

# Transport

## 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

- Overall contribution of the transport sector to UK GHG emissions in 2010 was 21%.
- Emissions from the transport sector have increased 0.5% since 1990.
- Road transport emissions have increased by 2% since 1990 reflecting the increase in vehicles on the road and total vehicle km travelled, although a decrease in vehicle km has been observed since 2007.
- The increase in road transport emissions is less than it could otherwise have been due to improving fuel efficiency. Vehicle km travelled over the same period has increased by 22%.

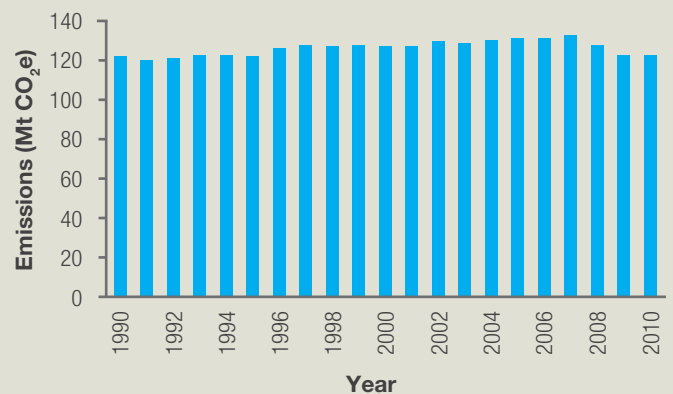
### Sources of emissions and data sets

- Emissions of GHGs from this sector predominately occur from road transport.
- CO<sub>2</sub> is the dominant GHG emitted by the transport sector making up 99% of transport emissions.
- Other sources include aircraft support vehicles and stationary combustion from railways.
- Key data sources include DECC's Digest of UK Energy Statistics (DUKES), UK Department for Transport publication Transport Statistics Great Britain, information from the Association of Train Operating Companies (ATOC), fuel consumption data from the Ministry of Defence and Civil Aviation Authority aircraft movement data.

### Methodology

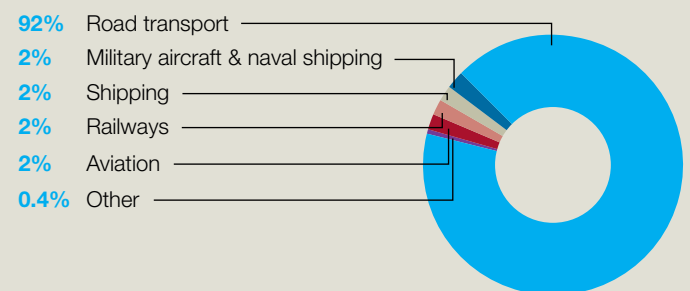
- **Aviation:** Emission estimates are based on the number of aircraft movements broken down by aircraft type at each UK airport. This complies with the highest and most detailed Tier (IPCC Tier 3) at which emissions can be estimated.
- **Railways:** Both mobile and stationary emissions are reported. Stationary emission sources are based on fuel consumption data from DUKES. Emissions from railways are calculated by multiplying emission factors by either fuel consumption or train kilometres.

### Transport Emissions 1990-2010



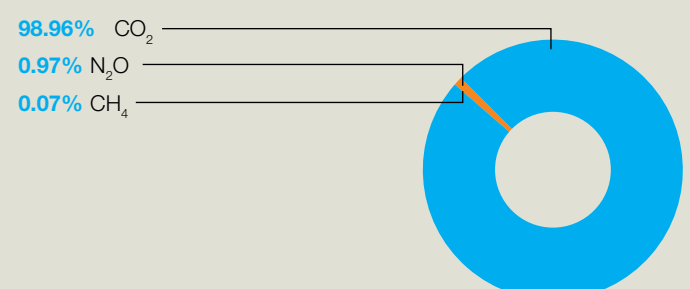
Source: UK GHG Inventory (UNFCCC coverage) (AEA, 2012)

### Transport Emissions by Source (2010)



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

### Transport Emissions by Gas (2010)



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

- **Road Transport:** Emissions are calculated either from a combination of total fuel consumption data and fuel properties or from a combination of drive related emission factors and road traffic data. This complies with IPCC Tier 3 specification.
- **Road Transport:** CO<sub>2</sub> is calculated using fuel consumed and the carbon content of the fuel.
- **Road Transport:** CH<sub>4</sub> and N<sub>2</sub>O are more complex to calculate since there is not a direct link between the fuel consumed and the emissions. Emissions are dependent on a number of factors including vehicle type, age, fuel type, speed and distance travelled.
- **Coastal shipping:** A bottom-up method is used based on detailed shipping movement data for different vessel types, fuels and journeys has been used to estimate domestic (coastal) shipping emissions.
- **Inland waterways:** Emissions from inland waterways are also included in domestic shipping. These are estimated using population, engine size and hours of use of different types of craft, combined with emissions factors from the EMEP/EEA Guidebook.
- **International Marine:** The estimate for international marine emissions is derived by the difference between total fuel consumption statistics from DUKES for marine fuels and fuel consumption by domestic shipping. This is reported as a memo item.
- **Military aircraft and naval shipping:** Data from the Ministry of Defence is used to calculate emissions from naval shipping. Fuel consumption data provided by the Ministry of Defence is used in conjunction with default emission factors

## 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 uncertainty associated with the emission factors for CO<sub>2</sub> is low, since the carbon content of the fuels used is well known. For non-CO<sub>2</sub> gases, the emission factors are dependent on a range of contributing factors, including engine size, vehicle age, speed and whether or not the vehicle has a 3-way catalyst. Therefore the uncertainty on the emission factors is high, although the contribution to total emissions is much lower.
- The uncertainty associated with total fuel use in the UK is relatively low; however the sectoral split is more uncertain.
- The overall uncertainty for the transport sector is estimated to be +/-3% as a 95% confidence interval in 2010.

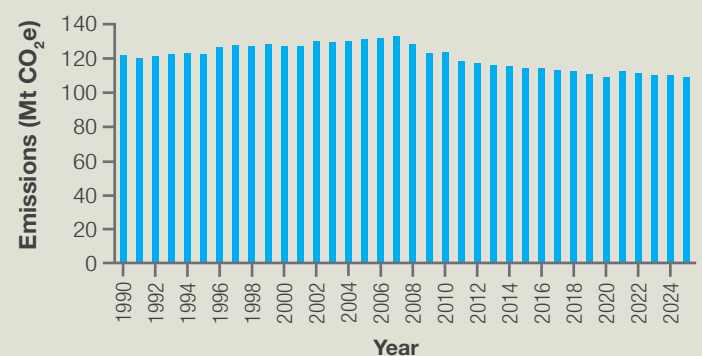
## Improvements

- Some petrol and diesel use has been reallocated from road transport to off-road machinery following a review of gas oil and diesel consumption across different sectors.
- Emissions estimates from inland waterways have been included in the inventory for the first time. Fuel for this sector has been reallocated from international shipping.
- Road transport improvements have included a new approach to allocate fuel consumption among vehicle types. This incorporates Automatic Number Plate Recognition data and regional licensing data to define the fuel and age mix of vehicles on different types of roads.

## Projections

- The dominant gas in transport projections is CO<sub>2</sub> and the dominant source is road transport.
- Emissions from transport are projected to decrease by 12% from 2010 to 2025, mostly driven by decreasing emissions from road transport.
- Projected emissions from aviation are expected to increase.
- The projections presented here exclude the impact of emissions trading.
- The projections are taken from DECC's Updated Energy and Emissions Projections: October 2011 although historic emissions presented here are from the 2012 inventory.

## Historic and Projected Emissions from Transport



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](http://www.decc.gov.uk/en/content/cms/about/ec_social_res/analytic_projs/en_emis_projs/en_emis_projs.aspx)
- Department for Transport: <http://www.dft.gov.uk/>
- UK Civil Aviation Authority: <http://www.caa.co.uk/>