

CLIMATE CHANGE PLAN

Monitoring Reports

May 2021



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Introduction

This annual monitoring report is the first to report against the [Climate Change Plan](#) update (CCPu) as finalised in March 2021. It follows on from the two monitoring reports published on progress to the 2018 Climate Change Plan (please see [2018](#) and [2019](#)).

The Climate Change (Scotland) Act 2009 (as amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019), is the toughest, most ambitious legislative framework on climate change in the world. The 2019 Act increased the ambition of Scotland's already world-leading targets in response to the global climate emergency and UN Paris Agreement, now committing Scotland to a 75% reduction in greenhouse gas emissions by 2030, and to reaching net-zero by 2045.

The CCPu responds to these challenging targets, updating the 2018 Climate Change Plan to set an ambitious pathway to 2032 and including 100 new policies and proposals across all sectors, as well as the ambition of over 40 existing policies scaled up.

The CCPu sends a clear statement of intent, providing greater certainty for all parts of society to contribute further to mitigating climate change. However, at this stage, there remain significant uncertainties, including the pace of technological advances, the limits of the devolved settlement, and we also need to ensure a just transition. As a result, the CCPu commits to an iterative 'learning by doing' approach, and the annual monitoring reports are a key means of ensuring this.

The 2019 Act also placed the monitoring framework for the Climate Change Plan 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. This is the first set of monitoring reports on the Climate Change Plan to be published since the 2019 Act was commenced in March 2020, as well as the first to reflect the updated policy content of the CCPu which was agreed by Scottish Ministers in March 2021. Furthermore, in line with the commitments in the CCPu to include a greater level of monitoring detail, the reports also include an assessment of progress against each of the individual policies and proposals (Part C in each sector chapter).

Overview

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

The updated Monitoring Framework for the Climate Change Plan for each of the sectors 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.

Greenhouse Gas Emissions Statistics

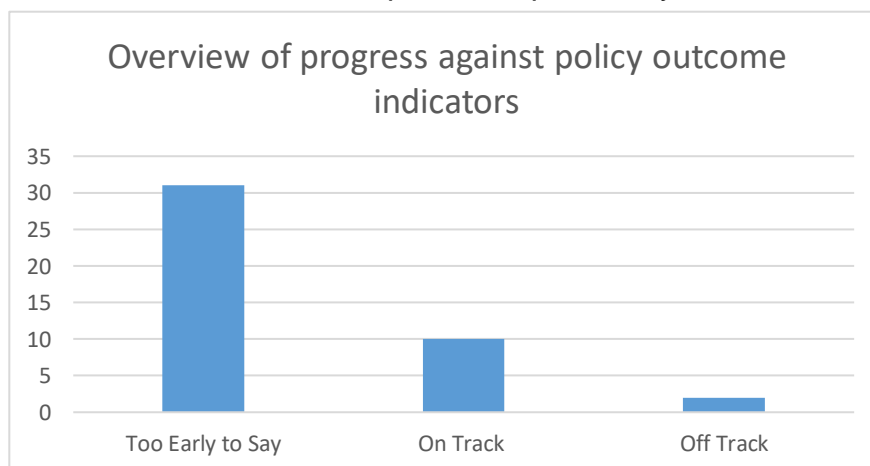
Official Statistics on Scottish greenhouse gas emissions determine progress towards national emissions reduction targets and also provide information on total annual emissions at a sectoral level. Statistics are published annually, typically in June, and two years in arrears. For example, the most recent figures, published in June 2020, cover emissions during 2018.

Policy Outcome Indicators

The Plan 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 will measure 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 Plan 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 Plan update, the set of outcome indicators from the 2018 Plan were reviewed to ensure that they reflect the updated policy commitments and to improve the quality and clarity of indicators. This has 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. The overall set of outcome indicators now includes 43 indicators, up from 29 previously used for the 2018 Plan. The following figure and table show the overview of progress against all policy outcome indicators across the sectors.

Summary graph 1



Summary Table 1: Progress against policy outcome indicators

	On Track	Off Track	Too Early to Say
Chapter 1: Electricity			
Electricity grid intensity (CO2e 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			
% heat in buildings from low greenhouse gas emissions sources			x
% of buildings using low greenhouse gas emission heating systems			x
Energy intensity of residential buildings (MWh per household)			x
Energy intensity of non-domestic buildings (GVA in the services sector per GWh)			x
% of homes with an EPC (EER, or equivalent) of at least C			x
% new homes built with a calculated space heating demand of not more than 20 kWh/m ² /yrT			x
% of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network			x
Percentage of households in fuel poverty			x
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 trains powered by alternative traction			x
Chapter 4: Industry			
Industrial energy productivity (£GVAm per GWh)			x
Industrial emissions intensity (tCO2e 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
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
Hectares of peatland restored per year			x
Area of woodland on agricultural land			x

Policy Tracker

The Plan update includes a set of specific policies and proposals for each sector to achieve the policy outcomes. The Framework will monitor progress towards implementing policies and developing proposals with a policy tracker, which will be set out for annual progress reporting, from May 2021. This will consistently record progress and next steps for policies, and where possible it will include implementation indicators for specific policies.

Chapter 1: Electricity

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan¹ for this sector was for 2.7 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of 2.2 MtCO₂e. On the basis of comparing these figures, the sector was within its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan 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 ₂ e 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 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

¹ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

policy outcomes and indicators. To do this, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress:

- Scotland's electricity system continues to evolve and is making the transition from a traditional centralised model, reliant on fossil fuels, to a decentralised model, with a more diverse electricity generation mix incorporating large volumes of renewable and other low carbon sources of electricity.
- Efforts to decarbonise the electricity sector will need to be stepped up in the face of Scotland's new Net Zero commitment, with sharp rise in capacity expected to be necessary in order to reach the target and to help drive decarbonisation across other sectors.
- Latest figures show Scotland has already reached the target of having an electricity grid intensity below 50 gCO₂ per kilowatt hour, with the 2018 figure showing a grid intensity of 44 gCO₂/kWh.
- Renewable electricity generation capacity in Scotland has more than trebled in the last ten years; as of September 2020, there was 11.9 GW of installed capacity across the country. Consequently, renewables' contribution towards the total volume of electricity generated has grown from 18.5% in 2008 to 61.1% in 2019.
- There is also currently an additional 14 GW of renewables capacity either under construction or at the planning stage, the majority of which is from wind generation. This indicates a strong pipeline, and a substantial level of capacity which could be added to the system in the future.

Developments in monitoring arrangements since CCPu / last report:

The CCPu retains the two policy outcomes from the previous monitoring report, and continues the outcome indicator *Electricity grid intensity (CO₂e per kilowatt hour)* from the previous monitoring report, while introducing the following new outcome indicators: *Installed capacity of renewable generation*, *Renewable capacity at planning stages* and *Loss of load expectation*.

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

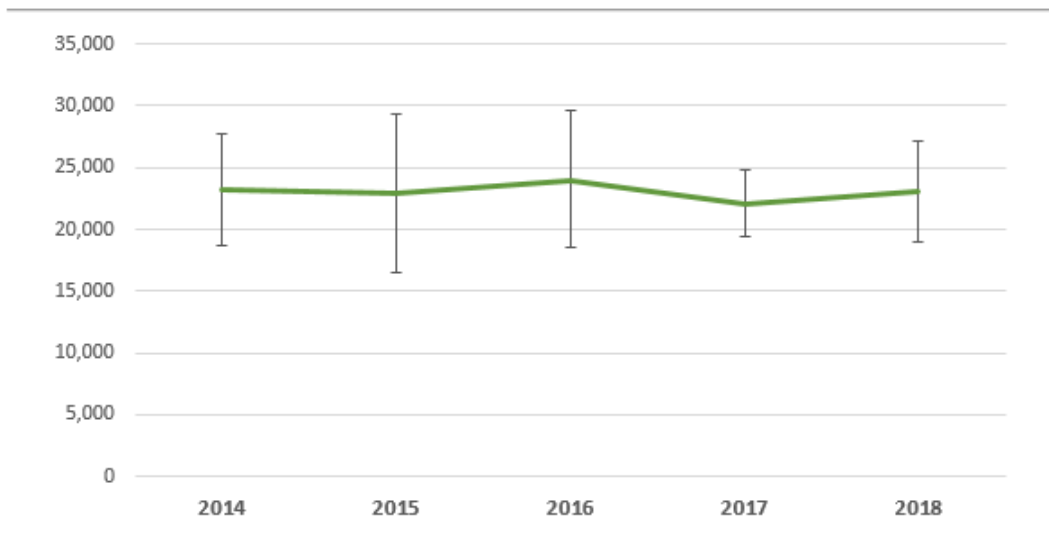
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say²

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Electricity graph 1

² Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Electricity grid intensity (CO ₂ e per kilowatt hour)	Maintain below 50g CO ₂ e per kilowatt hour

Most recent data: 2018

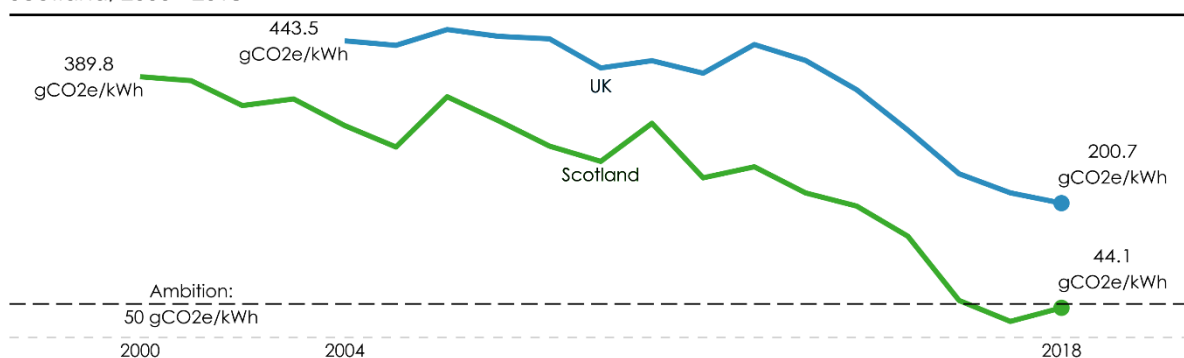
Data source(s): BEIS Energy Trends; Scottish Government Greenhouse Gas Emissions

Assessment: On track

Commentary:

- Electricity grid intensity in Scotland rose from 23.8 gCO₂/kWh in 2017 to 44.1 gCO₂/kWh in 2018 but remains below 50 gCO₂/kWh for a second year running.
- This rise was due to an increase in gas fired power generation, to compensate for long-term outages at one of Scotland’s two nuclear power stations.
- The overall downward trend from a carbon intensity of 320gCO₂e/kWh in 2010, is chiefly the result of the closure of Cogenzie and Longannet coal fired power stations in 2013 and 2016, as well as a reduced reliance on gas for power generation. This has significantly reduced the use of fossil fuels for electricity generation.
- Emissions from power generation are now concentrated in one large gas power plant, and a handful of smaller gas power stations across the country. This, combined with our expectation that the fleet of renewables will continue to grow, gives us confidence that grid intensity will be maintained at 50gCO₂/kWh or below.

Average greenhouse gas emissions per kilowatt hour of electricity
Scotland, 2000 - 2018



Source: BEIS, SG

Electricity graph 2

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

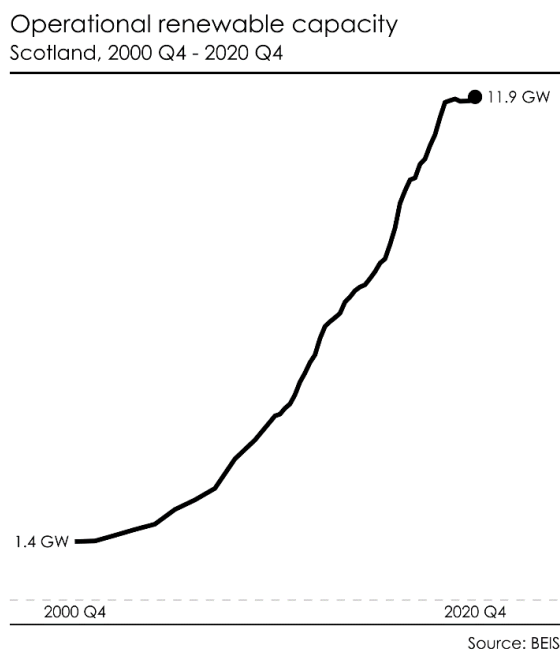
Most recent data: Quarter 4 2020

Data source(s): BEIS Energy Trends

Assessment: On Track

Commentary:

- Scotland had 11.9 GW of installed renewable electricity generation capacity operational in December 2020.
- The bulk of Scottish renewable generation capacity as of 2020 is still onshore wind, at 8.5 GW of operational capacity. Offshore wind has grown since 2017, increasing from 0.18 GW to approximately 0.9 GW in 2020.
- Total renewable capacity in Scotland has remained steady for the last two years, although it has grown by approximately 15% from the start of 2018, to most recent data in Q4 2020.
- Other renewable technologies have also grown in recent years, since the start of 2018, solar photovoltaic generation has increased 19% to 0.37GW, and bioenergy has grown 12% to 0.5GW.
- Half of the renewable capacity in Scotland comes from large installations of over 50 MW (6.2 GW in total), while 1.3 GW comes from small-scale installations of less than 5 MW. These projects provide an important contribution and could contribute to the development of smart, decentralised and local energy markets in Scotland.



Electricity graph 3

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

Most recent data: Quarter 4 2020

Data source(s): BEIS Renewable Energy Planning Database

Assessment: On track

Commentary:

- Total renewable capacity in the pipeline for Scotland has consistently fluctuated between 10 GW and 15 GW for the past decade. In Q4 2020, the total pipeline capacity for Scotland is on the higher end of this range, at 14.0 GW total, and 286 projects.
- Of this pipeline capacity: 2 GW is under construction, most of which is offshore wind farms off the Moray Firth; 7.7 GW is awaiting construction; and 4.3 GW is in planning stages of development.
- Of the current pipeline renewable capacity, the two largest technologies present are onshore and offshore wind, with pipeline capacity of 8.9GW and 4.2GW respectively. There are 187 onshore wind projects and 12 offshore wind projects in development in Scotland. Of this pipeline capacity for onshore wind, only 5% is currently under construction, whereas for offshore wind, 35% is currently under construction.
- The remaining pipeline capacity of approximately 0.9GW comprises other renewable technology projects, the largest portion of this is solar photovoltaics, and wave/tidal generation, both at approximately 0.35GW of pipeline capacity.
- Were all capacity in the pipeline to be delivered it would more than double the level currently deployed, and could generate an estimated 33.5 TWh of renewable electricity.

Pipeline renewable capacity by planning stage Scotland, December 2020



Source: BEIS

Electricity graph 4

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	Loss of Load Expectation (hours per year)	Maintain GB standard below 3 hours per year

Most recent data: October 2020

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 in 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 System Operator.
- Current projections from the National Grid Winter Outlook indicate that the LOLE expected in the grid system over 2020/21 is <0.1 hours/year in the base case.
- The LOLE is therefore projected to remain well below its target of 3 hours per year.
- Under high and low demand reference scenarios, the LOLE projection is still within targets, at 0.3 hours/year in the high demand scenario, and <0.1 hours/year in both the base case and low scenario.

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Support the development of a wide range of renewable technologies by addressing current and future challenges, including market and policy barriers.	Maintained	SG continues to maintain its focus on tackling barriers to development, such as aircraft and seismological radar issues, working in partnership with the industry and other stakeholders.	N/A	Ongoing
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.	Maintained	SG continues to engage with the relevant regulatory processes and to press for outcomes and reforms consistent with the development of Scotland's renewables resource and our Net Zero target.	N/A	Ongoing
Publish a revised and	Boosted	SG has announced its	N/A	Ongoing

updated Energy Strategy, reflecting our commitment to net zero and key decisions on the pathways to take us there.	[March 2020]	intention to update Scotland's Energy Strategy, with work due to commence later in 2021.		
Develop and publish a Hydrogen Policy Statement by the end of 2020, followed by a Hydrogen Action Plan during 2021.	Boosted [2020-2021 PfG]	HPS published in December 2020, with work on Hydrogen Action Plan now underway.	N/A	Publication of the Hydrogen policy Statement is completed. The development of the Hydrogen Action plan is ongoing
A new renewable, all energy consumption target of 50% by 2030, covering electricity, heat and transport.	Maintained	Total Scottish energy consumption powered by renewables was 24% in 2018. The latest statistics show that the growth in renewable generation capacity slowed over the last 2 years (2019-2021), however renewable generation levels remain strong. So although the rate of progress on this indicator may slow down, we anticipate an uptick when renewables pipeline capacity, particularly offshore wind, starts to commission in the early-mid 2020s	Progress made with this indicators to date shows that in 2018 Scotland was almost halfway towards meeting the 50% target.	N/A

<p>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.</p>	<p>New [CCPu 2020]</p>	<p>SG continues to support energy technology innovation. Since the publication of the Climate Change Plan update, our globally recognised Wave Energy Scotland programme has successfully secured Horizon 2020 funding to lead EuropeWave, a technology development programme for the wave energy sector in partnership with the Basque Energy Agency. We have also committed further three years of funding for our Energy Technology PhD studentship programme.</p>	<p>N/A</p>	<p>We will launch a call for evidence later this year inviting views on energy technology development opportunities.</p>
<p>Renewed focus on developing local energy projects and models, including through CARES, supporting the achievement of 1GW and 2GW of renewable energy being in Local Community ownership by 2020 and 2030.</p>	<p>Maintained</p>	<p>As of December 2020, an estimated 853 MW of community and locally owned renewable energy capacity was operational in Scotland. This represents 85.3% progress towards the 2020 target and 42.6% progress toward the 2030 target</p>	<p>Annual report on Community and locally owned energy in Scotland produced by EST through CARES Contract on SG behalf which monitors progress toward targets.</p>	<p>Ongoing</p>
<p>We will carry out detailed research, development and analysis during 2021</p>	<p>New [CCPu 2020]</p>	<p>This is underway.</p>	<p>N/A</p>	<p>N/A</p>

to improve our understanding of the potential to deliver negative emissions from the electricity sector.				
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.	New [CCPu 2020]	SG continues to work with stakeholders to identify where possible further improvements can be made to reduce determination timescales. The average time taken to determine an Electricity Act wind farm application has improved over the last two years from 51 months in 2018 to 26 months in 2020.	Ongoing	Ongoing
We will deliver the actions from our Offshore Wind Policy Statement, published in October. 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.	New [CCPu 2020]	The Scottish Offshore Wind Energy Council (SOWEC) has created 5 workstreams to take forward the actions identified in the OWPS	Ongoing	Ongoing
Accelerate our work with aviation, energy and	Boosted [CCPu 2020]	SG continues to work with the sector on these issues	Ongoing	Ongoing

other stakeholders to ensure that all radars are wind turbine tolerant/neutral during the coming decade.		through the Ministerially chaired Aviation 2030 Group.		
Review and publish an updated Electricity Generation Policy Statement ahead of the next Climate Change Plan.	New [CCPu 2020]	Work on this will take place in the context of the Energy Strategy update, with further details to follow.	Ongoing	Ongoing

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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	New [CCPu 2020]	We will continue to work with energy sector stakeholders and assess options for building on recent and successful innovation support in this area, as well as to identify and support wider policy changes in reserved areas	Ongoing	Ongoing

to support investments.		which could deliver these outcomes.		
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.	Maintained	We continue to engage with the UK Government as well as with the energy regulator, Ofgem, on these issues, and to press for reform which will unlock investments in Scotland.	Ongoing	Ongoing
Collaborate on actions to support investment in new pumped storage hydro capacity.	Maintained	We are engaging with Scottish developers, and pressing the UK Government to use its existing mechanisms and powers to unlock investment in pumped storage hydro.	Ongoing	Ongoing
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).	Maintained	We remain involved in discussions at a UK level around the implementation of this Plan and the benefits that it can deliver.	Ongoing	Ongoing
Encourage and support increased interconnection which can enhance Scottish system security	Maintained	We are in regular contact with transmission network owners and the system operator regarding the need	Ongoing	Ongoing

while considering effects on domestic capacity and investment.		for and benefits of increased interconnection to Scotland's renewables and climate change agenda.		
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.	New [CCPu 2020]	A great deal of activity is already taking place in this area, some of which has published or been set in motion since the Climate Change Plan update was published. We will consider and monitor these studies and their evidence before deciding on the additional value that any specific Scottish Government work might generate.	TBC	TBC
Develop a series of whole system energy scenarios to guide infrastructure investment decisions for Scotland.	New [CCPu 2020]	External research has been commissioned to support this policy	Completed research due end 2021.	N/A
Ensure that sustainable security of electricity supply is included as a priority within future Scottish Government energy innovation funding programmes.	New [CCPu 2020]	SG continues to support energy technology innovation and we have recently committed further funding for our Energy Technology Partnership PhD programme, where sustainable security of	N/A	N/A

		supply is a key focus. Later this year we will launch a call for evidence later this year inviting views on energy technology development opportunities.		
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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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Press the UK Government to further reform and maintain the CfD mechanism in a manner which better captures the economic benefits and total value added for the Scottish and UK supply chains.	New [CCPu 2020]	As part of the UK Government Consultation on the Contracts of Difference, the Minister for Energy, Connectivity and the Islands submitted the Scottish Government's response on 6 th February 2021	N/A	UKG was due to publish their consultation response by end of March 2021, however this has not yet materialised. With implementation Q3/Q4 2021
Introduce new requirements for developers to include	New [CCPu 2020]	This was reviewed as part of the recent ScotWind pause with the outcome	N/A	Supply Chain Development Statements will be

<p>supply chain commitments when applying to the ScotWind leasing process run by Crown Estate Scotland.</p>		<p>announced on 24 March 2021.</p>		<p>required as part of applications to the current ScotWind leasing round.</p> <p>Financial penalties (on a sliding scale) will be issued to applicants who fail to meet up to but not including 80% of their Supply Chain Development Statement commitments.</p> <p>Applicants who fail to meet 80% (and over) of their commitments can have their option agreement withdrawn.</p>
<p>Identify and support major infrastructure improvements to ensure that Scotland's supply chain companies and facilities can benefit from the continued growth of renewable energy.</p>	<p>New [CCPu 2020]</p>	<p>(1) The CES Arup report published in October 2020 identified what improvements were required. (2) Chaired by Prof Sir Jim McDonald SOWEC have commissioned a report into the Scottish supply chain to identify availability, gaps and improvements</p>	<p>N/A</p>	<p>(1) A working group has been established work through the actions identified. (2) Due to report April 2021</p>

Chapter 2: Buildings

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan³ for this sector was for 9.0 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of 9.4 MtCO₂e. On the basis of comparing these figures, the sector was outside its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan sets out the following four 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
% heat in buildings from low greenhouse gas emissions sources			x
% of buildings using low greenhouse gas emission heating systems			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 (MWh per household)			x
Energy intensity of non-domestic buildings (GVA in the services sector per GWh)			x
% of homes with an EPC (EER, or equivalent) of at least C			x
% new homes built with a calculated space heating demand of not more than 20 kWh/m ² /yrT			x

Our gas network supplies an increasing proportion of green gas (hydrogen and biomethane) and is made ready for a fully decarbonised gas future.	On Track	Off Track	Too Early to Say
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³ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

% of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network			x
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The heat transition is fair, leaving no-one behind and stimulates employment opportunities as part of the green recovery			
Percentage of households in fuel poverty			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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

Heat in buildings currently accounts for approximately 20% of Scotland's greenhouse gas emissions. Emissions from heating buildings across Scotland must reach zero by 2045 with heat demand in buildings significantly reduced and poor energy efficiency removed as a driver of fuel poverty.

Our draft Heat in Buildings Strategy was published in February 2021 and sets out the near-term actions and vision for transforming our buildings and the systems that supply their heat, ensuring all buildings reach zero emissions by 2045. The consultation on the draft Heat in Buildings Strategy seeks views on a new heat target, which will be confirmed in the final Strategy.

As detailed in the following section, the CCPu introduced five new indicators to track progress in the Buildings sector, whilst three indicators were carried over from the previous Plan which have seen some progress since the 2019 monitoring report. Specifically, from 2015 to 2018, energy intensity fell by just 1.3%, despite a 0.6% increase in domestic energy consumption. No update is available at this stage on the energy intensity of non-domestic buildings for 2018 as data is still being compiled. Last but not least, 45% of Scottish homes were rated as EPC band C or better under SAP 2012 (RdSAP v 9.93) in 2019 similar to 2018.

Developments in monitoring arrangements since CCPu / last report

Following our commitment to net zero by 2045, in the update to the Climate Change Plan we presented four revised policy outcomes. Five new indicators have been introduced to reflect the changes to the outcomes, alongside three indicators brought forward from our previous monitoring report. The monitoring framework for the sector now aims to capture and track:

1. The percentage of heat in buildings from low greenhouse gas emissions sources.
2. The percentage of buildings using low greenhouse gas emission heating systems.
3. The energy intensity of residential buildings (carried over from previous monitoring report).
4. The energy intensity of non-domestic buildings (carried over from previous monitoring report).
5. The percentage of homes with an EPC (EER, or equivalent) of at least C (carried over from previous monitoring report).
6. The proportion of new homes built with a calculated space heating demand of not more than 20 kWh/m²/yr.
7. The proportion of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network.
8. The percentage of households in fuel poverty.

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

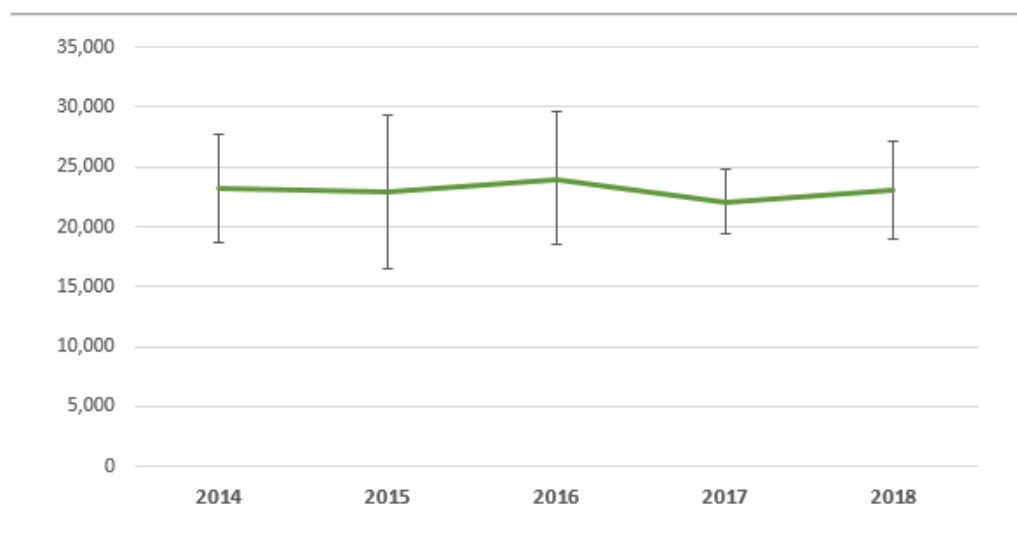
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say⁴

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Buildings graph 1

⁴ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	% heat in buildings from low greenhouse gas emissions sources	Progress to target [TBC in 2021]

Most recent data:

Data source(s): Data is under development

Assessment: Too early to say⁵

Commentary: Discussions with contractors are ongoing to take forward work and develop data that can be used to monitor this in future.

⁵ The evidence and data doesn't exist or is yet to be developed

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	% of buildings using low greenhouse gas emission heating systems	Year-to-year change

Most recent data:

Data source(s): Data feeding into this will come from:

- Ordnance Survey;
- Scottish EPC register;
- Scottish assessors (non-domestic register);
- BEIS (meter point data);
- Xoserve (off gas grid data);
- Scottish Gas Network (meter point connection);
- Home analytics; and
- Geomni UK buildings model.

Assessment: Too early to say⁶

Commentary: Data is still being compiled by EST and is not yet ready for further distribution.

⁶ Evidence and data doesn't exist or is yet to be developed

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	Energy intensity of residential buildings (MWh per household)	Progress to target [to fall by at least 30% by 2032] ⁷

Most recent data: 2018

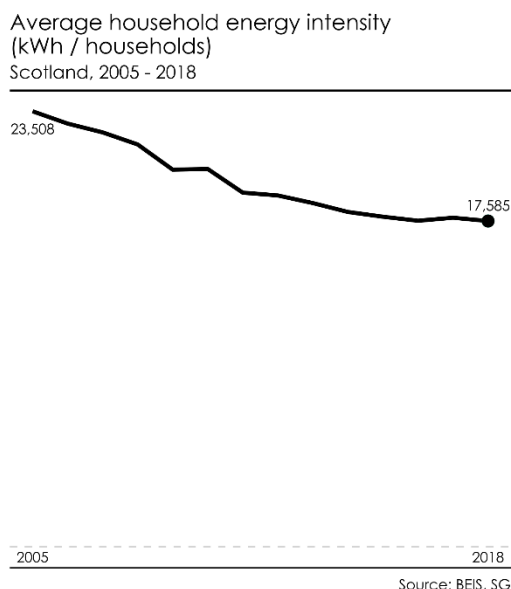
Data source(s): [Scottish Statistics Energy Hub](#)

Assessment: Too early to say⁸

Commentary: The Climate Change Plan update sets ambitions in the residential sector for energy and emissions intensities to fall by 30% from 2015 levels. Energy intensity is the average energy use per household in Scotland. Emissions intensity is average emissions per household.

From 2005, energy intensity fell by 25.2% to 17.6 MWh in 2018, and this is due to a 18.5% decrease in energy consumption in part due to improved energy efficiency measures, while the number of households increased by 8.9%. From 2015 to 2018, energy intensity fell by just 1.3%, despite a 0.6% increase in domestic energy consumption.

Between 2015 and 2018 emissions intensity in the residential sector increased by just 0.1% to 2.52 tons of carbon dioxide per household a year. This stems from a 2.0% increase in domestic emissions and a 1.9% increase in the number of households.



Buildings graph 2

⁷ From the 2015 baseline

⁸ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	Energy intensity of non-domestic buildings (GVA in the services sector per GWh)	Year-to-year change

Most recent data:

Data source(s): Data feeding into this will come from:

- Ordnance Survey;
- Scottish EPC register;
- Scottish assessors (non-domestic register);
- BEIS (meter point data);
- Xoserve (off gas grid data);
- Scottish Gas Network (meter point connection);
- Home analytics; and
- Geomni UK buildings model.

Assessment: Too early to say⁹

Commentary: Data is still being compiled by EST and is not yet ready for further distribution.

⁹ Evidence and data doesn't exist or is yet to be developed

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	% of homes with an EPC (EER, or equivalent) of at least C	Progress to 2035 target [all homes to have EPC C or higher where technically feasible and cost effective]

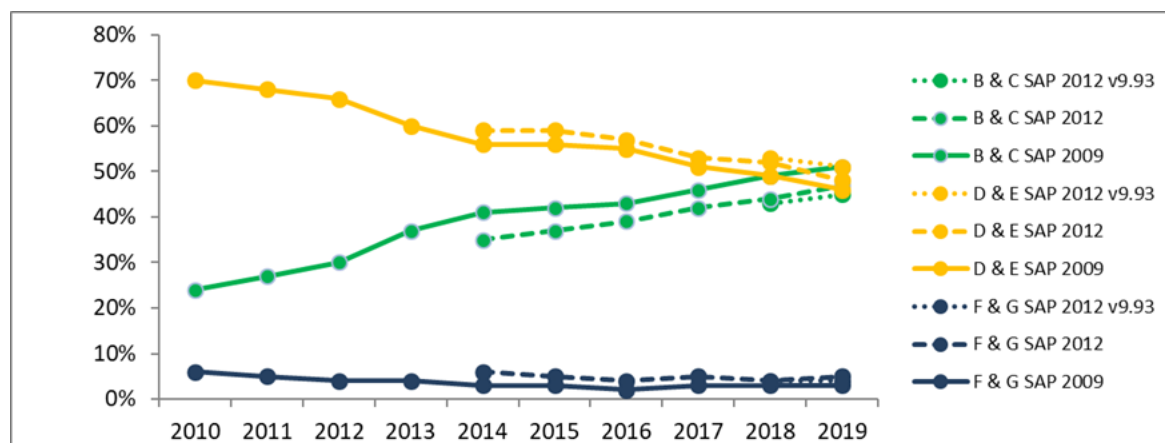
Most recent data: 45% of Scottish homes rated as EPC band C or better under SAP 2012 (RdSAP v 9.93) in 2019 similar to 2018.

Data source(s): Scottish House Condition Survey (SHCS) 2019. Energy efficiency ratings are calculated under different versions of Standard Assessment Procedure (SAP), the SAP 2009 methodology and the most recent SAP 2012 methodology applying two different versions of RdSAP. Using SAP 2009 enables us to examine the longer term trend in the energy efficiency of the housing stock since 2010. SAP 2012 (RdSAP v9.93) was first used in reporting data from the SHCS in the 2018 Key Findings Report and therefore only 2 years of data are available. For this reason SAP 2012 (RdSAP v9.92) is also included with data from 2014.

Assessment: Too early to say¹⁰

Commentary:

Grouped EPC Bands under SAP 2009, SAP 2012 (RdSAP v9.92) and SAP 2012 (RdSAP v 9.93), 2010 to 2019



Buildings graph 3

The figure shows a strong trend of improvement in the energy efficiency profile of the housing stock since 2010. The proportion of dwellings rated C or better increased from 24% in 2010 to 51% in 2019 (SAP 2009), and 35% in 2014 to 47% in 2019 (SAP 2012, RdSAP v 9.92).

An improvement in the energy efficiency profile of the domestic building stock will contribute to reducing energy intensity and emissions intensity in the residential sector.

¹⁰ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	% new homes built with a calculated space heating demand of not more than 20 kWh/m ² /yrT	Year-to-year change

Most recent data: Analysis of newbuild homes completions for 2019

Data source(s): EPC data for Q1 to Q4 2019 lodged to the Scottish Energy Performance Certificate Register (23,638 records)

Assessment: Too early to say¹¹

Commentary: Without applying any moderation to remove potentially erroneous values, 1,513 records reported heat demand of 20 kWh/m²/year or less. This is 6.4% of completions for 2019.

Adjusting the stock to account for any potentially erroneous values: Removing the 0.5% of the stock with both the lowest and highest space heating demand /m²/year in effect removes all but one of the records with a space heating demand m²/year <10kWh, and removes all records with a SH demand m²/year >120 kWh. This leaves 1,394 records (5.96%) of the stock with space heating demand m²/year < 20 kWh / m².

The reported percentage is for the latest full year analysis available at this time (February 2021) and is the first value reported since setting the indicator. No trend can therefore be reported. Future monitoring should use 6% as the baseline when analysing the trend in the share of properties built with space heating demand < 20 kWh /m²/year.

¹¹ Evidence and data are so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
3	% of Scottish gas demand accounted for by biomethane and hydrogen blended into the gas network	Year-to-year change

Most recent data: 2019

Data source(s): Scottish Gas Network (unpublished data) and BEIS (Regional and local authority gas consumption statistics)

Assessment: Too early to say¹²

Commentary: In 2019, 1.5% of gas demand was accounted for by biomethane gas. This is an increase of 1.2 percentage points compared to 2015.

UK wide legislation currently prevents the injection of hydrogen gas into the system. This is to be looked at in Westminster when the parliamentary time table allows.

¹² Evidence and data are so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
4	Percentage of households in fuel poverty	Progress to 2040 target [no more than 5%] interim 2030 [no more than 15%] 2035 [no more than 10%] targets ¹³

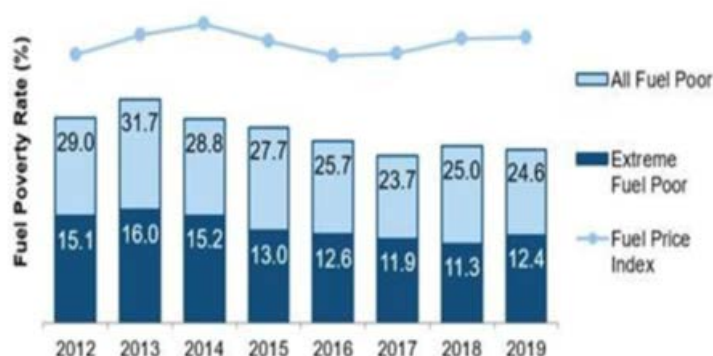
Most recent data: 24.6% of households were estimated to be living in fuel poverty in 2019.

Data source(s): Scottish House Condition Survey 2019

Assessment: Too early to say¹⁴

Commentary:

Estimates of Fuel Poverty and Extreme Fuel Poverty since 2012



Note: Energy requirement underpinning fuel poverty estimate modelled on the following basis: 2012-2013: BREDEM|2012 v 1.0: from 2024 onwards: BREDEM 2012 v 1.1 and New Prices to the adjustment of fuel price sources from 2013. From 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households. From 2019 further improvements are included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses and assigning an off-peak tariff to relevant household's lights and appliances fuel prices.

Buildings graph 4

In 2019, an estimated 24.6% of all households were in fuel poverty, similar to 2018 but lower than that recorded in the survey between 2012 and 2015. Since 2016 the rate of fuel poverty has remained between 23% and 26%.

Around 12.4% were living in extreme fuel poverty, similar to 2018 but a decrease from 16% in 2013. Since 2015, the rate of extreme fuel poverty has remained between 11% and 13%.

¹³ As set out in the Fuel Poverty Act with consideration of associated indicators on extreme fuel poverty and the fuel poverty gap.

¹⁴ Evidence and data are so far inconclusive

In 2019, the median fuel poverty gap (adjusted for 2015 prices) for fuel poor households was £700. This is higher than the median fuel poverty gap (adjusted for 2015 prices) in 2018 (£610) but similar to the median gap in 2012 to 2017.

The Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 received Royal Assent in July 2019 and it is therefore too early to say whether progress towards its targets are on track. The Fuel Poverty Strategy required by the Act will be published later in 2021, and will set out how the targets will be achieved.

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Energy Company Obligation (ECO) requires obligated energy supply companies to deliver energy efficiency measures in homes – mainly insulation-based measures and boiler replacements.	Maintained	<p>ECO provides finance for energy efficiency improvements benefitting fuel poor households but offers limited funding for zero carbon heating measures.</p> <p>The Secretary of State (BEIS) retains an absolute veto over how these schemes are designed, operate and are financed through the energy levies in Scotland. Scottish Ministers have expressed</p>	Since 2013, approximately 13.3% of all households receiving ECO measures have been delivered in Scotland (to around 12% of all households in Scotland).	The current ECO scheme is set to conclude in March 2022. Scottish Ministers are seeking the agreement of the UK Government to replace the existing ECO and Warm Home Discount schemes with a single, flexible Fuel Poverty scheme in Scotland.

		their view that this is not an acceptable basis upon which to set regulations for a Scottish scheme.		
<p>Energy Efficient Scotland Delivery Schemes:</p> <ul style="list-style-type: none"> • Area Based Schemes and Warmer Homes Scotland. • Home Energy Scotland Advice Service and Loans. • Home Energy Scotland cashback scheme for zero emissions heating technologies and energy efficiency measures - boosted. • SME Advice Service and Loans. • SME cashback scheme for zero emissions heating technologies and energy efficiency measures - boosted. 	Boosted [2020-2021 PfG]	<p>Area Based Schemes now provide increased funding for whole house retrofits, zero/ low carbon heating and microgeneration.</p> <p>Through Warmer Homes Scotland (WHS) we have made available renewable and micro generation heat measures and new insulation measures. Grant funding has also been increased to incentivise uptake on more expensive low carbon & renewable measures.</p>	<p>ABS has delivered over 100,000 energy efficiency improvements since 2013.</p> <p>WHS has been operating since Sept 2015 helping more than 20,000 households throughout Scotland.</p>	<p>Scottish Ministers have expressed their intention to provide multi-year resource assumptions for ABS. Guidance for 21-22 schemes is being drafted and officials hope that this will be incorporated for ABS 10 (22-23) onwards.</p>
Review support programmes: We will review existing Scottish Government funding schemes to ensure that	Boosted [2020-2021 PfG]	Work on this is underway. Provision to the SME sector has been expanded		

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.				
Procure a new national delivery scheme, to replace the existing Warmer Homes Scotland contract, to open in 2022.	Boosted [CCPu 2020]	Work on this is underway. No further update is available at the moment.		
Energy Efficiency Standard for Social Housing: will be met by social landlords by 2020.	Maintained	We expect that Covid-19 will affect some further projects that landlords planned to carry out to meet the first milestone during 2020	The SHR reported that 87% of social rented homes were already meeting the 2020 milestone as of the end of March 2020, landlords will provide their final report on performance against EESSH1 in 2021.	Completed
2024 New Build Zero Emissions from Heat Standard: requiring new buildings to have zero emissions heating systems.	Boosted [2020-2021 PfG + CCPu]	We have created an external, independently co-chaired working group to support development of Standard.	We committed to consulting on the Standard in 2020. This was achieved.	Next steps: Consultation analysis. Drafting and launch of technical consultation in 2021.

		<p>We have created a non-domestic sub-group to support main working group.</p> <p>We have commissioned 3 research projects to consider cost implications, network issues and other key challenges associated with the introduction of zero emissions heating.</p> <p>In December 2020, we launched our initial Scoping Consultation. This sets out the Scottish Government's high-level vision for Standard and is underpinned by a number of key outcomes. The consultation closed 3 March 2021.</p>		Drafting of regulations (timeframe TBC).
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,	Maintained	Research to inform review of current standards, last updated in 2015, was completed in 2020. An industry working group was convened in December 2020 and is currently supporting the review process. It is intended to publish a consultation on proposals for	Yes. Related indicator within CCPu – “% new homes built with a calculated space heating demand of not more than 20 kWh/m ² /yrT”. Initial report contribution provided in February 2021. Intent is that this	Intent to consult in April/May 2021 and make regulations in late 2021

including our decarbonisation of heat agenda.		improved energy standards in April/May 2021 and to introduce legislation and supporting guidance in late 2021.	percentage can be updated annually from energy performance certificate data from new home completions to illustrate the change delivered by periodic review of standards.	
Heat in Buildings regulation: Put in place regulation to increase uptake of zero emissions heating systems and improve energy efficiency standards across all tenures, prioritising the raising of standards for households living in fuel poverty. Re-introduce revised regulations to the Scottish Parliament requiring mandatory minimum energy efficiency standards for the Private Rented Sector, to come into force from 2022.	Boosted [2020-2021 PfG]	Commitment in the draft Heat in Buildings Strategy to introduce regulations to achieve this, including a clear timeframe for consulting on and laying of regulations, and backstop dates for compliance. Requirement to take account of those in, or at risk of being in fuel poverty included as part of the vision for the strategy, and this will underpin the drafting of all regulations. Regulations to set minimum standards for the Private Rented Sector have been paused as a direct result of Covid-19. However the commitment to introduce this as soon as practical remains.	Milestones have been set in the draft Heat in Buildings Strategy regarding dates to consult and lay regulations. Backstop dates for compliance have also been set. First dates have only just been introduced through the publication of the Heat in Buildings Strategy in February 2021.	Next steps: PRS regs – to reintroduce to Parliament as soon as practical (not in this Parliament) Owner Occupier regs – to consult in 2021/22 New build heat standards – consultation currently live
Low Carbon Infrastructure Transition Programme (LCITP) -	Boosted [2020-2021 PfG]	The LCITP continues to provide support investment in decarbonisation of business	No	Applications for support closed 26 February 2021, with

<p>supports investment in decarbonisation of business and the public sector.</p>		<p>and the public sector. Launched in September 2020 the Green Recovery: Low Carbon Energy Project Capital Funding Invitation targeted £50 million of support for project that demonstrate innovative low carbon heat solutions for buildings.</p>		<p>funding awards being issued in Q2.</p>
<p>Expanded £1.6bn 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.</p>	<p>Boosted [2020-2021 PfG]</p>	<p>A call for evidence has been launched to seek input on actions to modify and enhance the range of support mechanism currently provided through the LCITP for development and delivery of large-scale low and zero carbon heat in buildings projects. This call will help us shape and deliver a future funding programme to help deliver capital projects.</p>		<p>Call for evidence closed at the end of April. We will continue to engage with stakeholders and the new fund will be launched towards the end of 2021.</p>
<p>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</p>	<p>Maintained</p>	<p>In 2020, the Scottish Government launched the 2nd generation Non-Domestic Energy Efficiency (NDEE) frameworks consisting of the NDEE over £1 Million Projects framework, NDEE sub £1 Million Projects framework</p>		<p>Frameworks and project support unit will operate until 2023</p>

<p>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.</p>		<p>and NDEE Project Support Unit framework. These frameworks will continue to support public and third sector bodies in Scotland accelerate energy efficiency retrofit projects across their estates. The NDEE Frameworks are innovative in the way that they cover multiple and diverse energy efficiency and renewable energy solutions.</p>		
<p>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</p>	<p>Boosted [August 2020]</p>	<p>1,054.7 MW of accredited capacity under the non-domestic RHI between November 2011 and December 2020.</p> <p>1,096 GWh of heat had been paid for between April 2014 and end May 2020 under the domestic RHI scheme in Scotland.</p>	<p>Scotland consistently attracts more than its pro-rata share under the NDRHI, with around 19% of non-domestic accredited installations being in Scotland.</p>	<p>The NDRHI closed as scheduled on 31 March 2021, though qualified extensions for both Tariff Guarantee and non-Tariff Guarantee applications were implemented prior to its closure.</p> <p>The DRHI has been extended by one year and is currently scheduled to close on 31 March 2022, and is due to be followed by the Clean Heat Grant. The BEIS consultation on the closure of the</p>

				scheme, 'The Domestic Renewable Heat Incentive – ensuring a stable scheme', closed on 7 May 2021.
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.	New [UK Government announcement]	This is a new scheme scheduled to start in Autumn 2021.		
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 up-front grants.	New [UK Government announcement]	This is a new scheme scheduled to start in April 2022, following the closure of the DRHI.		
Support for Heat Networks: the District Heating Loan Fund helps address the financial and technical barriers to district heating projects by offering low interest loans..	Maintained	The District Heating Loan Fund continues to offer low interest loans to help overcome the financial barriers to the delivery of low carbon infrastructure projects.	No	DHLF expected to continue to offer funding throughout financial year 21/22.
Implement the provisions of the Heat Networks (Scotland) Bill to create a	Boosted [2020-2021 PfG]	Bill passed unanimously by Scottish Parliament on 23 February 2021.	Bill subject to two statutory deadlines:	Commitment on record to have first consultation on

strong regulatory framework to support delivery by 2023.			1 April 2022: Publication of Heat Networks Delivery Plan 1 October 2023: Laying of SSI to set 2035 target for heat network supply.	regulations in late-2021. Commitment on record to deliver necessary regulations by end-2023.
Continue to support the Heat Network Partnership - a collaboration of agencies focused on the promotion and support of district heating schemes in Scotland.	Maintained	The draft Heat in Buildings Strategy proposes repurposing the Heat Network Partnership in 2021 with a refreshed membership and remit focussed on enhanced heat network project pipeline development and subsequent delivery.	Consultation closed 30 April 2021 with analysis of responses thereafter	Refresh of HNP will take place in summer 2021 with launch of new Partnership in September 2021
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.	Boosted [2020-2021 PfG + CCPu]	The Standard has been finalised and approved by Scottish Ministers, and is being rolled out across a series of pathfinder projects. A steering group of public sector bodies is actively embedding the standard across new projects		Pathfinder projects and further specific guidance are under development and will be completed in 2021
Local Heat and Energy Efficiency Strategies (LHEES) will be in place by the end of 2023, setting out preferred heat	Boosted [2020-2021 PfG + CCPu]	In parallel with a pilot programme (detailed below) we have developed a draft LHEES methodology with our	All 32 Scottish local authorities have participated in, and completed a pilot programme for	We have committed to having LHEES in place across all local authorities by the end of 2023. The next

<p>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.</p>		<p>delivery partner Zero Waste Scotland.</p> <p>A peer review of this methodology has also been procured and completed.</p> <p>Research has been undertaken to understand challenges arising from data access and management for LHEES and to recommend solutions.</p> <p>We have engaged regularly with COSLA to discuss the roles and responsibilities, resourcing and governance relating to the production of LHEES and to determine the need for a statutory duty. This engagement is ongoing.</p>	<p>LHEES, testing different approaches and building capacity. Learning from the pilots has fed into a draft methodology for LHEES, which will set out a consistent approach for the production of LHEES.</p>	<p>steps are to use and test the draft methodology to carry out the baseline analysis needed for LHEES at a national level. Alongside this we will consult with relevant stakeholders and engage with local authorities to implement LHEES. We will also continue to engage COSLA regarding a statutory duty on local authorities to produce LHEES.</p>
<p>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</p>	<p>Maintained</p>	<p>Work to review the existing 2016 Regulations was paused in 2020 due to the Covid pandemic.</p> <p>This will recommence later in 2021 with a view to developing proposals for consultation.</p>	<p>The long term milestones for delivery are set in the Heat in Building Strategy – i.e. convert 0.5m buildings to ZE heat by 2030, and all by 2045.</p> <p>The Heat in Buildings Strategy commits to introducing regulations</p>	<p>Consultation on proposals to increase ambition of existing 2016 Regulations during 2021-22.</p>

<p>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.</p>			<p>to achieve this by 2025.</p> <p>Delivery milestones (i.e. rollout/ progress) haven't been developed yet.</p>	
<p>Support for community low and zero emissions heat projects through CARES.</p>	<p>Boosted [2020]</p>	<p>Ongoing - heat decarbonisation is a key focus of the next CARES contract due to commence 1 April 2021, with tailored packages of support available to eligible applicants. Support will also be provided to eligible groups and organisations to encourage participation and take up of funding available under the Heat Transition Deal.</p>	<p>Strategic policy direction will be provided to the contract delivery body through the SG Contract Manager in consultation with Heat Policy colleagues, to ensure CARES is aligned with SG heat decarbonisation objectives, with feedback on progress monitored through regular engagement and reporting commitments.</p>	<p>Duration of next CARES contract April 2021 – March 2025 and beyond. Learning obtained from projects supported.</p>
<p>Salix financing facility to</p>	<p>Maintained</p>	<p>Salix Finance continues to</p>	<p>£45 million in energy</p>	<p>Ongoing</p>

support investment in non-domestic buildings retrofit.		deliver the Public Sector Energy Efficiency Loan Scheme on behalf of Scottish Government.	efficiency projects in Scotland to date, which is forecasted to save the public sector more than £129 million over the lifetime of the projects.	
Work with social landlords to bring forward the review of the existing Energy Efficiency Standard for Social Housing (ESSH2) with a view to strengthening and realigning the standard with net-zero requirements.	Boosted [CCPu 2020]	Initial discussion with sector representatives on bringing forward review of ESSH2 from 2025 to 2023	ESSH2 sets a performance target for energy efficiency in social housing by 2032	Review in 2023
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.	Boosted [CCPu 2020]	Work is underway to develop an area-by-area understanding of the options for buildings currently using gas. A pathways project being managed in partnership with SGN, the ENA and NGG will support a more detailed understanding of the potential for green gas. The LHEES process will provide a platform for bringing together stakeholder insight, analysis and business planning on the longer-term right solutions.	No	Ongoing

<p>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.</p>	<p>Boosted [CCPu 2020]</p>	<p>Commitment in the draft Heat in Buildings Strategy to reform the EPC assessment, including consultation in summer 21 on this, with focus on zero emissions and active change brought through recommended measures, and away from cost based metric.</p>	<p>Milestone to consult in summer 2021. Work ongoing to achieve this goal</p>	<p>Consultation to launch in June 2021</p>
<p>Work with stakeholders to further understand and support the application and use of low and zero emissions heating within designated historic environment assets and hard to treat buildings.</p>	<p>New [CCPu 2020]</p>	<p>The <i>Heat in buildings strategy - achieving net zero emissions: consultation</i> published February 2021 contains a commitment to work with stakeholders, including Historic Environment Scotland (HES), to develop more solutions to transition Scotland's historic buildings to zero emissions heating while respecting and preserving the special characteristics of our buildings and places, and where needed continue to build our evidence base and the guidance available for the heat transition in these buildings and areas, including in our approach to regulation. The strategy also commits to</p>	<p>N/A</p>	<p>A Heat in Heritage Buildings report is forthcoming which will provide a starting point for understanding the evidence base in relation to heat transition for historic and heritage buildings.</p>

		working with HES to consider what specific provisions or exemptions may be needed within regulations to take account of buildings which are designated as listed or in conservation areas, in meeting requirements for decarbonisation of their heat supply and reducing their demand for heat.		
Develop and introduce future regulation for non-domestic buildings and launch a consultation on these proposals.	Boosted [CCPu 2020]	<p>Work to review the existing 2016 Regulations was paused in 2020 due to the Covid pandemic.</p> <p>This will recommence later in 2021 with a view to developing proposals for consultation.</p>	<p>The long term milestones for delivery are set in the Heat in Building Strategy – i.e. covert 0.5m buildings to ZE heat by 2030, and all by 2045.</p> <p>The Heat in Buildings Strategy commits to introducing regulations to achieve this by 2025.</p> <p>Delivery milestones (i.e. rollout/progress) haven't been developed yet.</p>	Consultation on proposals to increase ambition of existing 2016 Regulations during 2021-22.
Undertake work to identify the capacity and output of renewable	New [CCPu 2020]	Scottish Government will undertake more detailed analysis and modelling of the	N/A	During 2021

<p>electricity generation required in Scotland to support the projected roll-out of heat pumps.</p>		<p>Scottish electricity system for the duration of the Climate Change Plan during 2021. This will include specific studies to identify how new electricity demand, particularly for heat, impacts on the necessary capacity of Scottish renewable electricity generation as well as the need for large scale transmission networks across Scotland and interconnection with the rest of the UK and our European neighbours. This work will also consider the impact of the electrification of transport.</p>		
<p>Consider whether to extend Permitted Development Rights for zero-emission heat networks and micro-renewable technologies.</p>	<p>New [CCPu 2020]</p>	<p>We are carrying out a multi-phase review of permitted development rights (PDR) in Scotland. COVID-19 has affected the timetable. Heat networks PDR are now in phase 4.</p>	<p>Work is in part dependent on progress with the wider legislative framework on heat networks. The Heat Networks (Scotland) Bill is at Stage 3 in Parliament.</p>	<p>Work on phase 4 PDR due to start Autumn 2021.</p> <p>Heat network policy leads to advise on circumstances in which they would like to see PDR apply.</p>
<p>Undertake work to better understand the impact on electricity networks of projected heat pump deployment. Work with</p>	<p>New [CCPu 2020]</p>	<p>Through the heat in building strategy we have committed to forming a heat electrification partnership with Scottish and Southern</p>	<p>No</p>	<p>We will undertake research on generation and network requirements in terms of the scale and</p>

<p>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.</p>		<p>Electricity Networks and SP Energy Networks, Scotland's two Distribution Network Operators. We have been working with both companies over the past year to support development of their Distribution Future Energy Scenarios, an important input to their next Business Plans. We are working to ensure the Methodology for our Local Heat and Energy Efficiency Strategies links clearly to the DNOs, ensuring a two way flow of information at the appropriate stage between local authorities and DNOs.</p>		<p>location of the demand in an electrification of heat scenario (in 2021)</p> <p>We will undertake research on potential network investment costs of the heat transition for Scotland (ranges of costs and impacts on consumer) in 2021.</p>
<p>Support heat networks through: Introducing a Non-Domestic Rates Relief for renewable and low carbon heat networks until 2023/24. Working to identify how new buildings in Heat Network Zones could be made ready to connect to heat networks. Including district heating within the Permitted Development Rights review. Through</p>	<p>New [CCPu 2020]</p>	<p>Regulations laid and being considered by Scottish Parliament on 24 February, ahead of taking effect on 1 April 2021.</p> <p>Proposal included in consultation on New Build Heat Standard published in December 2020.</p>	<p>Expect uptake of relief of c. £37k p.a.</p>	<p>Regs will run until 31 March 2024.</p> <p>Anticipate that there will be a review of the relief and next steps nearer end date.</p> <p>New build heat standard expected to be in place by 2024.</p>

National Planning Framework 4, ensuring that local development plans take account of where a Heat Network Zone has been identified.				
Explore how local tax powers could be used to incentivise or encourage the retrofit of buildings, and commission further analysis to identify potential options.	New [CCPu 2020]	We recently consulted on our draft Heat in Buildings Strategy. Responses are being analysed.		Next steps will be set out in due course.
Design future delivery programmes to ensure significantly accelerated retrofit of buildings, with new programmes to be in place from 2025.	New [CCPu 2020]	We recently consulted on our draft Heat in Buildings Strategy. Responses are being analysed.		Next steps will be set out in due course..

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps

Hydrogen for heat demonstrator – providing £6.9m support for SGN’s H100 hydrogen for domestic heat demonstrator.	Boosted [2020-2021 PfG]	Complete – funding provided and the project is up and running		
Work with UK Government on product standards, with a view to making new gas boilers hydrogen-ready.	New [CCPu 2020]	Underway, pending UKG consultation on product standards. Scottish Ministers have written to BEIS Ministers setting out our support for the development of hydrogen-ready boilers into the market		

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Develop a long-term public engagement strategy in 2021 and begin implementation of early actions.	New [CCPu 2020]	Further development of the policy narrative in the draft Heat in Buildings Strategy (published Feb 2021)	Not as yet	Scoping work for strategy to commence in April 2021
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.	Maintained	<p>The smart meter programme is owned and led by the UK Government who have responsibility for the policy, regulatory and commercial framework.</p> <p>The Scottish Government is working to deliver a Smart Meter Advice Project (SMAP) through Home Energy Scotland (HES), to enable customers to make the most of the energy use</p>	As of August 2020 there were very nearly one million homes across Scotland with a smart meter installed and operating. This means that nearly 40% of households in Scotland have a smart meter.	<p>The Department for Business, Energy & Industrial Strategy (BEIS) announced on 17 September 2019 that the smart meter rollout would be delayed by four years, with a new deadline for suppliers to install smart meters in 85% of homes by 2024.</p> <p>In response to</p>

		<p>data provided by their smart meters. HES now have a network of advisors trained to provide general smart meter information and recruit customers for SMAP. Each centre has a smart meter specialist fully trained to use the SMAP tool.</p>		<p>unavoidable impacts on the smart meter rollout due to the Coronavirus (Covid-19) pandemic, on 18 June 2020 the UK Government announced an extension to the smart meter rollout's current All Reasonable Steps (ARS) obligation on suppliers by six months to 30 June 2021. The ARS obligation had been due to expire on 31 December 2020.</p>
<p>Work with the Scottish Cities' Alliance and the seven cities on the opportunities to accelerate activity on heat and energy efficiency.</p>	<p>New [CCPu 2020]</p>	<p>The Scottish Government have provided funding support to the SCA to deliver a Carbon Scenario Tool to support both the cities net zero ambitions and the production of Local Heat and Energy Efficiency Strategies.</p> <p>Additionally, the Low Carbon Infrastructure Transition Programme (LCITP) is supporting the</p>		<p>The Carbon Scenario Tool project has begun and is due for completion by end 2021.</p>

		development of a prospectus of heat network projects that has been produced by SCA.		
Provide capital investment for Scottish colleges for equipment to deliver training for energy efficiency and heat.	New [CCPu 2020]	<p>This work is being delivered by the Energy Skills Partnership (ESP) via Energy Saving Trust and relates to 2 EV charging rigs, 5 heat pump training rigs, 3 solar thermal training rigs and an insulation training centre.</p> <p>2 applications for heat pump training rigs, an application for solar thermal and 2 applications for EV charging have been received.</p> <p>However, Covid is creating some problems delivering this effectively due to:</p> <ul style="list-style-type: none"> • Staff furloughed e.g. procurement staff who would normally do this work for curriculum teams • Access to buildings to measure and produce drawings of where equipment will fit is not possible due to Covid • ESP has experience of funds like this and in 	See text in previous cell which sets out what was agreed.	Original intention was to have all the training rigs in place by the end of this FY but due to Covid its likely we will have to extend this.

		'normal' times colleges are enthusiastic to receive this kind of funding – Covid is making this a challenge		
Respond to the recommendations of the Expert Advisory Group on a heat pump sector deal for Scotland, by Q1 2022.	New [CCPu 2020]	On track – the Heat Pump Sector Deal Expert Advisory group has now met on 4 occasions and is on track to deliver its interim report to Scottish Ministers after the Scottish Parliament election.	N/A	The group is expected to provide an interim report to Scottish Ministers after the May 2021 election, and final set of recommendations in summer 2021. Our draft Heat in Buildings Strategy commits to responding to those recommendations when we publish the final draft in Autumn 2021.
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.	New [CCPu 2020]	We are currently at the scoping stage and will provide an update at a later time.	N/A	
Publish a 'Heat Network Investment prospectus' in 2021/22 - a first-cut of HN	New [CCPu 2020]			Due in 2021/22

Zones across Scotland, combined with information on decarbonisation needs of existing networks.				
Establish a short life working group on finance for the heat transition.	New [CCPu 2020]	The draft Heat in Buildings Strategy published for consultation in February 2021 includes a proposal to establish a Green Heat Finance Task Force in 2021 to explore potential new and value for money innovative financing mechanisms for both at-scale and individual level investment in heat decarbonisation		Established 2021
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.	New [CCPu 2020]	We have begun internal work on the principles and analysis to understand in detail the intersection of fuel poverty and heat decarbonisation. Programmes are already embedding these emerging principles.	The Heat in Buildings Strategy provides more detail	
Ensure Local Heat and	New	Since the last report we	All 32 Scottish local	We have committed to

<p>Energy Efficiency Strategies are developed through extensive engagement with local communities.</p>	<p>[CCPu 2020]</p>	<p>have launched and completed a final phase of 9 LHEES pilots in partnership with local authorities. All 32 Scottish local authorities have now piloted LHEES. Each of the three pilot phases have been evaluated. Alongside the pilot programme, regular engagement with local authorities has been undertaken through a combination of workshops, webinars and one-to-one engagement.</p>	<p>authorities have participated in, and completed a pilot programme for LHEES, testing different approaches and building capacity. Each of the three phases of the pilot programme have been independently evaluated, with key findings published on the Scottish Government website.</p>	<p>having LHEES in place across all local authorities by the end of 2023. We will consult on the draft LHEES methodology with relevant stakeholders and engage with local authorities to implement LHEES. We will also continue to engage COSLA regarding a statutory duty on local authorities to produce LHEES.</p>
<p>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.</p>	<p>New [CCPu 2020]</p>	<p>We are conducting internal analysis to understand the intersection of fuel poverty and heat decarbonisation and we continue to evolve our schemes to ensure solutions are tailored to the specific circumstance of households</p>		
<p>Urge the UK Government to rebalance levy costs</p>	<p>New [CCPu 2020]</p>	<p>We continue to press the UKG on this. In the Heat in</p>		

<p>on energy bills to make gas and electric systems relatively more cost comparable.</p>		<p>Buildings Strategy we set out a series of actions required by the UKG if we are to deliver a rapid and just heat transition. Scottish Ministers have reiterated in recent correspondence with BEIS Ministers that the balance of energy costs must be addressed to incentivise zero emissions heating appropriately.</p>		
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Chapter 3: Transport

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan¹⁵ for this sector was for 12.8 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of 14.8 MtCO₂e. On the basis of comparing these figures, the sector was outside its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan sets out the following policy outcomes for this 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 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 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	On Track	Off Track	Too Early to Say
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¹⁵ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

purchased from 2024 are zero-emission, and to bring this date forward if possible.			
% 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 SG 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		

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

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 trains 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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

Transport remains Scotland's largest sectoral emitter, with cars accounting for 40% of all transport emissions. Currently, COVID-19 is having a profound impact on transport, with uncertainty on trends, reflecting what is happening globally.

Our new commitment to reduce car kilometres by 20% by 2030 recognises the need to address our over-reliance on cars and to reverse the steady rise in single occupancy car use seen over the past decade. It is too early to assess whether we are on track to meet this commitment as the latest data provides only the baseline against which future annual reports will be measured. However the package of policies outlined in the CCPu, and reported on below, show the progress being made despite the disruption to programmes caused by the COVID-19 pandemic. A route map outlining how we will deliver the 20% reduction is currently being developed and will be delivered by the end of 2021, assuming the pandemic has moved to a phase to allow this.

Registrations of new ULEV cars, vans and buses show some year on year progress. The ChargePlace Scotland network continues to grow and added almost 200 charging points in the past year. In 20/21 we have offered a further 1300 loans to households and business seeking to switch to zero emission vehicles. Significant investment has also been made in decarbonising the bus fleet: in the financial year 2020/21 the Scottish Government has awarded over £50 million to support bus operators to acquire 272 zero-emission battery-electric buses.

Within the rail sector, around 76% of passenger and 45% of freight journeys are already on electric traction. Work by Transport Scotland, Network Rail and industry partners continues to progress well to deliver the key outcomes of the Rail Decarbonisation Plan to make the traction elements of Scotland's railway carbon free by 2035.

In the context of aviation, we are working with Highlands and Islands Airports Ltd and the aviation industry to bring trials of cutting-edge zero and low emission aircraft to Scotland in 2021 and are working to decarbonise scheduled flights within Scotland by 2040.

Due to this being the first year monitoring and evaluation for the CCPu and so close after publication, many indicators are in nascent stages and will be kept under review as policy outcomes and policies progress, to consider if these should evolve as data emerges.

Developments in monitoring arrangements since CCPu / last report

The CCPu significantly amended the monitoring framework for Transport. The sector retained the following policy outcomes: *Proportion of ferries in SG ownership which are low emission are increased to 30% by 2032 and By 2032 low emissions*

solutions have been widely adopted at Scottish ports and airports. The other five policy outcomes are new.

Many of the outcome indicators are new. The following were retained: *Percentage of the rail track electrified, Number of low emissions ferries in Scottish Government ownership*

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

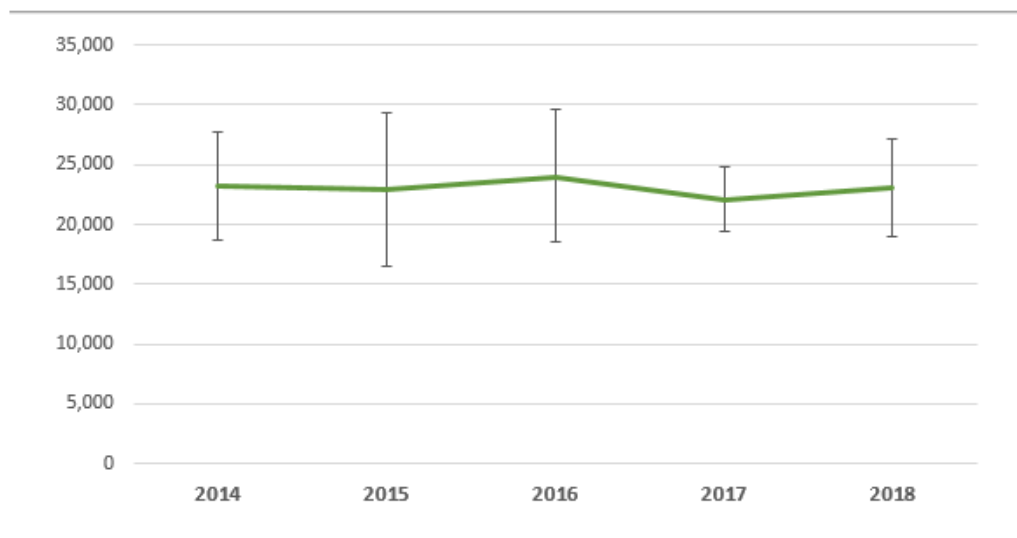
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say¹⁶

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Transport graph 1

¹⁶ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	% reduction in car kilometres	Progress to target [20% reduction by 2030] ¹⁷

Most recent data: km increased 1% between 2018 and 2019

Data source(s): Scottish Transport Statistics 2020

Assessment: Too early to say¹⁸

Commentary:

Our new commitment to reduce car kms by 20% by 2030 recognises the need to address our over-reliance on cars and to reverse the steady rise in single occupancy car use seen over the past decade. It is too early to assess whether we are on track to meet this commitment as the latest data provides only the baseline against which future annual reports will be measured.

¹⁷ From 2019 baseline

¹⁸ Evidence and data is so far inconclusive

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

Most recent data: 6.0% (Year to Q3 2020)

Data source(s): DfT Vehicle Licensing Statistics

Assessment: On track

Commentary:

The % of new car registrations which are ULEV was 6.0% in the 12 months to September 2020. This is an increase from 2.4% in the previous twelve month period. The number of new ULEV car registrations in Scotland has increased every year since records began in 2010. Over the past year, the number of new ULEV cars registered in Scotland has increased by 77%. ULEV vehicle uptake in Scotland is supported by a range of Scottish Government investment. We've invested over £45 million to grow Scotland's accessible public electric vehicle charging network – [ChargePlace Scotland](#), provided almost £50m to enable Scotland's public sector to switch to ULEV and provided over £85m of loan funding to enable households and business to purchase zero emission vehicles.

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

Most recent data: 1.5% (Year to Q3 2020)

Data source(s): DfT Vehicle Licensing Statistics

Assessment: On track

Commentary:

The % of new van registrations which are ULEV was 1.5% in the 12 months to September 2020. This is an increase from 0.6% in the previous twelve month period. The number of new ULEV van registrations in Scotland has been increasing gradually since 2010. Although ULEV vans represent a small proportion of all new van registrations, the number of new ULEV vans registered in Scotland has increased by 74% over the past year. ULEV vehicle uptake in Scotland is supported by a range of Scottish Government investment. We've invested over £45 million to grow Scotland's accessible public electric vehicle charging network – [ChargePlace Scotland](#), provided almost £50m to enable Scotland's public sector to switch to ULEV and provided over £85m of loan funding to enable households and business to purchase zero emission vehicles.

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

Most recent data: 0% (Year to Q3 2020)

Data source(s): DfT Vehicle Licensing Statistics

Assessment: Too early to say¹⁹

Commentary:

There were no new ULEV HGV registrations in the year to Q3 2020. As current numbers are so low, we do not have sufficient data to provide a baseline or trajectory. We will aim to do so over the next year to allow for necessary analysis of trends and consultation with stakeholders.

Our zero emission heavy duty vehicle programme, in partnership with Scottish Enterprise, will identify key cross cutting technology in Zero Emission HDVs which require innovation in order to meet our decarbonisation targets and to support the supply chain in Scotland in developing those. We will draw on the Automotive Industry Advisory Group on the shift to Zero Emission HDVs and HGVs, and the new innovation centres – Driving the Electric Revolution and LOCATE – are focused on drivetrain technology development and transfer across vehicle type and modes.

In August 2020, we established the Hydrogen Accelerator at St Andrew's University. This will increase the speed and scale of hydrogen transport deployments in Scotland by providing expert advice on technology assessments, business models, and opportunities to connect research with application. It will build confidence and capability among the investment community and organisations considering hydrogen for fleets and transport applications. We will also invest in the establishment of a zero emission drivetrain testing facility in 2021, with a focus on hydrogen fuel cells to accelerate the development of these vehicles.

¹⁹ Evidence and data is so far inconclusive

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

Most recent data: 1.9% (year to Q3 2020)

Data source(s): DfT Vehicle Licensing Statistics

Assessment: Too early to say²⁰

Commentary:

The share of new bus registrations which are ULEV was 1.9% in the twelve months to September 2020. This is an increase from 0.6% in the previous twelve month period. The number of new ULEV bus registrations is expected to increase in the coming years as technology and infrastructure develops.

In line with our 2020-2021 Programme for Government commitment to work with the bus industry to co-design solutions for remaining hurdles to decarbonisation, the Bus Decarbonisation Taskforce was convened in November 2020 to develop a pathway for the decarbonisation of the public service bus fleet by the end of 2021.

Within the financial year 2020/21, the Scottish Government has awarded over £50 million to support bus operators to acquire 272 zero-emission battery-electric buses. This is just a slightly lower number than the normal annual fleet replacement rate of around 300 buses per annum, and thus represents very significant progress in the transition to zero-emission vehicles, particularly given the impact of COVID-19 on the economic and financial context. These new buses will be reflected in the data between 6-9 months after being registered.

From financial years 2021-2026, £120 million will be made available to support bus decarbonisation. We will work with the Bus Decarbonisation Taskforce to ensure that this funding is delivered in a way that delivers most value for money and leverages in as much private investment as possible.

²⁰ Data and evidence is so far inconclusive

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

Most recent data: n/a

Data source(s): n/a

Assessment: Too early to say²¹

Commentary:

Scheduled flights within Scotland play an important role in providing connectivity to people living in the Highlands and Islands. Air connectivity helps to support sustainable economic growth in the Highlands and Islands as well as providing important services to islands communities, for example transport to the mainland for medical appointments.

To maintain connectivity whilst reducing emissions requires either the use of new types of aircraft (such as hydrogen or fully electric), or the use of Sustainable Aviation Fuel (which can, depending on the blend and the type of fuel used, reduce emissions by around 30%).

We have set a baseline of 2019 against which future reductions will be measured. However we are not expecting to see a year on year reduction in emissions from aviation, as it will be some time before low/zero-emission aircraft can be used on commercial intra-Scotland passenger services.

While good progress has been made on the development of fully-electric, hybrid and hydrogen powered aircraft, these are not currently at a stage where they can be used on commercial passenger flights within Scotland, and it is expected to be a number of years before they reach that stage. Similarly, the UK does not currently produce Sustainable Aviation Fuel, and while this can be sourced from other countries the cost difference means that it is not a commercially viable alternative.

²¹ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome 6	Indicator % of ferries that are low emissions	On-Track Assessment (Milestones/ Targets) Progress to target [30% by 2032]
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Most recent data: 8% of the current Scottish Government Fleet consists of low emission vessels.

Data source(s): CMAL & Transport Scotland

Assessment: On track

Commentary:

As set out in the PFG statement, the long-term investment plan for vessels and ports to be completed in 2022 as part of the Island Connectivity Plan will set out how we aim to “improve resilience, reliability, capacity, and accessibility, increase standardisation, and reduce emissions”.

The recently announced Small Vessel Replacement Programme, will increase the number of low emission vessels within the Scottish Government’s ferry fleet. Utilising the experience and knowledge gained by CMAL and CalMac from their operation of three diesel electric hybrid vessels currently in service which were world leading when launched. The programme will deliver vessels that utilise the latest proven battery and on shore charging technologies.

No of Low/zero emission ferries within the Scottish Fleet	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Diesel Electric Hybrid	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Diesel /Liquid Natural Gas 801 due April - June 2022 802 due Dec 2022 - Feb 2023	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2
Small Vessel Replacement Programme	0	0	0	0	0	0	1	2	3	4	5	6	7	8	8
Total Low/ Zero Emission Vessels	3	3	3	3	4	5	6	7	8	9	10	11	12	13	13
% of fleet Low/Zero Emission	8%	8%	8%	8%	10%	13%	15%	18%	21%	23%	26%	28%	31%	33%	33%

Fleet Breakdown	Vessels	Low/ ZE
NIFS	5	0
CHFS	34	13

Notes: Small Vessel Replacement Programme (SVRP) will deliver 8 possibly 10 electric vessels. The programme is in its early stages with funding yet to be allocated and the rate of procurement/build still to be determined. However, an amount of contingency has been included in both the procurement and build processes to account for percentage of risk to the programme. The aim is to deliver an average of 1 vessel per year.

Vessels 801 & 802 are a live project the years indicated are the shipyard's projected deliver dates.

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

Most recent data:

In July 2020 Network Rail advised that 40.7% single track km of Scotland's rail network was electrified.

Data source(s): Network Rail Scotland Route

Assessment: On track

Commentary:

In July 2020 Network Rail advised that 40.7% single track kilometres of Scotland's rail network was electrified. This remains unchanged as there has been no further electrification of the network or new track constructed since that time. As it normally takes several years for Network Rail to develop, design and construct new electrification infrastructure it is difficult to provide specific timescales for completion of additional route kilometres electrified. However, we have a degree of confidence that the long-term programme defined in the Rail Services Decarbonisation Action Plan is on track to deliver its objectives by the end of 2034.

In February 2021 Transport Scotland announced the first 4 priority electrification routes. These projects are now being progressed with Network Rail who will design and construct the electrification infrastructure. It is not known at this stage the exact quantity of track that will be electrified as it is anticipated most routes will deploy intermittent electrification initially and train services will be supported by electric / battery trains whilst consideration is being given to making these routes fully electric in the longer term. It takes substantial time for Network Rail to develop and agree the final scope of major infrastructure projects and so clarity on the detail of the electrification may be known for the 2022 update of this monitoring framework.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
8	% of trains powered by alternative traction	Year to year change

Most recent data: There are currently no alternative traction trains operating on Scotland's rail network.

Data source(s): Transport Scotland

Assessment: Too early to say²²

Transport Scotland is currently engaged with the rail industry, academia and the supply chain who are developing alternative traction technologies, battery and hydrogen, at pace. Part of this development is to understand how the technologies can be applied to the unique technical specifications of the GB rail network. At this stage, the emerging technologies are not mature and ready for market, but it is anticipated the incentives driving industry to deliver viable solutions will result in alternative traction trains to operate on the network in the medium term.

²² The evidence and data doesn't exist or is yet to be developed

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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 – we will publish a route-map to meet the 20% reduction by 2030 in 2021.	New [CCPu 2020]	Route map underway with project plan in development, subject to status of COVID-19 pandemic.	Milestone set in the policy wording around delivery in 2021, if pandemic recovery allows it.	Delivery by the end of 2021 (pandemic depending).

<p>Commit to exploring options around remote working, in connection with our work on 20-minute neighbourhoods and work local programme.</p>	<p>New [2020-2021] PfG</p>	<p>TS has commissioned research on remote working and business travel intentions as we recover from the pandemic, and also a review of international evidence on 20 minute neighbourhoods. Modelling on the emissions impact of remote working also underway to guide our policy development.</p>	<p>No.</p>	<p>Emerging evidence & pandemic recovery will guide timeframes. NPF4 expected 2022.</p>
<p>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.</p>	<p>New [2020-2021 PfG]</p>	<p>Working with the Scottish Government's Digital Directorate, exploring 'How can tech help foster the development of informal networks when people are working at home or in Work Local hubs?' This is the focus of Challenge 10 of the CivTech 5.0 tech accelerator programme which launched on 10 July 2020.</p> <p>Technology company Yoti Ltd. was successful in reaching the CivTech Accelerator Stage, and will now fast-track product</p>	<p>No.</p>	<p>The CivTech process will conclude in March 2022.</p>

		<p>development of its FRANKD COVID-19 testing system with testing company GeneMe Ltd., working closely with the CivTech Team, the Digital Directorate, and the Health and Social Care Directorate.</p> <p>To support construction innovation, Transport Scotland is working with South Lanarkshire Council and the Construction Scotland Innovation Centre (CSIC), one of Scotland's 7 innovation centres, which is delivered through Edinburgh Napier University.</p>		
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.	New [2020-2021 PfG]	Fuel duty fully reserved policy area and current lack of sharing of any options being considered by UKG. We will engage with BEIS on the forthcoming UK Net Zero Strategy.	No.	Timeframe: expected that UKG will make proposals during lifetime of current Westminster Parliament
We will work with local authorities to continue to ensure that their parking and local transport	New [For CCPu 2020-although continuation of	We will work with partners to update the guidance on developing a local transport strategy ensuring that the	No.	2022

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.	work already underway]	needs of roads users also take cognisance of the statutory requirements to tackle climate change.		
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.	New [CCPu 2020]	No progress to date		
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.	Maintained	Both programmes will continue in 2021-22, however, Bikeability training and driver awareness training has been impacted by COVID-19 in 2020.	Bikeability Training is offered to LAs in Scotland. CS is developing a 'Couch to Commute' pilot journey in 21-22. This would support up to 300 individuals to access 1:1 training	Cycle training is offered throughout the year. Data collected on a quarterly basis.
Support transformational	Boosted	The Scottish budget of 28	No milestones have	Grants agreed and

<p>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</p>	<p>[2020-2021 PfG]</p>	<p>January confirmed that the record commitment of £100.5 million for active travel would be maintained for 21-22.</p> <p>The AT team is currently negotiating with Partners with view to awarding grants based on continually improving availability of infrastructure and behaviour change programmes.</p> <p>Partners are using the Active Travel Framework and the outcomes agreed within this as a basis for grant proposals</p>	<p>been set. Previous vision of 10% of journeys by cycling by 2020 was included within the Cycling Action Plan. COVID-19 has delayed development of a replacement for this and we expect new Cycling Plan within 2021.</p> <p>This is unlikely to contain targets, and we expect it to align with the indicators within the Active Travel Framework.</p>	<p>Grant Offer Letters issued by May 2021.</p> <p>Evaluation of 2020-21 programmes will be expected by end of September 2021, and will inform grant proposals for 2022-23</p>
<p>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</p>	<p>New [2020-2021 PfG]</p>	<p>By end March 2021, the majority of interventions had been delivered and are on the ground (at least 90% of the planned interventions).</p> <p>Because of local challenges to delivery, we do not expect all schemes to be delivered.</p> <p>As we transition out of lockdown, focus is now on</p>	<p>By 14th May 2021 – All feasible interventions are on the ground.</p>	<p>Based on timescales in previous column, we will repurpose funding from those LAs who are unable to deliver schemes to support permanence of other schemes where appropriate.</p> <p>Those schemes remaining as</p>

<p>distance during transition out of the COVID-19 lockdown.</p>		<p>providing a routemap and tools to make some of these successful schemes permanent where appropriate and where there is local support.</p> <p>No funding available in 2021—22 for new schemes</p>		<p>temporary will be removed after 18 months, or when Covid emergency has eased and they are no longer needed</p>
<p>Support increased access to bikes for all including the provision of public bike and e-bike share.</p>	<p>New [throughout 2019-2020]</p>	<p>Continued delivery of E-bike Grants for communities and public sector organisations, increased investment in the E-bike loan fund, and long term e-bike trials offered in communities.</p> <p>We have continued to fund CoMoUK, who provide advice on all shared transport, including, bike share and encourage local authorities to develop their own 'Bikes for All' scheme by circulating a template to all local authorities setting up their own shared bike scheme.</p> <p>In 2020/21 CoMoUK and Paths for All collaborated with Edinburgh and</p>	<p>By the end of March 2021, the full budget for e-bike grants and loans was allocated.</p> <p>Overall, bike share trips in Glasgow and Edinburgh increased by 38%, across both cities, from June - September 2020, compared to the same period in 2019. It attracted 18,000 new users, many of whom had not cycled for a year or longer.</p>	<p>Increase budget for the E-bike loan fund in 2021/22</p> <p>Continues delivery of E-bike Grants and trials</p>

		Glasgow councils to fund free trials of the Edinburgh and Glasgow public bike share schemes using Smarter Choices, Smarter Places funding.		
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. We will grant funding CoMoUK to increase awareness of the role and benefits of shared transport and looking at the barriers to uptake of car clubs. We will provide support for travel planning through Travelknowhow Scotland, which is an online resource which offers	New [PfG 2018]	Launched in 2019, Round 1 of the 3-year, £2m MaaS Investment Fund (MIF) resulted in awards of up to £1m to 3 projects to demonstrate the viability of MaaS in Scotland. These projects are underway although public launch has been paused due to the pandemic. With just over £1m remaining, a second and final round of investment is currently underway.	We anticipate that all £2m of the MIF will be awarded by Summer 2021.	Round 2 awards are due to be made in Spring 2021, with all projects due to be rolled out in Summer 2021 and completed by September 2022 (COVID-19 permitting).

<p>employers access to sustainable travel planning tools to develop and implement workplace Travel Plans and encourage ride-sharing in order to start changing travel behaviour within organisations.</p>				
<p>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.</p>	<p>New [2020-2021 PfG]</p>	<p>Scotland's Road Safety Framework to 2030 published on 25 February 2021. It comprises a strategic action on Climate as follows: we will deliver road safety initiatives that positively impact the climate emergency and we will mitigate the negative impacts climate change may have on road safety. By smoothing traffic flow, good speed management has the potential to reduce emissions and improve air quality. As far as promoting greener, cleaner choices is concerned, the new Framework</p>	<p>Following Interim targets to 2030 have been set:</p> <p>50% reduction in people killed 50% reduction in people seriously injured 60% reduction in children (aged <16) killed 60% reduction in children (aged <16) seriously injured</p> <p>The following Intermediate Outcome Targets to 2030 have been set:</p> <p>40% reduction in pedestrians killed or</p>	<p>This Framework is valid from 1 Jan 2021 to 31 Dec 2030.</p> <p>Next step of the policy is the publication of the 1st Delivery Plan expected end of May 2021.</p>

		<p>consistently applies the NTS2 Travel Hierarchy to road safety matters.</p> <p>Another strategic action relates to Active & Sustainable Travel and will ensure road safety remains a key focus of active & sustainable travel in Scotland. Active & sustainable travel contributes to better place-making which, in turn, contributes to safer places, thereby improving the perception of road safety.</p>	<p>seriously injured</p> <ul style="list-style-type: none"> 20% reduction in cyclists killed or seriously injured 30% reduction in motorcyclists killed or seriously injured 20% reduction in road users aged 70 and over killed or seriously injured 70% reduction in road users aged between 17 to 25 killed or seriously injured 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 	
<p>We are committed to taking forward policy consultation in advance of drafting supporting regulations and guidance to enable local authorities</p>	<p>New [Throughout 2019-2020]</p>	<p>Transport Scotland is in the process of taking preparatory policy steps ahead of public consultation on regulations and guidance.</p>	<p>The first milestone will be publication of the public consultation in summer 2021.</p>	<p>The intention is to undertake a public consultation in summer 2021 with a view to regulations and guidance coming into</p>

to implement workplace parking levy schemes that suit their local circumstances.				force in 2022.
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.	New [2020-2021 PfG]	<p>The investment in improved bus infrastructure includes two main elements:</p> <ol style="list-style-type: none"> 1. The Bus Partnership Fund (BPF) will account for the majority of the investment. It will provide grant funding to local authorities, in partnership with bus operators, to develop and implement bus priority projects on local roads. The BPF has launched and applications to the fund close in April 2021. Once awards are made, milestones and performance data will be gathered from funded projects and fed into the overall reporting of BPF. 2. The Managed Motorways (MM) project will reallocate road space to high-occupancy vehicles, such as buses, on the Glasgow motorway network. The Strategic Business 	<p>Applications to BPF close – first tranche 16/04/21. On track</p> <p>Applications to BPF close – second tranche 15/10/21. On track</p> <p>Managed Motorway SBC. Spring 2021. On track</p>	5-year programme for BPF

		Case (SBC) for Managed Motorway is planned to be published in Spring 2021.		
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.	New [2020-2021 PfG & Budget 2020]	Enabling legislation the National Bus Travel Concession Scheme for Young Persons (Scotland) Order 2021 laid in Parliament January 21.	The scheme will be introduced as soon as practicable during financial year (2021-22). The uncertainty around the ongoing impact of COVID-19 means it is not possible to set a date for the scheme to commence at this point We do not want more people to use public transport at a time when, for public health reasons, travel restrictions remain in place and capacity is restricted.	The Order enabling Ministers to formally admit operators to the scheme and put in place the necessary administrative arrangements to bring it into operation at a date of their choosing will, subject to approval by the Scottish Parliament, came into force on 1 April 2021.
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	New [2020-2021 PfG]	The wider U26 review was paused as a result of the impact of COVID-19, and has since recommenced and is nearing completion, including updating the evidence base to reflect the impact COVID-19 has had on young people. We have	Review nearing completion.	

the impacts of COVID 19 and post lockdown measures on public transport usage and behaviour).		worked with Young Scot and the Scottish Youth Parliament to discuss the review and to understand the challenges relating to transport and affordability for young people.		
Delivery of our first Active Freeways - segregated active travel routes on main travel corridors connecting communities and major trip attractors.	New [CCPu 2020]	New in 2020. Published rationale for this investment, as part of STPR2 Phase 1 recommendations: Update and Phase 1 Recommendations - February 2021 - STPR2 (transport.gov.scot)	No	Within STPR2 Phase 1 we published the next steps as: Appraisal methodology to be developed, to support this investment. It will be used to identify appropriate locations for the first tranche of investment, secured through the Low Carbon Fund.

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps

<p>We will consider and develop new financing and delivery models for electric vehicle charging infrastructure in Scotland and working with the Scottish Future Trust to do so.</p>	<p>Boosted 2019-2020 PfG</p>	<p>We have developed the strategic case (case for change) and are taking forward a new programme with Scottish Futures Trust to implement new models of financing and delivering public electric vehicle charging infrastructure</p>	<p>No.</p>	<p>Working with Scottish Futures Trust we are planning to develop and implement the new programme over the course of 2021.</p>
<p>We have invested over £30m 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.</p>	<p>Maintained</p>	<p>The CPS network continues to grow and added almost 200 Chargepoints in the past year. We will continue to invest in growing the network in 2021/22.</p>	<p>There is a Programme for Government commitment to continue to invest in the network until 2022 but no quantitative targets or indicators</p>	<p>We are working with the Scottish future Trust to explore and identify new approaches to financing with leverage greater commercial investment</p>
<p>Our Low Carbon Transport Loan has provided over £80m 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 being expanded to include used electric vehicles.</p>	<p>Maintained</p>	<p>In 20/21 we have offered a further 13,000 loans to households and business seeking to switch to zero emission vehicles</p>	<p>No</p>	<p>Vehicle manufacturers and dealers continue to bring new offerings to the market. We will monitor these and determine our policy/investment priorities accordingly</p>

We will continue to promote the uptake of ULEVs in the taxi and private hire sector.	Maintained	Loans for zero emission taxis are still available through the low carbon transport loan. Limited promotional activity in the past year due to COVID-19.	No	We will continue to provide loan funding and support to assist taxi owners switch to zero emission in 2021/22.
Continue to promote the benefits of EVs to individuals and fleet operators (exact nature of promotion to be decided annually).	Maintained	Our switched on Fleets programme continues to provide funding to enable the switch to zero- emission across Scotland's public bodies. A further £15m of funding was invested in 20/21.	No	We will continue to provide funding and capacity building support to public bodies and local authorities in 2021/22.
We will work with public bodies to phase out the need for any new petrol and diesel light commercial vehicles by 2025.	Boosted [2019-2020 PfG]	Our switched on Fleets programme continues to provide funding to enable the switch to zero- emission across Scotland's public bodies. A further £15m of funding was invested in 20/21.	No	We will continue to provide funding and capacity building support to public bodies and local authorities in 2021/22.
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	Boosted 2019-2020 PfG]	We are working with Scottish Future Trust and Scottish Procurement Directorate to explore innovative procurement approaches for the public sector that deliver costs savings and ensure investment is optimal.	No	Procurement project will continue in 2021/22 with findings likely in late 2021.

out the need for any new petrol and diesel light commercial vehicles by 2025.				
Create the conditions to phase out the need for all new petrol and diesel vehicles in Scotland's public sector fleet by 2030.	New [2019-2020 PfG]	Our switched on Fleets programme continues to provide funding to enable the switch to zero- emission across Scotland's public bodies. A further £15m of funding was invested in 20/21.	No	We will continue to provide funding and capacity building support to public bodies and local authorities in 2021/22.
We will continue to invest in innovation to support the development of ULEV technologies and their adoption.	Maintained	Our 2021/22 work plan contains a range of programmes to stimulate innovation, creating the right mix of networks and collaboration, funding, facilities and skills to support our ambitions.	These being set up for individual programmes.	FY 2021-22
Take forward the initiatives in respect of connected and autonomous vehicles set out in A CAV Roadmap for Scotland.	Maintained	The CAV Forth live trial was originally intended to commence in 2020. The project has been impacted by some delays, outside of Transport Scotland's control and responsibility, both as a result of project supply chain issues and the impact of the COVID-19 pandemic.		The project is now working on a programme that will see the full passenger trial commence in the latter part of 2021, to allow the completion of a six month trial in advance of the end of the project in March 2022.

		<p>The introduction of the Actively Managed Hard Shoulder over a four mile section of the M8 and M9 motorways supports Transport Scotland's involvement in Project CAV Forth, and the Scottish Government's Programme for Government 2020 / 2021 'Protecting Scotland, Renewing Scotland' where it was noted that measures to tackle the impact of congestion forms part of a sustainable transport future and that a step change in investment to make bus services greener and more punctual and reliable is being taken.</p>		
<p>With local authorities and others, evaluate the scope for incentivising more rapid uptake of electric and ultra-low emission cars and vans.</p>	Maintained	<p>We continue to work with local authorities and invest in growing zero emission transport infrastructure in 21/22 and future years. We have provided over £3m to local authorities to install EV infrastructure in 20/21 and continue to support hydrogen transport projects in Aberdeen, Dundee and</p>	No	<p>Ongoing funding programme which are kept under development and will seek to move to models which look to leverage greater commercial investment in the next few years</p>

		Glasgow.		
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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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
To support businesses we will establish a Zero Emission heavy duty vehicle programme and will invest in a new zero drivetrain testing facility in 2021.	New [2020-2021 PfG]	We are continuing our work with Scottish Enterprise on the Heavy Duty Vehicle (HDV) Programme. We are identifying capability in the sector, including current and potential future supply chain, putting in place support mechanisms to enable OEMs and supply chain companies to innovate, increase Zero Emission HDV capacity in Scotland, capture market share and to attract inward investment. We will also continue efforts to support public sector authorities to	No	Functional and Technical Specifications for the facility have been drafted, and agreed. The next phase of the LOCATE project will move the project into a delivery phase: operational planning, strategic procurement and testing commercial model assumptions. This work will be led by the University of St Andrews. The Zero Emissions

		<p>procure zero emission HDVs.</p> <p>We are continuing our work on the LOCATE project to establish a drivetrain test facility, for low/zero emission mobility at the Michelin Scotland Innovation Parc site in Dundee.</p>		<p>HDV programme will continue into Financial Year 2021/22, to:</p> <ul style="list-style-type: none"> • Complete summarising the market for HDVs in Scotland. • Carry out analysis of off-road vehicle opportunity. • Hold awareness-raising workshops with buyers, OEMs and companies. • Continue the funded expert support programme. • Develop innovation support systems to aid the public sector to procure Zero Emission HDVs
Explore the development of green finance models to help business and industry to invest in new road transport technologies.	New [CCPu 2020]	On 22 March and, in conjunction with the Bus Decarbonisation Taskforce, Government published an information and ideas pack which set out the various financial models that could support bus	No	Going forward, Government will expand upon this work to identify models that could support decarbonisation of other parts of road transport such as

		decarbonisation. This also included an assessment of whole life costs for battery electric and hydrogen buses as well as comparisons between the technologies.		HDVs, this will ensure that the specifics of each sector are carefully considered and accounted for when proposing new financial models.
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.	New [CCPu 2020]	Scoping study commissioned on “last mile delivery” (LMD) to understand scale and impact of the sector	No.	LMD scoping study runs March – June 2021 LMD workplan to be developed thereafter
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.	Maintained	We will undertake work to better understand non-electrification / non-hydrogen routes to decarbonising vehicles – drawing on established energy policy and leading to a defined policy position in this area that complements existing work. Aims: • Identify whether alternative fuels have the potential to	No	Work beginning in 2021/22 business planning period.

		<p>power certain vehicle types in the short, medium and long term, whilst still contributing to Scotland's statutory climate change targets.</p> <ul style="list-style-type: none"> • Identify where Scottish resources, expertise, or embedded demand point to particular alternative fuel types that would have particular economic benefit for Scotland. 		
<p>Launched the new Hydrogen Accelerator (H2A) Programme to attract technical experts to help scale up and quicken the deployment of hydrogen technologies across Scotland.</p>	<p>New [July 2020]</p>	<p>Established in July 2020 with indicative 3-year funding support from TS. hosted by St Andrews University, in partnership with Strathclyde University.</p> <p>Key roles include:</p> <ul style="list-style-type: none"> • expertise in the design and delivery of hydrogen projects, • project management guidance and support • coordinating approach across Scotland's key hydrogen initiatives • enabling new opportunities in sector 	<p>H2A will report using its established governance processes and against TS grant funding conditions.</p>	<p>Funding initially for FY's 20/21-22/23</p>

		<ul style="list-style-type: none"> • conducting analysis of the evolution of hydrogen-related technologies. <p>TS are represented on the board and on management groups.</p>		
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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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
We have introduced a revised green incentive of the Bus Service Operators Grant.	New [April 2019]	Bus Service Operators Grant Low Emission Vehicle (BSOG LEV) incentive was introduced April 2019. The action is complete.	No	Next steps are covered by the new policy commitment below, namely the assessment of options for the optimal subsidy framework.
We launched a £9 million Scottish Ultra Low Emission Bus Scheme (SULEBS).	New [August 2020]	£10.1 million was awarded to support bus operators purchase 57 new ultra-low emission buses and	57 new battery-electric vehicles purchased, replacing older diesel vehicles, by the end of	The action was completed – next steps are covered in the new policy commitment

		associated infrastructure.	2021.	(below)
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.	Maintained	Work on implementing the bus services provisions (i.e. Part III) of the Transport (Scotland) Act 2019 restarted at the end of 2020. A stakeholder event was held on 17 March attended by a range of stakeholders, including local authorities, bus operators and third sector groups. The discussions on the day are helping inform and refine a consultation planned for later this year with the development of regulations thereafter. We are also further engaging with key stakeholders ahead of the publication of the consultation.	The preparation of a consultation is under way and will launch later this year.	Following consultation, regulations will be developed for implementation with a final timeline still to be agreed (and subject to Parliamentary process).
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.	New [CCPu 2020]	A £25m round of the Scottish Ultra Low Emission Bus Scheme was launched in January 2021, amended from the previous round to allow finance bodies who wished to purchase and lease vehicles to bid. On 25 February 2021 the		An assessment of options for the optimal subsidy framework for the next 5 years will be undertaken over the coming 6 months in close liaison with the finance and bus operating and bus manufacturing sectors.

		<p>Bus Decarbonisation Taskforce, comprised of leaders from the bus, finance and energy sectors, held a meeting focussed on financial models to support swift decarbonisation of the sector. The meeting discussed a paper from Transport Scotland that set out criteria for future subsidy framework, in the context of an in-depth presentation about private sector investment models.</p>		
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Outcome 5: We will work to decarbonise scheduled flights within Scotland by 2040

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
We will aim to create the world's first zero emission aviation region in partnership with Highlands and Islands Airports Limited (HIAL).	New [Green New Deal 2019]	Some action taken to decarbonise airport operations at HIAL, including a project lead by EMEC which aims to decarbonise heat and power	No	2040

This will include taking action to decarbonise airport operations in the HIAL region.		at Kirkwall Airport through green hydrogen technology.		
We will begin trialling low or zero emission planes in 2021.	New [2020-2021 PfG]	HIAL is jointly leading the SATE project which will create the UK's first operationally-based, low-carbon aviation test centre at Kirkwall Airport – COVID-19 restrictions permitting expect this to lead to the first companies trialling their aircraft this summer.	Yes	Project started and expect first trials of aircraft this summer
The Scottish Government will continue to engage with Aviation sector to encourage sustainable growth post COVID-19.	New [CCPu]	No	No	Aviation working group being established as well as ongoing informal engagement
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.	New [CCPu]	No	No	TBC- expect to consult in 2021
Explore options for incentivising the use of more sustainable aviation fuel as we develop our	New [CCPu]	No	No	TBC- expect to consult in 2021

Aviation Strategy, recognising that significant levers in this area are reserved.				
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Outcome 6: Proportion of ferries in Scottish Government ownership which are low emission has increased to 30% by 2032.

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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.	Maintained	The Islands Connectivity Plan will investigate the opportunities and technologies available to the maritime sector and set out pathways towards the delivery of ferries that will operate with zero or significantly reduced carbon emissions helping Scotland achieve its ambitious target of net zero emissions by 2045. In an early step to achieving this objective, Transport	No.	

		Scotland officials have been investigating the options for deploying battery operated vessels as part of the Small Vessel Replacement Programme (SVRP). This will see the replacement of up to eight of the smaller vessels operated by CalMac.		
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.	New [2020-2021 PfG]	No progress to date.		

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

Policy	Status: New, Boosted or Maintained	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones	Timeframe and expected next steps
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	compared to last CCP [date announced]		been set for this policy? If so, most recent data for progress against these.	
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.	New [CCPu 2020]	While we continue to engage with ports, the BPA and other stakeholders, their focus has principally been on dealing with impacts of Brexit and Covid and managing the consequent financial hit they've been experiencing from a reduction in passenger services and freight movements.	Ongoing	COVID-19 and economic recovery will guide timeframes.
Working with the ports sector and with its statutory consultees through the Harbour Order process to ensure future port developments are environmentally underpinned.	New [CCPu]	While we continue to engage with ports, the BPA and other stakeholders, their focus has principally been on dealing with impacts of Brexit and Covid and managing the consequent financial hit they've been experiencing from a reduction in passenger services and freight movements.	Ongoing	COVID-19 and economic recovery will guide timeframes.

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
<p>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.</p>	<p>New [2020-2021 PfG]</p>	<p>In February 2021 the first 4 priority rail electrification projects were announced as part of the Strategic Transport Projects Review 2 Phase 1. Proposals are being progressed to electrify the Glasgow to Barrhead, Glasgow to East Kilbride, Borders and Fife Circle routes. It is anticipated intermittent electrification may be deployed on some routes that can then be served by electric / battery trains with consideration of full electrification of these routes over the longer term. Transport Scotland is engaged with the train rolling stock supply chain who continue to develop</p>	<p>The commitment is to make Scotland's rail passenger services carbon free by 2035 through increased electrification of the network and to deploy alternative traction battery / hydrogen trains where appropriate.</p>	<p>There is no defined timescale for completing these 4 priority projects at this stage. A detailed update on progress with delivery of the rail decarbonisation action plan will be given in 2023.</p>

		alternative traction battery and hydrogen technologies.		
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.	New [Part of Rail Services Decarbonisation Action Plan, July 2020]	<p>Scottish Engineering has been awarded an 18 month contract to create an international rail cluster linking Scottish SMEs with train manufacturers, contractors, academics, and research centres.</p> <p>Initially, in the light of prevailing circumstances, this work will begin life as a digital project with a number of events bringing business and academia together online.</p>	The following has been achieved to date: 221 registered companies; 2 of 8 planned events delivered; one of the three required technical report published; one of the two market sector reports published and 34 of the planned 100 1-2-1 meetings with SMEs conducted.	Further activity planned through to December 2021. Activities necessarily constrained by the prevailing circumstances related to the pandemic.
Continue to deliver our Rail Freight Strategy.	Maintained	Work continues alongside rail industry partners to take forward the actions from the published rail freight strategy. This includes innovative regulatory targets for rail freight, including rail freight growth, and a dedicated Scottish Strategic Rail Freight Fund for this 5-yearly rail control period.	n/a	No defined and specific timescales for completing the actions. Network Rail's regulatory targets have their own associated milestones and timescales.

Chapter 4: Industry

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan²³ for this sector was for 10.3 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of 11.5 MtCO₂e. On the basis of comparing these figures, the sector was outside its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan 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 ₂ e 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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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.

²³ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

Scotland has already made great progress in this sector, with industrial emissions falling by over 45% (9.5 MtCO₂e) between 1990 and 2018. While this has occurred, industrial sectors have remained fundamental to the Scottish economy, contributing £26 billion annually and employing over 300,000 people at present.

As we look ahead for the duration of the plan period, by 2032, emissions need to decrease by a further 43% on 2018 levels, with Scottish industry remaining globally competitive and sustainable, and the policies included in the plan update aim to make progress on this. However, due to the balance of reserved and devolved responsibilities, to some extent progress is often dependent on UK Government and/or international policy and markets.

There remains a significant risk that decarbonising faster than the rest of the UK and Europe could lead to carbon leakage. Both support for investment and a level regulatory playing field is therefore needed. Nevertheless, the Scottish Government is ensuring that the industrial sector understands its role in decarbonisation, the opportunities this can bring, and the support being offered to manage their transition.

Developments in monitoring arrangements since CCPu / last report

Following our commitment to net zero by 2045, in the update to the Climate Change Plan we presented two revised policy outcomes. One new indicator has been introduced to reflect the changes to the outcomes, alongside two indicators brought forward from our previous monitoring report.

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

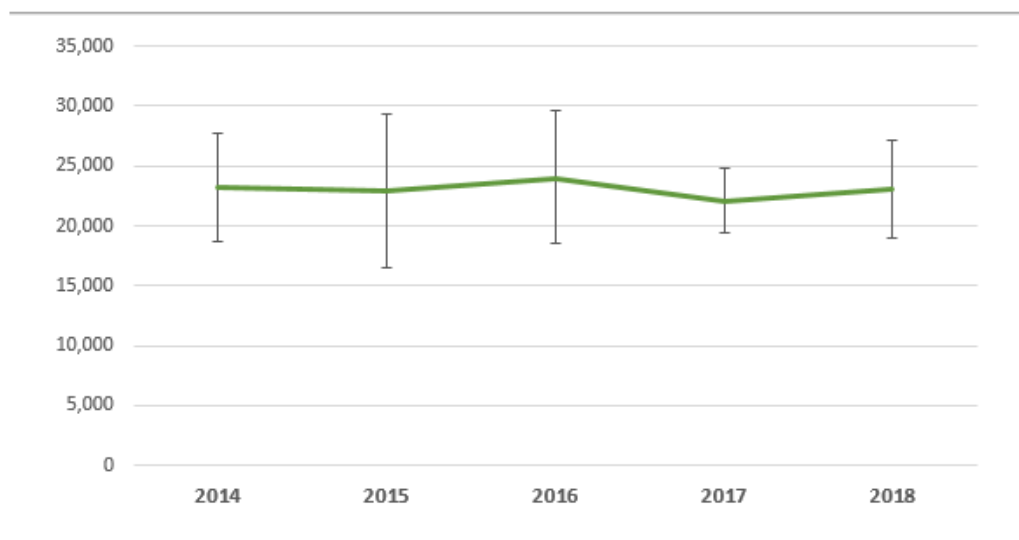
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say²⁴

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Industry graph 1

²⁴ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Industrial energy productivity (£GVAm per GWh)	Progress to target [Increase 30% by 2032] ²⁵

Most recent data: £0.53million GVA per GWh – industrial energy productivity in Scotland in 2018.

Data source(s): BEIS sub-national energy consumption statistics, BEIS Energy Consumption in the UK statistics, Scottish Government Quarterly National Accounts.

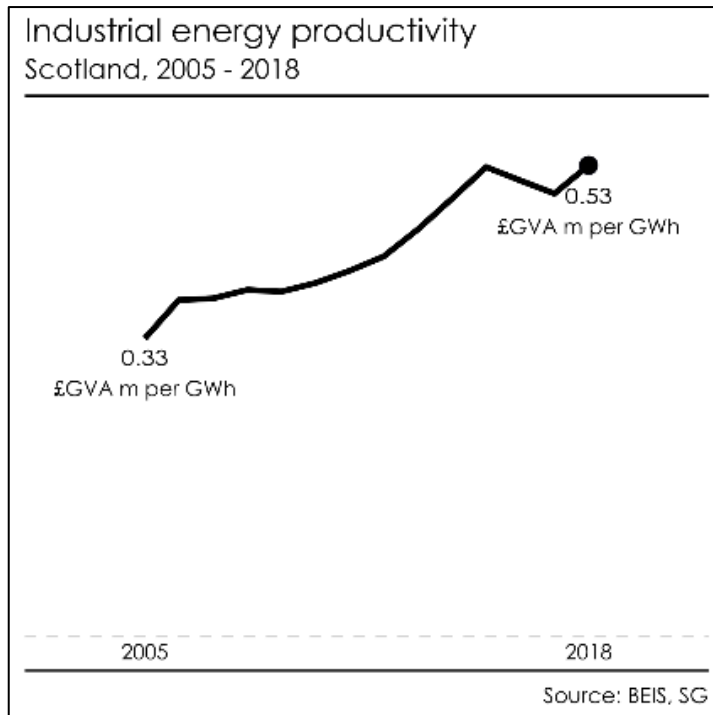
Assessment: Too early to say²⁶

Commentary:

- Industrial energy productivity in Scotland (the GVA obtained through each GWh of energy used in the industrial sector) grew steadily, by over 55%, from 2005-2015, followed by 2 years of moderate (6%) decline, and an uptick in the most recent year 2018.
- Between the 2015 baseline and the most current data available in 2018, there has been a moderate (0.4%) improvement in industrial energy productivity. The on track assessment of ‘too early to say’ reflects the fact that many decarbonisation policies for the industrial sector are in the early stages of roll-out and, as such, it is too early to see the impact of these.
- 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.
- Industrial GVA has continued to grow in recent years and is currently at its highest level, and although there has been a 28% decrease in energy consumption since 2005, this has remained relatively steady for the last few years.
- The data here cannot be directly compared to previous iterations of the Climate Change Plan monitoring report as a more robust method of tracking has now been developed, one which separates industrial from commercial energy use.

²⁵ From 2015 baseline

²⁶ Evidence and data is so far inconclusive



Industry graph 2

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Industrial emissions intensity (tCO ₂ e per £GVAm)	Progress to target [Reduce 30% by 2032] ²⁷

Most recent data: 454 tonnes CO₂e per £1 million GVA – industrial emissions intensity in Scotland in 2018.

Data source(s): Scottish Government Greenhouse Gas Emissions publication, Scottish Government Quarterly National Accounts

Assessment: Too early to say²⁸

Commentary:

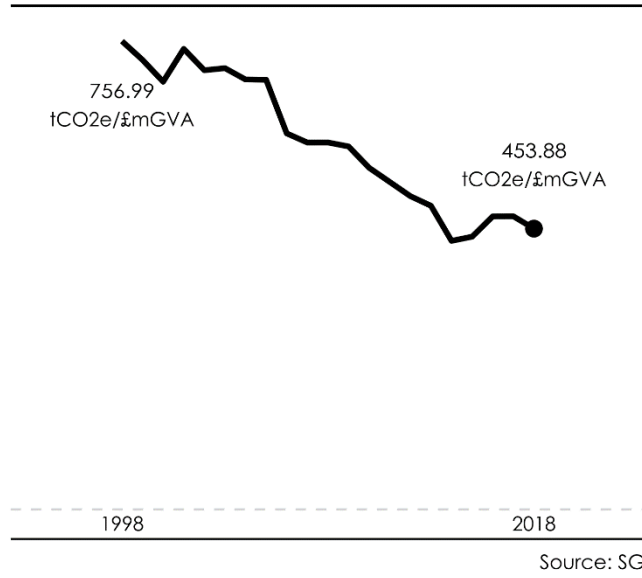
- Emissions intensity in Scotland (the volume of emissions produced through each £1m of GVA in the industrial sector) fell by over 35% 2005-2015, rose 7% to 2017, and decreased to its current level in 2018.
- Between the 2015 baseline and the most current data available (2018) there has been a slight (3%) increase in emissions intensity of industry, and the ‘too early to say’ assessment above reflects the fact that many decarbonisation policies for the industrial sector are in the early stages of roll-out and, as such, it is too early to see the impact of these.
- Improvements on this indicator are also 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.
- As outlined above, industrial GVA was at its highest level in 2018, and although emissions fell by over 25% between 2005-2018, they increased between 2014-2017 by approximately 1MtCO₂e, largely due to increased activity in the refinery and petrochemicals sectors.
- The data here cannot be directly compared to previous iterations of the Climate Change Plan monitoring report as a more robust method of tracking has now been developed, one which separates industrial and commercial emissions.

²⁷ From 2015 baseline

²⁸ Evidence and data is so far inconclusive

Industrial emissions intensity
Scotland, 1998 - 2018

Industry graph 3



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

Most recent data: 1.5% Scottish gas demand accounted for by biomethane blended into the gas grid in 2019/20

Data source(s): Scottish Gas Networks

Assessment: Too early to say²⁹

Commentary:

- The level of biomethane in the gas grid grew 5-fold between 2015 and 2019, from 126 GWh to 716 GWh. So despite a 14% increase in Scottish gas consumption over the same period, the percentage of this gas consumption which was accounted for by biomethane has risen from 0.3% to 1.5%.
- Although moderate, this growth in biomethane levels has contributed to a lower emissions intensity of the gas grid.
- Scottish gas networks estimates that the equivalent of 227,000 households were supplied with biomethane in 2019/20.

²⁹ Evidence and data is so far inconclusive

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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 will have an interim cap 5% tighter than the EU ETS, and will be reviewed for consistency with Net Zero in 2021.	Boosted [June 2020]	The UK ETS, established jointly by Scottish Ministers with the UK Government and the other devolved administrations, became operational on 1 January 2021. It currently mirrors the EU ETS to provide a smooth transition for the new market, but with clear commitment to review it for consistency with Net Zero.	The policy was implemented on 1 January 2021. There are no specific indicators in the CCPU. The first data from participants will not be available until Q2 2022.	Next steps include joint UKG-DA consultation on increasing the ambition of the UK ETS, most particularly its cap. We have publically committed to consult on this within 9 months of the CCC's CB6 advice (so Sept 2021). And implement and changes by Jan 2023 if possible, but Jan 2024 at the latest.
Deliver an Energy Transition Fund (ETF) to	New [June 2020]	Since the announcement of the ETF we have been	The ETF will provide £62m funding to its	Business cases are now in a late stage of

<p>provide support for a sustainable, secure and inclusive energy transition in the North-East.</p>		<p>working closely with project partners to support them as they develop business cases at pace, the approval of which will allow these projects to move into delivery phase.</p> <p>The ETF has announced grant offers for Aberdeen Hydrogen Hub and the Global Underwater Hub to date. .</p>	<p>associated projects over a five year period from 2020/21 to 2024/25.</p>	<p>development and we'd expect to make further announcements on their progress in the near future.</p>
<p>Establish and deliver a Scottish Industrial Energy Transformation Fund (SIETF) – to support the decarbonisation of industrial manufacturing through a green economic recovery.</p>	<p>New [June 2020-2-21]</p>	<p>First application window for the SIETF closed on 26th February, followed by a 3 month period of assessment and due diligence.</p>	<p>Estimates of annual cumulative carbon savings resultant from co-investment from SIETF will be revised as the scope is reviewed in 2021, and annually thereafter. However actual savings are unlikely to evidence until 2024 after significant energy efficiency or decarbonisation deployments are operational. We will monitor number and value of projects supported,</p>	<p>First batch of grants to be awarded after election. Competition will re-open later in 2021 following a review of the first application window.</p>

			and track projected emissions and energy productivity savings.	
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.	New [December 2020]	<i>Making Scotland's Future: A Recovery Plan for Manufacturing</i> was published on 4 December 2020. Some actions underway and others out for consultation which closed on 12 February. Recovery Plan timeframe 12 months (i.e. end-2021) with absorption of initiatives into wider programme at that point.	Final Recovery Plan milestones still being developed. Should be finalised at time of final Recovery Plan publication (now expected May due to election period)	Finalisation of Recovery Plan and publication expected in May 2021
Low Carbon Manufacturing Challenge Fund: to support innovation in low carbon technology, processes and infrastructure. Will be based on successful delivery of ERDF funded Advancing Manufacturing Challenge Fund.	New [2020-2021 PFG]	Confirmation of Fund announced in PfG 2020	No. Fund still in development	First tranche of funding relatively small set for FY 21/22 will utilise existing delivery mechanisms. Phase 2 (FY22/23 onwards) will see implementation of Challenge Fund model
The Renewable Heat Incentive (RHI) is a GB-wide scheme created by the UK Government (with the agreement of the Scottish Government).	Boosted [August 2020]	1,054.7 MW of accredited capacity under the non-domestic RHI between November 2011 and December 2020	Scotland consistently attracts more than its pro-rata share under the NDRHI, with around 19% of non-domestic accredited	The NDRHI is due to close on 31 March 2021, with the regulations for its closure laid on 25 January 2021, though

			installations being in Scotland.	qualified extension for both Tariff Guarantee and non-Tariff Guarantee applications have been implemented.
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.	New [CCPu 2020]	Developing the proposal's mission, objectives, structure and governance. Then consider options in context of other initiatives, and consider breadth of membership.	Too early to set indicators or milestones	Launch by end of 2021
Deliver a Net Zero Transition Managers Programme to embed Managers in organisations tasked with identifying, quantifying and recommending	New [CCPu 2020]	Early stages of developing a pilot programme, considering market intelligence gained from SIETF on capacity within industrial sites to progress projects.	Too early to set. Indicators likely to link to funding programmes such as SIETF or stakeholder partnerships such as SIDP.	Detailed pilot proposal development in first half 2021. Pilot active by end of 2021

decarbonisation opportunities for the business.				
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.	New [2020-2021 PfG]	GFIB has been established. Following a series of engagements between Partners (Scottish Government, Scottish Enterprise and Falkirk Council) to design the outline structure for the forum and its proposed workplan, GFIB is now established and has moved from an initiation phase to an action focussed delivery phase. The Board has agreed the scope and goal of each of its 5 workstreams, who will lead on them, and has identified the deliverables the Board will prioritise over the next 12 months.	The Board has agreed its priorities for the next 12 months and is currently developing its strategic indicators as a tool to track progress.	The Board will meet every 2 months to discuss specific areas of interest for the board and work together to deliver on the priorities set for the first 12 months (February 2021-22).
Develop policy on providing market-benefit for Scottish industries that invest to decarbonise production.	New [CCPu 2020]	New policy in CCPu. Commissioned research underway. Draft report submitted and reviewed by steering group. Contractor designing a second phase to use targeted stakeholder	No. This is a high-level scoping exercise to identify demand-side policy opportunities. It may warrant further investigation and development of	Commissioned research expected to complete Q2 2021.

		engagement to probe specific products within markets in more detail.	Scottish products or demand-side levers.	
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.	New [2020-2021 PfG]	<p>Over the next five years, our enterprise agencies will provide £50 million Green Business Support funding to businesses, organisations and social enterprises. £9.6m has been added to their capital R&D budget for 21/22.</p> <p>A further £50 million Green Supply Chain Development funding is available to help ensure that businesses and supply chains across Scotland can capitalise on our investment in low carbon infrastructure. Arrangements for the £4.4m available in 21/22 are being developed.</p>	As yet, no targets have been set. The enterprise agencies are in the process of finalising their plans for 2021-22 and arrangements for the Green Supply Chain Development Fund are still being made.	first call for this funding was announced on 22 March with a go live for applications in May and awards to be made in August.
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,	New [CCPu 2020]	A new Low Carbon Economy Unit is being established in SG to support the economic development contribution to net zero. Their work will include identifying strengths of the Scottish economy and		From Summer 2021 onwards, produce place-based analysis to identify what 'buy', 'make' and 'innovate' investments are required by when for business and industry.

<p>for example on The Clyde Mission and continued support for the Michelin Scotland Innovation Parc (MSIP).</p>		<p>related opportunities for economic growth / delivering net zero / and tackling place based poverty and inequalities. This will include key research, innovation and related capabilities.</p> <p>The Scottish Government has committed £25m to Clyde Mission to support the development of zero carbon energy infrastructure and heat along the river Clyde's path.</p>		<p>By end 2021 we will have in place a strategy for the utilisation of this funding, aiming to lever investment and activity from public and private sector partners.</p>
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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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
ACORN CCS Project: support the delivery of	Maintained	Ongoing support.	No specific milestones beyond policy support.	Clarity on UK business models and funding

the CCS and Hydrogen capability at St. Fergus Gas Processing complex by 2025.			in 21/22 we will need to make funding decisions and whether funding for Acorn is required from the EETF	expected by November 2021. Following this we will have a clear picture of potential financial support.
Establish and deliver a Carbon Capture and Utilisation (CCU) Challenge Fund.	New [2020-2021 PfG]	Working with Enterprise Agencies and undertaking stakeholder engagement to establish the fund and eligibility criteria. Opening for expression of interest in 2021.		The fund will open in 2021 for allocating grants and will pay out £5m to the end of 2023.
Emerging Energy Technologies Fund – to support the development of Hydrogen, CCUS and Negative emissions technologies.	New [CCPu 2020]	The EETF has £5m available for projects in 2021/22.	N/A	CCS/NETS: In 2021 a NETs feasibility study and alongside CCS policy development can help inform the spending profile from 2022
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.”	Boosted [2020-2021]	December 2020 BEIS released some details on relevant business models and we continue to press for further clarity, engaging on the UK led regulators forum.	N/A	Continued support to projects for business models to develop this year. Further clarity expected before COP26.
Forums for CCUS and Blue (low-carbon) Hydrogen: to bring	Boosted [NECCUS 2019]	Having established in November 2019 NECCUS have cemented their	N/A	Established in 2019. Grant Funded 2019/20, 2020/21,

together industry, academics and membership organisations to promote and attract investment in CCUS and Blue Hydrogen.		importance to the sector by developing paid membership and successfully bidding for £1.2m for work to deliver Scotland's Net Zero Roadmap (SNZR)		grant offer made for 2021/22. Aim for NECCUS to be self-sufficient for 2022/23
Evidence for CCUS and Blue Hydrogen: building the evidence base on impact of technology, regulatory and market barriers..	Boosted [PfG 2020/21]	Work has commenced on regulatory requirements, and geological risk. An economic Impact Assessment has been commissioned. Working with the Acorn Project on a Shipping of CO2 study.	N/A	Economic Assessment expected to complete in early summer 2021 for publication. Working with Scottish regulators to update guidance on the regulatory landscape in 2021. Shipping study will report at the end of 2021
Strategic development of Scotland's hydrogen economy - This is a cross-portfolio proposal that will impact on the delivery of multiple outcomes.	Boosted [Hydrogen Assessment and Policy Statement 2020]	The Hydrogen Policy Statement published in December 2020 articulates our ambitions and potential opportunities in this emerging sector.	n/a	The policy statement provides a policy framework for the development of a Hydrogen Action Plan which we will publish in 2021.
Hydrogen Demonstration: to replicate and scale-up demonstration projects	Boosted [Hydrogen Assesment	We have completed and published several major pieces of work over the last	n/a	The £10m funding to support Hydrogen Demonstration

<p>and the evidence base for hydrogen based technologies.</p>	<p>and Policy Statement 2020]</p>	<p>12 months to inform our hydrogen policy development; the Offshore Wind to Green Hydrogen Report, the Deep Decarbonisation Pathways for Scottish Industries Study, and the Hydrogen Assessment have provided an evidence base which informed our policies on hydrogen within the Hydrogen Policy Statement published in December 2020 and articulates our ambitions and potential opportunities in this emerging sector. The Hydrogen Policy Statement provides a policy framework for the development of a Hydrogen Action Plan which we will publish in 2021</p>		<p>announced in the 2020 SG Budget has supported strategically important hydrogen demonstration projects including the SGN H100 Fife gas network decarbonisation project.</p>
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Chapter 5: Waste and the Circular Economy

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan³⁰ for this sector was 1.2 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of 1.7 MtCO₂e. On the basis of comparing these figures, the sector was outside its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan 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	

³⁰ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

As set out in this report, the most recent data reporting on outcome indicators was published in 2019, and while this suggests progress is being made on outcomes (reduction in landfill, biodegradable municipal waste to landfill), it is ultimately too early to say. For example, official data shows that the total quantity of waste landfilled in Scotland in 2019 was 3.00 million tonnes, a reduction of 20% from 2018 and the lowest figure recorded since records began.

As set out in the recent CCPu, Scotland's progress in reducing emissions in the waste and resources sector over the past 20 years has been striking. Recycling is now a more established part of our everyday life, and we recycle over 60% of Scotland's waste. The amount of waste going to landfill in Scotland is at its lowest since records began. In 2018, waste and resources sector emissions were over 70% lower than in 1998.

However, we still have a significant challenge ahead in order to meet our ambitious emissions reduction targets. Emissions in the sector are currently around 1.9 megatonnes per year; our aim is to reduce these emissions to 1.2 megatonnes by 2025, and 0.8 megatonnes by 2030. Achieving these milestones will require meeting our ambitious waste reduction and recycling targets, including: ending landfilling of biodegradable municipal waste and significantly reducing food waste; accelerating efforts to address legacy emissions from closed landfill sites; and ensuring a more rapid transition to a fully circular economy in Scotland.

Work continues on the policies set out in the Climate Change Plan update to meet this challenge.

Developments in monitoring arrangements since CCPu / last report

Following our commitment to net zero by 2045, in the update to the Climate Change Plan we presented 1 revised policy outcome, carrying forward three from the

previous monitoring report. Five new indicators have been introduced to reflect the changes to the outcomes and to provide greater detail.

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

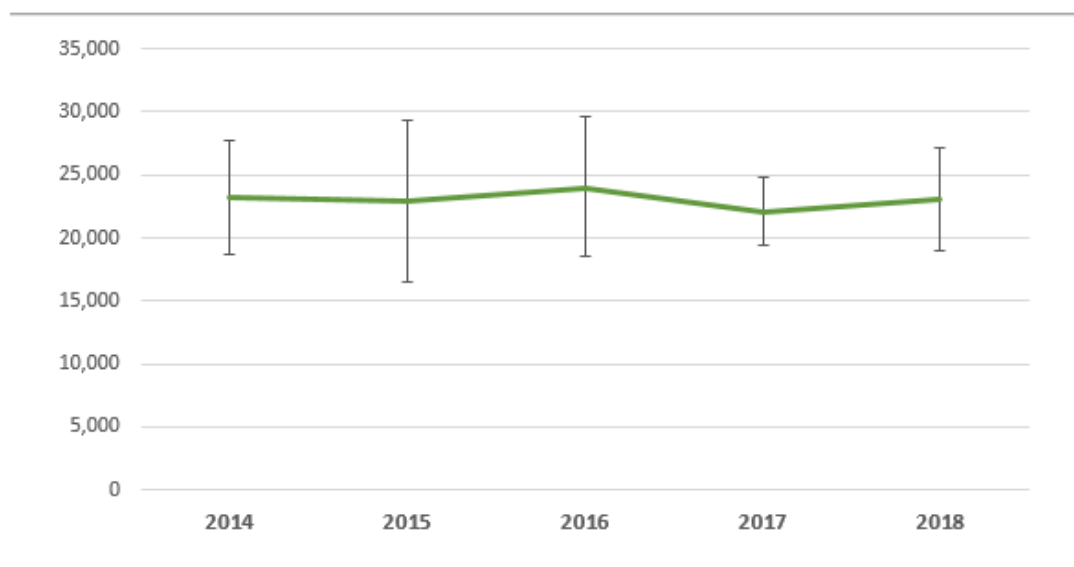
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say³¹

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Waste graph 1

³¹ Evidence and data is so far inconclusive

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

Most recent data: In 2018, 3.74 million tonnes of Scottish waste was landfilled out of a total of 11.65 million tonnes that were managed. The percentage of waste sent to landfill in 2018 was 32.1% compared with 32.4% in 2017 and 42.8% in 2011.

Data source(s): Official statistics published by SEPA_ 2018 waste from all sources and 2019 waste landfilled in Scotland

Assessment: Too early to say³²

Commentary:

Total waste volumes managed vary significantly year on year, for example, due to changes in the amount of construction and demolition waste. Given the time lag in data, it remains “too early to say” if we are on track. Further work is being undertaken to assess trajectory, supported by the development of the 2025 route map to outline how we will deliver our waste and recycling targets.

The target relates to the proportion of Scottish waste landfilled anywhere. The latest data is for 2018.

Most Scottish waste that is landfilled is landfilled in Scotland. As such it is possible to indicate the likely trend by considering waste landfilled in Scotland, figures for which are available before information on all Scottish waste managed. In 2019, 3.00 million tonnes of waste were landfilled in Scotland, a reduction of 0.74 million tonnes (20%) compared with 2018 and the lowest figure recorded since the start of reporting in 2005.

³² Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Total amount of biodegradable landfilled waste (tonnes)	Year-to-year change + Progress to interim target [0 tonnes of biodegradable municipal waste landfilled by 2026]

Most recent data: 2019 waste landfilled showed the amount of biodegradable municipal waste (BMW – the biodegradable component of Municipal Waste) disposed to landfill in Scotland was 0.70 million tonnes, a decrease of 0.32 million tonnes (32%) from 2018.

Data source(s): Official statistics publication by SEPA- 2019 waste landfilled in Scotland and 2019 waste incinerated in Scotland.

Assessment: Too early to say³³

Commentary:

Official statistics show the amount of biodegradable municipal waste landfilled in Scotland decreased by nearly a third (32%) between 2018 and 2019. This means Scotland has met and exceeded the EU target to reduce the quantity of BMW disposed of to landfill.

A implementation date of 31 December 2025 for the ban on biodegradable municipal waste sent to landfill has now been set out in legislation. However, we expect significant progress ahead of that date. We are working with partners to model capacity requirements, and ensure alternative capacity is matched to future demand, including expected progress on reducing waste and increasing recycling.

While some of the work to support local authorities' delivery planning had been temporarily delayed due to the COVID-19 pandemic, this work has restarted and is progressing at pace. We are working to provide a centrally supported procurement solution to help remaining local authorities secure alternative solutions to comply with the forthcoming ban. We are currently exploring the role of landfill tax in supporting progress towards compliance with the ban as quickly as possible. No decisions have been taken yet.

³³ Evidence and data is so far inconclusive

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

Most recent data:

Data source(s): To be determined.

Assessment: Too early to say³⁴

Commentary:

This is a new [boosted] policy, as outlined in the recent Climate Change Plan update, 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.

³⁴ The evidence and data doesn't exist or is yet to be developed

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
3	Household and non-household food waste reduced (tonnes)	Progress to target [reduce all food waste by 33% by 2025] ³⁵

Most recent data: The report ‘How much food waste is there in Scotland?’ published in November 2016 provides the best insight to date as to the true scale of food and drink waste. This provides the baseline for our reduction target.

Data source(s): WRAP (Courtauld) National Household Waste composition 2017

Assessment: Too early to say³⁶

Commentary:

As outlined in the Food Waste Reduction Action Plan a review of progress towards the 33% target will take place during 2021, providing updated estimates of total food waste in Scotland and further sector specific data. Scotland does not currently collect waste data at the granular level necessary to report annually or by supply chain sector.

While our capacity to measure and monitor on a granular and sector specific level develops, there has been some alternative interim measurement methodologies for internal use. For household data, we have utilised waste compositional data from 5 local authorities in Scotland from a wider UK waste compositional study conducted by WRAP. This has been analysed alongside information from Waste Data Flow, the national database that holds data on waste collected by local authorities.

However any estimates are heavily caveated as the Scottish element of the WRAP household data is based on a small and not necessarily representative sample of LAs. So it is calculated using different methodologies to the 2013 baseline for our reduction target, so we are cautious about using the data to assess progress against the baseline .

Mandatory reporting of food waste by business is a topic that we will consult on in a broader food waste consultation later in the year and the latest waste compositional analysis study, looking at household food waste, is planned for early 2022 after having been delayed due to the COVID-19 pandemic.

³⁵ Reduce all food waste arising in Scotland on a per capita basis by 33% by 2025, based on 2013 baseline;

³⁶ The evidence and data doesn't exist or is yet to be developed

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
4	Total waste generated (tonnes)	Progress to target [reduce total waste by 15% by 2025 against 2011 baseline] ³⁷

Most recent data: 11.45 million tonnes in 2018, 4.2% reduction against 11.96 million tonnes in 2011.

Data source(s): Official statistics publication by SEPA- waste from all sources 2018.

Assessment: Off track

Commentary:

The total amount of waste generated in 2018 was 11.45 million tonnes, the same as in 2017. This equates to a 4.2% reduction compared with 2011.

The changes in the amounts of waste generated are not the same for all sources. Since 2011 the amounts of both commercial and industrial (C&I) waste and household waste fell by 22.1% and 7.7% respectively, while the amount of construction and demolition waste increased by 11.8%.

³⁷ By 2025 reduce total waste arising in Scotland by 15% against 2011 levels;

Part C - Information on implementation of individual policies

Outcome 1: Reduction in waste sent to landfill

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
<p>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:</p> <ul style="list-style-type: none"> 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 	<p>Boosted [2020-2021 PfG]</p>	<p>A implementation date of 31 December 2025 for the BMW ban has now been set out in legislation. However, Ministers expect significant progress ahead of that date.</p> <p>While some of the work to support local authorities' delivery planning had been temporarily delayed due to the COVID-19 pandemic, this work has restarted and is progressing at pace. We are working to provide a centrally supported procurement solution to help remaining local authorities</p>	<p>To see data in part B - 2019 waste landfilled showed the amount of biodegradable municipal waste (BMW – the biodegradable component of Municipal Waste) disposed to landfill in Scotland was 0.70 million tonnes, a decrease of 0.32 million tonnes (32%) from 2018.</p> <p>Data source(s): Official Statistics Publications by SEPA- 2019 Waste</p>	<p>Bio ban – 31 December 2025</p> <p>Recycling Improvement Fund – begins 2021/22 (A call for Expressions of Interest for the fund have now opened)</p>

<p>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.</p> <ul style="list-style-type: none"> • 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 bio-waste (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. <p>In response to the Committee on Climate Change's (CCC's) latest recommendations, it is</p>		<p>secure alternative solutions to comply with the forthcoming ban.</p> <p>Work is progressing on the new policies announced in PfG 20 / CCPu 2020. This includes ongoing work with ZWS, local government and COSLA to establish a £70m fund to improve local authority recycling infrastructure.</p>	<p>Landfilled in Scotland and 2019 Waste Incinerated</p>	
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<p>our intention to extend the forthcoming ban on biodegradable municipal waste to landfill to include biodegradable non-municipal wastes, subject to appropriate consultation and work to provide assurance around some specific waste streams.</p>				
<p>Work with 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.</p>	<p>Boosted [2020-2021 PfG]</p>	<p>Work with Zero Waste Scotland continues on the review of Charter's Code of Practice</p>	<p>N/A</p>	<p>Further engagement on proposed revisions to Code of Practice May 2021 onwards. Agree approach to evaluating Charter later in 2021</p>
<p>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</p>	<p>Boosted [Low Carbon Fund 2020]</p>	<p>Ongoing discussions with UK Government, administrations and regulators regarding development and implementation of electronic waste tracking system.</p>	<p>N/A</p>	<p>UK-wide consultation due in 2021</p>

the necessary steps alongside SEPA to drive implementation of the system in Scotland.				
Electronic waste tracking fund Improved waste data system will help drive further progress to deliver on existing waste and recycling targets.	Boosted [Low Carbon Fund 2020]	New policy in CCPu – no updates yet.	N/A	As above

Outcome 2: Reduction in emissions from closed landfill sites

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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	Boosted [Low Carbon Fund 2020]	New policy in CCPu – no updates yet.	N/A	2025, doubling sites with investigative or development work

environmental impact of closed landfill sites				
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.	Boosted [Low Carbon Fund 2020]	As above	As above	As above

Outcome 3: A reduction in food waste

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
<p>We will lead collaborative efforts to deliver Scotland's landmark Food Waste Reduction Action Plan. To reduce food waste by 33% from the 2013 baseline by 2025. Actions include:</p> <ul style="list-style-type: none"> Improving monitoring and infrastructure by considering a mandatory national food waste reduction target and mandatory reporting of Scotland's food surplus and waste by food businesses. Consulting on the current rural exemption and food 	<p>Boosted [FWRAP published 2019; 2020-2021 PfG]</p>	<p>No new developments</p>	<p>Review of Food Waste Action Plan to be published end 2021/start 2022</p>	<p>Consultation due later in the year</p>

<p>separation requirements for food waste collections, to help break down barriers to food waste reuse and recycling.</p> <ul style="list-style-type: none">• 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.				
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<ul style="list-style-type: none"> 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. 				
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Outcome 4: Reduce waste and establish a more circular economy, where goods and materials are kept in use for longer.

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
We will work with local authorities and the future DRS scheme administrator(s) to explore options that will unlock reprocessing investments, including pricing and incentive schemes, to create jobs and a ready supply of	New [2020-2021 PfG]	Options are being explored with local authorities; DRS scheme administrator was approved 24 March 2021	N/A	Options work expected to continue during 2021

recycled material for new packaging.				
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.	Boosted [2020-2021 PfG]	Regulations to increase carrier bag charge passed by Parliament and came into force on 1 April		
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	New [2020-2021 PfG]	Public consultation was completed (October 20-January 21) Consultation analysis and consultation responses were published on 17 th March 2021 Draft regulations were published for comment on 17 th March 2021 for 28 days.	n/a	<ul style="list-style-type: none"> • 13th April 2021: Consultation closes • Lay final regulations later in 2021
Implementation of our Deposit Return Scheme (DRS) for single use drinks containers.	Maintained	DRS scheme administrator approved (24 March 2021)	N/A	We will commission an independent gateway review to assess the impact of the pandemic on the go-

				live date for the scheme
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.	New [2020-2021 PfG]	Publication of “Taking Account of Climate and Circular Economy Considerations in Public Procurement” Taking account of climate and circular economy considerations in public procurement: SPPN 1/2021 - gov.scot (www.gov.scot)		Publication of Circular Recovery Procurement Roadmap in 2021
Reforming extended producer responsibility schemes: We will continue to work with the UK Government and other devolved administrations on reforms to the packaging extended producer	New [2020-2021 PfG]	An initial consultation has been conducted and consulting second stage consultation on specific proposals for a packaging EPR to be introduced was launched on 24 March.		The intention is to have introduced an EPR for packaging by 2024. The next steps are the consultation followed by final scheme design and regulation.

responsibility regime, which we expect will deliver improved funding for local authorities in the future.				
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.	Boosted [CCPu 2020]	On-going development of Circular Recovery Roadmaps	Milestones will be developed within the roadmaps	Publication in 2021
In the context of the latest CCC recommendations and building on progress already made by the sector, we will consider	New [CCPu 2020]	New policy in CCPu – no new updates at this stage.		

measures to ensure new energy from waste plants are more efficient, and 'future-proofed' for Carbon Capture and Storage technology.				
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.	New [CCPu 2020]	New policy in CCPu – no new updates at this stage.		

Chapter 6: LULUCF

Part A - Overview of sector

The 2018 annual emissions envelope published in the 2018 Climate Change Plan³⁸ for this sector was for -5.3 MtCO₂e, whereas the outturn emission statistics for this year (published in June 2020) show a position of -5.4 MtCO₂e. On the basis of comparing these figures, the sector was within its envelope in 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan 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 Carbon Code: Projected emissions reduction (validated units)			x

³⁸ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, the data for this aspect of these monitoring reports will be based on the envelopes published in the 2018 Plan .

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

While this policy outcome does not have any indicators, this policy outcome is on track. Five RLUP pilot regions have been announced and the Scottish Government is working collaboratively with them to enable their establishment in 2021. More information is provided in the body of this report.

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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

Forestry

Planting of new woodlands was 11,210 and 11,050 hectares in 2018-19 and 2019-20 respectively, a substantial increase on previous years, and in line with planting targets for these years.

There is a strong pipeline of woodland creation projects at present, and it is expected that the 2020-21 target of 12,000 hectares will be exceeded. The targets will increase further to reach 18,000 hectares a year by 2024-25.

This policy has been boosted through an additional £100M of funding (announced in the PfG in 2020) to support an increase in woodland creation up to 2025, as well as actions to expand the woodland carbon market through the Woodland Carbon Code, acquire more land for planting on Scotland's national forests and land, and support the promotion and development of wood products for use in construction

Peatland

In 2019-20, circa 6,000 hectares of peatland were set on the road to restoration through collective work by our delivery partners. This is off-track against the relevant indicator target of 20,000 hectares per year.

In 2020-21, it is forecast that around 5,000 hectares of peatland will be set on the road to recovery (final figures will be published in our next report). This figure is a decrease on 2019-20 primarily due to the impacts of the Covid-19 pandemic which interrupted project delivery and delayed the launch of the call for new project proposals to late summer 2020.

Since publication of the CCPu we have increased our focus on addressing the barriers to increased annual rates of peatland restoration. This has included confirming a multi-year funding package and launching a new call for applications for landscape scale projects; convening a first peatland restoration summit in December 2020 to inform development of a new Scottish Government-led Peatland Restoration Programme to create a more flexible and efficient delivery system; and working with partners to increase private sector investment in peatland restoration via the Peatland Code.

Developments in monitoring arrangements since CCPu / last report

The CCPu amended the LULUCF monitoring framework.

Forestry retains the following outcome indicators, *Number of hectares of woodland created*, *Annual volume of Scottish produced sawn wood and panel boards use in construction* and adds the following: *Woodland ecological condition* and *Woodland Carbon code: projected sequestration*.

The indicator *Hectares of peatland restored per year* is a proxy measure which doesn't directly represent the reduction in emissions. The CCPu monitoring framework notes that an emissions reduction indicator may be adopted in the future. It further notes that the current target of 20,000 hectares per year is under review and may change in future as peatland restoration takes its place in an emerging suite of wider land use change.

The indicator *Peatland Carbon Code: Projected emissions reduction (validated units)* has been introduced as part of the CCPu. This is the first time we are reporting on it.

The RLUPs indicator was introduced as part of the CCPu, and therefore this is the first time we are reporting on it.

Part B - Progress to Policy Outcome Indicators

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets) Year-to-year change
0	FTE employment in Low Carbon Renewable Energy Economy	

Most recent data: 2018

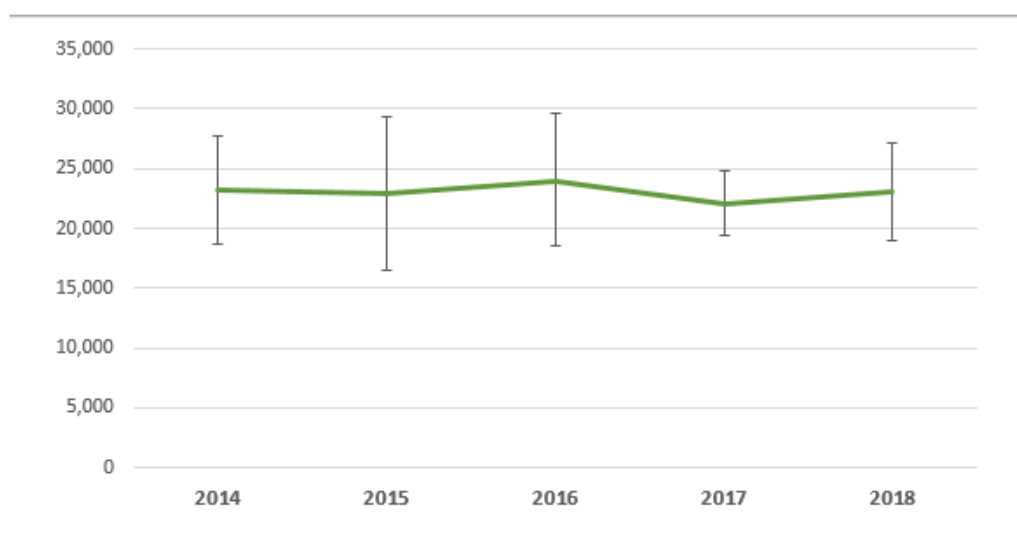
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say³⁹

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCRE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCRE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

LULUCF graph 1

³⁹ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Hectares of woodland created per year	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: 11,050 hectares in 2019-20

Data source(s): Forestry Statistics 2020

Assessment: On track

Commentary:

Current levels of woodland creation applications indicate that we are on track to meet the 12,000 target. Delivery is dependent upon landowners implementing their projects as agreed. Official data on woodland creation for this period will be released in summer 2021.

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

Most recent data: 442,611 hectares are now classified as native woodland, 430,000 ha of these native woodlands are in overall 'favourable' or 'intermediate' condition.

Data source(s): National Forest Inventory (NFI)

Assessment: Too early to say⁴⁰

Commentary:

Published as official statistics by the National Forest Inventory (NFI), the study into Woodland Ecological Condition 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 in 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 an ecological contribution, with less than 6% in 'unfavourable' ecological condition.

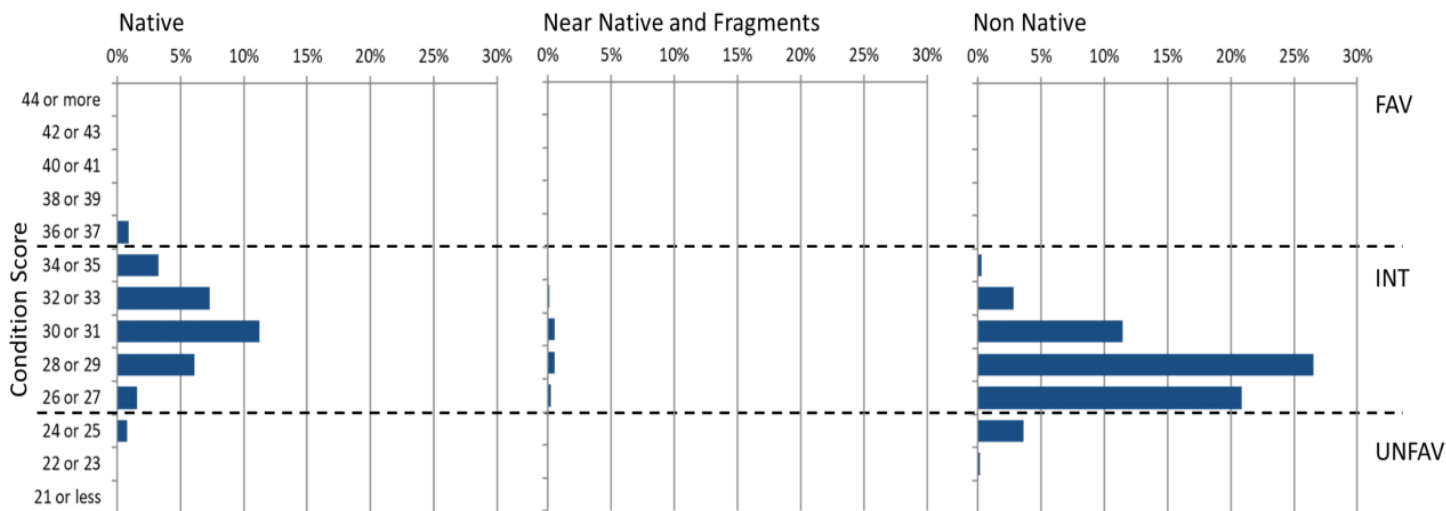
Furthermore, the survey demonstrates that the active management of a forest for wood production delivers higher biodiversity as well as a renewable supply of wood to help sustain an industry that benefits climate change mitigation, jobs and the economy - at minimal cost to the public purse.

The second report covering the second 5-year survey is due late in 2021.

⁴⁰ Evidence and data is so far inconclusive

7 Condition scoring distribution

Figure 7.1 The overall distribution of ecological condition class by woodland type in Scotland



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.

LULUCF graph 2

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
1	Woodland Carbon Code: Projected carbon sequestration (validated credits)	Progress to target (increase 50% by 2025) ⁴¹

Most recent data: 5.6 million tCO₂, unofficial data for UK at December 2020

Data source(s): UK Land Carbon Registry, Forestry Statistics (Forest Research)

Assessment: On track

Commentary:

There has been a 19% increase in the number of validated credits under the Woodland Carbon Code between April and December 2020.

Unofficially, 5.6M carbon credits had been validated at December 2020. Data for 2020-21 will be released in in the publication of Forestry Statistics in Summer 2021.

⁴¹ Carbon sequestration baseline March 2020

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

Most recent data: 2,24 million m3 estimated in construction in 2019

Data source(s): Forestry Statistics 2020

Assessment: Too early to say⁴²

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 2.24 million cubic metres of timber used in construction in 2019, is based on these statistics.
- There is a slight decrease from the estimate for 2018 which reflects the reduction in house builds in 2019. COVID-19 is also likely to have an impact on the 2020 estimates and we expect the volumes to be lower than the progress for the target. Once construction is back to normal we hope that the figures will move back on track to hit the longer term targets.

⁴² Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
3	Hectares of peatland restored per year	20,000 ha/y ⁴³

Most recent data:

Around 6,000 hectares on the road to recovery in 2019-2020.

Around 5,000 hectares (forecast) on the road to recovery in 2020-2021.

Data source(s):

Peatland Action (NatureScot)

Assessment: Off track

Commentary:

In 2019-20, circa 6,000 hectares of degraded peatland were set on the road to restoration through collective work by Peatland ACTION, the Cairngorms National Park, the Loch Lomond and The Trossachs National Park, Forestry and Land Scotland and Scottish Water.

Although this is the largest annual area into restoration so far in the programme (up from 5,800 hectares in 2018-19), it remains circa 14,000 ha off-track against the relevant indicator target of 20,000 hectares per year.

In total, around 25,000 hectares have been put on the road to recovery with funding provided by Scottish Government since 2012-13.

The 2018 Climate Change Plan established a restoration target of 250,000 ha by 2030, with a cumulative target within that of 50,000 hectares by the end of 2019-20. Over that period circa 15,000 hectares have been set on the road to restoration, circa 35,000 hectares short of the 50,000 hectare target.

In 2019-20 Peatland ACTION carried out feasibility studies on a land area of 74,700 hectares (up from 72,700 hectares in 2018-19), such that over 200,000 hectares of targeted feasibility studies have been undertaken with funding provided by the Scottish Government since 2012-13.

In 2020-21, it is forecast that around 5,000 hectares of peatland will be set on the road to recovery. This figure is reduced primarily due to the impacts of the Covid-19 pandemic which interrupted project delivery and delayed the launch of the call for new project proposals to the late summer 2020.

⁴³ 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	Indicator	On-Track Assessment (Milestones/ Targets)
3	Peatland Carbon Code: Projected emissions reduction (validated units)	Year-to-year change

Most recent data:

115,209 validated units from 3 projects in Scotland between 2017 (first Peatland Code project) and March 2021. These projects, their validation date and associated units are as follows.

Project name	Date validated	Validated units
Dryhope	01/07/18	6,484
Lochrosque	15/05/20	87,103
Talla, gameshope and Carrifran	21/12/20	21,622
Total		115,209

Data source(s): UK Land Carbon Registry⁴⁴

Assessment: Too early to say⁴⁵

Commentary:

The CCPu acknowledges that Government cannot fund on its own the scale of peatland restoration and management that will be needed to deliver on our emissions reduction targets. Alongside the funding we make available through grants for peatland restoration and agri-environment schemes, private investment in Scotland's natural capital will also be essential. It will also be necessary to ensure long-term sustainable management of restored peatland so that the carbon it stores remains locked up in the long term.

As well as our commitment of £250 million of funding over ten years, we are working to attract increased private investment. The Peatland Code is a recognised standard for businesses to purchase and report on carbon units for peatland restoration.

We will increasingly work to integrate public and private funding for peatland restoration and management through better coordination between the Peatland Code and government grants to landowners and land managers via our delivery partners.

A shared carbon registry – the *UK Land Carbon Registry* – was established in November 2020 for the Woodland Carbon and Peatland Codes to reduce complexity in the carbon market and facilitate increased private sector investment in nature-based solutions to tackle greenhouse gas emissions and improve wellbeing.

The data reported above represents the total validated units from projects in Scotland since the Peatland Code began in 2017 and March 2021. This provides the

⁴⁴ Via www.iucn-uk-peatlandprogramme.org/funding-finance/peatland-code/peatland-code-projects

⁴⁵ Evidence and data is so far inconclusive

baseline against which year-to-year changes for this indicator will be reported in future.

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Forestry grants: we will provide funding via a grant scheme, to support eligible land owners establish appropriate woodlands.	Boosted [2020-2021 PfG]	This policy has been boosted through an additional £100M of funding (announced in the PfG in 2020) to support an increase in woodland creation up to 2025. There is currently a full pipeline of woodland creation projects.	The indicator for woodland creation is hectares planted per year. Approvals indicate that we are on track to deliver 12,000 hectares for 2020-21.	The targets for woodland creation consist of stepped increases over the next five years, rising from 12,000 hectares in 2020-21 to 18,000 hectares in 2024-25.
Woodland creation on Scotland's national forests and land: Forestry and Land Scotland will deliver an annual contribution towards the	Maintained	FLS continues to create woodlands and is developing partnerships with a range of potential partners to undertake woodland creation for carbon capture	In 20/21 FLS will create around 570 ha of woodland	FLS will continue to create woodlands each year on an ongoing basis

<p>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.</p>				
<p>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.</p>	<p>Maintained</p>	<p>This policy has been maintained, although the COVID19 restrictions have prevented the planned number of events taking place</p>	<p>No Hard indicators. But a new series of events is currently underway associated with the establishment of a monitor farm network that includes farm forestry.</p>	<p>Ongoing – annual series of events and developments to increase uptake of farm forestry eg launch of Small Woodland Load Scheme in spring 2021</p>
<p>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</p>	<p>Maintained</p>	<p>The four administrations of the UK have begun work on the review of the current UK Forestry Standard (UKFS). The review takes place every five years and the aim is to update and publish the next version by the end of 2022.</p> <p>The review will ensure the Standard is up to date and</p>	<p>No</p>	<p>Next edition of the UK Forestry Standard is due to be published by the end of 2022</p>

<p>created and managed to meet sustainable forest management principles and provides a basis for monitoring.</p>		<p>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.</p>		
<p>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.</p>	<p>New [CCPu 2020]</p>	<p>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.</p>	<p>Quantity of validated carbon units under the Woodland Carbon Code</p>	<p>50% increase in validated carbon units by 2025</p>
<p>Forestry and woodland strategies: Forestry and woodland strategies continue to be prepared</p>	<p>Maintained</p>	<p>A number of current strategies are being reviewed and updated. Work is also ongoing with</p>	<p>N/A</p>	<p>Work with Scottish Borders Council will be</p>

<p>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.</p>		<p>Scottish Borders Council to pilot further improvements to how such strategies can be developed in future. That work will inform a refresh of the current SG Guidance, which is planned to be commenced in 2021/22</p>		<p>completed by 2022. Planned to commence refresh of relevant SG guidance in 2021/22</p>
<p>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 which is now open to</p>	<p>New [Scottish Forestry Implementation Plan]</p>	<p>There has been good take up of the grant scheme. We are still working with Confor and other stakeholders to obtain better data on plant production.</p>	<p>No</p>	<p>N/A</p>

forest nurseries across GB with support from Defra.				
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.	New [CCPu 2020]	<p>Acquisition & Disposal Strategy has been prepared setting out FLS approach to investing in new woodland.</p> <p>The transition from the previous NWIP programme to the new approach will take place on the 01 May 2021 when NWIP expires.</p> <p>A number of carbon off-setting agreements and partnerships are being explored and are at various stages of discussion</p>	Indicators and milestones are currently being developed. Will come into effect from the 01 May	New Governance and business Rules to begin implementation late spring 2021

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against	Timeframe and expected next steps

			these.	
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.	Maintained			

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Restoration grants: We will provide grant funding to support eligible land managers to deliver	Boosted [Budget 2020/21, reinforced in	This is a boosted policy in the CCPu 2020. In 2019-20, Scottish Government grant put	In 2019-20, progress against the annual target of 20,000 ha is off-track, and is	Informed by a Ministerial peatland summit in December 2020,

<p>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.</p>	<p>2020-2021 PfG]</p>	<p>~6,000 hectares of peatland on the road to restoration. In 2020-21, this figure is forecast to be around 5,000 hectares, the reduction being largely due to the impacts of responding to the Covid-19 pandemic. The multi-year funding package established in our February 2021 Infrastructure Investment Plan has enabled a new call for multi-year landscape scale applications that should significantly increase restoration in 2021/22 and boost contractor confidence. Research to inform the location of restoration efforts in future is underway and will report in the spring.</p>	<p>forecast to remain so in 2020-21.</p>	<p>work is currently underway with our partners to develop a new Scottish Government-led Peatland Restoration Programme to improve the governance and delivery framework and address systemic barriers to increased delivery.</p>
<p>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</p>	<p>New [CCPu 2020]</p>	<p>This is a new policy in the CCPu 2020.</p>	<p>N/A</p>	<p>Informed by a Ministerial peatland summit in December 2020, work is currently underway with our partners to develop a new Scottish Government-led</p>

and others to deliver peatland restoration.				Peatland Restoration Programme to improve the governance and delivery framework and address systemic barriers to increased delivery. The work plan for this emerging Programme includes addressing challenges relating to widely raising awareness of the opportunities that peatland restoration may offer, investment confidence, contractor capacity and skills and training.
With partners, refresh our vision for Scotland's peatlands and review peatland restoration support mechanisms to overcome embedded	New [CCPu 2020]	This is a new policy in the CCPu 2020.	N/A	Informed by a Ministerial peatland summit in December 2020, work is currently underway with our

barriers and improve how we fund and deliver this activity.				partners to develop a new Scottish Government-led Peatland Restoration Programme to improve the governance and delivery framework and address systemic barriers to increased delivery. The work plan for this emerging Programme includes development of a new vision for Scotland's peatlands.
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	New [2019-2020 PfG]	This was a policy commitment in the PfG 2019/20. Growing media producers are already transitioning and developing alternatives and, overall, there was a 25% reduction in the use of peat between 2011 and 2019.	The Scottish Government has already provided support to the potato industry to help find ways to reduce peat use in the early part of the potato production chain.	A series of stakeholder meetings will be held in 2021 so that we may further understand the remaining barriers to transition faced by the Scottish

and develop a time-scaled plan.		Peat use now constitutes less than half of all growing media used in the UK.		horticulture sector and can help to overcome these
Our Position Statement on National Planning Framework 4 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.	New [CCPu 2020]	<p>The Chief Planner wrote to all Planning Authorities on 3 March 2020 requesting information about active peat extraction sites in Scotland and the timescales around when these existing planning permissions are due to expire. Scottish Government is using this information to better understand the scale of extraction and the likely impact of any possible future policy levers to be used.</p> <p>The Scottish Government's recently published Position Statement on National Planning Framework 4, confirmed that our intention is not to support future applications for planning permission for new commercial peat extraction for horticultural purposes including new extensions to existing sites.</p>	N/A	<p>We invited comments on the NPF4 Position Statement over a 12 week period from November 2020 to 19 February 2021. The consultation responses and an analysis of consultation responses will be published in due course.</p> <p>In autumn 2021, we will lay a draft NPF4 in the Scottish Parliament. At the same time we will carry out extensive public consultation. We anticipate producing a final version of NPF4 for approval and adoption around spring 2022.</p>

<p>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</p>	<p>New [CCPu 2020]</p>	<p>This is a new proposal in the CCPu 2020.</p>	<p>The indicator <i>Peatland Carbon Code: Projected emissions reduction (validated units)</i> has been introduced as part of the CCPu. This is the first time we are reporting on it and the relevant data between the first Peatland Code project and March 2021 is included in this report.</p>	<p>The Environment and Economy Leaders Group has established a sub-group on investment in natural capital. Boosting the profile and traction of the Peatland Code is a key element of its work and in the coming months we will engage with the IUCN and other partners to develop this area and learn from the experience of the woodland sector. In time we would expect this work to impact positively on the associated indicator. We will also engage with agriculture policy to align with the development of future public sector</p>
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				support mechanisms.
Explore how best to restore all degraded peat in the public estate and also within formally designated nature conservation sites, including through statutory mandate.	New [CCPu 2020]	This is a new proposal in the CCPu 2020. It relates to recommendations from the Climate Change Committee.	N/A	We will progress this work from 2021.
Explore the development of a Peatland Restoration Standard to ensure best practice and continuous development in the success and effectiveness of peatland restoration.	New [CCPu 2020]	This is a new proposal in the CCPu 2020.	N/A	We will progress this work from 2021.

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

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps

<p>Establishment of pilot Regional Land Use Partnerships to help ensure that we maximise the potential of Scotland's land to help achieve net zero.</p>	<p>New [CCPu 2020]</p>	<p>Since the CCPu, five Regional Land Use Partnership pilots have been announced. These will be established over the course of 2021, and they will develop Regional Land Use Frameworks by 2023.</p> <p>The regions are:</p> <ul style="list-style-type: none"> • Cairngorms National Park; • Highlands Council Region; • Loch Lomond and the Trossachs National Park; • North East Region (Aberdeenshire and Aberdeen City Councils); and • South of Scotland (Dumfries and Galloway and Scottish Borders Councils). 	<p>No milestones or indicators have yet been developed. These will be formalised in collaboration with the pilots.</p>	<p>The timeframe is to have the pilots established by the end of 2021, with frameworks being developed by 2023.</p>
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<p>Publication of Scotland's third Land Use Strategy (LUS3) by statutory deadline of 31 March 2021</p>		<p>Scotland's third Land Use Strategy was published on the 24th March 2021. It resets the strategic focus on to the integrated nature of land use and introduces a new landscape based approach to demonstrating the range of demands placed on land and the variety of benefits it can provide.</p>		
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Chapter 7: Agriculture

Part A - Overview of sector

The 2018 annual emissions envelope set in the 2018 Climate Change Plan⁴⁶ for this sector was for 8.4 MtCO₂e, the actual emission statistics for this year show a position of 7.5 MtCO₂e⁴⁷. As such, the sector was within its envelope during 2018. However, it should be noted that the historical GHG inventory for the period 1990-2018 was subject to technical revisions since the time of development of the 2018 Plan, which places some limitations on the extent to which these figures can be directly compared.

The updated Plan 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

⁴⁶ The CCPu includes updated emission envelopes for the years from 2020 onwards. Given the time period involved in the preparation of national and sectoral emissions statistics (the most up to date data available at this time is for 2018), comparisons with the updated envelopes are not yet possible. Until such a time as this can happen, comparisons will be made based on the 2018 Plan envelopes.

⁴⁷ If the published GHG statistics for 2018 are adjusted to include known future inventory revisions around reporting for wetlands and changes to global warming potentials of some GHGs then this figure would become an estimated 7.7 MtCO₂e

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			
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
Hectares of peatland restored per year			x
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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

The agriculture policies in the Plan update provide a route map for agricultural transformation, starting in 2020 with piloting and introducing new mechanisms of support for farmers, crofters and land managers to meet Scotland's climate ambitions, as well as delivering wider biodiversity and environmental benefits and continuing food production.

We are taking a co-development approach, working with stakeholders and farmer-led groups to secure increased uptake of low emission farming measures through

new schemes and approaches, the development of environmental conditionality and enhanced advisory support.

Farmer led groups are a key initiative to propose practical workable solutions to ensure that agriculture contributes to Scotland's climate targets. These have made significant progress since the Plan update was published in December 2020 building on the work of the Beef Suckler Climate Group. Farmer led groups were established on Arable, Dairy and Hill, Upland and Crofting, along with an existing group considering the Pig sector, to look at what other key farming sectors can do to shift to low carbon farming and land management and use. These groups have all now reported and the detailed proposals and ideas within these reports will now be considered by government as it begins its work to create a new rural support scheme – as required to do by statute by 2026.

We have also taken forward work of a more technical nature that will help inform delivery of the policy outcomes in the Plan. ClimateXChange research has been published on Marginal Cost Abatement Curve, methane reducing feed additives and the role of leguminous crops. Consultations have been undertaken on the Clean Air Strategy, the formation of a Scottish Nitrogen Balance Sheet and River basin management plans - silage, slurry and anaerobic digestate – improving storage and application. These all have links to actions that will support climate change mitigation actions within agriculture.

Developments in monitoring arrangements since CCPu / last report
Revisions to the monitoring framework in the CCPu revised the policy outcomes by adding 2 and continuing 4. The outcome indicators have been revised to provide greater detail and are new.

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

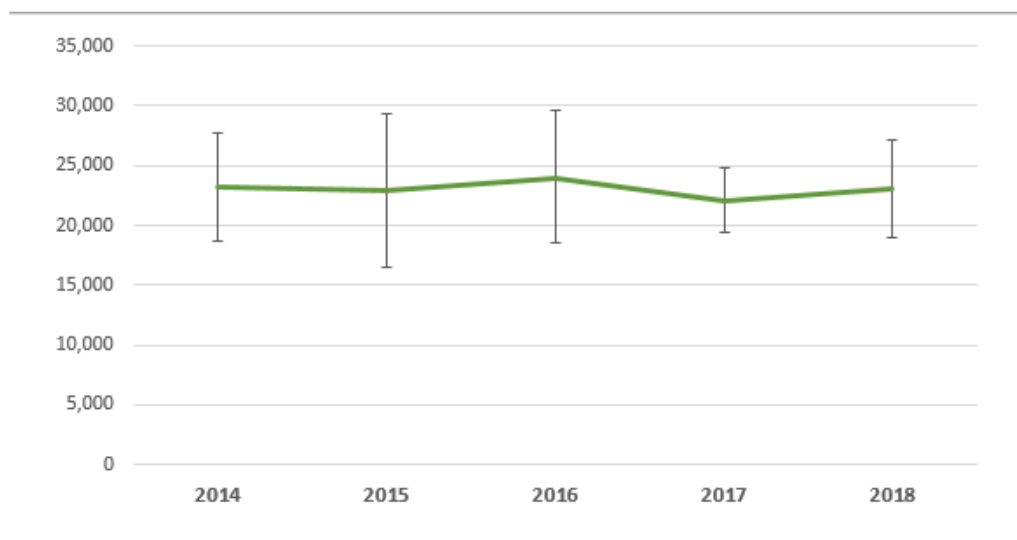
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say⁴⁸

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCRE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCRE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

Agriculture graph 1

⁴⁸ Evidence and data is so far inconclusive

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
2	Increased engagement with Farm Advisory Services on environmental issues and climate change	Based on trend

Most recent data: Data evaluating and monitoring the Farm Advisory Services (FAS) are currently being collected. Indicators collected include:

- More awareness of environmental issues and opportunities
- More awareness about climate change and energy use
- More awareness of waste and pollution issues
- Event feedback forms
- Use of AgreCalc to evaluate carbon footprint
- Calls to the advice line which are specifically about environmental issues.

This data will be assessed and used to develop a baseline and targets going forward. Data is collected through a comprehensive customer feedback form as well as a range of indicators related to engagement at events and use of online tools. Early indications are that engagement has been positive.

Data source(s): FAS monitoring and Evaluation collection.

Assessment: Too early to say⁴⁹

Commentary: This is a new indicator and the baseline and targets are still being assessed.

⁴⁹ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
3	Use of Nitrogen fertilisers	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): British Survey of Fertiliser Practice (BSFP).

Assessment: Too early to say⁵⁰

Commentary: The BSFP collects data on the types of Nitrogen fertilisers used, how widespread that use is and the precision of application of these fertilisers. An analysis of current practice, alongside expert advice, will inform targets for how this should be measured and what targets should be set.

The Scottish Survey of Farm Structure can give some helpful sub-indicator baseline data as reported upon in the Climate Change Plan: monitoring report 2019. It was expected that the next Scottish Survey of Farm Structure would be held in 2020, however, due to Covid 19 that did not take place. Therefore, the most recent data set is for 2016 and the same as the previous monitoring report and is relevant to both policy outcome 3 and 5:

- 64% of farmers surveyed carried out pH testing on other (arable) land in 2016.
- 30% of farmers surveyed carried out pH testing on grassland in 2016.
- 42% share of farms surveyed completed a nutrient management plan on other (arable) land in 2016.
- 17% of farmers surveyed completed a nutrient management plan on grassland in 2016.

⁵⁰ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
3	Spreading precision of Nitrogen fertilisers	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): British Survey of Fertiliser Practice (BSFP).

Assessment: Too early to say⁵¹

Commentary: The BSFP collects data on the types of Nitrogen fertilisers used, how widespread that use is and the precision of application of these fertilisers. An analysis of current practice, alongside expert advice, will inform targets for how this should be measured and what targets should be set.

⁵¹ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
4	Time taken from birth to slaughter and increased efficiency through improved health and reduced losses	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): Cattle Tracing Scheme (CTS).

Assessment: Too early to say⁵²

Commentary: Work is ongoing with the Farmer Led Groups to understand the issues involved in reducing emissions and to agree how to measure and evaluate efficiency. These decisions will then inform the development of baseline and targets.

⁵² The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
5	Improvement in covered slurry storage	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): The Survey of Agricultural Production Methods (SAPM).

Assessment: Too early to say⁵³

Commentary: SAPM is currently only collected every four years and the most recent collection was impacted by the Covid pandemic. Alternative methods of collecting this data will be investigated and an evaluation will be carried out into the baseline and targets for this indicator.

⁵³ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
5	Precision application of manure and slurry	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): British Survey of Fertiliser Practice (BSFP).

Assessment: Too early to say⁵⁴

Commentary: The BSFP collects data on the extent of manure and slurry use and the precision of application. An analysis of current practice alongside expert advice will inform targets for how this should be measured and what targets should be set.

⁵⁴ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
6	Hectares of peatland restored per year	Year-to-year change

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): A project is underway to develop a Scotland-wide data catalogue of land use classifications.

Assessment: Too early to say⁵⁵

Commentary: Work is underway to develop this data source and to make tools available to assess both current land use classifications but also assessments of land use capability and the potential for restoring peatland. This will inform the setting of a baseline and targets.

⁵⁵ The evidence and data doesn't exist or is yet to be developed.

Policy Outcome	Indicator	On-Track Assessment (Milestones/ Targets)
6	Area of woodland on agricultural land	Based on trend

Most recent data: This is a new indicator and baseline and targets are still being assessed.

Data source(s): A project is underway to develop a Scotland-wide data catalogue of land use classifications.

Assessment: Too early to say⁵⁶

Commentary: Work is underway to develop this data source and to make tools available to assess both current land use classifications but also assessments of land use capability and the potential for increasing the area of woodland. This will inform the setting of a baseline and targets.

⁵⁶ The evidence and data doesn't exist or is yet to be developed.

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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.	New [2019-2020 Programme for Government]	<p>This is a new policy, published in the Climate Change Plan Update in 2020.</p> <p>Agricultural Transformation is underway. We have established farmer-led groups, to provide advice on how to farm in ways that reduce emissions and benefit the environment. These have been making rapid progress and will support a number of policies in the Plan including low</p>	No new indicators	<p>The detailed proposals and ideas within the farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.</p> <p>Agriculture Transformation funding in place for 2021/22.</p>

		<p>carbon farming, environmental conditionality, supporting biodiversity and wider land use considerations</p> <p>The pilot Sustainable Agricultural Capital Grant Scheme is being evaluated to measure success, and a further £40 million has been allocated in the 2021/22 budget. This will continue to assist the agricultural industry to play its part in contributing towards the delivery of Scotland's climate ambitions</p> <p>The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p>		
Develop rural support policy to enable, encourage and where appropriate, require the	New [CCPu 2020]	This is a new policy, published in the Climate Change Plan Update in 2020 and will be informed	No new indicators	The detailed proposals and ideas within the farmer led groups

<p>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.</p>		<p>by the farmer led groups and further stakeholder consultation. The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p>		<p>reports will be considered by government as it begins its work to create a new rural support scheme.</p>
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<p>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.</p>	<p>New [2020-2021 PfG & Agriscot 2020]</p>	<p>This is a new policy, published in the Climate Change Plan Update in 2020. Rapid progress has already been made through the Beef Suckler Climate Group which has already published recommendations. A separate Programme Board has now been set up to take these forward. The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p>	<p>No new indicators</p>	<p>The detailed proposals and ideas within the farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.</p>
<p>Introduce Environmental Conditionality, from 2021 via implementation of the</p>	<p>New [CCPu 2020]</p>	<p>This is a new policy, published in the Climate</p>	<p>No new indicators</p>	<p>The detailed proposals and ideas within the</p>

<p>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.</p>		<p>Change Plan Update in 2020.</p> <p>We have established farmer-led groups, to provide advice on how to farm in ways that reduce emissions and benefit the environment. The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p>		<p>farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.</p>
<p>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</p>	<p>New [CCPu 2020]</p>	<p>This is a new policy, published in the Climate Change Plan Update in 2020. The Land Matching Service and advice under the Farm Advisory Service is already in place and will be built upon.</p>	<p>No new indicators</p>	<p>Will continue development throughout 2021.</p>

businesses by providing an opportunity to consider alternative land-uses or alternative agricultural uses.				
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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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	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 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.	Boosted [Through new policy to realign and enhance advice]	Scotland's Farm Advisory Service (FAS) has been extended until the end of 2021 and has evolved into a concept well placed to adapt, keep pace with such challenges and provide advice aligned to Scottish Government's priorities of climate change mitigation and adaption and biodiversity.	No new indicators	Post 2020 period the FAS will remain flexible and be responsive to emerging needs. We will continue to consider the focus of the FAS and how that advice can be delivered to best effect. We aim to procure future FAS

		<p>Farming for a Better Climate continues to promote practical and cost effective climate change mitigation and adaptation measures to farmers and land managers, alongside real time findings from the Farming for a Better Climate Soil Regenerative Agriculture Group. Messages are promoted via a project webpage, social media accounts, a regular podcast and other press and promotional material. The farmer-led soil regenerative agriculture network continues to focus on positive actions that can be taken on Scottish farms to support, enhance and protect their soils. The group have trialled new approaches to allow them to improve production whilst delivering wider benefits such as building soil resilience, improving water retention, storing carbon and enhancing bio-diversity. While face to face events</p>		<p>contracts for implementation after December 2021.</p>
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		have been limited due to Covid-19, regular updates are added to the Farming for a Better Climate webpages and shared via social media along with press articles and a series of podcasts.		
An agri-tech group will be established to share, disseminate and encourage adoption of advances in agricultural science and technology as widely as possible.	Maintained	This work is ongoing, however was impacted by Covid-19.	No new indicators	Will seek to finalise throughout 2021.
Launch a new and expanded peer to peer knowledge transfer initiative based on the success of our Young Climate Change Champions work.	New [CCPu 2020]	This is a new policy, published in the Climate Change Plan Update in 2020. Following the success of the Young Farming Climate Champions we will work with industry to take forward a Scotland wide approach encompassing all of our food production sectors to promote not only climate friendly practices but also wider environmental and biodiversity benefits.	No new indicators	Will continue development throughout 2021.
Realign and enhance our established programmes	New [CCPu 2020]	We aim to procure future FAS contracts for	No new indicators	December 2021

<p>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.</p>		<p>implementation after December 2021 and will take this opportunity to greater align and enhance the service to support climate change mitigation, cut emissions, improve carbon sequestration and increase biodiversity.</p> <p>The KTIF has funded over £1m across 16 project which seek to restore, preserve and enhance biodiversity and increase efficiency in energy use in agriculture and food processing.</p>		
<p>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.</p>	<p>Maintained</p>	<p>Carbon Audits were broadly consulted upon in the Stability and Simplicity consultation Stability, certainty and simplicity in rural support - gov.scot (www.gov.scot)</p> <p>The farmer led groups reports were made available in March 2021. We will consider the use of carbon audits as part of the whole industry approach to climate change and restoring and</p>	<p>No new indicators</p>	<p>The detailed proposals and ideas within the farmer led group reports will be considered by government as it begins its work to create a new rural support scheme.</p>

		enhancing biodiversity within food production and farming.		
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.	Maintained	A working group on “Trees in Tenancies” has been established which is developing actions to make it easier for Tenant farmers to benefit directly from woodland creation. These include developing case studies with tenant farmers, producing better guidance in partnership with the Tenant Farming Commissioner, creating example legal templates and “heads of terms” and identifying potential barriers within the existing legislation. We are also updating the Small Farm Grant Scheme to provide more options for woodlands and trees within this scheme.	No new indicators	Will continue development throughout 2021.
Marketing scheme: Determine the feasibility of a Low Carbon Farming marketing scheme.	Maintained	This is ongoing and currently under consideration as part of the Beef Suckler Climate Report.	No new indicators	Will continue consideration throughout 2021

Outcome 3: Nitrogen emissions, including from nitrogen fertiliser, will have fallen through a combination of improved understanding, efficiencies and improved soil condition

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Communicate and demonstrate the benefits of precision farming and nitrogen use efficiency in order to achieve a reduction in GHG emissions.	Boosted [Through new policy to realign and enhance advice]	This policy has been boosted through the commitment on the Farm Advisory Service, Innovation and Knowledge Transfer and will be informed by the findings and needs of the arable farmer led group. Farming for a Better Climate and the Soil Regenerative Group. The work which is ongoing to develop a Nitrogen Balance Sheet may also present opportunities.	No new indicators	Will continue development throughout 2021.
Work with the agriculture and science sectors regarding the feasibility and development of a	Boosted [Through Scotland's National	The ClimateXChange have published a comparative analysis of nitrogen accounting tools -	No new indicators	Will continue development throughout 2021.

<p>SMART (specific, measurable, achievable, relevant and time bound) target for reducing Scotland's emissions from nitrogen fertiliser.</p>	<p>Nitrogen Balance Sheet]</p>	<p>Comparative analysis of nitrogen accounting models with particular reference to agriculture (https://www.climateexchange.org.uk/research/projects/comparative-analysis-of-nitrogen-accounting-models-with-particular-reference-to-agriculture/)</p> <p>The establishment of a Scottish National Nitrogen Balance Sheet, which is due to be set out in legislation by March 2022, will be a key step in building the evidence base around nitrogen use efficiency at the national scale. Proposals for the Balance Sheet have recently been out to consultation, including a workshop for agriculture and land management stakeholders.</p>		
<p>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</p>	<p>Boosted [Through new policy to introduce conditionality]</p>	<p>Carbon Audits were broadly consulted upon in the Stability and Simplicity consultation Stability, certainty and simplicity in</p>	<p>No new indicators</p>	<p>The detailed proposals and ideas within the farmer led groups reports will be considered by</p>

<p>establish how best to achieve this.</p>		<p>rural support - gov.scot (www.gov.scot)</p> <p>The farmer led groups reports were made available in March 2021, we will consider soil testing as part of the whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p>		<p>government as it begins its work to create a new rural support scheme.</p>
<p>Investigate the benefits and barriers of leguminous crops in rotation.</p>	<p>Maintained</p>	<p>Research on the potential for leguminous crops in Scotland was published in January 2021 - The potential for leguminous crops in Scotland (https://www.climateexchange.org.uk/research/projects/the-potential-for-leguminous-crops-in-scotland/)</p> <p>This was considered by the arable farmer led group. The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing</p>	<p>No new indicators</p>	<p>The detailed proposals and ideas within the farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.</p>

		biodiversity within food production and farming.		
Crop varieties with improved nitrogen-use efficiency.	Maintained	This is ongoing through monitoring for the establishment of new breeding goals and the development of breeding programmes looking at nitrogen-use efficiency & native varieties. This is being considered by the arable farmer led group.	No new indicators	Will continue development throughout 2021

Outcome 4: Reduced emissions from red meat and dairy through improved emissions intensity

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Commission and publish a report into the establishment of emissions intensity figures for beef, lamb and milk.	Maintained	Completed - ClimateXChange published Emission intensity of Scottish agricultural commodities in August 2018 (https://www.climatexchang	No new indicators	N/A

		e.org.uk/research/projects/emission-intensity-of-scottish-agricultural-commodities/)		
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.	Boosted [CCPu 2020]	<p>Over the past five years a number of beef producers have started work on a number of these issues thought the Beef Efficiency Scheme(BES) we have 105,360 unique genotypes that have been processed to date from BES animals (calves and sires) through the mandatory genotyping in the scheme. There has also been a large amount of data recorded through the scheme, this includes calf and dam mortality, with calf mortality being recorded even if death occurs prior to registrations. In additional all participants of BES have had to carry out compulsory carbon audits on three occasions throughout the lifetime of the scheme.</p> <p>This work is ongoing and will be informed by the farmer led groups' reports</p>	No new indicators	<p>The detailed proposals and ideas within the farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.</p> <p>A revised Animal Health and Welfare Livestock Strategy is expected to be published in 2021.</p>

		<p>which were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.</p> <p>A revised Animal Health and Welfare Livestock Strategy is to be published in 2021.</p>		
Determine the practicality of establishing a SMART target for reduction in the intensity of emissions for beef, sheep and dairy sectors.	Maintained	This is ongoing and will be informed by the five farmer led groups as well as the findings of the report on emissions intensity (see above).	No new indicators	Will continue development throughout 2021.
Consult in 2018 to determine the nature of livestock health measures that the sector will adopt from 2019.	Maintained	This policy has been maintained from the 2018 Climate Change Plan and is ongoing. It looks at proactive measures to control diseases in cattle and thereby lower the emissions by increasing efficiencies. The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate	No new indicators	A revised Animal Health and Welfare Livestock Strategy is expected to be published in 2021. The detailed proposals and ideas within the farmer led groups reports will be considered by government as it

		change and restoring and enhancing biodiversity within food production and farming.		begins its work to create a new rural support scheme.
Determine the practicalities and feasibility of using livestock feed additives as a means of reducing emissions.	Maintained	A report on livestock feed additives was produced through the ClimateXChange and a summary is available at: https://www.climatexchange.org.uk/research/projects/methane-reducing-feed-additives/ The farmer led groups' reports were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.	No new indicators	Will continue to monitor, however, no product is currently authorised for use as a feed additive to reduce methane emissions.

Outcome 5: Reduced emissions from the use and storage of manure and slurry

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against	Timeframe and expected next steps

			these.	
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.	Boosted [Dec 2020, before CCPu 2020]	<p>Research has been completed on the market potential for anaerobic digestion as a tool to manage slurry and farmyard manure arising from Scottish livestock farming.</p> <p>farmyard-manure-and-slurry.pdf (climatexchange.org.uk)</p> <p>Support for improving slurry storage is available for farmers through the Agri-Environment Climate Scheme with £5.2m provided to 131 businesses between 2017 and 2021. A further £2.05m support for improving the use and storage of manure and slurry was provided through the pilot Sustainable Agriculture Capital Grant Scheme.</p> <p>This issue was also considered by the farmer led groups, as appropriate. The farmer led groups' reports</p>	No new indicators	Will continue support for improving slurry storage in 2021. The detailed proposals and ideas within the farmer led groups reports will be considered by government as it begins its work to create a new rural support scheme.

		were made available in March 2021, setting out a whole industry approach to tackling climate change and restoring and enhancing biodiversity within food production and farming.		
Investigate the practicalities of livestock grazing in rotation on current arable land.	Maintained	<p>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.</p> <p>The operational 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 rotational grazing negates the necessity for artificial</p>	No new indicators	N/A

		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.		
Conduct a feasibility study for the establishment of manure/slurry exchange.	Maintained	Completed – a feasibility study was published in June 2020, through the ClimateXChange Establishing a manure/slurry exchange in Scotland (https://www.climatexchange.org.uk/research/projects/establishing-a-manureslurry-exchange-in-scotland/)	No new indicators	N/A
Determine how to consistently minimise emissions from slurry storage.	Maintained	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) Support for slurry storage is available for farmers	No new indicators	N/A

		through the Agri-Environment Climate Scheme and was part of the pilot Sustainable Agriculture Capital Grant Scheme		
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.	New [CCPu 2020]	This is ongoing. A public consultation on River basin management plans - silage, slurry and anaerobic digestate – improving storage and application was launched in January 2021 with the review of regulations expected to happen in 2021.	No new indicators	Will continue development throughout 2021

Outcome 6: Carbon sequestration and existing carbon stores on agricultural land have helped to increase and maintain our carbon sink

Policy	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Explore with the farming and forestry sectors how best to increase planting of trees and hedgerows which optimise carbon	Boosted [Two actions, 1st announced summer 2020,	This is ongoing. The Scottish Government and Scottish Forestry have launched the Integrating Trees Network, a new	No new indicators	Will continue development throughout 2021

sequestration, including the role of agroforestry.	2nd CCPu 2020]	<p>demonstrator network of farms, crofts and estates across Scotland, to raise awareness of the multiple benefits that planting trees can bring to agricultural businesses. The aim of the network is to encourage more trees to be planted on Scottish land, in the right place, for the right reason and to give guidance on how this can be practically achieved.</p> <p>We have also committed (July 2020) an additional £1.5 million (through the Agricultural Transformation Programme) to further support the integration of small woodlands on farmers and crofts across Scotland which will help to increase the levels of carbon sequestration delivery by our agricultural sector.</p>		
Investigate the feasibility of payment for carbon sequestration taking into account any existing schemes such as the woodland carbon code as	Maintained	This is ongoing and will consider the development of a scheme in which farmers can selling carbon credits, noting that a significant number of farmers are	No new indicators	Will continue development throughout 2021.

a means of encouraging the uptake of carbon sequestration on farms.		already doing this under the Woodland Carbon Code.		
Increase woodland cover on suitable agricultural land.	Maintained	The Scottish Government and Scottish Forestry have launched the Integrating Trees Network, a new demonstrator network of farms, crofts and estates across Scotland, to raise awareness of the multiple benefits that planting trees can bring to agricultural businesses. The aim of the network is to encourage more trees to be planted on Scottish land, in the right place, for the right reason and to give guidance on how this can be practically achieved.	No new indicators	Will continue development throughout 2021.
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	New [CCPu 2020]	A working group on “Trees in Tenancies” has been established which is developing actions to make it easier for Tenant farmers to benefit directly from woodland creation. These include developing case studies with tenant farmers, producing better guidance in partnership with the Tenant	No new indicators	Will continue development throughout 2021

reform legislation where appropriate.		Farming Commissioner, creating example legal templates and “heads of terms” and identifying potential barriers within the existing legislation.		
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.	New [CCPu 2020]	This is a new policy, published in the Climate Change Plan Update in 2020.	No new indicators	Will continue development throughout 2021, linking to development of policies in the LULUCF chapter.
Explore options for land-use change to optimise uses beyond traditional farming and food production to multi-faceted land use including forestry, peatland restoration and management and biomass production.	New [CCPu 2020]	This is a new policy, published in the Climate Change Plan Update in 2020	No new indicators	Will continue development throughout 2021

Chapter 8: NETS

Part A - Overview of sector

This is a new sector and therefore we cannot compare the 2018 emissions envelope to the real emissions. However, once we have the data for the CCPu period, we will provide a comparison of emissions reduction against the envelope as laid out in the CCPu.

The updated Plan sets out the following policy outcomes for the sector. Given how new this sector chapter is, there are no indicators for these outcomes.

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

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, we use data from the Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE) publication.

The LCREE 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 meaningful set of success outcomes and indicators which can improve our ability to track the impacts of our policies on a just transition to net zero and a wellbeing economy.

Sector commentary on progress

We have updated the Climate Change Plan to include an additional sector chapter for Negative Emissions Technologies (NETs), reflecting our recognition, in line with the advice of the UK Committee on Climate Change, that such technologies will be essential for Scotland reaching net-zero. The chapter includes policies on assessing opportunities for NETS, through the underpinning technology of CCUS (carbon capture utilisation and storage) and then the full systems to achieve net negative emissions, such as BECCS (Bioenergy with Carbon Capture and Storage) or DACCS (Direct Air Capture with Carbon Capture and Storage). It should be noted that natural net carbon sinks, such as forestry, do not fall within the scope of the NETS chapter (they are covered in the LULUCF chapter). Given that the NETS chapter is new to the Climate Change Plan update, the majority of the policies set out are necessarily at an early stage, and therefore Section B focuses mainly on planned actions, which we will monitor annually. Where policies have been a more longstanding part of our approach (e.g. support for the development of CCUS), we have included progress since the previous round of monitoring reports on the 2018 Plan.

Developments in monitoring arrangements since CCPu / last report:

N/A since NETs is a new sector chapter

Part B - Progress to Policy Outcome Indicators

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

Most recent data: 2018

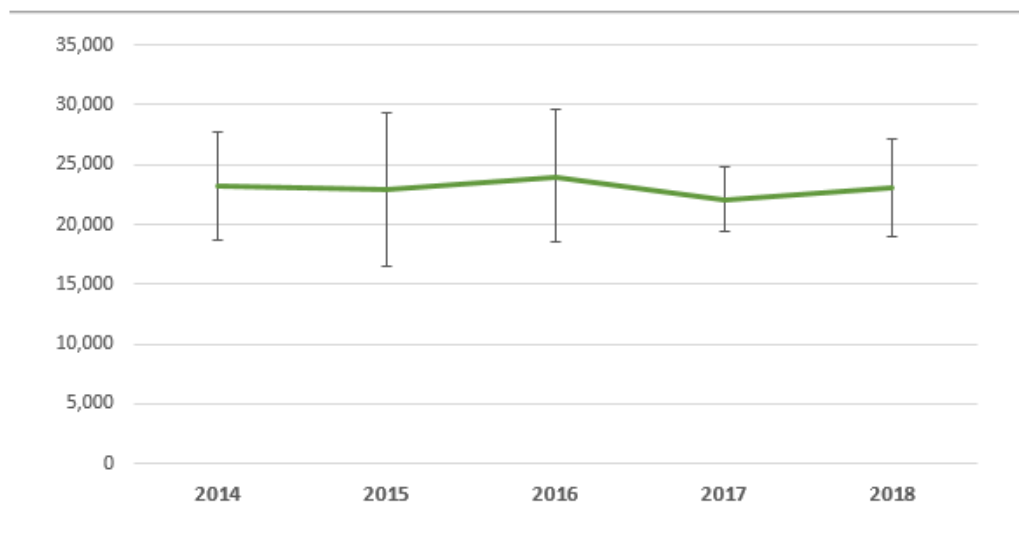
Data source(s): Office of National Statistics: Low Carbon Renewable Energy Economy (LCREE)

Assessment: Too early to say⁵⁷

Commentary:

- In 2018, Scottish low carbon and renewable energy (LCREE) sector was estimated to directly provide 23,100 full time equivalent (FTE) jobs
- The LCREE estimates are based on a relatively small sample of businesses and hence are subject to fairly wide confidence intervals. LCREE employment in Scotland in 2018 is similar to previous years and not statistically significantly different to 2017.

Employment in Low Carbon Renewable Energy Economy, FTE



Source: ONS

NETS graph 1

⁵⁷ Evidence and data is so far inconclusive

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
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	New [CCPu 2020]	Scoping work on a feasibility study commenced in Q1 2021. Policy development on DAC underway.	N/A	Feasibility study scoping 2021
From 2022, based on the outcomes of the feasibility work, we will provide support for	New [CCPu 2020]	New to the CCPu	Initiated in 2022 supported by the EETF.	Initiated in 2022 supported by the EETF.

commercial partners to develop NETs proposals.				
Put in place a continual process to review the development of NETs and progress against its envelope.	New [CCPu 2020]	New to the CCPu	N/A	Timing and arrangements to be confirmed.
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.	New [CCPu 2020]	New to the CCPu	Scottish Government response to UK Government Greenhouse Gas Removals consultation submitted in March 2021	Engagement with UK Gov throughout 2021 on business case development

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	Status: New, Boosted or Maintained compared to last CCP [date announced]	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones been set for this policy? If so, most recent data for progress against these.	Timeframe and expected next steps
Support the development of NETS technologies within Scotland.	New [CCPu 2020]	New to the CCPu	NETs feasibility study in 2021. Funding for NETs will be available via the EETF from 2022	NETs feasibility study in 2021. Funding for NETs will be available

				via the EETF from 2022
Support the inclusion of NETS in the development of strategic, industry lead pathways for CCUS infrastructure in Scotland.	New [CCPu 2020]	New to the CCPu	Completion of the industry led Scotland's Net Zero Roadmap (SNZR) and Scotland Net Zero Infrastructure (SNZI) projects in 2022. These projects set pathways for industrial decarbonisation and the infrastructure to deliver this.	SNZR and SNZI expected to conclude in 2022
Funding through the Scottish Industrial Energy Transformation Fund to consider the development of NETs demonstrators	New [CCPu 2020]	NETs demonstrators to be considered for inclusion in subsequent calls of SIETF.	As for SIETF	As for SIETF
Provide a focus on integrating NETS projects with CCS infrastructure through the Emerging Technologies Fund.	New [CCPu 2020]	New to the CCPu	Funding for NETs and CCS will be available via the EETF from 2022	Funding for NETs and CCS will be available via the EETF from 2022

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	Status: New, Boosted or Maintained	Progress on implementation since time of last report / CCPu	Have any implementation indicators / milestones	Timeframe and expected next steps
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	compared to last CCP [date announced]		been set for this policy? If so, most recent data for progress against these.	
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.	New [CCPu 2020]	We published the Bioenergy Update on 24 March 2021	We published the Bioenergy Update on 24 March 2021	We published the Bioenergy Update on 24 March 2021
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	New [CCPu 2020]	We have established an internal Working Group. We will set up an Expert Panel to support to Working Group during the summer of 2021. This group will work for 18-24 months to make recommendations for the Bioenergy Action Plan, expected to be published in 2023.	Initial meeting of the Working Group in March 2021. Expert Panel to be established over summer of 2021.	Ongoing meetings of the working group and expert panel over the next 24 months. Gathering evidence and sharing knowledge across multiple sectors. Engagement with UK Government in the lead up to their Biomass Strategy

compatible with a sustainable global trade in bioenergy				due to be published by 2022.
By 2023, in time to inform the next Climate Change Plan, we will publish a 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.	Boosted [CCPu 2020]	See above	See above	To be developed from the findings and recommendations from the Working Group and Expert Panel (see above).



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