Reducing emissions in Scotland: 2013 progress report

Committee on Climate Change
March 2013

Acknowledgements

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Front cover images: A partly cloudy sky over Rannoch Moor in Scotland is reflected in the waters of a peat bog; Glentress Peel, Forestry Commission Scotland's visitor and mountain biking centre in the Tweed Valley Forest Park, opened in 2011 and constructed from local timber, Copyright Forestry Commission Picture Library; Pelamis P2 wave power device, pictured at European Marine Energy Centre, Orkney, in July 2011, copyright Pelamis Wave Power.

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Introduction and executive summary

This is our second report on Scotland's progress towards meeting emission reduction targets, as requested by Scottish Ministers under the Climate Change (Scotland) Act 2009.

The Scottish Act set a long-term target to reduce emissions of greenhouse gases (GHGs) by 80% in 2050 relative to 1990, with an interim target to reduce emissions by 42% in 2020 relative to 1990. Secondary legislation passed in October 2010 and October 2011[1] also set a series of annual emission reduction targets for 2010 to 2022 and 2023 – 2027 respectively.

At the time of our first progress report in January 2012, emission data for the first target year (2010) was not yet available. Our report instead focussed on the extent of underlying progress towards the targets through the implementation of policy to drive emission reduction measures. The overall conclusion was broadly positive, particularly in key sectors such as power and buildings. However we noted the significant challenges involved in meeting the ambitious targets set in Scotland, and the need for further policy development for these to be achieved.

In this report we assess:

- Emissions data for 2010.
- 2011 macroeconomic and temperature data and emissions data for power generation and the traded sector (EU ETS).
- Underlying progress reducing emissions through the development and implementation of policies. As part of this we also consider the Scottish Government policies and proposals for meeting future targets[2] and assess whether more effort is required to meet targets.

Our key messages from this analysis are:

- The first annual target in Scotland, to reduce emissions to 53.652 $MtCO_2e$ was missed by just over 1 $MtCO_2e$. This was due mainly to the exceptionally cold winter temperatures in 2010, which increased demand for energy use for heating. Temperature-adjusted gas sales data suggests a downward trend in residential demand, once the effect of the colder temperatures is stripped out.
- Given that the difference between emissions and the target level can be explained by the cold temperatures, there may be a case for the Scottish Government to consider measuring progress against targets using temperature-adjusted energy and emissions data, to reflect underlying progress.

1 Climate Change (Annual Targets) (Scotland) Order 2010 : http://www.legislation.gov.uk/ssi/2010/359/pdfs/ssi_20100359_en.pdf. Climate Change (Annual Targets) (Scotland) Order 2011: http://www.legislation.gov.uk/ssi/2011/353/pdfs/ssi_20110353_en.pdf

2 As set out in the Scottish Government's 'Draft second report on proposals and policies' – 'RPP2'. http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/lowcarbon/meetingthetargets

- Much milder temperatures in 2011 combined with modest economic growth suggest that emissions fell in Scotland in 2011. This would also be in line with the UK trend, where emissions fell 7% in 2011.

At the sector level, there has been continued progress in a number of areas, including renewable energy, home insulation, tree planting and waste policy.

However, there is a need to accelerate the pace of policy implementation across all sectors, and an important role for the Scottish Government in relation to:

- **Renewable power:** Scotland continues to lead the UK in terms of installed capacity and generation from renewables. There is a healthy pipeline of projects, which if all delivered, would more than meet the Scottish Government's 2020 renewable power target.
  - The Scottish Government has helped to provide longer-term certainty for industry by setting a 2030 decarbonisation target, which is in line with the Committee's recommendations. However uncertainty over post-2020 support at the UK level may feed back to current investment decisions. This confirms there is a need for a pro-active role for the Scottish Government in the design and implementation of the UK Government's Electricity Market Reform, if targets are to be achieved.
- **Residential sector:** Good progress has been made on improving insulation levels in Scotland. Nevertheless, a substantial amount remains to be done, which highlights the need for strengthened Scottish Government policies and to ensure that Scotland receives a commensurate share of GB-level funding to further roll-out insulation measures.
  - The Scottish Government has committed to a new National Retrofit Programme and is developing plans to aim for maximum roll out of the Green Deal and the Energy Company Obligation (the ECO, which will focus on providing energy efficiency measures to low income and vulnerable homes and those living in hard to treat properties) in Scotland. A commensurate share of the latter, together with proposed Scottish Government funding for targeting fuel poverty could take spending close to the level needed to address fuel poverty in Scotland.
  - This is particularly important for Scotland, where fuel poverty rates are far above the UK average, and are particularly high in rural and electrically heated households.
- **Renewable heat:** Deployment has continued to progress above the targeted level. The Scottish Government has also committed to develop a long-term renewable heat strategy in order to support the delivery of the Renewable Heat Incentive in Scotland. It will be crucial that this strategy accelerates investment levels and addresses the barriers to take-up of renewable heat technologies.

- **Agriculture:** It is not straightforward to assess progress, given the current lack of data on the uptake of emission reduction measures. However the Scottish Government plans to survey farmers this year to determine the current implementation rates. Depending on the outcome of this and future survey work, the Scottish Government has indicated it will consider whether a stronger approach than the current voluntary based policy (e.g. regulation of nitrogen use) will be required. It will be important that a monitoring framework and performance triggers are set out to accompany these surveys, to ensure a timely decision on whether stronger measures are required (i.e. over 2014-15).
- **Transport:** It is likely that more will be needed on active travel and 'Smarter Choices', where there are no confirmed and funded programmes beyond the current financial year. The Scottish Government's evaluation of the 'Smarter Choices Smarter Places' pilot (due later this year) should be used to inform the most cost-effective options and means of implementation and roll-out.

Overall, despite the first legislated target being missed, underlying progress towards targets to date appears on track in most areas. However, the early target years reflect low levels of implementation and a significant increase in effort will be required in most sectors to meet future targets.

Future targets

The Scottish Government has now published its plans for meeting future targets. It sets out the range of policies and policy proposals for meeting targets to 2027. Key points in relation to this are:

- Significant revisions to both historical emissions data and projections suggest that there is a much greater challenge to meet emission targets than previously thought. Including a large revision to the 2030 projection of land use emissions, these revisions have resulted in a 'business as usual' path for the non-traded sector up to 4 $MtCO_2e$ greater in 2027 than at the time of the Committee's advice on the level of annual targets for 2023-2027[3].
- The Scottish Government has set out a package of policies and proposals that therefore address the higher level of abatement that will be required, given the higher business as usual path.
- Meeting targets to 2020 requires that the EU moves to a 30% target for 2020, and tightens the EU ETS cap accordingly. Without this, even implementing all of the proposed policies, will not be enough to meet targets on current projections.

3 Committee on Climate Change (2011) 'Advice to the Scottish Government on emission targets for 2023-20257'. http://www.theccc.org.uk/publication/letter-committee-on-climate-change-advice-to-the-scottish-government-on-emission-targets-for-2023-2027-and-credit-use-in-2013-2017/

- Beyond 2020, the Scottish Government has set out a package of policies and proposals that could result in overachieving the targets in most years, and would set Scotland on the required pathway to securing longer-term decarbonisation to 2050. However there is a considerable degree of uncertainty over some of these policies and proposals, and they would all have to deliver their full estimated abatement. It is likely some level of implementation would already have to be in place pre-2020.

We set out the analysis underpinning these conclusions in the following 8 sections:

1. Latest emission trends
2. Energy supply
3. Homes and communities
4. Business and the public sector
5. Transport
6. Agriculture, rural land use and forestry
7. Waste
8. Proposals and policies for meeting future targets

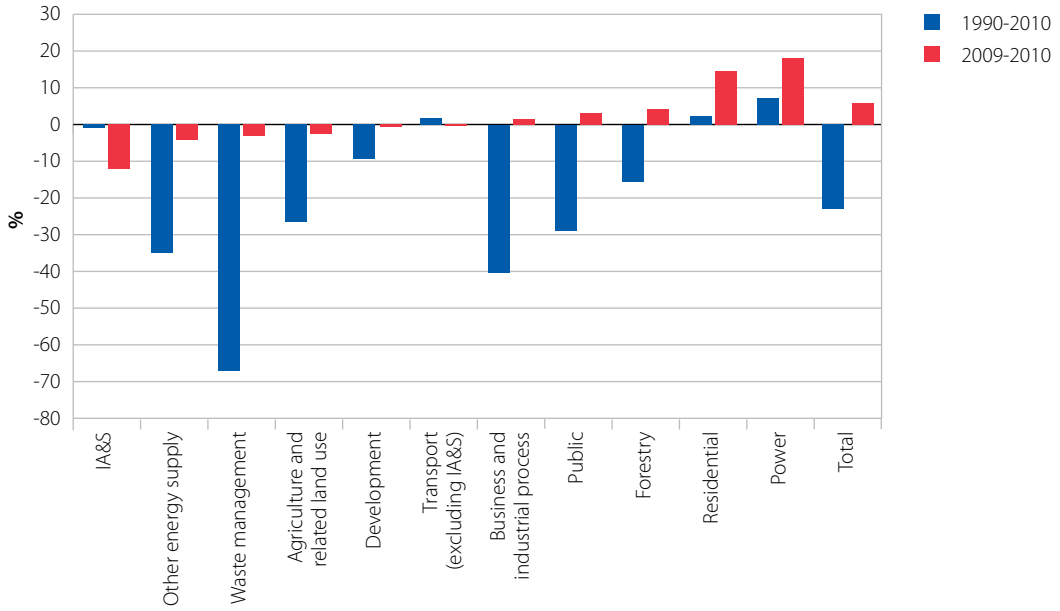
1. Latest emission trends

Greenhouse gas inventory data for 1990 – 2010

Unadjusted emissions

The latest emissions data available for Scotland is for 2010. Before accounting for trading in the EU Emissions Trading System (EU ETS), emissions increased 3.1 $MtCO_2e$ (6%) on 2009 (Figure 1.1):

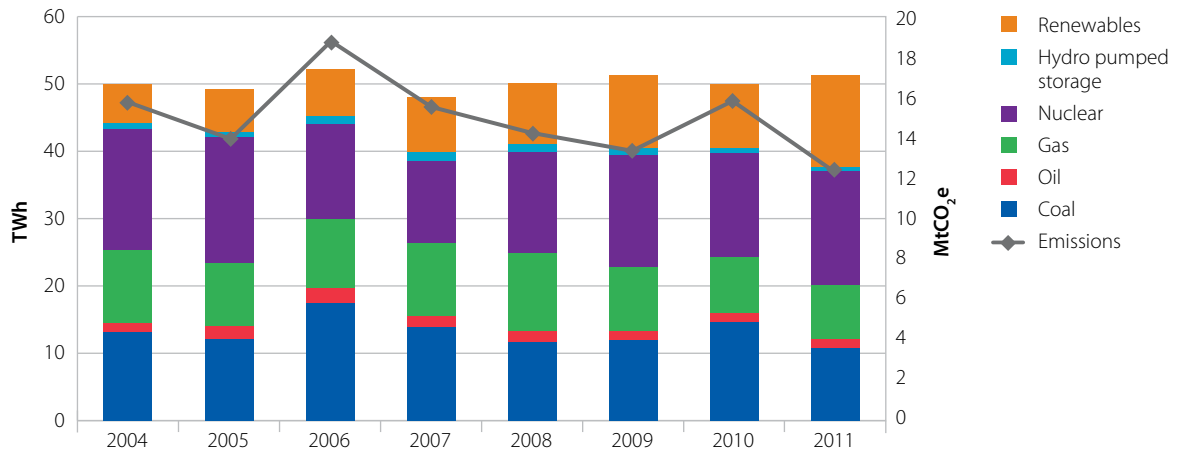
Figure 1.1: Scottish GHG emissions by sector: percentage change from 1990-2010 and 2009-2010



Source: NAEI (2012).
Note: Emissions are presented here before accounting for trading in the EU ETS.

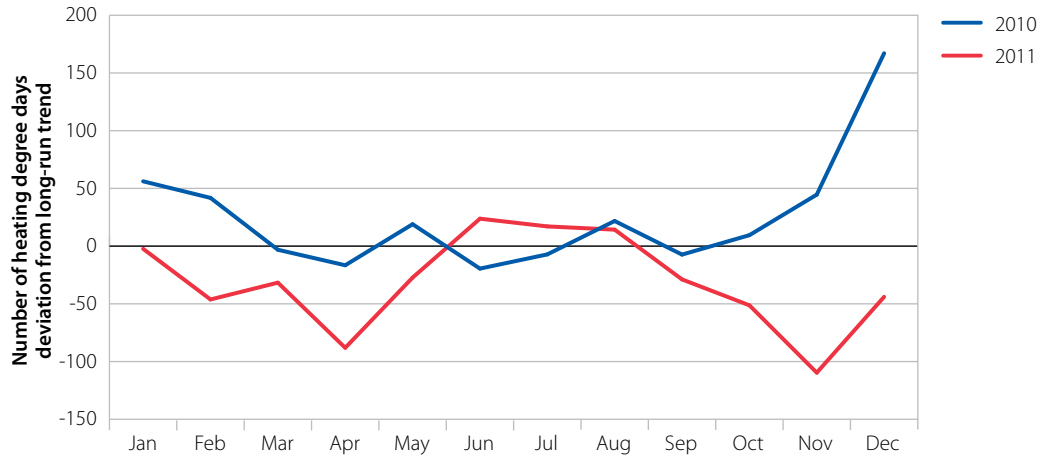
- The largest increase in emissions in 2010 was in the power sector, where emissions increased 2.4 $MtCO_2e$, or 18%, compared to 2009. Although overall generation fell by 1.2 TWh (2%), reductions in nuclear output (1.4 TWh, due to maintenance outages), renewable generation (1.2 TWh, due mainly to low rainfall in 2010 which significantly reduction hydropower output) and gas-fired generation (1.7 TWh), were more than outweighed in terms of emissions, by a large increase in coal-fired generation (2.8 TWh) (Figure 1.2).
- Residential sector emissions increased 1.1 $MtCO_2e$ (15%) in 2010. This can be attributed to the particularly cold temperatures during 2010 (Figure 1.3). Once a weather adjustment is made, residential gas consumption data suggest demand is likely to have fallen (Figure 1.4).

Figure 1.2: Power sector – generation by fuel type and emissions (2004-2011)



Source: DECC (2012), NAEI (2012) and CCC calculations.
Notes: Emissions for 2004-2010 are sourced from the NAEI greenhouse gas inventory. 2011 is a CCC estimate, based on emission factors.

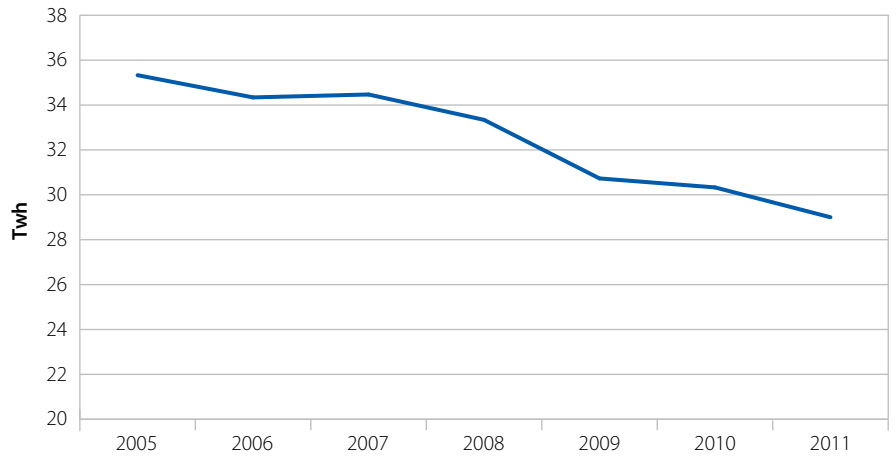
Figure 1.3: Temperature data – number of heating degree days variation from the long-run average (2010-2011)



Source: Vesma.com (2013).
Notes: Heating degree days (HDDs) are calculated relative to a baseline temperature, typically 15.5°C, which is the outside temperature above which a building needs no heating. One HDD is the number of degrees centigrade deviation from the base temperature of the actual temperature on a given day (e.g. if the temperature was 5.5°C for one day the number of HDD would be 10). Long-run trend is 1971-2000. Points above the x-axis reflect colder than average temperatures, and points below indicate higher than average temperatures.

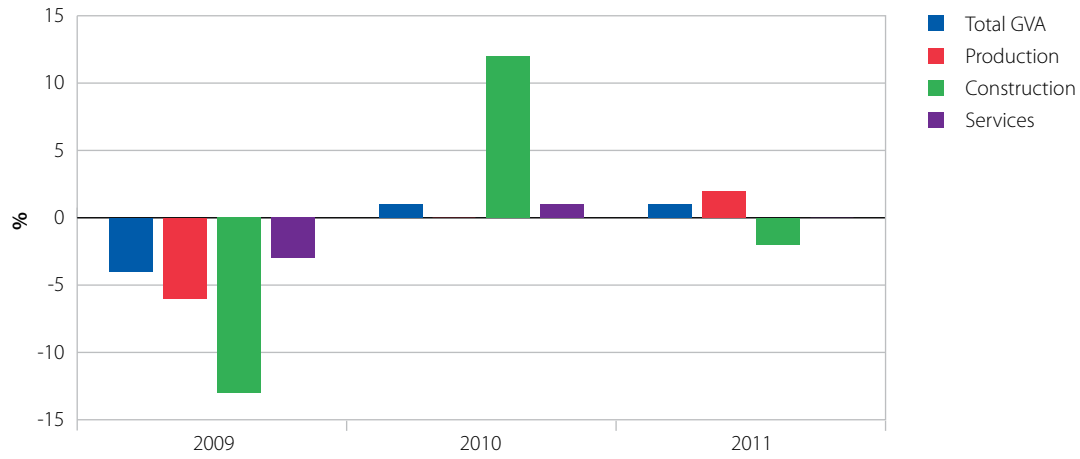
- Emissions in business and the public sector also increased (by 2% and 3% respectively), though the combined scale of this increase is small, at less than 0.15 $MtCO_2e$. It is likely these changes reflect increased energy demand for heating, and in the business sector, an increase in economic output relative to 2009 (Figure 1.5).
- Scotland's emissions sink in the forestry sector is relatively large (-9.6 $MtCO_2e$), but decreased by 0.4 $MtCO_2e$ in 2010. This is a reflection of historic tree-planting rates, which have declined substantially since the 1970s.

Figure 1.4: Residential gas sales – weather corrected (2006-2011)



Source: DECC (2012).
Note: The data used to produce these estimates cover the gas year – e.g the period from 1 October through to the following 30 September (i.e. 9 months of the reference year). The data are also weather corrected.

Figure 1.5: Economic data: percentage change in output from previous year (2009-2011)



Source: Scottish Government (2012) .

- Emissions fell in transport (excluding international aviation and shipping) by 0.1 $MtCO_2e$ (1%), international aviation and shipping by 0.3 $MtCO_2e$ (12%), agriculture and related land use by 0.3 $MtCO_2e$ (3%), and waste by 0.1 $MtCO_2e$ (3%).

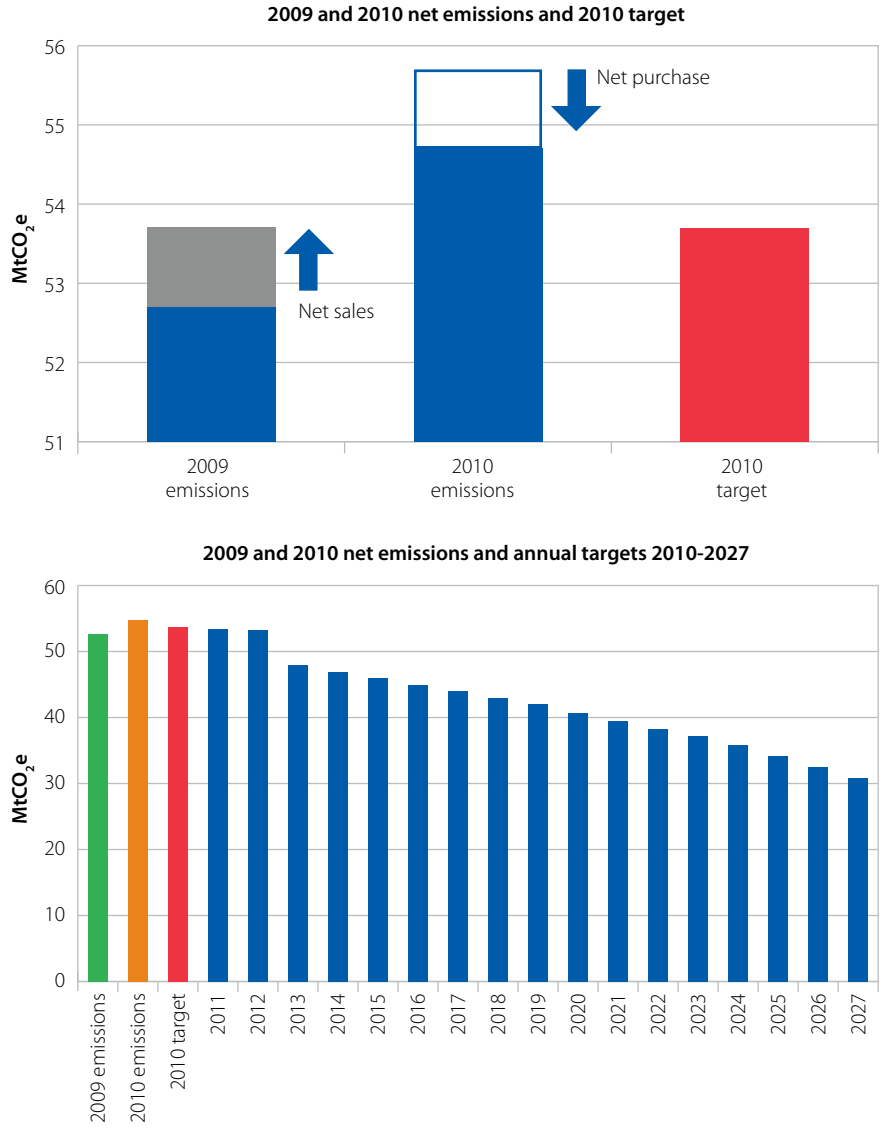
Although overall emissions increased in 2010, at 55.7 $MtCO_2e$, the level of emissions remains 23% lower than 1990.

Adjusted emissions and the 2010 target

Scotland's emission targets are set on a net basis – that is they account for trading in the EU ETS[4], which covers power stations and energy-intensive industries. Net emissions in 2010 were 54.7 $MtCO_2e$, 24% lower than in 1990, and a 2% increase from 2009 emissions (as adjusted for trading).

Net emissions in 2010 were 1.1 $MtCO_2e$ above the level of the statutory target (53.652 $MtCO_2e$ (Figure 1.6).

Figure 1.6: Scotland's net emissions in 2009 and 2010: comparison against 2010 target and longer term trajectory



Source: NAEI (2012) and Scottish Government (2012).

4 A traded sector cap for emissions in the EU ETS has been estimated for Scotland for each year to 2020 (the current phase of the scheme, Phase III, runs from 2013-2020). Emissions in the traded sector, in emission accounting terms, will always be equal to the traded sector cap estimated for Scotland. In any year, where actual emissions are greater than the cap (i.e. in 2010), it is assumed that credit purchase offsets this, and reduces the level of emissions to the cap. Where emissions are lower than the cap (i.e. in 2009), it is assumed that credits are being sold, and therefore increasing the 'net' level of emissions to the level of the cap.

Although there was a large increase in power sector emissions in 2010, as these are subsumed within the traded sector cap they do not contribute, in emissions accounting terms, to the excess of net emissions above[5].

Given this, and the sector trends discussed above, we conclude that the exceptionally cold winter temperatures were a key driver of the 2010 target being missed. In light of this, there may be a case for the Scottish Government to consider measuring progress against targets using temperature-adjusted energy and emissions data, to reflect underlying progress.

It is also important to note that the greenhouse gas inventory, which reports emissions in Scotland each year, and is the basis on which performance against annual targets is judged, is subject to revision each year. This is due to revisions and improvements to the underlying data, as well as to the methodologies for attributing emissions to Scotland from the UK level data. In some years the revision can be larger than the amount of reduction being targeted. For example, emission data for 2009 has been revised upwards by 1.7 $MtCO_2e$ (4%). For context, the difference between the target for 2010 and 2011 is just 0.25 $MtCO_2e$.

Likely trends in 2011

More recent (preliminary) emission data is available for the UK as a whole for 2011, showing economy-wide emissions fell 7% in 2011. We concluded in our 2012 progress report to the UK Parliament that of this 7% reduction, almost half (3 percentage points) was due to the mild winter temperatures in 2011, with much of the remainder due to rising energy prices, falling real income and transitory changes in the power generation mix. Only around 0.8 percentage points could be directly attributed to the implementation of measures to reduce emissions.

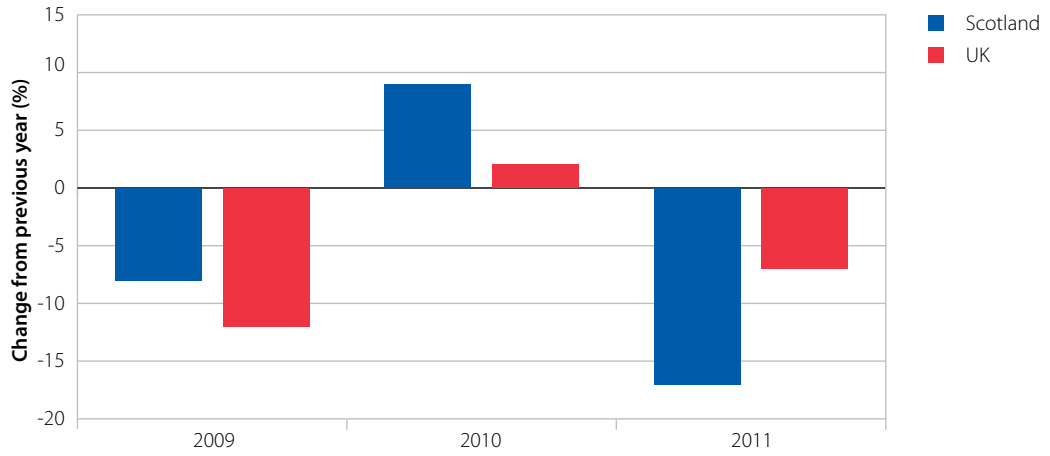
We have considered contextual data available for Scotland in 2011 and find it is likely that Scottish emissions fell by a similar extent in 2011:

- Reflecting milder temperatures in 2011 (Figure 1.3), it is likely that energy demand for heating, and the associated emissions, will have fallen relative to 2010.
- Economic data by sector shows a mixed picture (growth in the production sector, but a large fall in construction output, and static services output), with overall modest growth in 2011.
- Although traded sector net emissions will be equal to Scotland's traded sector cap, data on power generation by fuel (Figure 1.2) and EU ETS emissions[6] (Figure 1.7) for 2011 suggests a large fall in gross emissions (17%). The fall in EU ETS emissions is larger than the fall at the UK level (7%) and suggests switching to less carbon-intensive fuels in Scotland in 2011.

5 Traded sector emissions will always be equal to the estimated EU ETS cap for Scotland, which is incorporated into the level of targets.
6 Data on emissions from installations in the EU ETS are reported to the European Commission and are available ahead of economy-wide data for 2011, which will be available for Scotland later in 2013.

The following sections consider the latest emission trends, targets and policies, and implementation of emission reduction measures by sector. Each section also considers the latest estimates of abatement potential and proposed measures, as outlined in the Scottish Government's draft plans for meeting targets to 2027, published earlier this year[7] (the draft second report on proposals and policies – referred to as 'RPP2').

Figure 1.7: Percentage change in Scotland's EU ETS emissions from previous year (2009, 2010 and 2011)



Source: European Commission (2012).

7 Scottish Government (2013) 'Draft second report on proposals and policies' – 'RPP2'. http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/lowcarbon/meetingthetargets

2. Energy supply

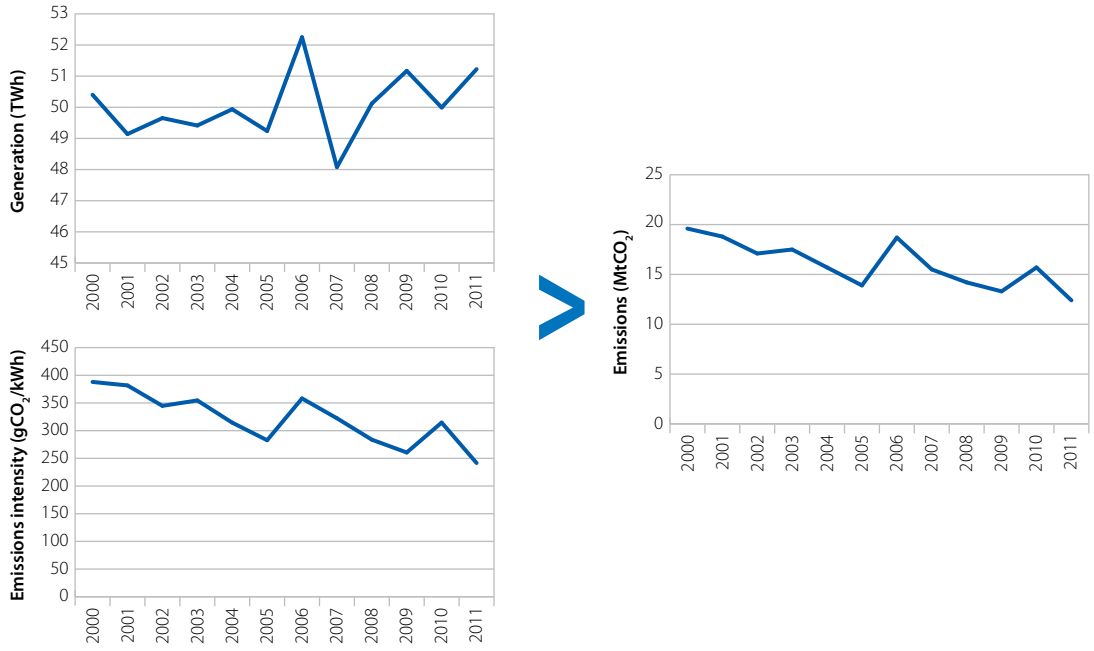
Latest emission trends

Energy supply is the largest source of emissions in Scotland, at 20.7 $MtCO_2e$, (37% of the total). Emissions increased in 2010 (12%), but remained 7% lower than in 1990. Within energy supply, power generation (16 $MtCO_2e$) accounts for the majority of emissions (76%). Power sector emissions can be subject to large annual variations due to the operation of single plant, or conditions for renewables and increased 18% in 2010 (Figure 2.1).

The increase in emissions in 2010 reflected a fall in nuclear and renewable output (due respectively to maintenance outages and low rainfall in 2010 which significantly reduced hydropower output), which was compensated for with an increase in coal generation (Figure 1.2).

Although emission data is not yet available for 2011, the more up-to-date information on power generation by fuel shown in Figure 1.2 suggests that there was a large fall in emissions in 2011, of around 3 $MtCO_2e$ (20%). Although generation increased by 1.2 TWh (2%), there was a significant fall in coal-fired generation of 4 TWh (27%) and large increases in renewable output (4 TWh, or 43%) and nuclear output (1.6 TWh, 10%) from the previous year.

Figure 2.1: Historic trends in electricity generation, emissions intensity and total emissions – Scotland (2000-2011)



Source: CCC calculations based on data from DECC (2012) & Scottish Government (2012) for generation data and NAEI (2012) for emissions in 2000-2010.
Notes: NAEI Inventory data for 2011 is not available for the power sector in Scotland. We have estimated 2011 emissions based on available data on generation by fuel type and emission factors for each fuel/station type.

Targets and policy

The Scottish Government is aiming to meet at least 30% of overall energy demand from renewable sources by 2020. This is more stretching than the UK's commitment under the EU Renewable Energy Directive (for 15% renewable energy by 2020). The Scottish target is comprised of targets for renewable power (the equivalent of 100% of gross consumption from renewables), transport (10% of road transport fuels from renewables) and heat (11% of heat demand from renewables).

Due to data availability and methodological issues it is currently difficult to accurately measure progress towards the overall 30% target. However the Scottish Government is working to address these issues, and in the meantime we report progress against each of the sector targets in the relevant sections below.

2.1 Power

The Scottish Government's aim is to deliver a largely decarbonised electricity generation sector by 2030, using renewable sources for generation along with fossil fuel plants using carbon capture and storage (CCS) technologies.

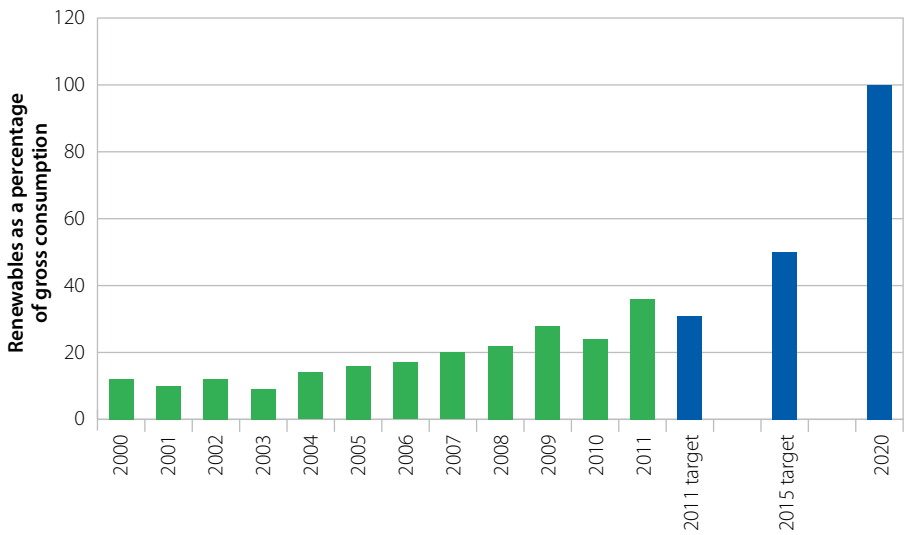
Towards 2030 there are a number of targets and milestones in place:

- To generate the equivalent of 100% of gross electricity consumption from renewables by 2020, with interim targets of 31% for 2011, and 50% by 2015.
- Local and community ownership of at least 500 MW of renewable energy by 2020.
- To demonstrate CCS at commercial scale in Scotland by 2020, with full retrofit across conventional power stations by 2025-30.

The draft RPP2 also sets a new long-term target for the power sector in Scotland, to achieve an emissions intensity of 50gCO_2/kWh for electricity generation in Scotland by 2030. The target is non-statutory, but the Scottish Government has stated that it will guide its overall policy approach and set the context for planning decisions relating to energy infrastructure. It is also in line with the Committee's recommendation to the UK Government to set a clear carbon objective in the new electricity market arrangements (i.e. to achieve carbon intensity of the order of 50 gCO_2/kWh in 2030), to provide investor confidence that there will be a market for low-carbon technologies, and that there will not be a second 'dash for gas'.

Progress to date towards each of these targets is summarised below.

Figure 2.2: Renewable generation as a percentage of gross consumption – actual 2000-2011, and targets for 2011, 2015 and 2020.



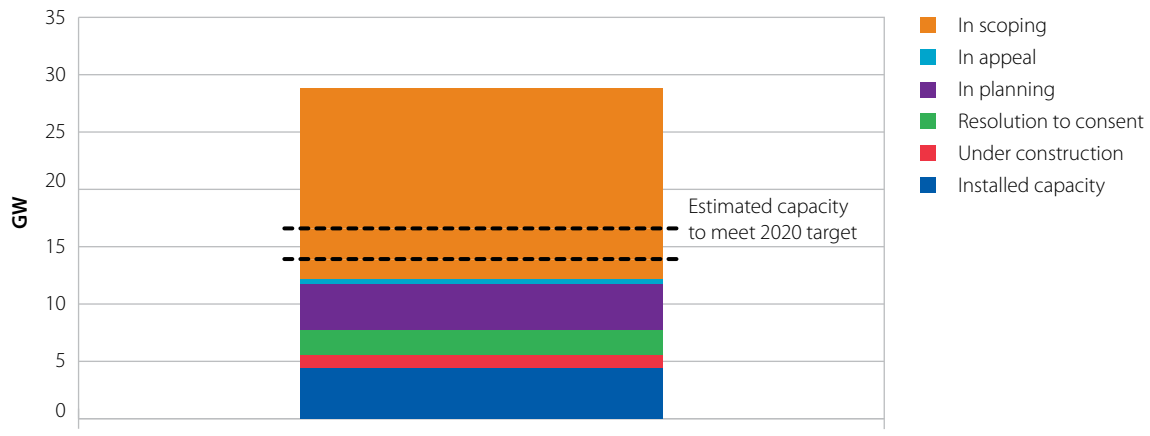
Source: DECC (2012).

Progress decarbonising the power sector

In 2011, Scotland's **generation from renewables** represented 36% of Scotland's gross electricity consumption – exceeding the 31% target level set for 2011 (Figure 2.2):

- Between 2003 and 2011, renewable capacity in Scotland increased from 1.7 GW to 4.8 GW (187%). This represented 40% of the UK's renewable installed capacity in 2011, including almost half of the UK's wind capacity. Over the same time, generation from renewables increased from 3.7 TWh to 13.7 TWh (269%), again accounting for 40% of the UK total generation from renewables in 2011, and almost half the UK's wind power output.
- The Scottish Government has estimated that meeting the 2020 target will require installed capacity to increase further, to between 14 and 16 GW. This requires adding on average around 1.1 GW of renewable capacity each year between 2012 and 2020. The most capacity added in one year so far in Scotland was 0.7 GW, in 2008, therefore significant further scaling up in deployment will be required going forward. Although annual figures are not yet available for 2012, data from DECC indicate that 0.6 GW of installed capacity was added in the first half of the year.
- There is also a significant pipeline of potential capacity in Scotland – almost double the amount required to meet the 2020 target (Figure 2.3). The main incentive to deliver this will be the Electricity Market Reform, but it is supported by Scottish Government initiatives such as the £103 million Renewable Energy Investment Fund, Saltire Prize, and additional support to develop the next generation offshore wind offshore wind through a £35 million Offshore Wind Energy Renewables Scotland fund.

Figure 2.3: Pipeline of renewables – capacity at various stages of project planning



Source: Scottish Government (2012).
Note: As at December 2011.

Over the longer-term, meeting the Scottish Government's new 2030 target will require the power sector to decarbonise from around 291gCO_2/kWh today, to 50gCO_2/kWh by 2030[8]. While the longer-term target provides an important signal to investors, at the UK level there is still uncertainty over the support framework for low-carbon generation beyond 2020, which could impact near-term investment decisions. This confirms the need for a pro-active role for the Scottish Government in the design and implementation of the UK Government's Electricity Market Reform, if targets are to be achieved.

Community generation

The GB-wide Feed-in Tariff (FiT) scheme was introduced on 1 April 2010, and is the main financial incentive to encourage the uptake of small-scale renewable electricity-generating technologies. FiTs are available to residential and community installers, as well as businesses. Most domestic technologies qualify for the scheme, including solar (PV), wind turbines, hydroelectricity, anaerobic digesters and micro combined heat and power (CHP).

By the end of 2012, the capacity of community installations through the scheme was 1.7 MW in Scotland, and 88 MW for residential installations. However it should be noted that up to 40% of community capacity and 4% of residential capacity in the FiT database has an unknown location, therefore some further capacity may be in Scotland.

Additionally, the Scottish Government has provided funding of almost £8 million for the Community and Renewables Energy Scheme since 2011. It offers loans for the pre-planning costs of renewables projects in Scotland and has recently been relaunched with support of £23.5 million over the next three years for community and rural business projects. To date, the scheme has made operational 147 MW of community projects, 30% of the 2020 target.

8 Figures based on Scottish Government estimates and use different methodology to the inventory-based and emission factor CCC methodology.

As at April 2012, there was a further 627 MW of community and locally-owned energy plant under development: 28 MW under construction, 259 MW consented but not yet built, 129 MW in planning, 200 MW in scoping and a further 10 MW whose stage of development is unclear.

It would appear therefore that Scotland is on track to meet the targeted capacity, if the majority of these developments are consented and built before 2020.

Carbon capture and storage (CCS)

With Scotland's coal-fired stations due to close between 2013 and 2020, and both nuclear stations due to be phased out by 2023, the Scottish Government anticipates that the generation mix through the 2020s will feature increasing deployment of carbon capture and storage (CCS) technology. Although the Scottish Government has, in conjunction with industry, been researching opportunities for storage around Scotland and ensuring that an appropriate regulatory framework for CCS is in place, the main financial support for developing CCS projects is the UK-wide CCS Commercialisation Competition. This makes £1 billion capital funding available for CCS demonstration projects.

Of the four projects currently shortlisted, and being evaluated further by the UK Government ahead of a decision on which to fund, two are in Scotland:

- A 340 MW post-combustion capture retrofitted to an existing 1,180 MW CCGT power station at Peterhead.
- A new proposed 570 MW fully abated coal pre-combustion project in Grangemouth, with storage in depleted offshore gas fields.

Depending on the projects chosen, the UK Government expects the selected projects to be operational between 2016 and 2020.

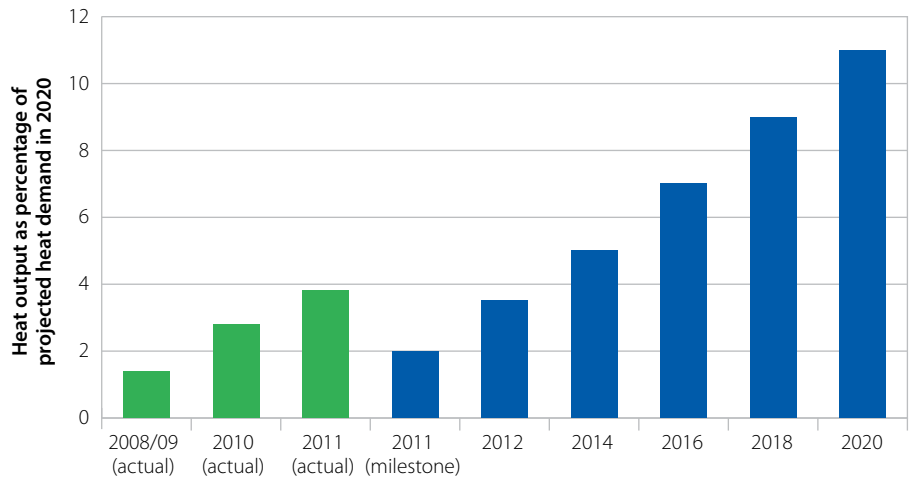
2.2 Renewable heat

The Scottish Government's aim is to have a largely decarbonised heat sector by 2050, with significant progress by 2030. A target to source 11% of heat demand from renewable sources by 2020 has also been set, alongside a set of interim milestones between 2011 and 2020.

The latest survey of heat capacity[9] found Scotland had around 0.5 GW of renewable heat capacity operational in 2011. It is estimated that the heat output from this is 2.3 TWh, which is equivalent to 3.8% of Scotland's total forecast non-electrical heat demand in 2020 and is above the interim milestone set for 2011 (Figure 2.4).

9 Energy Saving Trust (2012) 'Renewable heat in Scotland 2011'. http://www.energysavingtrust.org.uk/scotland/Take-action/Get-business-funding/Renewable-Heat-in-Scotland-2011

Figure 2.4: Estimated output of renewable heat in 2011 against indicative interim milestones to 2020 target



Source: Energy Saving Trust (2012).
Note: Indicative milestones are as set out in the Scottish Government's Renewable Heat Action Plan (2009).

There is likely to be a greater opportunity for renewable heat in the residential sector in Scotland than the UK as a whole, given there is a higher proportion of properties that do not have access to mains gas for heating. This is particularly the case in rural areas where over half of households are not on the gas grid. These properties in particular are likely to be using higher carbon alternatives with high price volatility (e.g. heating oil) and therefore have greater scope for savings.

It will be important therefore for the Scottish Government to support deployment under the Renewable Heat Incentive (RHI), which provides payments to those who generate and use renewable energy to heat their buildings, and will be the key policy delivering renewable heat across Great Britain:

- The first phase of the RHI focuses on the industrial and commercial sectors. Between November 2011 and December 2012, the scheme supported 171 MW of installed capacity[10]. 22% of this is in Scotland – a greater share than would be expected from shares of population or GVA.
- The second phase of the scheme will expand to new technologies and also the domestic sector, which has been covered by a separate scheme, the Renewable Heat Premium Payment (RHPP). As at Phase 1 closure (31 March 2012), the RHPP scheme had supported a total of 5,369 renewable heat installations, of which 673 (13%) were in Scotland. Again this is greater than a share that would be expected from Scotland's share of the GB housing stock (9%).

10 Ofgem (2013) 'Renewable Heat Incentive update – issue 4'. http://www.ofgem.gov.uk/e-serve/RHI/Documents1/Ofgem%20RHI%20Quarterly%20Report%20Jan%202013.pdf

The Scottish Government has a number of policies in place to support the RHI:

- For the residential sector, the £50 million Warm Homes Fund includes a provision for biomass heating investments. A Home Renewables Loans Fund also provides loans of up to £10,000 for renewable heat installations.
- A District Heating Loan Fund has been allocated £5 million over the current spending review period, and is open to local authorities, registered social landlords, SMEs, and energy services companies.
- Heat mapping is being rolled out to all local authorities.

The Scottish Government is also developing a longer-term strategy, which will build on an initial draft of deployment options[11] published alongside the RPP2. It will be important that this addresses the non-financial barriers to the uptake of renewable heat.

2.3 Energy consumption

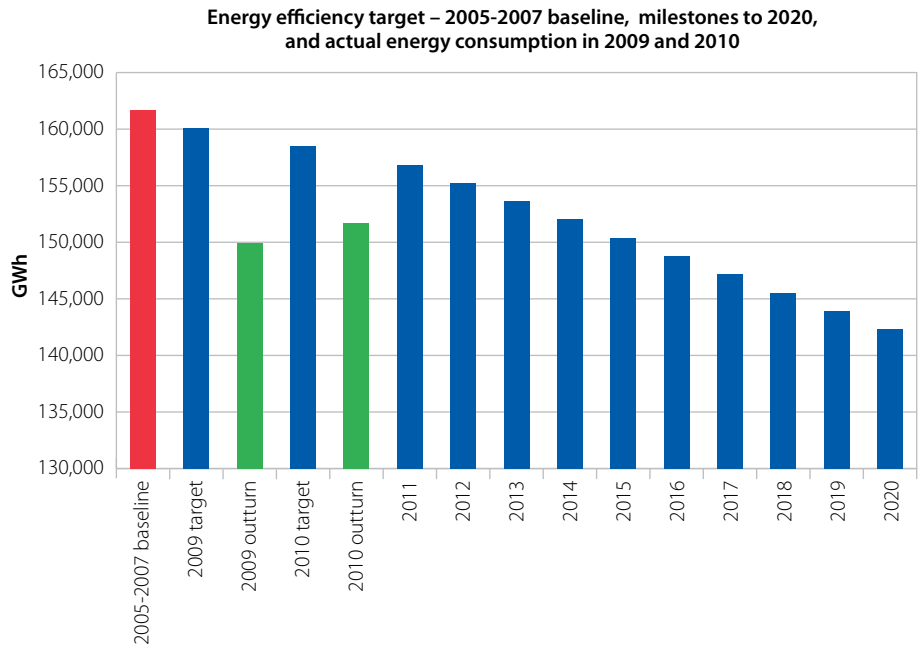
The Scottish Government's Energy Efficiency Action Plan (EEAP) was published in 2010, setting out a target to reduce total energy consumption (across all sectors and fuel types) in Scotland by 12% by 2020, relative to a baseline of average 2005-2007 consumption. Scotland's Climate Change Act also requires the action plan to set a series of annual energy efficiency targets, which the EEAP sets as a straight-line trajectory from 2009 to 2020.

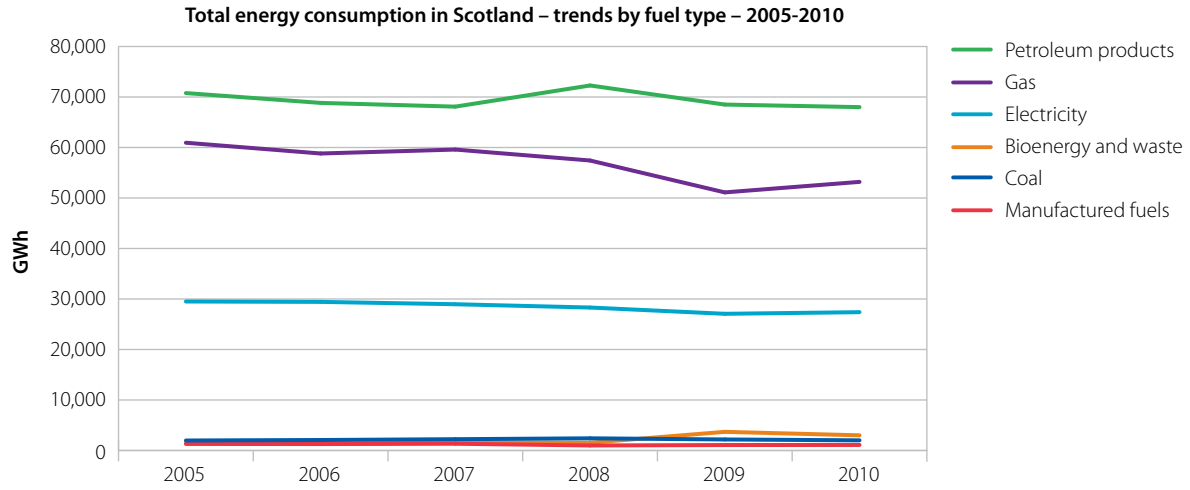
The latest outturn data is for 2010, showing that although total energy consumption increased in 2010, by just over 1,000 GWh (1%), consumption was still 7,000 GWh (4%) below the target level for 2010 (Figure 2.5).

The main driver of reductions since the baseline period has been a fall in gas consumption, which accounts for a third of total energy consumption in Scotland (Figure 2.5). However it should be noted that the gas consumption data is weather corrected, and therefore these figures do not reflect the large increase in actual consumption caused by the exceptionally cold winter months in 2010.

11 Scottish Government (2013) 'Outline for a draft heat vision'. http://www.scotland.gov.uk/Resource/0041/00413386.pdf

Figure 2.5: Total energy consumption in Scotland





Source: DECC (2012).
Notes: Covers coal, manufactured fuels, petroleum products, electricity, bioenergy and wastes in the commercial and industrial, residential and transport sectors. Gas data are temperature adjusted.

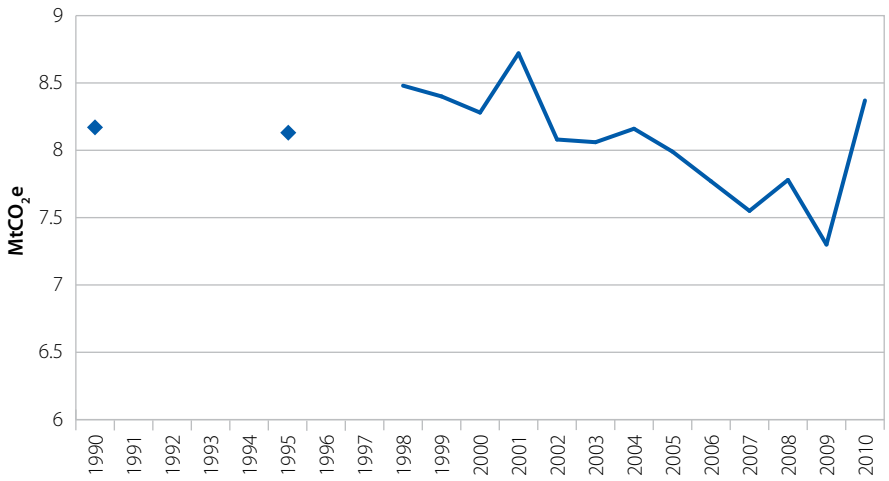
3. Homes and communities

Latest emission trends

Emissions from the residential sector in Scotland (Figure 3.1) were 8.4 $MtCO_2e$ in 2010, accounting for 15% of Scotland's total emissions. Emissions in 2010 were 2% higher than in 1990, having increased 15% in 2010 due to the exceptionally cold winter temperatures (see Figures 1.3 and 1.4).

Given the milder temperatures in 2011 and continued downward trend in temperature adjusted gas demand, it is likely emissions fell significantly in 2011.

Figure 3.1: Residential sector emissions in Scotland (1990-2010)



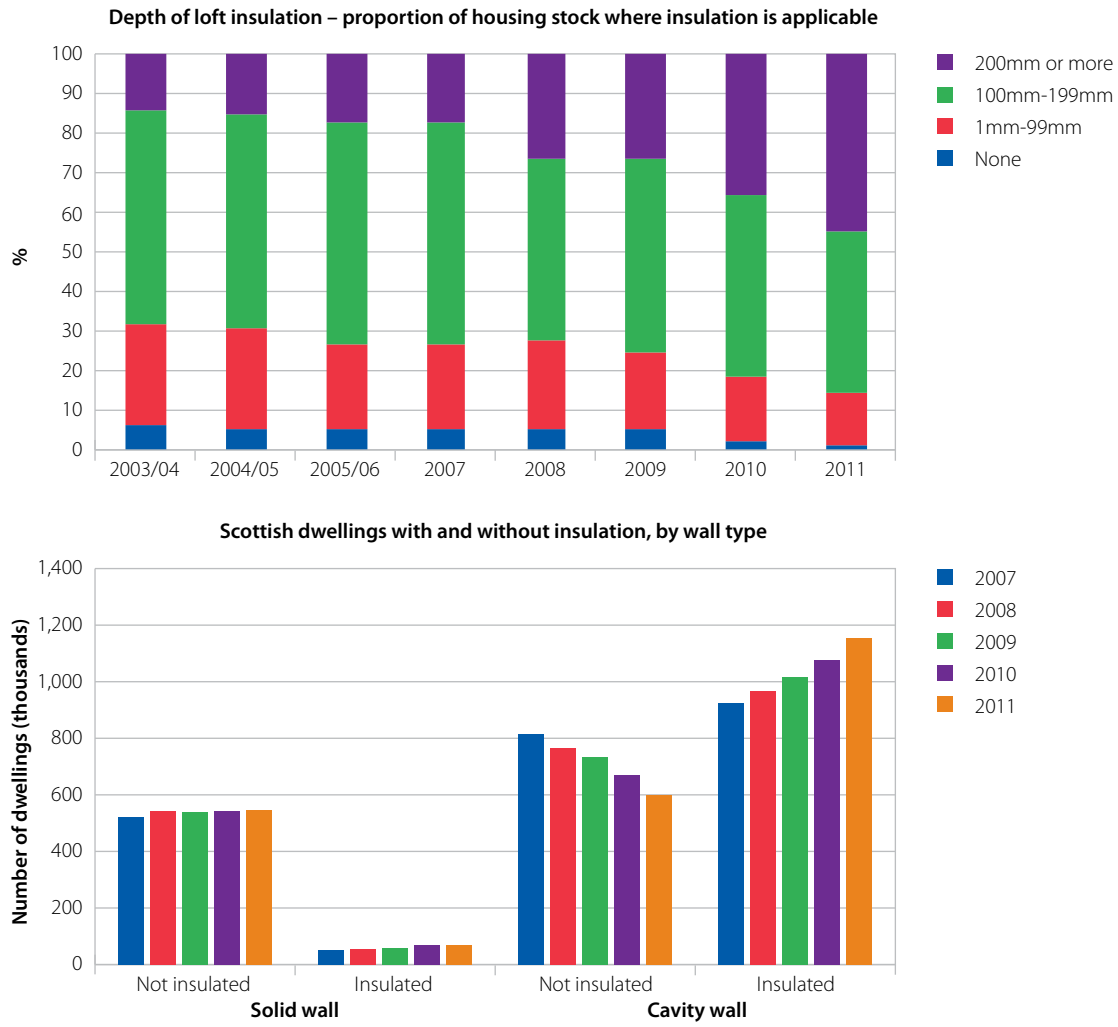
Source: NAEI (2012).
Note: GHG emissions data is not available for Scotland for 1991-1994, or 1996-1997.

Milestones and progress

The first RPP set out a number of 2020 milestones for the residential sector:

- Every home to have loft and cavity wall insulation, where this is cost-effective and feasible, plus simple measures such as draught-proofing and pipe lagging;
- Every home heated with gas central heating to have a highly efficient boiler with appropriate controls; and
- At least 100,000 homes (approximately 4% of Scotland's building stock) to have adopted some form of individual or community renewable heat technology for space and/or water heating.

Figure 3.2: Loft, cavity and solid wall insulation in Scotland (2003/04-2011)



Source: Scottish House Condition Survey for 2011 – Scottish Government (2012).
Note: In 2011 there were 554,000 dwellings where loft insulation is not applicable.

RPP2 adds a longer term ambition:

- To deliver a step change in provision of energy efficient homes to 2030 through retrofit of existing housing and improved building regulations for new homes.

There have been steady improvements in the insulation of homes in Scotland in recent years (Figure 3.2 and Table 3.1), though there is remaining potential on loft and cavity wall insulation and a large challenge on solid wall insulation:

- Rates of loft insulations increased each year of the Carbon Emissions Reduction Target (CERT) programme, from 40,000 in year 1 (starting 1 April 2008), to 104,000 in year 4 (April 2011-March 2012 – Table 3.1). A further 32,000 homes do not have any loft insulation but would be suitable, plus a large number of lofts could benefit from top-ups (the recommended level of insulation is 275 mm[12]).

12 As recommended by the Energy Saving Trust

- Cavity wall insulations were broadly level year on year, with Scotland receiving an overall share commensurate with its share in the GB housing stock (around 43,000 each year on average, 9%). This compares to the further 600,000 cavity wall properties in Scotland that remain uninsulated.
- In addition, 546,000 solid wall properties remain uninsulated, with greater difficulty and expense of installing the insulation than for cavity walls. Scotland overall however has a higher proportion of its solid walls that have insulation than the GB average (11% versus 2% respectively).

Table 3.1: Cavity wall and loft insulations in Scotland under CERT, and as a percentage of GB total

Measure	2008-09	2009-10	2010-11	2011-12
Cavity wall insulation	39,500 (8%)	46,300 (9%)	42,800 (10%)	44,500 (10%)
Loft Insulation	39,500 (6%)	52,500 (9%)	63,800 (11%)	104,400 (13%)

Source: Energy Saving Trust HEED database.
Note: There is lag between data records being submitted to Ofgem (who operate the scheme) and the submission of data to HEED. This has resulted in an estimated data gap of 9% over the four years of CERT data shown.

The Scottish Government has supplemented the GB-level energy efficiency policies such as CERT with its own funding for programmes such as the Energy Assistance Package, Universal Home Insulation Scheme, and Boiler Scrappage Scheme. From 2013 these schemes will be replaced by a new 'National Retrofit Programme (NRP)' and the Warm Homes Fund. The NRP will provide £65 million funding each year alongside a range of other funding streams and leverage of energy company investment, mainly through the GB schemes – Green Deal and Energy Company Obligation (ECO).

The NRP will be area-based and will initially be aimed at fuel poor areas. This is particularly important in Scotland. Fuel poverty in Scotland was significantly above the UK average in 2010 (the latest year for which comparable data is available, at 28% and 19% of households respectively) The fuel poverty statistics for 2011 in Scotland are presented for both July and October energy prices, showing the rate either falling (to 25%), or increasing slightly (to 29%), and highlighting the significant impact energy prices can have on fuel poverty rates. Even at the lower rate, fuel poverty remains double the rate in 2002.

Fuel poverty rates can also vary substantially depending on household characteristics (see Table 3.2), which has important implications for the design and targeting of fuel poverty and energy efficiency policies.

Table 3.2: Latest fuel poverty statistics in Scotland by dwelling characteristics			
Dwelling characteristic		**July 2011 prices**	**October 2011 prices**
All households		**25%**	**29%**
Primary heating fuel	Gas	21%	26%
	Electricity	32%	38%
Urban/Rural	Urban	23%	27%
	Rural	35%	38%
Gas grid	On gas grid	23%	27%
	Not on gas grid	40%	43%
Source: Scottish House Condition Survey 2011.			

The proposed level of spending on the NRP, combined with a share of ECO funding in line with GB household share (estimated at £120 million), would bring the level of spending on energy efficiency measures broadly in line with the level of expenditure estimated by Energy Action Scotland that would be required to eradicate in fuel poverty in Scotland by 2016[13].

Abatement estimates

The abatement potential identified in RPP2 from all of the Scottish Government's current policies is expected to deliver 0.4 $MtCO_2e$, slightly below the cost-effective level estimated by the Committee for 2020 (0.6 $MtCO_2e$). However the RPP2 also includes additional abatement from a range of proposed policies (such as stronger domestic new build standards, regulation of private and social housing, extension of the NRP and low carbon heat policies), which could achieve up to 1.4 $MtCO_2e$ emission reduction by 2020 and 1.6 $MtCO_2e$ by 2027.

13 As discussed in evidence provided to the Scottish Parliament's Economy, Energy and Tourism Committee on 26 October 2011. http://www.scottish.parliament.uk/parliamentarybusiness/28862.aspx?r=6723&mode=pdf

4. Business and the public sector

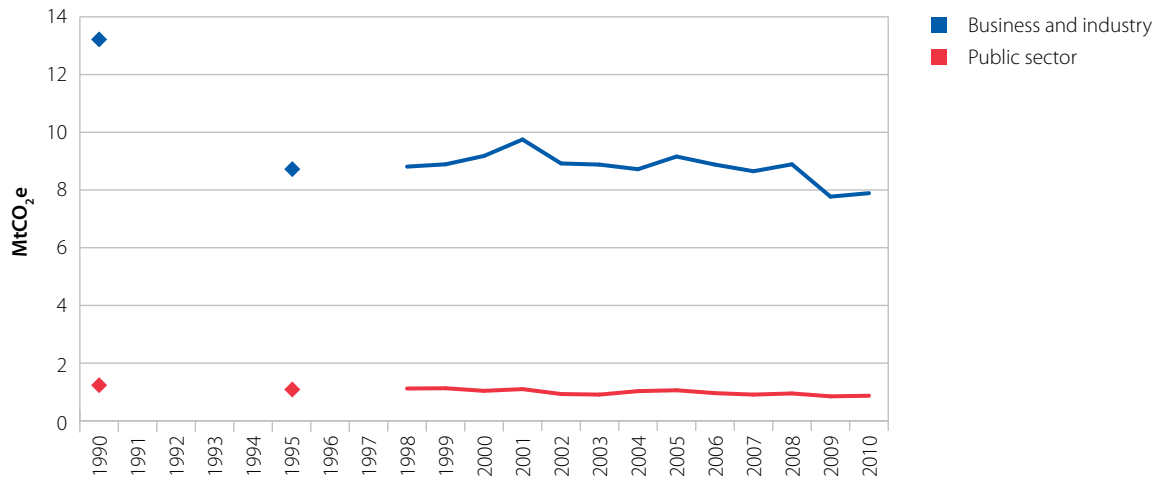
Latest emission trends

Emissions from business and industrial process (including some emissions within the EU ETS) were 7.9 $MtCO_2e$ in 2010, 14% of Scotland's total. Emissions were 40% below 1990 levels, though they increased by 2% in 2010 (Figure 4.1).

Emissions from the public sector were 0.9 $MtCO_2e$ in 2010, representing 2% of Scotland's total. Emissions increased 3% in 2010 but overall were 29% lower than in 1990.

The 2010 change is likely to reflect an increased demand for energy for heating during the exceptionally cold winter months, as well as a return to economic growth following the 2009 recession.

Figure 4.1: Scottish business, industry and public sector GHG emissions (1990-2010)



Source: NAEI (2012).
Note: Inventory GHG data is not available for Scotland for 1991-1994 or 1996-1997.

Milestones and progress

RPP1 set several milestones for 2020:

- The public sector will have reduced its energy consumption by at least 12%;
- Individual public bodies will have all set and be monitoring their own ambitious annual energy efficiency targets;
- All businesses will have access to consistent energy and resource efficiency advice.

RPP2 extends these milestones:

- By 2027 there will be a complete transformation in the way Scottish public bodies work, through implementing and going beyond existing carbon management plans and sustainable procurement;

- By 2027 there will be significant progress in transforming energy use in industry and business, through energy and resource efficiency, and low carbon technologies such as CCS and fuel switching;
- By 2050 direct emissions from the sector will be almost zero.

On progress towards the nearer-term (2020) milestones to date we observe the following:

- The statistics on total energy consumption used to measure Scotland's energy use target for 2020 (see Section 2.3) do not separately split out the public sector. However, a study commissioned by the Scottish Government on abatement potential in the public sector[14] estimated an energy and emissions baseline based on 138 carbon management plans (most of which had baseline years of 2008 or 2009). These plans cover 80% of the 175 public sector bodies in Scotland and an estimated 90-95% of emissions. The study found that the current uptake of recommended measures across the public sector is 32%, but a programme to overcome barriers relating to leadership, procurement, finance and availability of resources could achieve full implementation and a reduction in emissions of 27% (with a similar estimated energy saving).
- The Carbon Trust reports that it has supported 150 (out of 175) public bodies in Scotland in completing Carbon Management Plans. Reductions targeted over 5 year periods from their baselines range from less than 10% to 50% – with the average across all parts of the public sector a 20% reduction in emissions. This would appear ambitious relative to the Scotland-wide reductions required from a similar baseline year (e.g. 2008) to meet the legislated target for 2013 for example (14% reduction).
- On advice for businesses, the Scottish Government has announced a 'Resource Efficient Scotland' advice and support programme will be operational by April 2013. It will be important for this programme to be adequately monitored, to assess the impacts of the advice, and also to ensure SMEs for example, are being sufficiently assisted.

Emissions from business and the public sector are covered by a range of EU and UK/GB policies, such as the EU ETS, Carbon Reduction Commitment Energy Efficiency Scheme (CRC), Climate Change Levy and Climate Change Agreements for example.

The Renewable Heat Incentive has been available to non-residential sectors since 2011. Although this is a GB-level policy, the Scottish Government has a key role to support its development, including helping to overcome non-financial barriers to roll out (see Section 2.2 for further detail).

Businesses will be able to apply for energy efficiency measures funded through private finance (with costs recouped from charges on energy bills) through the GB-wide Non-Domestic Green Deal, which launched earlier in 2013. The Scottish Government is aiming to secure a proportionate share of the funding available and is supporting implementation with a Green Deal assessor qualification in Scotland and work with the construction sector in Scotland to ensure that Scottish installers receive a share of a GB-wide Green Deal training fund (£1.5 million).

14 Carbon Trust (2013) *Potential carbon abatement in the public sector in Scotland* http://www.scotland.gov.uk/Resource/0041/00410160.pdf

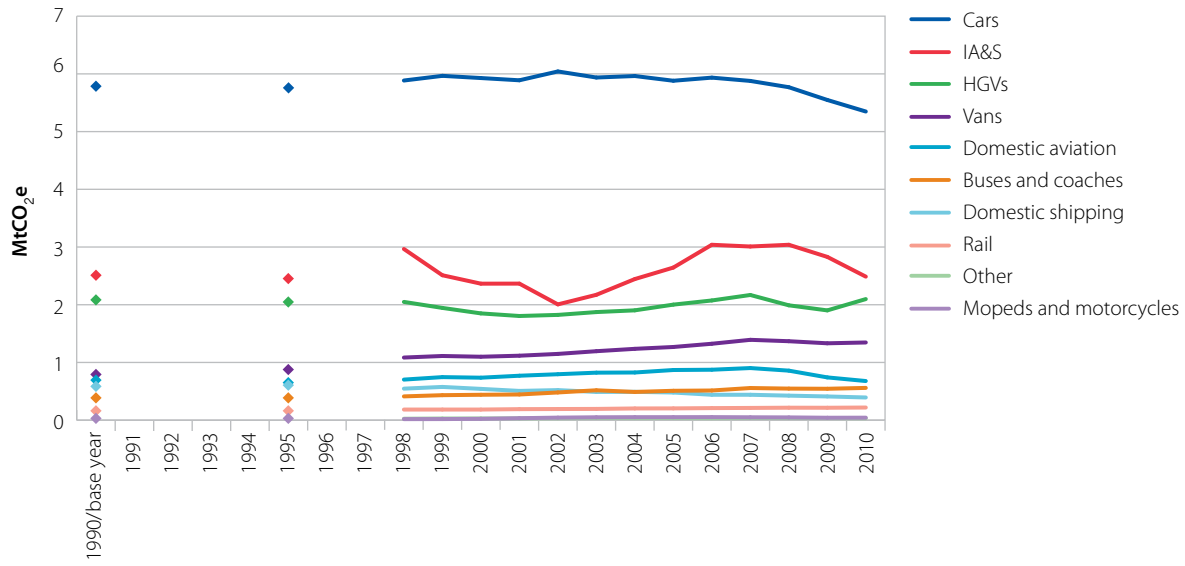
5. Transport

Latest emission trends

The Scottish Government's emission targets include emissions from all transport in Scotland, including international aviation and shipping (IA&S). Total transport emissions fell 3% in 2010, but overall are 1% higher than in 1990. Within that (Figure 5.1):

- Emissions from cars are the largest source of transport emissions, at 5.3 $MtCO_2e$, 41% of the total. Emissions fell 4% in 2010, and overall are 7% lower than in 1990. Emissions have also fallen each year since 2006, reflecting a levelling off in vehicle-kilometres travelled and improvements in new car efficiency (Figures 5.2 and 5.3).
- International aviation and shipping emissions were 2.5 $MtCO_2e$ in 2010, 19% of total transport emissions. Emissions fell 12% in 2010, and overall are 1% lower than 1990. From 2012 onwards emissions from international aviation are capped with the EU ETS.
- Emissions from heavy goods vehicles (HGVs) were 2.1 $MtCO_2e$ in 2010, accounting for 16% of Scotland's transport emissions. Emissions are 1% higher than in 1990, and increased 10% in 2010.
- Emissions from vans were 1.3 $MtCO_2e$ in 2010, 10% of total transport emissions. Emissions were 69% higher than in 1990, and increased 1% in 2010.

Figure 5.1: Transport emissions by mode (1990-2010)

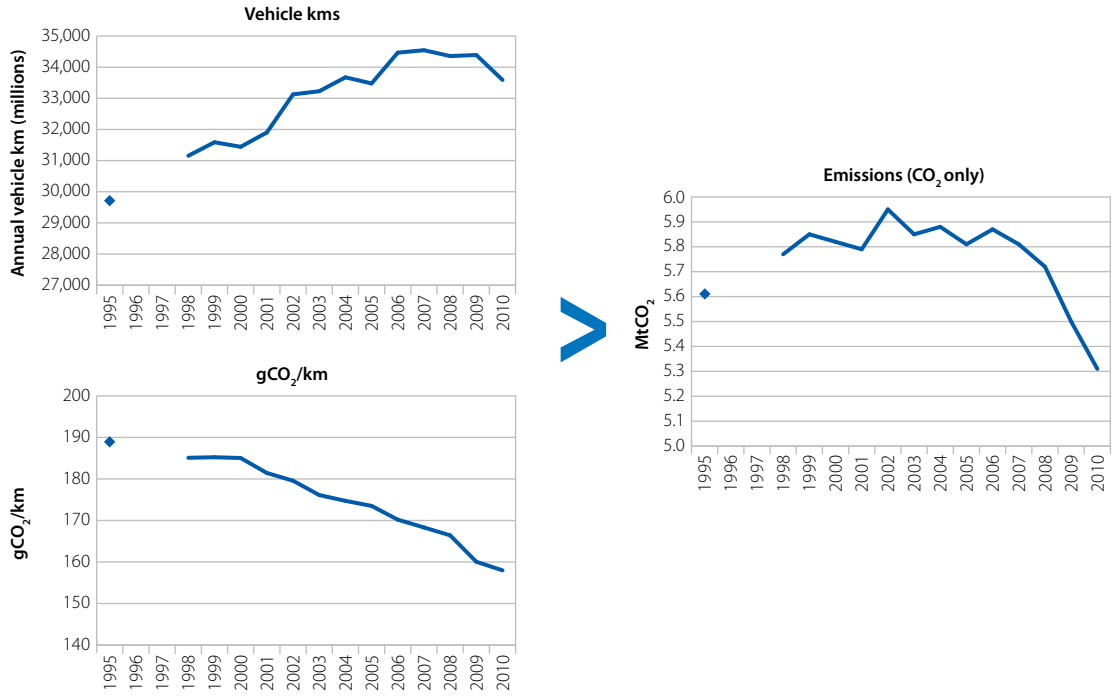


Source: NAEI (2012).
Note: Inventory GHG data is not available for Scotland for 1991-1994 or 1996-1997.

- The remaining 15% of transport emissions are comprised of domestic aviation and shipping,buses, rail and motorcycles.

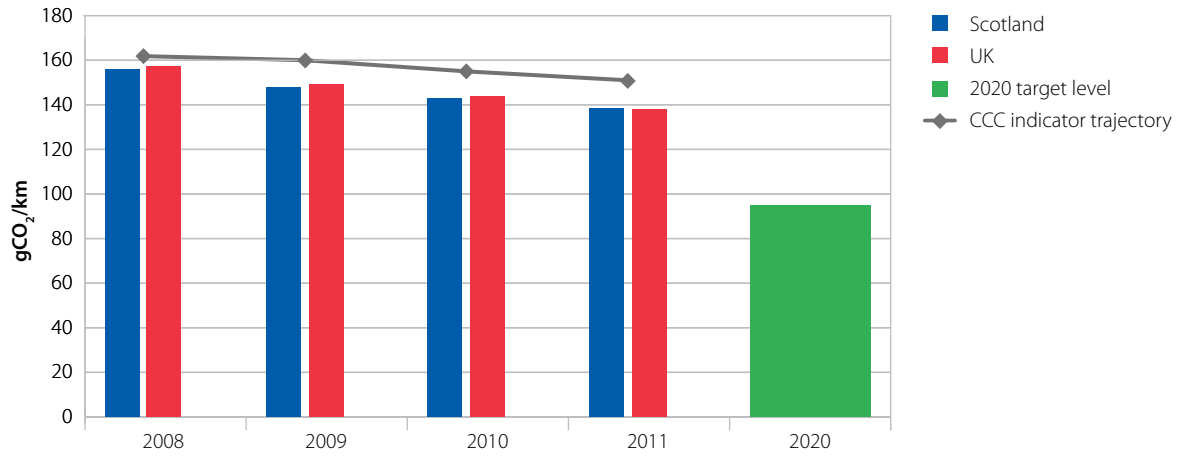
Overall transport emissions, including IA&S, were 13.2 $MtCO_2e$ in 2010, 24% of Scotland's total.

Figure 5.2: Historical trends in vehicle km, gCO_2/km and car emissions – Scotland (1995-2010)



Source: NAEI (2011), Scottish Transport Statistics No. 29 – 2010 edition, chapter 5: road traffic. CCC calculations.
Notes: Inventory GHG data is not available for Scotland for 1996-1997.

Figure 5.3: New car gCO_2/km – Scottish and UK average and CCC UK indicator trajectory (2008-2011)



Source: The Society of Motor Manufacturers and Traders (2012).

Milestones and progress

The first RPP set out a number of milestones to 2020:

- A mature market for low carbon cars resulting in achievement of an average efficiency for new cars of less than 95 gCO_2/km
- An electric vehicle charging infrastructure in place in all Scottish cities
- Personalised travel planning advice provided to all households
- Effective travel plans in workplaces with more than 30 employees
- At least 10% of journeys made by bicycle

These are confirmed again in RPP2, with an additional aim for 2030:

- Significant progress in the decarbonisation of road transport through wholesale adoption of electric cars and vans and conversion to hybrid or alternatively-fuelled HGVs and buses as well as significant modal shift and steps to decarbonise rail and maritime travel.

There has been mixed progress towards these goals:

- As shown in Figure 5.3, progress in 2011 towards achieving the 2020 level of **new car efficiency,** driven by an EU Directive targeting 95 gCO_2/km, continued ahead of the level suggested by the Committee on a pathway towards that target.
- On **electric vehicles**, the Department for Transport's Plugged-in-Places scheme, in which Scotland is one of the pilot areas, is now in its third year. The Scottish Government has match-funded this scheme with £9 million support, which will see the installation of charging facilities across all of Scotland's seven cities and primary road network, as well as commercial and residential charge points, adding to the 280 points already in place. It is difficult to draw conclusions from just a few years of data, but available information shows the share of UK sales of electric vehicles taking place in Scotland increased from 6% in 2011 to 8% in 2012, just slightly under Scotland's share of overall vehicle sales in the UK (9%).
- Travel planning was a component of most of the towns that formed part of the Scottish Government's 'Smarter Choices, Smarter Places' pilot over May 2009 to summer 2011. The full evaluation is due later in 2013, and it will be important that the lessons learned from the pilots are used to further develop the policy and inform the most effective means of rolling out the measures to the remaining urban population. Currently the Scottish Government has not confirmed any further support for '**Smarter Choices'** programmes beyond the current financial year, although local authorities have ring-fenced capital grants (£5.6 million in 2013-14 and £8.2 million in 2014-15) for programmes to support cycling and walking.

- Currently only 1% of journeys are made by **bicycle**, well below the 10% target. The Scottish Government has confirmed funding of £10.4 million in financial year 2013-14 for cycling infrastructure and promotion but funding beyond that is currently uncertain. The Committee is sceptical this target will be achieved, but endorses the current support for cycling infrastructure.

Policies for the transport sector, as set out in the RPP2 are EU-level policies only (Directives on new car efficiency and biofuels), for which the Scottish Government's estimate of abatement potential for 2020 is line with our estimates (savings of 1.7 $MtCO_2e$).

Further options have been suggested by the Scottish Government through a range of potential policies:

- Decarbonising vehicles
- Sustainable communities
- Business efficiencies
- Network efficiencies
- Lower emission potential in transport (this reflects 0.75 $MtCO_2e$ of the saving in 2027 and will be detailed further in the next RPP).

Together with abatement potential from existing policies, the Scottish Government estimates that delivering all of these measures could save 4 $MtCO_2e$ by 2020, slightly above our estimate of 3.6 $MtCO_2e$, from a range of supply and demand-side measures.

6. Agriculture, rural land use and forestry

Latest emission trends

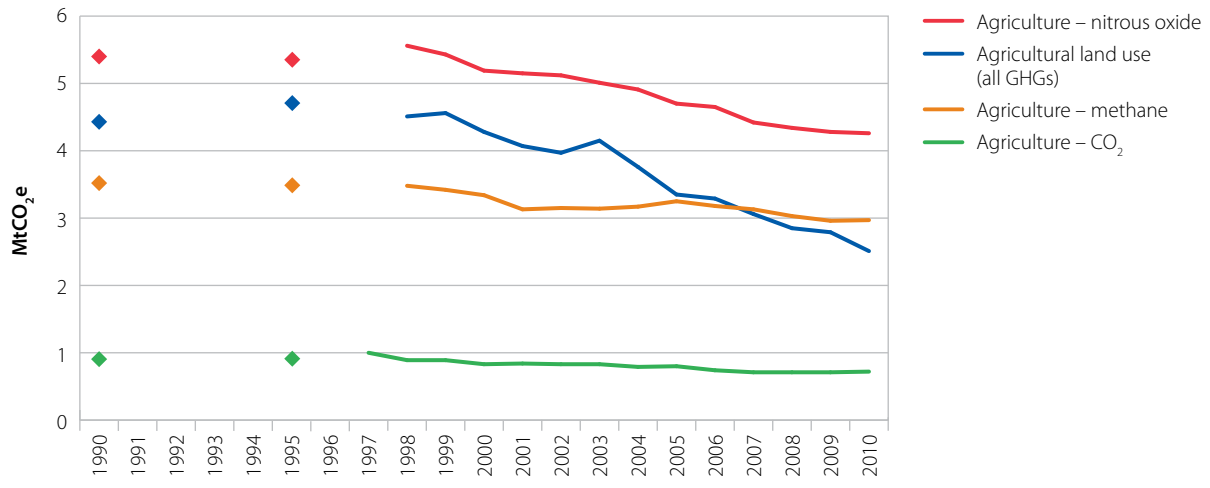
There is currently considerable uncertainty in the emissions inventory for the agriculture sector in particular. This is the subject of an ongoing research programme, which should begin to feed through into improvements in the accuracy of the inventory from 2014 onwards.

There is also substantial uncertainty in historic emissions, there is uncertainty in projections for this sector also. In particular, we noted at the time we recommended the levels of emission targets to the Scottish Government that revised agriculture and forestry projections would subsequently be available. These in particular have had a significant bearing on the 'business as usual' emissions pathway through the 2020s, from which abatement is needed to meet legislated targets. We return to the implications of this in Section 8.

Based on current estimates, emissions from agriculture and related land use were 10.5 $MtCO_2e$ in 2010, 19% of Scotland's total. Emissions fell 27% between 1990 and 2010 and 3% in 2010. Within this (Figure 6.1):

- Methane emissions fell 16% between 1990 and 2010, from 3.5 $MtCO_2e$ to 3 $MtCO_2e$, reflecting a reduction in livestock numbers. Emissions increased slightly, by 1% in 2010.
- Nitrous oxide emissions fell 21% between 1990 and 2010, from 5.4 $MtCO_2e$ to 4.3 $MtCO_2e$, due to large reductions in nitrogen application rates over that time. Emissions fell 1% in 2010.
- Emissions from agriculture related land use fell 43% from 4.4 $MtCO_2e$ to 2.5 $MtCO_2e$ as cropland emissions have fallen at the same time as the grassland sink increased.

Figure 6.1: Agriculture and land use emissions (1990-2010)

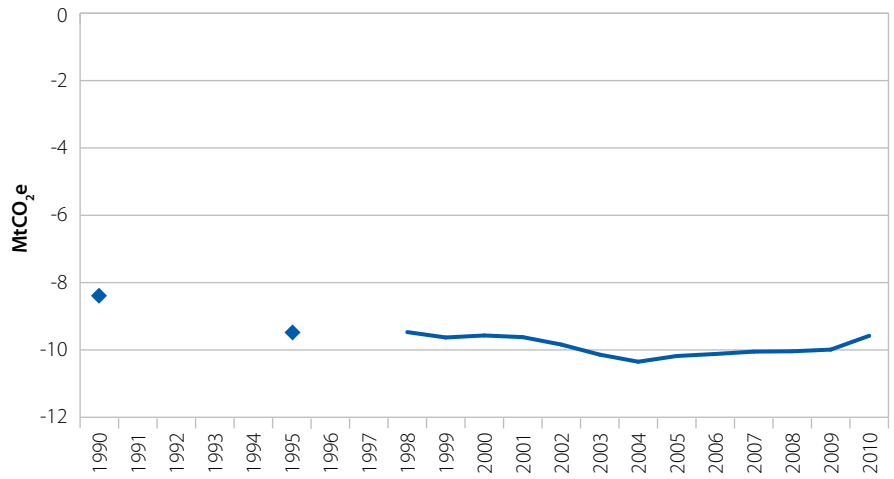


Source: NAEI (2012).
Note: Inventory GHG data is not available for Scotland for 1991-1994 or 1996-1997.

- CO_2 emissions from on-farm stationary (e.g. heating farm buildings) and mobile combustion (e.g. tractors and harvesters) were 0.7 $MtCO_2e$ in 2010, having fallen 20% since 1990.

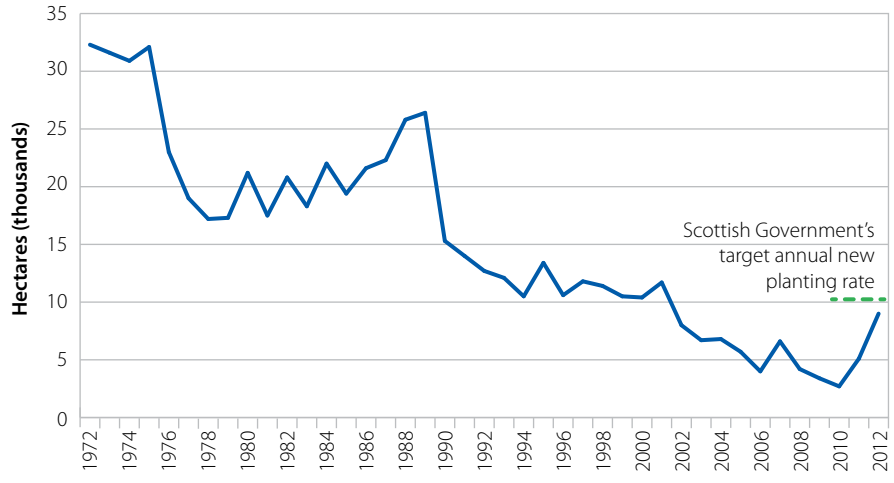
The forestry sector in Scotland provides a large emissions sink, equivalent to 9.6 $MtCO_2e$ in 2010. Although the size of the sink increased by 15% over the period 1990 to 2010, it actually decreased in 2010 by 4% (Figure 6.2). This reflects past trends in tree planting which fell steadily from 32,300 hectares per year in the early 1970s, to a low of 2,700 hectares in 2010 (Figure 6.3).

Figure 6.2: Forestry emissions (1990-2010)



Source: NAEI (2012).
Note: Inventory GHG data is not available for Scotland for 1991-1994 or 1996-1997.

Figure 6.3: New tree planting in Scotland (1972-2012)



Source: Forestry Commission (2012).

Milestones and progress

RPP1 set out a number of milestones for the agriculture, land use and forestry sector:

- To conclude research on behaviour change in agriculture and develop indicators to measure progress by 2011
- Incorporate consideration of peatland restoration into the methodology for calculating the net Scottish emissions account
- Increase the rate of new woodland creation to 10,000 hectares per year

Progress against these targets is considered in the following three sections.

6.1 Behaviour change

The Scottish Government has published its research on farmer behaviour, as well as a scoping study on indicators to measure progress of the key policy to encourage uptake of emission reduction measures on farms. The latter study found that existing data provided a reasonable basis for measuring the uptake and greenhouse gas impact of mitigation measures, but it could be improved by directly monitoring farm practice activity.

The RPP2 states that the Scottish Government intends to survey farmers in 2013 to measure levels of uptake. The Scottish Government has indicated that this information will be used to decide if the voluntary approach is sufficient to achieve the required uptake levels, or if regulation may be required. In particular, the Scottish Government is aiming to encourage best practice in nitrogen efficiency and to achieve a 90% uptake rate of efficiency practices from 2018. The voluntary approach will be kept under review, and depending on progress achieved, measures to regulate nitrogen fertiliser use will be considered.

This is a positive approach, and one we would welcome. However, it will be important that a monitoring framework and performance triggers are set out to accompany these surveys, to ensure a timely decision on whether stronger measures are required (i.e. over 2014-15).

Other options that have been included in the RPP2 include technology policy development aimed at ensuring future feasibility of measures that are currently costly or impractical. Abatement from technology development is not expected to materialise until the 2020s.

The RPP2 also notes potential for additional low carbon agricultural practices post-2025, but states that further detail will be provided in the next RPP.

6.2 Peatlands

Scotland's peatlands cover about 20% of its land area, with its deep peat soils containing up to 1.8 billion tonnes of carbon. This represents around 60% of the UK's peat carbon store and 4% of Europe's total peat carbon store. Though there has been little drainage of peatland in Scotland in the last two decades, historically much of the Scotland's peatland had been subject to draining and damage, leading to release of CO_2. Conversely, healthy peatlands can sequester CO_2, as well as help deliver adaptation benefits (such as managing water flow and building biodiversity resilience).

The Scottish Government has committed £1.7 million for peatland restoration from 2012 – 2015 and intends to include this activity within Scottish emissions accounting. The Scottish Government is also currently developing a peatland plan to consider the scope to increase peatland restoration rates. This is welcome from both mitigation and adaptation perspectives.

6.3 Forestry

Although tree planting rates have declined significantly from the 1970s (Figure 6.3), rates have increased in recent years, indicating some policy success due to the changes made to the Scottish Rural Development Programme, which provides grants for woodland creation. In 2012, rates had almost hit the 10,000 hectare target. The RPP1 contained a policy proposal to consider increasing afforestation rates to 15,000 hectares per year. In response to this the Scottish Government set up a group set up to advise on this proposal. It recommended that the focus of activity should be on creating 100,000 hectares of new woodland between 2012 and 2022 and that a detailed review should be carried out no later than 2020 in order to set targets beyond 2022. The Scottish Government has accepted this recommendation and highlights that the need to meet its climate change targets should be a key factor in the review.

The RPP2 also contains a new proposal for the forestry sector, to increase the amount of Scottish timber used in the construction and refurbishment of buildings. This reflects the recommendation made in the Committee's 2011 bioenergy review[15], which identified timber in construction as a cost effective carbon abatement technology. This is however featured as a longer-term policy with potential emission abatement due to start in 2022.

15 Committee on Climate Change (2011) 'Bioenergy review'. http://www.theccc.org.uk/publication/bioenergy-review/

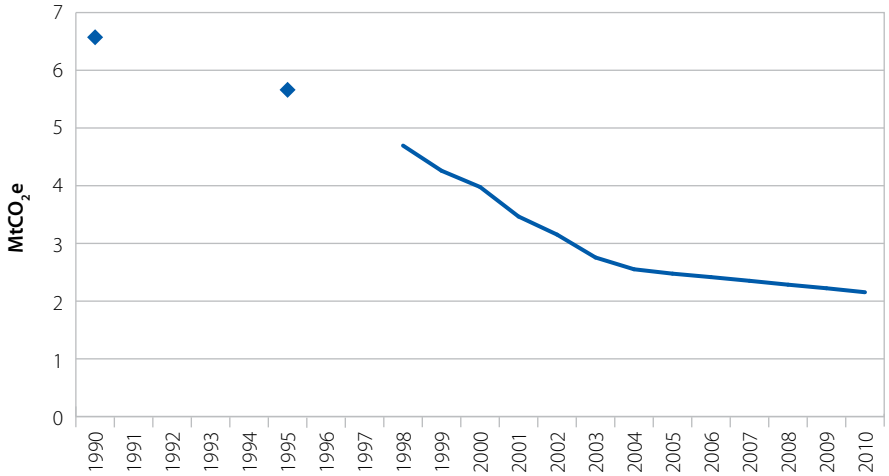
7. Waste

Latest emission trends

Emissions from the waste sector in Scotland fell 67% between 1990 and 2010, from 6.6 $MtCO_2e$ to 2.2 $MtCO_2e$ (Figure 7.1). Emissions in 2010 continued this trend, falling 3%.

The vast majority of emissions in the waste sector arise from methane released from waste in landfill. The large fall in emissions in the waste sector reflects reductions in the amount of waste sent to landfill as well as increasing rates of methane capture at landfill sites.

Figure 7.1: Waste sector emissions (1990-2010)



Source: NAEI (2012).
Note: Inventory GHG data is not available for Scotland for 1991-1994 or 1996-1997.

Milestones and progress

Scotland's Zero Waste Plan sets a number of targets for the waste management sector:

- Targets for the proportion of household waste recycled/composted/re-used:
  - 40% in 2010
  - 50% in 2013
  - 60% in 2020
  - 70% in 2025
- Recycling of all waste (including commercial and industrial waste) by 2025
- Reducing the proportion of total waste sent to landfill to a maximum of 5% of all waste by 2025

The Zero Waste (Scotland) Regulations, passed in the Scottish Parliament in 2012 provide a statutory underpinning to these ambitions. They require:

- Businesses to present dry recyclables (metals, plastics, paper, card and glass) and food waste for collection from 1 January 2014
- Food businesses (except in rural areas) to present food waste for separate collection (over 50 kg of waste from 1 January 2014 and over 5 kg from 1 January 2016)
- A ban on materials collected for recycling going to landfill or incineration from 1 January 2014
- A ban on biodegradable municipal waste going to landfill from 1 January 2021

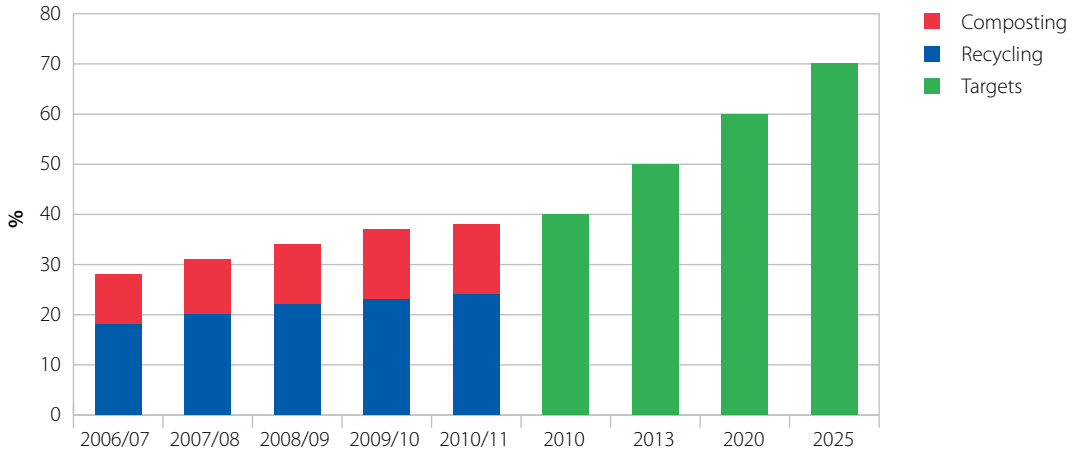
Through Zero Waste Scotland, a body set up to deliver the Zero Waste Strategy, the Scottish Government invested £8 million in councils and commercial waste management firms in 2012-13, including £5 million to support the roll-out of new food waste collections and £750,000 to help increase the availability of collection services to Small and Medium sized Enterprises (SMEs).

The latest figures on municipal recycling rates show that Scotland fell slightly short of the first target for 2010, with 38% of household waste being composted or recycled in 2010/11 (Figure 7.2).

As regards the target to reduce waste sent to landfill, there has been a steady decline in the amount of total waste arisings sent to landfill. Although there has been a little variation in the level of total waste arisings, the proportion of this sent to landfill has fallen from 43% in 2004, to 27% in 2010 (Figure 7.3).

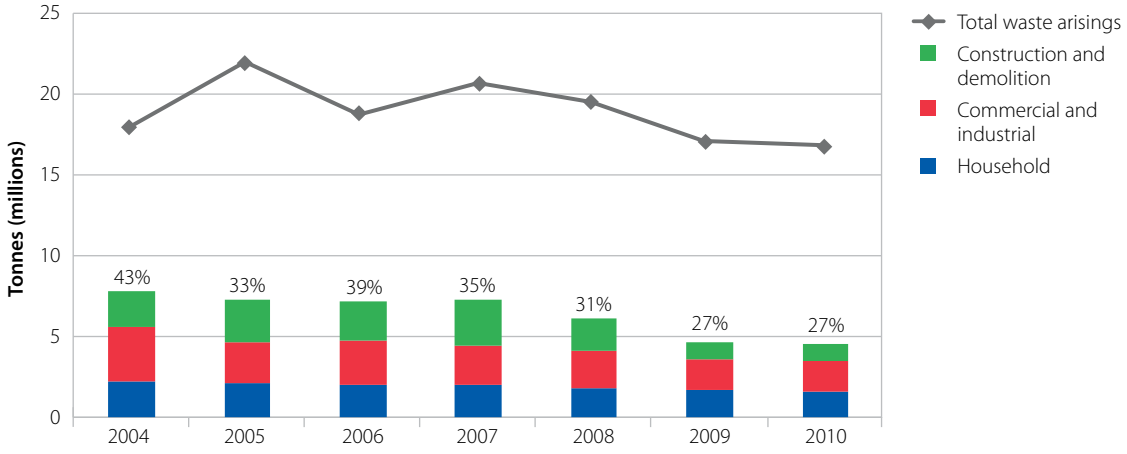
While the Zero Waste Plan, as supported by legislation, forms a good basis for achieving significant reductions in waste emissions, the RPP2 suggests an additional proposal, to increase methane capture rates across landfill sites in Scotland. The scope for this is currently being investigated by the Scottish Government to inform future policy decisions.

Figure 7.2: Percentage of household waste recycled or composted 2006/07 - 2010/11 and targets for 2010 to 2025



Source: SEPA (2012), Scottish Government (2012).

Figure 7.3: Total waste arisings in Scotland and volume of waste landfilled by source (2004-2010)



Source: SEPA (2012).

8. Proposals and policies for meeting future targets

As part of this report, the Scottish Government requested that we assess the achievability of Scotland's future targets, and where any further effort may be required. In doing this, we have considered the Scottish Government's draft plan for meeting future targets, the 'second report on proposals and policies' – 'RPP2'.

It sets out the range of policies and policy proposals for meeting the targets to 2027, which were legislated in October 2011 following advice from the Committee.

It is important to note that there is now a much greater challenge to meet emission targets due to significant revisions to both historical emission data and projections since the Committee's advice. In particular, new projections for the land use, land use change and forestry sector (LULUCF) which were not available at the time the Committee advised the Scottish Government on the level of targets, increased the business as usual pathway through the 2020s. Collectively, revisions have increased the 'business as usual' emissions of the non-traded sector by 4 $MtCO_2e$ in 2027 than at the time of the Committee's advice.

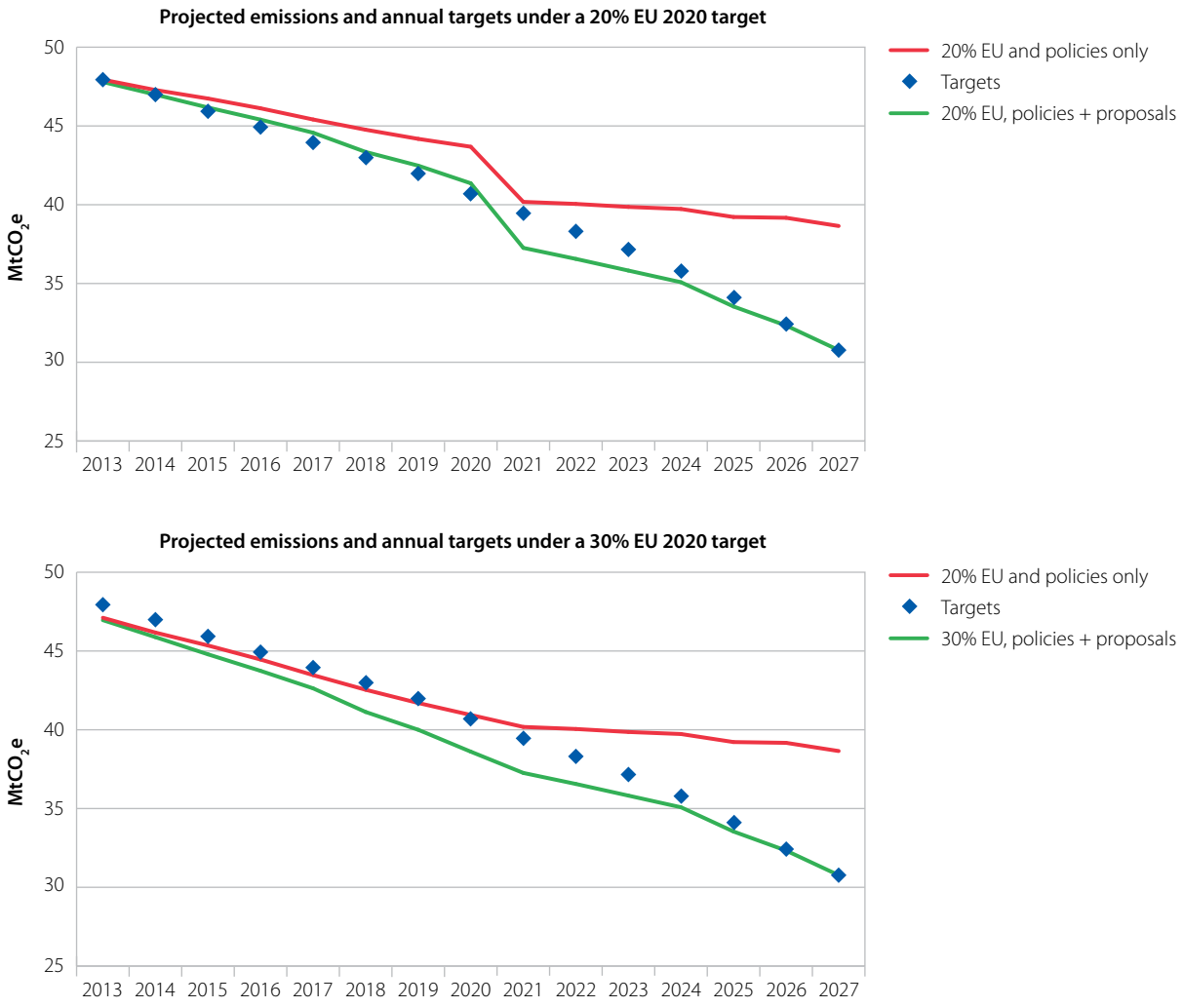
The Scottish Government has set out a package of policies and proposals that therefore address the higher level of abatement that will be required, given the higher business as usual path. This shows that:

- Meeting the targets to 2020 requires that the EU moves to a 30% target for 2020, and tightens the EU ETS cap accordingly. Without this, even implementing all of the proposed policies, will not be enough to meet targets on current projections (Figure 8.1).
- Through the 2020s, the Scottish Government has set out a package of policies and proposals that overachieve targets in most years, and sets Scotland on the required pathway to securing longer-term decarbonisation to 2050. This is based on 'actual emissions' rather than the level of EU ambition and traded sector cap, as currently there is no meaningful cap for the 2020s (the default path through the 2020s in the EU ETS Directive is incompatible with the 2050 target).

However there is a considerable degree of uncertainty over some of these policies and proposals, and they would all have to deliver their full estimated abatement to meet targets. It is also likely some level of implementation would already have to be in place pre-2020.

There is a need therefore, now that plans have been set out, for the Scottish Government to focus on developing proposals into detailed policies, and implementing these in a way that achieves the full estimated abatement potential, if Scotland is to meet its climate change commitments.

Figure 8.1: Emission projections and targets (2013-2027)



Source: Scottish Government (2013).

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