

Energy Supply

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

Sector summary – historic emissions

- Energy supply is the biggest single contributor to the UK's CO₂ emissions.
- Overall contribution of energy supply sector to UK GHG emissions in 2010 was 35%.
- Emissions have decreased by 25% since 1990, due to fuel switching to less carbon-intensive energy sources and reduced energy intensity of the economy.
- CO₂ is the dominant GHG emitted by the energy supply sector.
- Emissions from power stations dominate the energy supply sector emissions in the UK.

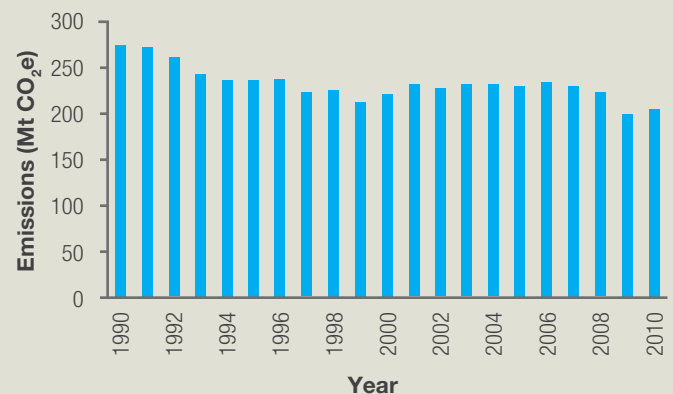
Sources of emissions and data sets

- Power generation is the largest source in this sector.
- Other significant sources include refineries, emissions from offshore oil and gas production and coal mines.
- Key data sources include DECC's Digest of UK Energy Statistics (DUKES), offshore oil and gas industry data provided by Oil and Gas UK, the Environment Agency's Pollution Inventory, EU-Emissions Trading System (EU-ETS) data and information provided by the British Geological Survey and the Iron & Steel Statistics Bureau.

Methodology

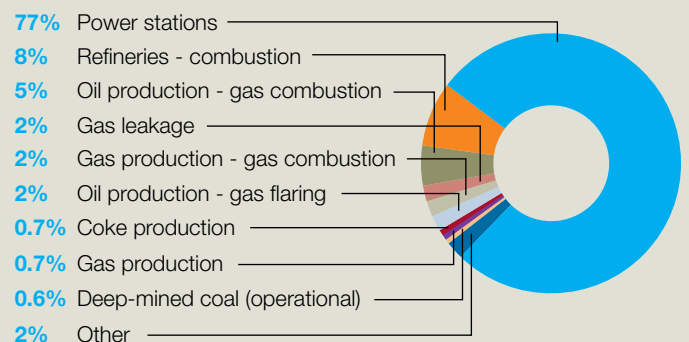
- Emissions associated with fuel combustion are estimated by using fuel consumption data and appropriate emission factors.
- General fuel consumption data are taken from DUKES.
- Emission factors are taken from a variety of sources including the EU-ETS, data provided by industry groups and literature based sources.
- For some sectors, site specific data are available from the EU-ETS and the Pollution Inventory.

Energy Supply Emissions 1990-2010



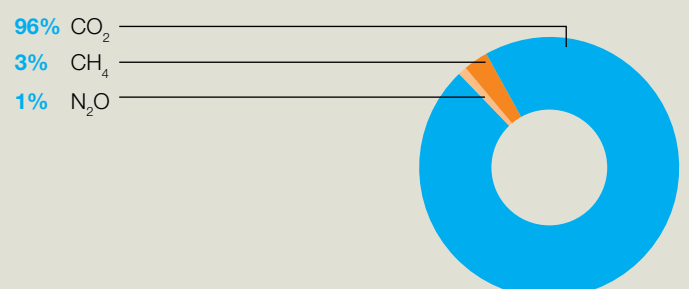
Source: UK GHG Inventory (UNFCCC coverage) (AEA, 2012)

Energy Supply Emissions by Source (2010)



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

Energy Supply Emissions by Gas (2010)



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

- Fugitive CH₄ emissions occur from coal mining activities. Emission estimates for open mines are based on data from UK Coal and estimates for closed coal mines are based on researched commissioned by DECC and Defra.
- Emissions from the offshore oil and gas sector are based on data provided by the trade organisation Oil and Gas UK, through their annual emissions reporting mechanism to DECC called the Environmental Emissions Monitoring System (EEMS).

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.
- The energy supply sector is dominated by emissions from combustion in power stations and refineries. Since the carbon content of the fuels and the fuel consumption is well known, the CO₂ emissions from this source are relatively certain, whereas the emissions of N₂O and CH₄ are more uncertain due to the number of factors that affect emissions of these gases.
- Fugitive emissions from fuels can arise from a large number of small release points, and are typically difficult to control and measure. They are therefore more uncertain than emissions from fuel combustion.

Projections

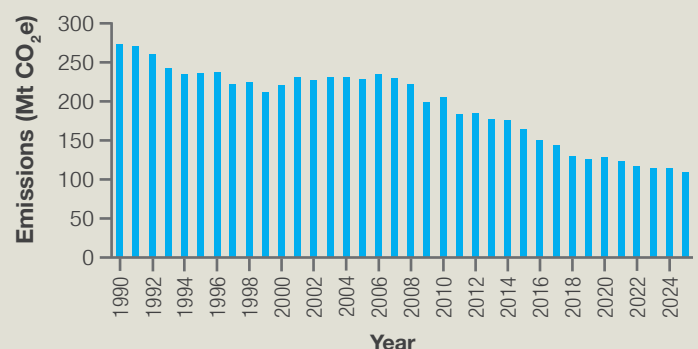
- The overall decrease in emissions from the energy supply sector between 2010 and 2025 is estimated to be 47%, excluding the impact of emissions trading.
- Projected emissions from energy supply are expected to decrease, due to a change in the fuel mix for power generation and reduced emissions from offshore oil and gas.
- The projections are taken from DECC's Updated Energy and Emissions Projections: October 2011 although historic emissions presented here are taken from the 2012 inventory.

- The overall uncertainty for this sector is estimated to be +/-2% in 2010, as a 95% confidence interval.

Improvements

- The emissions estimates for closed coal mines have been reviewed and updated, to take account of up to date data for recent mine closures, and utilisation of the methane released.
- Analysis of data available from operator returns under the EU-ETS has led to improvements in activity data and emission factors for certain fuels and sources within this sector.

Historic and Projected Emissions from Energy Supply



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

Links

- UK GHG Inventory: <http://ghgi.decc.gov.uk/>
- UK GHG National Statistics: <http://www.statistics.gov.uk/hub/agriculture-environment/environment/climate-change/index.html>
- UK Updated Energy Projections: http://www.decc.gov.uk/en/content/cms/about/ec_social_res/analytic_projs/en_emis_projs/en_emis_projs.aspx
- Digest of UK Energy Statistics: <http://www.decc.gov.uk/en/content/cms/statistics/publications/dukes/dukes.aspx>