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UK Greenhouse Gas Emissions Reporting and Accounting for Domestic and International Mitigation Targets

Holly Menten-Weil – September 2014

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Overview

- The UK's emissions reduction targets
- The Climate Change Act
- The UK Greenhouse Gas Inventory

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The UK's emissions reduction targets

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The UK has various emissions reduction targets, under the Kyoto Protocol, the UK Climate Change Act 2008, and EU legislation

- The UK has an annual emissions cap under the EU Effort Sharing Decision (ESD)
  - Annual emissions cap covering the **non-traded sector only.**
  - 16% reduction on 2005 emissions by 2020.

- The UK is a party to the Kyoto Protocol.
  - Target under the 1st commitment period (2008-2012) to reduce emissions by an average **12.5% below 1990 base year levels**
  - UK is in the process of ratifying the 2nd commitment period (2013-2020)

- The UK also has domestic targets under the Climate Change Act 2008
  - Long term legally binding framework to reduce emissions by at least **80% on 1990 levels by 2050**
  - Series of carbon budgets that set legally binding targets for 5 year periods.

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There are lots of differences in the detail of what the different targets cover and how they are accounted for

Geographical Coverage

- Kyoto Protocol includes Crown Dependencies and some Overseas Territories
- Carbon Budgets are UK only
- ESD is UK + Gibraltar

Emissions coverage

•ESD is non-traded emissions only, and also excludes LULUCF.

•For Kyoto Protocol 2nd commitment period, EU will hold traded sector aspect of target and UK target will only be for the non-traded sector.

Accounting

•Kyoto Protocol & carbon budgets set an emissions cap over a period of years, while ESD is an annual cap.

•Kyoto Protocol has different LULUCF accounting rules

•Different rules for use and carryover of emissions credits

•Base years are slightly different

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The Climate Change Act

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The Climate Change Act commits us to 80% emissions cuts by 2050

There are three main pillars to the Act

1. Ambitious GHG reduction targets	2. Binding carbon budgets	3. Clear accountability framework
80% cuts by 2050 (cf 1990)	5-year budgets set three budget periods ahead	Independent CCC established for advice and scrutiny
At least 34% by 2020	Set to deliver cost-effective transition to 2050 goal	HMG required to publish policies and proposals
"appropriate UK contribution to global mitigation effort"	Set 12 years in advance (CB5 to be set in 2016)	

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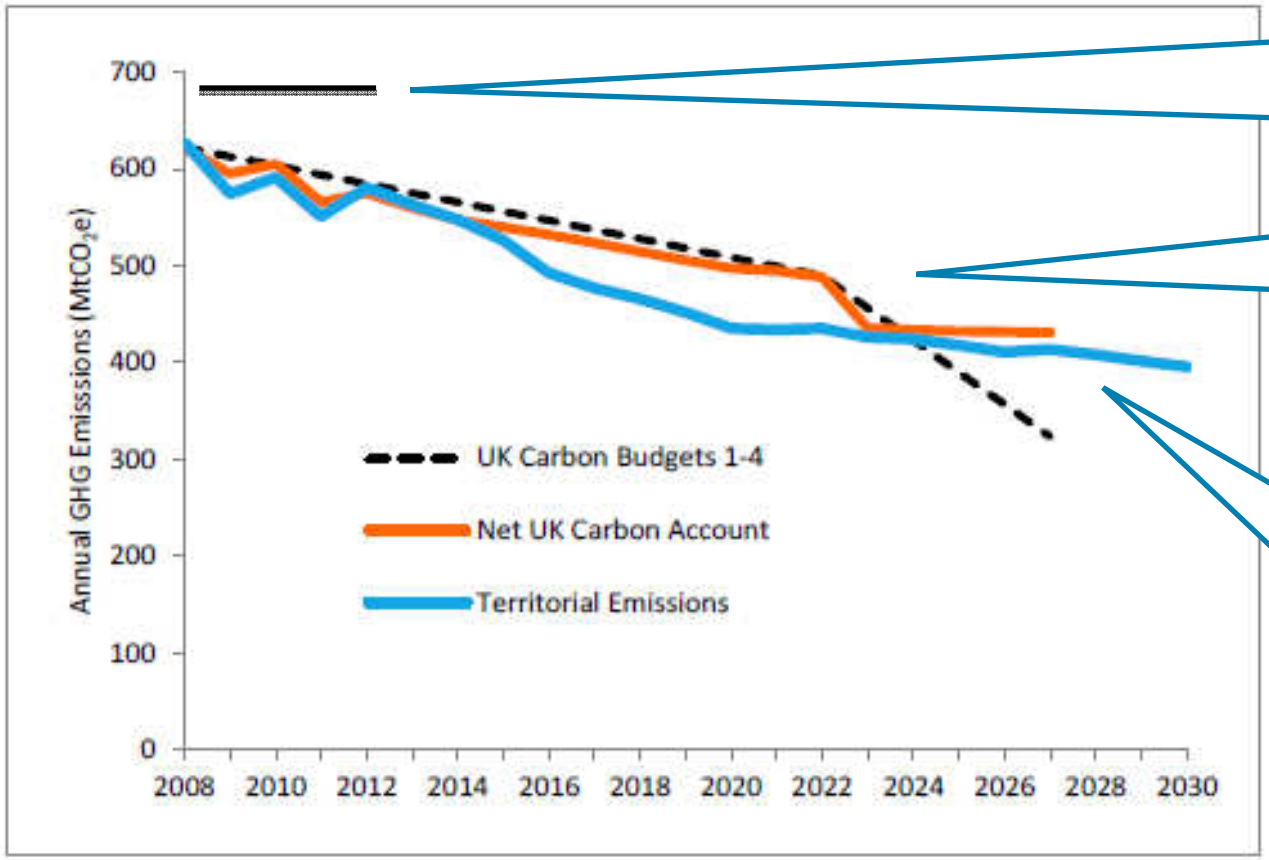
Four carbon budgets have been set so far, going out to 2027. As we get closer to 2050 the rate of required emissions reductions increases

Net UK carbon account and territorial emissions projection: 2008-2030 (MtCO2e)



2008-2012 KP Target. Progress against the KP 1st commitment period won't be finalised until 2015, but on track to over-achieve.

The black dotted line shows the emissions levels required to meet carbon budget targets.

Emissions projections are currently being updated. New projections are due to be published in Sep 2014.

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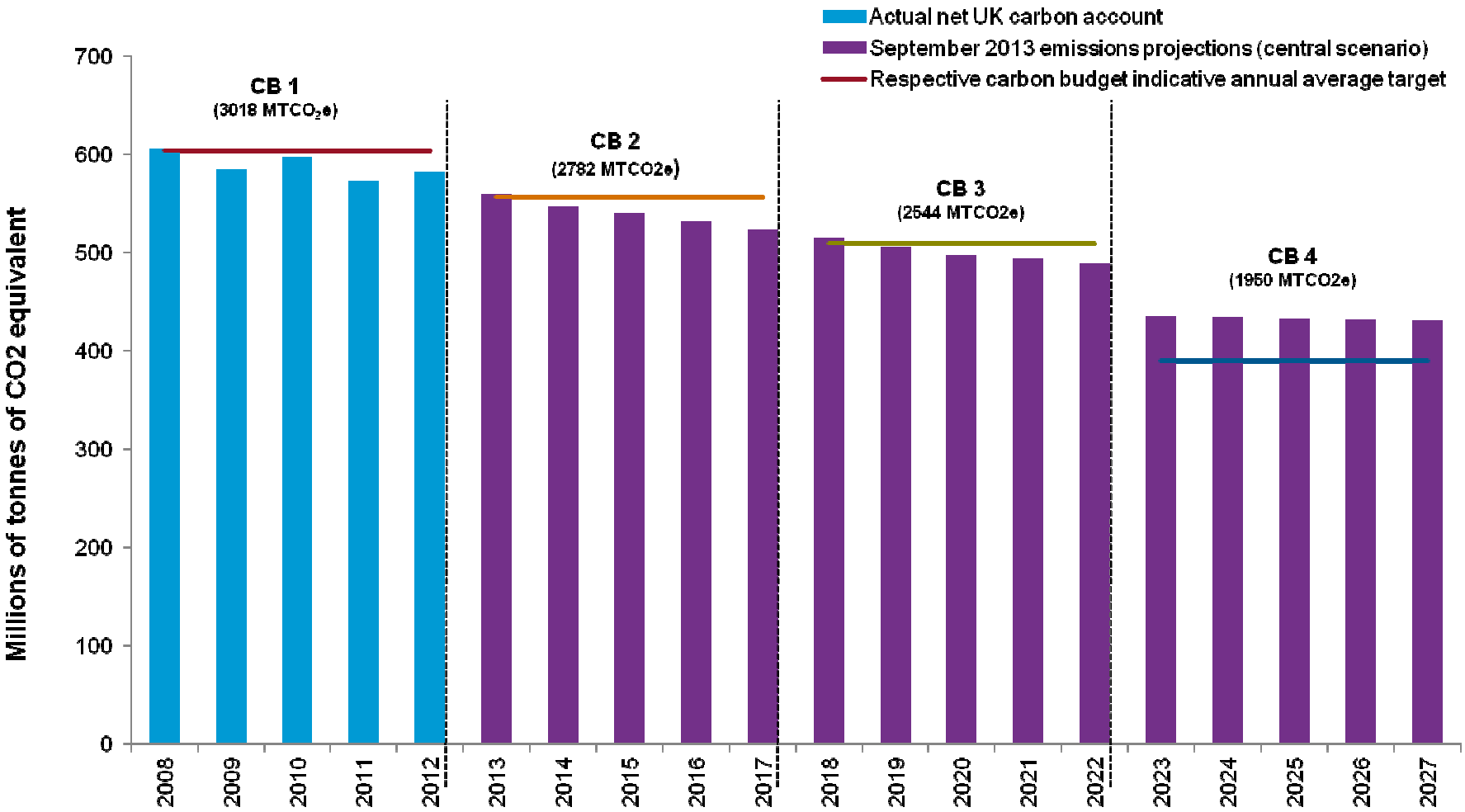
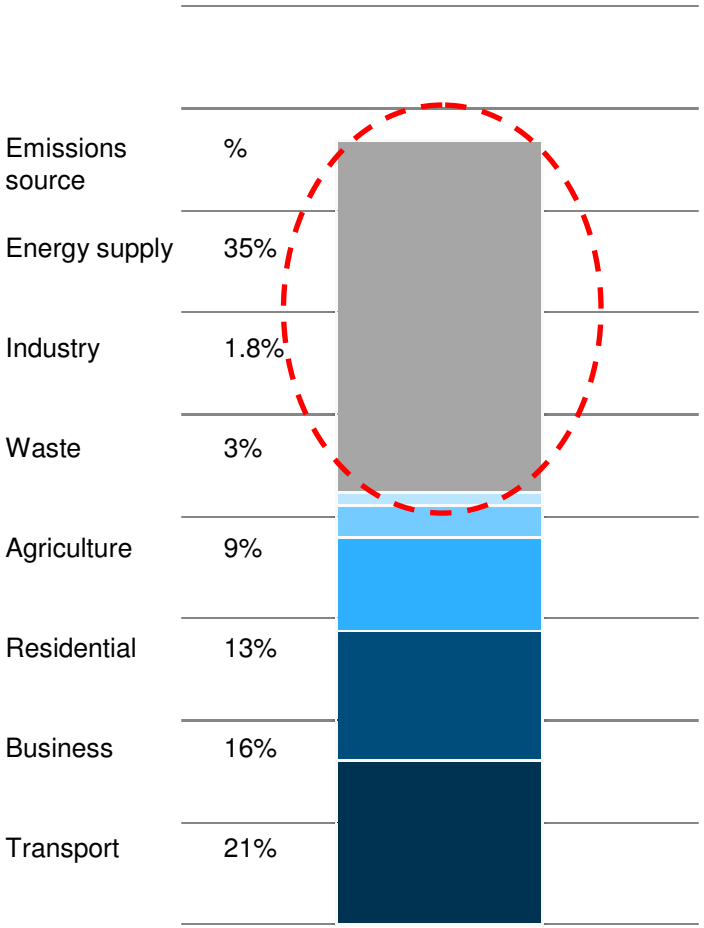
We publish annual emissions projections to chart progress towards carbon budgets



The 80% target and carbon budget caps cover all emissions – including those already capped through the EU ETS



Power Sector and industrial emissions are already capped at EU level through EU ETS

Buildings, agriculture and transport emissions are excluded from the EU ETS

" the Traded Sector "

"the Non-Traded Sector"

Because these emissions are already capped, we assume emissions in these sectors were exactly the same as the UK's share of the EU ETS cap

We measure emissions in these sectors through the UK's Greenhouse Gas inventory

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The UK Greenhouse Gas Inventory

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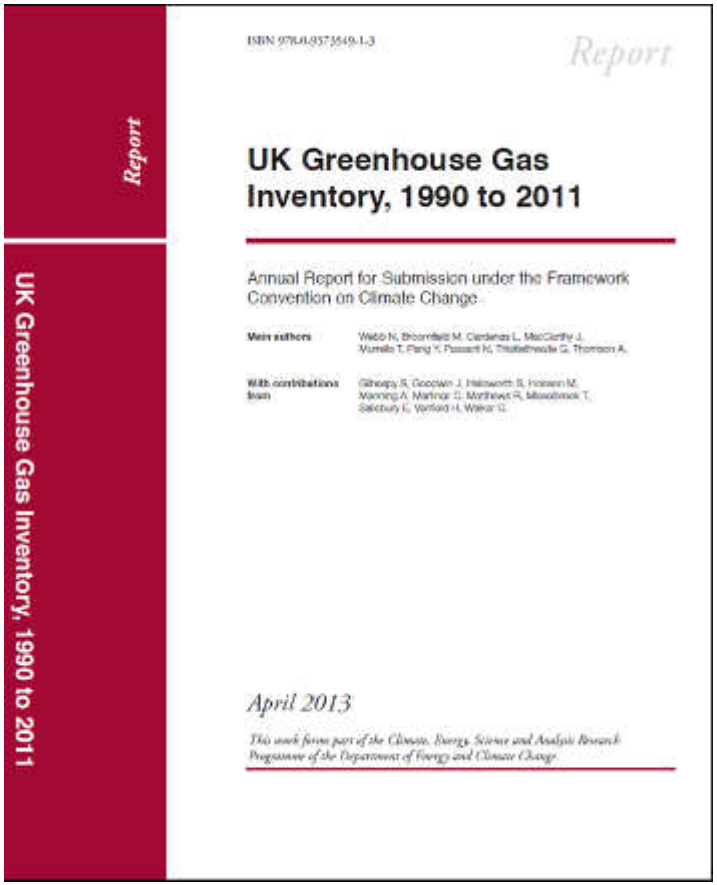
The UK has to report its GHG emissions inventory annually to the UN and the EU

- GHG inventory = consistent time series of emissions from 1990 up to latest inventory year (currently 2012).

- The inventory covers the Kyoto Protocol basket of 6 greenhouse gases:
  - Carbon dioxide (CO_2)
  - Methane (CH_4)
  - Nitrous oxide (N_2O)
  - Hydrofluorocarbons (HFCs)
  - Perfluorocarbons (PFCs)
  - Sulphur Hexafluoride (SF_6)



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We have to comply with international guidelines on how to calculate emissions

Most emissions are calculated as

*emissions = activity data * emissions factor*

Where:

- The **activity data** is a measure of the activity producing the emissions

  (e.g. amount of coal burned, numbers of livestock, distance travelled by vehicles)

- The **emissions factor** is the estimated emissions per unit of activity

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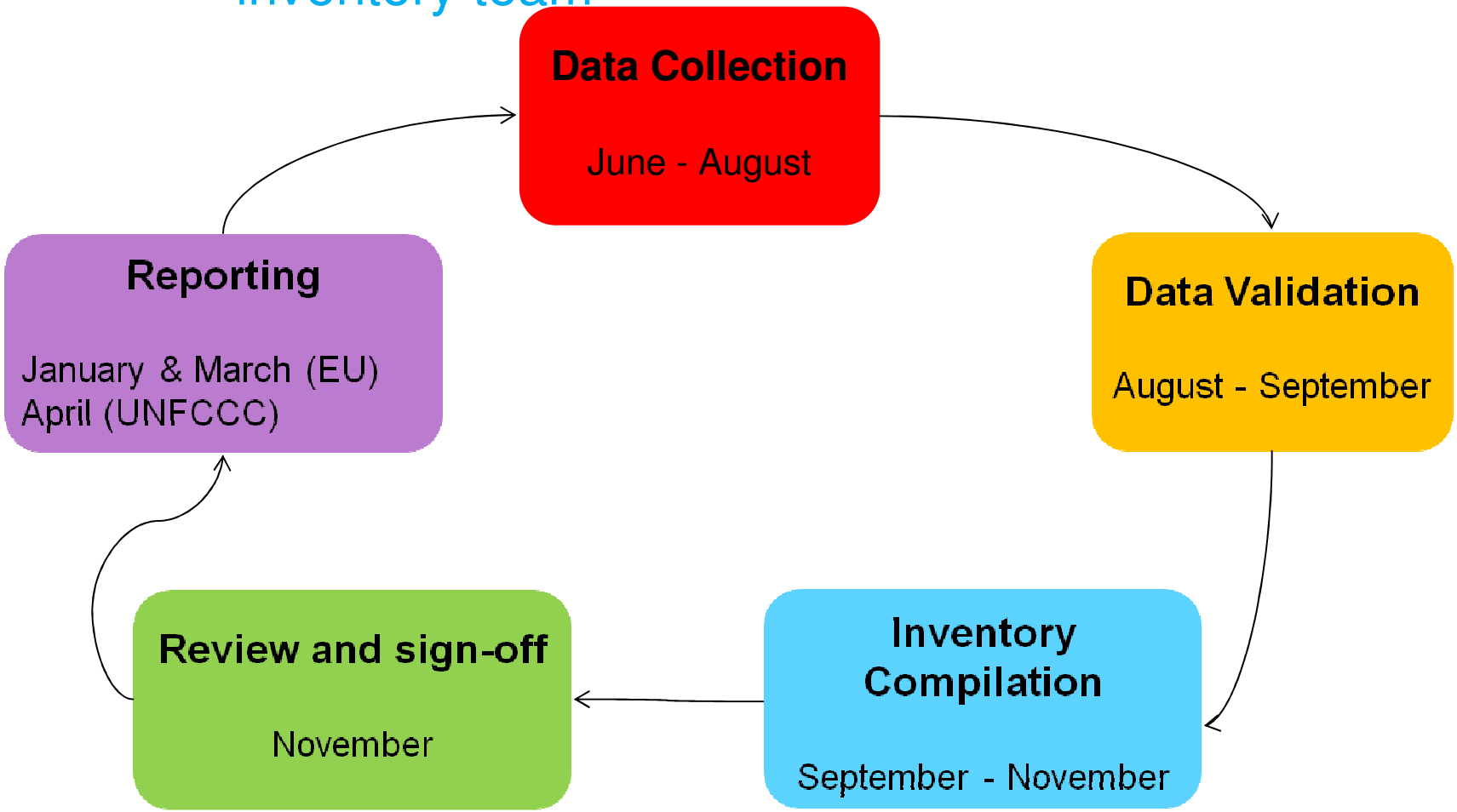
The UK inventory is compiled by a consortium led by Ricardo-AEA, with oversight from the DECC inventory team



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The data used to compile the inventory are collected on an annual basis, from a wide range of sources

Data Supply Agreements

•We have Data Supply Agreements with key data providers that set out what data they will supply to the Inventory Agency, and what the data will be used for

UK GHG Emissions Trading Scheme Regulations provisions

•Issue a notice if information is not provided

•Apply civil penalties for failure to comply

•Use of the provisions in the legislation is last resort!

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Inventory governance is provided by the National Inventory Steering Committee (NISC), who meet twice a year

- NISC members include:
  - Representatives from DECC policy and strategy teams
  - Representatives from other government departments
  - Inventory Agency experts
  - Other subject matter experts

- The NISC meets twice a year:
  - Once to approve the draft inventory
  - Once to advise on the annual inventory improvements programme

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The UK's most recent inventory covers 1990-2012, and was submitted to the UN on 15th April

It takes time to compile the inventory, so there's quite a big time delay in emissions reporting.

Currently:

- The latest UK inventory and final emissions statistics cover the period 1990-2012.
- The latest Devolved Administration and Local Authority emissions estimates are for 2012.
- We have a provisional estimate of 2013 emissions (based on energy statistics), but won't have final figures for 2013 emissions until February 2015.

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Questions?

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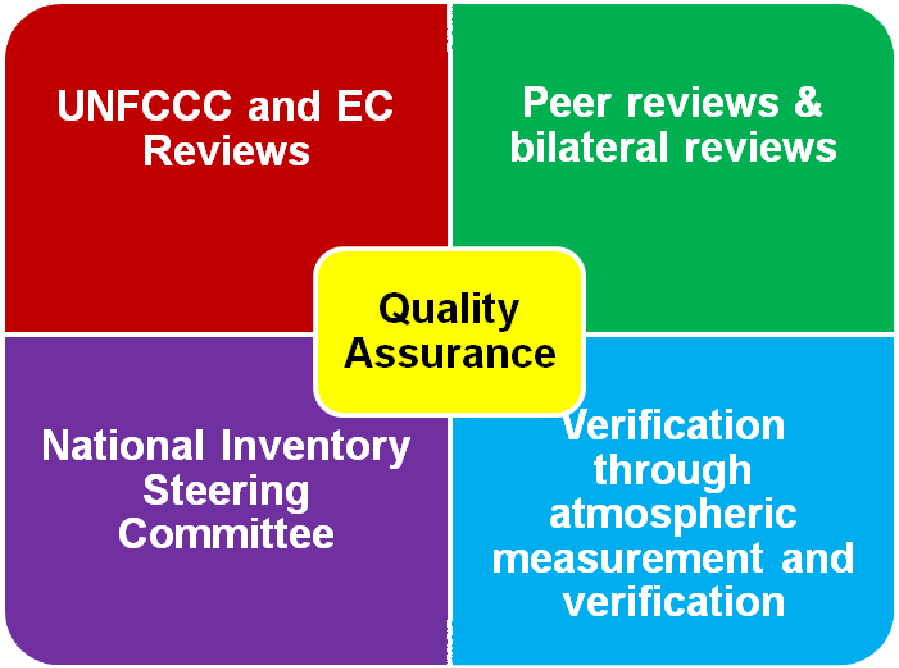
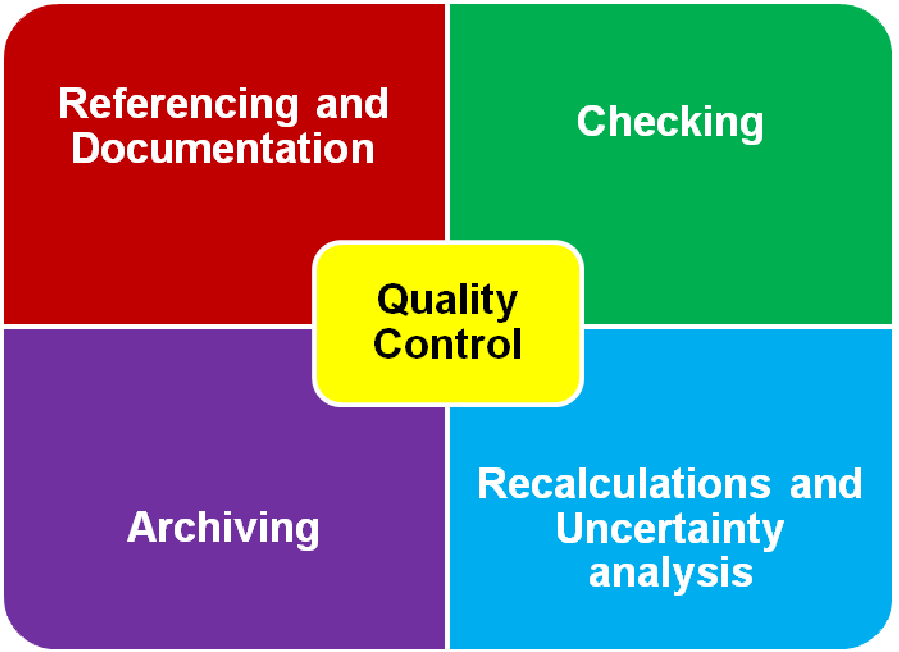
Detailed quality assurance and quality control measures are applied to the inventory





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Our inventory improvement programme develops the inventory to take account of new emissions sources and improve accuracy and robustness

Why do we need to make improvements?

- The UNFCCC encourages the continuous improvement of GHG Inventories
- We also need to be able to adapt to changes to IPCC guidelines, and to the findings of UNFCCC and EU reviews

What sort of improvements?

- **New data sources**, e.g. EU Emission Trading System - high quality site specific data on emissions from power plants
- **Methodological changes**, e.g. to reflect industry changes – an increase in methane capture at coal mines

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How are emissions estimated?

Emission = Activity Data x Emission Factor

•Modelled (e.g. road transport)

•Activity data from Government and Industry sources and surveys (e.g. DUKES, agriculture census, traffic surveys)

IPCC Guidelines

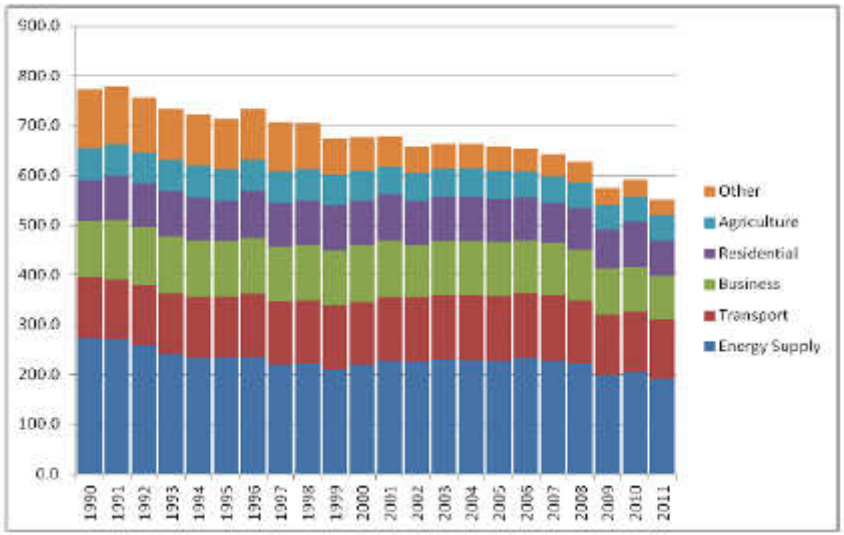
Emissions factors

•Tier 1 = IPCC default

•Tier 2 = country specific

•Tier 3 = site specific

Figure 4: Greenhouse gas emissions by source, 1990-2011 ($MtCO_2e$)



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Emission Factors

Emissions per unit of activity

- used to reflect the carbon content of each fuel used in the UK
- updated regularly as the fuel mix changes
- typically derived from measurements on a number of representative sources and the resulting factor applied to all similar sources in the UK

For some sources, the calculation of emissions is more complicated, and therefore a model is used to estimate emissions, e.g. waste management, transport and F-gases (more on this shortly)