



Department
of Energy &
Climate Change

UK progress towards GHG emissions reduction targets

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This document is also available from our website at: <https://www.gov.uk/government/publications/final-uk-emissions-estimates>

Executive summary

- This publication provides the latest estimates of UK progress towards domestic and international greenhouse gas emissions reduction targets. It provides an update to the information on progress against targets that was published in the *Final UK greenhouse gas emissions* statistics on 3rd February 2015.

Kyoto protocol target

- UK emissions of the basket of six greenhouse gases covered by the Kyoto Protocol were an average 607.9 million tonnes carbon dioxide equivalent (MtCO₂e) per year over the first commitment period (2008-12) net of EU Emissions Trading System (EU ETS) trading, 22 percent lower than base year emissions. The UK's target for this period was a 12.5 percent reduction on base year emissions.
- For the second Kyoto Protocol commitment period (2013-2020) a UK target is yet to formally be agreed.

The Climate Change Act 2008

- The first carbon budget ran from 2008 to 2012. In 2014, the UK confirmed that it had met the first carbon budget, with emissions 36 MtCO₂e below the cap of 3,018 MtCO₂e over the first carbon budget period.
- UK greenhouse gas emissions for 2013 under carbon budget coverage (UK only, excluding Crown Dependencies and nitrogen trifluoride (NF₃) emissions) and net of EU ETS trading were 522.7 MtCO₂e. This is 33.7 MtCO₂e below the average annual emissions required to meet the second carbon budget (2013-2017) of 556.4 MtCO₂e.

EU Effort Sharing Decision

- The UK has an annual emissions cap for the non-traded sector under the EU Effort Sharing Decision, beginning in 2013. UK greenhouse gas emissions for 2013 under the Effort Sharing Decision are estimated to be 344.9 MtCO₂e. This is 13.8 MtCO₂e below the UK's 2013 cap of 358.7 MtCO₂e.

Emissions reductions targets

The UK has both domestic and international greenhouse gas emissions reductions targets:

- Kyoto Protocol
- The Climate Change Act 2008
- EU Effort Sharing Decision

Each target is presented separately in the following section due to the different targets having different geographical coverages and accounting rules.

Kyoto Protocol target

First Commitment Period (2008-2012)

The UK has an international target for reducing greenhouse gas emissions through the Kyoto Protocol. Under the first commitment period of, EU countries collectively made a commitment to reduce greenhouse gas emissions across the EU by 8 percent on 1990 levels by 2012. As part of this, the UK undertook to reduce total greenhouse gas emissions by 12.5 percent below base year levels over the five-year period 2008-12 under the EU burden sharing agreement (EU Decision 2002/358/EC).

The Kyoto Protocol uses a base year which is comprised of 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for fluorinated compounds. In July 2007, the UK's Kyoto base year figure was set at 779.9 MtCO₂e, based on the 2006 UK Inventory submission. This means that to meet the UK's Kyoto commitment for the first commitment period (2008-2012), greenhouse gas emissions must be below 3,412 million tonnes carbon dioxide equivalent over the full five year period, or below 682.4 MtCO₂e on average per year.

UK emissions of the basket of six greenhouse gases covered by the Kyoto Protocol were an average 607.9 MtCO₂e per year over the first commitment period (2008-12) net of EU ETS trading, 22 percent lower than base year emissions.

While the first commitment period is now over, final reporting against the target will not take place until late 2015 or early 2016 to allow time for the UN to complete reviews of countries' final emissions inventories for the first commitment period, and for countries to carry out any emissions trading required to comply with targets. However, it is likely that when final reporting

takes place the UK's emissions for the first commitment period will be the same as or very similar to the emissions presented in these statistics for the Kyoto basket of greenhouse gases over the period 2008-2012.

Second commitment period (2013 – 2020)

2013 is the first year of the second commitment period of the Kyoto Protocol. The second commitment period will run for eight years, from 2013 to 2020 inclusive. For this second commitment period, alongside the EU and its Member States, the UK communicated an independent quantified economy-wide emission reduction target of a 20 percent emission reduction by 2020 compared with 1990 levels (base year). The target for the European Union and its Member States is based on the understanding that it will be fulfilled jointly with the European Union and its Member States. The 20 percent emission reduction target by 2020 is unconditional and supported by legislation in place since 2009 (Climate and Energy Package).

The climate and energy package implements the goal of reducing EU GHG emissions to 20 percent below 1990 levels by 2020. The reduction effort is shared out as follows:

- 21 percent reduction in emissions from sectors covered by the EU emissions trading system (EU ETS) compared to 2005 levels;
- Around a 10 percent reduction from most other sectors compared to 2005. These sectors are covered by the Effort Sharing Decision (ESD).

Once ratified this Kyoto target will cover the UK, and the relevant Crown Dependencies and Overseas Territories that wish to join the UK's ratification. As ratification is not yet complete and exact details of the UK's target for the second commitment period are still being finalised, these statistics do not include information on the UK's progress against its second commitment period target.

Table 1: Progress towards Kyoto Protocol Target
UK, Crown Dependencies and Overseas Territories 2008-2013

	MtCO ₂ e					
	2008	2009	2010	2011	2012	2013
All greenhouse gases (including net emissions/removals from LULUCF) without allowance for EU ETS	648.9	594.3	610.3	566.2	583.1	:
EU ETS Net UK purchases/(sales)	20.8	(12.8)	(6.8)	(24.1)	(13.8)	:
All greenhouse gases (including net emissions/removals from LULUCF)	628.2	607.1	617.1	590.3	596.9	:

Note:

: Data not available

For the purposes of reporting for Kyoto Protocol, the figure for net UK purchases/(sales) in 2012 is slightly higher than the equivalent figure for UK carbon budgets. This is due to differences in both the coverage and the way in which the annual EU ETS cap has been calculated. Further details are in Emissions Trading section.

The Climate Change Act 2008

The UK has domestic targets for reducing greenhouse gas emissions under the Climate Change Act 2008, which established a long-term legally-binding framework to reduce GHG emissions, committing the UK to reducing emissions by at least 80 percent below 1990 baselines by 2050, with an interim target to reduce GHG emissions by at least 34 percent compared to the 1990 baseline by 2020.

To help set this trajectory, the Climate Change Act also introduced carbon budgets, which set legally-binding limits on the total amount of GHG emissions the UK can emit for a given five-year period.

The Government set the first three carbon budgets in May 2009, covering the periods 2008-12, 2013-17 and 2018-2022. The fourth carbon budget, covering the period 2023-27, was set in June 2011. The first of these budgets required that total UK greenhouse gas emissions did not exceed 3,018 MtCO₂e over the five-year period 2008-12. The fourth carbon budget was set so as to require a reduction in emissions of 50 percent below base year levels over the period 2023-2027.

Like the Kyoto Protocol, the Act uses a base year which is comprised of 1990 for carbon dioxide, methane and nitrous oxide, and 1995 for fluorinated compounds. However, this base year figure differs from that used for reporting against the Kyoto Protocol in that the baseline is revised each year to incorporate revisions made to 1990 and 1995 emissions data, whereas the Kyoto Protocol base year emissions are fixed. Table 18 below shows details of the first four carbon budgets.

Table 2: Summary of UK Carbon Budgets
UK only, 2008-2027

	MtCO ₂ e			
	Budget 1	Budget 2	Budget 3	Budget 4
	2008-12	2013-17	2018-22	2023-27
Budget level	3,018	2,782	2,544	1,950
Equivalent average annual emissions	603.6	556.4	508.8	390.0

Source: Carbon Budgets.

<https://www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/carbon-budgets>

Note: The levels of carbon budgets are not shown here as a percentage reduction from the base year. This is because the base year figure is not fixed, but is revised each year to incorporate revisions to the inventory so the percentage reduction required to meet targets will change over time.

Further details of how the Kyoto Protocol and Carbon Budget baseline emissions figures have been derived can be found on the DECC website in the [Record of UK base year emissions](#) table.

The first carbon budget ran from 2008 to 2012. In 2014, the UK confirmed that it had met the first carbon budget, with emissions 36 MtCO₂e below the cap of 3,018 MtCO₂e over the first carbon budget period.

UK greenhouse gas emissions for 2013 under carbon budget coverage (UK only, excluding Crown Dependencies and NF₃ emissions) were 566.5 MtCO₂e. However, for measuring

progress against carbon budgets a figure for emissions net of EU ETS emissions trading (the 'net carbon account') is used. Net of ETS trading UK emissions under carbon budget coverage were 522.7 MtCO₂e. This is 33.7 MtCO₂e below the average annual emissions required to meet the second carbon budget of 556.4 MtCO₂e. Further information on the UK's net carbon account for 2013, will be published in the UK's Annual Statement of Emissions for 2013 (which will be published by 31st March 2015).

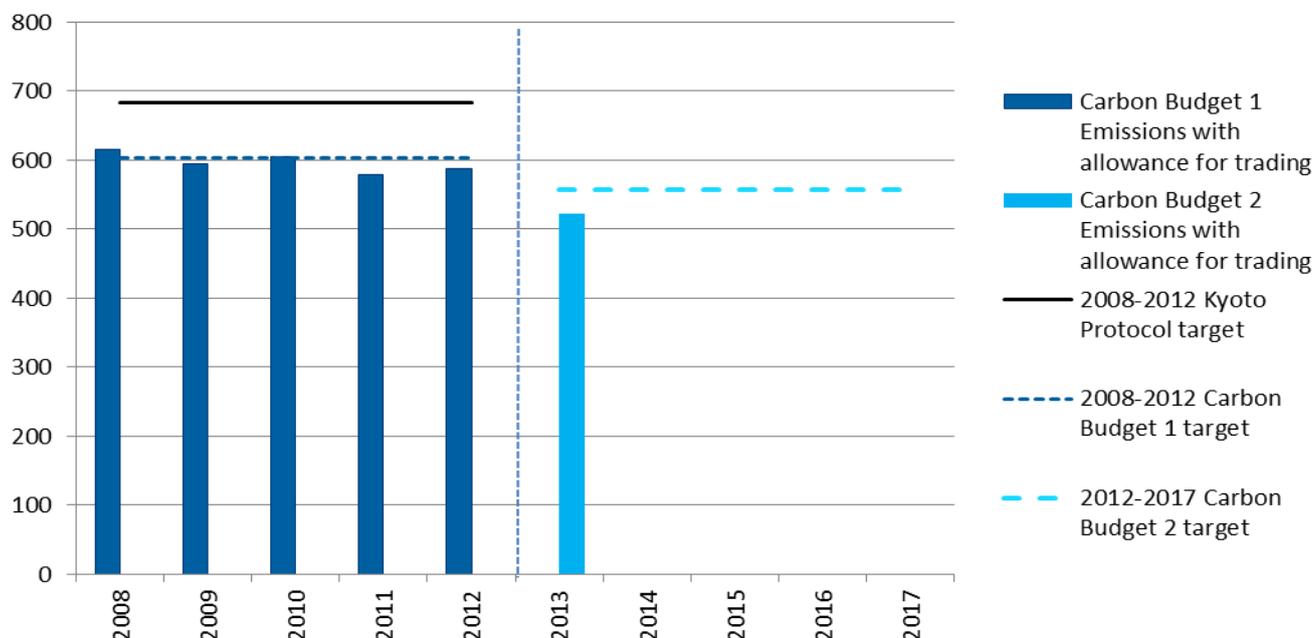
Table 3: Progress towards UK Carbon Budgets
UK only, 2008-2013

	2008	2009	2010	2011	2012	2013
All greenhouse gases (including net emissions/removals from LULUCF) without allowance for EU ETS	635.9	582.5	598.0	554.9	573.5	566.5
EU ETS Net UK purchases/(sales)	20.2	(12.6)	(6.7)	(24.0)	(13.6)	43.8
All greenhouse gases (including net emissions/removals from LULUCF)	615.7	595.2	604.7	579.0	587.1	522.7

Source: Table 9, Final UK greenhouse gas emissions national statistics 1990-2013 Excel data tables

Note: 1. Emissions for the first carbon budget period (2008 to 2012) are the final figures for the first carbon budget which were reported in 2014. This means that there is a time series break between 2012 and 2013, as 2013 figures are based on the most recent greenhouse gas inventory.
2. Further details on the EU ETS Net UK purchases/sales can be found in the Emissions Trading section of this statistics release.

Figure 1: UK's progress towards meeting Kyoto Protocol and carbon budget targets (MtCO₂e)



Source: Table 9, Final UK greenhouse gas emissions national statistics 1990-2013 Excel data tables
<https://www.gov.uk/government/statistics/final-uk-emissions-estimates>

Note: The chart shows emissions under carbon budgets coverage. These are slightly different to the emissions used to assess compliance against the Kyoto Protocol target.

EU Effort Sharing Decision

The UK has an annual greenhouse gas emissions cap under the EU Effort Sharing Decision (ESD). 2013 is the first year to which EU Effort Sharing Decision targets apply. The ESD was agreed as part of the 2008 EU Climate and Energy package and came into force from January 2013. It sets out targets for EU Member States to either reduce or limit emissions by a certain percentage in the non-traded sector (i.e. activities not included in the EU Emissions Trading System, but excluding Land Use, Land Use Change and Forestry (LULUCF) and NF₃ emissions) by 2020 from a 2005 baseline. The UK's target is to reduce emissions by 16 percent from 2005 levels, to be achieved through a declining target for emissions for each year from 2013-2020. This is reported annually through the greenhouse gas inventory submission to the European Commission.

In March 2013, the European Commission (EC) published Member State targets consistent with the scope of the EU ETS during the second trading period, from 2008 to 2012. In October 2013, the Commission published adjustments (under Article 10 of the ESD), to account for the change in the scope of the EU ETS between the second trading period and the third trading period (from 2013 to 2020). The final values were therefore calculated on the basis of these two Commission decisions.

Table 4: UK emission allocations under the Effort Sharing Decision

UK & Gibraltar, 2013-2020

		MtCO ₂ e
Year	Annual Emission Allocations	
2013	358.7	
2014	354.2	
2015	349.7	
2016	345.2	
2017	340.7	
2018	336.1	
2019	331.6	
2020	327.1	

Source: Annual emission allocations, European Commission
http://ec.europa.eu/clima/policies/effort/framework/documentation_en.htm

ESD emissions are calculated by taking total greenhouse gas emissions without LULUCF and NF₃ and deducting the total verified emissions under the EU ETS from stationary installations and domestic aviation.

UK greenhouse gas emissions for 2013 under the Effort Sharing Decision are estimated to be 344.9 MtCO₂e. This is 13.8 MtCO₂e below the annual emission allocations of the declining target for 2013 of 358.7 MtCO₂e.

This should be considered a provisional estimate, as once the UK has reported its emissions under the ESD to the EC they will then undergo a review process, undertaken by the European Environment Agency, and will not be finalised until that review is complete.

Table 5: Progress towards EU Effort Sharing Decision target

UK & Gibraltar, 2013-2020

		MtCO ₂ e
		2013
A	Total greenhouse gas emissions without LULUCF ¹	572.1
B	NF ₃ emissions	0.0
C	Total greenhouse gas emissions without LULUCF and without NF ₃ emissions (A-B)	572.1
D	Total verified EU ETS emissions from UK stationary installations	225.5
E	CO ₂ emissions from civil aviation	1.7
F	Total ESD emissions (C-D-E)	344.9

Source: Table 9a, Final UK greenhouse gas emissions national statistics 1990-2013 Excel data tables

Notes: 1. Total greenhouse gas emissions for the UK and Gibraltar, taken from the UK's 1990-2013 greenhouse gas inventory.

Emissions Trading

The EU ETS operates as a *cap and trade* system, which means that, currently, any installation within the System in the EU is given an allocation of emissions allowances each year. If the installation's actual emissions are above this initial allocation for the year in question, then the installation must either purchase allowances through the System, or bring forward some allowances from the following year's allocation, so as to cover the deficit.

Note that a negative net value indicates that the reported emissions from UK installations in the EU ETS were below the cap, i.e. there was a net selling or withholding of units by UK installations. This means that emissions are either emitted elsewhere or emitted at a later stage, so they may not be used to offset UK emissions. The opposite occurs when reported emissions from EU ETS installations exceed the cap.

Table 6: EU ETS net trading position
UK, 2005-2013

	MtCO ₂ e								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Net purchases/(sales) by UK installations	27.1	33.2	27.5	19.3	(13.5)	(7.6)	(24.9)	(14.5)	43.8
Net purchases/(sales) by UK Government ¹	(1.9)	(1.9)	(1.9)	-	-	-	-	-	-
Net cancelled unallocated allowances/(sales) by UK Government ²	-	-	-	0.9	0.9	0.9	0.9	0.9	-
Net UK domestic aviation emissions against aviation cap	-	-	-	-	-	-	-	-	(0.0)
Net UK purchases/(sales)	25.2	31.3	25.6	20.2	(12.6)	(6.7)	(24.0)	(13.6)	43.8

Source: Table 9, Final UK greenhouse gas emissions national statistics 1990-2013 Excel data tables

Note:

1. At the end of Phase I, the UK Government sold a small number of unallocated allowances from the new entrant reserve on the open market. These have been spread equally over each of the three years in Phase I.
2. At the end of Phase II of the EU ETS, the UK was required to cancel all allowances which have not been either issued or auctioned by that point. As a consequence, allowances totalling 4.5 MtCO₂e were cancelled in 2012. These cancelled allowances have the effect of reducing the overall cap for the whole of Phase II. For presentational purposes, this amount has been distributed evenly over the five years 2008-2012, effectively reducing the cap by 0.9 MtCO₂e each year.
3. Domestic aviation emissions are included for the first time from 2013.

In 2012, aviation was included in the EU ETS for the first time, and aircraft operators were required to report their annual emissions and surrender an equivalent number of allowances for all flights from, to and within the European Economic Area (EEA). However UK carbon budgets only cover domestic aviation (that is, aviation within the UK). Taking into account these changes in EU ETS, from 2013 onwards domestic aviation emissions are included in the traded sector for UK carbon budget reporting purposes.

To do so requires the calculation of a separate notional cap for UK domestic aviation, covering flights within the UK only further details of this cap and its calculation will be presented in the 2013 Annual Statement of Emissions which will be published by 31st March 2015

Future updates to emissions estimates

On Thursday 26th March 2015 DECC will be publishing a breakdown of 2013 UK emissions by end-user sector and fuel type, to supplement the source sector breakdown published on 3rd February 2015.

Also on Thursday 26th March DECC will be publishing provisional estimates of UK greenhouse gas emissions for 2014 as National Statistics. This will coincide with the publication of *Energy Trends*, which will include estimates of 2014 UK energy consumption.

Final estimates for 2014 UK greenhouse gas emissions, including information on progress against emissions reduction targets, will be published in February 2016 as National Statistics.

Further information and feedback

Further information on UK greenhouse gas emissions statistics, including Excel tables with additional data on UK emissions, can be found on the Gov.uk website at:

<https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/uk-greenhouse-gas-emissions>

Notes for Editors

1. A full set of data tables can be accessed via the [UK greenhouse gas emissions pages](#) of the Gov.uk website.
2. Further information about the Kyoto Protocol can be found on the [UNFCCC's website](#).
3. Further details of the European Union Emissions Trading System can be found at the [EU ETS section of the Gov.uk website](#).
4. Under the Climate Change Act, the Annual Statement of Emissions for 2013 must be laid before Parliament and published no later than 31st March 2015. This will give details of the net UK carbon account for 2013, which is used to determine compliance with the targets and budgets under the Act.

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