CLIMATE CHANGE PLAN

Monitoring Report

October 2018

The Scottish Government
Riaghaltas na h-Alba
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Ministerial Foreword

I am very pleased to be publishing the first annual monitoring report on Scotland's Climate Change Plan.

Scotland's low carbon transition is well underway. Our emissions have almost halved since 1990 and we have met our statutory targets in each of the past three years. The Climate Change Plan published in February sustains this momentum with a stretching and credible package of measures to ensure we continue meeting our targets over the period to 2032.

The Plan is an important long term Scottish Government strategy. One of its key features is that it includes a monitoring framework for the first time. The monitoring framework, which comprises a suite of 85 policy output and implementation indicators, will help us to keep track of where things are going well and where changes in approach may become necessary.

This first annual monitoring report pilots the new framework, setting out a baseline against which future assessments of progress will be made. It has been less than a year since the Plan itself was published and it is simply too early to make an assessment of whether the Plan as a whole is on track.

As well as providing the baseline for future assessments of progress, this first report also provides a foundation from which to further develop the monitoring framework itself. In particular, our Climate Change Bill proposes to place the framework on a statutory footing, with individual sector by sector monitoring reports being laid before the Scottish Parliament. The Bill will also mean that Scotland has the world's most ambitious statutory climate targets for 2020, 2030 and 2040 and will be carbon neutral by 2050.

I look forward to continuing to work together with stakeholders across Scotland to ensure robust and effective monitoring of the Climate Change Plan's implementation.

Roseanna Cunningham
**Cabinet Secretary for Environment, Climate Change and Land Reform**

Overview

This monitoring report on the Climate Change Plan is complementary both to the Plan[I] itself and the most recent Official Statistics on Scotland's greenhouse gas emissions[II].

The Plan sets out the **"policies"** and **"proposals"**, leading to defined **"policy outcomes"**, by which Scotland's statutory emissions reduction targets from 2018 to 2032 will be met. The annual emissions statistics, which come with a two-year lag, provide the assessment of whether targets have been met and a breakdown of progress at a sector by sector level.

This monitoring report provides more detailed information on progress in implementing the Plan[III]. The report is made up of a series of sectoral chapters, containing information on the policy output and implementation indicators set out in the corresponding chapter of the Plan:

- "**Policy output indicators**" identify whether we are on track to achieve the policy outcomes for that sector. Information on these indicators is set out within blue boxes.

- "**Policy implementation indicators**" report on whether measures are in place to deliver the policy outcomes. Information on these indicators is set out within green boxes.

The diagram below summarises the links between the indicators upon which information is being reported here, the policies in the Plan and their outcomes.
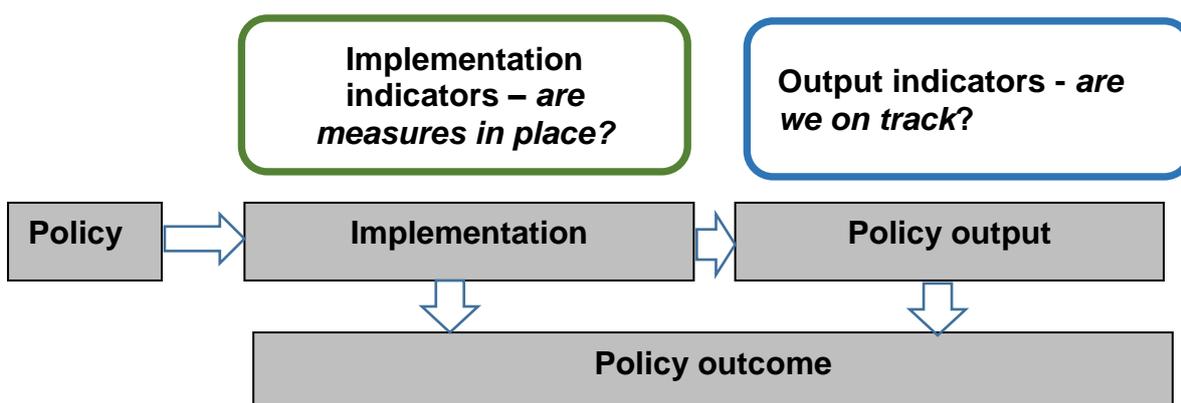
Updates on the development of the proposals set out in the Plan are also provided in the introduction to each sectoral chapter of this report, where appropriate.

The chart below provides an overview of progress against the 29 policy output indicators across all chapters of the Plan. A list of these indicators, organised by sector, is also provided in the table on the following page. Full details on each indicator may be found in the relevant chapters of this report.

Summary Figure 1: Overview of progress against policy output indicators.
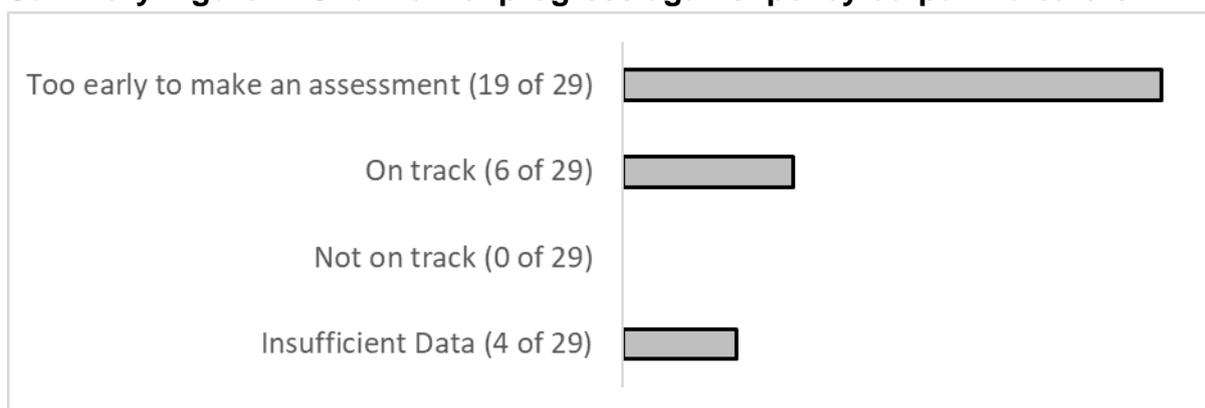
It has been less than a year since the Plan itself was published, so this first annual monitoring report represents a baseline for future assessments of progress. For the majority of the indicators, it is currently still too early to make an assessment of whether these are on track. A comprehensive assessment of whether the Plan itself is fully on track is not therefore possible at this stage.

We will continue to develop and improve this monitoring framework over the coming year, learning from the experience of this pilot version to explore ways to make the assessment of whether indicators are on track as transparent as possible and to consider where the design of individual indicators can be improved.

Summary Table 1: Progress against policy output indicators.

	Too early	On track	Not on track	No data
Chapter 1: Electricity				
Electricity grid generation.		x		
Secure and flexible supply, robust against fluctuations / interruptions.	x			
Chapter 2: Buildings				
Change in energy intensity of residential buildings from 2015	x			
Change in emissions intensity of residential buildings from 2015	x			
Change in non-domestic energy productivity from 2015	x			
Change in emissions intensity of non-domestic sector from 2015	x			
Chapter 3: Transport				
Average emissions of new cars registered	x			
Average emissions of new vans registered	x			
Annual share of biofuels as percentage of petrol and diesel sales				x
Percentage of grant funding for charge points utilised each year.	x			
Percentage of charge point installs completed each year.	x			
Annual utilisation of the Charge Place Scotland network.	x			
Average emissions of HGVs per tonne kilometre.	x			
Report on ECO Stars				x
Report against the actions outlined in the Rail Freight Strategy.		x		
Proportion of bus fleet made up of low emission vehicles				x
Report on Transport Scotland's input into port and airport strategies.				x
Number of low emission ferries in Scottish Government ownership.		x		
The percentage of the rail track electrified.		x		
Active travel budget for the year.		x		
Progress towards active travel vision.	x			
Chapter 4: Industry				
Industrial and commercial energy productivity	x			
Industrial and commercial emissions intensity	x			
Chapter 5: Waste				
Volume of land filled waste	x			
Number of additional landfill sites with gas capture		x		
Chapter 6: Land Use, Land Use Change and Forestry				
Number of hectares of woodland created	x			
Scottish produced sawn wood and panel boards used in construction	x			
Number of hectares of restored peatland per year	x			
Chapter 7: Agriculture				
Level of emissions from the agriculture sector.	x			

ELECTRICITY

Electricity

Greenhouse gas emissions from the electricity sector decreased by 12.3MtCO$_2$e (83%) between 1990 and 2016. The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 28% between 2018 and 2032, taking the overall reduction in emissions within the sector to 87% when compared with 1990.

The Plan sets out the following two **"policy outcomes"** for the sector:

1. From 2020 onwards, Scotland's electricity grid[IV] intensity will be below 50 grams of carbon dioxide per kilowatt hour. The system will be powered by a high penetration of renewables, aided by a range of flexible and responsive technologies.

2. Scotland's energy supply is secure and flexible, with a system that is robust against fluctuations and interruptions to supply.

Scotland's energy 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 electricity.

To support this transition, and to ensure that Scotland's energy supply remains secure and flexible, the Scottish Government is developing a Networks Vision, to be published later this year. This will take a closer look at the issues, evidence and decisions which will shape Scotland's future electricity and gas infrastructure. The Scottish Government is also continuing to fund and support innovation as the sector moves towards smarter and more flexible grids, creating new opportunities for households, communities and businesses to shape and benefit from the electricity network.

The latest figures show that, in 2016, Scotland's generation intensity was 54gCO$_2$e/kWh, falling from 151gCO$_2$e/kWh the previous year, and continuing a downward trend. These continuing reductions, a result of the closure of carbon intensive coal fired power stations, including Longannet which closed in 2016, and a significant increase in renewable electricity generation, put Scotland well on track to meeting this policy outcome in the electricity sector.

[IV] The use of the word 'generation' would be more technically accurate – this has been changed in the remainder of the text.

Chapter 1: Electricity

Renewable electricity generation capacity in Scotland has more than trebled in the last ten years; as of June 2018, there was 10.3GW of installed renewable electricity generation capacity across the country. Consequently, renewables' contribution towards the total volume of electricity generated has grown from 18% in 2008 to 43% in 2016. In 2017, it is estimated that renewables generated the equivalent of 69% of Scotland's electricity demand, up from 54% in 2016 and just over 12% in 2000. The comparable figure for the rest of the UK in 2017 was 24%.

There is also currently an additional 12.2GW of renewables capacity either under construction or at the planning stage, the majority of which is from wind generation, both offshore and onshore. This indicates a strong pipeline, and a substantial level of capacity which could be added to the system in the future.

Chapter 1: Electricity

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

For the duration of the Plan, Scotland's electricity grid generation will be below 50gCO$_2$ per kilowatt hour, powered by a high penetration of renewable technologies, including onshore wind, offshore wind, island wind, hydro, solar, marine and bioenergy.

MOST RECENT DATA: Grid generation of 54gCO$_2$e per kilowatt hour in 2016.

DATA SOURCE(S):
- Scottish Greenhouse Gas Emissions, 2016 - Climate Change Sectors Paper[1].
- Department for Business, Energy and Industrial Strategy Energy Trends: December 2017, special feature article - Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2013 to 2016[2].

ON TRACK: Yes.

COMMENTARY:

- The carbon intensity of Scottish electricity generation fell from 151gCO$_2$e/kWh in 2015 to 54gCO$_2$e/kWh in 2016. The duration of the Plan is 2018 to 2032, and it is expected that by this start date grid intensity in Scotland will be below 50g/CO$_2$/kWh.
- This fall continues the downward trend from a carbon intensity of 318gCO$_2$e/kWh in 2010, chiefly the result of the closure of Cockenzie 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, resulting in a large reduction in emissions from power generation in Scotland.
- The reduction in electricity generation from coal and gas fired power stations over the last ten years has been partially offset by an increase in generation from lower carbon sources. This includes nuclear power, but most notably from renewable generation, which increased by more than 150% during this period.
- Although renewable electricity generation slowed in 2016 due to poor weather conditions for wind power, renewable electricity generation statistics for 2017 show a 27% increase on 2016 and a 16% increase on 2015 levels, the previous record year for renewable generation in Scotland.
- The continued growth in renewable generation is expected to be a key driver in reducing the carbon intensity of electricity generation in Scotland.

Chapter 1: Electricity

OUTPUT INDICATOR FOR POLICY OUTCOME 2:

Scotland's energy supply is secure and flexible, with a system robust against fluctuations and interruptions to supply.

MOST RECENT INFORMATION: The Scottish Government included System Security and Flexibility as one of the six priorities in the Energy Strategy and, building on that, is publishing a Networks Vision later this year, which will support the development of networks that are able to maintain a supply of energy that is secure, affordable and flexible.

DATA SOURCE(S): The Scottish Government's Energy Strategy[3].

ON TRACK: Too early to make an assessment, a Networks Vision will be published later this year, which will provide more detailed information in relation to this indicator.

COMMENTARY:

- The Scottish Government's Energy Strategy made clear the vital role that energy supply infrastructure will play in Scotland's transition to a renewable and low carbon future.
- The Scottish Government is currently developing a Networks Vision, due for publication later this year, which will take a closer look at the issues, evidence and decisions which will shape the future electricity (and gas) infrastructure. It examine the need for networks which are able to maintain secure, affordable and flexible supplies of energy as Scotland shifts to a whole system approach, while operating safely and reliably.
- The Scottish Government will continue to work closely with the key stakeholders in this area, including the UK Government, the Office of Gas and Electricity Markets (Ofgem), network owners and operators, as well as other stakeholders, in order to ensure this outcome.
- The Scottish Government is also continuing to fund and support innovation as the sector moves towards smarter and more flexible grids, creating new opportunities for households, communities and businesses to shape and benefit from the electricity network.

Chapter 1: Electricity

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1 AND 2:

Increase amount of electricity generated from renewable sources in Scotland.

**MOST RECENT DATA:** 25,66GWh of electricity generated from renewable sources in 2017.

ANNUAL CHANGE: 5,384GWh increase in electricity generated from renewable sources from 2016 to 2017.

DATA SOURCE(S): Department for Business, Energy and Industrial Strategy Energy Trends, Renewables[4].

COMMENTARY:

- Electricity Figure 1 below shows the volume of electricity generated from renewable sources in Scotland, by technology, from 2000 to 2017.
- In 2017 electricity from renewable generation had increased by 27% on 2016 levels, and by 16% on 2015 levels, with 2015 being the previous record for renewable generation in Scotland.
- The continued increasing trend in generation from renewables is largely driven by an increase in installed capacity of wind generation, 2017 in particular saw favourable weather conditions for wind power generation, as compared to 2016.

Electricity Figure 1: Electricity generated (GWh) from renewable sources, Scotland, 2000-2017
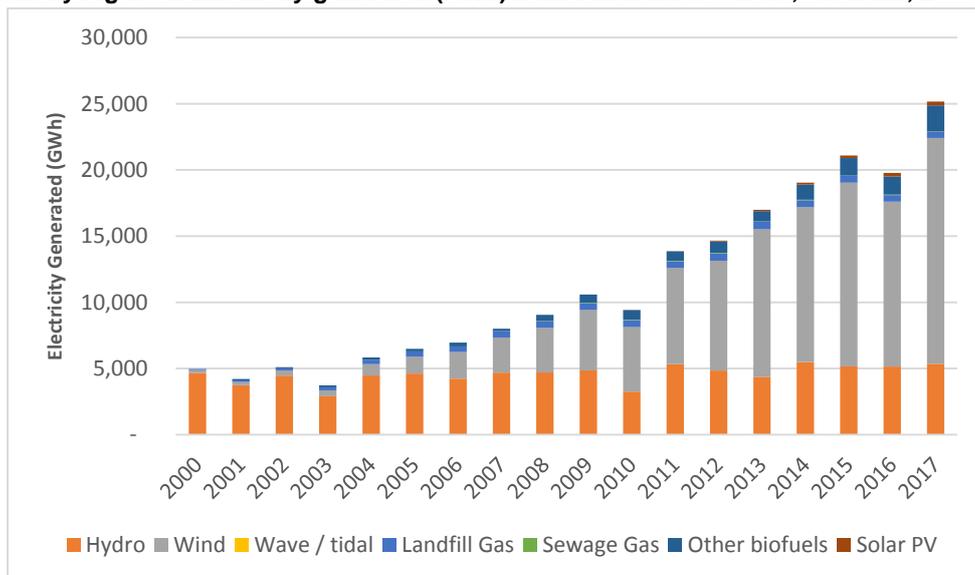
Chapter 1: Electricity

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1 AND 2:

Increase the installed capacity of sites generating electricity from renewable sources in Scotland. By 2030, it is expected that the installed capacity of renewable electricity generation sources will be between 12GW and 17GW.

MOST RECENT DATA: 10.3GW of installed capacity at end June 2018.
**PREVIOUS YEAR:** 9.6GW of installed capacity at end June 2017.
CHANGE: 0.7GW increase in installed capacity from June 2017 to June 2018.
DATA SOURCE(S): Department for Business, Energy and Industrial Strategy Energy Trends, Renewables[4].

COMMENTARY:

- Installed capacity of renewable generation increased from 9.6GW to 10.3GW (8% increase) between quarter 2 of 2017 and 2018, with this increase largely attributed to the increase in operational wind sites.
- Although there is a significant number and capacity of renewable projects in the planning pipeline, it is anticipated that recent and impending changes to subsidy schemes for large and small scale renewables will have an impact on the rate at which additional projects will become operational. The Renewables Obligation closed to all new generating capacity on 31 March 2017, and the UK Government are currently consulting on plans to close the Feed in Tariff on 31 March 2019.
- Despite the closure of these schemes, a limited Contracts for Difference budget (£557 million) remains for supporting certain renewable technologies, including notably offshore wind and Scottish Government continues to work with industry to identify and lobby for new routes to market for onshore wind.

Electricity Figure 2: Installed Capacity of Renewables (MW), Scotland, 2000-2018 Q2
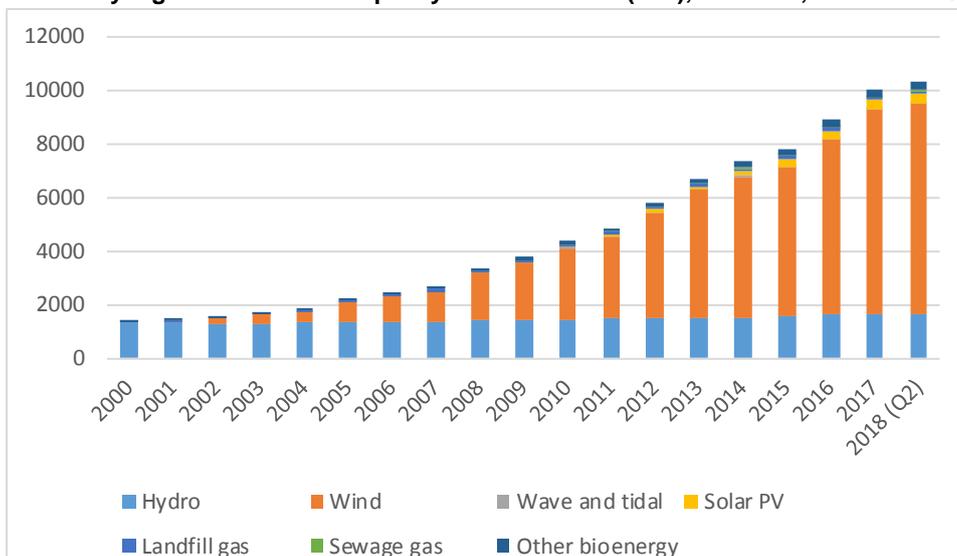
Chapter 1: Electricity

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1 AND 2:

Increase total community and locally owned renewable energy capacity operational, and in development, in Scotland.

MOST RECENT DATA: 666MW of community and locally owned renewable energy capacity in 2017.

PREVIOUS YEAR: 595MW of community and locally owned renewable energy capacity in 2016.

CHANGE: 71MW increase in community and locally owned renewable energy capacity from 2016 to 2017.

DATA SOURCE (S): Energy Saving Trust Community Energy Report[5].

COMMENTARY:

- Community and locally owned renewable energy capacity in Scotland continues to grow. In 2017, the estimated operational capacity was 33% over the original target of 500MW in community and local ownership by 2020. The Scottish Government has now set targets of 1GW of community and locally owned energy by 2020 and 2GW by 2030.
- Electricity Figure 3 shows that in addition to the 666MW of operational capacity under community and local ownership, in 2017 there was an additional 50MW under construction and 283MW consented.
- The largest proportion of community energy was on Scottish farms and estates (40%), followed by local authorities (40%) and community groups (12%). The largest proportional increases have been in the community group and housing association categories, with capacities increasing by 21% and 25% respectively.
- Despite challenges facing local and community owned projects, including the proposed closure of the Feed in Tariff, the Scottish Government remains committed to supporting these projects, recognising not only the economic and clean energy benefits they bring, but also the community and social benefits.

Electricity Figure 3: Community and locally owned renewable energy capacity in different stages of development (MW), Scotland, June 2017
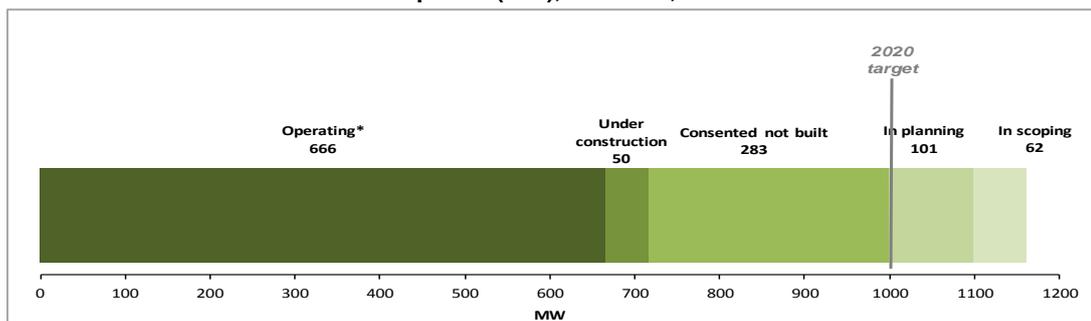
IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1 AND 2:

Increase total renewable capacity in Scotland by planning stage.

MOST RECENT INFORMATION: As of June 2018 Scotland had 12.2GW of renewable capacity either under construction or at the planning stage.
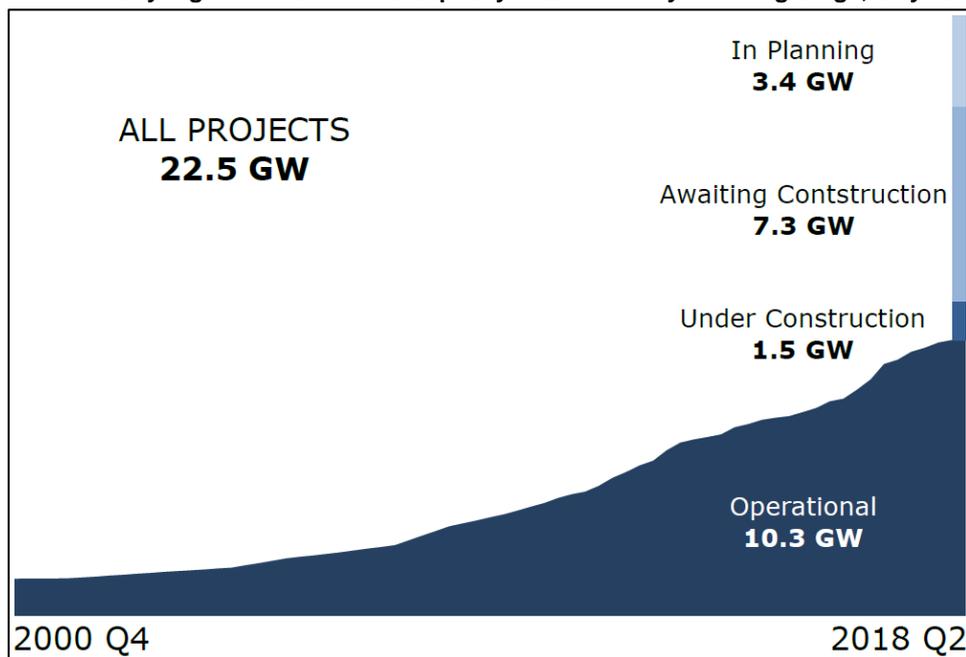
INFORMATION SOURCE(S):

- Department for Business, Energy and Industrial Strategy Energy Trends, June 2018[6].
- Department for Business, Energy and Industrial Strategy Renewable Energy Planning Database, April 2018[7].

COMMENTARY:

- The total renewable capacity of 12.2GW currently under construction or in planning in Scotland is greater than the 10.3GW capacity currently deployed.
- As of June 2018, wind projects account for 90% of the capacity in the pipeline. Offshore wind projects account for 5% of the total projects in the planning system and make up around 43% of total installed capacity, while onshore wind makes up 62% of the projects and 48% of the installed capacity.
- Despite a high number and capacity of projects in the pipeline, the Scottish Government recognises that there are a number of factors which mean that not all projects in planning will progress to commissioning, and that grid intensity and renewable electricity ambitions remain challenging.

Electricity Figure 4: Renewable Capacity in Scotland by Planning Stage, July 2018

In Planning
3.4 GW

ALL PROJECTS
22.5 GW

Awaiting Contstruction
7.3 GW

Under Construction
1.5 GW

Operational
10.3 GW

2000 Q4

2018 Q2

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1 AND 2:

Increase the share of electricity generated from renewable sources, as a proportion of total electricity generated in Scotland.

MOST RECENT DATA: 42.9% of all electricity generated in Scotland came from renewable sources in 2016.
**PREVIOUS YEAR:** 42.4% of electricity generated from renewable sources in 2015.
CHANGE: 0.5 percentage points increase in the proportion of electricity generated from renewable sources between 2015 to 2016.
DATA SOURCE(S): Department for Business, Energy and Industrial Strategy Energy Trends, December 2017[8].

COMMENTARY:

- Renewable electricity generation in 2016 was down 10% on 2015 levels, due to poor weather conditions for wind power. Despite this, the proportion of total electricity generated from renewables increased, due to a sharp decrease in coal production following the closure of Longannet in March 2016.
- The proportion of electricity generated by renewables in Scotland has steadily increased over time, growing from 12% in 2004 to 43% in 2016. Even with a substantial reduction in renewable generation in 2016, the proportion of electricity generated by renewables increased by around 0.5 percentage points from the previous year.
- Statistics for the proportion of all electricity generated in Scotland in 2017 will not be released until December 2018. Given that renewables capacity and generation has greatly increased in 2017 from 2016, and that generation from fossil fuels will have reduced, it is expected that the total proportion of electricity generated from renewables will continue to increase in 2017.

Electricity Figure 5: Share of Electricity Generated (GWh) by Renewables, 2004 - 2016
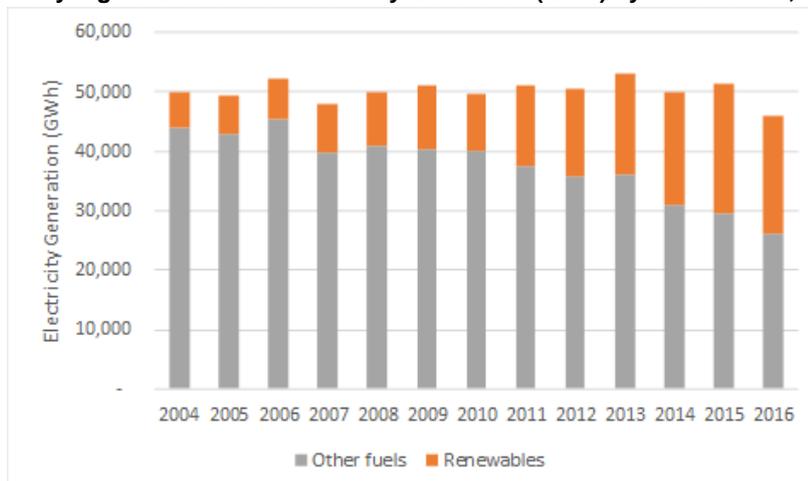
BUILDINGS

Buildings

Greenhouse gas emissions from the buildings sector have already been reduced by 13% (1990 to 2016). The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 33% (2018 to 2032). The Plan sets out the following four policy outcomes for the sector:

1. By 2032, the energy intensity of Scotland's residential buildings will fall by 30% on 2015 levels.

2. By 2032, the emissions intensity of residential buildings will fall by at least 30% on 2015 levels.

3. By 2032, non-domestic energy productivity to improve by at least 30% on 2015 levels.

4. By 2032, the emissions intensity of the non-domestic sector will fall by at least 30% on 2015 levels.

The long-term trend shows that the emissions intensity of Scotland's residential buildings has fallen by 31% between 1998-2016, while energy intensity in the residential sector has fallen by 27% between 2005 and 2016. The energy productivity of the non-domestic sector is improving, which corresponds with a declining emissions intensity, which has fallen by 49% between 1998 and 2016. Space heating is a significant driver of emissions in the residential sector. As such, it can be affected by fluctuating external temperatures. This is demonstrated in recent winters, which have been on average cooler, leading to increased emissions. Due to this year-on-year variation it is the long-term trend that is important.

The Energy Efficient Scotland Route Map was published in May 2018 setting out our vision for 2040 where our homes and buildings are warmer, greener and more efficient. The Route Map sets out the steps we will take over the next 20 years to reduce emissions from Scotland's buildings, including:

- proposals for a long-term framework of energy efficiency standards for both domestic and non-domestic sectors, including the aim for all homes to achieve an Energy Performance Certificate rating of at least band C by 2040, where technically feasible and cost-effective;
- further details regarding our offer of support to owners of residential and non-domestic properties; and

- the launch of the Energy Efficient Scotland Transition Programme which builds on our existing area-based schemes and extends these to households who will self-fund improvements to their homes as well as to businesses and the third and public sectors.

Progress is being made to turn policy proposals into policy, including:

- Review of energy standards within building regulations has commenced. This seeks to further reduce energy demand and greenhouse gas emissions in new building and where new building work is undertaken to existing buildings. A call for evidence published in June sought views on the implementation of the previous 2015 standards and the potential for further cost-effective improvement. Responses are now being considered.

- Review of The Assessment of Energy Performance of Non-Domestic Buildings (Scotland) Regulations 2016 will commence following analysis of the responses to our consultation on Energy Efficient Scotland. The programme for this first review is set out in the Route Map, proposing consultation on amended regulations in 2019, publication in 2020 and application from 2021.

- Decisions on the decarbonisation of the gas grid are reserved to the UK Government. We continue to work with the UK Government and our partners, including local authorities and utility providers on the best approach to decarbonising the gas grid. The UK Government published its call for evidence titled A Future Framework for Heat in Buildings in March. We expect the UK Government to respond in due course.

- Decisions on any alternative to the UK Government Renewable Heat Incentive Scheme, which is due to end in 2021, are matters that are reserved to UK Ministers under the Scotland Act 1998. The UK Government has not as yet indicated an alternative renewable heat subsidy scheme to replace RHI. The Scottish Government continues to liaise with the UK Government for clarity on this matter.

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

Change in energy intensity of residential buildings from 2015.

	2020	**2025**	**2032**
Change in energy intensity from 2015	-10%	-17%	-30%

MOST RECENT DATA: 17.0MWh per household in 2016.
**BASELINE DATA:** 17.2MWh per household in 2015.
CHANGE: 1.0% decrease in energy intensity in 2016.
DATA SOURCE(S): Total final energy consumption at regional and local authority level (Department for Business, Energy and Industry Strategy)[1]. Estimates of households and dwellings in Scotland, 2017 (National Records of Scotland)[2].

ON TRACK: Too early to make assessment.

COMMENTARY:

Buildings Figure 1 - Relative Changes in Energy Intensity of Residential buildings (MWh per household), 2005 to 2016
(2015 = 100)
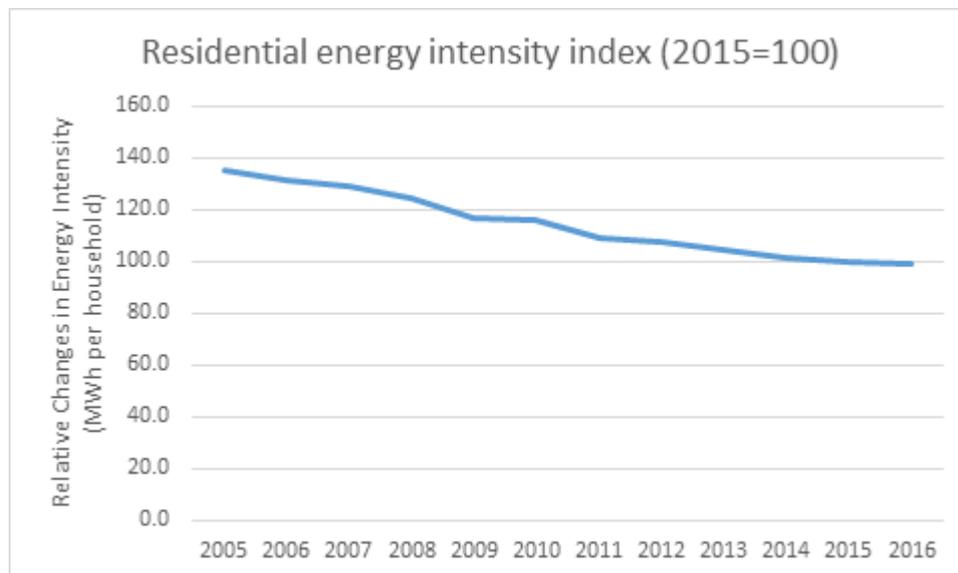
- Energy intensity of residential buildings has fallen 1.0% between 2015 and 2016. It has been steadily falling since 2005 and has fallen by 27% since the first available consumption data in 2005. This decrease over time is due to both a general trend of decreasing energy consumption and increasing household numbers.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 2:**</u>

Change in emissions intensity of residential buildings from 2015.

	2020	2025	2032
Change in emissions intensity from 2015	-5%	-13%	-30%

MOST RECENT DATA: 2.58tCO$_2$e per household in 2016.
**BASELINE DATA:** 2.51tCO$_2$e per household in 2015.
CHANGE: 3.0% increase in emissions intensity between 2015 and 2016.
DATA SOURCE(S): Scottish Greenhouse Gas Emissions (Scottish Government)[3] Estimates of households and dwellings in Scotland, 2017 (National Records of Scotland)[2].

ON TRACK: Too early to make assessment.

COMMENTARY:

**Buildings Figure 2 - Relative Changes in Emissions Intensity of Residential buildings (tCO$_2$e per household),
1998 to 2016 (2015=100)**
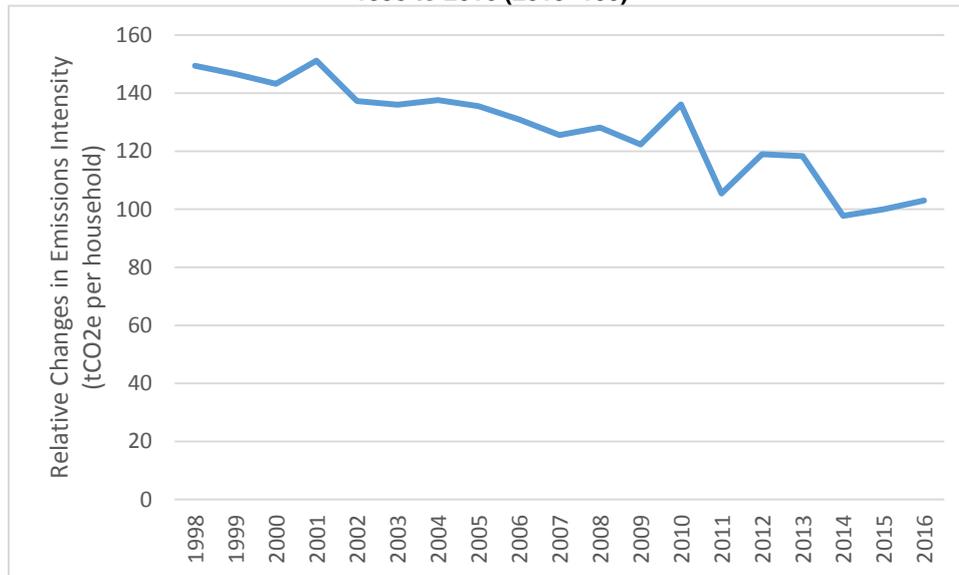
(continued in next box)

(continued from previous box)

- Residential emissions intensity has fallen 31% between 1998 and 2016, although it varies annually, mainly driven by fluctuating external temperatures.
- Between 2015 and 2016 emissions intensity in the residential sector increased by 3.0%. This is linked to an increase in the combustion of fuel in households, reflecting cooler mean winter and autumn temperatures in 2016 compared to 2015.
- Despite the increase between 2015 and 2016, the overarching trend of emissions intensity shows a decrease. There have been prior years which have seen a slight increase before continuing a downward trajectory, with notable instances in 2008 and 2010. The rise in emissions in 2015 and 2016 is the first instance in which there has been an increase two years in a row, but it remains too early to make an assessment as to whether or not this will continue.

OUTPUT INDICATOR FOR POLICY OUTCOME 3:

Change in non-domestic energy productivity from 2015.

	2020	**2025**	**2032**
Change in energy productivity from 2015	10%	20%	30%

MOST RECENT DATA: £2.20 million Gross Value Added (GVA) per GWh in 2016.
BASELINE DATA: £2.23 million GVA per GWh in 2015.
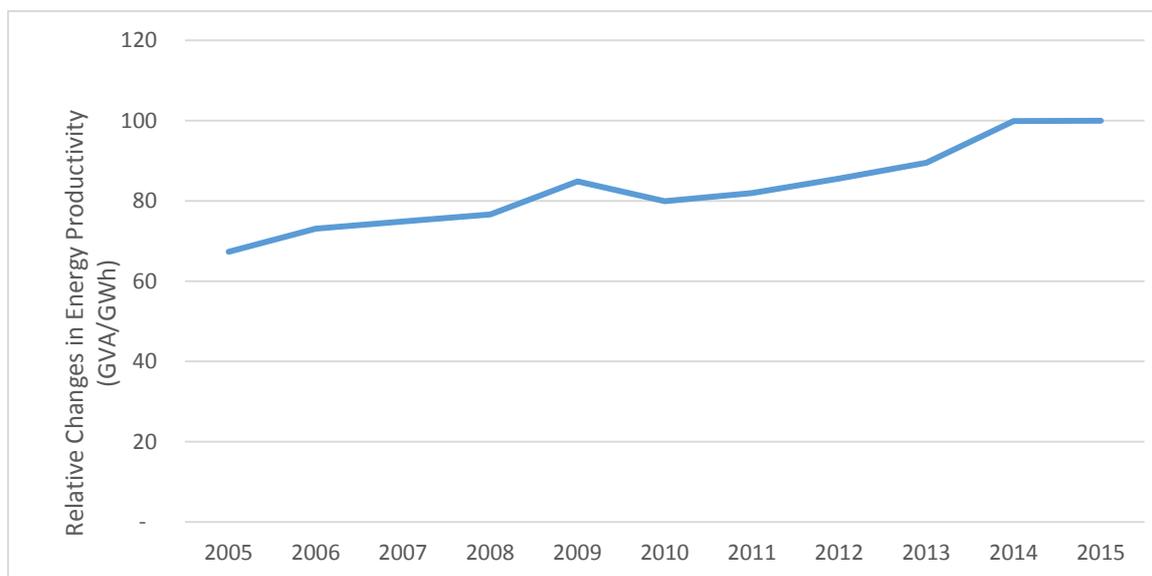**CHANGE:** 1.3% decrease in energy productivity from 2015 to 2016.
DATA SOURCE(S):
- Quarterly National Accounts Scotland, Q1 2018[4].
- Total final energy consumption at regional and local authority level (Department for Business, Energy and Industry Strategy)[1].

ON TRACK: Too early to make assessment.

COMMENTARY:

Buildings Figure 3 - Relative Changes in Energy Productivity (GVA/GWh), 2005 to 2016 (2015 = 100)

- Between 2005 and 2016 energy productivity in the industrial and commercial sectors in Scotland rose by 45% as a result of an underlying 25% fall in energy consumption and a 9% increase in GVA (2016 prices) during this time.
- Energy productivity fell 1.3% between 2015 and 2016, which is the first decrease in this measure since 2010, and which follows steady increases since 2005, as outlined in Buildings Figure 3. The reduction in this period was largely due to increases in energy consumption in 2016, the first increases in consumption in these sectors since 2010, coupled with moderate levels of growth in output.

Chapter 2: Buildings

OUTPUT INDICATOR FOR POLICY OUTCOME 4:

Change in emissions intensity of non-domestic sector from 2015.

	2020	2025	2032
Change in emissions intensity from 2015	-10%	-20%	-30%

MOST RECENT DATA: 113.2tCO$_2$e per £million GVA in 2016.
BASELINE DATA: 112.9tCO$_2$e per £million GVA in 2015.
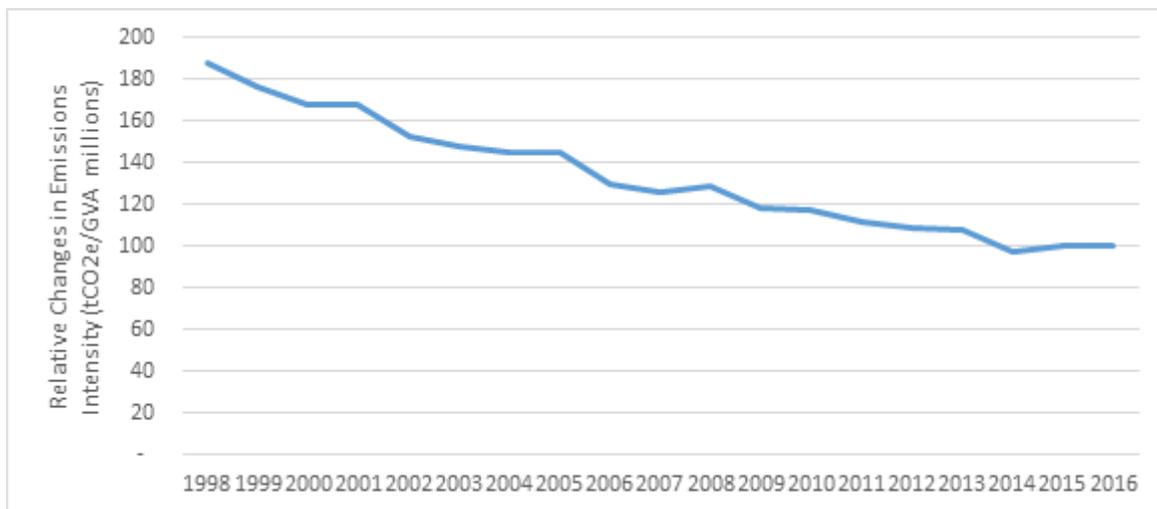**CHANGE:** 0.3% increase in emissions intensity from 2015 to 2016.
DATA SOURCE(S):
- Scottish Greenhouse Gas Emissions, 2016[3].
- Quarterly National Accounts Scotland, Q1 2018[4].

ON TRACK: Too early to make assessment.

COMMENTARY:

Buildings Figure 4 - Relative Changes in Emissions Intensity (tCO$_2$e/£ millions), 1998-2016 (2015=100)

- Between 1998 and 2016 emissions intensity fell by 47%, as a result of an underlying 32% fall in emissions and a 35% increase in GVA (2016 prices). The majority of the reduction in emissions during this period came from industry (over 6MtCO$_2$e, a 37% fall) rather than services (0.2MtCO$_2$e, a 5% fall).
- Emissions intensity increased by 0.3% between 2015 and 2016, driven by an increase in emissions across both industry and services. Despite this increase, the sectors are following an overarching trend of decreasing emissions intensity, as outlined in Buildings Figure 4, and at this stage it remains too early to make an assessment as to whether this long-term indicator is on track.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:

Average energy efficiency levels of domestic buildings increases.

MOST RECENT DATA: Average energy efficiency rating (SAP 2012) of 63.7 in 2016.

BASELINE DATA: Average energy efficiency rating (SAP 2012) of 62.8 in 2015.

CHANGE: +0.9 SAP points between 2015 and 2016, a statistically significant change.

DATA SOURCE(S): Scottish House Condition Survey, a National Statistics publication. The Scottish House Condition Survey is the largest single housing research project in Scotland, and the only national survey to look at the physical condition of Scotland's homes as well as the experiences of householders. The latest Scottish House Condition Survey publication relates to 2016 can be found at the following link: http://www.gov.scot/Publications/2017/12/5401[5]. Survey data for the year 2017 will be released in December 2018.

Energy efficiency ratings are calculated under two versions of Standard Assessment Procedure (SAP), the SAP 2009 methodology and the most recent SAP 2012 methodology. Using SAP 2009 enables us to examine the trend in the energy efficiency of the housing stock since 2010. SAP 2012 was first used in reporting data from the Scottish House Condition Survey in the 2014 Key Findings report and therefore only three years' of data are available. Further information about SAP and the differences between the two methodologies can be found in the link above.

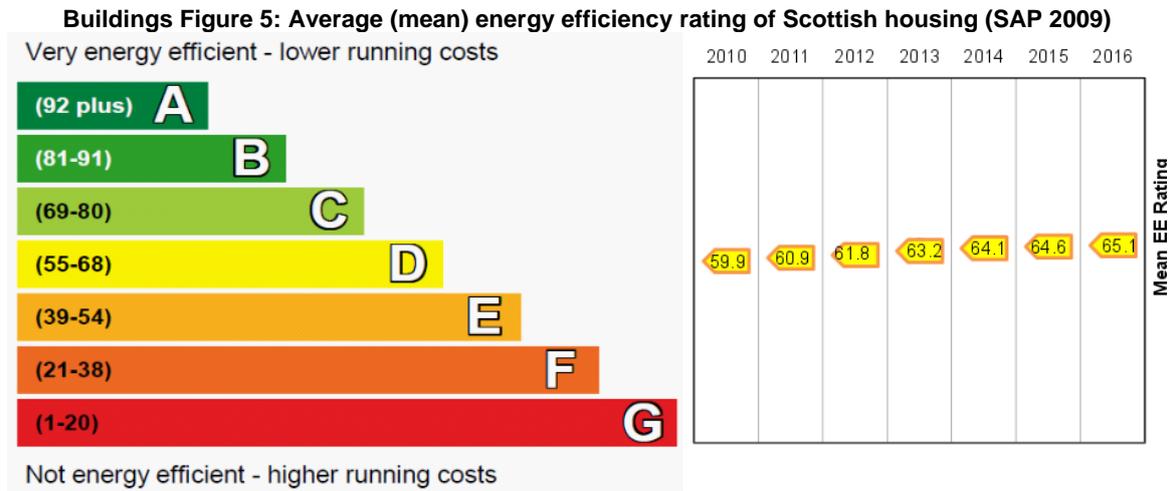**COMMENTARY:**

An increase in the average energy efficiency of domestic buildings will contribute to reducing energy intensity and emissions intensity in the residential sector.

We are able to explore long-term improvements in the average energy efficiency of the Scottish housing stock using SAP 2009. Over the period 2010 to 2016, the average energy efficiency rating increased from 59.9 to 65.1. This is demonstrated in the chart below and highlights that Scottish housing is gradually moving up through the Energy Performance Certificate bands.

(continued in next box)

(continued from previous box)

Buildings Figure 5: Average (mean) energy efficiency rating of Scottish housing (SAP 2009)

Very energy efficient - lower running costs

(92 plus)	A
(81-91)	B
(69-80)	C
(55-68)	D
(39-54)	E
(21-38)	F
(1-20)	G

Not energy efficient - higher running costs

2010: 59.9 2011: 60.9 2012: 61.8 2013: 63.2 2014: 64.1 2015: 64.6 2016: 65.1

Mean EE Rating

The data presented for this indicator are the mean energy efficiency rating. The median rating in 2016 was 66 (SAP 2012) indicating that half of the housing stock has an energy efficiency rating of 66 or better. Based on SAP 2009, we can also see that the median rating has improved over time, increasing from 62 in 2010 to 67 in 2014 and then remaining at that level in 2015 and 2016.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:

Grouped domestic energy efficiency ratings improve.

MOST RECENT DATA: 39% of dwellings rated as Energy Performance Certificate (EPC) band C (SAP 2012) or better in 2016.
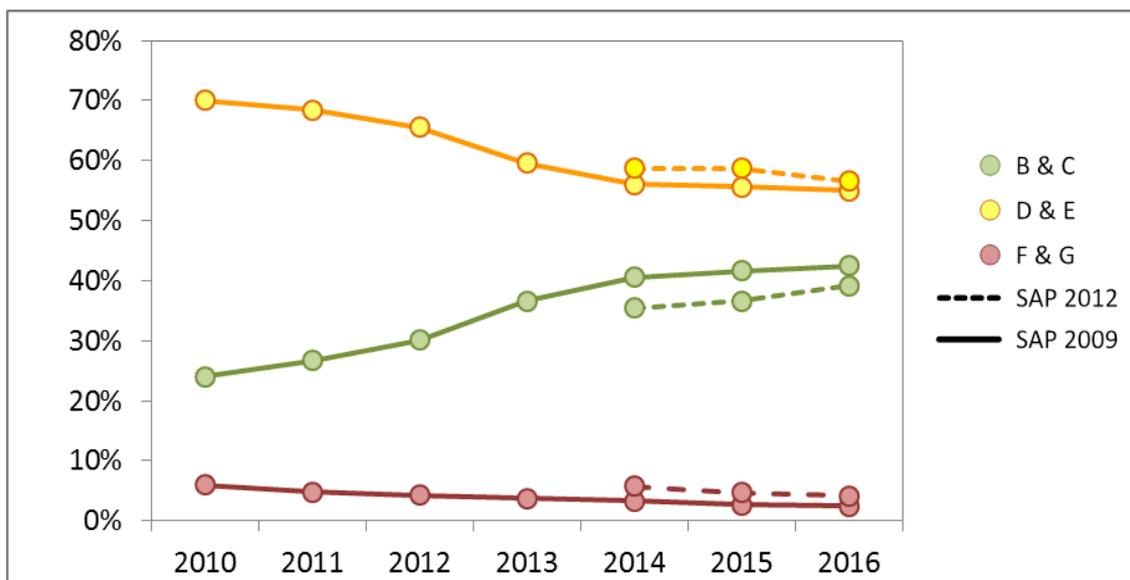**BASELINE DATA:** 37% of dwellings rated as EPC band C (SAP 2012) or better in 2015.
CHANGE: There was no statistically significant difference between 2015 and 2016 in the percentage of dwellings rated as EPC band C or better.
DATA SOURCE(S): Scottish House Condition Survey (as per previous implementation indicator)[5].

COMMENTARY:

Buildings Figure 6 - Grouped EPC Bands under SAP 2009 and SAP 2012, 2010-2016

Although there was no statistically significant difference between 2015 and 2016 in the percentage of dwellings rated as EPC band C or better, there is a long-term improvement in the energy efficiency of the Scottish housing stock. Based on SAP 2009, there has been a 77% improvement in the share of the most energy efficiency dwellings from 24% rated C or better in 2010 to 43% in 2016. In the same period, the proportion of properties in the lowest EPC bands (E, F or G) has almost halved, reducing from 27% to 14%.

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.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:

Percentage of domestic properties with loft and wall insulation increases.

MOST RECENT DATA: 65% of lofts had at least 200mm of loft insulation while 58% of dwellings had wall insulation (cavity or solid) in 2016.
**BASELINE DATA:** 64% of lofts had at least 200mm of loft insulation while 56% of dwellings had wall insulation (cavity or solid) in 2015.
CHANGE: There was no statistically significant difference between 2015 and 2016 in the percentage of dwellings with 200mm or more of loft insulation or with insulated walls.
DATA SOURCE(S): Scottish House Condition Survey (as per previous implementation indicator)[5*].

COMMENTARY:

Buildings Figure 7 - Depth of loft insulation (where applicable) 2003/04 - 2016
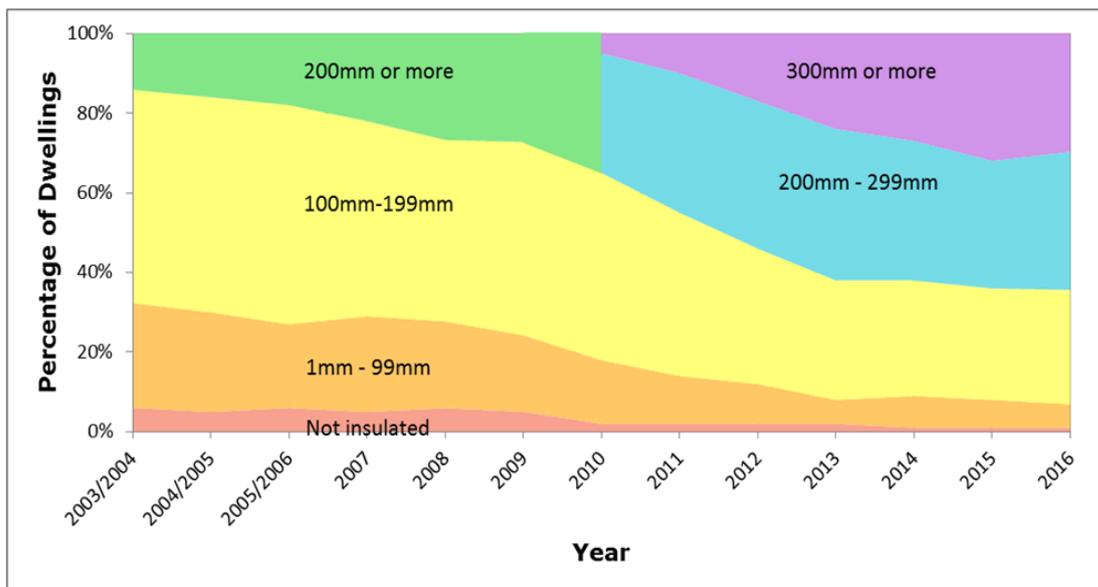
(continued in next box)

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* The presence of cavity wall insulation is becoming increasingly difficult for Scottish House Condition Survey surveyors to identify as over time the injection holes age, fade or are covered up by later work. This may mean that the Scottish House Condition Survey under-estimates the number of homes that have had cavity wall insulation installed. Nonetheless, the longer term trends are consistent with administrative data on the number of cavity wall insulation measures installed under the UK Government Carbon Emissions Reduction Target (CERT) and the Energy Company Obligation (ECO).

(continued from previous box)

There was no statistically significant difference between 2015 and 2016 in the percentage of dwellings with 200mm or more of loft insulation or with insulated walls. However, there is long-term improvement on these indicators, with loft insulation increasing from 35% in 2010. Similarly rates of cavity wall insulation have increased from 62% in 2010 to 72% in 2016. 94% of lofts are already insulated to at least 100 mm while the percentage of lofts with a high standard of insulation (300mm or more) has increased from 5% in 2010 to 30% in 2016. Whilst the rate for 2015 was 32%, the difference compared to 2016 is not statistically significant.

An increase in insulation levels will contribute to reducing energy and emissions intensity in the residential sector.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:

Total renewable heat generation in Scotland increases.

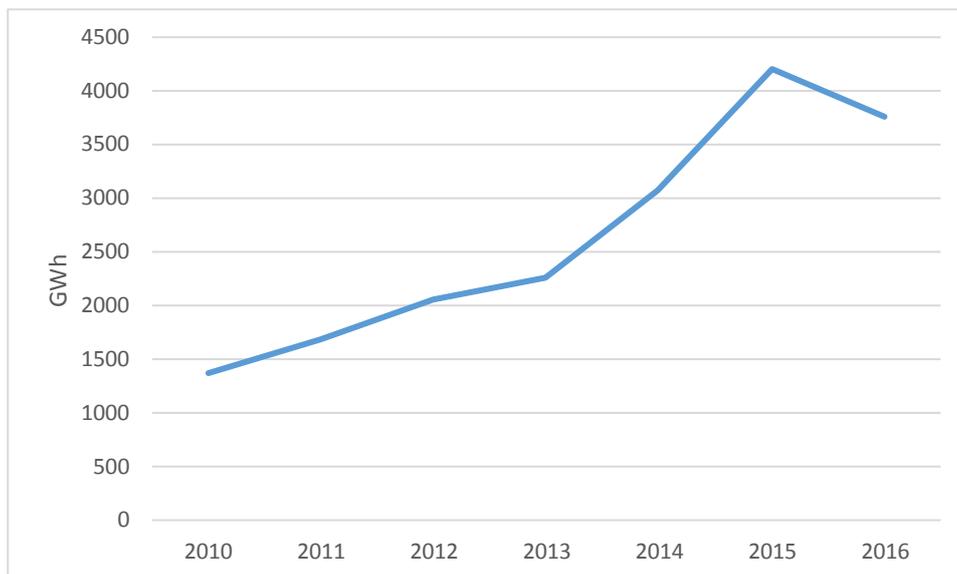**MOST RECENT DATA:** 3,752GWh renewable heat generated in 2016.
BASELINE DATA: 4,205GWh renewable heat generated in 2015.
CHANGE: 453GWh (11%) decrease in renewable heat generated from 2015 to 2016.
DATA SOURCE(S): Renewable Heat in Scotland, 2016, Energy Saving Trust[6].

COMMENTARY:

Buildings Figure 8 - Renewable Heat Generated (GWh) - 2010 to 2016

Renewable heat generation fell between 2015 and 2016, mainly driven by changes at a small number of large non-domestic sites, although generation levels remain 2,389GWh higher than in 2010.

An increase in the level of renewable heat generation will contribute to reducing the carbon intensity of Scotland's heat generation in both the domestic and non-domestic sector.

Installed capacity of non-domestic Renewable Heat Incentive (RHI) increases.

MOST RECENT DATA: 892MW installed capacity in August 2018.
BASELINE DATA: 729MW installed capacity in August 2017.
**CHANGE:** 163MW (22%) increase in installed capacity from August 2017 to August 2018.
DATA SOURCE(S): Renewable Heat Incentive statistics, Department for Business, Energy and Industry Strategy[7].

COMMENTARY:

- Installed capacity of renewable heat receiving payment under the non-domestic RHI has increased by 112% since December 2015, as outlined in Buildings Figure 9.

Buildings Figure 9 - Capacity of accredited non-domestic installations (MW)
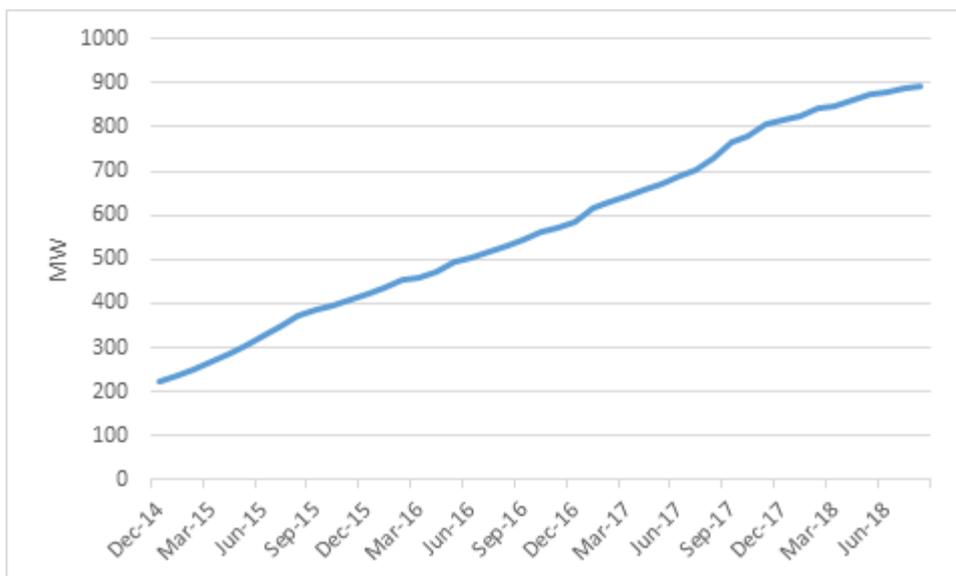
- RHI incentivises renewable heat generation. Increasing the proportion of heat generated renewably will therefore reduce the emissions intensity of heat consumption in Scotland.
- Scotland currently accounts for 21% of all non-domestic accredited installed capacity to the RHI scheme as of August 2018.
- It should be noted that this does not give the full picture of non-domestic renewable installations, only those who have joined the RHI scheme. However, it can be assumed this covers the majority, as the RHI provides an incentive to install renewables.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:

Amount of renewable heat paid for under the domestic RHI scheme in Scotland increases.

MOST RECENT DATA: As of end September 2017 around 477GWh of heat had been paid for under the domestic RHI scheme in Scotland.
BASELINE DATA: As of end September 2016 around 276GWh of heat had been paid for under the domestic RHI scheme in Scotland.
**CHANGE:** An additional 201GWh of renewable heat was paid for in the year to September 2017.
DATA SOURCE(S): Energy in Scotland[8].

COMMENTARY:

As of end September 2017 around 477GWh of heat had been paid for under the domestic RHI scheme in Scotland:
- 323GWh of heat was generated by biomass systems (68% of the Scotland total).
- 108GWh by air source heat pumps (23%).
- 41GWh by ground source heat pumps (9%).
- 4GWh by solar thermal (1%).

Buildings Figure 10 - Cumulative domestic RHI heat generation (GWh)
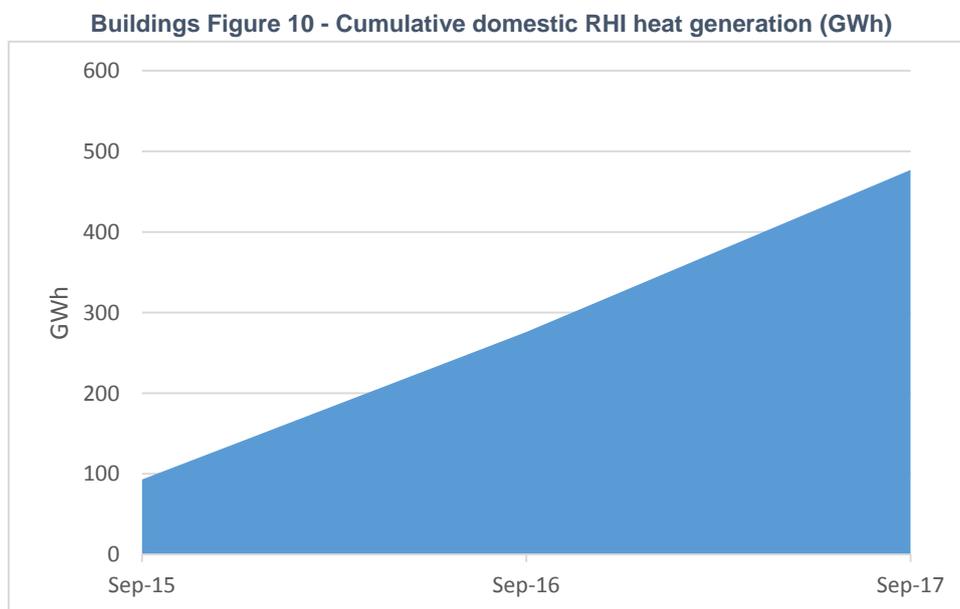
The level of renewable heat supported through the RHI scheme contributes to reducing the emissions intensity of Scotland's heat generation.

Scotland currently accounts for 20% of all domestic accredited installations to the RHI scheme as of August 2018. Well above pro-rata.

**IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3 AND 4:**

Further analysis to establish a baseline for non-domestic buildings' energy efficiency and emissions data.

COMMENTARY:

Analysis has progressed in this area and a non-domestic energy efficiency baseline is due to be published in November 2018.

Using the 30,000 non-domestic Energy Performance Certificates (EPCs) held on the Scottish EPC register, Scotland-wide data sets and building specific electricity and gas meter point data, analysis is being undertaken to establish a baseline for the energy efficiency of Scotland's non-domestic buildings. This baseline will be essential in helping monitor improvements in energy efficiency and in supporting the development of policies targeted at the non-domestic sector.

TRANSPORT
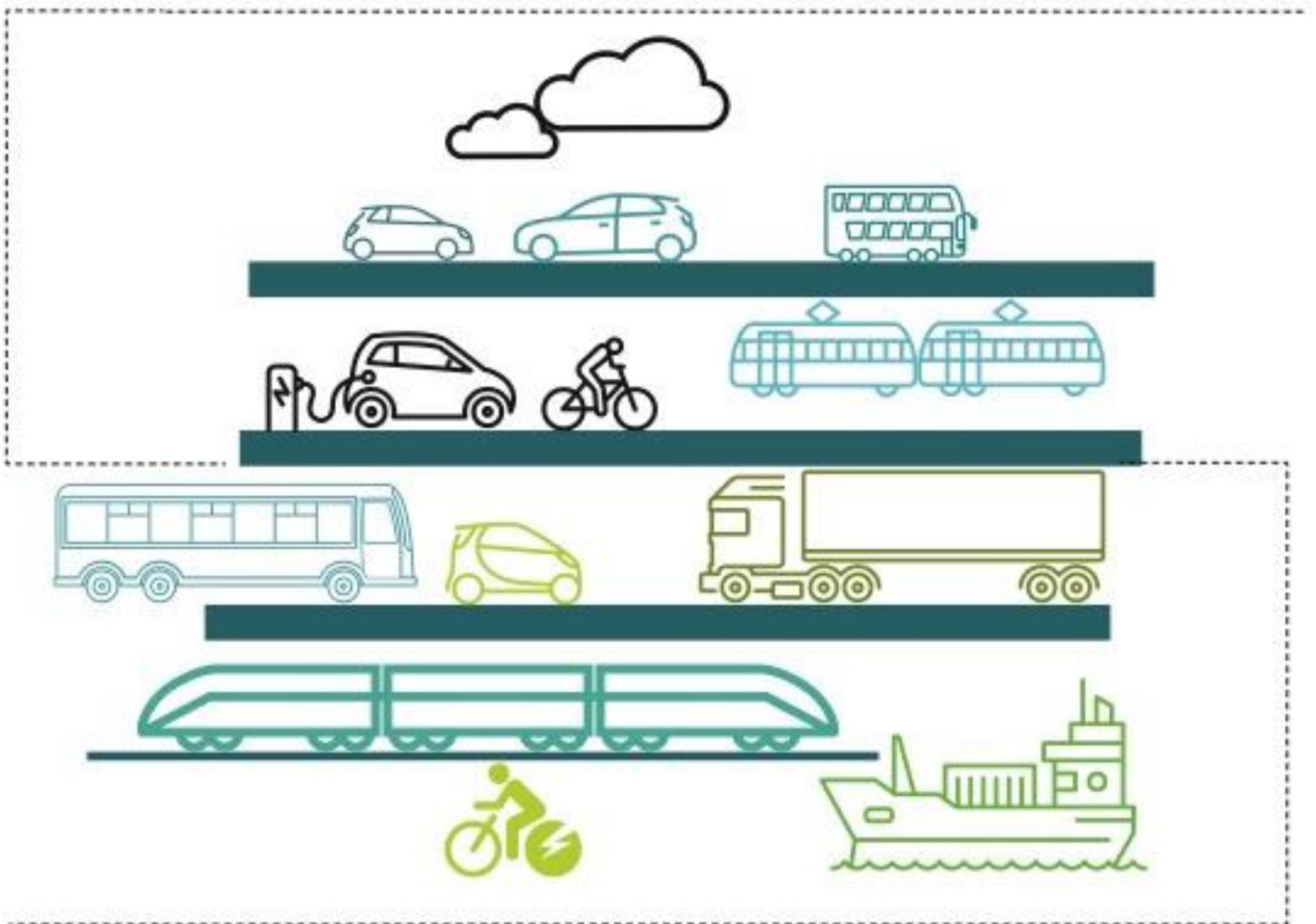
Transport

Greenhouse gas emissions from the transport sector have been reduced by 2% (1990 to 2016). The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 37% (2018 to 2032).

The Plan sets out the following eight **"policy outcomes"** for the sector:

1. Average emissions per kilometre of new cars and vans registered in Scotland to reduce in line with current and future EU/UK emissions standards.

2. Proportion of ultra-low emission new cars and vans registered in Scotland annually to reach 100% by 2032.

3. Average emissions per tonne kilometre of road freight to fall by 28% by 2032.

4. Proportion of the Scottish bus fleet which are low emission vehicles has increased to 50% by 2032.

5. By 2032 low emission solutions have been widely adopted at Scottish ports and airports

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

7. We will have electrified 35% of the Scottish rail network by 2032.

8. Proportion of domestic passenger journeys travelled by active travel modes has increased by 2032, in line with our Active Travel Vision, including the Cycling Action Plan for Scotland Vision that 10% of everyday journeys will be by bike by 2020.

The decarbonisation of transport is a long term objective underpinned by sustained action. Because of this we expect to see the key indicators accelerate as we approach 2032, this is particularly the case as emerging technologies, underpinned by a range of behaviour change approaches, work through the system. As a result it is too early to make an assessment on the majority of indicators. But these will provide a valuable assessment of progress in future years.

There has been some progress in improving new car efficiency with average CO_2 emissions for new registrations in Scotland falling by 27% between 2006 and 2016. However, progress between 2015 and 2016 slowed, with only a small improvement

in this time period. It is too early to draw firm conclusions, but there will be a key role for sustained action on reducing vehicle emissions at a UK and EU level.

In Scotland, 1.2% of car sales were Electric Vehicles (EV) in 2017, up from 0.7% in 2016. The proportional growth of EV sales in Scotland was faster than the rest of the UK in 2017. We have introduced a number of initiatives to drive uptake, including: support for public sector fleet uptake of Ultra-Low Emission Vehicles (ULEVs); interest free loans for business and individuals; and funding for local authorities to take concentrated local action to support EV uptake.

Drivers of EVs in Scotland benefit from one of the most comprehensive charge point networks in Europe through Charge Place Scotland. This year we are aiming to add 1500 new charge points in homes, businesses and on local authority land and 150 new public charge points. Our investment in charging infrastructure will aid the pursuit of our ambition to phase out the need for petrol and diesel cars and vans by 2032.

The Government is committed to building an Active Nation, and to achieve this has doubled the previous budget of £39.2 million (2017-18) to £80 million in 2018-19. In 2017, for commutes of five miles or under, 4% of people cycled to work. This figure is at its highest level. In 2017, for commutes of two miles or under, 23% of people walked to work. This figure has decreased slightly between 2016 and 2017.

On buses, since 2011 the Scottish Green Bus Fund has enabled 363 low carbon buses to be purchased and early indications suggest that the number of low carbon buses is ahead of the trajectory for 50% by 2032. We are continuing to work with bus operators to improve data held on the number of low carbon buses purchased without the Scottish Green Bus Fund.

Chapter 3: Transport

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

Average emissions of new cars registered in Scotland have continued to reduce in line with EU/UK standards.

	2018	**2019**	**2020**	**2021**
Total change in average gCO$_2$e/ km (cars)	107	103	99	95

MOST RECENT DATA: 120.0gCO$_2$e/km for new cars registered in 2016.

BASELINE DATA: 164.4gCO$_2$e/km for new cars registered in 2006.

CHANGE: Change of 44.4gCO$_2$e/km for new cars registered from 2006 to 2016.

DATA SOURCE(S): Scottish Transport Statistics[1].

ON TRACK: Too early to make assessment.

COMMENTARY:

The latest edition of the Scottish Transport Statistics (published in early 2018) provides trends over the past 10 years (2006 – 2016). The data show that the average CO$_2$ emissions for new car registrations in Scotland has fallen by 27% between 2006 and 2016 and 1.2% from 2015 to 2016. 2017 data have not yet been published in the Scottish Transport Statistics but we are aware that progress has slowed.

EU legislation sets mandatory emission reduction targets for new cars. By 2021, phased in from 2020, the fleet average to be achieved by all new cars is 95gCO$_2$/km. More years of data are needed before we can make assessment of whether we are on track to meet this EU target. The table above outlines a simplistic linear prediction for meeting the 2021 target, however, progress might not necessarily be linear - some years might see greater reductions in average CO$_2$ emissions than others as manufacturers bring more efficient models to the market. It is expected that all major manufacturers will begin adding hybrid systems to their standard offers to reduce their emissions and meet the European CO$_2$ targets.

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

Average emissions of new vans registered in Scotland have continued to reduce in line with EU/UK standards.

	2018	2019	2020	2021
Total change in average gCO$_2$e/ km (vans)	165	156	147	-

MOST RECENT DATA: 176.2gCO$_2$e/km for new vans registered in 2016.

BASELINE DATA: 188.4gCO$_2$e/km for new vans registered in 2012.

CHANGE: Change of 12.2gCO$_2$e/km for new vans registered from 2012 to 2016.

DATA SOURCE(S): Department for Transport vehicle statistics[2].

ON TRACK: Too early to make assessment.

COMMENTARY:

CO$_2$ data for light goods vehicles only started being recorded in earnest in 2012, so only 4 years of data are available, compared to over ten years of CO$_2$ data for cars. Average CO$_2$ emissions in Scotland for new light goods vehicles registrations has fallen by 6.5% from 2012 to 2016 and 2.9% from 2015 to 2016.

EU legislation sets CO$_2$ emission targets for new vans sold on the European market. For 2020, the target is 147gCO$_2$/km – 19% less than the 2012 average. It is too early to make an assessment of whether we are on track to meet this target until more years of data are available. The table above outlines a simplistic linear prediction, however, progress might not necessarily be linear - some years might see greater reductions in average CO$_2$ emissions than others.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 1:**</u>

Annual share of biofuels as a percentage of total petrol and diesel sales in the UK.

	2018	**2019**	**2020**	**2021**
Biofuels as % of total petrol and diesel sales*	n/a	n/a	n/a	n/a

*At the time of publication, the UK Government is taking a Statutory Instrument through the UK Parliament to amend the Renewable Transport Fuel Obligation system, which will likely result in new targets being set in this area.

MOST RECENT DATA: 3% of total transport fuel (road and non-road mobile machinery) is biofuel in the period April 2016-17.

DATA SOURCE(S): Department for Transport Renewable Transport Fuel Obligation statistics[3].

ON TRACK: Insufficient Data.

COMMENTARY:

The UK Government's Renewable Transport Fuel Obligation mechanism requires fuel suppliers to ensure that a specified percentage of the road fuels they supply in the UK is made up of renewable fuels. It also requires suppliers to report on the actual percentage of the fuel they supply coming from renewable and sustainable sources. For the period April 2016-17, 3% of total road and non-road mobile machinery fuel was renewable and 99.96% of this renewable fuel has been demonstrated to meet the sustainability requirements.

We have indicated that there are insufficient data to monitor this indicator as there is no separate reporting mechanism for biofuel sales in Scotland. We are therefore unable to monitor how Scotland compares to the UK in terms of the proportion of road transport renewable fuel.

New UK biofuel targets came into force in April 2018. The changes will compel owners of transport fuel who supply at least 450,000L a year or more, to make sure the mix is at least to 9.75% by 2020, and 12.4% by 2032. Currently the industry is only expected to meet a target of 4.75% biofuel.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Average emissions per kilometre of cars and vans registered in Scotland.

MOST RECENT DATA: Average emissions of 142.4gCO_2e/km for cars in 2016. Robust data on the average emissions for all vans registered are not available.

DATA SOURCE(S): Scottish Transport Statistics[1].

COMMENTARY:

Average CO_2 emissions for all cars registered in Scotland has fallen by 15% between 2006 and 2016, and 2.4% from 2015 to 2016.

CO_2 data for light goods vehicles (vans) only started being recorded in earnest in 2012 meaning robust data on the average emissions for all vans registered (i.e. the stock) are not available.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

The outcome of changes in Vehicle Exercise Duty at each budget.

MOST RECENT INFORMATION:
https://www.gov.uk/government/statistics/vehicle-licensing-statistics-2017

INFORMATION SOURCE(S): Department for Transport vehicle licensing statistics[4].

COMMENTARY:

Vehicle Excise Duty is charged on vehicles registered in the UK. For cars licensed after March 2001, Vehicle Excise Duty is charged in bands on the basis of their CO_2 emissions. From April 2017 the Vehicle Excise Duty bands for new cars changed to require much smaller CO_2 emissions to be in the lower bands, whilst making the higher bands larger.

The outcome of the 2017 Vehicle Excise Duty reform will be reflected in the April 2018 statistical publication. However, it is important to note that a range of factors, in addition to Vehicle Excise Duty, influences changes in the fuel type, efficiency and emissions of the vehicle fleet.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Negotiations regarding biofuels are ongoing within the context of an EU framework. Scotland has engaged in the development of the approach.

MOST RECENT INFORMATION: The UK Government's Renewable Transport Fuel Obligation.

INFORMATION SOURCE(S): Renewable Transport Fuel Obligation statistics[5].

COMMENTARY:

Scottish Minsters and relevant officials have engaged with the UK Government through the process of negotiations with the EU on regulations concerning biofuels, and the development of UK-wide systems, such as the revised Renewable Transport Duels Obligation mechanism.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Number of individuals and organisations who have completed fuel efficient driver training.

MOST RECENT DATA: 1,967 individuals and 78 organisations who have completed training in 2016-17.

DATA SOURCE(S): Energy Saving Trust[6].

COMMENTARY:

Fuel Good driver training is a driver training scheme established to help Scottish businesses and their employees save on fuel costs and reduce carbon emissions. Since 2011 more than 15,000 individuals and 360 organisations have completed the training.

OUTPUT INDICATOR FOR POLICY OUTCOME 2:

Percentage of grant funding for charge points utilised each year.

MOST RECENT DATA: 98.1% of grant funding for charge points was utilised in Financial Year 2016-17.

DATA SOURCE(S): Transport Scotland[7].

ON TRACK: Too early to make assessment.

COMMENTARY:

Local Authorities and the Energy Saving Trust aim to utilise 100% of the grant funding made available by Transport Scotland for installing charging points. This year (2018-19) £15 million of grant funding is available for Local Authorities, a substantial increase from £3.6 million in 2017-18. It is too early to assess whether we are on track to meet our commitment to phase out the need for petrol and diesel cars and vans by 2032 but this increasing investment in charging infrastructure will aid the pursuit of this ambition. This year we are aiming to add 1500 new charge points in homes, businesses and on local authority land, including 150 new public charge points.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 2:**</u>

Percentage of charge point installs completed each year.

MOST RECENT DATA:
70 charge point installs completed by Local Authorities in 2017-18.
123 workplace installs completed by the Energy Saving Trust in 2017-18.
1024 domestic installs in 2017-18.

DATA SOURCE(S): Charge Place Scotland and the Energy Saving Trust[7].

ON TRACK: Too early to make assessment.

COMMENTARY:

Drivers of EVs in Scotland benefit from one of the most comprehensive charge point networks in Europe through Charge Place Scotland (www.chargeplacescotland.org). There are currently more than 800 publicly available charge points on the Charge Place Scotland network, including over 175 rapid charge points. We have increased our investment in infrastructure for 2018-19 to expand the Charge Place Scotland network and home charging with the aim of adding 1500 new public, domestic and workplace charge points across Scotland. It is too early to assess whether we are on track to meet our commitment to phase out the need for petrol and diesel cars and vans by 2032 but increasing number of charge points will aid the pursuit of this ambition.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 2:**</u>

Annual utilisation of the Charge Place Scotland network.

MOST RECENT INFORMATION: In 2017 the Charge Place Scotland network was used over 420,000 times by over 8,000 members.

INFORMATION SOURCE(S): Charge Place Scotland[7].

ON TRACK: Too early to make assessment.

COMMENTARY:

There are been a year on year increase in the annual utilisation of the Charge Place Scotland network. It is too early to assess whether we are on track to meet our commitment to phase out the need for petrol and diesel cars and vans by 2032 but the increasing utilisation of the charge point network reflects the increasing number of EV owners.

Transport Figure 1: Increasing amount of power drawn each year on the Charge Place Scotland network
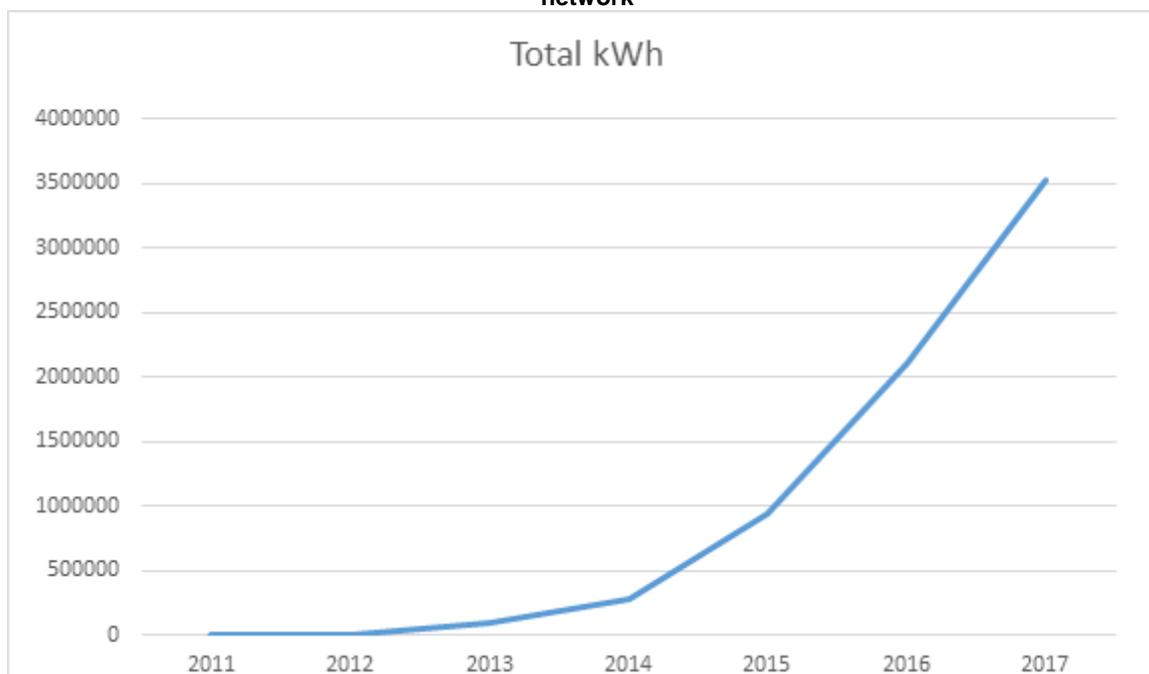
IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Percentage of grant funding for publically available charge point installations that is utilised each financial year.

MOST RECENT DATA: £15 million of grant funding available to Local Authorities for the financial year 2018-19.

DATA SOURCE(S): Transport Scotland[7].

COMMENTARY:

This year (2018-19) £15 million of grant funding is available for Local Authorities, a substantial increase from £3.6 million in 2017-18. This funding is for the installation of publically available charge points and for the installation of workplace charge points for local authority fleet vehicles. This year we have a commitment to add 150 new public charge points.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Percentage of grant funding for domestic/workplace charge point installations that is utilised each financial year.
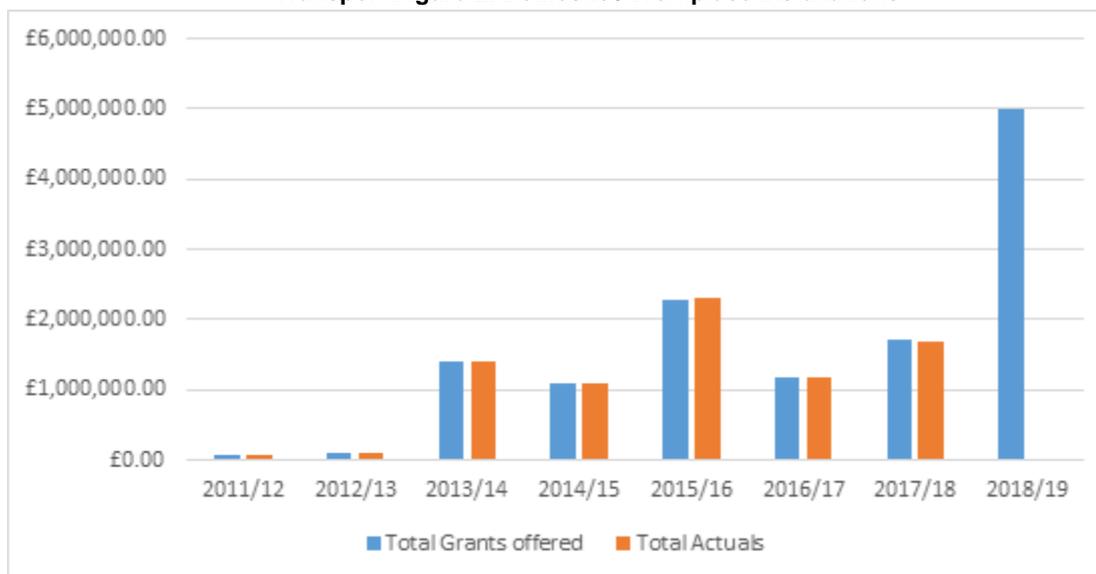
MOST RECENT DATA: £5 million of grant funding available in 2018-19 for domestic/workplace charge point installations.

DATA SOURCE(S): Energy Saving Trust[7].

COMMENTARY:

This year (2018-19) £5 million of grant funding is available compared to £1.7 million in 2017-18.

Transport Figure 2: Domestic / Workplace Installations

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Percentage of publically available charge point installs that are completed each financial year.

MOST RECENT DATA: 134 public charge point were added to the Charge Place Scotland network in 2017-18.

DATA SOURCE(S): Charge Place Scotland[7].

COMMENTARY:

Chart showing the total number of public chargers on the Charge Place Scotland network by year:

Transport Figure 3: Number of public charge points
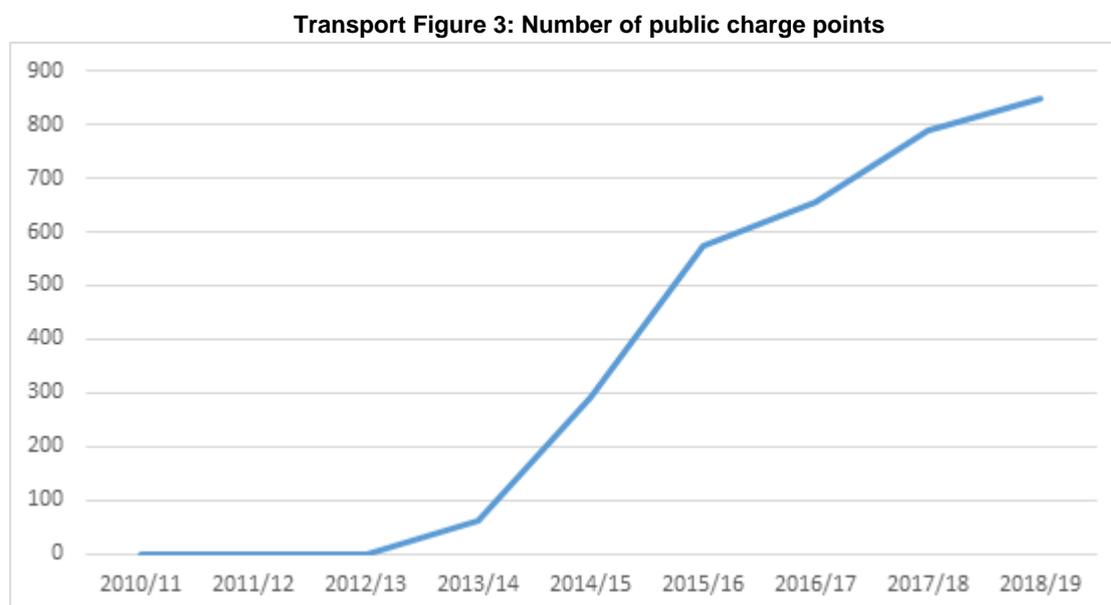
IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Percentage of domestic/workplace charge point installs that are completed each financial year.

**MOST RECENT DATA:** 123 workplace and 1024 domestic charge point installations completed in FY 2017-18.

DATA SOURCE(S): Energy Saving Trust[7].

COMMENTARY:

123 workplace charge points were installed in 2017-18, up from 82 installations in 2016-17.
1024 domestic charge points were installed in 2017-18, up from 472 installations in 2016-17.

Transport Figure 4: Domestic and workplace installations completed by year
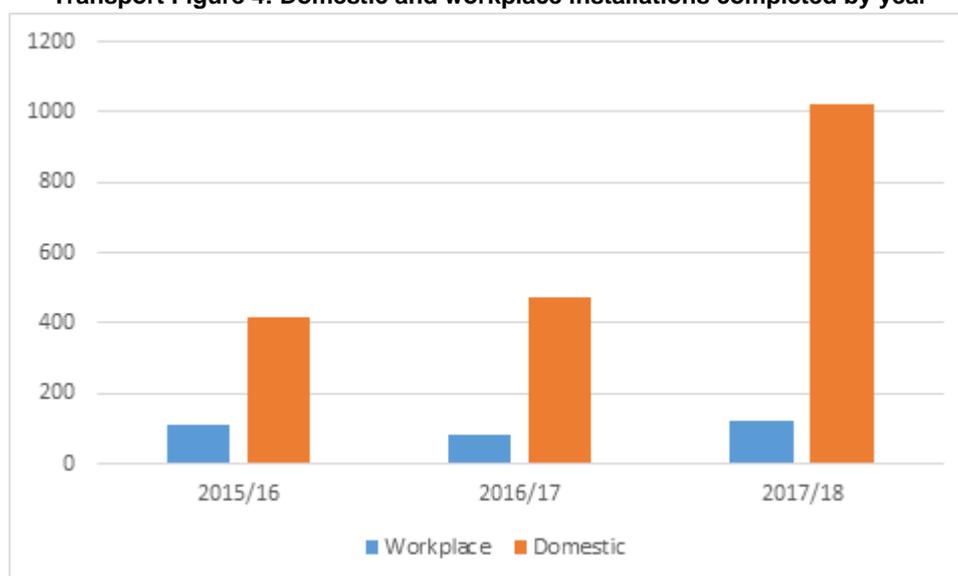
OUTPUT INDICATOR FOR POLICY OUTCOME 3:

Average emissions of HGVs per tonne kilometre.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total emissions (gCO$_2$e) per tonne kilometre of Road Freight Index 2017 = 100	98	96	94	92	91	89	87	85	83	81	79	78	76	74	72

MOST RECENT DATA:
- Goods originating and delivered within Scotland: Average emissions of 203.8gCO$_2$e per tonne kilometre from HGVs (Heavy Goods Vehicles) in 2015.
- Goods originating in Scotland and delivered elsewhere: 289.6gCO$_2$e per tonne kilometre from HGVs in 2015.
- Total goods originating in Scotland (delivered in Scotland and elsewhere) - Average emissions of 119.6gCO$_2$e per tonne kilometre from HGVs in 2015.

DATA SOURCE(S):
- Scottish Transport Statistics publishes the number of million tonne kilometres travelled by all goods transported within Scotland and to the rest of the UK by UK HGVs[1].
- The Carbon Account for Scotland publishes emissions data for HGVs[8].
- The measure is calculated by dividing HGV emissions by the sum of million tonne kilometres transported from Scotland to Scotland and to elsewhere.

ON TRACK: Too early to make assessment.

COMMENTARY:

It is too early to make an assessment of whether we are on track until more years of data are available. As emissions data are published approximately 18 months after the end of the year in question, the base year figure for 2017 cannot yet be established.

(continued from previous box)

There are a number of initiatives that should positively impact upon the carbon emissions of the freight industry, this includes the following:

- The Scottish Government has produced a series of guides and case studies through its Freight Best Practice Scheme to help the logistics industry save fuel, reduce emissions and increase safety. The guides help individuals to drive smarter and more efficiently to save money, develop skills and preserve the environment.
- The Scottish Freight and Logistics Advisory Group has been set up to increase sustainable economic growth in Scotland, recognising the importance of freight in the transport sector. Amongst the aims of the group is to prioritise and co-ordinate action taken by industry in response to government policies, including carbon reduction.
- Through its freight grant schemes, the Scottish Government helps companies choose sustainable rail and water methods to move goods. Taking freight off congested roads and moving it by rail or water can have environmental and wider social benefits but it can be more expensive. The Scottish Government runs three schemes that help offset these extra costs to encourage the use of rail or water transport instead of road transport.

OUTPUT INDICATOR FOR POLICY OUTCOME 3:

Report on the number of ECO Stars member organisations and impact on emissions and fuel savings.

MOST RECENT DATA:
- 258 ECO Stars commercial vehicle members in Scotland as of August 2018.
- 11 local authority ECO Stars schemes in Scotland as of August 2018.

MOST RECENT INFORMATION: Specific fuel savings are not recorded directly so only able to report on member numbers.

DATA/INFORMATION SOURCE(S): Transport Research Laboratory, who are responsible for ECO Stars delivery[9].

ON TRACK: Insufficient data.

COMMENTARY:

ECO Stars is a recognition and advice scheme, making suggestions for sustainable operational practice and fleet choices. Operators are not required to submit fuel usage information as part of their application, and as such these data are not currently recorded. Specific fuel savings and emissions reductions are therefore not possible to estimate as a direct result of ECO Stars membership. Success and impact of the scheme is focussed on recruitment of new members and continued engagement with existing members.

OUTPUT INDICATOR FOR POLICY OUTCOME 3:

Report qualitatively against the actions outlined in the Rail Freight Strategy.

MOST RECENT INFORMATION: The Rail Freight strategy was published in 2016.

INFORMATION SOURCE(S): The Rail Freight strategy[10].

ON TRACK: Yes.

COMMENTARY:

'Delivering the Goods, Scotland's Rail Freight Strategy', which was published in March 2016, sets out a number of actions that are being taken forward by the Scottish Government, Network Rail and the Scotland Freight Joint Board. These actions are looking at new and efficient ways of transporting goods in addition to building strong and lasting partnerships to grow existing and new markets. Each freight train removes up to 76 HGVs from the road and per tonne of cargo, rail freight produces 76% less carbon dioxide than road freight.

The strategy includes actions to inform our High Level Output Specification (HLOS) which sets Network Rail's regulatory outputs for the next rail control period (2019 to 2024). Our HLOS was published in July 2017 and includes a Scottish Gauge requirement, a specific output on the availability of cross-border routes for freight and targets to grow rail freight alongside freight performance and journey time improvements. The freight strategy and the outputs in the HLOS incentivise Network Rail to work with the wider rail industry with a clear focus on delivering our priorities for Scotland's railways.

The strategy included specific promotion actions and we published our rail freight guide 'Delivering Your Goods - Benefits of Using Rail Freight' in February 2017. This short Guide gives an introduction to using rail freight and is aimed at companies and public sector organisations who may be unfamiliar with rail's capabilities, but who could benefit from the resilience of a rail alternative for their supply chain. The Guide sign-posts to other more detailed sources of information.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Uptake of the ECO-Stars programme.

MOST RECENT INFORMATION: There are 258 unique ECO Stars commercial vehicle members in Scotland as of August 2018.

INFORMATION SOURCE(S): Transport Research Laboratory, who are responsible for ECO Stars delivery[9].

COMMENTARY:

There are no defined recruitment targets for ECO Stars membership, however, there has been good uptake rates with scheme geographic coverage continuing to grow. There are currently established schemes in 11 of 14 local authorities with Air Quality Management Areas, and plans to commence in a further 2. This will widen the target recruitment area for commercial vehicle members and subsequent potential scheme impact.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Progress in delivering the Rail Freight Strategy.

MOST RECENT INFORMATION: The Rail Freight strategy was published in 2016.

INFORMATION SOURCE(S): The Rail Freight strategy[10].

COMMENTARY:

There are 22 actions in the rail freight strategy, most of which have been completed, are on-going or are being taken forward through other channels. One of the key actions that has been completed is the identification and formalisation of the Scottish strategic freight network.

Also, following the publication of the rail freight guide, Transport Scotland, in conjunction with industry partners, hosted a series of freight commodity workshops in Coatbridge, Aberdeen, Inverness and Fife. The purpose of these workshops was to shine a light on the benefits of using rail freight, to look at the role of rail freight in the logistics chain, to hear from users of rail and industry experts, and to explain how rail could assist businesses.

In terms of investment, the current rail control period to 2019 has seen a record £5 billion investment in our railways, including a £30 million Scottish Strategic Rail Freight Investment Fund. In addition, the Scottish Government continues to administer EC state aid approved freight mode shift grant schemes which can provide capital support for infrastructure or revenue support for the additional costs of moving freight by rail or water instead of road.

Our 2017-18 mode shift revenue support enabled eight rail freight services move up to three million tonnes of freight by rail rather than road. Since 2007, £11.3 million in mode shift capital grants has been invested in 12 freight handling facilities across Scotland removing over 110 million lorry miles from road.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 4:**</u>

Proportion of bus fleet made up of low emission vehicles is 50% by 2032.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Proportion of bus fleet made up of low emission vehicles (%)	13	15	18	20	23	25	27	30	33	36	39	42	45	48	50

MOST RECENT DATA: Currently unavailable – will be available for future monitoring reports.

DATA SOURCE(S): Bus Service Operators Grant[11].

ON TRACK: Insufficient Data.

COMMENTARY:

We are currently unable to provide an accurate value for the percentage of the total fleet made up of low emission vehicles, however, indications are that the number of low carbon buses is ahead of the trajectory for 50% by 2032.

We know that there are 4,000 registered buses in the Scottish bus fleet (Scottish Transport Statistics, 2018). We also know that the number of low carbon buses that will be available via claims for the Bus Service Operators Grant Low Carbon Vehicle, however, reforms to data collection and assurance work is required. In addition, applications for more than 100 low carbon buses have been made for the eighth round of the Scottish Green Bus Fund.

A value for the percentage of the total fleet is subject to reforms to Bus Service Operators Grant data collection and assurance work, and will be available for future monitoring reports.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 4:

Number of low carbon buses purchased including those through the Scottish Green Bus Fund.

MOST RECENT DATA: Currently unavailable.

DATA SOURCE(S): We know the number of low carbon buses purchased through the Scottish Green Bus Fund but we don't have reliable data on the number of low carbon buses purchased without the Scottish Green Bus Fund.

COMMENTARY:

The number of low carbon buses purchased through the Scottish Green Bus Fund for each year from 2011 is available here[12]:
https://www.transport.gov.scot/public-transport/buses/scottish-green-bus-fund/#45456

46 buses were purchased with the seventh round of the Scottish Green Bus Fund and information on the eighth round will be added in due course.

We will continue to work with bus operators to improve data held on the number of low carbon buses purchased without the Scottish Green Bus Fund. This will allow for a total number of low carbon buses purchased to be provided.

Transport Figure 5: Number of bus purchases with each round of the Scottish Green Bus Fund
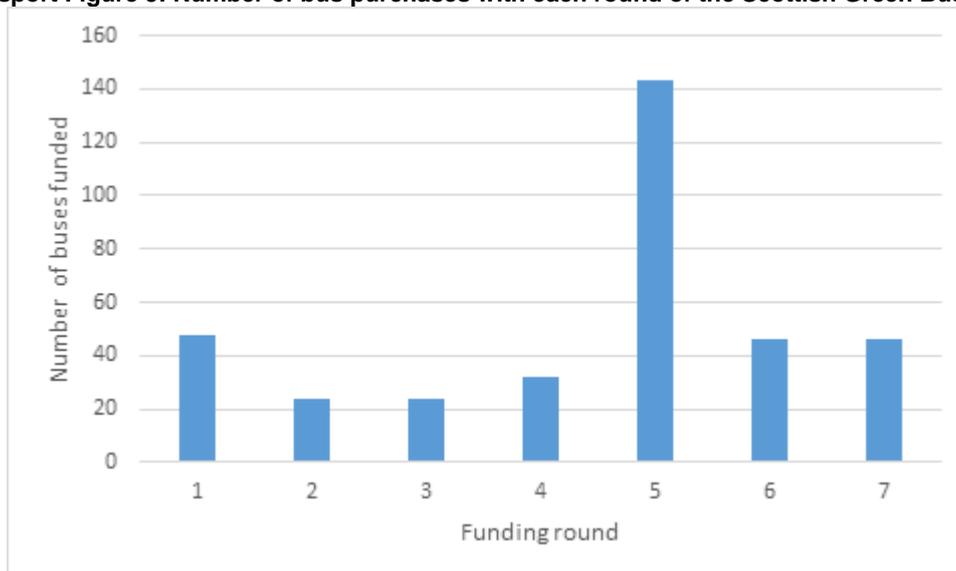
IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 4:

Annual low carbon bus expenditure through Scottish Green Bus Fund and Bus Service Operators Grant incentive.

MOST RECENT DATA: £5.1 million low carbon bus expenditure in the financial year 2017-18.

DATA SOURCE(S): Scottish Green Bus Fund[12], Bus Service Operator's Grant[11] incentive claims.

COMMENTARY:

The Scottish Government provides funding support to bus operators for the additional costs associated with the purchase and operation of low carbon buses within the Scottish bus fleet. The Scottish Government is committed to accelerating the uptake of such vehicles, and continue to work with bus stakeholders on the level of support required to make this commercially viable now and in the future as the technology and its associated costs matures. The 2017-18 timeframe is to reflect the latest available financial year figures.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 4:

Numbers of kilometres run by low emission buses as a percentage of total bus kilometres.

MOST RECENT DATA: 10.2% of kilometres run by low emission buses in the financial year 2017-18.

DATA SOURCE(S): Bus Service Operators Grant low carbon vehicle incentive claims[11].

COMMENTARY:

As a greater percentage of the Scottish bus fleet become low carbon buses, the percentage of kilometres run will increase. The 2017-18 timeframe is to reflect that the data are sourced from Bus Service Operators Grant incentive claims covering the financial year.

OUTPUT INDICATOR FOR POLICY OUTCOME 5:

Qualitative report on Transport Scotland's input into port and airport strategies.

MOST RECENT INFORMATION: Transport Scotland.

INFORMATION SOURCE(S): Transport Scotland[13].

ON TRACK: Insufficient data.

COMMENTARY:

Ports and airports in Scotland are primarily operated by independent organisations distinct from the Scottish Government and it is the responsibility of these organisations to operate their facilities in line with the relevant regulatory regimes.

We are aware that light-emitting diode (LED) lighting is being increasingly used across Scotland's airports and ports leading to lower carbon emissions as a result of LED lighting using around 50% of the energy of previous lighting. Highlands and Islands Airports Limited aim to replace all building lights with LED by 2023 and all fixed apron lighting by 2024. Highlands and Islands Airports Limited has also invested over £2 million to date replacing lighting including at Benbecula Airport where 100% of the Aeronautical Ground Lighting has been converted to LED. Ports continue to explore options for shore side power to be provided to ships alongside (cold-ironing). Key examples include Fraserburgh Harbour Commissioners and Orkney Islands Council (Stromness Multi Modal Low Carbon Transport and Active Travel Hub).

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 5:

Qualitative annual report on Transport Scotland's engagement with Scottish port authorities and airports.

MOST RECENT INFORMATION: Transport Scotland.

DATA SOURCE(S): Transport Scotland[13].

COMMENTARY:

Ports and airports in Scotland are primarily operated by independent organisations distinct from the Scottish Government and it is the responsibility of these organisations to operate their facilities in line with the relevant regulatory regimes.

Transport Scotland regularly engages with Ports and Airports in a range of forums including discussions on how they can reduce carbon emissions as part of their own operations.

OUTPUT INDICATOR FOR POLICY OUTCOME 6:

Number of low emission ferries in Scottish Government ownership.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Number of low emission ferries in Scottish Government ownership	3	4	4	5	5	5	6	6	7	7	7	8	8	9	9

MOST RECENT DATA: 3 low emission ferries owned in 2018.
DATA SOURCE(S): Caledonian Maritime Assets Ltd (fleet owner)[14].

ON TRACK: Yes.

COMMENTARY:

Three diesel-electric hybrid ferries were delivered from 2011 to 2015 and 2 dual-fuel diesel/Liquefied Natural Gas (LNG) ferries scheduled for delivery in 2019 and 2020. The size of the fleet has expanded with the purchase in 2018 of the 3 ro-pax ferries serving the Northern Isles Ferry Services, previously on long-term lease. The size of the owned fleet has therefore risen to 33 ferries so the target of low emission ferries in 2032 has risen from 9 to 10.

The Scottish Government is supporting the Hyseas consortium in the development of a world's first seagoing ro-ro hydrogen ferry. The consortium has secured EU funding to build and test a full scale hydrogen marine drive-train prior to installing it in a ferry earmarked for use on services within Orkney.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 6:

Update on programme of procurement through the Vessel Replacement Plan.

MOST RECENT INFORMATION: Vessel Replacement and Deployment Plan Annual Report 2016 was published January 2018.
INFORMATION SOURCE(S): Vessel Replacement and Deployment Plan Annual Report 2016[15].

COMMENTARY:

The latest Vessel Replacement and Deployment Plan Annual Report indicated that the next vessel to be procured for the CalMac fleet would be for the services to Islay. Revised delivery dates for the 2 new dual-fuel vessels were announced on 16 August 2018: Summer 2019 and Spring 2020 respectively.

OUTPUT INDICATOR FOR POLICY OUTCOME 7:

The percentage of the rail track electrified.

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Percentage of rail track electrified (kilometres)	27	27	28	29	29	30	30	31	32	32	33	33	34	34	35

MOST RECENT DATA: 25% of rail track electrified in 2015-16.
DATA SOURCE(S): Scottish Transport Statistics: Rail Services[16].

ON TRACK: Yes.

COMMENTARY:

The percentage of rail passenger journeys using electric trains is a more useful indicator than the percentage of rail track electrified. With the addition of three new electrified rail routes operating in Scotland during 2018-19, it is estimated that by summer 2019, 75% of all rail passenger journeys in Scotland will be by faster and more reliable low carbon electric trains. In comparison with the situation in 2016 the proportion of passengers using electric trains as opposed to diesel will have increased by 16%, at a time when significant absolute growth in passenger numbers has also taken place. ScotRail patronage has risen by over 30% in the last 10 years (to April 2017) with some 98 million passenger journeys annually.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 7:

Annual information on electrification is contained within the Scottish Transport Statistics.

MOST RECENT INFORMATION: Network Rail - Not National Statistics.

INFORMATION SOURCE(S): Scottish Transport Statistics: Rail Services[16].

COMMENTARY:

See information in the indicator above.

OUTPUT INDICATOR FOR POLICY OUTCOME 8:

Active travel budget for the year.

MOST RECENT DATA: £80 million budget for 2018-19.

DATA SOURCE(S): Scottish Government budget 2018-19[17].

ON TRACK: Yes.

COMMENTARY:

The Government is committed to building an Active Nation, and to achieve this has doubled the previous budget of £39.2 million per annum (2014-18) to £80 million in 2018-19. This equates to an average spend £14 per capita in Scotland.

Funding has been agreed for majority of this amount including:
- Capital funding of £66.32 million
- Resource funding of £6.28 million
- Cycling, Walking Safer Streets £7.4 million

In addition, £6.56 million funding has been provided for sustainable travel behaviour change programmes (i.e. Smarter Choices, Smarter Places, Energy Saving Trust, CoMo).

We anticipate full spend of £80 million budget by March 2019.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 8:**</u>

Progress towards active travel vision.

MOST RECENT INFORMATION: Around a third of commutes to work under 5 miles are by active modes. The prevalence of cycling as the main mode of travel for commutes of under 5 miles has increased and is currently at its highest level.

DATA SOURCE(S): Scottish Household Survey 2017, Active Travel Delivery Partner reports (quarterly/annual), Annual Cycling Monitoring Report, Bike Life Reports, Hands Up Survey[18].

ON TRACK: Too early to make assessment.

COMMENTARY:

The active travel vision is a long term one for 2030; there are no existing measures or indicators for this although the indicator does reflect the emphasis on encouraging active travel for shorter everyday journeys (under 5 miles for cycling; under 2 miles for walking). We are developing relevant indicators as part of an Active Travel framework using Theory of Change that will allow progress to be monitored. The active travel budget has been doubled to £80 million this year, therefore it is too early to assess benefits of this, although we are encouraged by the rise in cycling as noted below.

Though no specific target has been set for this indicator, progress, particularly around increasing rates of cycling for short commutes has increased since 2012:
- In 2017, for commutes of five miles or under, 4% of people cycled to work. This figure is at its highest level.
- In 2017, for commutes of two miles or under, 23% of people walked to work. This figure has decreased slightly between 2016 and 2017.

Within this there are regional differences in 2016 data:
- In 2017, for commutes of five miles or under, the figure of people cycling to work in Glasgow is the same as the national figure (4%) but higher in Edinburgh at 10%. This represents an increase in cycling to work in Edinburgh between 2016 and 2017 but a reduction in Glasgow over the same period.
- In 2017, for commutes of two miles or under, more people walked to work in Edinburgh (35%) than in Glasgow (27%).

<u>**IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 8:**</u>

Qualitative update on what has been achieved through active travel expenditure.

MOST RECENT INFORMATION: In 2017, for commutes of five miles or under, 4% of people cycled to work; walking is the main mode of travel for 23% of population.

INFORMATION SOURCE(S): Scottish Household Survey 2017, Active Travel Delivery Partner reports (quarterly/annual), Annual Cycling Monitoring Report, Bike Life Reports, Hands Up Survey[18].

COMMENTARY:

Grant awards in 2017-18 were for a mix of both infrastructure and behaviour change/training projects; we awarded £39.2 million to a range of delivery partners. Most of this funding was awarded to Local Authorities/other partners with a request for 50% match funding for programmes such as Community Links and Community Links PLUS.

The majority of infrastructure funding was issued to Sustrans for Community Links and National Cycle Network. Between 2011–2016, these have delivered 370 miles of newly constructed walking and cycling infrastructure, as well as 160 miles of upgrading/resurfacing.

A number of behaviour change programmes were delivered including:
- 10,000 adults supported with training in 2017-18. This includes 1,200 bus and lorry drivers trained as part of vulnerable road user awareness courses.
- A range of Cycle Friendly programmes to promote and support cycling locally and make facilities more cycle friendly by providing funding for improved facilities. Last year 9 Universities, 789 workplaces (with approximately 260k employees) and 418 School (approximately 130k pupils) were presented the appropriate Cycle Friendly awards.
- School cycle training delivered through Bikeability where 36,000 children from P6 to S2 were taught to cycle safely and to learn how to manage traffic in 2016-17.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 8:

Qualitative report on the implementation and achievements of Smarter Choices, Smarter Places.

MOST RECENT INFORMATION: Smarter Choices, Smarter Places 2017-18 Programme Review from Paths for All, October 2018.

INFORMATION SOURCE(S): Paths for All[19]

COMMENTARY:

Smarter Choices, Smarter Places is changing people's travel behaviours. It supports the sustainable transport hierarchy by increasing people's knowledge and understanding of walking, cycling and sustainable transport as credible options for everyday journeys. It reduces the number of car journeys, miles travelled and CO_2 emissions produced. In 2017-18 the programme was delivered in partnership with all Scotland's 32 local authority areas for the first time. A very wide variety of projects tailored to meet local needs and priorities were delivered. Initiatives were focused on school, workplace and community settings. Activities included community and workplace active travel challenges; trialling new bus services; bus ticketing promotions; personal travel planning; maps and wayfinding to increase knowledge; social media and printed media campaigns to increase awareness, and events that helped promote walking and cycling as normal ways to travel. Successful initiatives have shown increases in rates of walking and cycling and increased use of public transport at a local level. Many of the initiatives are focussed on increasing the awareness of walking, cycling and sustainable transport, and early analysis suggest that the programme is responsible for well over half of Scotland's population receiving pro-sustainable transport messages.

INDUSTRY

Industry

Greenhouse gas emissions from the industry sector have already been reduced by 48% (1990 to 2016). The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 21% (2018 to 2032) taking the overall reduction in emissions within the sector to 61% when compared with 1990.

The Plan sets out the following three **"policy outcomes"** for the sector:

1. By 2032, industrial and commercial energy productivity to improve by at least 30% from 2015 levels, through a combination of fuel diversification, energy efficiency improvements and heat recovery.

2. By 2032, industrial and commercial emissions intensity will fall by at least 30%, from 2015 levels, through a combination of fuel diversification, energy efficiency improvements and heat recovery.

3. Technologies critical to further industrial emissions reduction (such as carbon capture and storage, carbon capture and utilisation, and production and injection of hydrogen into the gas grid) are demonstrated at commercial scale by 2030.

Between 1990 and 2016 emissions in the Scottish Industrial sector fell by almost 48%, following a slight (0.7%) increase in emissions in the sector in 2016.

The Scottish Government is working to coordinate incentive mechanisms on energy efficiency and decarbonisation measures across industry. We are developing a discussion paper to be shared with industrial stakeholders that will contain options on further incentives and business support, reflecting our commitment to manage the transition toward decarbonising the industrial sector.

As outlined in the Climate Change Plan, the Scottish Government has developed measures which recognise the importance of sustainable economic growth as Scotland's industrial sector strives to remain internationally competitive, avoiding carbon leakage, whilst reducing emissions and energy use.

Energy productivity and emissions intensity in the industrial and commercial sectors in Scotland have been introduced as measures to demonstrate that over the long-run, for each unit of energy input, we are achieving higher levels of output, and for each unit of output, we are generating fewer greenhouse gas emissions.

Chapter 4: Industry

Between 2015 and 2016, energy productivity in the industrial and commercial sectors in Scotland decreased by 1%. This is the first decrease since 2010, and can be attributed to an increase in energy consumption in these sectors over the period. This period also saw a slight increase in emissions intensity, primarily because of an increase in emissions across both industry and services.

There has been a general trend of increasing energy productivity and decreasing emissions intensity in the industrial and commercial sectors in Scotland in recent years, demonstrating progress with the measures.

Overall however, the decrease in energy productivity and increase in emissions intensity between 2015 and 2016 contrasts with continued long-term progress made on these measures, as detailed in the sections below. It is anticipated that future decreases in emissions and energy consumption and increases in output in these sectors will lead to a fall in emissions intensity and energy productivity as per the ambitions set out in the Climate Change Plan.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOME 1:**</u>

Industrial and commercial energy productivity to improve by at least 30% by 2032.

Year	2020	2025	2032
Change in Energy productivity from 2015	10%	20%	30%

MOST RECENT DATA: £2.20 million GVA per GWh energy productivity in 2016.
BASELINE DATA: £2.23 million GVA per GWh energy productivity in 2015.
**CHANGE:** 1.3% decrease in energy productivity from 2015 to 2016.
DATA SOURCE(S):
- Quarterly National Accounts Scotland, Q1 2018[1].
- Total final energy consumption at regional and local authority level[2].

ON TRACK: Too early to make assessment.

COMMENTARY:

- Between 2005 and 2016 energy productivity in the industrial and commercial sectors in Scotland rose by 45% as a result of an underlying 25% fall in energy consumption and a 9% increase in GVA (2016 prices) during this time.
- Energy productivity fell 1.3% between 2015 and 2016, which is the first decrease in this measure since 2010, and which follows steady increases since 2005, as outlined in Industry Figure 1. The reduction in this period was largely due to increases in energy consumption in 2016, the first increases in consumption in these sectors since 2010, coupled with moderate levels of growth in output.

Industry Figure 1: Relative Changes in Energy Productivity (GVA/GWh), 2005 to 2016 (2015 = 100)
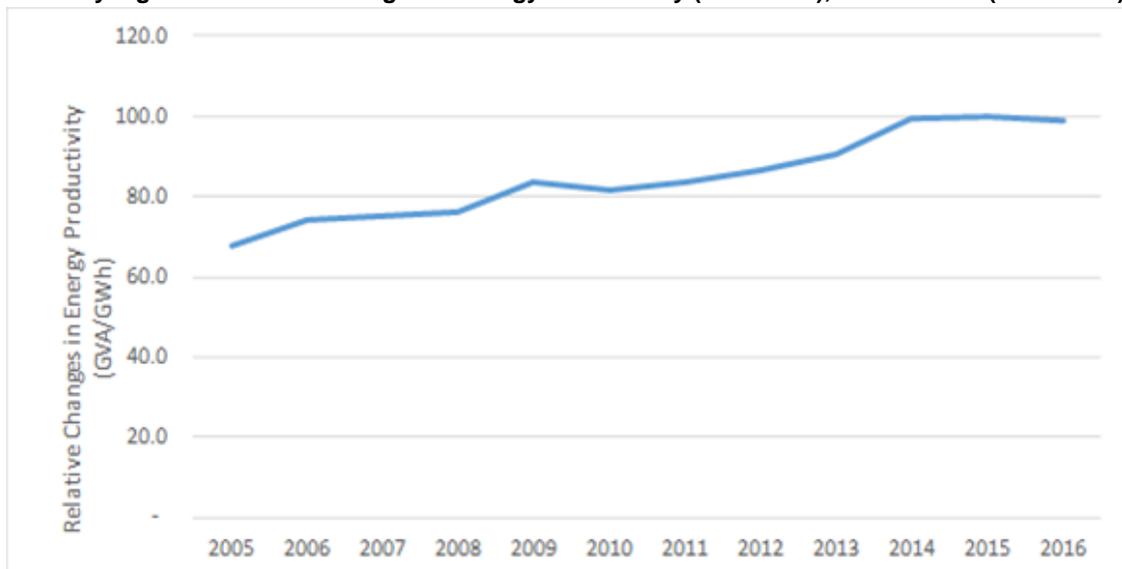
OUTPUT INDICATOR FOR POLICY OUTCOME 2:

Industrial and commercial emissions intensity to fall by at least 30% by 2032.

Year	2020	2025	2032
Change in emissions intensity from 2015	-10%	-20%	-30%

MOST RECENT DATA: 113.2tCO$_2$e per £1 million GVA, in 2016.
BASELINE DATA: 112.9tCO$_2$e per £1 million GVA, in 2015.
CHANGE: 0.3% increase in emissions intensity from 2015 to 2016.
**DATA SOURCE(S):**

- Scottish Greenhouse Gas Emissions, 2016 - Climate Change Plan Sectors Paper[3].
- Quarterly National Accounts Scotland, Q1 2018[1].

ON TRACK: Too early to make assessment.

COMMENTARY:

- Between 1998 and 2016 emissions intensity fell by 47%, as a result of an underlying 32% fall in emissions and a 28% increase in Gross Value Added (GVA) (2016 prices). The majority of the reduction in emissions during this period came from industry (over 6MtCO$_2$e, a 37% fall) rather than services (0.2MtCO$_2$e, a 5% fall).
- Emissions intensity increased by 0.3% between 2015 and 2016, driven by an increase in emissions across both industry and services and a moderate increase in GVA. Despite this increase, the sectors are following an overarching trend of decreasing emissions intensity, as outlined in Industry Figure 2, and at this stage it remains too early to make an assessment as to whether this long-term indicator is on track.

Industry Figure 2: Relative Changes in Emissions Intensity (tCO$_2$e/£ millions), 1998-2016 (2015=100)
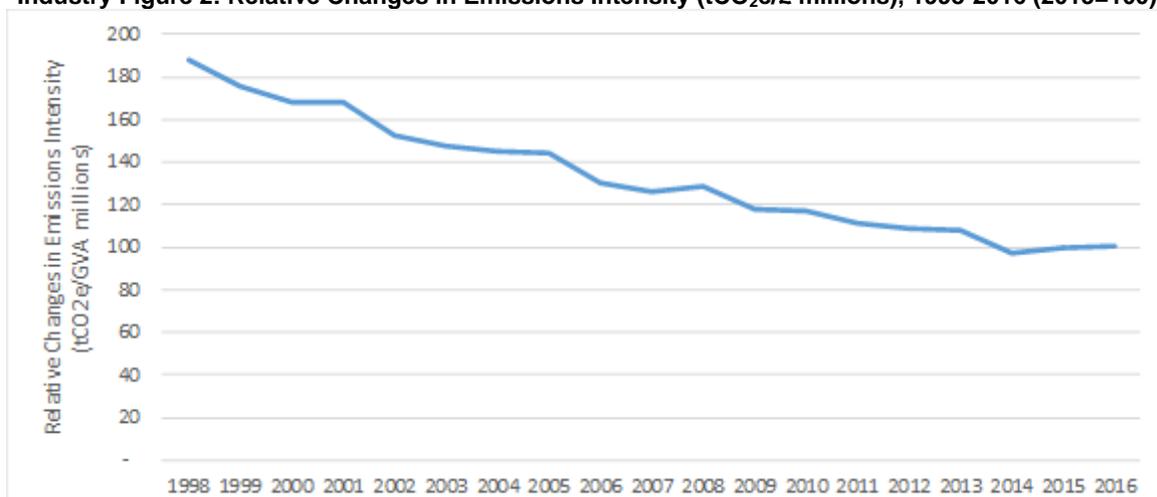
IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2 and 3:

The installed capacity of renewable heat receiving payment under the non-domestic Renewable Heat Incentive (RHI) increases.

MOST RECENT DATA: 892MW of installed capacity receiving payment under the non-domestic RHI in August 2018.
**BASELINE DATA:** 729MW of installed capacity receiving payment under the non-domestic RHI in August 2017.
CHANGE: 163MW (22%) increase in installed capacity of renewable heat receiving payment under the non-domestic RHI from August 2017 to August 2018.
DATA SOURCE(S): Renewable Heat Incentive statistics, Department for Business, Energy and Industrial Strategy[4].

COMMENTARY:

- Installed capacity of renewable heat receiving payment under the non-domestic RHI has increased by 112% since December 2015, as outlined in Industry Figure 3.

Industry Figure 3: Installed capacity of accredited non-domestic installations (MW)
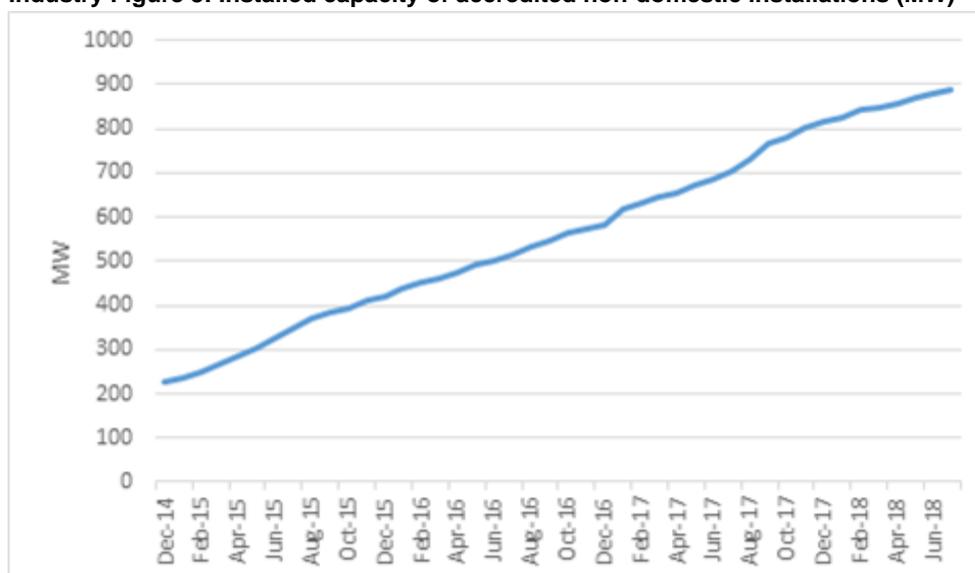
- RHI incentivises renewable heat generation. Increasing the proportion of heat generated renewably will therefore reduce the emissions intensity of heat consumption in Scotland.
- Scotland currently accounts for 21% of all non-domestic accredited installed capacity to the RHI scheme as of August 2018.
- It should be noted that this does not give the full picture of non-domestic renewable installations, only those who have joined the RHI scheme. However, it can be assumed this covers the majority, as the RHI provides an incentive to install renewables.

Chapter 4: Industry

<u>**IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2 AND 3:**</u>

Improve the evidence base of the industrial sector in Scotland through initiatives under the Manufacturing Action Plan and SEEP (Scotland's Energy Efficiency Programme).

MOST RECENT INFORMATION: The Scottish Government continues to work alongside Industry representatives and agencies including the Scottish Environmental Protection Agency, Resource Efficient Scotland and Zero Waste Scotland to improve the evidence base of the Scottish Industrial Sector.

INFORMATION SOURCE(S):
- Scottish Environment Protection Agency: Scottish Pollutant Release Inventory[5].
- European Environment Agency Database on emissions and energy use for Large Combustion Plants[6].

COMMENTARY:

- The Scottish Government is working alongside industrial and sector stakeholders to improve the evidence base on emissions and energy use across the Scottish Industrial sector. This information should support industry to be more productive and decarbonise, and should also be of use to benchmark the performance of industrial operations.
- Industrial stakeholder workshops, hosted regularly following the Ministerial Roundtable at the end of 2017, have been significant in developing our understanding of the Scottish industrial sector. These forums have provided insight into the challenges and opportunities industry faces to meet the targets that we have set.
- We have achieved positive engagement with Scottish energy intensive industries over the past year, creating a platform from which to move into a collaborative phase of working partnership with industry to make inroads into climate targets.
- The information sources listed above provide historical emissions and energy use data at the individual site level, which, due to the levels of categorisation within the datasets, can be aggregated to sub-sector and sector levels. This has allowed for detailed analysis of the trends in industrial emissions over time.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2 AND 3:

Continued annual monitoring of energy productivity and emissions intensity.

MOST RECENT INFORMATION: As above.

INFORMATION SOURCE(S): As above[5, 6].

COMMENTARY:

- The annual monitoring commitment of this implementation indicator is informing the reporting period for the output indicators for policy outcomes 1 and 2.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2 and 3:

The Scottish Government funded elements of the ACORN Carbon Capture Utilisation & Storage (CCUS) Project feasibility study are completed by November 2018.

MOST RECENT INFORMATION: The Scottish Government funded elements of the ACORN CCUS project are on track to be completed by mid- November 2018.

INFORMATION SOURCE(S): Project promoters - Pale Blue Energy Ltd[7].

COMMENTARY:

There is international recognition that we need CCUS to meet global climate change ambitions agreed in Paris in 2015. Scotland is uniquely blessed with existing infrastructure that could be adapted for use in CCUS and we have unique access to vast CO_2 storage potential and the Scottish Government has consistently supported the calls for investment in Carbon Capture and Storage and CCUS projects.

The UK Government are currently undertaking a major programme of activities to develop their policy on CCUS – interest in CCUS is growing in UK Government and is increasingly linked to hydrogen production. Scottish Government are closely involved in the progress of UK policy on CCUS.

The ACORN CCUS project, which has received direct financial support from the Scottish Government, was also recently awarded a circa £1 million grant from EU funding streams as a Project of Common Interest. This grant will further cement the ACORN project's status as the most advanced CCUS project in the UK.

WASTE

Waste

Greenhouse gas emissions from the waste sector have already been reduced by 73% (1990 to 2016). The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 52% (2018 to 2032).

The Plan sets out the following two **"policy outcomes"** for the sector:

1. Reduction in waste sent to landfill.

2. Reduction in emissions from closed landfill sites.

In summary:

- In 2017, for the first time, we recycled more household waste than we landfilled.

- The total amount of household waste generated in Scotland was 2.46 million tonnes in 2017, a decrease of 38,153 tonnes (1.5%) from 2016. See data at: https://www.sepa.org.uk/media/378862/2017-household-waste-commentary.pdf

- Our Waste Data Strategy includes plans for the development of new indicators to measure progress on waste and resource management in Scotland in the future, and plans for a new electronic waste data system (in partnership with the rest of the UK).

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

From 1 January 2021, the landfilling of biodegradable municipal waste will be illegal. As a result of that, and the other policy action above, we expect the volume of land filled waste to fall significantly from the current level of 3.7 million tonnes.

	2018	**2019**	**2020**
Tonnes of waste landfilled (household and non-household)	2.7 million	2.3 million	2.0 million

MOST RECENT DATA: 3.83 million tonnes of all types of waste landfilled in 2017, an increase of 90,816 tonnes (2.4%) from 2016.

DATA SOURCE(S): Scottish Environment Protection Agency: Waste landfilled in Scotland – 2017[1].

ON TRACK: Too early to make assessment.

COMMENTARY:

- The Ban on Biodegradable Waste to Landfill in 2021 will cause a very significant drop in the total landfill figure. The profile between now and 2021 is more difficult to predict. The most significant falls may occur closer to the 2021 deadline.
- The increase in 2017 was primarily due to an increase in the landfill of soils, which increased by 230,748 tonnes (22.4%) from 2016. This may be due to increased activity in construction and roadbuilding.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

60% of total household waste recycled by 2020.

MOST RECENT DATA: 45.6% of household waste recycled in 2017, increase of 0.6 of a percentage point from 2016.

DATA SOURCE(S): Scottish Environment Protection Agency: Household Waste Data – 2017[2].

COMMENTARY:

- Recycling waste rather than landfilling it or burning it is, from a climate change point of view, preferable. High recycling reduces emissions.
- Establishment of recycling services and supporting legislation has lifted recycling services fairly quickly from a low level (5% in 1999).
- The Scottish Government and COSLA have agreed a Scottish Household Recycling Charter to promote greater consistency of collections. Twenty seven Councils have now signed up to the Charter.
- The Scottish Government has made a commitment to introducing a deposit return scheme for drinks containers, which is aimed at boosting recycling for the packaging.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

70% of all waste recycled by 2025.

MOST RECENT DATA: 61% of all waste recycled in 2016.

DATA SOURCE(S): Scottish Environment Protection Agency: Waste from all sources – Summary data 2016[3].

COMMENTARY:

- Recycling waste rather than landfilling it or burning it is, from a climate change point of view, preferable. High recycling reduces emissions.
- This indicator includes all waste including commercial and industrial waste as well as household waste.
- The Scottish Environment Protection Agency's drive to enforce recycling regulations across all sectors is gradually becoming more effective.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Household and non-household food waste reduced by 33% by 2025 from 2013 baseline.

MOST RECENT DATA: 2014-15 Waste Composition Study: Food waste went down from 420,000 tonnes in 2009 to 330,000 tonnes in 2014-15 (21.5% reduction).

BASELINE DATA: N/A

CHANGE: N/A

COMMENTARY:

- Supporting datasets are not yet available for the 2025 target, because the methodology is still being reviewed to set an agreed 2013 baseline. Data are available from the 2014-15 Zero Waste Scotland Waste Composition Study[4].

OUTPUT INDICATOR FOR POLICY OUTCOME 2:

	2017/18	**2018/19**	**2019/20**	**2020/21**
Number of additional landfill sites with gas capture being developed each year	3	6	9	12

MOST RECENT DATA: As of September 2018 there were 8 Scottish Government supported projects underway.

DATA SOURCE(S): Scottish Environment Protection Agency: Waste data for Scotland[5].

ON TRACK: Yes.

COMMENTARY:

- Reports from the project officer at the Scottish Environment Protection Agency indicated that projects funded in 2017 are proceeding as expected.

IMPLEMENTATION INDICATOR OF POLICY OUTCOME 2:

Up to 12 landfill gas capture sites supported by 2020-2021.

MOST RECENT DATA: As above.

DATA SOURCE(S): Scottish Environment Protection Agency[6].

COMMENTARY:

- Gas emissions from landfill sites can continue for decades after the waste has been deposited. These emissions can be used to support heat networks for homes and businesses nearby, or where such emissions are very low level, the gas can be flared off.
- All landfill sites must by law be equipped with gas capture systems where needed.

LAND USE, LAND USE CHANGE AND FORESTRY
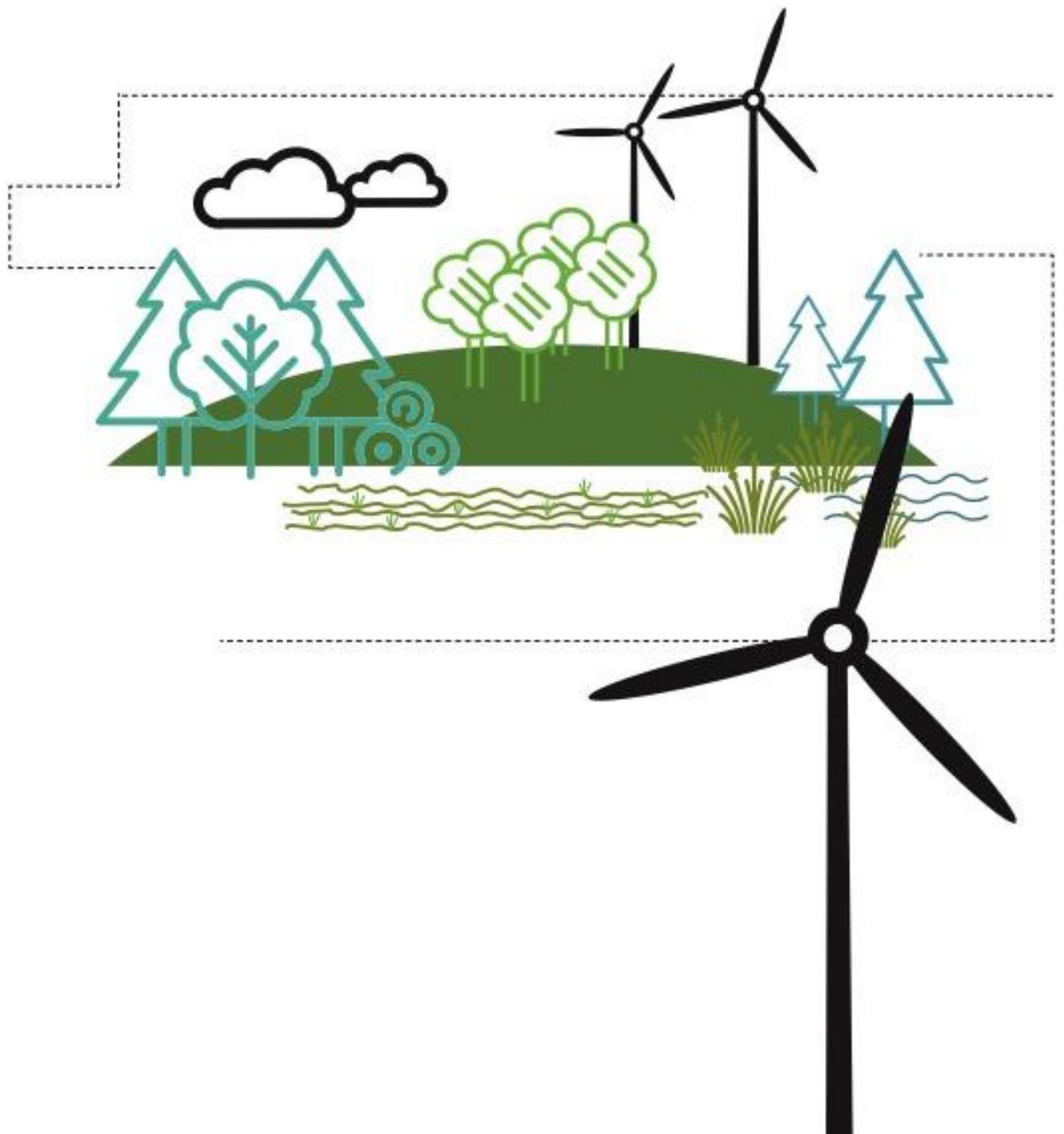
Land Use, Land Use Change and Forestry

The Land Use, Land Use Change and Forestry (LULUCF) sector as a whole is a net sink, rather than source, of greenhouse gases. Based on the most recent (2016) greenhouse gas inventory, the sector was sequestering a net 1.1 $MtCO_2e$ in 1990. Since then, there has been a significant increase in net sequestration, up to 8.4 $MtCO_2e$ in 2016. The Climate Change Plan includes LULUCF projections based on the 2015 greenhouse gas inventory (which were the most up-to-date projections available at the time). It should be noted that although the historic forestry data were substantially revised in the 2016 inventory, the LULUCF projections remains unchanged, as projections consistent with the 2016 Inventory are not yet available. The Climate Change Plan shows that the size of the sink will increase to 2020, dip slightly until 2025, and then be fairly constant until 2032.

The Plan sets out the following three **"policy outcomes"** for the LULUCF sector:

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.

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.

3. To enhance the contribution of peatland to carbon storage, we will support an increase in the annual rate of peatland restoration, from 10,000 hectares in 2017‑2018 to 20,000 hectares per year thereafter.

Forestry

*   Forestry Statistics are published annually in September and include figures on woodland creation.

*   For other indicators Forestry Commission Scotland data have been used to report against the output indicators and implementation indicators as reported in this chapter.

*   Figures reported in this chapter show that the area of new woodland planting was higher than the previous year and we expect for this positive trend to continue. Also there has been a large number of events following the Mackinnon review to promote woodland creation.

- Figures on use of timber products in construction also demonstrate progress towards meeting the targets as set in the Climate Change Plan.

Peat

- In 2017-18, 3,600 hectares of peatland were restored. The longer term pipeline for peatland restoration is healthy (e.g. 25,000 hectares of unrestored peatland currently covered by completed Peatland Action feasibility studies) and action has been taken to increase the capacity of contractors, land managers and the project team – and to extend the annual window for delivering restoration work - so there is good scope to deliver the longer term climate charge target for restoration. We anticipate improvements in data collection and analysis this year with the formation of a project data and information team starting in October.

OUTPUT INDICATOR FOR POLICY OUTCOME 1:

Number of hectares of woodland created.

	Until 2019-2020	From 2020-2021	From 2022-2023	From 2024-2025
Ha created	10,000	12,000	14,000	15,000

MOST RECENT DATA: 7100 hectares for the period 1 April 2017 to March 2018.

DATA SOURCE(S): Official Statistics released in September 2018[1].

ON TRACK: Too early to make an assessment. The target has not been achieved for financial year 2017-18 but on track for 2018-19.

COMMENTARY:

- Forestry statistics for woodland creation are published annually in September. These are the figures for the period April 2017 to March 2018. Figures on woodland created after March 2018 are not available.
- Extreme weather delayed some planting so that will roll over into the figures for the following year.
- Scotland was responsible for 78% of new woodland creation in the UK in 2017-18.
- Plans and approvals for 2018 suggest that figures will be significantly higher for 2018-19.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Area of new woodland created with grant scheme support.

MOST RECENT DATA: 6300 hectares from the period 1 April 2017 to the end of March 2018.

DATA SOURCE(S): Official Statistics released in September 2018[1].

COMMENTARY:

- Forestry statistics for woodland creation published annually in September. These are figures for the period April 2017 to March 2018. Figures on woodland created after March 2018 are not available.
- Extreme weather delayed some planting so that will be picked in the figures for the following year.
- Scotland was responsible for 78% of new woodland creation in the UK in 2017-18.
- Plans and approvals already made for more woodland creation in 2018 suggest that figures will be significantly higher for 2018-19.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Percentage of applications that are processed within processing time agreements.

MOST RECENT DATA: N/A

DATA SOURCE(S): N/A

COMMENTARY:

- The Forestry Grant Scheme Customer Charter was introduced in March 2018; at the same time Forestry Commission Scotland introduced new Forestry Grant Scheme applicant guidance detailing changes to the application process to deliver shorter case approval times.
- The Charter sets out the Customer Service Standards for Forestry Commission Scotland's handling of applications and capital claims for grant under the Forestry Grant Scheme within the Scottish Rural Development Programme 2014–2020. This Charter commits all participants, including Forestry Commission Scotland, Rural Payments and Inspection Division, consultees and applicants/claimants, to deal with applications and capital claims in a business-like manner with the objective of meeting the agreed target times.
- Forestry Commission Scotland aims to send a draft contract to the applicant within 13 weeks of accepting a completed and submitted application if it meets the eligibility criteria and follows published guidance and process claims and make payments within 8 weeks (10 weeks if an inspection is required) of receipt of a completed and fully supported claim.
- Cases approved during this period have been developed under applicant guidance predating the Customer Charter; there is a delay before newly submitted applications conform to the new guidance and can appropriately be monitored against the processing time agreements. Forestry Commission Scotland expects applications approved from November 2018 to conform to the new processing guidance.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Area of new woodland created on the national forest estate.

MOST RECENT DATA: 900 hectares from 1 April 2017 until the end of March 2018.

DATA SOURCE(S): Official Statistics released in September 2018[1].

COMMENTARY:

- Forest Enterprise Scotland manages Scotland's National Forest on behalf of Scottish Ministers. A Strategy for Woodland Creation on the National Forest Estate was published in August 2018 and sets out Forest Enterprise Scotland's aim to create 3,250 hectares of woodland in the period September 2016 to March 2021 (this equates to a rate of around 650 hectares per year), with 250 hectares of that woodland being on newly acquired former coalfield and derelict sites to achieve large scale restoration and remediation of these sites.
- Forest Enterprise Scotland is improving the way they intend to achieve their share of the Scottish Government's woodland creation targets. Through the [New Woodland Investment Programme](#)[2] they intend to increase the contribution of the National Forest Estate to the delivery of Scottish Government objectives, in particular for woodland creation, which contribute significantly to the delivery of the Climate Change Plan.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Number of promotional events held.

MOST RECENT DATA: 20 events held from 1 April 2017 to the end of March 2018.

DATA SOURCE(S): Forestry Commission Scotland data[3].

COMMENTARY:

- In the period April 17 to March 2018, Forestry Commission Scotland has either hosted or initiated approximately 20 events across Scotland. This includes a range of event formats, from small scale, on farm demonstration days to large scale National Events (e.g. the Royal Highland Show).
- While some of these events are organised and hosted by Forestry Commission Scotland, others are held by our partners and facilitators, e.g. Central Scotland Green Network Trust and Soil Association Scotland.
- These events aim to promote woodland creation and discuss some of the real and perceived challenges around planting new woodlands and integrating these woodlands within the existing business, e.g. farming. They also provide information on the Forestry Grant Scheme and the Woodland Carbon Code. The Code is a potential vehicle for attracting additional investment into woodland creation projects.
- Events are usually well attended by a mixture of stakeholders, farmers, land managers from the public and third sector.
- Towards the end of this reporting period interest in Woodland Creation was increased by the publishing of the McKinnon Report 'Analysis of Current Arrangements for the Consideration and Approval of Forestry Planting Proposals' which provides improvements to the woodland creation approval process, resulting in an increased number of events being held from March onwards.

<u>**IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:**</u>

Number of woodland creation projects that have been issued with a UK Forestry Standard non-compliance notice within the first 10 years following creation.

MOST RECENT DATA: 0

DATA SOURCE(S): Forestry Commission Scotland Interim data[3].

COMMENTARY:

- Forestry Commission Scotland is building and testing new woodland creation UK Forestry Standard Compliance monitoring and reporting systems. These systems will be introduced in October 2018 with a compliance register published in 2019. Annual reporting will be adopted from 2019 onwards.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 1:

Number of Planning Authorities with current Forest and Woodland Strategies.

MOST RECENT DATA: 31 local authorities with current Strategies in March 2018.

DATA SOURCE(S): External data from local government[4].

COMMENTARY:

- Forestry and woodland strategies provide a framework for forestry expansion through identifying preferred areas where forestry will be supported as it is recognised that it will have a positive impact on the environment, landscape, economy and local communities.
- The delivery of planning services in Scotland lies with 32 local authorities, 2 National park authorities and 4 strategic development planning authorities.
- All local authorities (bar one) in Scotland have a forestry and woodland strategy: some have been developed in partnership (e.g. for Stirling and Clackmannan), others have been developed by the strategic development planning authority (e.g. the Clyde Plan). Some are in the form of a technical report, while others have been developed as supplementary guidance for the local development plan. Some are currently under review, as forestry and woodland strategies are generally updated every 5 years as recommended in the right tree in the right place[5].
- All of them identify the area where new woodland would deliver the council's objectives and the areas that are more sensitive to the impact of large-scale woodland creation. They all provide a mechanism to inform local and regional woodland expansion to deliver the Climate Change Plan.

OUTPUT INDICATOR FOR POLICY OUTCOME 2:

Annual volume (in millions of cubic metres) of Scottish produced sawn wood and panel boards used in construction (extrapolated from UK figures).

	2021-2022	**2026-2027**	**2031-2032**
Volume	2.6 million cubic metres	2.8 million cubic metres	3.0 million cubic metres

MOST RECENT DATA: 1.9 million cubic metres used in construction in the 2017 calendar year.

DATA SOURCE(S): Forest Research "UK Wood Production and Trade: 2017 Provisional Figures"[6].

ON TRACK: Too early to make assessment.

COMMENTARY:

- It is too early to assess whether progress is on track until Forestry Commission Scotland have more data and can observe a trend.
- Data are published annually, but the first opportunity to assess whether the target is met will be 2021-22.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Number of knowledge exchange events held each year involving members of the construction industry e.g. designers, specifiers and engineers.

MOST RECENT DATA: 11 knowledge exchange events held in the 2017-18 financial year.

DATA SOURCE(S): Forestry Commission Scotland data[3].

COMMENTARY:

All the following activities above have been focussed on education/informing construction professionals and students on effectively using timber products in construction:

- Annual Royal Incorporation of Architects Scotland and 3 regional "Best use of wood awards".
- Royal Incorporation of Architects Scotland "Best use of wood" exhibition.
- Strategic Integrated Research in Timber programme annual update seminar.
- Advanced Timber Construction challenge fund awards.
- Solid Wood Solutions conference.
- Continuance of funding support and digitisation of sustainable building materials library at Lighthouse.
- Distribution of "Modern Timber House" publication via Wood for Good.
- Publication and dissemination of "Massive Timber: An Introduction to Solid Laminate systems".

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 2:

Annual Timber Association figures for the adoption of timber framed for new build houses across the UK.

MOST RECENT DATA: 28.4% new build houses across UK in the 2016 calendar year.

DATA SOURCE(S): Structural Timber Association "Annual survey of structural timber markets: Market report 2016" published 2017[7].

COMMENTARY:

- The housing market is one of the largest markets for wood products in construction. An increase in timber frame construction can be considered to be an increase in use of timber overall in construction. This demonstrates progress for the policy included in the Climate Change Plan.
- The Structural Timber Association publishes annual statistics which allow a constant monitoring of progress.

OUTPUT INDICATOR FOR POLICY OUTCOME 3:

Number of hectares of restored peatland per year.

	2018	**2019**	**2020**	**2021**	**2022**
Output	10,000ha	20,000ha	20,000ha	20,000ha	20,000ha

MOST RECENT DATA: 3646 hectares restored in 2017-18.

DATA SOURCE(S): Grants database Scottish Natural Heritage[8].

ON TRACK: Too early to make an assessment for 2018.

COMMENTARY:

A high demand has been identified for peatland restoration through feasibility studies. A significant part of current work is focused on delivering increases in capacity (budget, land manager, contractor, project team) to deliver the pipeline of projects that has been identified. Action has also been taken to extend the annual window for delivering restoration work.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number of hectares on the road to recovery through Peatland Action at the conclusion of the preceding financial year.

MOST RECENT DATA: 3,646 hectares on the road to recovery for year 2017-18. Since the start of the project an estimated 13,000 hectares have been restored.

DATA SOURCE(S): Grants database Scottish Natural Heritage[8].

COMMENTARY:

Peatland Action is scaling up in a phased way in order to allow for a sustainable increase in the capacity of land managers, contractors and the project team to the level required to meet the long term Climate Change Plan target. It will be possible to provide data on actual restoration after restoration is complete as this is a long term process. Date of restoration activity is currently the only measure.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Total number of applications received for Peatland Action restoration project funding.

	2018	2019	2020	2021	2022	2023	2024	2025
No. of grant applications	100	120	130	140	150	150	150	150

MOST RECENT DATA: 84 grant applications in 2018-19.

DATA SOURCE(S): Grants database Scottish Natural Heritage[8].

COMMENTARY:

Demand for Peatland Action funding is increasing year on year as demonstrated by the increased numbers of applications and a pipeline of 25,000 hectares of viable restoration work supported by feasibility studies. The number of grant applications is increasing and is an indicator of the success of interest in the scheme. However, the area proposed for restoration varies from application to application.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number of projects approved for funding from the Peatland Action restoration project funding.

	2018	2019	2020	2021	2022	2023	2024	2025
No. of successful applications	90	110	115	120	125	130	130	130

MOST RECENT DATA: 70 projects will be approved for funding in 2018-19.

DATA SOURCE(S): Grants database Scottish Natural Heritage[8].

COMMENTARY:

In 2018, the available Peatland Action budget has focussed on supporting completion of carry-over 2017-18 projects and supporting those new 2018-19 projects which are most likely to deliver restoration (i.e. contractors already in place) and which offer the best value for money. The indicator is used to assess the quality of applications received.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number and area of restoration feasibility plans supported through the Peatland Action programme.

MOST RECENT DATA: 33 plans will be supported in 2018-19 covering 171,825 hectares. 12 plans supported in 2018, covering 50,000 hectares.

DATA SOURCE(S): Grants database Scottish Natural Heritage[8].

COMMENTARY:

Feasibility studies demonstrate that there is viable demand to deliver the longer term Climate Change Plan target for 20,000 hectares restoration per annum. This indicator strongly supports progress as it is being used to line up future projects and enables the programme to create good quality applications and also assess the potential for restoration for future years. Reporting is best completed at the end of the financial year. The constraints of time and weather mean that some projects may not be completed in the calendar year.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number of contractors trained to carry out the restoration.

MOST RECENT DATA: 13 contractors trained in this financial year. Since starting in October 2017 there have been 79 attendees on courses.

DATA SOURCE(S): Training database Scottish Natural Heritage[8].

COMMENTARY:

This is a critical component of developing the longer term capacity required to meet climate change targets for peatland restoration. A training programme for contractors is now established and attendance can be reported at the end of the financial year. These figures do not include the informal training that takes place between contractors and project officers which is difficult to measure but enables the sharing of expertise and good practice.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number of land managers/consultants trained through the Peatland Action Programme.

MOST RECENT DATA: 22 land managers/consultants trained so far in 2018-19.

DATA SOURCE(S): Training database Scottish Natural Heritage[8].

COMMENTARY

A training programme for land managers/consultants is now established and interest is high. Figures can be reported at the end of the financial year but do not include the informal training that takes place between contractors and project officers which is difficult to measure but enables the sharing of expertise and good practice.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOME 3:

Number of dedicated policy officers.

MOST RECENT DATA: 8 Project Officers.

DATA SOURCE(S): Project Manager[8].

COMMENTARY:

The dedicated project team will increase to 30 by the end of 2018. The enhanced size of the dedicated team is designed to deliver the long term 20,000 hectares per annum target in future years.

Project Officers are key to the delivery of Peatland Action. They work with land managers and contractors to ensure applications are appropriate and delivered to a high specification.

AGRICULTURE

Agriculture

Greenhouse gas emissions from the agriculture sector have already been reduced by 14% (1990 to 2016). The Climate Change Plan sets out policies and proposals to reduce emissions from this sector by a further 9% (2018 to 2032).

The Plan sets out the following five **"policy outcomes"** for the sector:

1. More farmers, crofters, land managers and other primary food producers are aware of the benefits and practicalities of cost-effective climate mitigation measures and uptake will have increased.

2. Emissions from nitrogen fertiliser will have fallen through a combination of improved understanding, efficient application and improved soil condition.

3. Reduced emissions from red meat and dairy through improved emissions intensity.

4. Reduced emissions from the use and storage of manure and slurry.

5. Carbon sequestration on agricultural land has helped to increase our national carbon sink.

The five overarching policy outcomes above remain the focus of the agricultural chapter of the Climate Change Plan. It is within these key areas that we continue to encourage farmers on the benefits of low carbon farming. However, what we should not lose sight of is that Scottish farmers also do a lot to contribute to the emissions reductions in the electricity generation, land use and forestry sectors. Since the final plan was published in February of this year we have;

- Delivered on the commitment to establish an industry led agri-tech group.

- Begun work with ClimateXChange, Scotland's centre of expertise on climate change, on the development and commissioning of research into nitrogen flow models, carbon accounting tools and further work on the methodologies of emissions intensity as well as continuing to work with them on ongoing projects in agroforestry and leguminous crops.

- Engaged publicly through the recent consultation "Stability and Simplicity proposals for a rural funding transition period" regarding possible roles for carbon auditing, soil testing, integrated land management plans and livestock health plans as we move forward.

Chapter 7: Agriculture

- Reiterated our commitment to taking forward the reviewing and renewing of Farming For a Better Climate and the establishment of young climate change champions which form part of the 2018-19 Programme for Government along with our commitment to take forward the research on nitrogen flow models.

<u>**OUTPUT INDICATOR FOR POLICY OUTCOMES 1, 2, 3, 4 AND 5:**</u>

Our primary output indicator will be the level of emissions from the agriculture sector in the National Greenhouse Gas Inventory. This will be underpinned with a particular focus on soil testing and nutrient planning in Scotland.

Over the next few years we would expect:

A. A reduction in agricultural greenhouse gas emissions in the national inventory.
B. An increase in the share of farmers carrying out soil tests.
C. An increase in the share of farm completing nutrient management plans.

A. MOST RECENT DATA: 7.8 $MtCO_2e$ in 2016.
BASELINE DATA: 7.74 $MtCO_2e$ 2015 data based on 2016 recalculations.
CHANGE: 0.1 $MtCO_2e$ from 2015 to 2016.
DATA SOURCE(S): Scottish Greenhouse Gas emission statistics 2016[1].

B. MOST RECENT DATA:
- 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.

BASELINE DATA:
- 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.

CHANGE: N/A
DATA SOURCE(S): 2016 Scottish Survey of Farm Structure and Method[2].

C. MOST RECENT DATA:
- 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.

BASELINE DATA:
- 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.

CHANGE: N/A
DATA SOURCE(S): 2016 Scottish Survey of Farm Structure and Method[2].

(continued from previous box)

ON TRACK: Too early to make assessment.

COMMENTARY:

It is currently too early to make an assessment of the progress that is being made on the output indicators.

- Emissions statistics - greenhouse gas emissions are published two years in arrears and the statistics report in 2018 related to 2016 emissions. We are therefore unable to assess the impacts of the Climate Change Plan at this time.
- Soil testing and nutrient management plans, within this first year we are setting our baseline with data that are available from the 2016 Scottish Survey of Farm Structure and Method**.** This survey is conducted and published on a 3 to 4 year basis with the next survey due circa 2019. Setting a baseline using the 2016 data will allow us to evaluate the changes in farming practices.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3, 4 and 5:

The number of attendees at climate change-themed Farming for a Better Climate and Farm Advisory Service events, who rated them useful and have said they will put what they have learned into practice.

MOST RECENT DATA: 717 attendees across some 46 Farming for a Better Climate and Farm Advisory Service events with around 93% of attendees rating the Farming for a Better Climate sessions sampled as useful, with an average of 67% attendees across all events saying they intend to make a change based on the information provided.

DATA SOURCE(S): The Farm Advisory Service[3] and Farming For a Better Climate[4].

COMMENTARY:

It is too early to judge the implementation of the policies, proposals and milestones in the agricultural chapter of the Climate Change Plan given the short amount of time since it was published. Therefore, the above figure is being used to set a baseline that we can then evaluate against in the coming years in order to track the progress of implementation.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3, 4 AND 5:

Increase the uptake of free carbon audits provided through the Farm Advisory Service to 200 audits delivered per year by 2019.

MOST RECENT DATA: 150 free carbon audits were delivered in 2017-18.

DATA SOURCE(S): The Farm Advisory Service[3].

COMMENTARY:

It is too early to judge the implementation of the policies, proposals and milestones in the agricultural chapter of the Climate Change Plan given the short amount of time since it was published. Therefore, the above figure is being used to set a baseline that we can then evaluate against in the coming years in order to track the progress of implementation.

IMPLEMENTATION INDICATOR FOR POLICY OUTCOMES 1, 2, 3, 4 AND 5:

Increase uptake of Integrated Land Management Plans (ILMPs) provided through the Farm Advisory Service to 300 ILMPs delivered per year by 2019.

MOST RECENT DATA: 125 ILMPs were undertaken in 2017-18.

DATA SOURCE(S): The Farm Advisory Service[3].

COMMENTARY:

It is too early to judge the implementation of the policies, proposals and milestones agricultural chapter of the Climate Change Plan given the short amount of time since its publication. Therefore the above figure is being used to set a baseline that we can then evaluate against in the coming years in order to track the progress of implementation.

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List of acronyms

CCUS   Carbon Capture Utilisation & Storage
COSLA   Convention of Scottish Local Authorities
EC   European Commission
EPC   Energy Performance Certificate
EV   Electric Vehicles
GVA   Gross Value Added
HGV   Heavy Goods Vehicles
HLOS   High Level Output Specification
ILMP   Integrated Land Management Plans
RHI   Renewable Heat Incentive
SAP   Standard Assessment Procedure
SEEP   Scotland's Energy Efficiency Programme
ULEV   Ultra Low Emission Vehicles