Methane

GHG Inventory summary Factsheet

Territorial coverage: UK including Crown Dependencies and Overseas Territories
Total emissions: Quoted with respect to emissions including net LULUCF
Sector Definition: National Communication

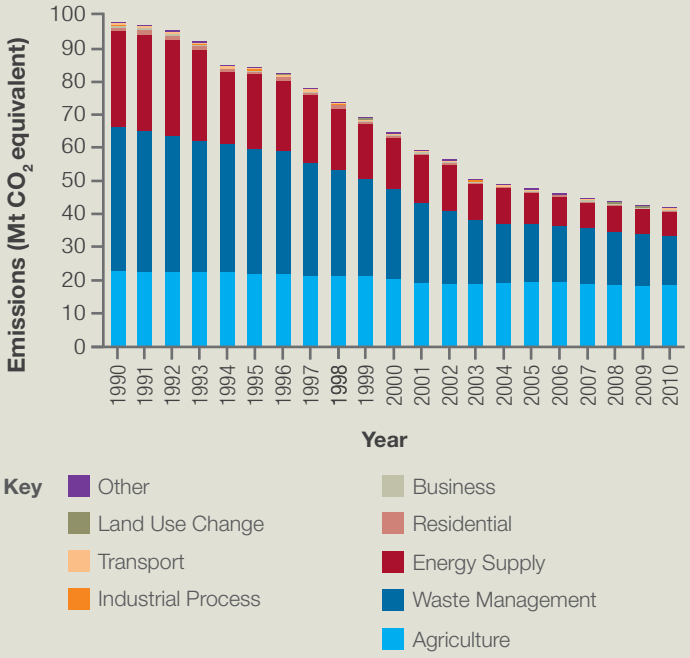
GHG summary - historic emissions

- Methane emissions have decreased by 57.6% from 1990 to 2010 and are currently 41.4 $MtCO_2e$ (7.0% of UK total GHGs).
- The main sources of methane emissions are landfilled waste (35.6% in 2010), agriculture (43.6% in 2010) and fugitive emissions (16.9% in 2010).
- landfilled waste methane emissions reduced by 65.8% over the period and contributed to over half (50.5%) of the total methane reduction.
- Fugitive methane emissions from fuels decreased by 75.6%, which equated to 38.4% of the total reduction of methane emissions over the period.
- Agricultural methane emissions from enteric fermentation and manure management reduced by 17.7% and 25.3%, respectively, and combined are responsible for only 7.5% of the reduction of total methane emissions since 1990.

Sources of emissions and data sets

- The main sources of methane emissions are waste management (mostly landfill), agriculture and fugitive emissions from fuels (within the Energy Supply sector).
- Key data for waste management includes the Environment Agency's Pollution Inventory, Expenditure and Food Survey (Defra), UK population statistics (Office National Statistics), water company returns to Ofwat, and data supplied directly by the water companies. Waste arisings data are taken from the WasteDataFlow.
- For agriculture, the main dataset used in estimation is the June Survey of Agriculture and Horticulture, published by Defra.
- Key data for fugitive emissions from fuels are from the Coal Authority, Oil and Gas UK, gas network operators and the Environmental Emissions Monitoring System (EEMS).

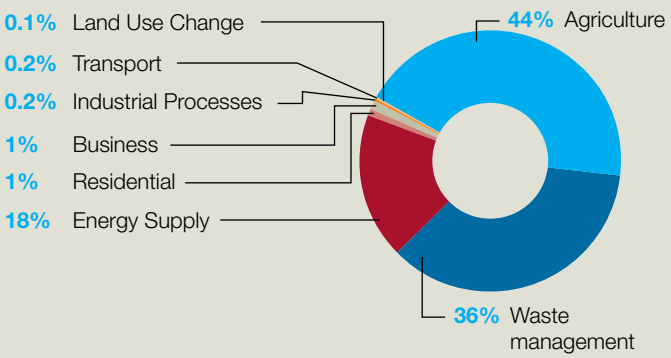
UK Methane emissions by source (1990 - 2010)



Source: UK GHG Inventory (UNFCCC coverage) (AEA, 2012)

Note: Categories used as based on source emissions not end-user.

Total Emissions by Sector (2010)



Methodology

- Emissions from landfill are modelled, based on the amount and type of waste sent to landfill, the characteristics of the waste, and information about landfill management (e.g. the amount of gas captured and used). The model is called "MELMod". Emissions from waste water treatment are based on the June returns to Ofwat, combined with emissions data supplied directly by certain water companies, and scaled up to represent total UK emissions.
- Methane emissions from enteric fermentation and manure management are estimated by combining livestock numbers with livestock specific emission factors. The emission factors used are a mixture of IPCC global average values and UK specific from research.
- Emissions from operating coal mines are estimated by combining coal production data with an emission factor. Emissions from closed coal mines are modelled, based on estimates of the methane reserves, information about flooding and mine closure dates.
- Emissions from offshore oil and gas production are estimated by the offshore operators themselves, and reported by Oil and Gas UK via the EEMS reporting mechanism.
- Total natural gas leakage from gas distribution is modelled by the network operators and combined with the methane content of gas to produce estimated methane emissions from this source.

Uncertainties

- The GHG Inventory quantifies uncertainties on emission factors and activity data, which in turn allow for the production of uncertainty estimates on the: emissions; overall uncertainty by gas; and indicative-only estimates of sector level uncertainties.
- Uncertainty in UK methane emissions in 2010 is 20%.
- The central estimate of total CH_4 emissions in 2010 was estimated as 41.5 $MtCO_2e$ with Monte Carlo uncertainty analysis suggested that 95% of the values were between 35.5-49.0 $MtCO_2e$
- Uncertainty in the trend: 95% probability that methane emissions in 2010 were between 45% and 67% below the level in 1990.

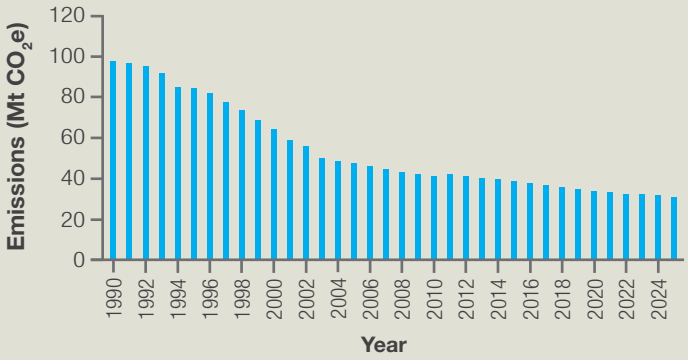
Improvements

- Model input data for the landfill model was updated for the 2011 inventory. This was done as part of a research project commissioned by Defra. A peer review on the revised model has since resulted in the revision of some values assigned to DDOC in the model.
- A programme of agricultural research projects is ongoing, which includes research into the availability of more detailed emission factors and activity data from across the UK.
- DECC commissioned a study in 2011 to update emissions from closed coal mines. The revised emissions from this source were included in the 2012 inventory submission.

Projections

- Projected emissions of methane are expected to decrease by 24% from 2010 levels by 2025.
- Emissions continue to be dominated by landfilled waste, agriculture and fugitive emissions.
- The overall decrease in methane emissions between 1990 and 2025 is estimated to be 68%.
- The projections presented here exclude the impact of emissions trading.
- The projections are taken from Updated Energy and Emissions Projections: October 2011 (DECC); historic data taken from the 2012 inventory.

Historic and Projected Emissions of Methane



Source: Updated Energy and Emissions Projections: October 2011 (DECC).

Links

- NAEI website: http://naei.defra.gov.uk/
- DECC GHG statistics: http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/gg_emissions/gg_emissions.aspx
- DECC projections: http://www.decc.gov.uk/en/content/cms/about/ec_social_res/analytic_projs/en_emis_projs/en_emis_projs.aspx