrial GVA comprises the manufacturing, construction and mining sectors.
- Industrial energy productivity in Scotland (the GVA obtained through each GWh of energy used in the industrial sector) grew steadily, by over 50%, from 2005-2015, followed by a 7.3% decline over the next two years. Despite a year-on-year decline of 15.3% in 2020, there was a recovery in 2021 with a 20.1% year-on-year increase.
- Compared to the 2015 baseline year industrial energy productivity has increased by 4.9% in 2021, this is compared to a 12.7% decline on the baseline in 2020. This is partly driven by a 13.7% increase in industrial GVA between 2020 and 2021, reflecting some recovery from the significant disruption to the

[27] From a 2015 baseline

Scottish economy during the COVID-19 pandemic. The period 2015 to 2019 saw an increase of 3% in industrial energy productivity.

- Industrial GVA increased by 5.3% over the period 2005 to 2021, in contrast to the relative decline seen in 2020.
- Despite recovery in industrial GVA, industrial energy consumption continued to fall in 2021, 5.1% lower compared to 2020 and 33.0% lower compared to 2005.
- Improvements on this indicator are likely to be stepped, or lumpy, rather than gradual year-year changes, as success depends on substantial process changes at a small number of large sites. We'll continue to review the suitability of the indicators used to reflect success in the sector and refine these as needed.

Policy Outcome: 1
Indicator: Industrial emissions intensity (tCO_2e per £GVAm)
On-track Assessment (Milestones/Targets): [Reduce 30% by 2032, to 283 tCO_2e per £GVAm][28]

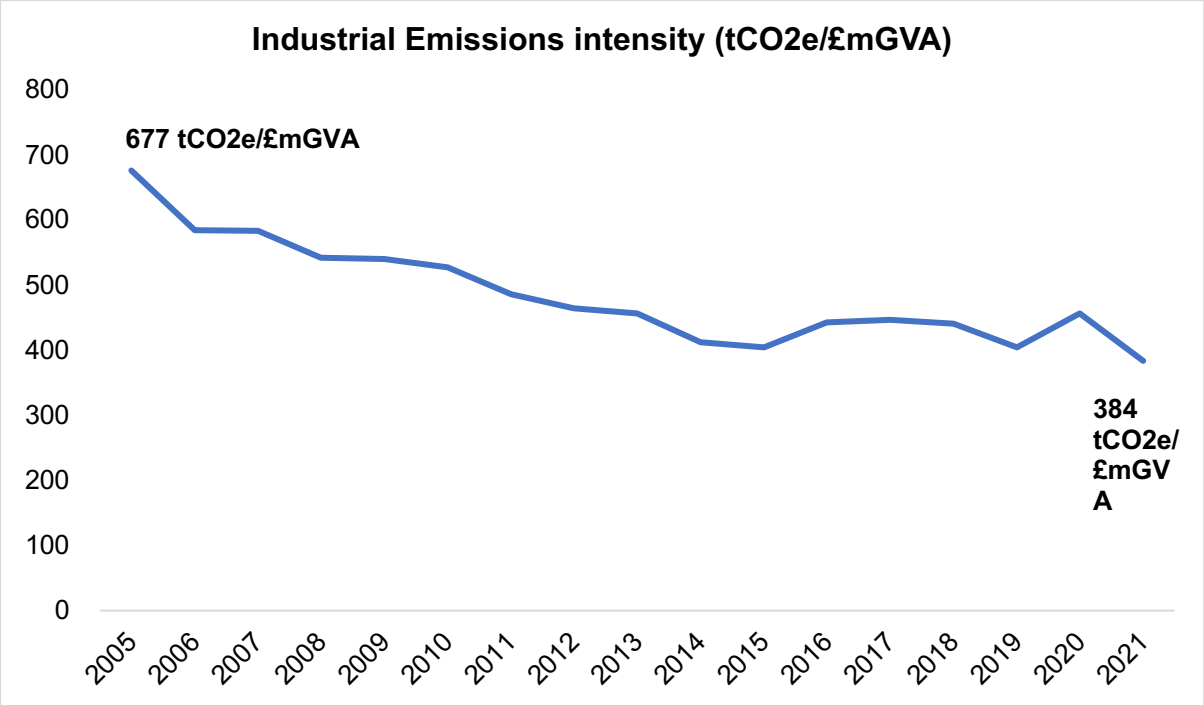
Most Recent Data: 2021
Data Source(s): Scottish Government Greenhouse Gas Emissions publication, Scottish Government Quarterly National Accounts Sectoral breakdown (unpublished)

Assessment: Off track – however, it should be noted that there is a high level of uncertainty with this assessment rating. The most recent data for 2021 reflects some recovery from the significant disruption to GVA across the Scottish economy during the COVID-19 pandemic, however this remains below the peak level recorded in 2019. In addition, fundamental decisions on the Scottish CCUS Cluster status could have a material impact on the assessment of this indicator.

Commentary:

- Industrial emissions intensity in Scotland (the volume of emissions produced through each £1m of GVA in the industrial sector) fell by 40.3% 2005- 2015, rose 10.5% to 2017 and decreased 9.5% to 2019. Year-on-year industrial emissions intensity rose again by 12.9% in 2020 reflecting a large decrease in overall GVA without an equivalent decline in emissions, but subsequently recovered in 2021 with a 15.9% decline.
- Improvements on this indicator are likely to be stepped, or lumpy, rather than gradual year-on-year changes, as success depends on substantial process changes at a small number of large sites.
- Compared to the 2015 baseline year industrial emissions intensity has decreased by 5.0%. This reflects a partial recovery in industrial GVA from the significant disruption to the Scottish economy during the COVID-19 pandemic, and a year-on-year decrease in industrial emissions.
- Total industrial emissions fell by 40.3% between 2005 and 2021. This is reassuring given the period 2014-2017 saw continuous year-on-year rises in industrial emissions before falling by 17% between 2017 and 2021.
- We'll continue to review the suitability of the indicators used to reflect success in the sector and refine these as needed.

[28] From 2015 baseline


Industrial Emissions intensity (tCO2e/£mGVA)
800
700
600
500
400
300
200
100
0
677 tCO2e/£mGVA
384 tCO2e/£mGVA
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

Policy Outcome: 2
Indicator: % of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network.
On-track Assessment (Milestones/Targets): Based on trend

Most Recent Data: Data published 2024 (covering up to 2023)
Data Source(s): Scottish Gas Network (SGN); Department for Energy Security and Net Zero (DESNZ) Sub-national Gas Consumption Statistics

Assessment: Too early to say

Commentary:

- In 2022, 2.1% of Scottish gas demand was accounted for by biomethane blended into the gas grid, up from 0.3% in 2015 and an increase on the 1.7% figure recorded for 2021.
- Although moderate, this growth in biomethane levels has contributed to a lower emissions intensity of the gas grid.
- The most recent data shows that there was 126 GWh of biomethane injected into the SGN in 2015 and 920 GWh in 2022, a 630% increase.
- Data for 2023 biomethane injections suggest that biomethane injection rates may have fallen, with 764 GWh being injected into the SGN. This still represents a 506% increase from 2015. This is likely to result in a smaller percentage of Scottish gas demand being accounted for by biomethane in 2023 than in 2022, depending on sub-national gas consumption statistics which are due to be released by DESNZ in December 2024.

5.3 Part C - Information on implementation of individual policies

Outcome 1: Scotland's Industrial sector will be on a managed pathway to decarbonisation, whilst remaining highly competitive and on a sustainable growth trajectory.

Policy: The United Kingdom Emissions Trading Scheme (ETS): following EU Exit we will work with UK Government and other devolved administrations on maintaining carbon pricing that is at least as ambitious as the EU ETS. The Scottish Government's preference is to establish a UK ETS which will have an interim cap of being 5% tighter than the EU ETS, and will be reviewed for consistency with Net Zero in 2021.
Date announced: June 2020
Progress on implementation since time of last report / CCPu: The UK ETS was established in January 2021 and is jointly administered by the four governments of the United Kingdom. Since establishment we have made a number of changes to strengthen the scheme, including better alignment with Net Zero objectives. We have recently announced our intention to continue the ETS for the long term until at least 2050. The UK ETS covers a large number of industrial emissions, as well as emissions from other sectors.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Further policy work to strengthen the UK ETS, including scope expansion to new sectors.

Policy: Deliver an Energy Transition Fund (ETF) to provide support for a sustainable, secure and inclusive energy transition in the North East.
Date announced: June 2020
Progress on implementation since time of last report / CCPu: All 4 funded projects are in full delivery. Notable deliveries since last update include:

1. Completion of the refurbishment of the WZero1 Building on the Energy Transition Zone Campus. This large building is now fully tenanted with organisations focused on technology to enable the transition to renewable energy. As part of this, the Offshore Renewable Energy (ORE) Catapult has installed an innovation centre for offshore floating wind – this was opened by the First Minister on 18th March 2024 and focuses on:
    a. Development, testing & qualification of floating wind technologies including moorings, anchoring & dynamic cable systems.
    b. Design & optimisation of floating offshore wind technologies & projects including project construction, operations & maintenance.
2. Completion of the "Digital Ecosystem" project for the Global Underwater Hub – this system enables effective remote learning and collaboration opportunities for subsea supply chain organisations throughout the UK from 3 bases (Aberdeen, Newcastle and Bristol). This presents Scottish supply chain companies with the opportunity to engage with the whole UK market, and form collaborations with other UK companies to bid for UK and international business.
3. Delivery of a successful "NZTTP - the success so far" event in Mid February. This event provided energy sector companies the opportunity to engage with

the Net Zero Technology Transition Programme (NZTTP) suite of 7 projects. Ranging from digital infrastructure to alternative fuel gas turbines, the projects presented a number of ways for companies to operationalise carbon reduction and move towards Net Zero. Offshore Energies UK (OEUK) members were particularly proactive in discussing implementation.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: All projects have ongoing monitoring against agreed outcomes and outputs. These are monitored on a quarterly basis, and in some cases may extend beyond the funding timescales for the Exchange Traded Fund (ETF). It is the intention to draw together the quarterly updates for 2023/24 into an overall monitoring report for 2023/24.

Timeframe and expected next steps: The Fund is now in the last full year (2024/25) of its planned lifespan, with the four main projects continuing in full delivery

Policy: Establish and deliver a Scottish Industrial Energy Transformation Fund (SIETF) – to support the decarbonisation of industrial manufacturing through a green economic recovery.

Date announced: June 2020

Progress on implementation since time of last report / CCPu: Our £34m SIETF programme continues to receive significant applications from a wide range of industrial manufacturing sectors across the country. By enhancing energy efficiency it cuts energy costs, in particular for Scotland's diverse food and drink sector. As of end of February 2024, 27 projects have been offered grants totalling £16m, as part of an overall £43m investment.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The 2023 Programme for Government committed us to continue SIETF which should leverage c£90m of total investment to directly reduce emissions from industrial processes. The fund in its current form should cut emissions by c.0.15 MtCO2e. Estimates of annual cumulative carbon savings resultant from co-investment from SIETF will be annually reviewed. However actual savings will begin to evidence from 2024 once significant energy efficiency or decarbonisation deployments are operational.

Timeframe and expected next steps: The programme continues to review the number and value of projects supported, projected emissions and energy productivity savings, and consider impacts against policy objectives within public sector financial constraints. Further grants are due to be awarded in Spring 2024 and programme development work continues on the next iteration of the programme.

Policy: Making Scotland's Future: multi-faceted programme will boost manufacturing productivity, innovation, and competitiveness, supporting manufacturing businesses to make the transition to net zero and realise the opportunities of a low carbon economy.

Date announced: 2020-2021 PfG

Progress on implementation since time of last report / CCPu: Making Scotland's Future, as a framework for collaboration, was implemented at the beginning of 2020. The programme refresh cited in the previous update was completed in Summer 2023 and partners now align their activities to this.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Delivery of the National Manufacturing Institute Scotland (NMIS) was a key milestone for this Programme. This completed with the formal opening of NMIS' flagship building in Renfrew on 21st June by the First Minister. The programme framework has been refreshed and includes a Just Transition and Net Zero horizontal theme to ensure partners consider the opportunities and challenges presented by the low carbon transition. Beyond the delivery of NMIS, Making Scotlands Future (MSF) is a collaboration programme designed to bring key public sector partners together to deliver a more collective approach to supporting the manufacturing sector. MSF helps partners cohere under the key priorities of the sector to shape and deliver projects against its joint objectives. Indicators and milestones vary across partners and their individual projects.
Timeframe and expected next steps: Project timeframes are tied to partner leads who are accountable for delivery of their own projects.

Policy: Low Carbon Manufacturing Challenge Fund: to support innovation in low carbon technology, products and processes. This will be delivered as a Research and development scheme with focus on implementing product circularity through design, reducing product/process waste and reducing emissions through product lifecycle
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: The Fund is now closed as a result of a need within Scottish Government to make budgetary savings.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: For projects of over 0.5 million the gross impacts of the project are estimated, in particular Gross Value Added (GVA) and employment. Additionality adjustments are then made to drive the net impacts of each intervention. Impact ratio (net GVA per £1 of support) cost per job created or safeguarded. Due to the status of the funding, and the nature of the projects being longer term, indicators/outcomes will not be realised until a later date.
Timeframe and expected next steps: SE intend to manage the contracts for awarded projects from alternative budgets – the length of these will vary across projects until the end of FY 2025/26.

Policy: The Renewable Heat Incentive (RHI) is a GB-wide scheme created by the UK Government (with the agreement of the
Scottish Government).
Date announced: August 2020
Progress on implementation since time of last report / CCPu:
1,133.3 MW of accredited capacity under the non-domestic RHI and the Non-Domestic Renewable Heat Incentive Scheme (NDRHI) between November 2011 and March 2023.[29]

1, 813 GWh of heat had been paid for between April 2014 and March 2023 under the domestic RHI scheme in Scotland.[30]

[29] https://www.gov.uk/government/statistics/rhi-monthly-deployment-data-march-2023-quarterly-edition
[30] RHI monthly deployment data: March 2023 (Quarterly edition): RHI monthly deployment data: March 2023 (Quarterly edition) - GOV.UK (www.gov.uk)

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: The domestic RHI has now closed from 31 March 2022. The non-domestic RHI closed to new applicants on 31 March 2021, but the UK Government extended the deadline for commissioning for eligible tariff guarantee or extension applications from 31 March 2022 to 31 March 2023.

Policy: Scottish Industrial Decarbonisation Partnership (SIDP): Scottish Government convened cross-sector energy-intensive industrial (EII) stakeholder forum with representatives from manufacturing sites. Initial objectives: bring together other initiatives; build a shared narrative between government/industry on decarbonisation' and disseminate best practice
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: SIDP development was stopped because many of the proposed co-ordination or convening functions began to be carried out by other partnerships or groups. The NECCUS alliance of industry government and experts which is driving changes needed to cut industrial carbon emissions, and the Grangemouth Future Industry Board (GFIB) continue to capture industry and wider views and commission vital evidence.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Too early to set indicators or milestones.
Timeframe and expected next steps: The proposal's purpose will be reviewed as industrial decarbonisation policy develops during 2024, noting how other partnerships or groups are operating in this policy area.

Policy: Deliver a Net Zero Transition Managers Programme to embed Managers in organisations tasked with identifying, quantifying and recommending decarbonisation opportunities for the business.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Programme development was paused following initial engagement with partners from Scotland's food and drink sector.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Feedback from early engagement with industry will inform policy development to tackle the challenges which manufacturing businesses face when raising capacity to design then deliver site-specific industrial decarbonisation projects.

Policy: Establish a Grangemouth Future Industry Board (GFIB) – forum to coordinate public sector initiatives on growing economic activity at the Grangemouth industrial cluster, whilst supporting its transition to our low carbon future.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: Co-designed a draft vision for the Grangemouth cluster at 2045. This vision will be used to inform the

development of the Industrial Just Transition plan for Grangemouth a draft of which will be published 31 May 2024, ahead of the final draft by December 2024. We have set up the Industrial Just Transition Leadership Forum as part of GFIB bringing Senior leaders from Industry, Academia, Government Agencies, Local Government, Unions and Community together with Ministers from Scottish and U/K Government to develop and direct a programme of activity for GFIB to deliver aligned to realising a just transition for Grangemouth.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Publication of Just Transition Plan (JTP).
Timeframe and expected next steps: GFIB to publish JTP Vision / Plan. GFIB will also seek to support net zero projects aligned to the JT(Just Transition) vision for Grangemouth over the next reporting period.

Policy: Develop policy on providing market-benefit for Scottish industries that invest to decarbonise production.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: In December 2023, UK Government outlined its intention to implement a carbon border adjustment mechanism (CBAM) by 2027. We remain engaged with UK Government (UKG) on related impacts on Scottish production including products standards.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Sector or product specific benchmarking is noted in 2021 Scottish Government research: Improving the market benefits for lower-carbon industrial production in Scotland (climatexchange.org.uk).
Timeframe and expected next steps: We will focus on promoting lower carbon intensity production in Scotland whilst liaising with UK Government who intend to consult on product standards during 2024.

Policy: Green Jobs Fund, to help businesses create new, green jobs, working with enterprise agencies to fund businesses that provide sustainable or low carbon products and services to help them develop, grow and create jobs. Further funding will help to ensure that businesses and supply chains across Scotland can capitalise on our investment in low carbon infrastructure such as the decarbonisation of heating and green transport.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: Published forecast figures on green job numbers are derived from projects where funding from the Green Jobs Fund has already been agreed and, in financial year 2024-25, support will continue for projects where commitments have been contractually agreed.

Latest figures to be quoted are: Between the Enterprise Agencies and Scottish Ministers, 118 projects have been supported with grant funding of £28.2 million through the Green Jobs Fund. Figures provided by the recipients of these awards estimated this fund will support up to 6,956 jobs over the life of the individual projects.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: ONS release of their “Green jobs update, current and upcoming work: March 2023” on the 13th March 2023, defined a green job

as: “Employment in an activity that contributes to protecting or restoring the environment, including those that mitigate or adapt to climate change”.

The Green Jobs Fund is a five year capital fund of up to £100 million. Over the five year term up to £50 million is baselined to the Enterprise Agencies and up to a further £50 million allocated to Scottish Ministers.
Timeframe and expected next steps Green Jobs Fund is expected to have awarded up to £100 million by 2026 to support businesses and their supply chains to help them better transition to a low carbon economy and create new green jobs.

Policy: Seizing the economic opportunity, we will work across government, enterprise agencies and the innovation system to identify strengths that can be built on as part of the decarbonisation journey, for example on The Clyde Mission and continued support for the Michelin Scotland Innovation Parc (MSIP).
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The Scottish Government and Scottish Enterprise continue to support MSIP. In November 2023, MSIP opened its Innovation Hub, adding to its assets that support business development and innovation in low carbon technologies. The other assets include its Innovation Labs, that are hosting companies seeking to research and test new products, and Skills Academy that is providing training in skills to support the green economy.

MSIP has also recently concluded its 4th business Accelerator cohort, providing access to skills, knowledge, networks and advice for 10 new businesses that are developing a range of future-thinking products and services, including sustainable mobility technology, innovative climate action products and services, sustainable manufacturing technology, wind power, energy efficiency and biotech for net zero.

Glasgow City Region partners have taken over leadership of the Clyde Mission, with Scottish Government continuing to support the work, including through £25 million capital funding for heat decarbonisation and £1.5 million revenue for a master planning exercise.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No dates set for Clyde Mission work. No specific dates set for MSIP.
Timeframe and expected next steps: For Clyde Mission, Glasgow City Region partners are to begin work to identify project(s) and work on the masterplan is anticipated to start during the coming year. Planning for MSIP’s 5th business Accelerator cohort is underway.

Outcome 2: Technologies critical to further industrial emissions reduction (such as carbon capture and storage and production and injection of hydrogen into the gas grid) are operating at commercial scale by 2030

Policy: ACORN CCS Project: support the delivery of the Carbon Capture Storage (CCS) and Hydrogen capability at St. Fergus Gas Processing complex by 2025.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The Scottish Government has provided funding and policy support to the Acorn CCS project positioned at St. Fergus, Aberdeenshire, through its feasibility and development phases. The UK Government have published their CCUS Vision which has further acknowledged that the Acorn project is best placed for 'Track 2' deployment.
Acorn will be asked to submit 'anchor phase' plans for assessment which will detail the initial emitter projects which aim to deploy by 2028/29, subject to technical, affordability and value for money assessments. This must include at least 2 emitter projects plus a provisional cluster expansion plan ('buildout phase').
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No milestones have been set. The UK Government are dictating the pace of deployment; the Scottish Government continue to push for the process to be expedited.
Timeframe and expected next steps: Continued support of Acorn, the Scottish Cluster and internationalisation of CCUS, aiming for CCS to be functioning at Acorn by 2029. Blue Hydrogen production from Acorn relies on CCS infrastructure being in place.

Policy: Establish and deliver a Carbon Capture and Utilisation (CCU) Challenge Fund.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: We made available up to £5 million of financial support for Carbon Capture and Utilisation through our CO2 Utilisation Challenge Fund which ran from 2022 to 2024. No applications were received and so the money has been reprioritised. As targeted market engagement did not identify a single specific reason for this lack of applications, a range of issues are thought to be potential contributors, including other funding streams in this area, industry difficulties with building project consortia and changes and challenges to the global supply chain.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Emerging Energy Technologies Fund – to support the development of Hydrogen, CCUS and Negative emissions technologies.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The first tranche of our hydrogen investment programme, the Hydrogen Innovation Scheme (HIS), was launched in June 2022. The HIS is targeted at supporting innovation under the themes of renewable hydrogen production, hydrogen storage and distribution, and integration of hydrogen into our energy system. Allocations from

the first round of the HIS totalled over £7m and were announced in May 2023; 31 projects are now underway.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The second tranche of the hydrogen investment programme, the Green Hydrogen Fund (GHF), was planned to have been launched by the end of 2023; this was trailed in Ministerial speeches and published documents. Due to the budget in December 2023, there are no imminent plans to launch the fund.
Timeframe and expected next steps: Whilst there are no immediate plans to open the Green Hydrogen Fund, the Scottish Government is working with Scottish Enterprise to consider delivery options for funding support to the hydrogen sector on a case-by-case basis, and to engage with projects as they come forward.

Policy: Carbon Capture Utilisation and Storage (CCUS): work closely with the UK Government to achieve commercial, policy and regulatory frameworks required to support CCUS at scale in the UK.
Date announced: 2020-2021
Progress on implementation since time of last report / CCPu: The Scottish Government continues to work closely with the UK Government at official and Ministerial level, with the aim of accelerating deployment of CCUS within Scotland. A Ministerial forum for CCUS has been established and had an inaugural meeting on 18 December 2023.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No indicators set.
Timeframe and expected next steps: A forward plan for the Ministerial forum on CCUS is being refined.

Policy: Forums for CCUS and Blue (low-carbon) Hydrogen: to bring together industry, academics and membership organisations to promote and attract investment in CCUS and Blue Hydrogen.
Date announced: NECCUS 2019
Progress on implementation since time of last report / CCPu: The second annual DecarbScotland event was hosted by NECCUS at Murrayfield, Edinburgh on Thursday 1 February 2024 bringing a national and international audience across industry, academia, government and other membership organisations to showcase the opportunities and discuss the challenges of industrial decarbonisation, with a focus on CCUS, in Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No indicators set
Timeframe and expected next steps: The remit of NECCUS will be discussed with the Scottish Government and Industry bodies in the context of the Scottish Cluster over 2024 and strengthened where needed.

Policy: Evidence for CCUS and Blue Hydrogen: building the evidence base on impact of technology, regulatory and market barriers.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu: The Scottish Government continue to improve our evidence base for CCUS on transport, storage,

skills, infrastructure and growing international markets, utilising the ClimateXChange framework amongst others.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No indicators set
Timeframe and expected next steps: A study on 'near shore' storage potential is being conducted in the first half of 2024 to look at the potential for storage which may be under the jurisdiction of Scottish Ministers.

Policy: Strategic development of Scotland's hydrogen economy - This is a cross-portfolio proposal that will impact on the delivery of multiple outcomes.
Date announced: Hydrogen Assessment and Policy Statement 2020, draft Hydrogen Action Plan 2022
Progress on implementation since time of last report / CCPu: Working with our enterprise agencies we have established a hydrogen programme internal board to take forward the hydrogen action plan deployment in a programmed approach. The board has been in place for almost 12 months.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: We have established the Scottish Hydrogen Industry Forum chaired by the energy minister and composed of senior industry stakeholders, to provide insight in this emerging sector, to inform policy, and help the realisation of our hydrogen ambitions.
Timeframe and expected next steps:
The Scottish Hydrogen Industry Forum meets quarterly – next meeting in in May 2024

Policy: Hydrogen Demonstration: to replicate and scale-up demonstration projects and the evidence base for hydrogen based technologies.
Date announced: Hydrogen Assessment and Policy Statement 2020, draft Hydrogen Action Plan 2021, final Hydrogen Action Plan 2022
Progress on implementation since time of last report / CCPu:
The £10m EETF Innovation Scheme (HIS), launched in 2022. The HIS is aimed at providing support for the production, storage and integration of renewable hydrogen including feasibility and demonstration projects. Allocations from the first round of the HIS totalled over £7m and were announced in May 2023; 31 projects are now underway.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
There are no specific indicators in the CCPu.
Timeframe and expected next steps:
Some HIS projects will conclude in 2024; the remainder will continue into 2025. The Scottish Government is considering further delivery options for funding support to the hydrogen sector.

6. Chapter 5: Waste and the Circular Economy

6.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the CCPu for this sector was 1.5 MtCO2e and the outturn emission statistics for this year (published in June 2022) show a position of 1.5 MtCO2e. On the basis of comparing these figures, the sector was within its envelope in 2021.

The CCPu sets out the following four policy outcomes for the sector:

Reduction in waste sent to landfill	On Track	Off Track	Too Early to Say
Total amount of landfilled waste (tonnes)	-	X	-
Total amount of biodegradable landfilled waste (tonnes)	X	-	-

Reduction in emissions from closed landfill sites	On Track	Off Track	Too Early to Say
Number of closed landfill sites with exploratory landfill gas capture/ flaring	-	X	-

A reduction in food waste	On Track	Off Track	Too Early to Say
Household and non-household food waste reduced (tonnes)	-	X	-

Reduce waste and establish a more circular economy, where goods and materials are kept in use for longer	On Track	Off Track	Too Early to Say
Total waste generated (tonnes)	X	-	-

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities, in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are

likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years, we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

While Scotland has already made significant strides in reducing emissions from waste, with a 40% reduction in waste management emissions between 2011-2021, our CCPu recognised that progress needs to be accelerated to deliver our waste reduction and recycling objectives, and to enable us to meet updated waste sector emissions envelopes.

Emissions from the waste management sector are currently around 1.5 million tonnes CO2e per year (2021). We aim to reduce these emissions to 0.9 million tonnes by 2025, and 0.7 million tonnes by 2030.

To achieve this, we must: accelerate action across society to reduce the demand for raw material in products; encourage reuse and repairs through responsible production and consumption; and recycle waste and energy to maximise the value of any waste that is generated, while minimising environmental and climate impacts.

Scotland has made good long-term progress towards reaching these ambitions, and some of our key indicators are on track for delivery. We have made progress in delivering key policy measures set out in our CCPu, and in some places, such as our approach to single use vapes, we have gone further than the CCPu. Overall the total amount of waste going to landfill in Scotland has nearly halved over the past decade (2.4 million tonnes or 23% of all waste generated was sent to landfill in 2022), over 62% of waste was recycled in 2022. In the same reporting year we met our 2025 target to reduce all waste by 15%.

However, based on available information, and analysis from our Circular Economy and Waste Route Map, it is clear that, for some of the CCPu indicators, Scotland is not on track. Circular economy and waste route map to 2030: consultation - gov.scot (www.gov.scot) In some areas we have fallen short, and progress has not been at the pace and scale required. For example, we are off track on our target to reduce food waste, and we have seen a 5% increase (2% per capita) against the 2013 baseline according to the most recent estimate (2021).

It is also important to recognise that our current 2025 waste and recycling targets (which form some of the CCPu indicators) are important milestones, but should not be the end destination. The world has changed since many of these targets were set in 2010, and as the Route Map makes clear, in some cases, our waste and recycling

targets are not universally the best indicators to deliver our circular economy, net zero or nature restoration objectives. Many of our existing “all waste” targets are weight-based, do not specifically measure emissions reduction or other environmental impacts, and do not account for the varying environmental or carbon impact of individual materials. This was reinforced by 2022 Climate Change Committee (CCC) advice to the Scotland Government and Parliament, which recommended that Scotland “set targets to reduce waste and improve recycling rates beyond 2025”… “on the basis of separate waste streams (rather than 'All waste') and where possible consider carbon-based metrics.”

As our review of our resources and waste system has found, the sustainable choices are still not the easy choices for households, businesses or those in the waste sector, and large-scale, and rapid system change is required to drive progress, and ensure a more rapid transition to net zero and a fully circular economy in Scotland.

To lay the foundations for this transformation, and set out priority actions to accelerate more sustainable use of our resources and reduce emission associated with resources and waste, we published our draft Circular Economy and Waste Route Map to 2030 for consultation in January 2024. Circular economy and waste route map to 2030: consultation - gov.scot (www.gov.scot)

Alongside this, the Circular Economy (Scotland) Bill was introduced to the Scottish Parliament in June 2023, and contains provisions that require primary legislation to underpin Scotland’s transition to a circular economy, and modernise Scotland’s waste and recycling services. If passed, the Bill will primarily deliver new powers that will set a framework for taking action into the future. The direction and actions set out in the Route Map are complemented by the provisions in the Bill, and in some places are dependent on enabling powers flowing from the Bill if passed.
Circular Economy (Scotland) Bill – Bills (proposed laws) – Scottish Parliament | Scottish Parliament Website

These actions will complement the existing, wide-ranging measures we have delivered or are delivering to support our waste reduction, recycling and emission reduction objectives, as set out in the CCPu. Current measures to divert waste from landfill, include a ban on biodegradable municipal waste going to landfill from 31 December 2025, and support for local authorities to secure contracts that comply with the landfill ban. We are working with the UK and devolved governments on reforms to extended producer responsibility schemes for packaging, waste electrical and electronic equipment (WEEE) and batteries, which will help drive circular economy outcomes. Our £70 million Recycling Improvement Fund was launched in March 2021, and more than £60 million has been awarded to 25 local authority projects to improve recycling infrastructure, projected to save over 57,000 tonnes of CO2e per year. We remain committed to the delivery of a successful Deposit Return Scheme (DRS) for single use drinks containers, and are working with the other UK Governments towards the launch of UK-wide schemes by October 2027.

Developments in monitoring arrangements since last report

Work continues to develop more robust reporting for some of the CCPu indicators, including landfill gas capture and food waste measurements. An updated Scotland food waste estimate for 2021 has been published alongside our review of the food waste reduction action plan. Food waste: review of 2019 waste reduction action plan - gov.scot (www.gov.scot)

Moving forward, it is clear from the response to the first Circular Economy and Waste Route Map consultation (2022), and through recent recommendations from the CCC, that there is broad support for a new suite of indicators to track Scotland's progress in moving to a circular economy, aligned to our efforts to tackle the climate and nature emergencies. Delivering Scotland's Circular Economy - route map to 2025 and beyond: consultation analysis - gov.scot (www.gov.scot)

We intend to set new circular economy targets from 2025, with work to develop this monitoring framework across 2024-25, drawing on existing evidence and progressing further research as required. The targets will cover the period to 2030 as a minimum, and will inform future indicators set for the next CCP. This will also allow more holistic tracking of Scotland's consumption levels and wider measures of circularity.

Improvements in waste data are overseen by the multi-stakeholder Scottish Waste Data Strategy Board. Across the draft Circular Economy and Waste Route Map, there are a range of measures that rely on timely data and evidence to maximise delivery of meaningful benefits. To ensure this happens, and we have a data landscape that remains fit for the future, we intend to work closely with partners to review and refresh the strategy and its action plan. Given the transformational changes being brought forward through the Route Map and the Circular Economy (Scotland) Bill, we intend to undertake this work in coordination with the development of a new monitoring framework for Scotland's circular economy, and emission reduction-related monitoring requirements.

We will also account for the changes to the data landscape that key measures like extended producer responsibility schemes, modernising recycling reform, and the UK-wide digital waste tracking service, will have, providing a step change in the quality and timeliness of waste data in Scotland.

6.2 Part B – Progress to Policy Outcome Indicators

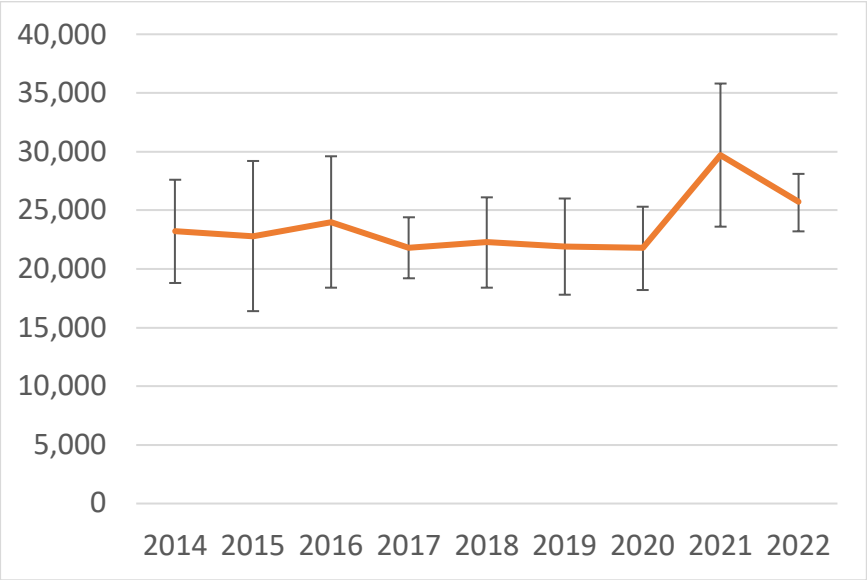
Policy Outcome: Cross-sectoral social and economic
Indicator: Full-time equivalent (FTE) employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics
Assessment: Too Early to Say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

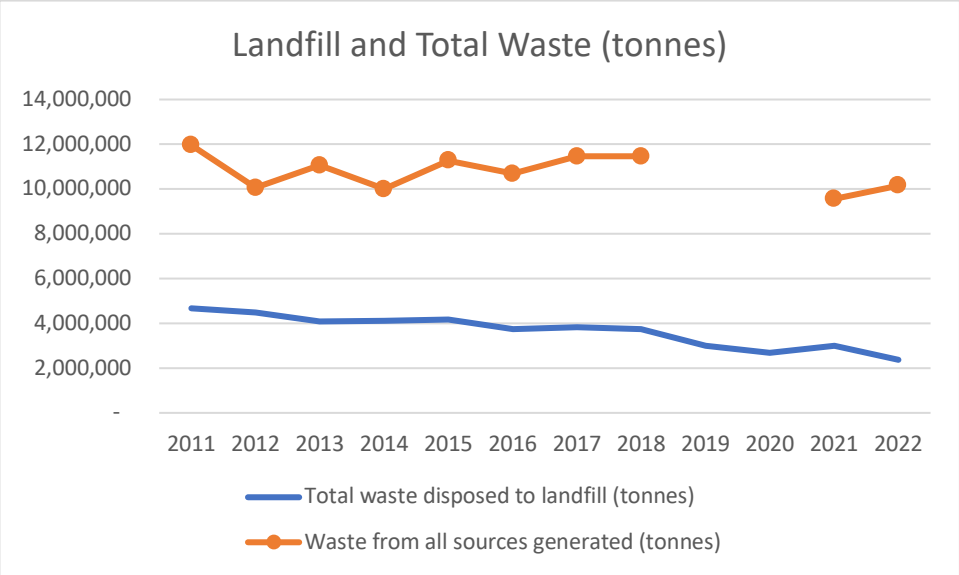
Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 1
Indicator: Total amount of landfilled waste (tonnes)
On-track Assessment (Milestones/Targets): Progress to target [no more than 5% of all waste to landfill by 2025]

Most Recent Data: Waste landfilled in Scotland reduced from 3.0 million tonnes in 2021 (31% of waste generated) to 2.4 million tonnes in 2022. The percentage of total waste sent to landfill in 2022 was 23%.



Data Source(s): Scottish Environment Protection Agency (SEPA) official statistics – Waste landfilled in Scotland 2022, Waste from all sources 2022

Assessment: Off Track

Commentary: Currently, Scotland landfills around a third the amount landfilled in 2005, with waste sent to landfill falling from around 7 million tonnes in 2005 to 2.4 million tonnes in 2022. Scottish waste landfilled in 2022 was 23% of total waste generated.

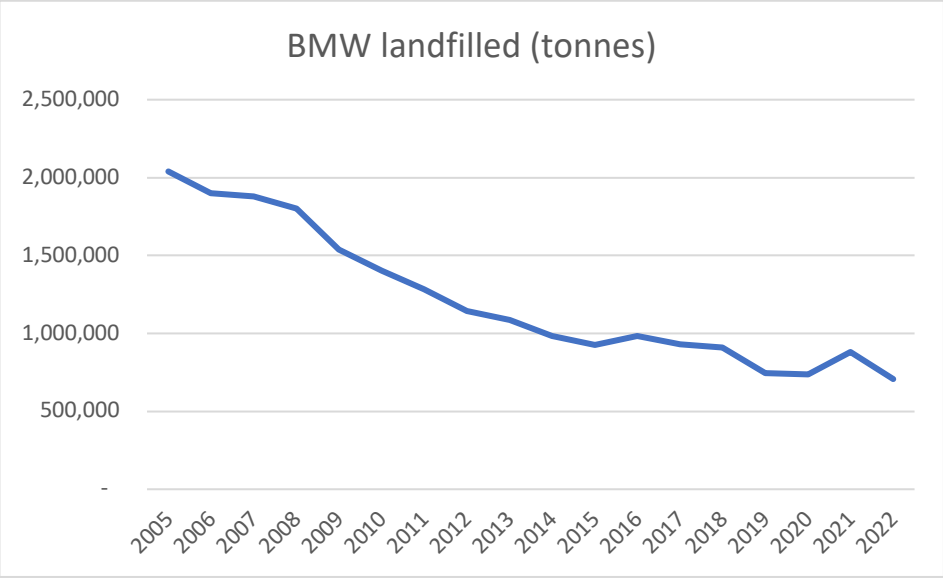
Achieving the weight-based, 5% to landfill target represents a significant challenge and the pace of reduction would need to accelerate markedly to meet the target. It should be noted however, that the types of waste being landfilled have changed significantly, with 'household and similar waste' (responsible for much of the biodegradable waste, which produces landfill gas) reducing from 46% of waste landfilled in 2005 to 31% of waste landfilled in 2022.

Much of the remaining material we landfill has a low carbon impact when landfilled or cannot easily be recycled or disposed of by other means. As we set out in the draft Circular Economy and Waste Route Map (2024), the 5% to landfill target does not account for the carbon intensity of waste being diverted to landfill, and is not a good indicator to measure the sector's progress to net zero. Achieving our 5% target does not fully align with our emissions reduction commitments or other environmental ambitions in the long term.

Policy Outcome: 1

Indicator: Total amount of biodegradable landfilled waste (tonnes)
On-track Assessment (Milestones/Targets): Year-to-year change +
Progress to interim target [0 tonnes of biodegradable municipal waste landfilled by 31st December 2025]

Most Recent Data: Biodegradable municipal waste (BMW) landfilled has reduced from 2.0 million tonnes in 2005 to 0.71 million tonnes in 2022.



Data Source(s): SEPA official statistics – waste landfilled in Scotland 2022

Assessment: On Track

Commentary: Clear reductions have been seen over the past 15 years in the amount of BMW landfilled. The amount of biodegradable municipal waste (BMW – the biodegradable component of Municipal Waste) disposed to landfill in 2022 was 707,000 tonnes, a decrease of 174,000 tonnes (20%) from 2021 and a reduction of 1.3 million tonnes (65%) since 2005. The increase between 2020 and 2021 was likely due to the effects of COVID-19. However, the longer term downward trend is expected to continue as we move towards the ban on landfilling biodegradable municipal waste, which will come into force on 31 December 2025. Work continues to support local authorities to put in place alternative solutions to comply with the ban. This includes providing access to technical, legal and procurement advice on their contracts.

Policy Outcome: 2
Indicator: Number of closed landfill sites with exploratory landfill gas capture/ flaring
On-track Assessment (Milestones/Targets): Progress to target [12 by 2025]

Most Recent Data: N/A
Data Source(s): To be determined

Assessment: Off Track

Commentary: This was a new policy, as outlined in the CCPu, to accelerate Landfill Gas Capture, working with SEPA and key industry partners to scale up the existing landfill gas capture programme to mitigate effects of landfill and environmental impact of closed landfill sites. This is supported by additional funding from the Low Carbon Fund, with the aim to harness the energy generated from landfill gas capture and maximise circular economy opportunities. Due to other unavoidable resource and budget implications, including COVID-19 contingency work, progress on this policy outcome was paused, but roll out of the programme is expected to begin from 2024 subject to final budget allocations and resource availability. Please see Part C for more information.

Policy Outcome: 3
Indicator: Household and non-household food waste reduced (tonnes)
On-track Assessment (Milestones/Targets): Progress to target [reduce all food waste by 33% from 2013 baseline by 2025]

Most Recent Data:

Table : Comparison of food waste estimates in 2013,2018, and 2021				
Sector	2013 baseline (tonnes)	2018 estimate (tonnes)	2021 estimate (tonnes)	2025 target (tonnes)
Food & drink Manufacturing	248,229	282,682	281,396	171,032
Households	598,890	600,312	610,167	412,640
Other sectors	140,964	144,107	146,109	97,125
Total	988,083	1,027,102	1,037,671	680,797

An estimated 1,037,671 tonnes of food and drink in Scotland was wasted in 2021.
Data Source(s): 2021 Scottish Food Waste Estimate – Zero Waste Scotland, January 2024 2021 Scottish Food Waste estimate

Assessment: Off Track

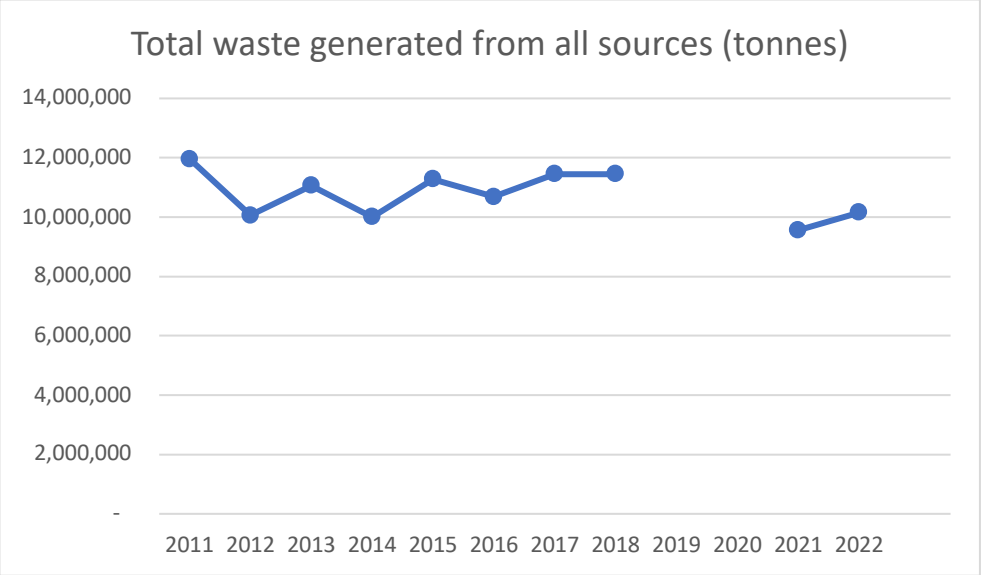
Commentary: A review of Scotland's Food Waste Reduction Action Plan has been published, along with the food waste estimate for 2021. The Review shows that progress to reduce food waste was limited by the COVID-19 pandemic and the cost-of-living crises. Overall we found that actions set out in 2019 were not enough – food waste has not decreased. The food waste estimate indicated that there was a 5% increase compared to 2013, which represents a 2% increase per capita against the 2013 baseline. According to 2021 data, the two largest sector sources of food waste are Household & Consumer (59%) and Food & Drink Manufacturing (27%). While supporting change within Scottish households is required, the relationships between the consumer, the retailer and the supply chain are complex, with each influencing the others' decisions and behaviour. The remaining 14% is food waste generated by the Hospitality & Catering, Wholesale & Retail, Education, and Healthcare sectors.

The draft Circular Economy and Waste Route Map was published in January 2024, alongside the Review of the 2019 Food Waste Reduction Action Plan. It marks a collective reset of our approach to tackling food waste as part of wider, cross-government food policy, noting that sticking to the same path will not yield the results we need to see. The actions we set out in the Route Map are based on the evidence we have so far on how best we can reset our approach and accelerate Scotland's goal to reduce food waste, and towards the UN Sustainable Development Goal (SDG) target of a 50% reduction by 2030.

Policy Outcome: 4

Indicator: Total waste generated (tonnes)
On-track Assessment (Milestones/Targets): Progress to target [reduce total waste by 15% by 2025 against 2011 baseline][31]

Most Recent Data: The estimated total quantity of waste generated in Scotland in 2022 was 10.16 million tonnes.



Data Source(s): SEPA official statistics – Waste from all sources 2022

Assessment: On Track

Commentary: The total amount of waste generated in 2022 was 10.16 million tonnes, an increase of 6.2% from 2021. This equates to an 15.1% reduction compared with 2011. Despite the annual increase, for the second year in a row Scotland has met its 2025 target to achieve a 15% reduction of all waste against 2011 levels.

However, it should be noted that 2021 was an atypical year due to the impact of COVID-19 and, even in years not affected by COVID-19, year-to-year changes in waste can be marked – generally driven by year-to-year variability in construction and demolition waste. In 2022, most of the increase in waste generated is construction type wastes such as Soils and Mineral waste from construction and demolition. Due to the level of year-to-year fluctuation, the target has been met in 4 years (2012, 2014, 2021, 2022) but not the other 5 years for which data is available. Excluding construction and demolition waste, the trend is clearer with a decline in combined household and commercial & industrial waste from 6.8 million tonnes in 2011 to 5.5 million tonnes in 2022, a drop of around 18% in 11 years. As a result of the December 2020 cyber-attack on SEPA, waste from all sources publications for 2019 and 2020 were not available.

[31] By 2025 reduce total waste arising in Scotland by 15% against 2011 levels;

In January 2024, our Circular Economy and Waste Route map consultation set out proposed measures to accelerate progress towards sustainable resource use and a circular economy in Scotland. This included measures designed to cut waste, challenge the current approach to consumption and production by mainstreaming reuse and repair, and incentivising and promoting sustainable choices; focusing on reducing food waste from all sources; and embedding circular construction practices to reduce resource needs, reduce waste and carbon, and encourage refurbishment and reuse.

6.3 Part C – Information on implementation of individual policies

Outcome 1: Reduction in waste sent to landfill

Policy: End landfilling of biodegradable municipal waste by 2025, reduce the percentage of all waste sent to landfill to 5% by 2025 and recycle 70% of all waste by 2025 by:

- Developing a new route map to reduce waste and meet our waste and recycling targets for 2025 in a way that maximises their carbon savings potential.
- Developing a post 2025 route map for the waste and resources sector, identifying how the sector will contribute towards Scotland's journey towards net zero in the period to 2030 and beyond.
- Establishing a £70m fund to improve local authority recycling collection infrastructure.
- In line with EU requirements, further promoting reuse and recycling ensure separate collection of textiles by 2025; and ensuring that biowaste (e.g. garden waste), is either separated and recycled at source, or is collected separately and is not mixed with other types of waste by 2023.
- In response to a recommendation from the CCC, it is our intention to extend the forthcoming ban on biodegradable municipal waste to landfill to include biodegradable nonmunicipal wastes, subject to appropriate consultation and work to provide assurance around some specific waste streams.

Date announced: 2020-2021 Programme for Government (PfG)

Progress on implementation since time of last report / CCPu:

- Publication of draft Circular Economy and Waste Route Map to 2030 for consultation (January 2024).
- Our £70 Recycling Improvement Fund was launched in March 2021. So far more than £60 million has been awarded to 25 local authority projects to improve recycling infrastructure.
- We continue to provide procurement support to help local authorities that need it to secure contracts in preparation for the forthcoming ban. As part of this support, Zero Waste Scotland is working with local authorities to provide technical, legal and procurement advice on their contracts.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

- Route Map milestones: first consultation in May 2022 (complete), and second consultation in January 2024 (complete).
- The projects funded through the Recycling Improvement Fund are projected to save over 57,000 tonnes of CO2e per year.

Timeframe and expected next steps

- The final Route Map is due for publication later in 2024.
- The Recycling Improvement Fund is a five-year fund, running until 2025/26, with further investments to be made across the lifetime of the Fund.
- A date of 31 December 2025 to ban the landfilling of biodegradable municipal waste has been set out in legislation.
- Following work to identify and quantify waste streams that could fall within an extension of the landfill ban to include biodegradable non-municipal waste, we will bring forward a call for evidence in 2024 to begin to better understand these and

other problematic waste streams and identify alternative treatment options for these wastes.

Policy: Work with the Convention of Scottish Local Authorities (COSLA) in the coming year to evaluate the Household Recycling Charter and review its Code of Practice as a key step in developing a future model of recycling collection.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu:

- A process to co-design a new Household Recycling Charter and Code of Practice, and put this on a statutory basis, was announced through the introduction of the Circular Economy Bill in 2023. The Bill is currently progressing through the Scottish Parliament.
- Additional detail on the approach to the new statutory Code of Practice and some of the dependencies was included in the Circular Economy and Waste Route Map to 2030, published for consultation in January 2024.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
Scoping work for the new Code of Practice commenced in 2023. Research and engagement with local authorities is now underway to inform the development of a co-design methodology. Delivery of the co-design process will take place in 2024/25 and conclude in 2025/26.

Policy: Underpinning this we will take steps to improve waste data, continuing to work with UK Government, other devolved governments and agencies to develop electronic waste tracking, which will help deliver a step change in the quality and usefulness of waste data for decision making. This will include taking the necessary steps alongside SEPA to drive implementation of the system in Scotland.
Date announced: Low Carbon Fund 2020
Progress on implementation since time of last report / CCPu: A joint Government Response to a joint (Scottish, UK and Welsh governments and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland (DAERA)) consultation on Mandatory Digital Waste Tracking was published on 31 October 2023. This set out, the scope and intention for how the service will work including what waste will be tracked, what information will be recorded, and how the service will recover costs through charging. See the Government Response for more details: Government response - GOV.UK (www.gov.uk)

The Route Map consultation (2024) sets out our intention to set new circular economy targets from 2025, with work to develop this monitoring framework across 2024-25, drawing on existing evidence and progressing further research as required. The targets will cover the period to 2030 as a minimum. This will also allow more holistic tracking of Scotland's consumption levels and wider measures of circularity. Improvements in waste data are overseen by the multi-stakeholder Scottish Waste Data Strategy Board. Across the Circular Economy and Waste Route Map there are a range of measures that rely on timely data and evidence to maximise delivery of meaningful benefits. To ensure this happens, and we have a data landscape that

remains fit for the future, we intend to work closely with partners to review and refresh the strategy and its action plan. Given the transformational changes being brought forward through the Route Map and the Circular Economy (Scotland) Bill, we intend to undertake this work in coordination with the development of a new monitoring framework for Scotland's circular economy, and emission reduction-related monitoring requirements.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

The Government Response set out two implementation milestones:

- The for service to be publicly available to users on a voluntary basis in 2024; and
- For legislation to come into force from April 2025 making use of the service mandatory.

Circular economy monitoring framework will be developed across 2024-25, with new targets determined from 2025, to be supported by a refreshed waste data strategy action plan.

Timeframe and expected next steps: As above.

Outcome 2: Reduction in emissions from closed landfill sites.

Policy: Accelerate Landfill Gas Capture and Landfill Legacy Management: we will work with SEPA and key industry partners to scale up the existing landfill gas capture programme to mitigate effects of landfill and environmental impact of closed landfill sites
Date announced: Low Carbon Fund 2020
Progress on implementation since time of last report / CCPu: No progress
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The CCPu set out an ambition to double the number of landfill gas capture sites that undertake investigative or development work (from 12 to 24 sites) by 2025.
Timeframe and expected next steps: Our Circular Economy and Waste Route Map consultation set out a timeline to increase the capture of landfill gas by 2025/2026.

Policy: Landfill gas capture on closed sites: in association with SEPA and the waste industry, double the number of landfill gas capture sites that undertake investigative or development work (from 12 to 24 sites) by 2025, in order to harness energy generated from landfill gas capture and maximise other circular economy opportunities. SEPA has already identified 12 sites for potential investigative work.
Date announced: Low Carbon Fund 2020
Progress on implementation since time of last report / CCPu: As above

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: As above

Timeframe and expected next steps As above

Outcome 3: A reduction in food waste

Policy: Scottish Government has committed to reduce food waste by 50% by 2030, in line with UN Sustainable Development Goal (SDG) 12.3.
Date announced: Food Waste Reduction Action Plan (FWRAP) published 2019; 2020/21 PfG; Review of FWRAP published 2024.
Progress on implementation since time of last report / CCPu: A review of food waste reduction progress in Scotland was published in January 2024, alongside the publication of the 2021 Scottish food waste estimate. Evidence has shown that 2021 food waste levels in Scotland are higher than the baseline figure in 2013.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Scottish Government has committed to reset our approach to tackle food waste and the Circular Economy and Waste Route Map is a vehicle to achieve this. A second consultation on the draft Route Map was conducted between January and March 2024. Consultation responses will be analysed to inform the final Route Map for publication later in 2024, including food waste actions within it.
Timeframe and expected next steps: As above. Next steps also include supporting the passage of the Circular Economy Bill, as this includes proposals to enable powers for the mandatory public reporting of food waste and surplus by businesses.

Policy: Improving local authority segregated food waste collections to help break down barriers to food waste reuse and recycling. Supporting leadership, innovation, effectiveness and efficiency in Scotland's public, private and hospitality sectors by expanding pilot programmes across the education sector and public sector buildings; Support the development and implementation of an NHS Scotland national action plan on food waste; Develop best practice guidance for public sector procurement teams to drive new ways of working and more transparent supply chains. A sustained approach to public engagement and communications to enable the public to make changes in their choices and behaviours around food and food waste, in partnership with Zero Waste Scotland.
Date announced: Food Waste Reduction Action Plan 2019 and CCPu 2020
Progress on implementation since time of last report / CCPu:
The Recycling Improvement Fund has funded seven projects to increase food waste recycling and expand access, with a value of over £2.2 million.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

N/A on data.
Review the rural exemption for food waste recycling, as part of recycling co-design process in 2024/25 and 2025/26.

Timeframe and expected next steps
The Scottish Government retains a commitment to consult on the rural exemption for food waste collections, linked to the co-design of the new Household Recycling Code of Practice.
The co-design of the new Household Recycling Code of Practice will include a comprehensive review of the existing Code of Practice and its impact. Opportunities

to build on this and improve recycling provision, including for food waste, will be assessed.

Outcome 4: Reduce waste and establish a more circular economy, where goods and materials are kept in use for longer.

Policy: We will work with local authorities and the future DRS administrator(s) to explore options that will unlock reprocessing investments, including pricing and incentive schemes, to create jobs and a ready supply of recycled material for new packaging.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu: We have set out a range of further measures to be delivered in the coming years to improve services, increase the recyclability of products, increase capture at end-of-life and provide greater incentives for domestic reprocessing. This includes extended producer responsibility (EPR) schemes for packaging, waste electrical and electronic equipment (WEEE) and batteries, with the first scheme for packaging to begin from 2025. Packaging EPR is anticipated to increase recycling rates for packaging materials to 76% by 2033[32]. It will require clearer labelling of products for recycling, and producers to cover the full net cost of managing household packaging when it becomes waste. Funding will go to local authorities to fund effective and efficient collection systems for household packaging waste.
We also remain committed to the delivery of a successful DRS for single use drinks containers, and are working with the other UK Governments towards the launch of UK-wide schemes by October 2027.

To support our transition to a circular economy and reduce Scotland's global carbon impact, we must take responsibility for our own waste, managing and processing as much as possible here in Scotland. A large majority of Scotland's waste is already managed within Scotland, but around 15% is currently processed elsewhere, representing a lost economic opportunity and an environmental cost too. Measures within the Route Map are focused on tackling this. Recycling co-design processes will look at the available markets and reprocessing capacity for collected materials, and opportunities to facilitate this; and existing measures in train like extended producer responsibility schemes will provide greater incentives for domestic reprocessing (as above). To strengthen public confidence in where recycling goes, we will also be consulting on the introduction of end destination public reporting of household recycling collected (by 2027/28).
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Co-design process for high quality, high performing household recycling and reuse services (2024/25 and 2025/26)
- Develop a statutory code of practice for household waste services (by 2025/26)
- Co-design measures to improve commercial waste service provisions (2026/27)
- Develop options and consult on the introduction of end destination public reporting of household recycling collected (by 2027/28)
- Producers to begin paying local authorities the full net cost of managing household packaging waste (October 2025)

[32] See pEPR final IA p10: Impact Assessment (publishing.service.gov.uk)

Policy: Measures to encourage more sustainable consumer purchasing, including plans to take further steps to consult on a charge on single use disposable beverage cups and to increase the carrier bag minimum charge from 5p to 10p in this parliamentary session.
Date announced: Boosted [2020-2021 PfG]
Progress on implementation since time of last report / CCPu: Bag Charge was increased to 10p on 1 April 2021
Work on a single-use disposable cup charge is progressing, powers to introduce a charge are included in the Circular Economy Bill and a consultation on the cup charge will be published with the intention of introducing regulations by 2025.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Single-use disposable cup charge is due to be introduced by 2025.
Timeframe and expected next steps
Consultation – 2024
If the Bill is passed by Parliament, CE Bill receives royal assent 2024/25 TBC.
Cups charge regulation passed– 2025

Policy: Banning priority single use items: We will consult on banning a number of problematic plastic items identified in the EU's Single Use Plastics Directive (with a view to introducing legislation in 2021) and outline how we will give effect to the wider requirements of the Directive before the end of 2020
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu:
From 1 June 2022 Scotland became the first part of the UK to implement a ban on some of the most problematic single-use plastic products through the Environmental Protection (Single-use Plastic Products) (Scotland) Regulations 2021. The regulations make it an offence for a person who, in the course of a business, supplies, offers to supply, or has in their possession for supply a range of single-use products, including cutlery, plates and beverage/food containers below:

The Scottish Government is taking concrete action to tackle single-use plastic issues at home as well as exchanging knowledge and practice with our international partners. The single-use plastics regulations sit alongside a broader range of initiatives already established or underway, including:

- Market restrictions in Scotland on plastic microbeads and plastic-stemmed cotton buds which came into force on 19 June 2018 and 12 October 2019 respectively;
- A 10p-levy on single-use carrier bags from 2021;
- Introducing extended producer responsibility for packaging from 2025, alongside the other UK governments
- Working with other administrations on the introduction of a deposit return scheme that will be in force across all of Scotland;
- Working with the other administrations on proposals to ban wet wipes containing plastic, with a UK-wide consultation held in Autumn 2023.
- A ban on the sale and supply of single use vapes in Scotland, following consultation in 2023. The UK Government and Welsh Government have also confirmed that

they intend to legislate for a ban in England and Wales respectively. Draft Scottish regulations to ban single use vapes were published on 23 February 2024 confirming a common coming into force date of 1 April 2025.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: As above, consultation on single use cups charge will be published.

Timeframe and expected next steps:

A consultation on the introduction of a charge for single-use disposable cups (2024)
A response to the consultation on wet wipes containing plastic will be published.
A consultation a ban the sale and supply of single use vapes was conducted in October-December 2023. Following the decision to proceed with a ban, the Scottish Government consulted on draft Regulations in February/March 2024, and a further six-week consultation on implementation and draft impact assessments was launched on 2 April 2024. Responses to both consultations will be used to inform the final regulations and impact assessments that will be laid in the Scottish Parliament this year, before a proposed ban coming into force from April 2025.

Policy: Implementation of our Deposit Return Scheme (DRS) for single use drinks containers.

Date announced: CCP 2018

Progress on implementation since time of last report / CCPu: We remain committed to the delivery of a successful DRS for single use drinks containers to increase recycling rates for single use drinks containers to at least 90%. Scottish DRS Regulations were laid in 2020 and establish the framework for DRS in Scotland, but implementation of those Regulations has been prevented by the UK Government's decision not to grant a full UK Internal Market Act exclusion for the scheme in May 2023. The UK Government has announced a delay to the launch of a UK-wide DRS to October 2027.

We continue to work across all administrations to ensure we are delivering a DRS which is simple and efficient for industry and consumers across the UK. A joint policy statement was published in April 2024 setting out the four-nation approach to DRS.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

Timeframe and expected next steps

- Joint policy statement will be published in 2024 setting out the four-nation approach to DRS.
- DRS planned launched across all UK Nations in October 2027

Policy: We will also work collaboratively across the public sector developing tools and guidance and a practical approach to influence and empower buyer, supplier and key stakeholder communities to use public procurement to support a green recovery and our wider climate and circular economy ambitions through procurement, embedding climate considerations in organisational procurement strategies by 2021 and reporting progress in annual procurement reports.

Date announced: 2020/21 PfG

Progress on implementation since time of last report / CCPu:

National suite of online Sustainable Procurement Tools modernised to support Scottish public sector procurers to adjust to a more resource efficient and sustainable

procurement practice, with learning and guidance provided on climate and the circular economy (Scottish Government Annual Procurement Report 2021-2022 (www.gov.scot)).
Public sector procurement strategy published April 2023
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
N/A
Timeframe and expected next steps

The draft Circular Economy and Waste Route Map consultation (January-March 2024) sets out a range of proposed activity in relation to sustainable procurement including analysis of market information and spend data to identify areas where regulations under section 82 and 82A of the Climate Change Act could enhance circular purchasing opportunities.

Policy: We are introducing extended producer responsibility for packaging from 2025 alongside the other UK governments, which will see producers paying local authorities the full net cost of running an efficient and effective household packaging collection service.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu:
The Packaging Waste (Data Reporting) (Scotland) Amendment Regulations 2023 and The Packaging Waste (Data Reporting) (Scotland) Amendment Regulations 2024 are now in force.

The Producer Responsibility Obligations (Packaging and Packaging Waste) Regulations 2024 have now been notified to the EU and World Trade Organisation (WTO). These regulations will establish packaging EPR through a UK statutory instrument.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:

N/A

Timeframe and expected next steps

The Producer Responsibility Obligations (Packaging and Packaging Waste) Regulations 2024 will be brought before the UK parliament later this year and has an intended coming into force date of 1 January 2025. Scottish Parliament will be notified of Scottish Ministers proposed consent to these regulations and allowed 28 days for scrutiny.

Policy: We are boosting our commitment to building a circular economy, where goods and materials are kept in use for longer. We will deliver this by embedding circular recovery principles in the wider green recovery. Through Zero Waste

Scotland and Scottish Environment Protection Agency (SEPA), we will intensify our work with industry and businesses to address emissions associated with production, consumption and waste of products/resources; and to promote resource efficiency.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:

Last year we consulted on our draft Energy Strategy and Just Transition Plan (ESJTP), which sets out the Scottish Government's vision for Scotland's energy system to 2045 and a route map of ambitions and actions that, coupled with detailed sectoral plans and the forthcoming CCP, will guide decision-making and policy support over the course of this decade.

We also published discussion papers on land use and agriculture Just transition in land use and agriculture: a discussion paper - gov.scot (www.gov.scot), the Grangemouth Industrial Cluster Just Transition: Grangemouth (www.gov.scot) and the built environment and construction sector Delivering a Just Transition for the Built Environment and Construction Sector Delivering a Just Transition for the Built Environment and Construction Sector (www.gov.scot)

We have also consulted on an updated Circular Economy and Waste Route Map, which sets out the clear actions we need to take to deliver sustainable use of our resources and progress a circular economy in Scotland by 2030 Circular economy and waste route map to 2030: consultation - gov.scot (www.gov.scot). This includes a package of measures to embed circular practices in the construction sector.

We introduced the Circular Economy (Scotland) Bill to Parliament on 13 June 2023 (Introduced | Scottish Parliament Website.) The Bill places a duty on Scottish Ministers to publish or refresh a circular economy strategy every 5 years, and powers for Scottish Ministers to create statutory circular economy targets.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps
If the Bill is passed by Parliament, the first circular economy strategy should be published in 2025. The circular economy monitoring and indicators framework will be developed across 2024-25, with new targets determined from 2025, supported by a refreshed waste data strategy action plan.

Policy: In the context of the latest CCC recommendations and building on progress already made by the sector, we will consider measures to ensure new energy from waste plants are more efficient, and 'future-proofed' for Carbon Capture and Storage technology.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
We published a Government Response to the Second Report from the Independent Review of the Role of Incineration in the Waste hierarchy in Scotland, available here: Decarbonisation of residual waste infrastructure: Scottish Government response - gov.scot (www.gov.scot). This highlights actions to improve the efficiency of energy

from waste plants and the appropriate use of Carbon Capture Use or Storage technology, including:

- National Planning Framework 4 sets out 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, and where relevant criteria are met. 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 Scottish Government decarbonisation goals.
- Continued funding support for the deployment of heat networks including those that utilise energy from waste, through the £300 million Scotland's Heat Network Fund;
- Continued support through our Heat Network Support Unit (HNSU), which 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; and
- Funding and policy support, which we continue to offer to support the deployment of CCUS in Scotland, and urge the UK Government to progress CCUS at pace.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: In our consultation on the Circular Economy and Waste Route Map (2024) we proposed to facilitate the development of a Sector-Led Plan to minimise the Carbon Impacts of the Energy from Waste Sector, and to publish this plan in 2025/26. This will, among other things, focus on measures to end the unnecessary incineration of high carbon emitting materials such as plastics from incineration and consider opportunities to decarbonise energy from waste, particularly the barriers and opportunities, such as carbon capture, utilisation and storage. More information is available here: Supporting documents - Circular economy and waste route map to 2030: consultation - gov.scot (www.gov.scot)

Policy: As part of our work on developing a route map to 2025, we will undertake a specific and focused piece of work to examine the range of fiscal measures used by other countries to incentivise positive behaviours and to develop proposals to go further in this area.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Alongside the second Circular Economy and Waste Route Map consultation, published in January 2024, we published new research on fiscal incentives for householders to reduce residual waste and maximise use of recycling provision. There are currently no plans to introduce Direct Variable Charging in Scotland, but the Scottish Government will continue research on fiscal incentives to better understand the potential they may have to address waste management issues in Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
We intend to conduct a review of waste and recycling service charging by 2025 to ensure that we have the right incentives to reduce waste and maximise use of recycling and reuse services. This review will investigate whether the current position

incentivises the right positive behaviours, and delivers the most value for local authorities, including the highest quality recyclate. The review will account for current and future funding availability for household services, including the potential revenue stream from the new packaging Extended Producer Responsibility scheme.

7. Chapter 6: LULUCF

7.1 Part A - Overview of sector

The 2021 annual emissions envelope published in the CCPu this sector was for 0.5 $MtCO_2e$, whereas the outturn emission statistics for this year (published in June 2023) show a position of 0.4 $MtCO_2e$. On the basis of comparing these figures, the sector was within its envelope in 2021.

The CCPu sets out the following three policy outcomes for the sector, the indicators for which are summarised below:

We will introduce a stepped increase in the annual woodland creation rates from 2020-2021 to enhance the contribution that trees make to reducing emissions through sequestering carbon.	On Track	Off Track	Too Early to Say
Hectares of woodland created per year	-	X	-
Woodland ecological condition	-	-	X
Woodland Carbon Code: Projected carbon sequestration (validated credits)	X	-	-

Increase the use of sustainably sourced wood fibre to reduce emissions by encouraging the construction industry to increase its use of wood products where appropriate.	On Track	Off Track	Too Early to Say
Annual volume (in millions of cubic metres) of Scottish produced sawn wood and panel boards used in construction	-	-	X

To enhance the contribution of peatland to carbon storage, we will support an increase in the annual rate of peatland restoration.	On Track	Off Track	Too Early to Say
Hectares of peatland restored per year	-	X	-
Peatland Code: Projected emissions reduction (validated units)	-	X	-

We will establish pilot Regional Land Use partnerships (RLUPs) over the course of 2021.

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

Forestry - There were 8,190 hectares of new planting in in 2022-23 despite 11,000 hectares of new planting being approved by Scottish Forestry. The unusually high proportion of projects were paused or called off (about 25%) was thought to be related to skills and capacity in the sector. Nevertheless, new planting in Scotland represented almost two thirds of all new planting across the UK in 2022-23.

A forestry summit with leaders from across the forestry sector was held in December 2023 to examine how to put levels of woodland creation back on track. Following the summit, a roadmap is being put together to set out actions to stimulate woodland creation and further discussions are being held with stakeholders. These discussions are also examining how funding from the Forestry Grant Scheme (FGS) and through the Woodland Carbon Code can be blended most effectively to maximise woodland creation in future, particularly in light of a significant reduction in FGS funding for woodland creation in 2024-25. Approximately, 14,000 hectares of woodland creation have been approved for 2023-24.

Private sector finance in woodland creation through the Woodland Carbon Code. Interim statistics show that 9.2M woodland carbon credits had been validated in Scotland at December 2023, with a 30% increase between April and December 2023.

Peatland - Scottish Government has committed £250 million over 10 years to restore 250,000 hectares of degraded peatlands by 2030. To date, we have achieved around 65,000 hectares of this, and the First Minister's April 2023 policy prospectus commits us to reaching 110,000 hectares by 2026.

Recent restoration rates average around 6,000 hectares annually over the past three years, falling well below our current annual target of at least 20,000 hectares. Our 10,700 ha target for 2023-24 represents a 40% increase over the 7,500 ha restored last year (2022-23), which itself was a 35% increase over the 5,400 ha restored in 2021-22. This growth rate in restoration is welcome and promising, but we are still

behind the pace required to meet our CCP commitment on emissions from degraded peatland.

The key challenges to peatland restoration fall into the following three broad categories.

1. Operational issues - There are a number of challenges which make peatland restoration difficult – rising costs; physical limitations imposed by weather, access and ecological constraints; and ongoing development of skills and capacity requirements throughout the entire project lifecycle in this young industry. Developing competent contractor and consultancy capacity to cope with the scale up required for 2030 targets is of particular concern with new entrants finding it challenging to win restoration contracts and a lack of visible project pipeline.
2. Policy uncertainty – Restoration currently relies on land owners offering their land on a voluntary basis. Demand has been varied across Scotland and we are seeing increasing demand from landowners, particularly in southern Scotland and the Cairngorms. However there is uncertainty around post-CAP financial support and the emerging carbon market.
3. Financial Model – Market mechanisms for generating a return on investment in peatland restoration are either relatively new or largely absent. The administration of the Peatland Code is especially resource intensive for IUCN but is intended to be a vital part of the financing model generating returns for land owners. We are seeing projects being delayed at the validation stage of the Peatland Code.

A detailed delivery improvement plan is in place and aims to accelerate rates of restoration, focusing on increasing sector capacity and addressing key bottlenecks. We are working hard with our delivery partners through the Peatland Action partnership to tackle the many barriers to upscaling peatland restoration in this relatively young sector.

Peatland Code is a well-regarded standard and used by investors, but operational challenges remain which threaten the pace and scale of adoption of this standard in Scotland (and UK). IUCN (who administer the Peatland Code) are investing in operational capacity and improving their processes but a lot of work remains to be done before we can get to the scale needed to meet our private finance policy objectives in the context of peatland restoration.

Based on registration data, as of March 2024, a total of 201 projects have registered under the Peatland Code in Scotland with a total of 4.47 million units (tCO2e) registered. This represents about 76% of all registrations in the UK. However, only 33% of the registered projects are so far validated, which does create a risk for new project developers if they end up facing significant waiting times to get their projects validated. IUCN, who administer the Peatland Code are onboarding additional validation capacity, but it is too early to say whether that has worked as expected.

Work has progressed on establishing a pilot for peatland restoration on crofting land.

RPID manage 46 crofting estates/land holdings extending to over 95,000 hectares mainly across the Highlands and Islands and have landlord responsibility for 1,524 tenanted crofts (10% of Scotland's total tenanted crofts) and around 80 miscellaneous tenancies including windfarms). RPID manage the 120 hectare Crofting Bull Stud at Knocknagael (providing subsidised bull hire to groups of crofters), and the starter farm at Balrobert (130 hectare). As the majority of the Scottish Ministers crofting and agricultural land holding interests is under either crofting or agriculture tenure, there is little influence we as landlords have on how our tenants should manage it. Influencing management change on land under crofting tenure is even more complicated, as this is governed by the Crofters (Scotland) Act 1993 and the Crofting Reform (Scotland) Act 2010. However crofting is a low intensity form of agriculture and this means our crofting land holdings already contribute a lot of Scotland's natural capital.

Across the wider estate we have been working to identify and determine areas and condition of peatland to identify areas of degraded peatland for restoration. We have concluded desk based assessments on over 90% of our holdings with peatland, and work is ongoing with the remaining 10%. This has helped identify sites that would benefit from restoration activities. We are currently engaging with various crofting tenants and grazings committees with the aim of developing a practical collaborative approach between land owner, crofting tenant and Peatland Action for restoration and long-term management of peatland on croft land. This work includes exploring the reason for past and present degraded peatland and identifying different restoration options.

NatureScot, one of our key delivery partners in the Peatland ACTION partnership, have also progressed work on engaging with landowners through their Communications Plan and on increasing the capacity of designers and implementers of restoration works through their Peatland Skills Plan.

Through the CivTech challenge we have worked with Environment Systems Ltd to develop a tool utilising technology to identify and prioritise peatland sites that will optimise costs and benefits. The solution – PeatSCOPE – is a web based portal which can enable better targeting of peatland sites for restoration to maximum benefits. We are currently gathering feedback from users to determine how we proceed with PeatSCOPE.

Between February and May 2023, we ran a consultation on "Ending the Sale of Peat in Scotland". Whilst the central focus of the consultation was on horticulture, as the main commercial use of peat, we also considered other uses of peat that drive commercial extraction and sought wider views through the consultation and stakeholder engagement. An analysis of responses was published in December 2023 and this, together with stakeholder engagements and impact assessments, will inform plans and timescales for moving away from using peat products in order to protect peatlands from further damage.

Developments in monitoring arrangements since last report

NatureScot-Peatland ACTION have developed a monitoring strategy - Peatland ACTION Monitoring Strategy 2023-2030 - which is now available through their site: Peatland ACTION - Monitoring strategy | NatureScot. The Monitoring Strategy was first implemented in 2019 and has been revised to improve the structure in 2023.

7.2 Part B - Progress to Policy Outcome Indicators

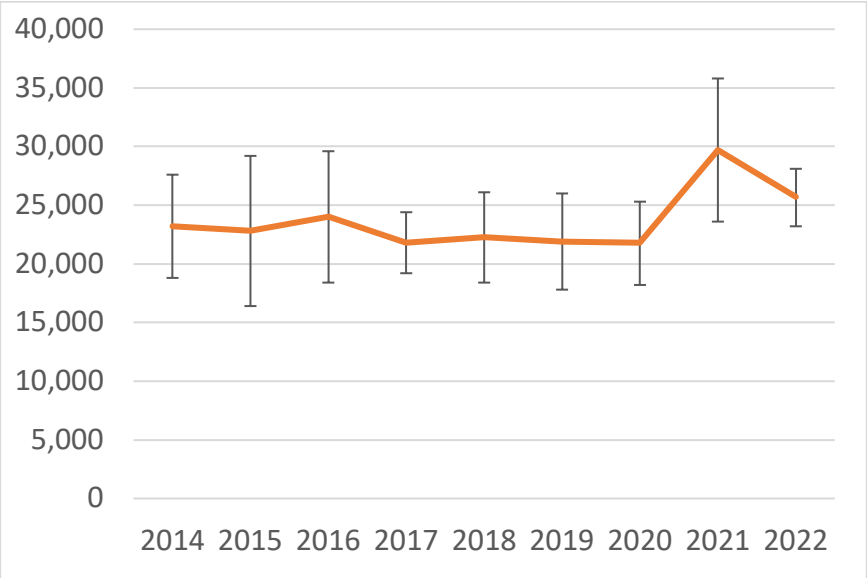
Policy Outcome: Cross-sectoral social and economic
Indicator: FTE employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics
Assessment: Too Early to Say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 1
Indicator: Hectares of woodland created per year
On-track Assessment (Milestones/Targets): 2020/21 = 12,000 ha/yr, 2021/22=13,500 ha/yr, 2022/23 = 15,000 ha/yr, 2023/24 = 16,500 ha/yr, 2024/25 = 18,000 ha/yr

Most Recent Data: Forestry Statistics 2023
Data Source(s): Forestry Statistics

Assessment: Off track

Commentary:
There was a dip in woodland creation in 2022-23 although 11,000 hectares of woodland creation applications had been approved for that year. Delivery is dependent upon land managers implementing their projects once approved by Scottish Forestry. Over 14,000 hectares of woodland creation have been approved for 2023-24. Official data on woodland creation for 2023-24 will be released in June 2024.

Policy Outcome: 1
Indicator: Woodland ecological condition
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: Published February 2020
Data Source(s):

Assessment: Too early to say

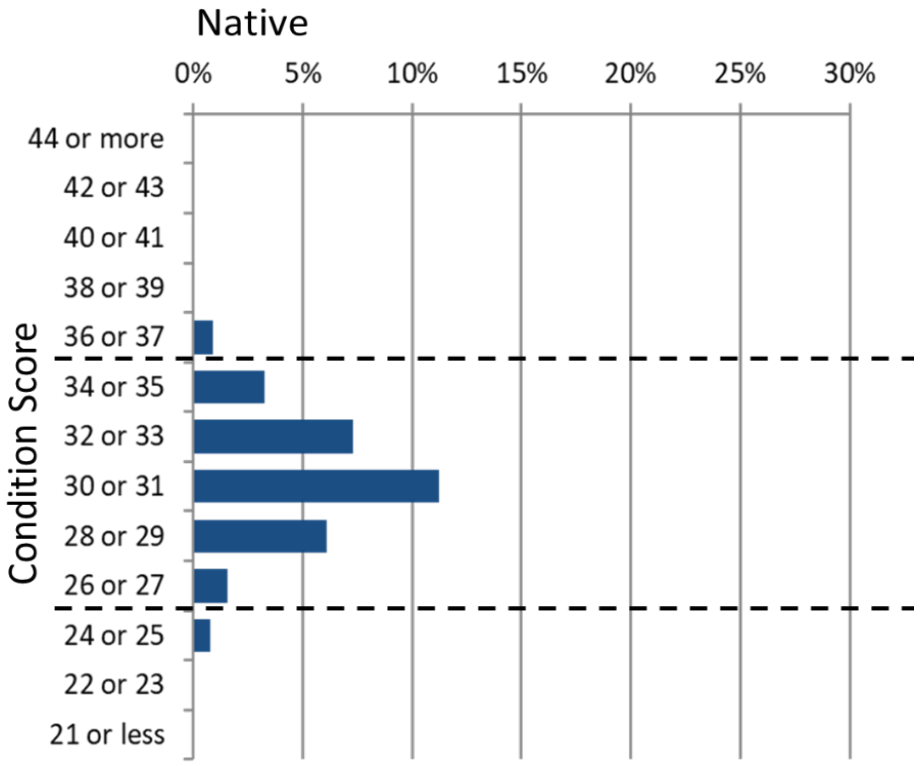
Commentary:
Published as official statistics by the National Forest Inventory (NFI), the study into Woodland Ecological Condition (WEC) is the largest and most in-depth assessment of the ecological condition of any habitat in Great Britain.

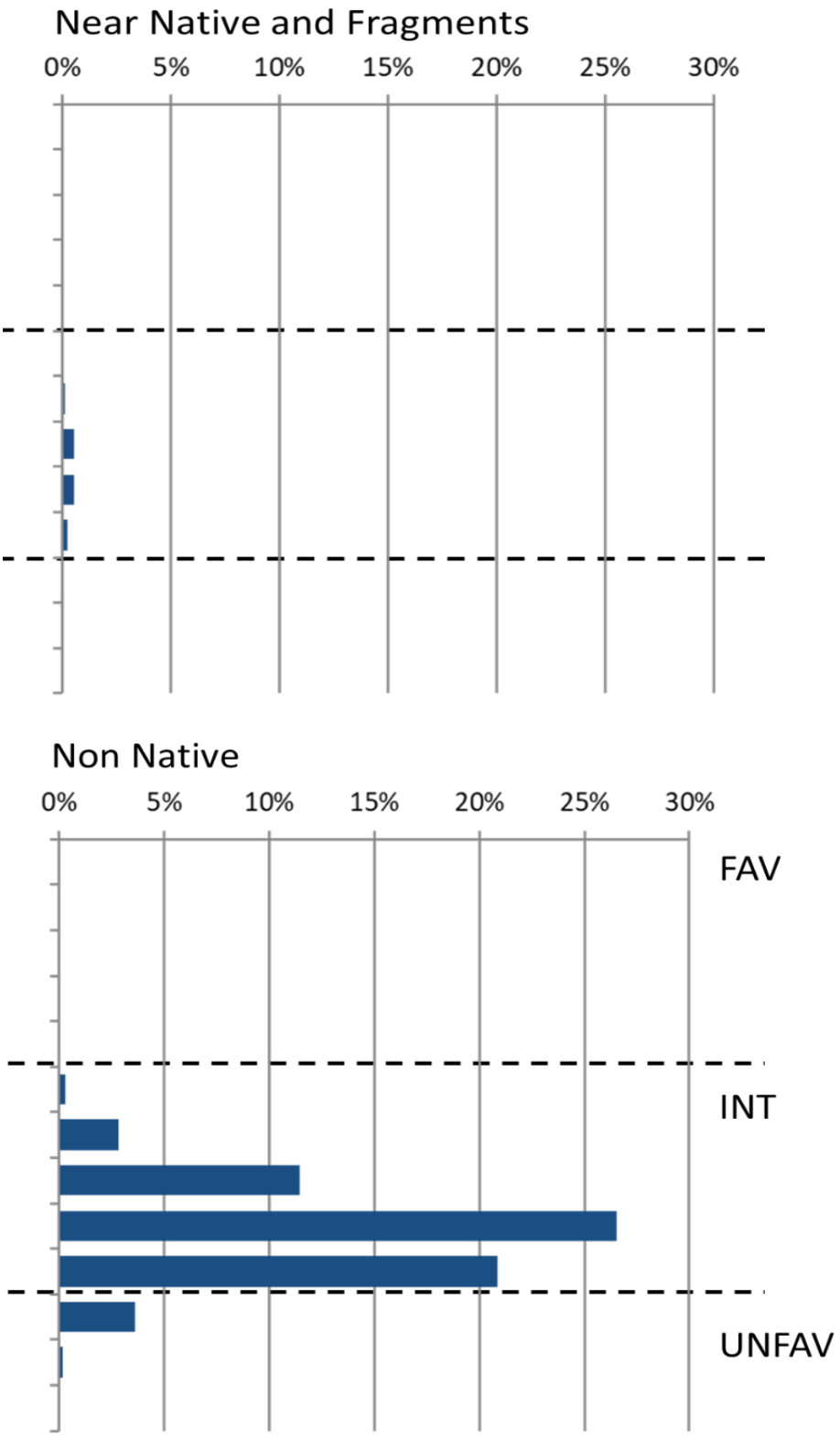
It reveals that in Scotland 442,611 hectares are now classified as native woodland and that the majority of this is North East and West Scotland. The statistics reveal that over 430,000 ha of these native woodlands are in overall 'favourable' or 'intermediate' condition.

They also show that Scotland's non-native woodlands make a positive ecological contribution, with less than 6% in 'unfavourable' ecological condition.

Furthermore, the survey demonstrates that the active management of a forest for wood production delivers higher biodiversity as well as a renewable supply of wood to help sustain an industry that benefits climate change mitigation, jobs and the economy - at minimal cost to the public purse.

The last WEC report was published in 2019 and was based on data collected in the first cycle of field survey 2010 to 2015, so the analysis has a time stamp of 2013 (the average age of the data). The plan is for the next report on WEC in 2024/25.





Notes: 1. Native = native woodland area, Near native and fragments = Near native woodland area and fragments, non-native = non-native woodland area. 2. The NFI calculator is used to score each of the 15 ecological condition indicators that can then be combined and used to give an overall score, and classification as favourable (fav) score 36-45, intermediate (int) score 26-35 or unfavourable (unfav) score 16-25 by woodland type. 3. Dashed line = threshold of each condition classification. To inform where to set the thresholds for each of the three classification categories published

evidence was used. 4. Woodland types are defined in Section 1.3.6. 5. Refer to the methodology report for more information.

Policy Outcome: 1

Indicator: Woodland Carbon Code: Projected Progress to target carbon sequestration (validated credits).
On-track Assessment (Milestones/Targets): Progress to target (increase 50% by 2025)[33]

Most Recent Data: Forestry Statistics 2023, and Woodland Carbon website for latest unofficial data
Data Source(s): UK Land Carbon Registry, Forestry Statistics (Forest Research)

Assessment: On track

Commentary:

- There has been a 30% increase in the number of validated credits in Scotland under the Woodland Carbon Code between April and December 2023.
- Interim Statistics note that 9.2M carbon credits had been validated in Scotland at December 2023.

  Data for 2023-24 will be released in in the publication of Forestry Statistics in June 2024.

[33] Carbon sequestration baseline March 2020

Policy Outcome: 1
Indicator: Annual volume (in millions of cubic metres) of Scottish produced sawn wood and panel boards used in construction.
On-track Assessment (Milestones/Targets): Progress to Targets [2020/21 = 2.6 million m3, 2026/27 = 2.8 million m3, 2031/32 = 3.0 million m3]

Most Recent Data: 2.25 million m3 estimated in construction in 2022
Data Source(s): Forestry Statistics 2023

Assessment: Too early to say

Commentary:

- Official Statistics on timber are published annually in September. These provide the best dataset to estimate volume of Scottish timber used in construction.
- The figure reported here, of 2.25 million cubic metres of timber used in construction in 2022, is based on these statistics.
- The decline in timber used in construction in 2022 compared to 2021 reflects the general state of the UK economy. In this situation, where builders are not struggling to source timber, domestic suppliers of timber are finding it difficult to penetrate the house building sector against strong competition from imported timber.

Policy Outcome: 3

Indicator: Hectares of peatland restored per year
On-track Assessment (Milestones/Targets): 20,000 ha/y[34]

Most Recent Data: Most recent estimates from delivery partner put restoration figures for 2023-2024 at 9600-9900 hectares. Final verified figures for the year will be available from NatureScot from 10 May 2024
Data Source(s): NatureScot published annual restoration figures

Assessment: Off track

Commentary:
Scottish Government has committed £250 million over 10 years to restore 250,000 hectares of degraded peatlands by 2030. To date, we have achieved around 65,000 hectares of this, and the First Minister's April 2023 policy prospectus commits us to reaching 110,000 hectares by 2026.

Recent restoration rates average around 6,000 hectares annually over the past three years, falling well below our current annual target of at least 20,000 hectares.

Our 10,700 ha target for 2023-24 represents a 40% increase over the 7,500 ha restored last year (2022-23), which itself was a 35% increase over the 5,400 ha restored in 2021-22. This growth rate in restoration is welcome and promising, but we are still behind the pace required to meet our CCP commitment on emissions from degraded peatland.

[34] Area of peatland restored is a proxy measure which doesn't directly represent the reduction in emissions, an emissions reduction indicator may be adopted in the future. Also, the current per annum area restoration target figure is under review and may be increased, updates will be reflected in future annual reporting.

Policy Outcome: 3

Indicator: Peatland Code: Projected emissions reduction (validated units)
On-track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 1,483,021 validated units from 42 Peatland Code projects in Scotland in 2023-24.
Data Source(s): Peatland Code, IUCN Peatland Programme

Assessment: Off track

Commentary:
Based on registration data, as of 31st July 2023, a total of 174 projects have registered under the Peatland Code in Scotland with a total of 4.9 million units (tCO2e) registered. This represents about 80% of all registrations in the UK. However, only 30% of the registered projects are so far validated, which does create a risk for new project developers if they end up facing significant waiting times to get their projects validated. IUCN, who administer the Peatland Code are onboarding additional validation capacity, but it is too early to say whether that has worked as expected

7.3 Part C - Information on implementation of individual policies

Outcome 1: We will introduce a stepped increase in the annual woodland creation rates from 2020-2021 to enhance the contribution that trees make to reducing emissions through sequestering carbon.

Policy: Forestry grants: we will provide funding via a grant scheme, to support eligible land owners establish appropriate woodlands.
Date announced: 2020-2021 PfG
Progress on implementation since time of last report / CCPu: This policy was been boosted through an additional £100M of funding (announced in the PfG in 2020) to support an increase in woodland creation up to 2025, although there has been a 50% reduction in FGS funding for woodland creation in 2024-25. There is a currently a strong pipeline of woodland creation projects.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The indicator for woodland creation is hectares planted per year. Approvals by Scottish Forestry indicate a sustained high level of applications for woodland creation.
Timeframe and expected next steps The targets for woodland creation consist of stepped increases until 2024-25 when the target will reach 18,000 hectares per year. SF is examining how FGS funding can best be used, alongside finance from the Woodland Carbon Code, to maximise woodland creation in future.

Policy: Woodland creation on Scotland's national forests and land: Forestry and Land Scotland will deliver an annual contribution towards the overall woodland creation target by creating new sustainable woodland on Scotland's national forests and land, including through partnerships with external organisations to scale carbon capture opportunities.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: FLS continues to create woodlands and is developing partnerships with a range of potential partners to undertake woodland creation for carbon capture
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: In 23/24 FLS will create around 900 ha of woodland
Timeframe and expected next steps: FLS will continue to create woodlands each year on an ongoing basis.

Policy: Awareness-raising: We will continue to deliver a programme of farm based events to demonstrate and support improved productivity through integration of farming and forestry enterprises.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: This policy has been maintained, with a series of events to demonstrate the benefits of trees on farms. These aim to encourage more farmers and crofters to plant trees and to raise awareness of the multiple benefits that planting trees can bring to agricultural businesses. The benefits include but are not limited to: providing shelter for livestock;

habitat for wildlife; increasing biodiversity; reducing carbon footprint; providing diversification opportunities for future income; and prevention of flooding
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No hard indicators. But a series of events is underway associated with the establishment of a monitor farm network that includes farm forestry. Sharing first hand experiences and providing wide-ranging advice including on the practicalities of accessing funding, where to plant the trees, and the multiple business and environmental benefits.
Timeframe and expected next steps: Ongoing – annual series of events and developments to increase uptake of farm forestry eg through the Integrating Trees Network. Encouraging more trees to be planted, in the right place, for the right reason, and to give guidance on how this can be practically achieved.

Policy: Woodland standards: The Scottish Government will lead on the work with the UK and other UK Governments to maintain and develop a UK Forestry Standard that articulates the consistent UK wide approach to sustainable forestry. The Standard defines how woodland should be created and managed to meet sustainable forest management principles and provides a basis for monitoring.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: The four administrations of the UK have revised the UK Forestry Standard (UKFS). The review takes place every five years. The revised version was published in 2023. The review ensured the UKFS is up to date and continues to safeguard and promote sustainable forestry practice in the UK, whilst reflecting the international context in which forestry operates. The UKFS is the technical standard which underpins the delivery of the forestry policies of the four UK countries.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: A 12-month transition period is in place to allow guidance to be updated, users to become familiar with the new edition of the UKFS, and draft woodland plans to be finalised. The new edition of the UK Forestry Standard published in 2023 will be operational from 1st October 2024.

Policy: Woodland carbon capture: The Scottish Government will further develop and promote the Woodland Carbon Code in partnership with the forestry sector, and will work with investors, carbon buyers, landowners and market intermediaries to attract additional investment into woodland creation projects and increase the woodland carbon market by 50% by 2025.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Scottish Forestry is providing technical support to private sector investors, land managers and advisors, and intermediaries in the woodland carbon market. We are taking further measures to develop the Code to facilitate further expansion of the market.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Quantity of validated carbon units under the Woodland Carbon Code

Timeframe and expected next steps: 50% increase in validated carbon units by 2025 (already met)

Policy: Forestry and woodland strategies: Forestry and woodland strategies continue to be prepared by planning authorities, with support from Scottish Forestry. They provide a framework for forestry expansion through identifying preferred areas where forestry can have a positive impact on the environment, landscape, economy and local people.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu: A number of current strategies are being reviewed and updated. The Forestry Strategy Implementation Plan 2022-25 has an action to review the Scottish Government Forestry and Woodland Strategy(FWS) guidance by 31 March 2025.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Support forestry sector on plant and seed supply strategy to help meet the increased planting targets: A programme of technical innovation to develop and adapt modern horticultural practices will help improve seed preparation and handling, techniques to reduce environmental impacts, and increase nursery production. Funding to support increased production of young trees is available through the Harvesting and Processing grant.
Date announced: Scottish Forestry Implementation Plan
Progress on implementation since time of last report / CCPu: There has been good take up of the grant scheme. We are still working with the UK Confederation of Forest Industries (Confor) and other stakeholders to obtain better data on plant production. Defra has introduced its own grant support scheme for the forest nursery sector that will also support the forest nursery sector
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: No
Timeframe and expected next steps: N/A

Policy: Forestry and Land Scotland will begin development of a new approach to woodland investment with a view to acquiring more land to establish further woodland on Scotland's national forests and land for the benefit of future generations and to optimise carbon sequestration. This includes partnering with private sector and other organisations to enhance scale and funding of carbon capture projects.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Acquisition Strategy has been prepared setting out FLS approach to investing in new woodland and is being applied. Disposal criteria are being reviewed to reflect FLS' strategic asset management approach and sustainability objective.
Scottish Government funds from LCIF have been allocated against new land purchases along with left-over NWIP funds which FLS now holds in a Strategic Acquisition Fund for strategic land and asset purchases.

A number of carbon off-setting agreements and partnerships are being explored and are at various stages of discussion. Variations in market pricing along with a strong demand for land make this a challenging area of business.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Key indicator for land acquisition is to fully invest the Scottish Government funds available. For FY 22/23 this is projected to be £15.5M. The largest acquisition in FY 22/23 was the purchase of the 3434 hectare Glenprosen Estate in the Angus Glens. The immediate adjacency of Glenprosen to Scotland's national forests and land, and that of other public bodies will result in Scottish Ministers owning a 10,400 hectare block of land, much within the Cairngorm National Park. Providing landscape scale land management / restoration opportunities. The estate has the potential for the creation of approximately 2000 hectares of woodland, making a significant contribution to the Scottish Government's woodland creation target and/or the target for native woodland creation. In addition, it has the potential for peatland restoration and/or significant habitat restoration opportunities

Timeframe and expected next steps: New Governance and business Rules have been set up and are now being implemented. Monitoring is undertaken by the Strategic Acquisition Board.

Outcome 2: Increase the use of sustainably sourced wood fibre to reduce emissions by encouraging the construction industry to increase its use of wood products where appropriate.

Policy: In collaboration with the private forest sector and other public sector bodies the Scottish Government will implement the Timber Development Programme through an annual programme of projects that support the promotion and development of wood products for use in construction.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
SF have funded a number of projects this year arising from the Roots for Further Growth economic strategy produced by SFTT ILG, including:

- Research project by Edinburgh Napier University into domestic potential for Wood Fibre Insulation (£23.5k)
- Ongoing co-funding for 3 PhDs – 2 in biorefining and 1 around tree genetics (2 * £7k = £14k)

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: On-going

Outcome 3: To enhance the contribution of peatland to carbon storage, we will support an increase in the annual rate of peatland restoration

Policy: Restoration grants: We will provide grant funding to support eligible land managers to deliver peatland restoration. Levels of funding will enable at least 20,000 hectares of peatland restoration per year. We will undertake research to inform where restoration can deliver the greatest emission savings per hectare
Date announced: Budget 2020/21, Reinforced in 2020-2021 PfG
Progress on implementation since time of last report / CCPu: CCPu 2020

We are three years into our ten-year commitment to invest more than £250 million to restore at least 250,000 hectares of degraded peatlands by 2030.

Our 10,700 hectares restored target for 2023-24 represents a 40% increase over the 7,500 ha restored last year (22-23), which itself was a 35% increase over the 5,400 ha restored in 21-22. This growth rate trajectory in restoration is encouraging, but we are still behind the pace required to meet our CCP commitment on emissions from degraded peatland.

We need to further accelerate the rates of restoration if we are to reach the 2030 CCP target of 250,000 hectares. The 2023/24 peatland budget is the highest ever at £30m which is 26% increase over last year.

This will enable multi-year, large scale projects to be planned and delivered, boosting restoration rates and increasing the confidence of contractors to invest in machinery, jobs, training and skills. Our investment sends a clear message to delivery partners, including landowners and contractors, that we are absolutely committed to this important activity in the long term.

We know that a blend of public and private investment in Scotland's natural capital will be essential to meet our emissions reduction targets. We are working across government and with partners to use our funding commitment to leverage increased private investment into peatlands.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Awareness raising: Working through partnership, we will put in place tools and information to promote peatland restoration and develop the capacity, skills and knowledge of land owners, land managers, contractors and others to deliver peatland restoration.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The NatureScot-led Peatland Skills Plan focuses on increasing workforce capacity for design of restoration schemes and growth in the contracting sector to ensure delivery.

Recent notable highlights include:

- NatureScot and Crichton Carbon Centre led training events and open days have been attended by more than 440 people so far in 2023/24. Many of the

440 attendees on training events were contractors looking to enter the sector by enhancing their skills and understanding. In-person and online events have focused on the theory and principles of restoration, successful tendering for Peatland ACTION-funded work and technical site visits to look at the success of particular techniques.

- Events have stretched from Shetland to Galloway and have been complemented by a range of online technically focused CPD training. The focus on increasing design – the key tool for developing the long-term pipeline of projects required to meet ambitious targets – is being met not only by in-person and online CPD training, but also via the short course on Peatland Restoration at Scotland's Rural College (SRUC).
- Three courses will run at SRUC over the winter, in Dumfries and in Inverness, with 2 fully booked and a third course nearly full. Between these three courses, 45 people will have entry-levels skills for the design sector.
- A New Entrants Machine Operator Training Scheme which was introduced to support training and mentoring of operators new to peatland restoration. 10 training placements have been offered to existing, experienced contractors, with 8 of these currently underway and the final 2 depending on the business securing PA-funded work this f/y.

As a result of these efforts the previous concern about contractor capacity as a barrier to delivery of restoration is much reduce.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps: N/A

Policy: With partners, refresh our vision for Scotland's peatlands and review peatland restoration support mechanisms to overcome embedded barriers and improve how we fund and deliver this activity.
Date announced: 2020/21 PfG
Progress on implementation since time of last report / CCPu:
Caring for our peatlands through protection, management and restoration is critical to mitigating and adapting to the linked climate and nature emergencies and achieving a Just Transition to net zero.
Recognising the challenges around upscaling peatland restoration, and noting that because different types of degraded peat emit different levels of greenhouse gases hectares restored is only a proxy for emissions reduced, we are working towards shifting our primary focus away from outputs (hectares restored) to outcomes (emissions reduced).
In time, and after further research, this new focus will allow us to extend the peatland emissions savings associated with restoration by counting the additional emissions reductions potentially available from a wider set of measures including reduced grazing, full or partial rewetting of cropland and/or grassland and/or extraction sites, and the downward emissions correction from the misclassification of grassland on peat.
This wider package includes measures that we are working towards through agriculture and deer management reform, our peat sales ban and introducing stricter controls on development on peat.
We are therefore working, through multiple channels, on a broader suite of measures to protect, manage and restore Scotland's peatlands.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Phase out the use of peat in horticulture by increasing uptake of alternative materials, undertaking stakeholder engagement to understand transitional challenges, to improve the uptake of alternatives and develop a timescale plan.
Date announced: 2019-2020 PfG
Progress on implementation since time of last report / CCPu: Consultation responses have been analysed independently and the consultation analysis report has been published. Stakeholder engagement continues, both on a one-one basis with peat users and through group discussions, providing support where transition is challenging. A suite of impact assessments are near completion, and these will help to understand and manage the effects of transition for businesses, individuals and the environment. Using the accrued evidence, Ministers will consider scope and timescales and we intend to legislate within this parliamentary term. Scottish Ministers have formally initiated the process of exclusion from the IMA to ensure that legislation in this devolved area is effective.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: Policy development is keeping pace with the legislative process. Major milestones including public consultation (February – May 2023); publication of consultation analysis report (Dec 2023) have been completed.
Timeframe and expected next steps: We intend to legislate within the current parliamentary term and will progress with the legislative process, impact assessments and stakeholder engagement.

Policy: Our Position Statement on NPF4 confirmed our current thinking that through the planning system we will not support applications for planning permission for new commercial peat extraction for horticultural purposes, we are looking at strengthening controls on development on peatland and we will help facilitate restoration through permitted development rights.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: NPF4, was published and adopted in February 2023, making clear that development proposals for new commercial peat extraction, including extensions to existing sites, will only be supported where: the extracted peat is supporting the Scottish whisky industry will only be supported in certain limited circumstances. NPF4 policy 5 seeks to protect carbon rich soils which have a critical role to play in helping the country reach its net zero target by sequestering and storing carbon. NPF4 policy 5 also sets out that local development plans should protect locally, regionally, nationally and internationally valued soils. Development proposals on peatland, carbon rich soils and priority peatland habitat will only be supported in a limited range of circumstances.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Develop opportunities for private sector investment in peat restoration, engaging with sectors to establish investment pathways, enabling both public and private sector to invest in a range of measures to help mitigate effects of climate change.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: 1,483,021 validated units from 42 Peatland Code projects in Scotland in 2023-24. The total validated units for this year represents an increase of 326% on the previous year.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: The indicator Peatland Code: projected emissions reduction (validated units) shows that there have been 1,483,021 tCO2e net emissions reductions from Peatland Code projects in 2023-24.
Timeframe and expected next steps: Scottish Government is currently exploring options for spending models on nature restoration that can encourage greater responsible private investment while maximising the value of public spending. This includes consideration of ‘blended finance’ mechanisms where public funding is used in a more targeted way to support increased nature restoration activity by ‘crowding-in’ responsible private investment.

Policy: Explore how best to restore all degraded peat in the public estate and also within formally designated nature conservation sites, including through statutory mandate.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:

Scottish Government is working with the six[35] main landowning public bodies in Scotland to explore how activity on public land and the Scottish Crown Estate can be scaled up to maximise benefits for communities, climate change and biodiversity.
This includes consideration of how strategic nature restoration activity can be delivered at the landscape scale, by different public landowners coming together *to work collaboratively across ownership boundaries.*

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Explore the development of a Peatland Restoration Standard to ensure best practice and continuous development in the success and effectiveness of peatland restoration.
Date announced: [CCPu 2020]
Progress on implementation since time of last report / CCPu:
Actions to develop a Peatland Restoration Standard are being tracked through the Peatland Action 'One Plan' – a set of priority actions agreed across the Peatland Action partnership. This work is being led by NatureScot through the Technical Advice workstream in collaboration with the Peatland Action Delivery Partners, IUCN and others.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

[35] *Forestry and Land Scotland, NatureScot, Scottish Water, Crown Estate Scotland, Scottish Ministers Crofting Estate and Ministry of Defence*

Outcome 4: We will establish pilot Regional Land Use partnerships (RLUPs) over the course of 2021.

Policy: Establishment of pilot Regional Land Use Partnerships to help ensure that we maximise the potential of Scotland's land to help achieve net zero.
Date announced: CCPU 2020
Progress on implementation since time of last report / CCPu: Five pilot regions were established in 2021 with the aim to facilitate collaboration between local and national government, communities, landowners, land managers and wider stakeholders. These pilots have been working across their respective regions to enable natural capital-led consideration of how to maximise the contribution that our land can make to addressing the climate and environmental crises as they sought to develop draft Regional Land Use Frameworks. Following on from the experiences of the pilot the Scottish Government has announced the establishment Regional Land Use Partnerships (RLUPs) as a national initiative beginning with the recruitment of up to three new regions in financial year 2024/25.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Timeframe and expected next steps: The Scottish government is currently working with the Regional Land Use Partnerships (RLUPs) as we seek to understand and evaluate the progress of the pilot programme. This approach will allow Scottish Ministers to take forward a fully informed decision on the future of the pilot programme.

Policy: Publication of Scotland's third Land Use Strategy (LUS3) by statutory deadline of 31 March 2021
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Scotland's third Land Use Strategy was published 24 March 2021
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these:
Timeframe and expected next steps: Scotland's fourth Land Use Strategy is due for publication by 31 March 2026.

8. Chapter 7: Agriculture

8.1 Part A - Overview of sector

The 2021 annual emissions envelope set in the CCPu for this sector was 6.8 $MtCO_2e$, the actual emission statistics for this year show a position of 7.8 $MtCO_2e$. As such, the sector was outside its envelope during 2021.

The CCPu sets out the following six policy outcomes for the sector, the indicators for which are summarised below:

A more productive, sustainable agriculture sector that significantly contributes toward delivering Scotland's climate change, and wider environmental, outcomes through an increased uptake of climate mitigation measures by farmers, crofters, land managers and other primary food producers.

There are no indicators for this policy outcome. More information is provided in the body of this report.

More farmers, crofters, land managers and other primary food producers are aware of the benefits and practicalities of cost effective climate mitigation measures	On Track	Off Track	Too Early to Say
Increased engagement with Farm Advisory Services on environmental issues and climate change	X	-	-

Nitrogen emissions, including from nitrogen fertiliser, will have fallen through a combination of improved understanding efficiencies and improved soil condition	On Track	Off Track	Too Early to Say
Use of Nitrogen fertilisers	x	-	-
Spreading precision of Nitrogen fertilisers	x	-	-
Nitrogen use efficiency for crop production	-	-	x

Reduced emissions from red meat and dairy through improved emissions intensity	On Track	Off Track	Too Early to Say
Time taken from birth to slaughter and increased efficiency through improved health and reduced losses	X	-	-

Reduced emissions from the use and storage of manure and slurry.	On Track	Off Track	Too Early to Say
Improvement in covered slurry storage	X	-	-
Precision application of manure and slurry	-	-	X

Carbon sequestration and existing carbon stores on agricultural land have helped to increase and maintain our carbon sink.	On Track	Off Track	Too Early to Say
Area of woodland on agricultural land	X	-	-

Just transition and cross economy Impacts:

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are likely to help generate lower emissions of greenhouse gases, such as low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years, we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

Our Vision for Agriculture outlines our aim to transform how we support farming and food production in Scotland to become a global leader in sustainable and regenerative agriculture.

To deliver the ambition set out in the Vision, in March 2024, we published an updated third edition of the Agricultural Reform Route Map including the changes which will come into effect from 2025 in three key areas:

- Introduction of peatlands and wetlands as a new condition of cross compliance
- Introduction of a new condition to the Scottish Suckler Beef Support Scheme (SSBSS)
- The foundations of a Whole Farm Plan

This edition of the Agricultural Reform Route Map still makes clear, the existing framework of support will continue in 2024 and sets out what changes recipients of current farm payments will be expected to make from 2025 and beyond. It also sets out the process for changing to a new agricultural support framework from 2026. It still includes information on important dates, the measures being considered now, when current schemes will transition or end, the support available, and how to prepare for these first changes from 2025. The Future Support Framework's proposed conditional payments will be under 4 tiers. Tier 1 Base Payment and Tier 2 Enhanced are direct payments while Tier 3 Elective will provide more targeted support with Tier 4 providing advice and knowledge transfer. They will continue to be refined as part of the ongoing co-design process.

Funding for Tiers 1 and 2, the tiers that will reflect most closely the direct payment regime, albeit with conditions built in from the start, will constitute at least 70% of the overall funding envelope to support farming, crofting, and land management from 2027 as announced by the First Minister in February 2024. We remain committed that at least half of all funding for farming and crofting will be targeted towards outcomes for biodiversity gain and a drive towards low carbon approaches to improve the resilience, efficiency, and profitability of the sector.

The National Test Programme was the first formalised step in supporting farmers and crofters to play their part in Scotland becoming a global leader in sustainable and regenerative agriculture and to learn about how their work impacts on climate and nature. To help industry through this period of significant agricultural reform, ring-fenced budget has been deployed to support and encourage farmers and crofters to learn about how their work impacts on climate and nature. This includes financial support to undertake initiatives as part of Preparing for Sustainable Farming which is already helping businesses prepare for these changes with support for conducting carbon audits and soil sampling, support for animal health and welfare activities and access to herd data for Suckler beef producers through MyHerdStats.

Following an initial announcement at the Royal Highland Show in June 2023, a further announcement was made in March 2024, that from 2025 onwards:

- A new calving interval of 410 days measured on an individual animal basis added to the SSBSS, will only be eligible for a SSBSS payment. This condition is designed to help balance productivity and profitability and efficiency with the opportunity to address climate impact of emissions.
- The introduction of the first Whole Farm Plan conditions which require farmers and crofters to complete two baselining activities from a list of options including carbon audits, biodiversity audits, soil analysis, the creation of animal health and welfare plans or integrated pest management plans. These changes are designed to help all our farmers and crofters do more to produce food sustainably, to cut emissions and to farm more for nature.
- New conditions will be introduced to Cross Compliance in 2025. These are new peatland and wetland standards which will be added to GAEC 6 - Maintenance of soil organic matter. These standards will prohibit a range of activities from being carried out on peatland and wetland areas and include: Ploughing and cultivation; new drainage and maintenance of existing drainage systems that causes further drying out of the peatland. As well as activities that cause damage to the vegetation cover exposing the soil.

The Introduction of the Agriculture and Rural Communities (Scotland) Bill to Parliament on the 28 September 2023 was a significant milestone in reforming our agricultural and wider rural support systems. The Bill will be the platform for measures focused on key Scottish Government outcomes: high quality food production; climate mitigation and adaptation; nature restoration; and wider rural development. It is of a framework nature, intended to deliver our published four-tier support framework and to enable continued co-development of detailed measures. Collectively, this will form a framework of support for agriculture, forestry, and rural communities and provides the opportunity to modernise the powers of the Scottish Ministers on areas relating to animal health and identification, welfare and genetic resources, and plant health.

The Scottish Government evidence pack Agriculture and Rural Communities (Scotland) Bill: supporting evidence and analysis was published on 29 September 2023. The report demonstrates the broad and robust evidence base underlying Scottish Government's approach to agricultural reform and outlines the current position of the Scottish agricultural sector, with evidence aligned to the objectives in the Vision for Agriculture.

We continue to fund actions on farm which support climate change. The capital budget for the Agricultural Transformation Fund in 2023 was allocated to the Agri-Environment Climate Scheme to provide an extension of support for the provision of slurry storage across Scotland (except in Nitrate Vulnerable Zones, 58 applications were approved with a commitment value of £2.14 million. A further £315 million has been committed to over 3,200 businesses through the Agri-Environment Climate Scheme since 2015. The Knowledge Transfer and Innovation Fund has funded over 52 projects to a value of £7.5M since 2015. Four awards, to a value of £240K, were granted in 2023/24 with funding focused on projects which help maximise resource efficiency, cut emissions and enhance productivity.

We have continued to deliver extensive advice and support for farmers and crofters on how to mitigate their emissions and adapt to climate change throughout 2023 through The Farm Advisory Service, Farming for a Better Climate, Integrating Tree Network, Farming and Water Scotland, and the Monitor Farm Programme.

Developments in monitoring arrangements since last report

N/A

8.2 Part B - Progress to Policy Outcome Indicators

Policy Outcome: Cross-sectoral social and economic
Indicator: Full Time Equivalent (FTE) employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets): Year-to-year change

Most Recent Data: 2022

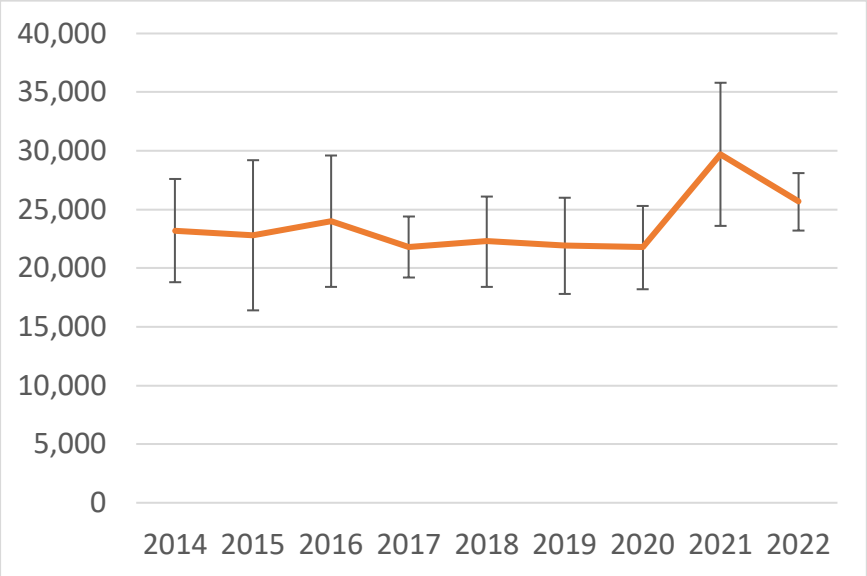
Data Source(s): Low Carbon and Renewable Energy Estimates, Office of National Statistics

Assessment: Too Early to Say

Commentary:

- In 2022, the Scottish low carbon renewable energy economy (LCREE) sectors were estimated to provide 25,700 FTE jobs.
- The estimates of LCREE are based on a relatively small sample of businesses and hence are subject to a wide confidence interval.
- Scottish LCREE employment in 2022 is lower than in 2021 but the difference is not statistically significant and caution should be exercised when interpreting year on year changes due to a high degree of uncertainty in estimates.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: Office of National Statistics (ONS) Low Carbon and Renewable Energy Economy Estimates

Policy Outcome: 2
Indicator: Increased engagement with Farm Advisory Services on environmental issues and climate change.
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: Farm Advisory Service (FAS) reporting and Farming for a Better Climate (FFBC) reporting

Data Source(s): FAS annual and lifetime reports and FFBC yearly progress reporting

Assessment: On track.

Commentary:
The FAS continues to see an increase in engagement and uptake on a range of advice the service offers. The structure of the service continues to support farmers and crofters through a period of significant uncertainty and change, whilst innovating and continuing to evolve the service to address future challenges, in particular the Scottish Government target for net-zero greenhouse gas (GHG) emissions by 2045.

This includes advice to improve biodiversity; increase awareness of habitat and carbon sequestration benefits of woodland planting; promote climate change adaptation and mitigation opportunities; improve business management and efficiency; encourage inclusivity by supporting new entrants and women in agriculture; and helping to support the industry and Scottish government to evolve to meet future challenges.

Uptake of support to April 2023 to February 2024

	Completed											**Total 23/24**
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Integrated Land Management Plan	2	8	3	5	7	7	5	6	6	8	1	**58**
Specialist Advice	11	14	12	25	35	32	23	32	32	30	27	**273**
Carbon Audits	1	1	4	7	15	6	15	17	22	23	11	**122**
Mentoring	4	1	0	5	0	2	3	7	4	0	4	**30**
												483

Over 70% of service users stated they will implement all the actions recommended in their bespoke one-to-one consultancy advice supported by FAS.

Additionally, over 93% would rate the quality of the report as excellent or good. As of February 2024, there were 143 specialist advice plans focusing on biodiversity, habitat landscape management for 2023-24, which is a (346%) increase on 2022-23

FAS One to Many delivery April 2023 to February 2024:

Activity	**23/24**	**Total since 2016** (figures take into account the 23/24 data)
FAS Connect Group Events	123	243
FAS Live Events & Webinars	137	1477
RAS Roadshow	14	14
Publications	199	1,665
Videos	126	804
Podcasts & Audio	94	401
Tools	2	50
Event Participants	6,640	37,230
Video Views	241,759	1,557,165
Podcast Listens	32,839	118,381
Publication Downloads	221,091	1,017,914
Website Views	1,211,094	6,239,159
Advice Line Enquiries	1,300	10,399

A growing percentage of attendees at FAS events feedback that they had an improved understanding of soil/nutrient management and climate change.

Farming for a Better (FFBC) offers support to farmers to find practical ways to cut carbon, increase sustainability, and move towards net-zero emissions within their farming system. FFBC continued to generated engagement in 2023 through:

FFBC webpage	Website visits totalled 41,053, a year-on-year increase of 1.5%. The number of page views totalled 117,756 page views which equates to a decrease of 4.9% compared to last year, however, the website underwent a major redesign which reduced the number of webpages and changed the user flow. The change was implemented in June, so the reduction of page views was expected.
Newsletter	By the end of 2023, the number of subscribers was 499 and the newsletter had an average open rate of 38%, with an average click rate of 7%.
Podcasts	Twelve podcasts were produced with a total of 623 listens. There were an additional 362 listens of previously produced podcasts.
Videos	There were eight new videos published with 1699 views. Additionally, previously produced videos were viewed 3840 times
Articles	In this reporting period, FFBC had over 20 articles in the agricultural press which includes Scottish Farmer, Farmers Weekly and a regular bi-monthly column in Farming Scotland Magazine.
Social media	FFBC on X, formerly known as Twitter, increased followers by 7.2% during the year to a total of 1897 followers. There were 71,678 Tweet impressions and increase of 1,641% to 71,678, Tweet engagements totalled 2,156, a 1091% increase and there were 674 post link clicks – an increase of 1334%. Facebook followers increased to 1610, an annual increase of 10%. The number of post impressions totalled 27,374 and increase

	of 233%. Post engagement increased by 75% (1,088) and post link clicks increased by 60% (154).
Downloads	There were over 2942 downloads during the period, a decline on the previous year's figures. The website redesign Is expected to have influenced this reduction.
Guides	Six new Practical Guides were published.

Policy Outcome: 3
Indicator: Use of Nitrogen fertilisers
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: 2022 (provisional)

Data Source(s): Dataset for The British Survey of Fertiliser Practice 2022, Table AA1.7

Assessment: On track

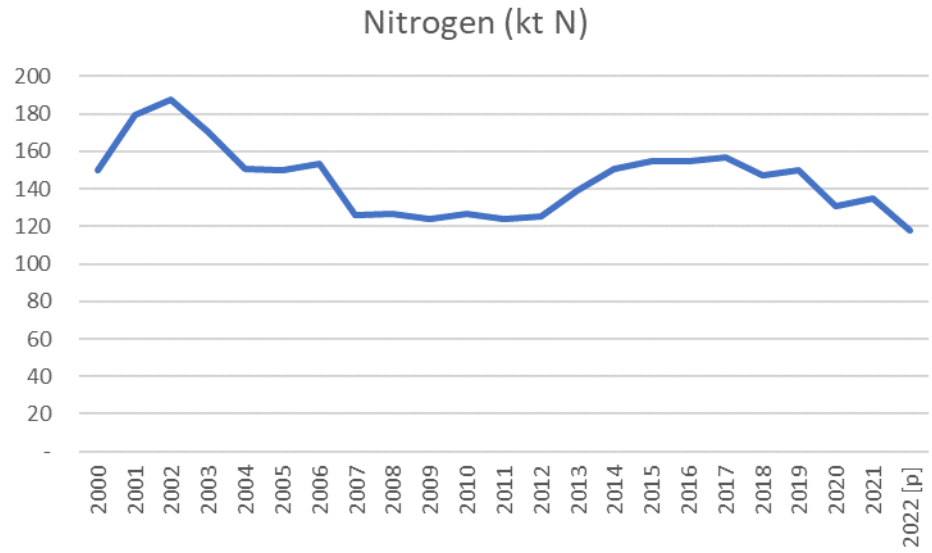
Commentary:
This data shows that from 2000, the use of nitrogen fertilisers in Scotland has decreased overall, with some fluctuation.

Nitrogen use decreased between 2002 and 2007, then remained largely stable until 2012 when it began to increase. Since 2017, there has been a downward trend from 157 kt total nitrogen use in 2017 to an estimated 118 kt total nitrogen use in 2022 (provisional data).

Quantities of nitrogen used (kt N), Scotland 2000 to 2022

Crop year	Nitrogen used (kt N)
2000	150
2001	180
2002	187
2003	170
2004	150
2005	150
2006	153
2007	126
2008	127
2009	124
2010	127
2011	124
2012	125
2013	139
2014	151
2015	155
2016	155
2017	157
2018	147
2019	150
2020	131
2021	135

2022 [p]	118



Note: Years are crop rather than calendar years (e.g. 2022 refers to the 2021/22 crop years, fertiliser consumption period July to June). Data for 2022 are provisional.

Policy Outcome: 3
Indicator: Spreading precision of Nitrogen fertilisers.
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: 2022

Data Source(s): Dataset for The British Survey of Fertiliser Practice 2022, Table AA1.1

Assessment: On track

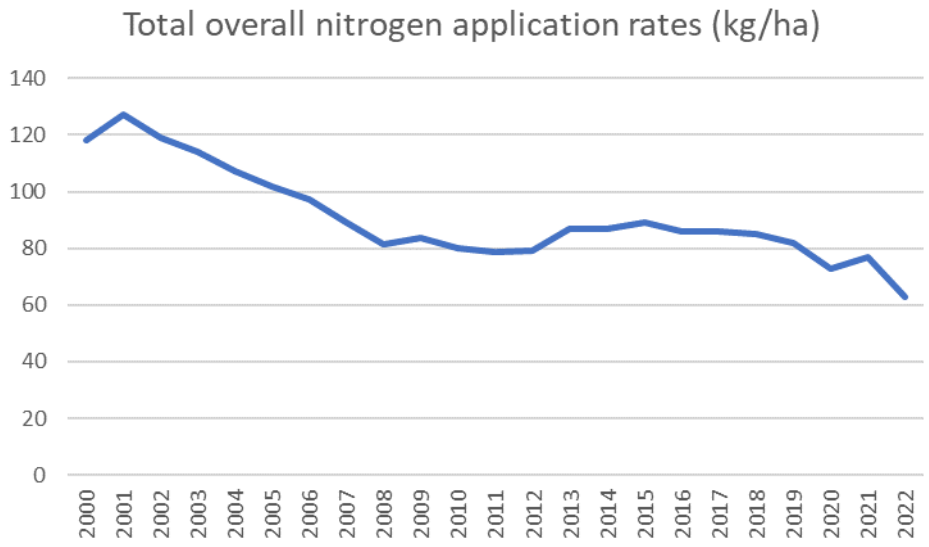
Commentary:
This data shows that from 2000, the overall application rates of nitrogen fertilisers have decreased, with some fluctuation.

The trend shows that the overall nitrogen application rates decreased from 118 kg/ha in 2000 to 63 kg/ha in 2022.

Total overall nitrogen application rates (kg/ha), Scotland 2000 to 2022

Year	Total overall nitrogen application rates (kg/ha), crops and grass
2000	118
2001	127
2002	119
2003	114
2004	107
2005	102
2006	98
2007	89
2008	81
2009	84
2010	80
2011	79
2012	79
2013	87
2014	87
2015	89
2016	86
2017	86
2018	85
2019	82
2020	73

2021	77
2022	63



Policy Outcome: 3
Indicator: Nitrogen use efficiency for crop production.
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data:

Data Source(s): Scottish Nitrogen Balance Sheet 2020, Table 1; Establishing a Scottish Nitrogen Balance Sheet (SNBS)

Assessment: Too early to say

Commentary:
Through The Climate Change (Nitrogen Balance Sheet) (Scotland) Regulations 2022, Scotland has committed to establishing a statutory whole-economy Nitrogen Balance Sheet, with regular formal review.

Crop production underpins much of wider food production, which in turn is the main engine of overall national nitrogen use in Scotland. Nitrogen Use Efficiency (NUE) is an important summary indicator metric that can be calculated from the comprehensive dataset on nitrogen flows assembled in the Scottish Nitrogen Balance Sheet (SNBS).

It is important to note that NUE in arable production inherently varies depending on farm type/systems, management, environmental conditions (soils, climate), etc. While good management can reduce losses, in practice some losses are inevitable due to continuous nitrogen transformation processes in soils and leaching. As such, crop production NUE values between 50-90% can generally be considered desirable but there is no simple one size fits all “good value.”

Contributors to Nitrogen use efficiency (NUE) in crop production:

Inputs to arable land (excludes recycling terms)	**Size of Input Flow (kt N per year)**	
	2019, except for N deposition which is 2018	**2020, except for N deposition which is 2019**
mineral fertiliser (to arable/crops)	62.1	63.5
slurry/manure (to arable/crops)	17.8	17.9
atmospheric N deposition (to arable)	4	4.0
digestate (non-crop/crop waste feedstocks only) (data not available as split between arable/grass - using 50%)	1.7	2.0
seeds (sowing/planting)	1.7	1.7

biological N fixation (BNF) by arable crops	1.6	1.8
sewage sludge (data not split into arable/grass - using 50%)	1.2	1.2
compost (assumed to go to arable/horticulture)	0.9	0.9
total N inputs	**90.2**	**93.1**

Useful outputs	**Size of Output Flow (kt N per year)**	
	2019, except for N deposition which is 2018	**2020, except for N deposition which is 2019**
harvest (as food, includes human-edible crops that end up as livestock feed, seed materials or biomass)	56.3	56.7
harvest (planted as fodder crops)	1.9	1.6
total N outputs	**58.2**	**58.2**

Year	2019, except for N deposition which is 2018	2020
Nitrogen Use Efficiency (NUE)	65%	62.5%

Note: Recycling terms are not included in either inputs or outputs for the purpose of this Nitrogen Use Efficiency (NUE) calculation: digestate from crops, crop residues.

Policy Outcome: 4
Indicator: Time taken from birth to slaughter and increased efficiency through improved health and reduced losses.
On-track Assessment (Milestones/Targets): Based on Trend

Most Recent Data: 2023

Data Source(s): Cattle Tracing Scheme, analysis by SRUC

Assessment: On track

Average age of prime animal slaughter by farm type, Scotland 2015 to 2023

All farm types	Mean age (months)	Number of animals
2015	22.89	363,722
2016	22.52	371,670
2017	22.41	360,737
2018	22.37	354,711
2019	22.39	356,875
2020	22.17	353,192
2021	21.90	347,354
2022	21.96	345,432
2023	22.04	328,754
Beef	**Mean age (months)**	**Number of animals**
2015	21.86	150,714
2016	21.56	156,325
2017	21.41	147,918
2018	21.37	139,813
2019	21.44	146,477
2020	21.31	144,711
2021	21.10	145,406
2022	21.12	141,194
2023	21.10	115,567
Dairy	**Mean age (months)**	**Number of animals**
2015	22.35	17,345
2016	22.18	17,327
2017	22.12	14,214
2018	22.41	12,145
2019	21.98	12,342
2020	22.07	10,552
2021	21.92	8,860
2022	22.35	9,164

2023	23.53	8,466
Finisher	**Mean age (months)**	**Number of animals**
2015	23.73	177,399
2016	23.32	183,674
2017	23.15	182,897
2018	23.11	185,781
2019	23.13	182,274
2020	22.81	183,723
2021	22.49	182,038
2022	22.53	179,657
2023	22.49	185,946
Trader	**Mean age (months)**	**Number of animals**
2015	23.71	14,842
2016	22.75	10,798
2017	23.30	11,184
2018	22.01	12,463
2019	22.63	11,675
2020	22.39	11,014
2021	22.17	8,613
2022	22.64	11,597
2023	22.34	14,765
Grower	**Mean age (months)**	**Number of animals**
2015	24.52	3,422
2016	24.78	3,546
2017	23.63	4,524
2018	23.56	4,509
2019	23.94	4,107
2020	24.16	3,192
2021	23.95	2,437
2022	23.63	3,820
2023	24.29	4,010

Note: the animals need not have been slaughtered in Scotland. Figures do not include indirect routes to slaughter.

Commentary:

Overall, the average age of prime animal slaughter has shown a downward trend between 2015 and 2023. In the most recent year, there was a small increase in the average age overall and for dairy and grower specifically, while the other farm types showed a decrease. Overall the trend is still downwards over the reported period.

We expect this to continue to reduce towards around 18 months. However, as most calves are spring born, we do not expect the whole industry to shift to an 18-month age of slaughter and so we expect the mean age of slaughter to remain above 18 months.

Policy Outcome: 5

Indicator: Improvement in covered slurry storage
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: 2016

Data Source(s): Farm Structure Survey 2016 Scottish Survey of Farm Structure and Methods, 2016 - gov.scot (www.gov.scot)

Assessment: On track

Manure and slurry storage, Scotland 2013				
	All holdings with storage		All holdings with storage, of which are covered	
	number of holdings	percentage of all holdings	number of holdings	percentage of holdings with storage
Storage for solid dung	8,963	27.1	1,253	12.7
Storage facilities for slurry	3,838	12	2,354	61.3
Storage facilities for slurry, in a tank	3,487	10.5	0	0
Storage facilities for slurry, in a lagoon	641	1.9	0	0
Total	**9,882**	**29.8**	**8,482**	**85.8**

Note: Sum of sub-categories do not equal base figure as holdings may employ more than one form of storage

Manure and slurry storage, Scotland 2016				
	All holdings with storage		All holdings with storage, of which are covered	
	number of holdings	percentage of all holdings	number of holdings	percentage of holdings with storage
Storage for solid dung	6,178	19.2	720	11.7
Storage facilities for slurry	3,007	9.3	1,872	62.3
Storage facilities for slurry, in a tank	2,739	8.5	0	0
Storage facilities for slurry, in a lagoon	571	1.8	0	0
Total	**7,161**	**22.2**	**6,204**	**86.6**

Note: Sum of sub-categories do not equal base figure as holdings may employ more than one form of storage

Commentary:

The data show a small overall increase in the percentage of holdings with covered slurry stores between 2013 (85.8%) and 2016 (86.6%).

We expect the percentage of slurry stores that are covered to continue to increase over time. This is likely to increase at a similar rate to that of the change between 2013 and 2016 due to the significant investment required to cover slurry stores or build new slurry stores with covers.

This data was gathered as part of the Scottish Survey of Farm Structure and Methods in 2016. Data on the storage and use of slurry and manure was collected as part of the 2023 June Agricultural Census and will be published in 2024.

Support for slurry stores is available through the Agri-Environment Climate Scheme and the Sustainable Agricultural Capital Grants Scheme (SACGS) 2022 focused on providing support for low emission slurry spreading equipment and slurry store covers that are proven to reduce harmful ammonia emissions and reduce adverse impacts on water quality resulting from the storage and spreading of livestock slurry and digestate.

Policy Outcome: 5

Indicator: Precision application of manure and slurry
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: 2016

Data Source(s): Farm Structure Survey 2016

Assessment: Too early to say (baselining)

Method of manure and slurry application by tonnage, Scotland 2016

	holdings	tonnes
Broadcast		
Ploughed in or injected within four hours	920	385,842
ploughed in after four hours	5,146	2,117,346
Not ploughed in or injected	4,957	9,322,483
Bandspread		
Trailing hose	550	4,178,295
Trailing shoe	294	602,161
Injection		
Shallow/open slot	63	576,821
Deep/closed slot	11	31,043
Total applied	**9,246**	**17,213,991**

Commentary:

This data was gathered as part of the Scottish Survey of Farm Structure and Methods in 2016. Data on the storage and use of slurry and manure was collected as part of the 2023 June Agricultural Census and will be published in 2024.

The Sustainable Agricultural Capital Grants Scheme (SACGS) 2022 focused on providing support for low emission slurry spreading equipment and slurry store covers that are proven to reduce harmful ammonia emissions and reduce adverse impacts on water quality resulting from the storage and spreading of livestock slurry and digestate.

Policy Outcome: 6
Indicator: Area of woodland on agricultural land.
On-track Assessment (Milestones/Targets): Based on trend.

Most Recent Data: 2021

Data Source(s): Forestry Statistics 2022 Table 1.12

Assessment: On track

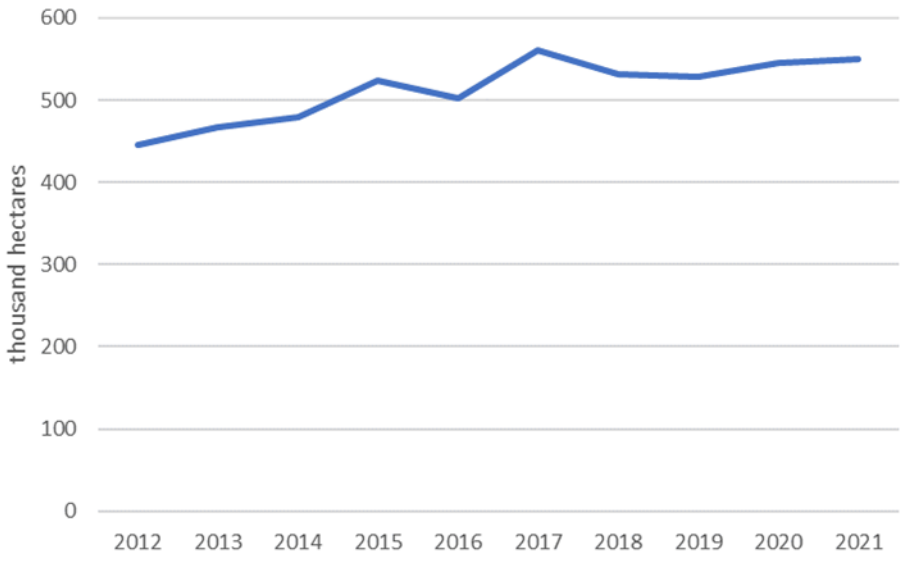
Commentary: The area of farm woodland in Scotland increased between 2012 and 2021. The area of farm woodland in Scotland increased from 445 thousand hectares (ha) to 550 thousand ha over the period 2012 – 2021.

The area of woodland on agricultural land is estimated using data from the June Agricultural Census (JAC) and administrative data sources. Data is currently available up to 2021 and published by Forest Research. Please note that users should use this data with caution following methodological changes in 2015.

The June Agricultural Census was reviewed in 2022 and this work highlighted further quality concerns with the farm woodland data and, therefore, estimates are not currently available after 2021.

Area of farm woodland, Scotland 2012 to 2021 (thousand hectares)

2012	445
2013	467
2014	479
2015	524
2016	502
2017	560
2018	532
2019	529
2020	546
2021	550


600
500
400
300
200
100
0
thousand hectares
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

8.3 Part C - Information on implementation of individual policies

Outcome 1: A more productive, sustainable agriculture sector that significantly contributes towards delivering Scotland's climate change, and wider environmental outcomes through an increased uptake of climate mitigation measures by farmers, crofters, land managers and other primary food producers.

Policy: Scale up the Agricultural Transformation Programme across all the policies, including monitoring to assess the effectiveness of the pilot Sustainable Agricultural Capital Grant Scheme that will enable farmers and crofters to purchase equipment that should assist in reducing their greenhouse gas emissions, and support practice change
Date announced: 2019-2020 Programme for Government (PfG)
Progress on implementation since time of last report / CCPu:
We continue to take forward actions to deliver the ambitions set in the Scottish Government's Vision for Agriculture where Scotland will have a Future Support Framework (FSF) that delivers high quality food production, climate mitigation and adaptation, and nature restoration. The FSF proposes mechanisms under the new Agriculture and Rural Communities (Scotland) Bill to enable conditional payments under four tiers: Base, Enhanced, Elective, and Complementary.

The Agriculture and Rural Communities (Scotland) Bill was introduced to the Scottish Parliament in September 2023. The Bill will be the platform for measures focused on key Scottish Government outcomes: high quality food production; climate mitigation and adaptation; nature restoration; and wider rural development. It is of a framework nature, intended to deliver our published four-tier support framework and to enable continued co-develop of detailed measures. The Bill is an enabling one, it enables tailored provisions and support to be implemented through secondary legislation and potentially adapted on a regular basis as required. We also published the Agriculture Bill – Analysis of Consultation Responses in June 2023.

A phased transition approach to the new FSF was outlined in the Agriculture Reform Route Map (the Route Map) published in February 2023. In March 2024, we published an updated third edition of the Route Map including the changes which will come into effect from 2025 in three key areas:

- Introduction of Peatlands and Wetlands as a new condition of cross compliance
- Introduction of a new condition to the Scottish Suckler Beef Support Scheme
- The foundations of a Whole Farm Plan

This edition of the Agricultural Reform Route Map still makes clear, the existing framework of support will continue in 2024 and sets out what changes recipients of current farm payments will be expected to make from 2025 and beyond. It also sets out the process for changing to a new agricultural support framework from 2026. It still includes information on important dates, the measures being considered now, when current schemes will transition or end, the support available, and how to prepare for these first changes from 2025. The Future Support Framework's proposed conditional payments will be under 4 tiers. Tier 1 Base Payment and Tier 2 Enhanced are direct payments while Tier 3 Elective will provide more targeted.

Under Preparing for Sustainable Farming (PSF) we are delivering transitional support for businesses to prepare for the future with three options. Scottish farmers, crofters, and agricultural contractors can claim funding for: carbon audits, soil sampling and analysis and animal health and welfare interventions.

Preparing for Sustainable Farming claim stats 1 January 2022 to 29 February 2024

Scheme year 2022 and 2023	claims submitted	Claim value
Carbon Audits	1279	£639,500.00
Soil analysis	1818	£2,305,499.73
Animal Health & Welfare	1368	£929,250.00
Total	**3434**	**£3,874,249.73**

Communications on PSF have been significantly increased during 2023 aligning with the route map. Communications have included meeting farmers and crofters directly at shows across Scotland, producing and circulating case study videos with farmers, explaining their experience and benefits gained, and creating and distributing promotional flyers.

The Agriculture Reform Implementation Oversight Board continues to support the implementation of policy reform, advising on incorporating the relevant recommendations from the farmer-led groups to cut emissions across agriculture, support the production of sustainable, high-quality food, address the twin crises of climate and nature/loss of biodiversity, and design a new system and approach.

The capital budget for the Agricultural Transformation Fund (ATF) in 2022-23 was allocated to the Sustainable Agriculture Capital Grant Scheme (SACGS) 2022 to provide support for low emission slurry spreading equipment and slurry store covers. 464 payments worth £3.1 million were made in total; building on the £2.1m paid in the SACGS 2021 pilot for similar such equipment.

The capital budget for the ATF 2023 was allocated to the Agri–Environment Climate Scheme to provide an extension of support for the provision of slurry storage across Scotland (except in Nitrate Vulnerable Zones). 58 applications were approved with a commitment value of £2.14 million. The capital budget for ATF 2024 is again allocated to the Agri-Environment Climate Scheme for slurry storage.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- Agricultural Transformation Fund is continuing to support capital investment and is expected to be incorporate into the new framework.
- The Enhanced Tier is due to be rolled out from 2026.
- The Agriculture and Rural Communities (Scotland) Bill continues its progress through the Scottish Parliament.

Policy: Develop rural support policy to enable, encourage and where appropriate, require the shift to low carbon, sustainable farming through emissions reduction, sustainable food production, improving biodiversity, planting biomass crops and appropriate land use change developed in line with just transition principles.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Scottish Government published the Agriculture Bill – Analysis of Consultation Responses in June 2023 and introduced the Agriculture and Rural Communities (Scotland) Bill (the Bill) to the Scottish Parliament in September 2023.

To deliver the ambitions set out in the Scottish Government Vision for Agriculture, Scotland will have a Future Support Framework (FSF) that delivers high quality food production, climate mitigation and adaptation, and nature restoration. The FSF proposes mechanisms under the new Bill to enable conditional payments under four tiers: Base, Enhanced, Elective, and Complementary.

A phased transition approach to the new FSF was outlined in the updated Route Map in June 2023, which included details on the introduction of the foundations of the Whole Farm Plan (WFP) from 2025. In March 2024 we announced further information on the WFP, which will require farmers and crofters to complete two baselining activities from a list of options including carbon audits, biodiversity audits, soil analysis, the creation of animal health and welfare plans or integrated pest management plans. These changes are designed to help all our farmers and crofters do more to produce food sustainably, to cut emissions and to farm more for nature.

The Agriculture Reform Implementation Oversight Board continues to advise on the implementation of policy reform and the outcomes of supporting the production of sustainable, high-quality food, while addressing the twin crises of climate and nature/loss of biodiversity through the future support framework.

Preparing for Sustainable Farming (PSF) continues to deliver transitional support for businesses to prepare for the future with three options that Scottish farmers, crofters, and agricultural contractors can claim funding for: carbon audits, soil sampling and analysis and animal health and welfare interventions. Communications on PSF have included meeting farmers and crofters directly at shows across Scotland, distributing case study videos to farmers, and creating and distributing promotional flyers.

We continue to develop the Land use and Agriculture Just Transition Plan, with a view to publishing a draft for consultation in the second half of 2024. As part of the Scottish Government commitment to co-design and co-development, an extensive series of overarching Just Transition stakeholder events, both in-person and online, took place across the country during 2023. These included 11 community-based workshops in rural areas, focusing exclusively on the land use and agriculture sector. They have provided access to a wealth of insight and lived experience of those who live and work on Scotland's land, helping inform the content of the Plan.

In March 2024 the draft Bioenergy Policy Statement was published and is seeking views on the potential to scale up domestic production of biomass via planting of perennial energy crops. The draft statement sets out that this must be done in a sustainable way and careful planning will be required to manage the potential synergies and trade-offs between goals for bioenergy, biodiversity, and food production. This highlights the importance of taking a joined up approach to tackling the climate and nature emergencies while also supporting future food security.

The consultation will run until June 2024 and is seeking evidence on the scale of planting of perennial energy crops which may be feasible, the opportunities and barriers, views on best practice to integrate energy crops within the agricultural landscape, and interaction with our commitments to restore and regenerate biodiversity. The evidence provided in the consultation will be used to inform policy positions which will be published in a final Bioenergy Policy Statement.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- The Agriculture and Rural Communities (Scotland) Bill continues its progress through the Scottish Parliament.
- A final Bioenergy Policy Statement will be developed in due course.
- Whole Farm Plan conditions commence in 2025.

Policy: Develop new schemes and approaches to support low carbon, sustainable farming, including through the Programme Board for the Beef
Suckler Climate Group, other farmer-led groups on arable, dairy and high value, nature farming and crofting which will report in 2021.
Date announced: 2020-2021 PfG and Agriscot 2020
Progress on implementation since time of last report / CCPu:
The Preparing for Sustainable Farming is continuing to deliver transitional support for businesses to prepare for the future with three options that Scottish farmers, crofters, and agricultural contractors can claim funding for: carbon audits, soil sampling and analysis and animal health and welfare interventions.

The Future Support Framework (FSF) proposes mechanisms under the new Agriculture and Rural Communities (Scotland) Bill to enable conditional payments under four tiers: Base, Enhanced, Elective, and Complementary.

We published an updated third edition of the Route Map in March 2024 which included the changes which will come into effect from 2025 on the introduction of a new condition to the Scottish Suckler Beef Support Scheme (SSBSS). The new conditions will be linked to calving interval performance, which aims to encourage beef producers to undertake steps that will help to reduce the emissions' intensity of their cattle production systems and make them more financially efficient. Also, from 2025 onwards, calves will only be eligible for a SSBSS payment if their dam has a calving

interval threshold of 410 days or less, or if the calf is the first registered birth associated with that dam. This condition is designed to help balance productivity and profitability with the opportunity to address climate impact of emissions.

The free-to-use MyHerdStats tool allows farmers and crofters to view performance indicators for their herds, allowing them to identify opportunities for improvements to herd efficiency, including calving intervals.

We continue to support land managers to undertake actions that help to mitigate and adapt to climate change and restore nature through schemes such as the Agri-Environment Climate Scheme (AECS). Following the outcome of applications to the 2023 round of the scheme, the Scottish Government has now committed over £315 million to over 3,200 businesses since the scheme was launched in 2015.

The Agricultural Transformation Fund (ATF) is intended to underpin support for the agricultural sector to reduce greenhouse gas emissions, improve efficiency and enhance Scotland's natural environment through the period of transition. The capital budget for ATF 2024 is £3 million plus a further £1.47 million of AECS allocation which has been allocated to provide an extension of the provision of support for slurry storage across Scotland (except in Nitrate Vulnerable Zones which have previously been supported to meet regulatory requirements) and to increase the provision of irrigation lagoons.

In 2023, the Scottish Government continued to work in partnership with NatureScot to deliver the Farming with Nature programme to support positive management for climate and biodiversity, and collaborative action across landholdings at a field, farm and landscape level. The programme is piloting new approaches to support farmers to deliver for nature to inform the ambition of the new agricultural support framework as set out in the Vision for Agriculture.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- Agricultural Transformation Fund is continuing to support capital investment and is expected to be incorporate into the new framework.
- The Enhanced Tier is due to be rolled out from 2026.
- Agri-Environment Climate Scheme is expected to continue to 2026, subject to funding, until the Elective Support is implemented.
- New calving conditions under the Scottish Suckler Beef Support Scheme come into effect in 2025.

Policy: Introduce Environmental Conditionality, from 2021 via implementation of the Beef Suckler Climate Report and, more widely from 2022, through the review of

existing CAP Greening which will extend the requirements to all farmers and crofters to undertake environmental actions.

Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu:

The Preparing for Sustainable Farming is continuing to deliver transitional support for businesses to prepare for the future with three options that Scottish farmers, crofters, and agricultural contractors can claim funding for: carbon audits, soil sampling and analysis and animal health and welfare interventions.

To deliver the ambitions set out in the Scottish Government Vision for Agriculture, Scotland will have a Future Support Framework (FSF) that delivers high-quality food production, climate mitigation and adaptation, and nature restoration. In the future, at least half of all funding for farming and crofting will be targeted towards outcomes for biodiversity gain and a drive towards low-carbon approaches to improve the resilience, efficiency, and profitability of the sector. The FSF proposes mechanisms under the new Agriculture and Rural Communities (Scotland) Bill to enable conditional payments under four tiers: Base, Enhanced, Elective, and Complementary.

A phased transition approach to the new FSF was outlined in the updated Route Map in June 2023. An update to the route map occurred March 2024 as part of the move to the new framework and included details that:

- From 2025 onwards a new calving interval of 410 days measured on an individual animal basis added to the Scottish Sucker Beef Support Scheme (SSBSS), will only be eligible for a SSBSS payment.
- The introduction of the first Whole Farm Plan conditions from 2025 will require farmers and crofters to complete two baselining activities from a list of options including carbon audits, biodiversity audits, soil analysis, the creation of animal health and welfare plans or integrated pest management plans.
- New conditions will be introduced to Cross Compliance in 2025. These are new peatland and wetland standards which will be added to GAEC 6 - Maintenance of soil organic matter. These standards will prohibit a range of activities from being carried out on peatland and wetland areas.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps:

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- Whole Farm Plan conditions commence in 2025.
- New calving conditions under the Scottish Suckler Beef Support Scheme come into effect in 2025.
- New conditions to Cross Compliance in 2025. These are new peatland and wetland standards which will be added to GAEC 6.

Policy: Further provision of advice for farmers and crofters who wish to retire: A new commitment to work with stakeholders to provide advice, including further extending

the Land Matching Service and guidance for farmers and crofters who wish to step back from agricultural businesses by providing an opportunity to consider alternative land-uses or alternative agricultural uses

Date announced: CCPu 2020

Progress on implementation since time of last report / CCPu:

Scottish Land Matching Service is a free service offering independent advice and facilitation to those considering options for joint ventures in farming. It is available to anyone either seeking an opportunity to start on a joint farming venture or those looking to offer an opportunity on their farm.

- 772 enquiries since the service launched in October 2019.
- 96 further enquiries over the last quarter.
- 23 enquires received for farming opportunities.
- 16 were from seekers of opportunities and
- 7 were from potential providers.

For Crofting opportunities

- 73 enquires received were from seekers.
- and 0 potential providers.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps: N/A

Outcome 2: More farmers, crofters, land managers and other primary food producers are aware of the benefits and practicalities of cost effective climate mitigation measures.

Policy: The dissemination of information and advice on climate change mitigation measures in agriculture through a range of communication methods utilising technology and all media to best effect.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Farm Advisory Service (FAS) has continued to offer easy access, up to date and relevant climate change mitigation knowledge and information to all farmers and crofters through a network of advisory centres, peer-to-peer support groups, online resources, and a telephone advice facility. Since 2016, the programme has delivered and produced:

- 1,648 publications.
- 790 videos.
- 392 podcasts and 40 online tools.
- 1,697 events.

We estimate that more than 70% of this activity will be around climate change adaptation and mitigation support. Event attendees highlighted an improved knowledge of climate change, improved soil/nutrient management, and improved knowledge of environmental issues and opportunities.

In terms of FAS one to one support since 2016 it has delivered:

- 2,200 Carbon Audits.
- 505 Integrated Land Management Plans.
- 1000 Specialist Advice plans and
- 111 mentoring support plans.

Several specialist advice outputs have been undertaken under this FAS programme including:

- 19% woodland management and conservation.
- 19% improved farm efficiency.
- 17% biodiversity habitat landscape management.
- 3% climate change adaptation and mitigation.
- 1% on organics.
- 19% on soil and nutrient management.

To improve communications, regular interaction with existing, new stakeholders and Scottish Government departments has taken place to ensure communications are consistent, accurate, and up to date.

Farming for a Better Climate (FFBC) continued to deliver guidance and advice for farmers and crofters on climate change through its website, social media, podcasts, and videos. FFBC also tested new technologies and approaches to reducing emissions through three trial farms, communicating practical findings across the initiative's networks to enable uptake of those measures.

We continue to communicate, educate, and demonstrate the benefits of climate change mitigation and adaptation measures with peer-to-peer engagement through initiatives like the Agriculture, Biodiversity and Climate Change Network and the Integrating Tree Network.

The Next Generation Practical Training Fund aims to support new entrants to farming by providing the opportunity for skills development and training on the practicalities of agricultural practice as well as wider business and sustainability skills. One of the key aims of the fund is to encourage more new, and prospective new entrants/next generation to uptake training courses with a particular focus on: climate change adaptation and mitigation practices, and biodiversity/habitats improvement, but also other equally important areas such as health and safety, equipment training, business efficiency and resilience.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The current Farm Advisory Service contracts are scheduled to end April 2024. We have a tender out to publicly procure new contracts to commence in 2024 and end in 2027 with an option to extend until 2028.

Policy: An agri-tech group will be established to share, disseminate and encourage adoption of advances in agricultural science and technology as widely as possible
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed -The agri -tech group concluded, and engagement with industry on agricultural science and technology has continued through the farmer-led groups, Agriculture Reform Implementation Oversight Board and the National Test Programme.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Launch a new and expanded peer to peer knowledge transfer initiative based on the success of our Young Climate Change Champions work.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Completed - The Agriculture Biodiversity and Climate Change Network launched in June 2022.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Realign and enhance our established programmes and initiatives such as the Farm Advisory Service, the Knowledge Transfer and Innovation Fund and Monitor

Farm Programme to create a more cohesive approach to ensure advice and support is focussed on helping industry to professionalise to support sustainable farming.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
During 2023 a project plan was set out and agreed by Scottish Ministers for the development of the Tier 4 of the Vision of Agriculture Support Package Beyond 2025 which focused on the development of an Agricultural Knowledge and Innovation System (AKIS). In June 2023 research to inform the development of the AKIS was published in the research and options paper "Establishing an agricultural knowledge and innovation system."

In September 2023 powers were introduced into the Agriculture and Rural Communities (Scotland) Bill to establish a Continuing Professional Development (CPD) regime and for support for knowledge, innovation, education, and training. These powers will be needed to implement the AKIS, which includes the CPD regime, in Tier 4 of the Vision of Agriculture Support Package.

We gathered views through an informal consultation circulated to stakeholder organisations to help determine what the AKIS will look like. The Scottish Government will consider all the responses and will develop proposals for a further consultation on AKIS.

The Farm Advisory Service has continued to offer easy access, up to date and relevant climate change mitigation knowledge and information to all farmers and crofters through a network of advisory centres, peer-to-peer support groups, online resources, and a telephone advice facility.

Knowledge Transfer and Innovation Fund (KTIF) has funded over 52 projects to a value of £7.5M since 2015. Four awards, to a value of £240K, were granted in 2023/24 with funding focused on projects which help maximise resource efficiency, cut emissions and enhance productivity. These KTIF projects support knowledge transfer and learning, as well as innovative on-the-ground improvements in agricultural competitiveness, resource efficiency, environmental performance, and sustainability.

The Monitor Farm programme aims to instigate positive transformational change in innovative sustainable farming practices on nine Scottish farms and to use the learnings from these farms for the benefit of farmers across Scotland. The programme's aim will be achieved through assisting to build resilient, dynamic farms focused on attaining full economic, social, and environmental sustainability. The methods used and results achieved will be developed using the data gathered from the 100+ farming businesses participating in the programme and will help create outputs in greater detail. To date the programme has delivered:

- Integrated Land Management Plans for each of the nine Monitor Farm
- Baseline soil sampling for them completed.
- Specialist plans for each of the nine farms complete.
- 36 management meetings.
- YouTube channel created with 210 subscribers and 22.5k views.

- Positive feedback from meetings and events with 73% of attendees planning to make a change after attending a Monitor Farm meeting (such as forage budgeting, taking faecal egg counts, utilising soil testing, blood sampling for minerals, water pump to utilise more rotational grazing).
- Over 110 attendees at the Lamb Selection meeting at UA Huntly. The feedback highlighted 79% of attendees had not been to a Monitor Farm meeting before demonstrating the value of cluster meetings to reach new audiences.

Farming for a Better Climate (FFBC) continued to deliver guidance and advice for farmers and crofters on climate change through its website, social media, podcasts, and videos.

We continued to communicate, educate, and demonstrate the benefits of climate change mitigation and adaptation measures with peer-to-peer engagement through initiatives like the Integrating Tree Network.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Will develop proposals on the Agricultural Knowledge and Innovation System consultation towards the end of 2024.
- The current Farm Advisory Service contracts are scheduled to end April 2024. We have a tender out to publicly procure new contracts to commence in 2024 and end in 2027 with an option to extend until 2028.
- The Monitor Farm programme will has funding until 2026.

Policy: Carbon Audits: in 2018, we will consult on how best to ensure maximum take up of carbon audits and how to enable tenant farmers and crofters in particular to benefit.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Under Preparing for Sustainable Farming farmers and crofters can claim funding towards carbon audits to improve their knowledge of current environmental performance and improve efficiency. So far, we have funded 1279 carbon audits since 1 January 2022. We will build on this by raising awareness of the opportunity for scheme year 2024 and the benefits it creates for the environment.

Carbon audits have also been funded through the Farm Advisory Service (FAS) since 2016. To date, 2,228 carbon audits have been delivered and completed through the FAS.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Whole Farm Plan conditions (including the option of performing a carbon audit under it) commence in 2025.

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.

Policy: We will explore with stakeholders, including the Scottish Tenant Farmers Association and the Tenant Farming Commissioner, how best to engage tenant farmers to increase understanding of the environmental and economic benefits of low carbon farming.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The Tenants and Trees group continues to hold discussions involving stakeholders on how to engage tenant farmers via the Tenant Farming Advisory Forum.

The Land Reform (Scotland) Bill introduced March 2024 includes a number of measures to radically reform tenant farming legislation, to make it fit for the future. It will provide more opportunities for tenants to deliver improvements to the land they work, become more sustainable and productive, and play their part in supporting biodiversity.

The Small Producers Pilot Fund is the replacement for the Small Farm Grant Scheme. The future development of the pilot will take place in 2024 taking forward elements of the Small Producer Pilot Fund Steering Group recommendations. The Fund will aim to support a range of Scottish Government outcomes including climate as follows:

- Community – support and sustain Scotland's communities (including our most remote rural and island communities) and bring associated health benefits through the production, supply, and consumption of fresh local produce.
- Industry - facilitating the growth of a diverse and resilient food and drink industry.
- Collaboration – develop the Fund with industry stakeholders and promoting collaboration within the small producer community.
- Climate - promote adaptive and sustainable as well as regenerative, climate and environmentally friendly practices enabling small producer participation in the transition to net zero and the achieving of environmental and biodiversity targets.
- Equality of Opportunity – deliver the opportunity for small producers to improve and grow their businesses to become more viable and profitable.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Development of the Small Producers Pilot Fund will take place during 2024.
- Land Reform (Scotland) Bill continues its progress through the Scottish Parliament.

Policy: Marketing scheme: Determine the feasibility of a Low Carbon Farming marketing scheme.

Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed - Naturally Scottish launched in January 2024.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Outcome 3: Nitrogen emissions, including from nitrogen fertiliser, will have fallen through a combination of improved understanding, efficiencies and improved soil condition.

Policy: Communicate and demonstrate the benefits of precision farming and nitrogen use efficiency in order to achieve a reduction in GHG emissions**.**
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Farm Advisory Service (FAS) has continued to offer easy access, up to date and relevant climate change mitigation knowledge and information to all farmers and crofters through a network of advisory centres, peer-to-peer support groups, online resources, and a telephone advice facility.

Several specialist advice outputs covering precision farming and nitrogen use have been undertaken under this FAS programme including on woodland management and conservation, on improved farm efficiency, woodland management and conservation, biodiversity habitat landscape management, climate change adaptation and mitigation, organics, and soil and nutrient management.

Farming for a Better Climate continued to deliver guidance and advice for farmers and crofters on climate change through its website, social media, podcasts, and videos and includes a range of additional materials that supports farmers and crofters to take action in this area including a page on Soils, Fertilisers and Manures.

Guidance and advice on diffuse pollution and the water environment is provided to farmers by the Scottish Environment Protection Agency and information is available on the Farming and Water Scotland website, an initiative funded by Scottish Government.

The current iteration of the Scottish Nitrogen Balance Sheet (SNBS) was published in May 2023, with the accompanying progress report. This iteration indicates that Scotland's national nitrogen efficiency has increased to 26.9% in 2020 from the 25.2% baseline in 2019 (which was published in December 2021).

The SNBS will help to support progress towards Scotland's national climate targets by tracking nitrogen use efficiency. In addition, it will support a range of wider policy applications such as air quality and the promotion of efficiency in food production. Going forward the SNBS will be used to help identify where key opportunities for improvement lie.

Under Preparing for Sustainable Farming farmers and crofters can claim funding towards carbon audits, this option is to provide strong encouragement for every farm in Scotland to improve awareness of their climate performance. The carbon audits help establish a business's carbon footprint, it identifies the sources and quantities of greenhouse gas emissions on farms and areas where simple changes can lead to improved efficiency and reduced operating costs and emissions.

Land managers in Scotland will also be able to claim actual cost up to a calculated maximum value for their soil sampling along with a payment to cover personal

development. The aim of the option is to improve nutrient planning and nutrient management. This will encourage the best use of nutrients from inorganic and organic fertiliser (including slurry and farmyard manure) by matching applications to crop requirements. It should thus reduce the loss of nutrients to the environment. Additional benefits are reduced diffuse pollution, emissions, and improved carbon capture on farmland.

The introduction of the first Whole Farm Plan conditions from 2025 will require farmers and crofters to complete two baselining activities from a list of options including carbon audits, biodiversity audits, soil analysis, the creation of animal health and welfare plans or integrated pest management plans. With guidance contained in the Route Map.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The current Farm Advisory Service contracts are scheduled to end April 2024. We have a tender out to publicly procure new contracts to commence in 2024 and end in 2027 with an option to extend until 2028.
- The next Scottish Nitrogen Balance Sheet is expected to be published during 2024.
- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- Whole Farm Plan conditions commence in 2025.

Policy: Work with the agriculture and science sectors regarding the feasibility and development of a SMART (specific, measurable, achievable, relevant and time bound) target for reducing Scotland's emissions from nitrogen fertiliser**.**
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The current iteration of the Scottish Nitrogen Balance Sheet (SNBS) was published in May 2023. The SNBS will help to support progress towards Scotland's national climate targets by tracking nitrogen use efficiency. In addition, it will also support a range of wider policy applications such as air quality and the promotion of efficiency in food production.

Under Preparing for Sustainable Farming, land managers in Scotland will be able to claim for their soil sampling. The aim is to improve nutrient planning and nutrient management along with a payment to cover personal development. This will encourage the best use of nutrients from inorganic and organic fertiliser by matching applications to crop requirements. It should reduce the loss of nutrients to the environment. Additional benefits are reduced diffuse pollution, emissions, and improved carbon capture on farmland.

The Scottish Government commissioned ClimateXChange (CXC) to produce a report on Target setting for nitrogen use efficiency in Scotland. The report will report on the potential for setting a NUE target for agriculture in Scotland. The CXC report will be published in 2024.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The next Scottish Nitrogen Balance Sheet is expected to be published during 2024.
- CXC report on Target setting for nitrogen use efficiency in Scotland will be published later in 2024.

Policy: From 2018 we expect farmers to test the soil on all improved land every five or six years, and we will work with them to establish how best to achieve this.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Under Preparing for Sustainable Farming, land managers in Scotland will be able to claim for their soil sampling along with a payment to cover personal development. The aim is to improve nutrient planning and nutrient management. This will encourage the best use of nutrients from inorganic and organic fertiliser by matching applications to crop requirements. It should reduce the loss of nutrients to the environment. Additional benefits are reduced diffuse pollution, emissions, and improved carbon capture on farmland.

The introduction of the first Whole Farm Plan conditions from 2025 will require farmers and crofters to complete two baselining activities from a list of options including carbon audits, biodiversity audits, soil analysis, the creation of animal health and welfare plans or integrated pest management plans. With guidance contained in the Route Map.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Preparing for Sustainable Farming will run until 2025 and we will increase awareness of timescales for Agricultural Reform via promotions throughout 2024.
- Whole Farm Plan conditions commence in 2025.

Policy: Investigate the benefits and barriers of leguminous crops in rotation.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Several measures related to the use of legumes in the rotation are being considered as part of the Agricultural Reform Programme, including 'Efficient/reduced use of inorganic fertilisers and lime' and 'Use of N fixing crops.'

The environment, food and rural affairs Strategic Research Programme 2022-2027 has two projects which continue to run and will consider legumes:

- The Impact of Novel Crops and Farming Technologies on the Scottish Agricultural Landscape.
- Crop Improvement for Sustainable production in a Changing Environment.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps:

- The Strategic Research Programme will run until March 2027.

Policy: Crop varieties with improved nitrogen-use efficiency.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The environment, food and rural affairs Strategic Research Programme 2022-2027 has two projects which continue to run and will consider this:

- The Impact of Novel Crops and Farming Technologies on the Scottish Agricultural Landscape.
- Exploring Barley Diversity for resilience and sustainability.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Strategic Research Programme will run until March 2027.

Outcome 4: Reduced emissions from red meat and dairy through improved emissions intensity.

Policy: Commission and publish a report into the establishment of emissions intensity figures for beef, lamb, and milk.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed – August 2018 – Published ClimateXChange published "Emission intensity of Scottish agricultural commodities".
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Work with Quality Meat Scotland, ScotEID and livestock producers to encourage improved emissions intensity through genotyping, improving fertility, reducing animal mortality and improving on farm management practices.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
MyHerdStats is a free tool available to all cattle keepers in Scotland via the platform ScotEID which displays herd performance metrics for the keeper's herd, generated using cattle traceability data. We continue to work with Scottish Agricultural Organisation Society (SAOS) to explore continued funding for MyHerdStats and the development of additional functionality for the platform. Between December 2022 and January 2024, MyHerdStats experienced around 6,000 unique user visits.

An updated Route Map was published in March 2024. It included detail on the introduction of a new condition to the Scottish Suckler Beef Support Scheme (SSBSS) which come into effect in 2025. The new conditions will be linked to calving interval performance, and from 2025 onwards, calves will only be eligible for a SSBSS payment if their dam has a calving interval threshold of 410 days or less. This condition is designed to help balance productivity and profitability with the opportunity to address climate impact of emissions.

The Animal Health and Welfare Livestock Strategy 2016 – 2021 review is currently delayed due to competing pressures dealing with the worst ever outbreak of avian influenza, increasing pressures to prevent the incursion of African swine fever which is circulating in nearby Europe and meeting the demands of EU exit. Subject to competing pressures we hope to publish the review in autumn 2024.

The Scottish Government is currently funding two animal health pilot projects which will help to (a) control sheep scab on Lewis and Harris and (b) a national pilot to help control Ovine Pulmonary Adenocarcinoma in the national sheep flock. Both projects aim to improve productivity and efficiency within the flock through improved biosecurity and animal health interventions.

As part of the wider preparation for the 2025 change, an animal health and welfare information leaflet has been prepared.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Sheep Scab Pilot expected to end March 2025.
- Ovine Pulmonary Adenocarcinoma Pilot expected to end June 2025.
- We hope to publish the review on The Animal Health and Welfare Livestock strategy in autumn 2024.
- Scottish Suckler Beef Support Scheme New conditions will be introduced in 2025, linked to calving interval performance.

Policy: Determine the practicality of establishing a SMART target for reduction in the intensity of emissions for beef, sheep and dairy sectors.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
We are working with a cohort of beef farms to understand the impact on productivity of improved data capture technology combined with specialist advice. This will be complemented with activity under the agriculture reform programme to work with farmers in all sectors to test how farmers will respond to actions aimed at delivering positive outcomes with regard to emissions reduction.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Consult in 2018 to determine the nature of livestock health measures that the sector will adopt from 2019.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed - The detailed proposals and ideas as a result continue to be considered as we work to create a new Future Support Framework under the wider Agriculture Reform Programme.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Determine the practicalities and feasibility of using livestock feed additives as a means of reducing emissions.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Working with The Department for Environment, Food and Rural Affairs, The Northen Ireland Department of Agriculture, Environment and Rural Affairs and Welsh Government we undertook a call for evidence on the potential of increasing uptake of methane supressing feed additives. A summary of responses was published in October 2023.

In February 2023, the Scottish Government published its draft Agricultural Reform List of Measures outlining the intention to develop future agricultural support conditionality options, which could recognise appropriate uptake of methane suppressing feed products by farmers. We continue to work with industry to establish options for recognising use of these products and other practices which can reduce greenhouse gas emissions.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps: N/A

Outcome 5: Reduced emissions from the use and storage of manure and slurry.

Policy: Engaging with farmers to explore their support requirements, establish how they can improve the use and storage of manure and slurry, including the potential for cooperatively owned and managed anaerobic digesters.
Date announced: Dec 2020, before CCPu 2020
Progress on implementation since time of last report / CCPu:
From 1 January 2024 silage and slurry stores built after 1991 (or that were substantially reconstructed or enlarged on or after 1st September 1991) and those with planning permission but not yet constructed must now be structurally compliant and all liquid digestate stores constructed before 1st January, or where planning permission was granted prior to 1st January 2022, must now meet requirements within the regulations under Silage Slurry and Agricultural Fuel Oil (Scotland) Regulations 2003.

The capital budget for Agriculture Transformation Fund in 2024 is £3 million plus a further £1.47 million of AECS allocation has been allocated to provide an extension of support for slurry storage across Scotland (except in Nitrate Vulnerable Zones which have previously been supported to meet regulatory requirements) and to increase the provision of irrigation lagoons. Applications for slurry stores opened February 2024.

Farmers and crofters can also access advice on improving the use and storage of slurry and silage through the Farm Advisory Service through the Scottish Environment Protection Agency Farming and Water Scotland website.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- From 1 January 2026 Silage and slurry stores built before 1991 (and not substantially enlarged or reconstructed since 1991) must be fully compliant and slurry stores located outside an NVZ must have capacity to store the total slurry likely to be produced in 26 weeks by housed pigs or 22 weeks by housed cattle by 2026.
- From 1 January 2027 all slurry application must be applied using precision equipment.
- Agricultural Transformation Fund is continuing to support capital investment and is expected to be incorporate into the new framework.
- The Enhanced Tier is due to be rolled out from 2026.
- The application window under Agricultural Transformation Fund for the 2024 round for slurry stores closed 19 April 2024.

Policy: Investigate the practicalities of livestock grazing in rotation on current arable land.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed - The East/West Beed Grazing Collaboration Pilot run by SAOS was supported under the Knowledge Transfer and Innovation Fund to work toward establishing evidence on the financial and environmental value of moving cattle to lower cost natural resources. The group produced case studies showing there are

environmental and carbon sequestration benefits, especially where fodder crops are grown and grazed gradually over the winter period. The findings included significant potential fuel savings, that adopting 294 rotational grazing negates the necessity for artificial fertilisers and intensely farming the fields and that it was on the whole a low cost, low carbon system with less reliance on cereals-based diets and greater utilisation of grazing ground both in the summer and winter.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Conduct a feasibility study for the establishment of manure/ slurry exchange.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Completed - Slurry Storage on Scottish Farms – A Feasibility Study
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Determine how to consistently minimise emissions from slurry storage.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
Research includes Slurry Storage on Scottish Farms – A Feasibility Study (climatexchange.org.uk) and Microsoft Word - IQ26-2019 - establishing a manure-slurry exchange in Scotland-a feasibility study - FINAL - 8 June 2020.docx (climatexchange.org.uk)
The capital budget for Agricultural Transformation Fund 2024 has been allocated to provide an extension of the provision of support for slurry storage across Scotland (except in Nitrate Vulnerable Zones (NVZ) which have previously been supported to meet regulatory requirements).
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Review management of storage and application of organic materials such as silage, slurry and liquid digestate, including what support may be required to ensure best practice.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
New amendments to the rules around how silage and slurry are managed and stored were introduced on 1st January 2022 with the aim of protecting the environment and helping to make better use of nutrients produced on farm. These updated the Controlled Activities Regulations (CAR) to include the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Scotland) Regulations 2003, (as amended) putting the majority of regulations about slurry and silage handling and storage into one place.

Guidance and advice is provided to farmers by the Scottish Environment Protection Agency and information is available on the Farming and Water Scotland website.

The capital budget for the Agricultural Transformation (ATF) Fund 2023 was allocated to the Agri-environment Climate Scheme (AECS) in 2023 to support the extension nationally of the slurry storage options. The capital budget for ATF 2022 was equally allocated in full to the Sustainable Agriculture Capital Grant Scheme (SACGS) 2022 to provide support for low emission slurry spreading equipment and slurry store covers.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A

Timeframe and expected next steps:

- From 1 January 2026 Silage and slurry stores built before 1991 (and not substantially enlarged or reconstructed since 1991) must be fully compliant and slurry stores located outside an NVZ must have capacity to store the total slurry likely to be produced in 26 weeks by housed pigs or 22 weeks by housed cattle by 2026.
- From 1 January 2027 all slurry application must be applied using precision equipment.
- Agricultural Transformation Fund is continuing to support capital investment and is expected to be incorporate into the new framework.
- The application window under Agricultural Transformation Fund for the 2024 round for slurry stores closed 19 April 2024.

Outcome 6: Carbon sequestration and existing carbon stores on agricultural land have helped to increase and maintain our carbon sink.

Policy: Explore with the farming and forestry sectors how best to increase planting of trees and hedgerows which optimise carbon sequestration, including the role of agroforestry.
Date announced: 2020
Progress on implementation since time of last report / CCPu:
The integration of woodlands into existing businesses is very much part of the woodland creation picture in Scotland. The Integrating Tree Network (ITN) is a joint Scottish Government and Scottish Forestry (SF) initiative that aims to support and enable farmers and crofters across Scotland to plant and manage trees on their land. The farmer led ITN brings together ten host farmers to share their knowledge and expertise through a series of online and in-person events. The ITN has hosted 32 events since March 2021 and includes a website, videos, case studies and a recent Why Trees publication which aims to showcase the many benefits of planting trees on farm.

The Tenants and Trees group continues to hold discussions involving stakeholders on how to engage tenant farmers via the Tenant Farming Advisory Forum.

Agriculture Bill - Analysis of Consultation Responses was published in June 2023, while The Agriculture and Rural Communities (Scotland) Bill was introduced to the Scottish Parliament in September 2023. The Bill will be the platform for measures focused on key Scottish Government outcomes: high quality food production; climate mitigation and adaptation; nature restoration; and wider rural development. It is of a framework nature, intended to deliver our published four-tier support framework and to enable continued co-develop of detailed measures.

Scottish Government has worked with SF Trees on Farm group to revise and improve the grant support available for agroforestry, introducing four new measures to its Forestry Grant Scheme:

- Increasing the grant rate for agroforestry projects by 50% from £3,600 per hectare to £5,400 per hectare.
- Making agroforestry funding available for planting fruit, nut, and native trees.
- Allowing additional protection measures for trees, to allow cattle to graze within agroforestry projects.
- Giving farmers more opportunity to participate in agroforestry by adapting the planting thresholds.

To deliver the ambitions set out in our vision and the Future Support Framework from 2026 an Agriculture Reform Route Map was published in February 2023 and a third edition was published March 2024. The updated Route Map still outlines what information and guidance the sector can expect from 2023-2025 and when it will be available. It also sets out the proposed timescales for information and interaction with the agricultural industry.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- The Integrating Tree Network will continue to support farmers and crofters throughout 2024.
- The Agriculture and Rural Communities (Scotland) Bill continues its progress through the Scottish Parliament.

Policy: Investigate the feasibility of payment for carbon sequestration taking into account any existing schemes such as the woodland carbon code as a means of encouraging the uptake of carbon sequestration on farms
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
The Scottish Government is providing funding for The Facility for Investment Ready Nature in Scotland (FIRNS) managed by NatureScot. FIRNS is providing grants to support projects testing different aspects of natural capital market development in Scotland, including voluntary carbon markets. The scheme includes match funding from the National Lottery Heritage Fund and the first round of FIRNs awards in September 2023 saw 27 projects awarded over £3m in total.

The 2023 Programme for Government committed the Scottish Government to the publication of a natural capital markets framework in 2024. This Framework will include actions to increase the uptake of the two existing voluntary carbon markets in Scotland – the Peatland Code and the Woodland Carbon Code – as well as actions to support the development of further high-integrity voluntary carbon markets.

The amount of validated future CO_2 removals under the Woodland Carbon Code rose by 28% between 2021-22 and 2022-23. There are now over 28,000 hectares of woodland validated under the Woodland Carbon Code which will remove over 11 million tonnes of CO_2 from the atmosphere over their lifetimes. A further 36,000 hectares has been registered with the Woodland Carbon Code but not yet validated, indicating a strong future pipeline of projects.

There was no further progress with the UK Farm Soil carbon code during 2023. The Sustainable Soils Alliance will feed into the BSI Nature Market Standards programme which commenced in summer 2023 and which will produce standards for voluntary carbon markets in due course.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:
- Expected publication of a natural capital markets framework in 2024

Policy: Increase woodland cover on suitable agricultural land.
Date announced: CCP 2018
Progress on implementation since time of last report / CCPu:
To deliver the ambitions set out in our vision and the Future Support Framework from 2026, an Agriculture Reform Route Map was published in February 2023 with a third edition published March 2024. The updated Route Map still outlines what information and guidance the sector can expect from 2023-2025 and when it will be available.

A trees on farms sub-group of Scottish Forestry Customer Representatives Group met in January 2024 to discuss how to strengthen integration of woodlands and agriculture, including the interaction between the Forestry Grant Scheme (FGS) and proposals for the elective component of future support schemes for agriculture.

Following a public consultation on the FGS in spring 2023, a series of enhancements to the scheme have been introduced. These measures relate to woodland creation, agroforestry and rainforest/caledonian pinewoods, and represent the most significant package of changes to the FGS since it was launched in 2015.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Building on the successful work integrating woodland with farming businesses, help remove barriers for those on agriculture holdings, particularly in the tenanted sector who want to engage in woodland creation, including exploring the potential to reform legislation where appropriate.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
The Tenants and Trees group continues to hold discussions involving stakeholders on how to engage tenant farmers via the Tenant Farming Advisory Forum.

The Land Reform (Scotland) Bill introduced March 2024 includes a number of measures to radically reform tenant farming legislation, to make it fit for the future. It will provide more opportunities for tenants to deliver improvements to the land they work, become more sustainable and productive, and play their part in supporting biodiversity.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Land Reform (Scotland) Bill continues its progress through the Scottish Parliament.

Policy: Work with stakeholders on options to increase peatland restoration on suitable agricultural and crofting land, to support delivery of policies in the LULUCF chapter. We will map peatland against this land which will allow modelling options for land-use change and inform opportunities for targeted support of peatland restoration and management.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
On behalf of Scottish Ministers, Scottish Government's Rural Payments and Inspections Division (RPID), manage 46 crofting estates/land holdings extending to over 95,000 hectares mainly across the Highlands and Islands and have landlord responsibility for 1,524 tenanted crofts (10% of Scotland's total tenanted crofts).

Across the wider RPID estate we have been working to identify and determine areas and condition of peatland to identify areas of degraded peatland for restoration. We

have concluded desk-based assessments on over 90% of our holdings with peatland, and work is ongoing with the remaining 10%. This has helped identify sites that would benefit from restoration activities. We are currently engaging with various crofting tenants and grazings committees with the aim of developing a practical collaborative approach between landowner, crofting tenant and Peatland Action for restoration and long-term management of peatland on croft land. This work includes exploring the reason for past and present degraded peatland and identifying different restoration options.

An RPID pilot for peatland restoration on crofting pilot has involved a baseline exercise to identify areas of degradation within the RPID land holdings. The exercise has not covered common grazings outwith RPID owned landholding.

We are considering proposals that will help make it easier for crofters to enter joint ventures with landlords and undertake projects such as carbon sequestration, habitat restoration and biodiversity enhancement. We will seek to provide clarity to the crofting sector to ensure crofters are aware of the support available for undertaking peatland restoration work and how to access it. In order to meet these commitments, the Government will consider what more can be done to address the skills shortage and provide appropriate skills and training.

New conditions will be introduced to Cross Compliance in 2025. These are new peatland and wetland standards which will be added to GAEC 6 - Maintenance of soil organic matter. These standards will prohibit a range of activities from being carried out on peatland and wetland areas and include: Ploughing and cultivation; new drainage and maintenance of existing drainage systems that causes further drying out of the peatland. As well as activities that cause damage to the vegetation cover exposing the soil
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Explore options for land use change to optimise uses beyond traditional farming and food production to multifaceted land use including forestry, peatland restoration and management and biomass production.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu:
Across the summer and autumn of 2023, the Scottish Government worked with the Regional Land Use Partnership (RLUP) pilots regions to gather information and evaluate progress against the criteria set out within the Bute House Agreement. They will work across their respective regions to enable natural capital-led consideration of how to maximise the contribution that our land can make to addressing the climate and environmental crises. In early 2024 work on a programme level evaluation began with Scottish Government officials working closely with the cohort of RLUPs to develop an overarching evidence base to inform the final decision making process.

Scotland's third land use strategy was published as planned by the statutory deadline of 31 March 2021. Scotland's fourth Land Use Strategy is due for publication in 2026

with work around its development due to start later in 2024 with a narrative around land integration.

The draft Bioenergy Policy Statement is seeking views on the potential to scale up domestic production of biomass via planting of perennial energy crops. The draft statement sets out that this must be done in a sustainable way and careful planning will be required to manage the potential synergies and trade-offs between goals for bioenergy, biodiversity, and food production.

The integration of woodlands into existing businesses (including agriculture) is very much part of the woodland creation picture in Scotland and continues to be delivered through our woodland schemes and through The Integrating Tree Network.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps:

- Development work will commence later in 2024 in advance of the next Land Use Strategy due in 2026.
- During 2024 Regional Land use Partnerships will work on a programme level evaluation.
- The Integrating Tree Network will continue to support farmers and crofters throughout 2024.

9. Chapter 8: NETs

9.1 Part A - Overview of sector

Negative Emissions Technologies (NETs) are yet to be deployed in Scotland as they rely on carbon capture and storage (CCS) to deliver negative emissions. Whilst some technologies that could deliver negative emissions are currently deployed, such as energy from waste, these facilities would require retrofitting with carbon capture technology and a route to storage to be considered a negative emissions technology.

The Climate Change Plan update (CCPu) includes policies and proposals for supporting and enabling early deployment from 2029 onwards. We currently do not track progress against the NETs envelope in the CCPu. In our last CCP (Climate Change Plan) Monitoring report, we committed to undertaking a feasibility study on NETs deployment in Scotland. This was published November 2023 and will help inform the development of our NETs policy going forward. The results of this study demonstrated the reliance of NETs deployment in Scotland on the UK Government's policies regarding carbon capture, usage and storage (CCUS) Cluster Sequencing, in particular on delivering the Scottish CCUS cluster at pace, as well as the possible benefits of including removals in the UK ETS (Emissions Trading Scheme).

The CCPu sets out the following policy outcomes for the sector. Given that this sector chapter appeared first in the CCPu (2020), there are no indicators for these outcomes. In the next CCP we will update the policy outcomes and include indicators to track progress against these updated outcomes.

Detailed feasibility study on NETs will assess the opportunities for negative emissions in Scotland, and identify applications with the greatest potential, including specific sites where possible.

CCUS: the continued development of CCUS technologies and systems is prioritised to ensure these can be rolled out commercially and at scale by the late 2020s.

Bioenergy: a cross-sectoral approach for the appropriate and sustainable use of biomass in energy applications is agreed and implemented (taking into account competing land and feedstock uses).

Just transition and cross economy impacts

We wish to understand and report on the broader just transition and cross-economy impacts of our emissions-reduction activities in addition to these sector specific policy outcomes and indicators. To do this, in this report we use data from the Office of National Statistics (ONS): Low Carbon Renewable Energy Economy (LCREE) publication. The LCREE data presented in this report is based on survey data of businesses which perform economic activities that deliver goods and services that are

likely to help generate lower emissions of greenhouse gases, for example low carbon electricity, low emission vehicles and low carbon services.

The LCREE indicator is narrowly defined and, while useful within its limited scope, does not give us the full picture of the impacts on workforce, employers and communities and progress towards a just transition. Over the next few years we will work to develop a more meaningful set of success outcomes and indicators aimed at tracking the impacts of our policies on a just transition to net zero.

Sector commentary on progress

The CCPu included Negative Emissions Technologies (NETs) as a sector chapter for the first time, recognising the important role that emissions removals will need to play in reaching net zero, as highlighted by the IPCC Working Group 3 report. The 'learning by doing' approach set out in the CCPu more widely was also identified as being particularly important in the case of this sector, given the considerable uncertainties around technological development and dependencies on UK Government action, particularly with regard to carbon capture and storage.

Policies included in the NETs chapter recognised these challenges and uncertainties and sought to develop an evidence base to allow for further policy development. We have since undertaken an initial review of evidence.

The review indicated that NETs in Scotland can deliver at scale in due course but not at the pace assumed in the CCPu. This is due to various shifts in evidence and key policy decisions since the time of the CCPu, including:

- The UK Government's decision in October 2021 not to award the Acorn Project during the Track-1 phase has delayed the deployment timeline for the carbon capture and storage system required for NETs.
- While the UK Government's Powering Up Britain announcements on 30 March 2023 reconfirmed their commitment to four UK CCUS clusters by 2030, and started the Track 2 process highlighting Acorn as one of two projects "best placed to deliver on Government objectives for Track-2", only eight out of 20 shortlisted and 41 initially eligible Track-1 Phase-2 projects were taken forward to the negotiation stage. No NETs projects were included in this list.
- Despite UK Government updates on Acorn/Track 2, there is still no timeline for a final decision on Acorn and the associated range of emitter projects.
- The availability of home-grown sustainable biomass to supply large scale power bioenergy with CCS (BECCS); and
- No public commitment to date by a commercial operator to employ a NETs model for a single large power station in Scotland. Given lead in times for development of such a facility and proposals for CCS deployment for the

Peterhead Combined Cycle Gas Turbine (CCGT) power project, it is unlikely that a new NETs power facility will be developed in the 2020s.

We have since gained further knowledge and evidence of what scale of NETs can be delivered in Scotland and to what timescale, through undertaking a NETs feasibility study. The study considered the feasible pace and scale of NETs deployment in Scotland. To do so, the authors examined existing sites in Scotland which emit biogenic carbon and could deliver negative emissions if paired with CCS infrastructure, as well as biochar production. The study then explored the potential for new sites, including Direct Air Capture. To determine the feasible deployment of these technologies, the study modelled three pathways for NETs deployment, all of which assumed that the Scottish Cluster would be active and able to permanently store CO_2 by 2030. The pathways differed in the level of government action, such as policy supports, market design, or funding to support NETs.

This study estimated that the maximum Negative Emissions Technologies (NETs) potential achievable in Scotland in 2030 is 2.2 $MtCO_2$/year (60% of the available biogenic CO_2 emissions), based on existing and future potential sites and given technical, economic and other constraints. This is significantly lower than the stated NETs ambition in the CCPu of 5.7 $MtCO_2$/year by 2032. With additional policy interventions from both the UK and Scottish Governments, this figure could potentially reach 6.8 $MtCO_2$/year by 2045 with technologies such as direct air carbon capture and storage (DACCS), bioenergy CCS (BECCS), energy from waste (EfW) and biomethane and distillery sites all playing a role.

As noted in the 2022 and 2023 monitoring reports, it is therefore clear that NETs in Scotland can deliver at scale in due course, but not at the pace assumed in the CCPu. This is due to various policy shifts since the publishing of the CCPu in 2021 including – critically – the UK Government's decision to not allocate the Scottish Cluster as a Track-1 cluster for delivery in the mid-2020s. With the right policy interventions from both the UK and Scottish Governments, outlined in the feasibility study, these technologies can meaningfully contribute to our climate change goals and negate residual emissions from hard-to-abate sectors. This further evidence will be considered as we undertake the next full CCP.

Developments in monitoring arrangements since last report:

No changes.

9.2 Part B - Progress to Policy Outcome Indicators

Policy Outcome: Cross-sectoral social and economic
Indicator: FTE employment in Low Carbon Renewable Energy Economy Indicator
On-Track Assessment (Milestones/Targets):Year-to-year change

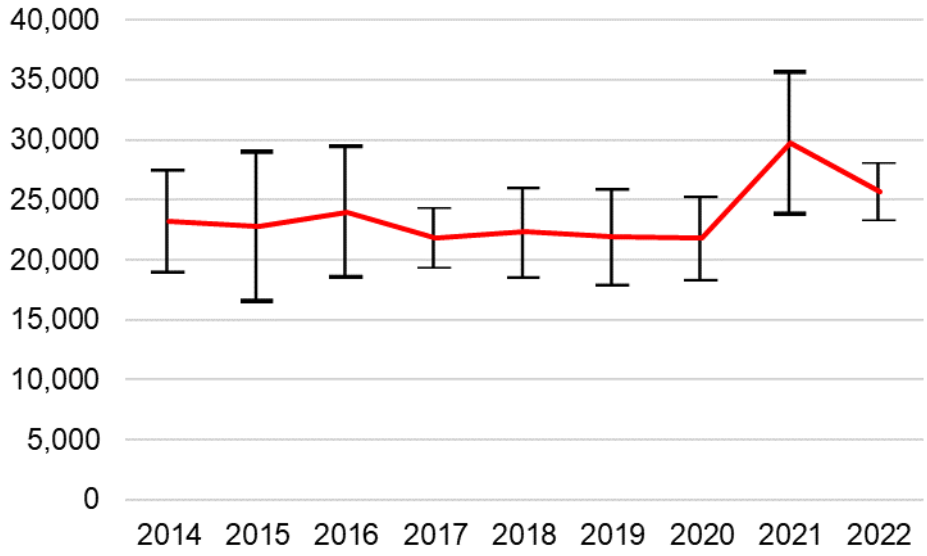
Most Recent Data: 2022
Data Source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE), Time spent of Green Tasks

Assessment: Too early to say

Commentary:
In 2022, the Scottish low carbon renewable energy (LCREE) sectors were estimated to provide 25,700 jobs.[36]

- The estimates of LCREE are based on a relative small sample of businesses and hence are subject to a wide confidence interval. Scottish LCREE employment in 2022 is above the average of previous years but the difference is not statistically significant.

Employment in Low Carbon Renewable Energy Economy, FTE[37]



[36] The Scottish Government also commissioned an independent analysis projecting future employment in the Energy Production Sector to inform the draft ESJTP. This can be found in Chapter 3 of the report and is available here.
[37] This is low carbon renewable employment (LCREE), and this chart does not include Scottish employment in CCUS or NETs sectors, as neither have been deployed in Scotland to date.

- LCREE only shows employment in roles in industries directly involved in the transition to Net Zero. This means that possible CCUS-related activity carried out by firms in sectors not targeted by the survey might be missed and statistics on jobs may undercount the economy's actual labour allocation to these activities.
- The Office of National Statistics (ONS) also released experimental statistics on a wider perspective of green activity in the economy with their time spent on green tasks release.
- These statistics reflect green activities in both LCREE and non-LCREE sectors. The 2024 publication with data for 2023 has not yet been published.

9.3 Part C- Information on implementation of individual policies

Outcome 1: Detailed feasibility studies on NETs will assess the opportunities for negative emissions in Scotland, and identify applications with the greatest potential, including specific sites where possible.

Policy: In 2021/22 carry out 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.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Studies to build our evidence on NETs and inform the scope of a detailed feasibility study have been commissioned and published within 2021/22. These outputs include research on bioenergy feedstock availability (Available here) and a horizon scan of international deployment of NETs (Available here). A detailed NETs feasibility study was published at the end of last year, containing recommendations to government and proposed NETs implementation pathways.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We will use the feasibility study to inform the next CCP.

Policy: From 2022, based on the outcomes of the feasibility work, we will provide support for commercial partners to develop NETs proposals
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We have continued to build our evidence of NETs feasibility through the detailed feasibility study, and engagement following the conclusion of this work, including with industry. We are engaging with those key stakeholders which have the ability to implement NETs in Scotland to better understand the support that the Scottish Government may be able to offer, and early opportunities for NETs in Scotland.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We are investigating support measures for commercial partners which support NETs deployment. We have commissioned further research looking at cost and profitability scenarios for Direct Air Capture deployment in Scotland.

Policy: Put in place a continual process to review the development of NETs and progress against its envelope.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: This is assured by internal governance boards.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: Timing and arrangements to be confirmed in the next CCP.

Policy: We will work with UK Government to ensure that they bring forward suitable mechanisms to support the development of NETs business cases in relevant sectors.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: Recognising that many NETs support mechanisms are reserved to the UK Government, we are working with relevant departments, including the Department for Energy Security and Net Zero (DESNZ), to ensure support for prospective NETs developers in Scotland. In particular and following the outcome of the UK government's cluster sequencing process in which it failed to award the Scottish Carbon Capture Storage (CCS) cluster track 1 status, we have championed the timely deployment of Scottish CCS infrastructure as being essential to enabling development of NETs. Work with the UK has further involved engaging with relevant consultations, including responding to the Call for Evidence on greenhouse gas removals (GGRs) and the Business model for power bioenergy with carbon capture and storage (Power BECCS) consultation. We will continue working with UK Government to foster the necessary support for NETs in Scotland. In July 2023, UKG announced that the Acorn Project is 'best placed' to be a Track 2 project as they considered it as one of two clusters which met Track-2 objectives "due to their maturity". Acorn also retains its position as a Track 1 "reserve" cluster. We welcome the UK Government's recent decision to invite Acorn to submit plans in early 2024 for the initial Scottish Cluster emitter projects with a deployment target of 2028/29 along with provisional future expansion plans for both pipeline and non-pipeline transport options. It is, however, disappointing that the UK Government has still not published the criteria and has only committed to set this out "in due course". The Scottish Government urges the UK Government to progress this at pace to secure the fastest possible deployment of the Scottish Cluster, so that a just transition for our energy workforce can be secured, while also delivering on net zero targets. We will also continue to take forward work with the rest of the Emissions Trading Scheme (ETS) Authority on the potential inclusion of GGRs in the UK ETS, through our role as part of the ETS Authority (which comprises of the UK Government and the three Devolved Administrations), including through consulting on the inclusion of eGGRs in the UK ETS.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We will continue working with UK Government to foster the necessary support for NETs in Scotland. We will continue to take forward work with the rest of the ETS Authority on the potential inclusion of GGRs in the UK ETS.

Outcome 2: CCUS: the continued development of CCUS technologies and systems is prioritised to ensure these can be rolled out commercially and at scale by the late 2020s.

Policy: Support the development of NETs technologies within Scotland.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: CCS is an essential part of NETs, and without a written commitment from the UK Government on progressing Acorn via track 2, it has been particularly difficult to provide any level of certainly to the burgeoning NETs industry in Scotland. That said, while we wait for UK Government commitment on Acorn, the Scottish Government continues to work with NETs stakeholders to identify opportunities for, and support the early deployment of NETs including the viability of captured carbon as a commodity.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Support the inclusion of NETs in the development of strategic, industry lead pathways for CCUS infrastructure in Scotland.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: As above
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Policy: Funding through the Scottish Industrial Energy Transformation Fund to consider the development of NETs demonstrators.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: The programme continues to review the number and value of projects supported, projected emissions and energy productivity savings, and consider impacts against policy objectives within public sector financial constraints.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: N/A

Outcome 3: Bioenergy: a cross-sectoral approach for the appropriate and sustainable use of biomass in energy applications is agreed and implemented (taking into account competing land and feedstock uses).

Policy: We will publish a Bioenergy Update in early 2021, laying out our current position and understanding of the role of bioenergy in the energy system and setting out in more detail how we will move forward.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We published the Bioenergy Update on 24 March 2021
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: None

Policy: In 2021, building on the Bioenergy Update, we will establish a cross sectoral Bioenergy Expert Working Group to consider and identify the most appropriate and sustainable use for bioenergy resources across Scotland. It will also assess the volume of bioenergy resources that we can grow or produce within Scotland and confirm the level of import that we believe is compatible with a sustainable global trade in bioenergy.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: We have published research which forecast the availability of domestic bioresources out until 2045. We will consider the impacts and interactions of increasing biomass production on existing agricultural land. We will publish a draft Bioenergy Policy Statement in advance of the next draft CCP. Following publication, we will establish an expert panel to review policy and suggest routes for developing the bioenergy sector.
Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: We will establish an expert panel to review policy and suggest routes for developing the bioenergy sector following publication of the draft Bioenergy Policy Statement.

Policy: By 2023, in time to inform the next CCP, we will publish a draft Bioenergy Action Plan, incorporating the learning developed by the expert working group and our understanding of the options to use Bioenergy in both NETs and other applications.
Date announced: CCPu 2020
Progress on implementation since time of last report / CCPu: See above – we will publish a draft Bioenergy Policy Statement for consultation in the coming months, prior to the next CCP. This draft Policy Statement was developed though a cross-sectoral approach. It has been driven forward by a Bioenergy Policy Working Group which brought together officials from across government. We will now be seeking views on the priority uses for bioenergy which have been identified by the working group, including the prioritisation of Bioenergy with Carbon Capture and Storage (BECCS), wherever that becomes feasible. We will also be seeking views on the potential to scale up domestic biomass supply by planting of perennial energy crops. Evidence provided through the consultation will be used to inform development of the final Bioenergy Policy Statement.

Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these: N/A
Timeframe and expected next steps: As above.