

Carbon emissions

A practical guide for
fleet operators and drivers



Photography by Bob McCaffrey on Flickr



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Road haulage carbon emissions

With the Government highly-focused on reducing the UK's carbon emission figures, the road haulage industry is coming under more scrutiny than ever.

The legally-binding EU Climate Change and Energy Package states that the UK's total emissions must fall by 20 per cent on 1990 levels by 2020, with additional targets to cut transport emissions by as much as 6 per cent.

For hauliers this presents a double opportunity: firstly, reducing the fuel consumption of fleet vehicles allows hauliers to develop sound environmental practices while helping the UK achieve its environmental goals.

Secondly, it allows hauliers to reduce their cost outgoings through higher efficiency and reduced fuel consumption.

By marketing yourself as a fuel-conscious and environmental organisation, you can also improve your reputation, leading to longer-term profitability.

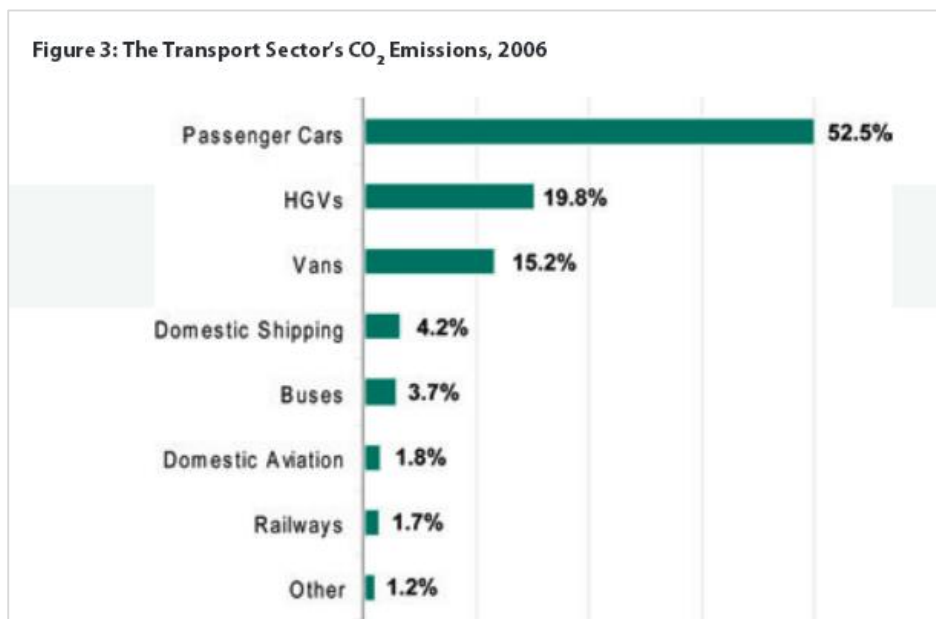
This guide gives you an overview of some key policies which can help you to reduce your fuel consumption, costs and associated carbon emissions.

Transport and CO₂

Climate change is related to levels of greenhouse gases in the atmosphere. A large source of these gases is from the combustion of fossil fuels, such as petrol and diesel, releasing greenhouse gases including carbon dioxide, CO₂, into the atmosphere.

The road transport industry plays a part in this process, contributing around 20 per cent of the UK's total carbon emissions a year, with only the energy industry having a larger impact, at around 39 per cent.

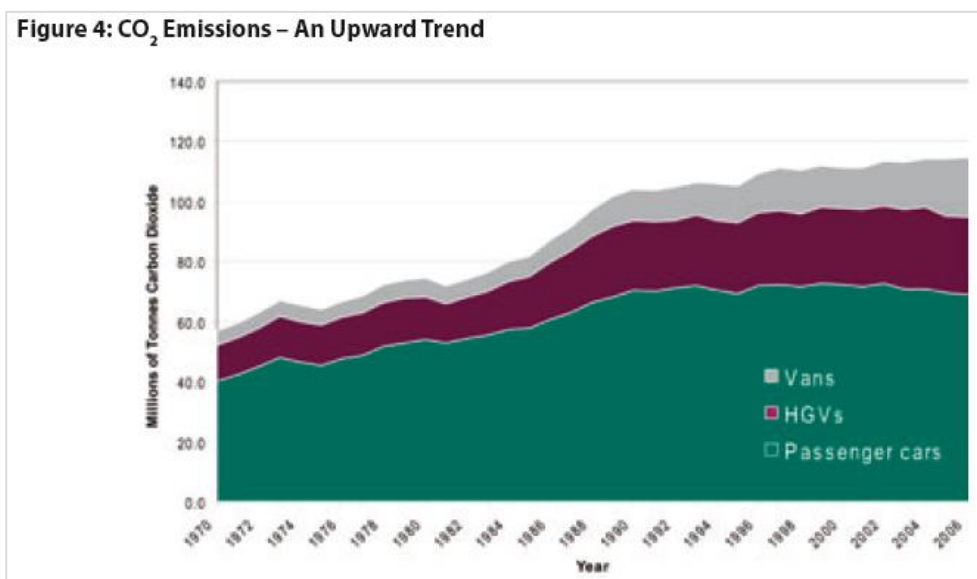
Road haulage is a significant consumer of fossil fuels and associated carbon emissions - HGV vehicles account for almost 20 per cent of total emissions, as outlined below:



Source: freightbestpractice.org.uk

Road haulage and CO₂

Freight Best Practice's research shows that that the total emissions from the road haulage industry are generally on an upward trend, representing around 4-5 per cent of the UK's total carbon emissions. However, this growth is beginning to level out, as shown below:



Source: freightbestpractice.org.uk

Average carbon emissions within the haulage industry are falling - in the thirty-year period from 1977-2007, the carbon emissions associated with a 200-mile journey fell by 21 per cent; NO_x emissions are also down 87 per cent, while journey times have fallen by around a third (Source: Daf Trucks).

Due to their size, HGVs often receive criticism regarding their CO₂ emissions; however, rapid development in engine technology and fuel management is having a largely positive effect.

Why monitor CO₂?

There are many reasons for monitoring your CO₂ output in the long and short term, with the majority focused on environmental considerations, cost and organisational reputation:

- ✓ **Ability to manage fuel consumption**
more effectively, leading to cost savings and long term competitiveness
- ✓ **Assess your environmental impact**
allowing you to develop a coherent environmental policy
- ✓ **Planning and budgeting**
reduces the risks associated with changes in fuel prices, making forecasting easier
- ✓ **Improve operating efficiencies**
identify and improve poorly performing areas of your business
- ✓ **Develop environmental accreditation**
Carbon Trust Standard - track your carbon footprint and improve company image and reputation
- ✓ **Easier to source new business**
easier to gain government grants and form links with the local community

Driver behaviour

Safe and Fuel Efficient Driving practices (SAFED) reduce CO2 emissions and save your business money. These include:

✓ **Clutch control**

avoiding double-declutching on synchromesh gearboxes, which increases clutch wear and wastes fuel

✓ **Braking**

smooth and progressive braking will save fuel and reduce stress on the driver, vehicle and load

✓ **Cruise control**

cruise control will allow the vehicle's control system to deliver the appropriate amount of fuel, requiring fewer gear changes, improving efficiency

✓ **Exhaust brake**

using the exhaust brake will create smoother reductions in speed, increasing the longevity of brake linings, while saving fuel

✓ **Awareness**

driving awareness and forward planning means you can save fuel from unnecessary gear changes

✓ **Gear selection**

keep the engine speed within the green band, using the highest gear and lowest revs possible; this saves fuel

✓ **Momentum**

by taking your foot off the accelerator and using the speed gathered on hills and slopes, you can reduce fuel consumption

✓ **Filling up**

avoid filling the tank to the brim, as when fuel heats up it will expand and escape via the breather vent

✓ **Speeding**

speeding is illegal but also reduces fuel economy - don't do it

✓ **Tyres**

ensure that tyres are correctly inflated, reducing resistance with the road, this can increase fuel efficiency by 20 per cent

✓ **Weather**

poor weather conditions reduces fuel efficiency, so drivers should adjust their driving to compensate for this

Vehicle technology

Upgrading your fleet regularly will ensure that you have the latest fuel efficient technology.

New vehicle technology is being developed all the time; your vehicle's MPG ratings will vary significantly depending on the engine, transmission and components used.

Exhaust pollution has reduced 18-fold over the last fifteen years as a result of improved tailpipe technology, together with cleaner fuels. You can maximise MPG ratings through the following:

✓ **Low rolling resistant tyres**

provides lower energy requirements to rotate wheels (average 5 per cent reduction in CO2 emissions)

✓ **Automated manual transmissions**

allows a computer to perform clutch operation (up to 7-10 per cent reduction in CO2 emissions)

✓ **Aerodynamics**

correctly fitted air deflectors, reducing the height of the load, reducing drag (average 10 per cent reduction in fuel consumption)

✓ **Alternative fuels**

use of non-fossil fuel technology (biofuels, solar power, electric power)

✓ **Electric bodies**

e.g. electrification of refrigeration and refuse bodies (leading to 10-20 per cent reduction in CO2 emissions per year)

✓ **Alternative powertrains – new vehicle technology:**

- Hybrids (fuel consumption reduction is up to 30 per cent)
- Fully electric vehicles – available for vehicles up to 12 tonnes (100 per cent tailpipe CO2 reduction)
- Fuel cell auxiliary power units (significant CO2 savings)

You can ensure that your vehicles produce the lowest emissions possible by regularly updating your fleets.

Influence of vehicle specification on fuel efficiency

Matching your vehicles' specification to the job it will be performing will reduce fuel consumption

The emissions created by an HGV will depend on how the vehicle is administered for operational use. Research by Daf Trucks shows that vehicle specification has the following implications for costs and carbon emissions:

Specification	Influence on MPG
Engine power	1 – 3%
Gearbox/axle ratio	2 – 3%
Tractor/trailer gap	2 – 4%
Correct aerodynamic kits	5 – 10%

Maintenance	Influence on MPG
Running in	2 – 5%
Tachograph calibration	3 – 5%
Brake adjustment	Up to 5%
Axle alignment	5 – 10%

Source: [Road Haulage Association/Daf Trucks](#)

Consult your manufacturer and handbook, ensuring that each feature is configured to ensure minimum maximum fuel efficiency.

Fuel management

Ensure that you know exactly what is happening to the fuel you are paying for.

Fuel management systems can take many forms including fuel cards, electronic keys, PIN numbers and fingerprint identification; all capable of capturing fuel use and distance travelled by specified drivers, allowing:

- ✓ **KPI setting**
accurate performance management tool
- ✓ **Identify impacts of driver training**
for reporting and analysis
- ✓ **Reduce manual data input**
saving administration costs
- ✓ **Cost savings**
around £2,000 per vehicle
- ✓ **Facilities benchmarking**
compare activities across departments

For larger firms this will allow you to compare the performance of different depots, vehicles and drivers.

Routing and scheduling

Effective route planning will minimise mileage and fuel consumption

By working with your customers you can identify optimal route plans to minimise fuel costs, including the following:

- ✓ **Maximisation of vehicle capacity**
reduced vehicle numbers and a streamlined fleet
- ✓ **Night running**
lower traffic and lower fuel requirements
- ✓ **Missed delivery strategy**
improving waiting times and job completion
- ✓ **Use of telematics technology**
vehicle tracking and route planning; reducing journey times and fuel requirements
- ✓ **Mobile communications**
driver information, hazard/traffic avoidance
- ✓ **Satnav**
multi-drop operations, reducing time to location, avoiding congestion and hazards
- ✓ **Increased load consolidation**
ensuring load allocation is optimised
- ✓ **Back loading**
freight exchange services will reduce empty-running

By integrating technology across your organisation, you can ensure that efficiency is maximised at all times. For more information please refer to [Freight Best Practices Information Technology for Efficient Road Freight Operations guide](#)



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Thank you for reading

Carbon Emissions – A Practical Guide for Fleet Operators and Drivers was written by Richard Newbold, Managing Partner of returnloads.net, the UK's leading road haulage marketplace. You can follow Richard on [Google+](#).