RHA

Carbon footprint explained

How owners, managers and drivers can reduce CO_2 emissions and save money

www.rha.uk.net

Carbon footprint explained

Efficiency and the Environment are the two most pressing issues to challenge the road haulage industry in many decades. The industry is under scrutiny as all things green start to impact the day-to-day running of transport operations.

Phrases such as 'carbon footprint' and 'sustainable transport' are coming into common useage as both government and haulage customers seek to review and measure the day-to-day performance of truck operators as part of the green agenda.

Pressure remains on directors, managers and drivers to look afresh at how they undertake their roles. Ironically, the industry as a whole has an excellent story to tell. Road haulage has a core culture of safe, fuel-efficient driving which is helping to limit CO_2 emissions and keep down costs to British businesses and consumers; but we can do better still, within the constraints of vehicle design, regulation and road congestion.

We are aware there is an extremely large amount of literature available in the marketplace to assist hauliers to meet the challenge of minimising their carbon footprint.

This publication distills the key ideas and procedures that can help professional transport operators do even better in terms of CO_2 emissions and costs; it aims to concentrate minds and to prompt action.

But, just as green pressure can be seen as oppressive, so it can also properly be seen as an opportunity to be seized: in demonstrating your good practice in terms of the green agenda, you can boost your company's reputation. Our underlying approach can be summed up in a simple saying which has always been true but seems especially relevant in today's climate: **Green haulage is efficient haulage**. That is a message which is good for society, good for hauliers and good for their customers.

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Reducing the carbon footprint of your transport operation

Companies and individuals are under increasing social, commercial and legislative pressure to recognise the impact that pollution continues to play in the world we all live in. It is no longer 'someone else's problem'... we all need to act now for the future. In road haulage and related services, we increasingly have to be both taking action and being seen to be taking action.

Trucks are often cast as the villains of the piece, despite fantastic advances in engine and vehicle design that have reduced CO_2 emissions over the past 30 years. Additionally, goods vehicles have decreased in number, increased productivity levels and become quieter, far more efficient users of fuel (Fig.1).

Calculating the carbon footprint of your vehicle

Carbon Calculator

One litre of diesel burns completely to produce 2.63kg of carbon dioxide.Using the simple calculations below how much does your vehicle contribute to greenhouse gases over an operational year?

- **www.carboncalculator.co.uk/calculator.php**
  This site will calculate the impact you create day-to day.
- Freight Best Practice – fleet performance management tool incorporating CO_2 calculator.
  www.freightbestpractice.org.uk
- Carbon Trust
  www.carbontrust.co.uk/
- National Energy Foundation
  www.nef.org.uk/

Fig. 1 Reductions in CO_2 emissions from trucks

A 200-mile journey in 2007 compared with 1977

	Truck GCW (tonnes)	Diesel consumption (litres)	CO_2 emissions (kg)	CO_2 per tonne of payload	Particulate emissions (grammes)	NO_x emissions (kg)	Journey time
1977	32	130	342	16.7	380	10.6	6hrs 10min
2007	44	103	271	9.2	14	1.4	4hrs 15min
Saved		21%	21%	45%	96%	87%	33%

Source: Daf Trucks

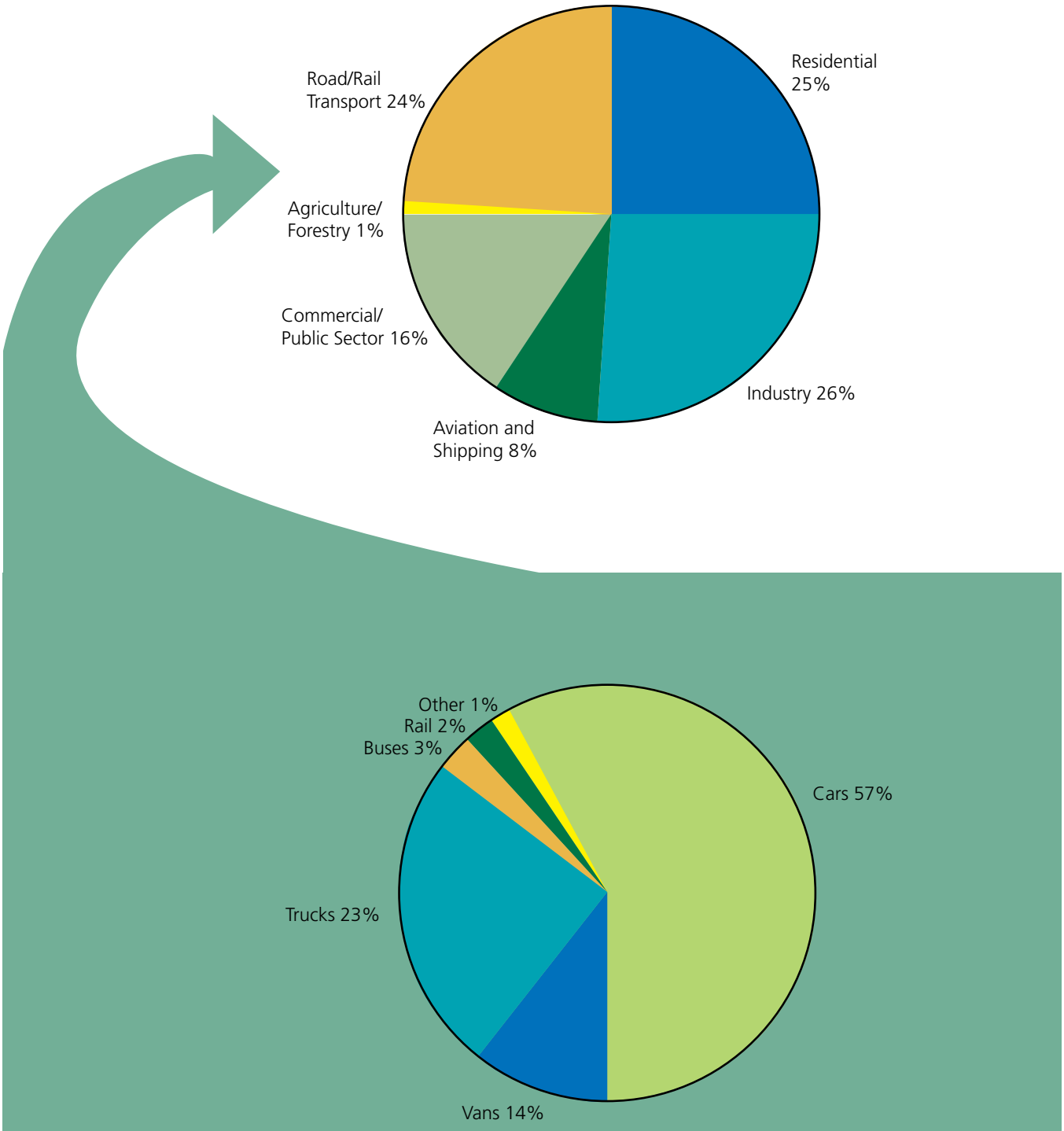
Fig. 2

Better MPG expressed as less CO_2

GVW	Mileage	MPG	Tonnes CO_2/annum	MPG	Tonnes CO_2/annum	Percentage Difference
44 tonnes	60,000	7.5	95.6	8.5	84.4	11.7%
	80,000	7.5	127.5	8.5	112.5	
	100,000	7.5	159.4	8.5	140.6	
17 Tonnes	40,000	11.5	41.5	13	36.7	11.6%
	50,000	11.5	51.9	13	45.9	
	65,000	11.5	67.5	13	59.7	
7.5 Tonnes	35,000	14	29.8	16	26.1	12.4%
	50,000	14	42.6	16	37.3	
	65,000	14	55.5	16	48.5	

Source: RHA

Fig. 3 Truck's Slice of the Carbon Cake



Road/rail transport accounts for just under a quarter of UK CO_2 emissions

Fuel consumption is directly proportional to carbon dioxide emissions. So what can you do to manage and reduce your vehicle's carbon footprint...?

Much has been achieved over the past 30 years, as seen from Fig.1. Fuel consumption when compared to an average truck in the mid-1970s has improved by 21% and, coupled with increased GVW, a massive 45% reduction in CO_2 per tonne of payload. (At the same time, tailpipe pollution has been transformed. The European Commission recently noted an 18-fold reduction over the past 15 years.)

Manufacturers will continue to develop vehicles and engines in the quest to reduce emissions further; this development will also result in the improved safety, economy and productivity of vehicles. However, the greater the reduction in CO_2 emissions, the greater the gains in profitability that can be achieved by you as a truck operator. By working to minimise the impact of your business on the environment, you effectively reduce your carbon footprint while saving money.

Trained drivers equals lower CO_2 emissions

Drivers probably make the greatest contribution to a company's performance by the way they drive the vehicles and operate any ancillary equipment that is fitted.

Adoption of Safe and Efficient Driving (SAFED) practices will, without doubt, save money and reduce the carbon footprint of individual companies. UK hauliers already have a core culture of safe and fuel-efficient driving which is helping to limit CO_2 emissions – but we can do better:

- Saving in fuel cost
- Saving carbon dioxide emissions
- Lowering maintenance costs
- Reducing unproductive downtime
- Reducing accident rate and related direct and indirect costs
- Lowering insurance premiums

- Enhancing competitiveness
- Improving marketing strategy to customers

All trucks are the same – but different? Make use of the manufacturer's driver familiarisation training and handbook. This will assist in:

- Improving MPG
- Reducing carbon dioxide emissions
- Reducing downtime – both planned and unplanned.
- Reducing wear and tear and related maintenance costs
- Improving residual values

Regular driver performance reviews should be adopted. The frequency will depend on the operation, and perhaps also the driver, to make sure your drivers really know how to get the best from the truck consistently – and are using their knowledge and skills as naturally as breathing (Fig.4).

Many companies are increasingly adopting these measures and we believe they benefit their own operations and the industry by explaining to customers what they are doing and why that is good for both the customer and the environment.

Fig. 4 Driver influence on truck performance

Drivers' actions	Influence on MPG/carbon footprint
Driving style	**8 – 10%**
Cruising speeds	**3 – 5%**
Engine idling time	**Up to 5%**

Source: Daf Trucks

Managing your fuel

Make sure you know what is happening to the fuel your firm is paying for. Owner-drivers have little problem in this area but every firm needs a system, whether buying on a card or in bulk at the depot. Control of every litre of fuel is critical, and you can achieve greater control by:

- Implementing a system for managing bulk deliveries and individual vehicle issues to establish and monitor performance KPIs
- Transparent fuel card management and monitoring performance policy against operational KPIs
- Effective vehicle/drivers MPG monitoring system
- Where practical, appointing a fuel champion within the business whose responsibility will be to manage the company's fuel performance.

Spec the right truck

Time spent ensuring the vehicle and equipment have the best match to the work they will be doing will repay you every day you have it on the road. Truck manufacturers should be able to provide valuable advice on the best specification of their products to suit your requirements, so it is worth asking, even if only for confirmation. Areas which should be considered as a minimum are:

- Full specification, including engine power and torque rating, gearbox and drive axle ratio
- Fuel efficiency
- Fuel type, if you are considering alternative fuels
- Maintenance
- Aerodynamics where practical
- Weight
- Body height

Scheduling and routeing

Improving vehicle use and route planning will assist in achieving additional savings with fuel and vehicle productivity. Some companies are increasing their efforts to work with customers to make their requirements fit in with greater efficiency. Areas you may wish to consider are:

- Efficient routeing/maximising vehicle resource
- Using maximum vehicle capacity
- Shortages, missed delivery strategy
- Telematics – vehicle/product tracking
- Mobile communication
- Satnav for multi-drop operations
- More night running
- Back-loading possibilities
- Increased load consolidation
- Multi-modal options

Fig. 5 How specification influences cost/carbon footprint

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: Daf Trucks

What does the future hold for truck emissions?

- Ongoing diesel engine development by vehicle manufacturers
- Longer, heavier vehicles meaning fewer trucks and greater productivity
- Hybrid vehicles, especially for urban work, front-loading skips, etc where braking and other energy can be re-captured
- Biofuels

Biodiesel: a complex and fast-changing issue.

From April 2009, UK diesel suppliers are tasked with using biodiesel to the extent of 2.5% of all the diesel they supply as road fuel and this is likely to be the percentage content in the general market, rising to 5.75% in 2010.

Truck operators considering using higher percentage biodiesel – 30%, 50% or 100%, for example – should be aware of the implications in terms of maintenance and durability, as well as fuel economy, and should check the suitability with the engine manufacturer. The carbon footprint and environmental argument will vary, depending on the source of biodiesel.

We expect biodiesel to be an increasingly controversial subject, as the specification requirement becomes more tightly defined and the public debate surrounding different sources develops.

Office and depot buildings

Truck exhaust accounts for most of a transport company's carbon footprint and costs but a fleet's depot also emits a significant amount.

A useful calculator for measuring your carbon level is at **www.carboncalculator.co.uk/calculator.php**

Four main areas to look at in terms of building and depot carbon reduction are:

- **Machinery:** Are items left on overnight or even during the day that can be turned off at the plug instead of being a constant and unnecessary drain of energy? Check also for efficient running, e.g. a leaky compressor will consume large amounts of extra energy
- **Lighting:** Energy-saving light bulbs cost more to buy but can use up to 80% less energy to produce the same amount of light. A 100W old-style bulb can be replaced with a 25W energy-saving bulb. Do all the lights really need to be on all the time?
- **Heating:** A little less can save a substantial sum and therefore cut your carbon footprint. Radiators perform best when given space to work in and are not shielded by boxes or desks
- **Insulation:** Keep doors shut; perhaps invest in warehouse plastic door curtains. Consider insulating the roof and lagging pipes
- **Staff can help:** Involve your employees or there will be no 'buy in'

Additional help

- Further help and advice is available via the RHA Regional Help Desks. For training information please contact RHA National Training on **01733 261456**
- RHA draft Environmental Policy Statement for members
- The RHA would welcome further contributions on the industry's carbon footprint

Additional reading: Freight Best Practice

- Truck Specification for best Operational Efficiency
- SAFED for HGVs and Vans
- Fuel Management Guide
- Computerised Vehicle Routeing and Scheduling (CVRS) for Efficient Logistics
- Fleet Performance Management Tool Incorporating CO_2 Calculator.
- **www.freightbestpractice.org.uk 0845 877 0 877**

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