



The ninth sustainability report



The UK automotive sector
2007 data

Contents

Chapter 1 - SMMT chief executive's statement and signatories	3	Chapter 5 - Vehicle use	25
The automotive sector sustainability strategy	6	Introduction	26
Chapter 2 - Executive summary and economic performance	7	CO ₂	26
Key performance indicators	8	Alternatively fuelled and advanced propulsion vehicles	31
Chapter 3 - Life cycle overview	11	Other tailpipe emissions	32
Life cycle outline, impacts and boundaries	12	Noise	33
Examples of industry actions taken to address vehicle life cycle impacts	14	Safety	34
Chapter 4 - Vehicle production and distribution	15	Chapter 6 - Vehicle end of life	35
UK production and registrations	16	Chapter 7 - Stakeholder engagement	39
Environmental inputs	17	Appendices	42
Environmental outputs	18	References	45
Social performance	20	Contact information	46
Green initiatives	23		
Pre and post production logistics	24		

Chapter 1

Chief executive's statement and signatories



Chief executive's statement



The motor industry is working to tough environmental targets and **making genuine progress**. We've cut the average fuel consumption and CO₂ emissions of the two million or so cars bought each year, lowered emissions and waste output from the manufacturing process and established a network of authorised centres to recycle end of life vehicles.

The voluntary colour-coded new car CO₂ labels are now used in 91% of dealerships and their effectiveness has been demonstrated through an increase in diesel registrations and a 76% rise in vehicles using alternative fuels or advanced propulsion technologies. In 2007 we had more vehicles on the road, driving further than they did in 2006 yet CO₂ emissions from road transport continued to fall.

Maintaining a steady rate of fleet renewal is vital to the success of the sector's CO₂ targets so the recent fall in new car sales raises concern from an environmental perspective as well as an economic. While the 2007 figures included in this report indicate a healthy industry with

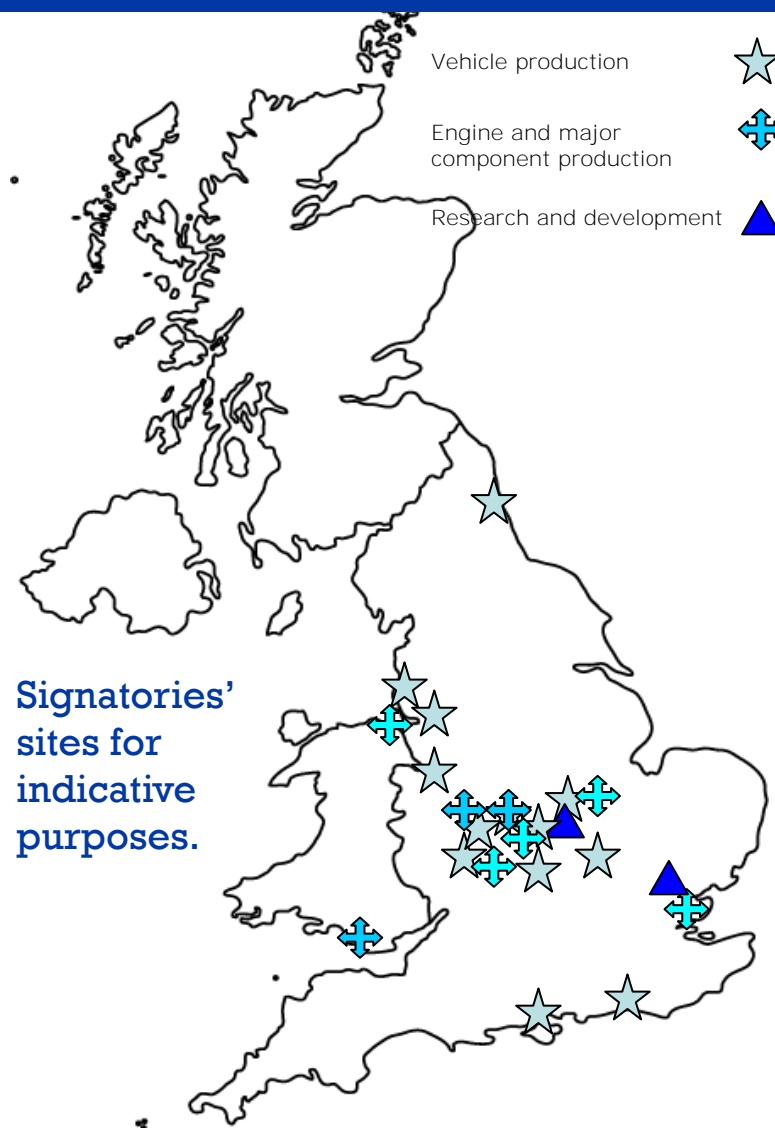
production volumes, registrations and financial turnover climbing and employment levels stable, we cannot underestimate how quickly this could change in the light of falling vehicle sales during 2008. Government action is needed to boost consumer confidence and the new car market in order to assure the 840,000 jobs and £51bn of turnover the sector contributes to the UK economy.

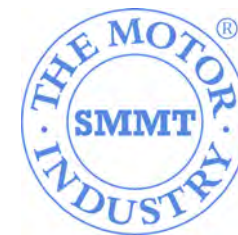
In review, SMMT's ninth annual sustainability report continues to highlight the impressive progress made by the automotive sector and once again sets the benchmark for other industries to reach.

As we look ahead to the report's tenth anniversary, we will be reviewing our strategy and the resulting report. Comments and suggestions from all stakeholders would be welcome so please contact the Sustainability Team on sustainability@smmt.co.uk.

Paul Everitt
Chief executive
The Society of Motor Manufacturers and Traders

Note: Data is for 2007 calendar year, but we have included more recent data where it is available, for instance on alternative fuel filling stations and the uptake of the colour coded new car CO₂ label. All data for the report has been provided by SMMT unless stated





Signatories

Signatories to this report are:

Bentley Motors
BMW Group including Rolls-Royce Motor Cars Ltd
Ford Motor Company Limited
General Motors UK Limited
GKN Driveline Limited
Honda UK Manufacturing Limited
IBC Vehicles Limited
Jaguar Cars Limited
Land Rover
LDV
Nissan Motor Manufacturing (UK) Limited and Nissan Technology Centre Group
Mercedes-Benz UK Ltd and Chrysler UK Ltd*
PSA Peugeot Citroën Automobiles UK Limited
Toyota (GB) plc and Toyota Motor Manufacturing UK Limited
Volvo Cars UK Limited
Volkswagen Group (UK) Limited

*formerly Daimler Chrysler UK Ltd until 01.11.07

Perkins Engines is not included in this year report's, due to acquisition and company restructuring.

Brands:

Bentley
BMW, MINI, Rolls-Royce
Ford engines, Ford Transit vans
Cadillac, Chevrolet, Corvette, Hummer, Saab, Vauxhall
GKN
Honda
Vauxhall, Nissan and Renault vans
Jaguar
Land Rover
LDV vans
Nissan
Mercedes-Benz, smart, Chrysler
Peugeot, Citroën
Toyota, Lexus
Volvo
Audi, SEAT, Škoda, Volkswagen Passenger Cars, Volkswagen Commercial Vehicles

The automotive sector sustainability strategy

Each commitment, as updated in 2005, has a page reference alongside it to signpost the actions taken in 2007 to fulfil it.

Sustainability reporting

1. Improve and enhance sustainability reporting, respond to stakeholder feedback (pages 4, 5, 40 and 41).

Production and distribution

2. Control and reduce the environmental impact of company operations (pages 17-19).
3. Affirm economic growth, turnover and investment toward securing competitiveness in the global economy (pages 9, 16).
4. Add value to employment capital through development, skills and training (page 20).
5. Improve the working environment, health and safety of employees (page 21).
6. Improve our understanding of the impact of pre and post production logistics towards the environment (page 24).
7. Support development of a high quality and strong environmental supply and reverse supply chain network (page 24).

Use

8. Improve fuel efficiency of new product design (page 29).
9. Research, develop and bring cleaner technologies to the market to improve tailpipe emission standards, where practical to introduce vehicles with higher emission standards in advance of legislation (pages 30- 32).
10. Improve the safety of the product (page 34).

End of life

11. Provide facilities for the consumer to return vehicles for disposal at end of life (page 36).
12. Design and make cars so that at least 95% of the weight of materials used can be recovered at the end of life (page 37).

Engagement and information






















13. Engage proactively with external stakeholders (pages 40 and 41).
14. Provide information to customers to enhance their awareness and understanding of product environmental and safety features (page 40).
15. Support strategies to reduce the environmental impact of road transport through fuel, driver and infrastructure development and the integrated approach (pages 28, 31 and 40).

Chapter 2

Executive summary and economic performance



Key performance indicators




		2003	2004	2005	2006	2007	Percentage change 2007 on 2006	
Number of signatories	(AS)	22	20	20	17	16	-5.9	
Vehicle production and distribution								
Production inputs								
Total combined energy use	(gwh) (AS)	6,126	5,337	5,103	4,851	4,672	-3.7	
Energy used per vehicle produced	(MW/h/unit) (VMS)	2.8	2.5	2.3	2.5	2.2	-12.0	
Total combined water use	(000m ³) (AS)	8,404	7,037	7,127	6,779	6,053	-10.7	
Water use per vehicle produced	(m ³ /unit) (VMS)	3.4	3.4	3.2	3.3	3.0	-9.1	
Material outputs								
Total combined CO ₂ equivalents	(tonnes) (AS)	1,679,832	1,447,900	1,417,129	1,363,189	1,338,244	-1.8	
CO ₂ equivalents per vehicle produced	(tonnes/unit) (VMS)	0.70	0.68	0.62	0.70	0.60	-14.3	
VOC emissions (cars)	(g/m ²) (VMS)	47	50	48	49	45	-7.2	
VOC emissions (vans)	(g/m ²) (VMS)	60	66	67	65	69	6.5	
Total combined waste to landfill	(tonnes)(AS)	56,743	52,842	44,910	39,862	30,004	-24.7	
Waste to landfill per vehicle produced	(kg/unit)(VMS)	17.90	19.80	14.50	17.00	12.75	-25.0	
Economics and investment								
Automotive manufacturing sector turnover	(£ billion)	46.30	46.90	48.20	49.30	51.00	3.4	
Total number of cars and CVs produced	(million) (UK) (WI)	1.84	1.86	1.80	1.65	1.75	6.1	
Total new car registrations	(million) (UK) (AC)	2.58	2.57	2.44	2.34	2.40	2.5	
Signatories' combined turnover	(£ billion) (AS)	39.16	34.64	39.38	41.87	43.66	4.3	
Total number of vehicles produced by signatories	(million) (AS)	1.73	1.61	1.77	1.60	1.71	6.9	
Employment and employees								
Combined number of employees	(AS)	87,625	76,327	72,337	75,789	65,761	-13.2	
Number of lost-time incidents	(AS)	710	491	410	385	249	-35.3	
Number of training days per employee	(AS)	3.8	2.9	3.2	2.7	2.6	-2.3	
Average staff turnover	(%) (AS)	6.1	8.65	5.8	5.7	7.6	33.6	
Vehicle use								
New car CO₂ emissions								
Average new car CO ₂ emissions	(g/km) (AC)	172.1	171.4	169.4	167.2	164.9	-1.4	



Data in the report is quoted in a number of ways:

Whole industry data	(WI)
All car sales in the United Kingdom	(AC)
All signatories	(AS)
UK vehicle manufacturing signatories	(VMS)

Out of 21 key indicators of performance over 2006-2007

	16 green, progress
	0 amber, static
	5 red, concern

Overall performance

Overall performance was good

Overall performance in 2007 was good. Only employment was a serious concern, down 13% for signatories but static for the sector overall. The fall **was largely due to the closure of Peugeot's Ryton plant**, which also had an adverse effect on staff

turnover and training days. Staff turnover remains well below the average for manufacturing sectors. VOC emissions performance was changed this year to grams of VOC per m² of **vehicle body coated to take account for various models'** derivative changes. VOC from van production increased in 2007, mainly due to metallic paints becoming more popular.

Signatories

In total, there are 16 signatories to the report covering all sections of the automotive industry. This year one new distribution site, VW Dordon, was added and data from one signatory (Perkins Engines) was not included in the report due to acquisition and company restructuring.

These changes are not significant to the overall results and the signatories continue to represent 98% of vehicle production in the UK.

The report covers 98% of production

Production inputs and outputs

Resource consumption & emissions improved significantly

The results for production inputs and outputs show significant improvements, up to 25% better than the previous year.

Continuing investment in energy saving technologies and introducing internal energy saving targets helped **decrease the industry's energy consumption by 12%** per vehicle produced. The associated CO₂ emissions per vehicle produced fell by 14% last year and 45% since 1999.

Water used to produce each vehicle fell 9% in 2007 and has halved since 2002; a saving of three million cubic metres.

Solvent emissions (VOC g/m²) were down 7.2% for car manufacturers and all the UK sites met their European Directive obligations by the October 2007 deadline. VOC emissions from the van sector increased 6.5%, largely because of increasing customer demand for metallic paints.

Considerable progress has been made in reducing waste to landfill. As a result, almost 10,000 tonnes were diverted from landfill, waste for recycling was up 22% and recovery doubled.

Economics and investment

Production, registrations were both up

It was a buoyant year for the automotive sector with increasing turnover, production and registration levels in 2007.

Despite growing concerns about the economy, the

new car market recovered in 2007 to bring to an end three successive years of falling registrations in the UK market.

Net capital investment was at a six year high and a record value added also positively contributed to this achievement.

Employment and employees

The number of jobs dependent on the automotive sector remained stable in 2007. Employment in supply and use grew to 78% of overall jobs in the sector, while manufacturing jobs declined. This fact is related to the closure of a manufacturing plant as well as movement towards mechanisation of production processes.

The industry puts a lot of effort into ensuring a safe and progressive working environment. This is reflected in low staff turnover figures for the sector even with a recent closure of a manufacturing plant.

A rewarding sector to work in

Vehicle use

New car CO₂ has improved 13.1% since 1997 and 1.4% last year

Significant improvements in fuel economy have reduced total CO₂ emissions from cars despite them travelling 7.3% further in the last ten years. The distance travelled by cars also fell for the first time in seven years.

Average new car CO₂ emissions fell by 1.4% in 2007 to 164.9 g/km. This was the tenth successive decline in the sales-weighted emissions figure. Since 1997, when data was first available, average emissions have fallen 13.1%.

The reductions in 2007 reflect a further shift to diesel powered vehicles, significant growth in the alternatively fuelled vehicle market (up 76%) and growth in the supermini segment.

At the end of 2007, the European Commission published a proposal for legislation detailing European wide emissions targets for new cars, with a target of 130g/km by 2012.

An ageing parc threatens the progress made in many areas because, on average, new vehicles emit less CO₂, produce fewer air pollutants, and are quieter and safer than older models.

Vehicle end of life

The vehicle manufacturers' contracted networks of authorised treatment facilities (ATFs) for recycling vehicles at the end of their useful life achieved the 85% recovery target in 2006.

The recovery rate is up 10% since 2000.

Design for recycling is also a significant focus.

VMs achieved their 85% ELV recovery target

Engagement and information

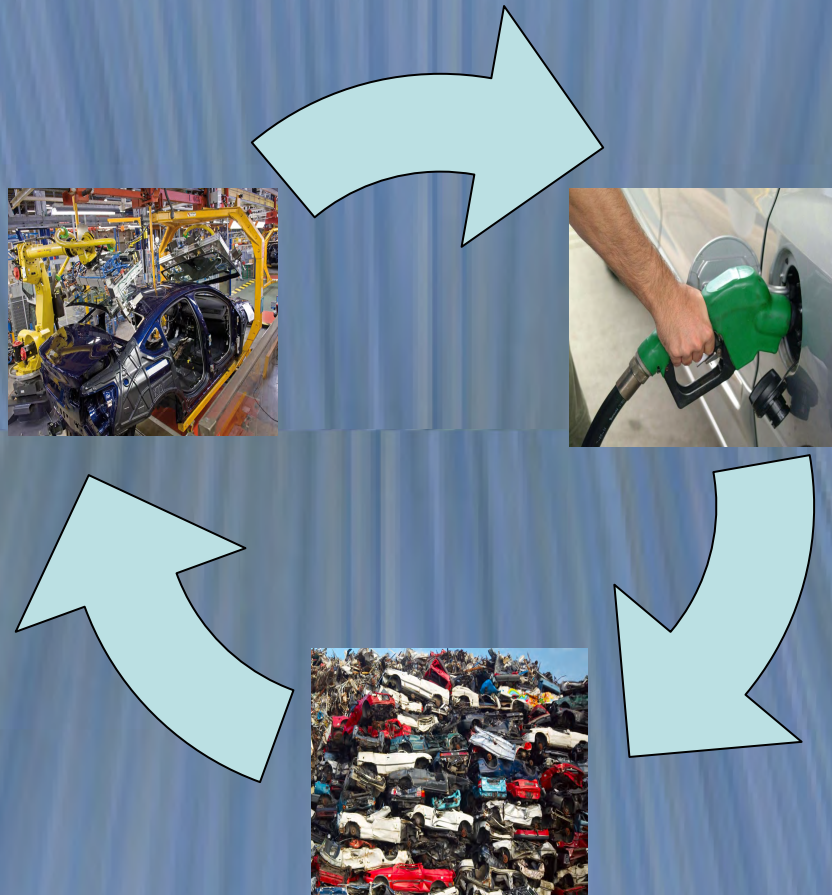
Colour coded label now has 91% take up

Adoption of the voluntary colour-coded label is becoming more successful year-on-year, with 91% take up by car dealerships.

In response to the growth in the light van sector, SMMT is working with the Department for Transport and Vehicle Certification Agency to make van CO₂ data and guidance available to consumers so they can make better informed purchasing decisions.

Chapter 3

Life cycle overview

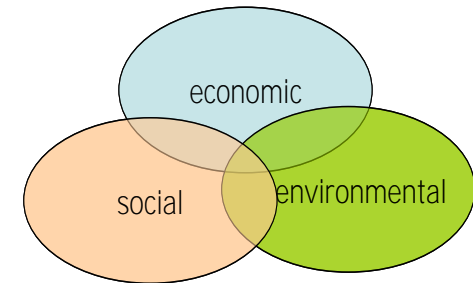


Life cycle outline, impacts and boundaries

The aim of this report is to outline the sustainability of the life cycle impacts of vehicles and the progress made year on year.

Life cycle impacts to consider:

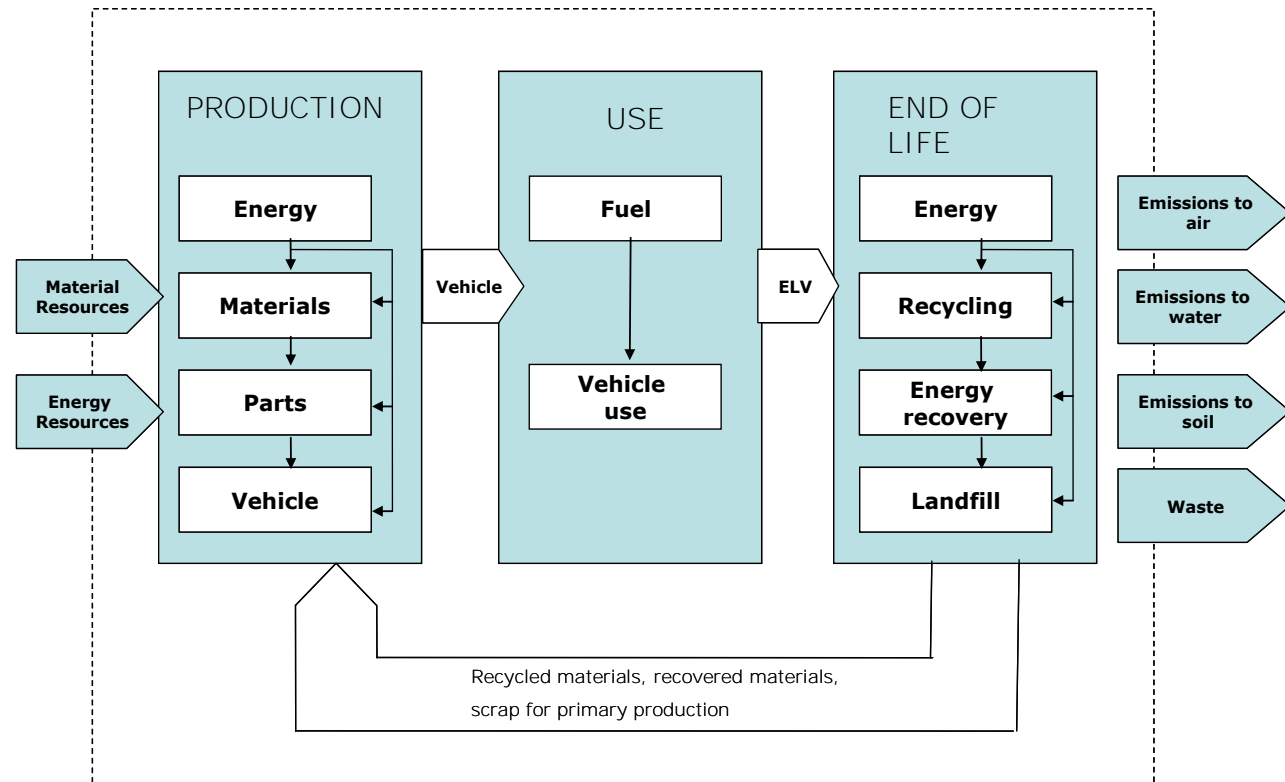
1. Economic impacts, from the viewpoint of the owner (private economy) or from society (public economy, including considerations of employment).
2. Environmental impacts, eg air and water pollution/consumption and emissions of greenhouse gases or ozone depleting substances, land use, noise, visual impact.
3. Social impacts, including health impacts, accident risks, effect on the work environment and satisfaction of human needs.



The automotive industry has applied a life cycle approach for a long time. The major focus has been to increase the understanding of life cycle implications.

The diagram to the right shows the boundaries of our reporting, which were established to focus on the core impacts of the signatories and the automotive supply chain.⁽¹⁾

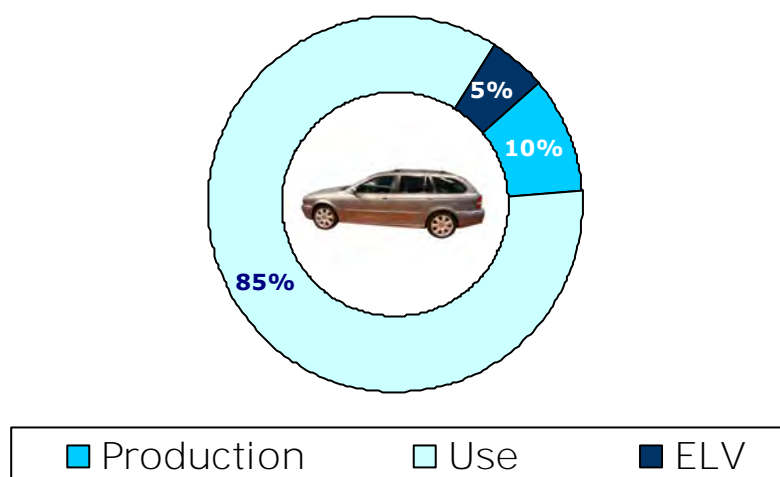
This report outlines the sustainability of the vehicle life cycle and the progress made in 2007



Life cycle CO₂ impact

The following chart gives a breakdown of CO₂ emissions throughout the life cycle of a typical vehicle. It is based on SMMT data and various academic reports. ⁽¹⁾ ⁽²⁾ ⁽³⁾

These proportions will change as alternative fuels and propulsion technologies, such as hybrids, penetrate the market further.



85% of life cycle CO₂ comes from the use phase of a vehicle

Production 10%

- Production
- Logistics
- Energy for sales and support functions

Use 85%

- CO₂ from distance driven
- CO₂ from servicing and after market functions

End of life 5%

- CO₂ from managing end of life vehicles (ELV)

Note where scrap is used in re-manufacturing, the CO₂ impact of production can be reduced versus traditional recycling.

Examples of industry actions taken to address life cycle impacts

Production

Environmental inputs

- Adopting efficient and renewable energy sources, such as wind power, combined heat and power (CHP) and minimising heat distribution losses, commitment through Climate Change Agreement
- Efficient water use eg cascade to minimise water use in paint shop, grey water use, rain water management

Environmental output

- Water-based and low solvent emission paint technologies
- Reducing use of hazardous substances, most recently through REACH (see page 24)
- Continual improvement in waste, energy efficiency through environmental management systems such as ISO 14001 and EMAS
- Reducing waste to landfill and increasing amount of waste being recycled/recovered

Smarter mobility

- Introduction of green travel plans
- Smart logistics

Use

Design

- Light-weighting
- Improved aerodynamics
- More efficient cooling and heating and move to lower global warming potential refrigerants
- Optimised transmissions eg semi-automatic, manual, continuously variable

Vehicle technologies

- Stop-start, electric, hybrids, alternative and biofuel compatibility, clean diesel, direct injection engines, engine downsizing, low rolling resistance tyres, Euro standards to reduce air quality pollutants, wider use of particulate filters

Driver aids

- Gear shift indicators, on board computers, econometers, speed limiters, tyre pressure monitoring systems
- Smart navigation

Safety features

- Occupant, pedestrian and child safety features
- Electronic stability control, lane departure warning

Consumers information

- Educating vehicle choices, both on cars and vans, such as colour-coded new car CO₂ label and databases

End of life

Design

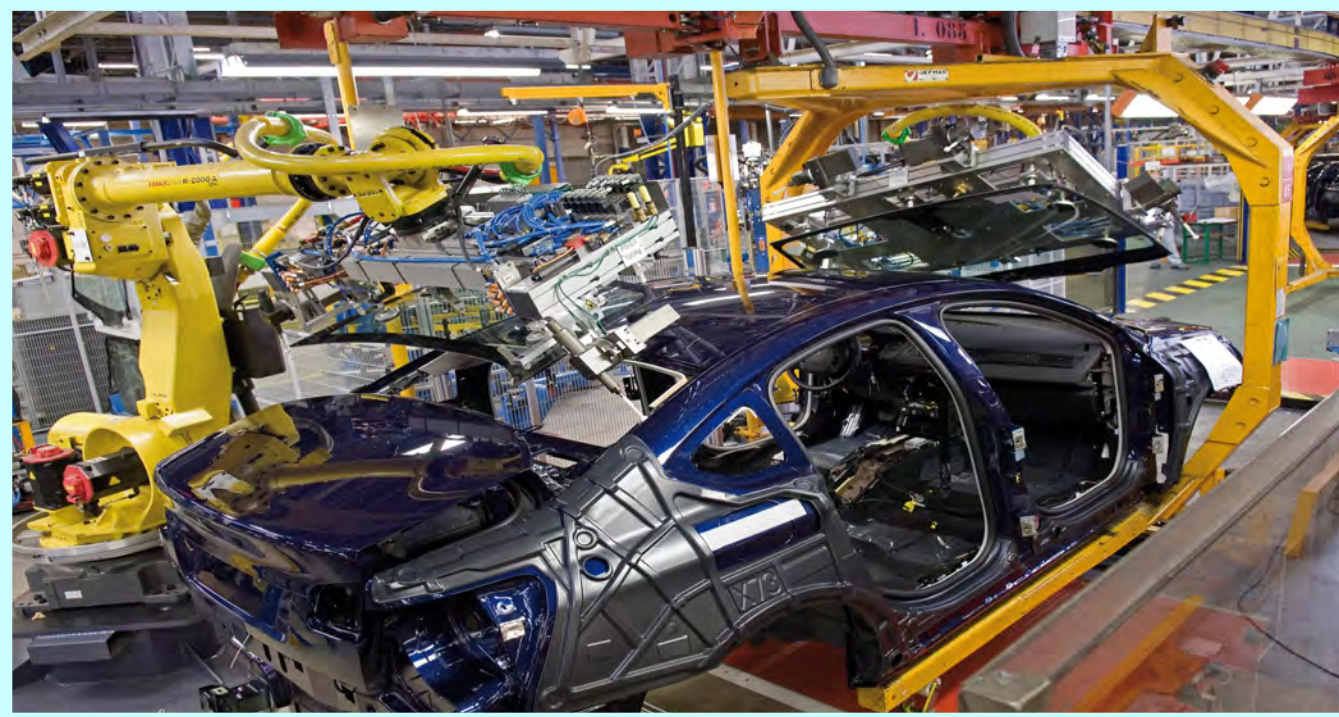
- Design for recycling
- Increased use of recyclable materials
- Phasing out hazardous materials to enable more recycling options

Organised network of treatment facilities

- Establishing a network of authorised treatment facilities (ATFs) to ensure appropriate vehicles depolluting
- Ensuring 85% of the vehicle is recycled/recovered in VM networks
- Providing instructions/data to facilitate correct and safe depollution and dismantling of end of life vehicles eg international dismantling information system (IDIS)
- Marking plastic components to aid material recovery

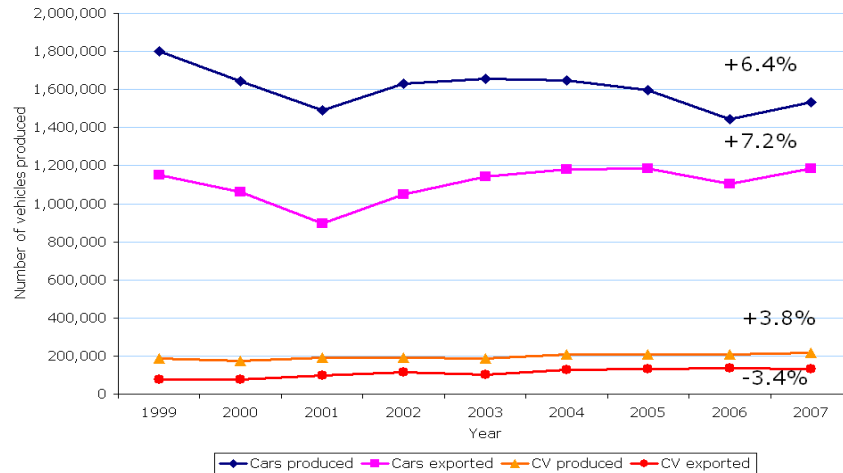
Chapter 4

Vehicle production and distribution



UK production and registrations

Production



Source: SMMT

Cars

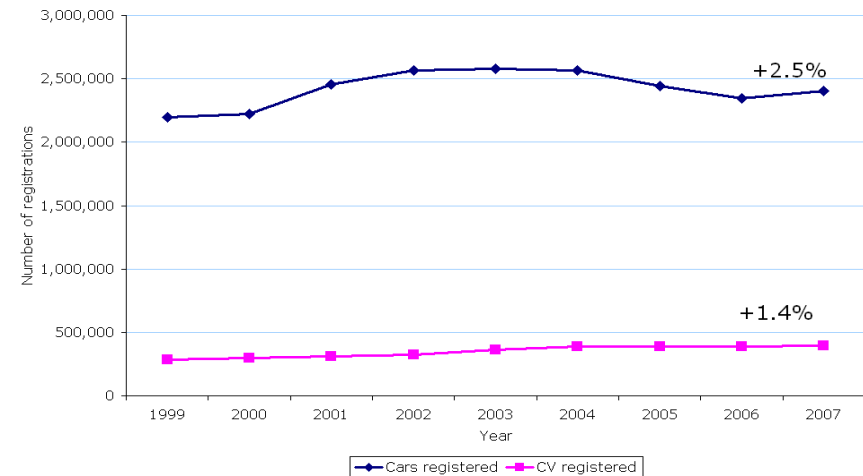
Car output recovered in 2007, with a 6.4% rise to 1,534,567 units. UK **production had been knocked by the loss of MG Rover and Peugeot's Ryton plant**. However, growth from other manufacturers helped lift volumes. Output for both the home and export markets rose in 2007, with exports accounting for a record 77.3% of all output. Despite the recovery in 2007, total output was still some 70,000 units or 4.4% below the 1999-2007 average of 1.6 million units.

**Car
production
rose 6.4%,
CVs rose
3.8%**

Commercial vehicles

CV output rose for the second successive year in 2007, up 3.8% on the 2006 level to 215,686 units. The growth during the year reflected a 17.7% rise in output for the home market, whilst exports slipped by 3.4%. LCV output represents nine out of every ten CVs produced. CV production in 2007 was 9.6% up on the average annual total since 1999, of 196,755 units.

Registrations



Source: SMMT

Cars

Registrations in the UK new car market rose by 2.5% to 2,404,007 units in 2007, after three years of falling volumes. The market recovered following improvements in GDP growth and resilience in consumer spending. Diesel, alternatively fuelled and advanced propulsion vehicle (AFV) volumes rose, as the focus on CO₂ emissions and lower running costs continued.

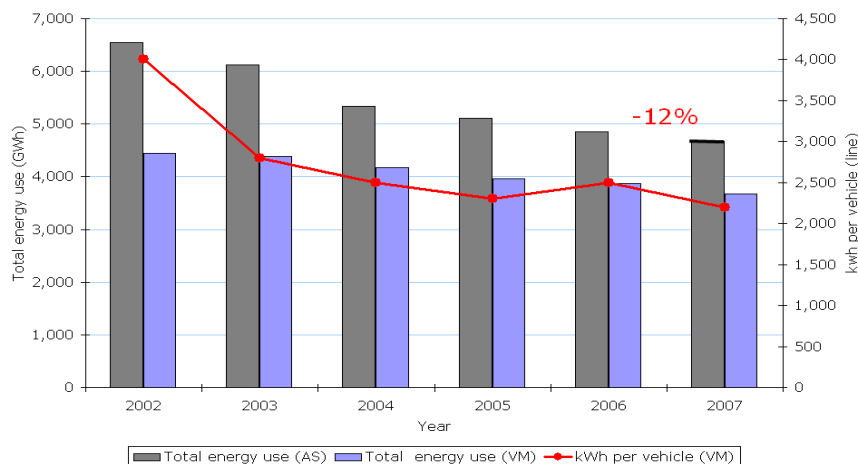
Commercial vehicles

The CV market rose to a new high in 2007 at 392,481 units, a 1.4% gain on 2006. Volumes have been high and firm over each of the past four years, after a strong period of growth between 2001 and 2004. At the heavier end of the market, demand for truck and artics and buses and coaches fell in 2007, following on from the impact of regulatory changes on the timing of registrations.

**New car
registrations
rose 2.5%,
CVs rose
1.4%**

Environmental inputs

Energy consumption - down 12%



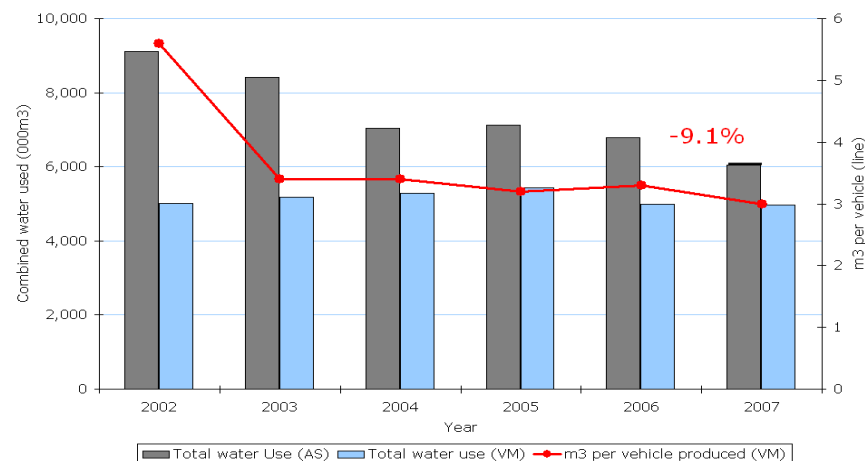
Energy use per vehicle produced decreased by 12%. Implementation of internal reduction targets by signatories, increased production levels and rising energy costs positively contributed to this achievement.

Energy use for all vehicle manufacturers fell by 4.8% in absolute terms from 2006.

Total energy use for all signatories (AS) fell in absolute terms by 3.7%. This decrease is partially related to exclusion of Perkins engines data, which contributed 1.1% to the overall energy use in 2006. One site has been included for the first time this year, which contributed 0.2% to total energy consumption. Due to an electrical fire on this site generators had to be used instead of renewable electricity resulting in increased figures for this year.

**Energy use
per vehicle
fell by 12%**

Water use - down 9.1%



Since 2002 annual water use has reduced by 3,000,000m³ and usage per vehicle produced almost halved.

Total water used by all signatories fell by 10.7% in absolute terms on 2006 levels.

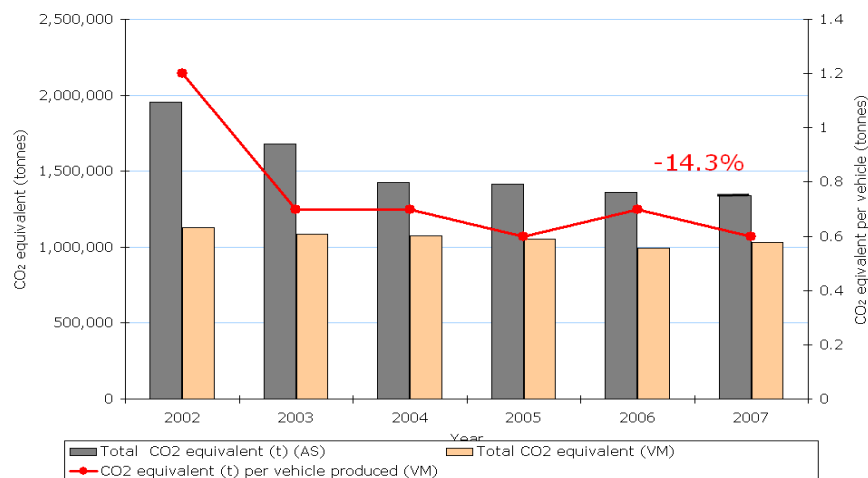
Vehicle manufacturers reduced water use in 2007 compared to 2006, even though production increased.

Water use per vehicle produced was cut by 9.1% compared to 2006.

**Water
used per
vehicle
halved
since
2002**

Environmental outputs

Production and distribution CO₂ - down 14.3%



Carbon dioxide (CO₂) emissions associated with manufacturing each vehicle fell by 14.3% in 2007 and have fallen 45.5% since 1999. This is the result of investment in energy efficiency and increased production volumes allowing the **baseload of a site's energy consumption to be spread over a larger number of vehicles.**

CO₂ per vehicle produced fell 14.3% last year, down 45.5% since 1999

Absolute CO₂ emissions from all signatories were slightly down on 2006 levels, but there was an increase of 3.5% (35,000 tonnes) from vehicle manufacturers. Such fluctuations in CO₂ are strongly correlated with changes in the energy mix used. For instance, where a low carbon energy source has to be replaced with a higher carbon source for financial reasons or due to fire damage to equipment.

See also the green travel plans section on page 23.

VOC emissions - down 7.2%



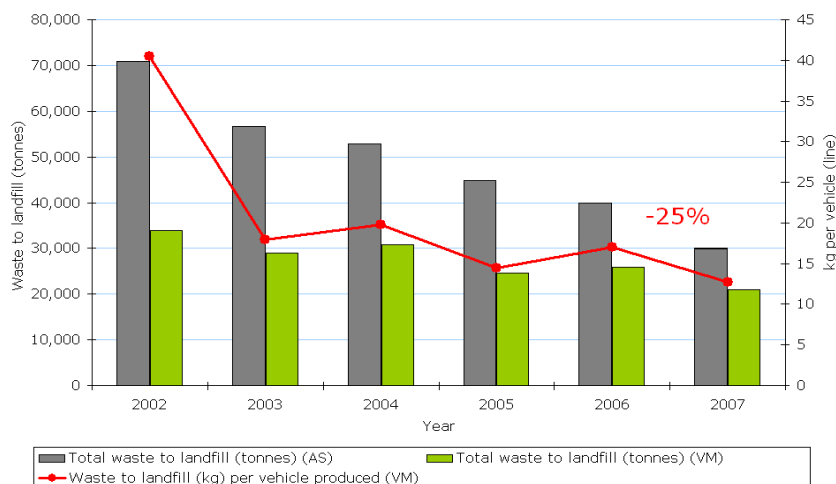
This year we have improved the performance indicator for volatile organic compounds (VOCs) from kg to using g/m² ie grams of VOC per m² surface area of vehicle body coated when dipped in an electrocoat bath. This is the legally regulated measure of efficiency in using VOC. This change in measurement parameter takes account of the various model and derivative changes both in volume and design that occur at the signatory sites. VOC performance has improved 18% since 1999 for car manufacturing (g/m²).

By the October 2007 deadline for compliance with the Solvent Emissions and Integrated Pollution Prevention and Control Directives, all signatories were well below their respective limits of 60g/m² for volume cars and 90g/m² for vans. Bentley and Rolls-Royce production volumes are so low that they are not in scope of these Directives.

The rising emissions on the van graph is largely the result of the rapidly increasing proportion of customers requiring metallic paints in recent years.

All sites were well below their VOC limits by the 2007 deadline

Waste to landfill - down 25.0%



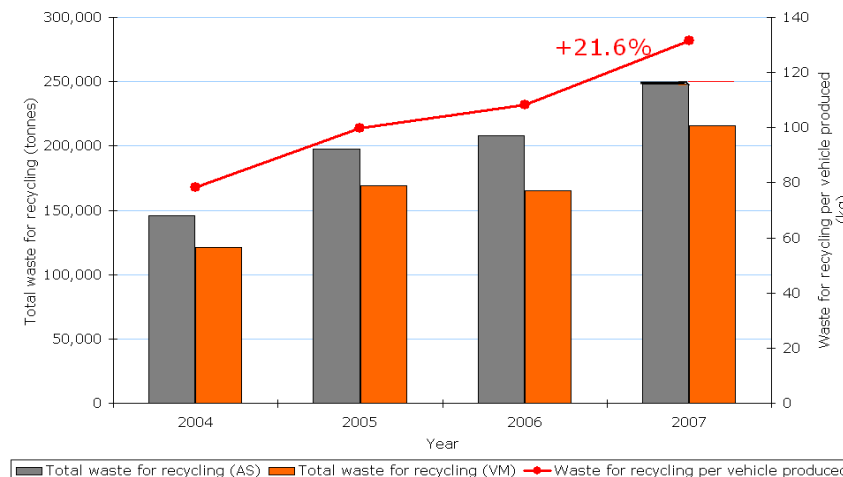
Total waste to landfill fell 25% for all signatories and 20% for vehicle manufacturers in 2007. Waste to landfill per vehicle produced was also 25% lower than in 2006.

Waste to landfill fell 25% last year and 68% since 2000

One site was included for the first time in 2007, adding about 1%. Perkins was excluded this year, which accounted for less than 4% of the overall value for 2006. The net impact was therefore minimal.

All the signatories increased their efforts to divert waste from landfill to recycling and recovery processes.

Recycling and recovery - up 21.6% and 100%



The amount of waste recycled by signatories has risen rapidly over the four years since SMMT began collecting this data.

Recycling has increased 100,000 tonnes per annum since 2004 and is almost 22% higher than in 2006.

Energy recovery has doubled since 2006.

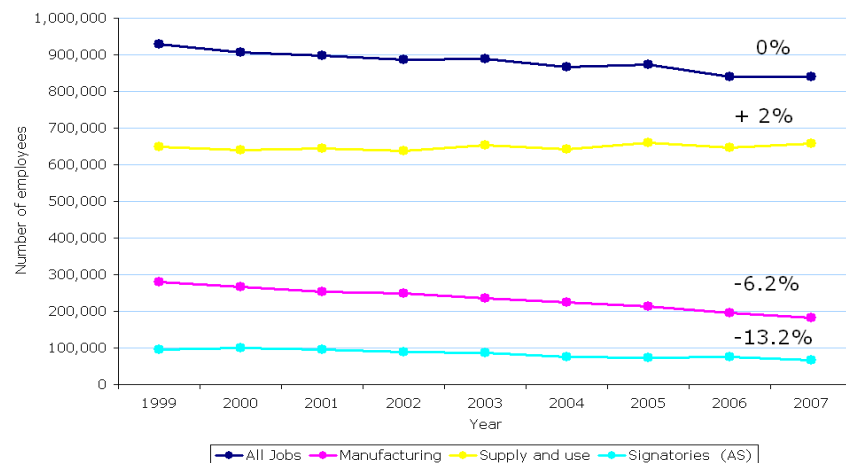
The signatories raised some concerns about the potential for Registration, Evaluation and Authorisation of Chemicals (REACH) to have a negative impact on the opportunities for recycling, (see page 24 for more detail on REACH).

It remains unclear whether REACH will actually have this effect. This issue is not specific to the automotive sector and has been raised with government, the European Commission and Chemicals Agency. A resolution is awaited.

Recycling increased 22% and recovery doubled last year

Social performance

Employment - 0% change



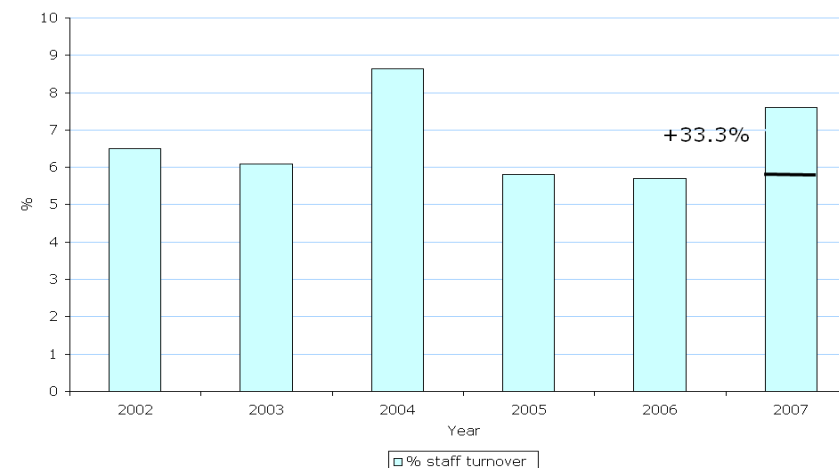
The falling trend in staff numbers halted in 2007

The UK automotive sector continues to make an important contribution to the economy with 841,000 people directly dependent on the sector. This number shows a downward trend, which halted in 2007.

Within the overall data collected there is a noticeable growth in the service sector with almost 10,000 jobs added in 2007 and reduction in manufacturing employment. This trend is reflected in signatories' data.

Over recent years key manufacturing companies have restructured, moved to contracting or relocated abroad.

Staff turnover - up 33.3%



We monitor staff turnover to try to gauge employee satisfaction.

The recent increase in staff turnover is largely due to the closure of the Peugeot Ryton plant, which took place in 2006 and 2007. Peugeot's excellent record on finding its staff future employment was discussed in last year's report.

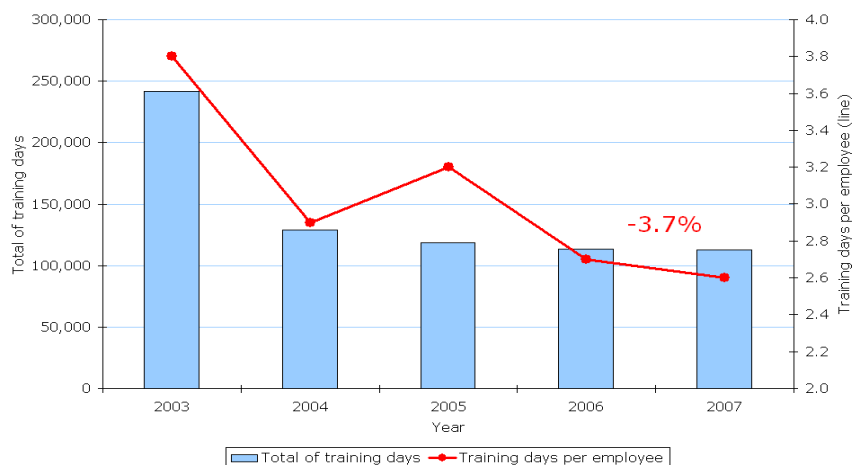
If we were to exclude the changes at Peugeot, staff turnover for our other signatories would be 5.8% (black line above), which is consistent with levels observed in the previous two years and is significantly below the turnover seen in other manufacturing sectors of 20.9%⁽⁴⁾ in 2007.

Staff turnover is well below average for manufacturing sectors, despite one site closing

Our signatories have leading policies to help employees establish a good work/life balance. These progressive policies include maternity, paternity and adoption leave, as well as parental leave, flexible working, variable hours, part-time and job share, supported home working and telecommuting, career break and smoke free work places.

In 2007, a number of signatories were listed in *The Guardian's* top 100 employers survey. One signatory was named by the UK Resource Centre for Women in Science, Engineering and Technology as an Employer of Choice and awarded its National Gold Standard Quality Mark.

Employee development - down 3.7%

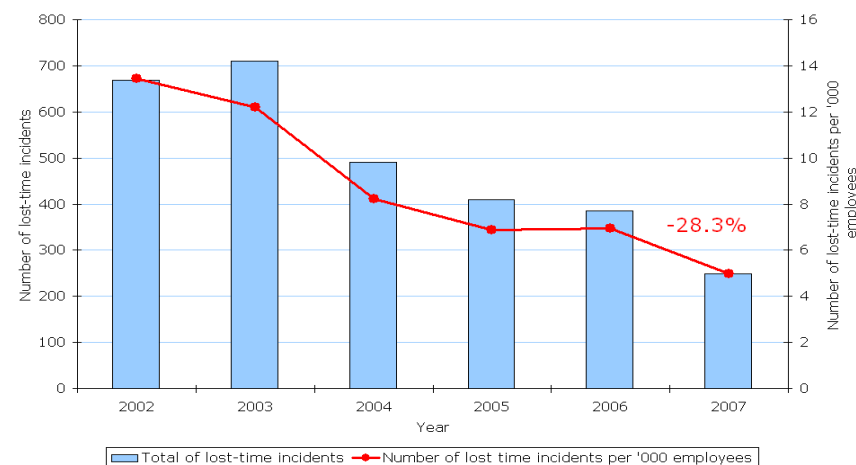


Induction training needs reflect low staff turnover

Major training campaigns are often associated with the induction of new employees or new vehicle models. Low staff turnover in the sector means that the need for induction training is low compared to other sectors.

The decrease in training days is related to the decline in employment across the automotive manufacturing. Figures are also influenced heavily by changes to the signatories compared to previous years.

Health and safety - improved 28.3%



Improving health and safety standards remains a priority for signatories and the sector as a whole.

Raising health and safety awareness amongst employees can sometimes result in better reporting and data appearing to show more incidents and a deteriorating record. However, lost time incidents continue to fall significantly in the automotive sector.

Lost time health and safety incidents continue to fall

The need for professional and personal training is continually reviewed by our signatories. Employees are provided with opportunities to participate in academic, skills and health related learning from university level to bricklaying courses.

New training initiatives in 2007 included:

- Skills for life programme, including numeracy and literacy training
- Zone Sales Manager training programmes
- Supervisory skills excellence course
- NVQ BIT levels 2 and 3 delivered across a number of sites

Community involvement

Donations to BEN surpassed £1,500,000 in 2007

Our signatories invest in the communities where they operate by supporting community projects, and improving education and employment opportunities. This community support is made up of donations to charities as well as the provision of vehicles for rescue missions, emergency operations and environmental projects.

In many cases employees are encouraged to engage with the community by volunteering their time and raising funds for local charities and projects which mean the most to them. In 2007, charity donations to the Motor Industry and Allied Trades Benevolent Fund (BEN) reached over **£1,500,000** in direct and in kind contributions.

Collaboration with local authorities, voluntary organisations and other private businesses close to the facilities helps to improve community liaison and regeneration of deprived areas.

Some of the many initiatives undertaken in 2007 are listed below:

- Sponsoring a programme carried out by the fire brigade in local schools to encourage safe driving practices. The programme targeted 16-18 year olds and was delivered to 8,000 school children in 56 different schools and colleges.
- Recruitment Open Day held for 75 students. It aimed to give students real experience of going through a typical recruitment process from completing the initial application form through mock selection tests, work shops on CVs and interview techniques.
- Over 500 students from three schools received a tour of a car plant and a number of presentations on the management of environmental risks and impacts at the plant.

- A plant visit was organised for engineering students with the main **objective to raise the students' awareness of what real engineering is all about.**
- The safety challenge that has been running for 11 years during which over £100,000 has been donated to local charities.
- Donating 300 surplus computer systems to local schools and worthy causes.
- Co-sponsoring Young Achievers Awards.
- Hosting Blind Drive Day for national blind charity to raise funds - partially sighted and blind drivers are sponsored to drive around a test track.
- Solar Car Challenge- a competition between local schools to design, build and race solar powered cars.
- Work experience placements.
- Hosting blood donor sessions at the plants.

Regeneration of deprived areas, plant tours for schools and engineering students, safety challenges, donating blood, young achievers awards etc

Green initiatives

Green travel plans

Our signatories have developed and supported various initiatives to ensure that employees, suppliers and visitors are aware of and have access to more sustainable modes of transport. Actions taken include:

- Advising staff on sustainable travel issues using the most appropriate media to develop awareness and encourage car sharing, cycling, walking or other alternative methods of commuting.
- Provision within the Human Resources policies for tele-working and other forms of flexible office working arrangements.
- Offering relocation packages to staff to allow new recruits to live locally, where this is appropriate.
- Encouraging suppliers to locate close to plants to minimise transport associated with deliveries.
- Covered racking and parking for bicycles and motorbikes.
- Work with local councils to improve local cycle network.
- Co-operating with local bus company to develop local bus-stops where necessary. Introduction of a bus ticket subsidy to encourage greater use.
- A car share scheme has been made available to all employees and affiliated companies.

250,000t CO₂ manufacturing emissions offset and more CO₂ 'retired'

- Encourage lift sharing.
- Providing pool cars for movement by personnel both within the sites and between other facilities in the area.
- Introduction of electric and alternatively powered vehicles as pool cars.
- Sponsoring of UNEP Greener Driving Program. (www.greener-driving.net)

Utilising wind power and CHP

Our signatories strive to be at the forefront of sustainable business, both in their manufacturing techniques and their products.

Four of the major names in the sector utilise wind power as a way to reduce the environmental impact of production. Electricity used at one site is 100% wind derived. In 2007, the signatories produced over 82,000 MWh of electricity from wind turbines. This switch from grid electricity to renewable sources saved 35,300 tonnes of CO₂ equivalent last year.

Combined heat and power (CHP) is another energy efficient technology employed by several signatories to capture the heat produced by on-site electricity generation to use for industrial heating purposes.

Wind power saved 35,300t CO₂ last year

Offsetting

The automotive sector has focused on cutting CO₂ from production and distribution and has achieved significant improvements over the years. Another way to mitigate the climate change impact of the vehicle lifecycle is carbon offsetting. This involves calculating the CO₂ **emissions and purchasing 'credits'** from emission reduction projects that have prevented or removed an equivalent amount of CO₂ elsewhere. As CO₂ has a global impact, it does not matter where it is emitted, the effect on climate change is the same. Approximately 250,000 tonnes of CO₂ have been offset from manufacturing emissions since the launch of the programme in July 2006.

In a similar way, some signatories have been able to 'retire' CO₂ credits as a green initiative, instead of selling them. This was possible because they generated excess credits within the EU Emissions Trading Scheme (EUETS) by taking early action on energy efficiency.

Pre and post production logistics

Supply chain management is a very complex process. The vehicle manufacturer signatories appreciate the enormous challenge of delivering goods in a cost-effective, timely and environmentally friendly manner. A number of them have undertaken research on the environmental effects of logistics. Consequently many initiatives were put in place in 2007 in co-operation with suppliers to address these issues.

Collection systems were introduced to move the supply of materials from push to pull system, so the frequency and size of shipments can be better controlled.

Critical suppliers are being identified and monitored to ensure readiness to achieve the given objectives.

The signatories continue to make improvements in a range of important sustainability parameters including:

- Cube utilisation - optimal use of storage space.
- Durable packaging.
- Greener modes - increased use of rail and short sea crossings in lieu of road freight.
- Sulphur reduction for short sea bunker oil.
- Supplier performance tracking and initiation of improvement actions with regard to shipping performance.
- Environmental training and awareness sessions for the supply base eg supplier roundtables and induction are conducted for new suppliers.
- Supplier training run for new model programmes.
- On site support to improve supplier delivery performance.

**Delivering
supplies
cost
effectively,
sustainably
and on time**

Production suppliers are required to provide evidence that the environment has been taken into consideration during the development of new components.

Designs and materials are chosen to be suitable from cost, purpose, quality and environmental viewpoints. The use of recyclate in products is encouraged, along with the use of materials from renewable sources. Also, consideration is given to design for recycling where possible.

Freight Best Practice

FBP is a Department for Transport (DFT) funded programme that offers a range of free publications to promote operational efficiency by saving fuel, developing skills and performance management.

Over the past two years, companies using Freight Best Practice products saved 240,000 tonnes of CO₂ equivalent.⁽¹⁵⁾

Registration, Evaluation and Authorisation of Chemicals (REACH)

A prime example of effective co-operation between vehicle manufacturers and the supply chain is the approach to REACH. This EU Regulation came into force in June 2007 and has significant implications for the global automotive industry and its supply chain because products that do not comply with REACH will have no market in Europe.

Under REACH, substances manufactured in the EU or imported to it, as well as **substances intended to be released from 'articles' (products)**, need to be pre-registered and then registered with the European Chemicals Agency.

The representatives of all the major vehicle manufacturers and the automotive supply chain formed a Task Force on REACH. The Task Force has issued the Automotive Industry Guideline on REACH (AIG) to help the global supply chain to **understand REACH and to adopt the Task Force's** recommendations for compliance with it. See www.acea.be/reach for more information. Industry is concerned about the impact REACH will have on recycling rates, see page 19.

**REACH is
a prime
example
of the VMs
and
suppliers
working
together**

Chapter 5

Vehicle use



Introduction

This chapter illustrates improvements in CO₂, air quality, safety and noise

The use phase is one of the most significant environmental, social and economic impacts in a vehicle's life cycle.

Chapter 3 showed that 85% of a vehicle's life cycle carbon dioxide is emitted during its life on the road.

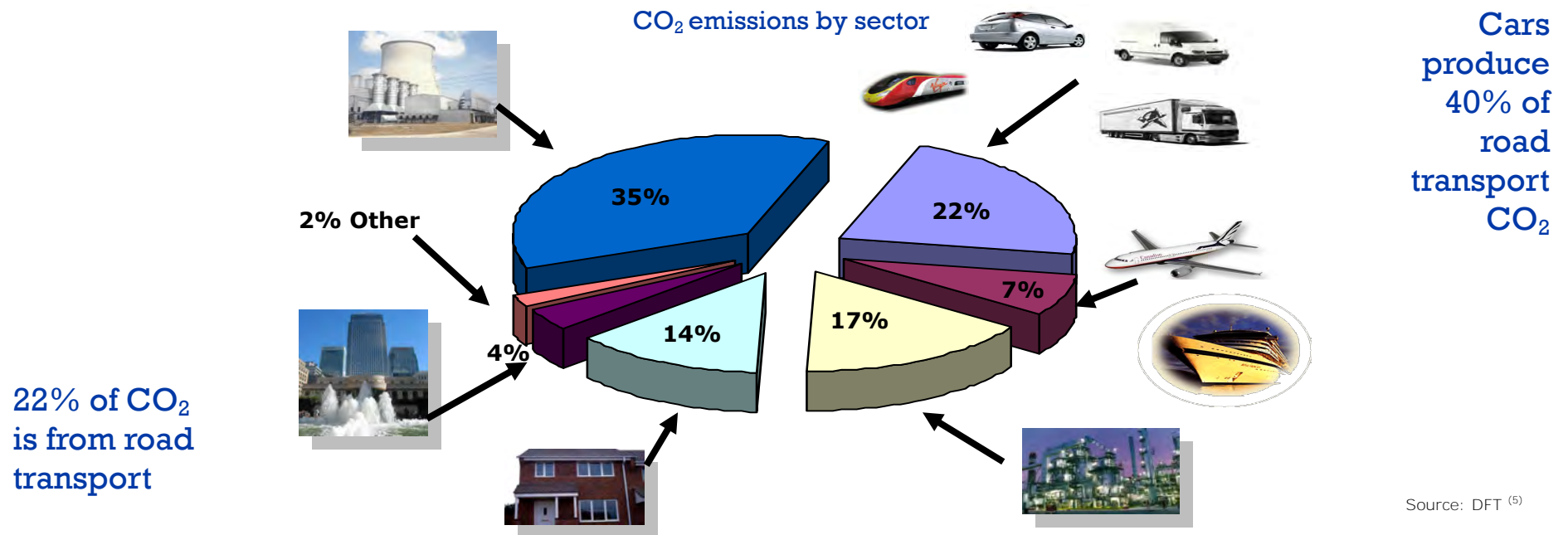
This chapter aims to demonstrate how technological improvements enable the vehicle manufacturers to:

1. Lower CO₂ emissions from vehicle use.
2. Reduce air quality impacts from tailpipe emissions.
3. Improve safety and noise levels.

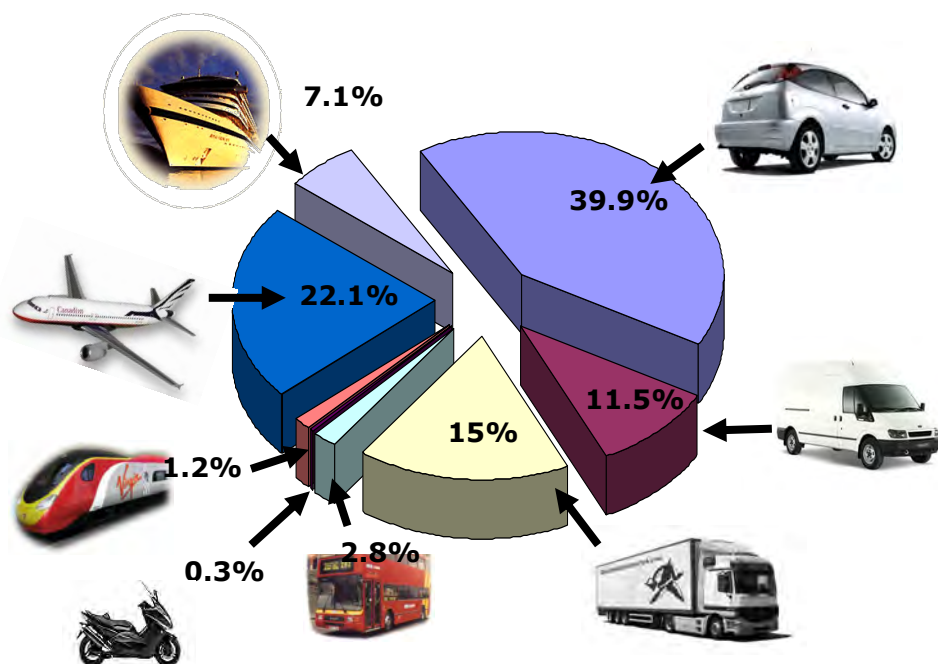
CO₂

Carbon dioxide (CO₂) is the main man-made contributor to climate change. It accounted for about 85% of the UK's man-made greenhouse gas emissions in 2006.

In 2006, 35% of carbon dioxide emissions were from the energy supply sector, 22% from road transport, 17% from business and 14% from residential fossil fuel use.



CO₂ emissions by mode of transport



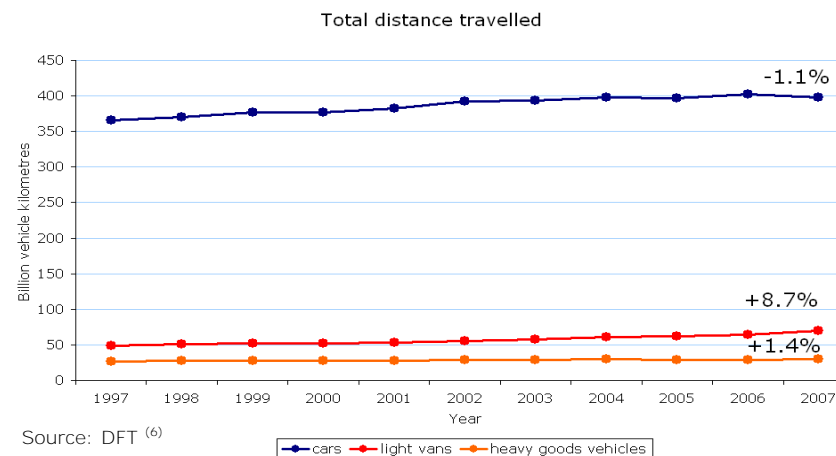
Source: DFT⁽⁵⁾

New car CO₂ has improved 13.1% since 1997 and 1.4% last year

The pie chart above shows the breakdown of the transport-derived CO₂ emissions, which make up 29% of the UK total on the previous page (2006).

Almost 40% of transport CO₂ emissions come from cars. This is because of the large number of cars on the road and the total distance they travel compared to other types of transport.

Aviation and shipping make up a further 29%. Most of the remainder comes from light vans and heavy goods vehicles, at 26.5%.⁽⁵⁾



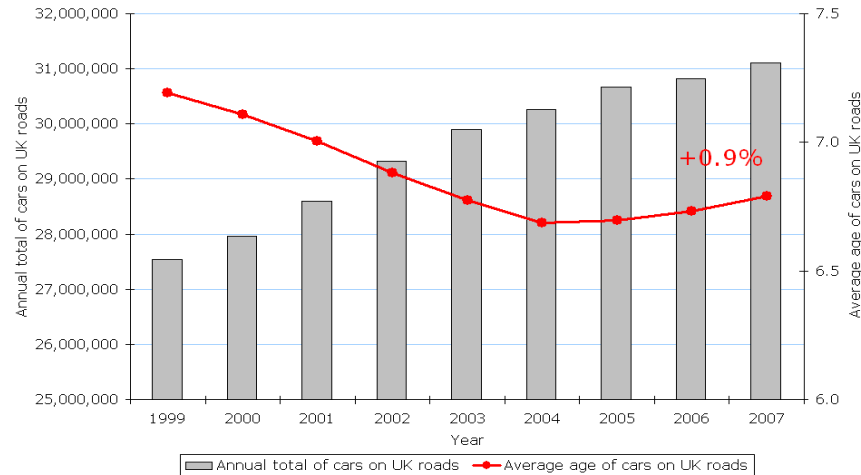
Cars account for 40% of transport CO₂ emissions and 78%⁽⁶⁾ of traffic on the roads. The graph above shows the total distance travelled in cars is over four times the distance covered by vans and heavy goods vehicles. The total number of kilometres travelled in cars fell in 2007 for the first time in seven years.⁽⁶⁾

At the moment there is a lot of focus by policy makers on tackling CO₂ emissions from road transport. In December 2007, the European Commission proposed a new law to ensure that low carbon technology is adopted in new cars. This is likely to be come into force in early 2009.

The growth in the light van sector needs attention for the future. SMMT is working with the Department for Transport and VCA to make van CO₂ data available to consumers so they can make better informed purchasing decisions. This database will be complemented by guidance enabling buyers to choose the best vehicle for their needs, while considering fuel efficiency and providing information on how they can improve fuel efficiency in other ways (see page 40).

The distance travelled by cars fell for the first time in seven years

Age of parc - 0.9% older



Source: SMMT

An ageing parc threatens progress on CO₂, air quality, safety, noise

The attractiveness of the technical solutions brought to market, education of society and smart advertising have contributed to reducing the average age of cars on the road. New car purchasing decisions are also affected by taxation, incentives and environmental awareness.

Unfortunately, the parc's trend towards newer vehicles has begun to reverse in recent years as new car demand moderated. This threatens the progress made in many areas because, on average, new vehicles emit less CO₂, produce fewer air pollutants, are quieter and safer than older models. However, there is an argument that longer vehicle life postpones the production and end of life environmental costs.

These points are illustrated on the following pages.

Tailpipe CO₂ emissions

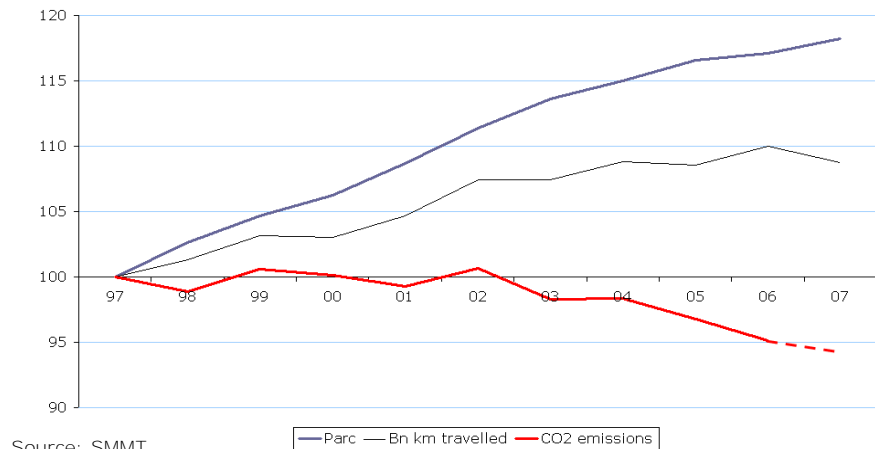
The graph below shows the change in the number of cars on the road, the distance travelled and the total CO₂ emissions, using 1997 as a baseline. Significant improvements in fuel economy have reduced the total amount of fuel consumed by cars despite around 12% growth in the distance travelled and 18% growth in the parc.

In 2007, the distance travelled by car fell back to the 2005 level which also contributed to a decrease in CO₂ emissions.

Provisional 2007 data shows that transport CO₂ fell 0.7% from 2006.⁽⁸⁾ Official 2007 data including breakdown by vehicle type is expected in January 2009.

Less CO₂ and less fuel consumed despite travelling 12% further

Number of cars, distance and CO₂



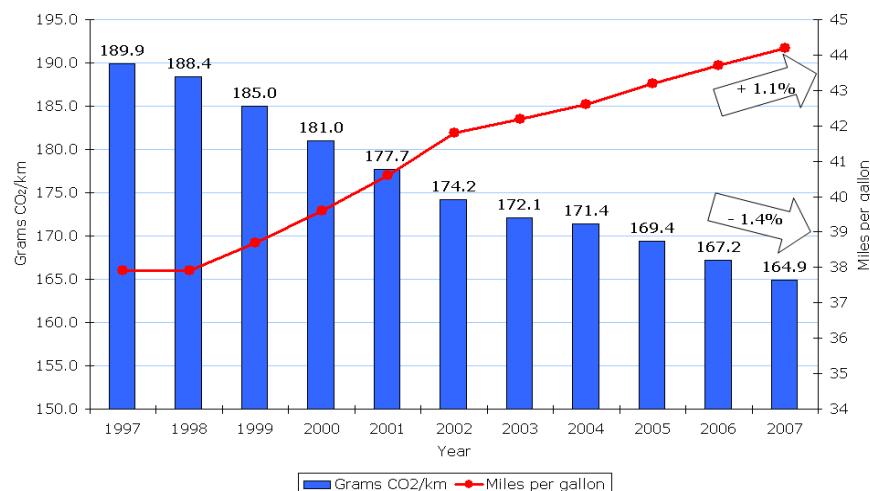
Source: SMMT

Further CO₂ reduction from tyres and tyre pressure monitoring systems

The European Commission has recently proposed the obligatory introduction in 2012 of low rolling resistance tyres, which will improve fuel consumption and save up to 7g CO₂/km and might also reduce noise, while maintaining a high level of safety.

Fuel consumption will be further improved by the proposed introduction of systems ensuring a proper tyre inflation (eg indirect tyre pressure monitoring systems (TPMS)). Maintaining proper tyre pressure is essential for both fuel efficiency and better tyre performance and life. Deflated tyres can cause up to 4% increase in fuel consumption while reducing the life of the tyre by 45%⁽⁹⁾.

UK new car CO₂ - down 1.4%, fuel economy - up 1.1%



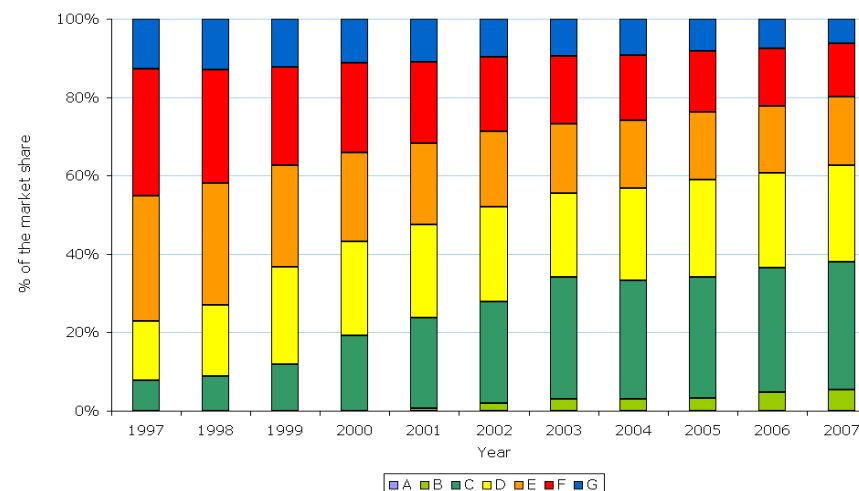
Source: SMMT

Fuel efficiency improved 16.6% and CO₂ is down 13.1% since 1997

The relationship between fuel efficiency and CO₂ emissions is not fully understood by the consumer. Fuel consumption is expressed in miles per gallon (MPG - the volume of fuel used for a given distance travelled) and is directly related to the mass of CO₂ emitted measured in grams/km.

Fuel efficiency has improved by 16.6% over the 11 years to 2007 and CO₂ emissions have reduced by 13.1% over the same period. The rates of improvement do not match due to increasing diesel penetration. Diesel engines often achieve greater MPG than petrol because of the higher calorific value per unit volume (litre/gallon). However diesel engine CO₂ emissions are greater per unit volume due to the higher carbon concentration in diesel fuel (658g of carbon per litre compared to 578g for petrol).

CO₂ trends by vehicle excise duty band



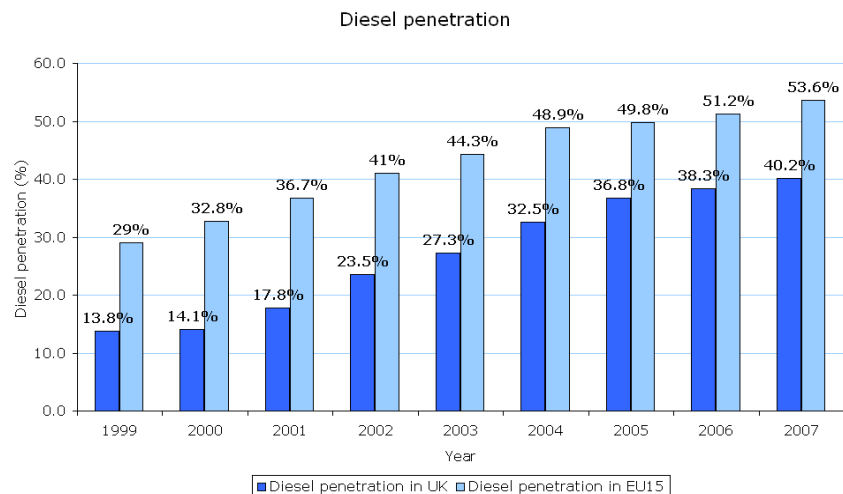
Source: SMMT

The graph above shows UK sales of new cars over the last ten years, according to vehicle excise duty (VED) bands. All data has been split into the current VED bands. It shows the market shifting towards lower emitting vehicles. Band G (cars over 225g/km) - introduced in 2006—has seen market share fall to just 6.2%.

The biggest volume reductions were in bands E and F—whose collective market share went from 77.1% to 31.1% in the last decade. Although registrations of band A cars are still low, band B has been steadily increasing, with market share moving from 0.6% in 2001 to 5.3%. **The market's overall move to lower CO₂ emitting cars reflects increased dieselisation and the greater number of alternatively fuelled and advanced propulsion vehicles as well as changes in the market structure by segment.**

Majority of cars now in C band, in 1997 were in F band

Diesel penetration of the market - up 4.9%



Source: ACEA, SMMT

Improvements in diesel technology, resulting in better tailpipe emissions and lower noise levels have contributed to improved uptake of diesel in the market.

Diesel's market share has increased from 13.8% in 1999 to 40.2% in 2007, this represents a tripling of its share in eight years. This has had a positive effect on average new car CO₂ year-on-year.

Diesel's growing market share has improved fuel efficiency of the fleet

Increasing market share for diesels has been perceived as a good way to reduce emissions of CO₂ by many European countries. Diesel's market share in Europe has increased by 25 percentage points since 1999. Although diesel penetration in the UK is still significantly lower than in other European countries, the improvement of 26 percentage points over the last nine years is very significant.

The UK is the only country in Europe where duty on diesel is as high as on petrol. This, coupled with the company car tax penalty are the main reasons why diesel penetration here is only 40% compared to 54% in Europe.

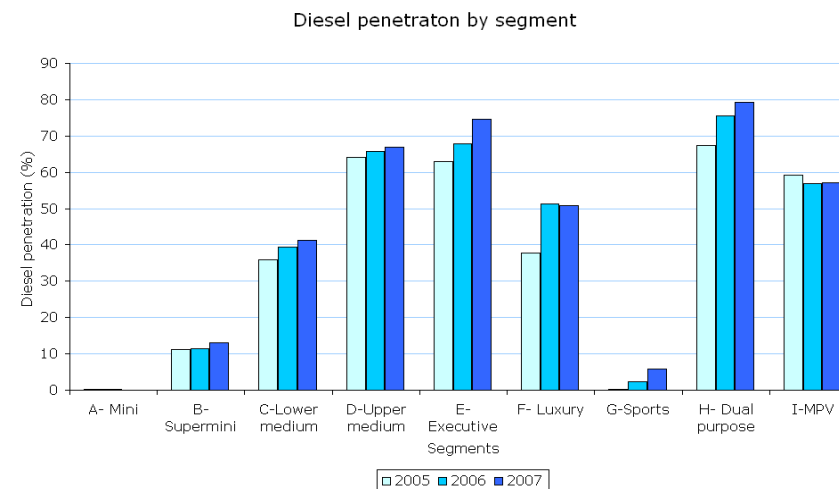
The graph below shows diesel penetration by segment. Diesel vehicles are now widely available in most segments and there has been a steady increase in diesel's market share in almost all of them.

Five of the nine segments - upper medium, executive, luxury and dual purpose and MPV - reached over 50% dieselisation in 2007, with dual purpose vehicles reaching almost 80% of sales.

The luxury car sector was the only one to experience falling diesel penetration in 2007, possibly due to increased availability of other technologies.

The lowest diesel penetration can be observed in mini and sports car markets. This may be related to the substantial price premium for diesel-powered vehicles, market perception and increased cost-effectiveness of diesel only being realised at higher mileages.

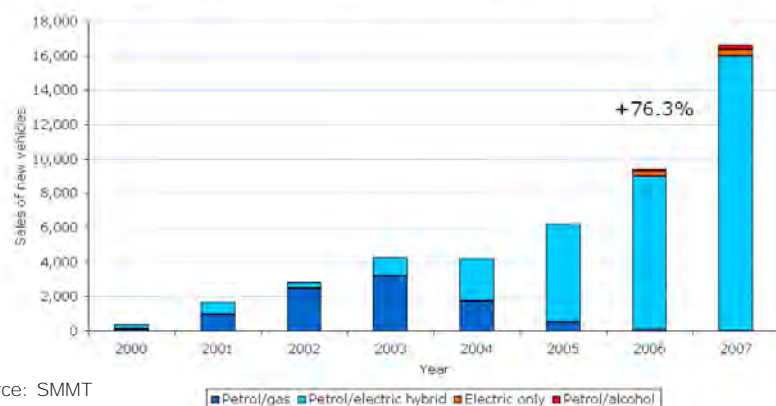
Diesel penetration of 40% in UK lags well behind Europe's 54%



Source: SMMT

Alternatively fuelled and advanced propulsion vehicles

Sales of alternatively fuelled and advanced propulsion vehicles



Source: SMMT

Alternatively fuelled vehicles (AFV eg biofuels) and advanced propulsion technologies, such as electric and hybrid cars, are responsible for 0.7% of the market with 16,640 vehicles sold in 2007. Even though their penetration of the market is still low, a steady growth can be observed since 2000 when only 0.02% of these cars were sold in UK.

Sales are growing rapidly but are still only 0.7% of the total market

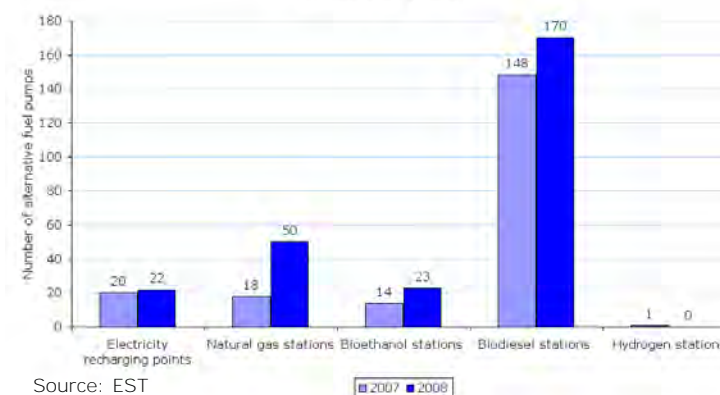
Over time petrol/electric hybrids have started to dominate, reaching 96% of the alternatively fuelled and advanced propulsion markets in 2007. Registrations of all-electric cars have increased from zero in 2000 to 397 in 2007, and are now the second best seller among advanced propulsion technologies. The number of alternatively fuelled vehicles such as E85 flex fuel (biofuel) cars sold in 2007 jumped 85.5% to 269 units. The graph above shows the rise and fall of the AFV market especially with LPG and CNG fuelled cars. In 2003 over 3,000 such vehicles were newly registered in comparison to only three in 2007. This is largely due to withdrawal of the government's Powershift incentive programme.

The Renewable Transport Fuels Obligation (RTFO) is intended to deliver CO₂ reductions from road transport by requiring fuel suppliers to achieve 5% renewable (bio) fuels in their sales by 2010. Biofuels can be used in most vehicles at relatively low concentrations blended with the standard fuel, but can also be used in specially designed (eg flex-fuel) vehicles at higher concentrations. For instance B10 has a 10% bio-content in diesel and E85 has 85% ethanol in petrol.

Biofuels can reduce CO₂ emissions but must be produced sustainably

In preparing for the RTFO, government researched the environmental impacts of biofuels. However, the science in this area is still developing and there is some concern that land use change to produce biofuels may, in certain circumstances, have negative impacts such as greenhouse gas emissions and food supplies. This has been a hot topic recently and **government's Gallagher review has now proposed that government should slow down the increase in the level of biofuels sold to 0.5%/year and reinforce the sustainability standards already required by the RTFO.**⁽¹⁶⁾

Alternative fuel pumps

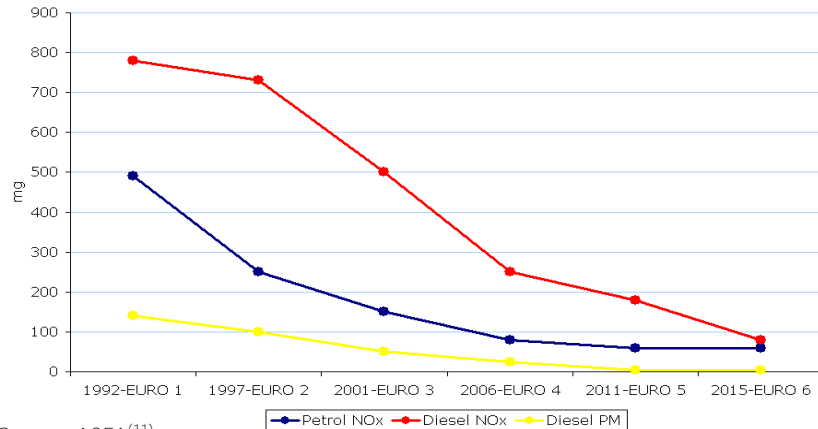


Source: EST

As the market share of the overall AFV market has increased, the number of alternative fuel pumps has increased (graph above).

Other tailpipe emissions

Euro standards- passenger cars



Source: ACEA⁽¹¹⁾

Euro standards	Emission limits		
	Petrol NOx mg/km	Diesel NOx mg/km	Diesel PM mg/km
Euro 0	1000	1600	no limit
Euro 1	490 (-51%)	780 (-51%)	140
Euro 2	250 (-75%)	730 (-54%)	100 (-29%)
Euro 3	150 (-85%)	500 (-69%)	50 (-64%)
Euro 4	80 (-92%)	250 (-84%)	25 (-82%)
Euro 5	60 (-94%)	180 (-89%)	5 (-96%)
Euro 6	60 (-94%)	80 (-95%)	5 (-96%)

NO_x and particulate standards have improved by over 80% and will reach over 94%

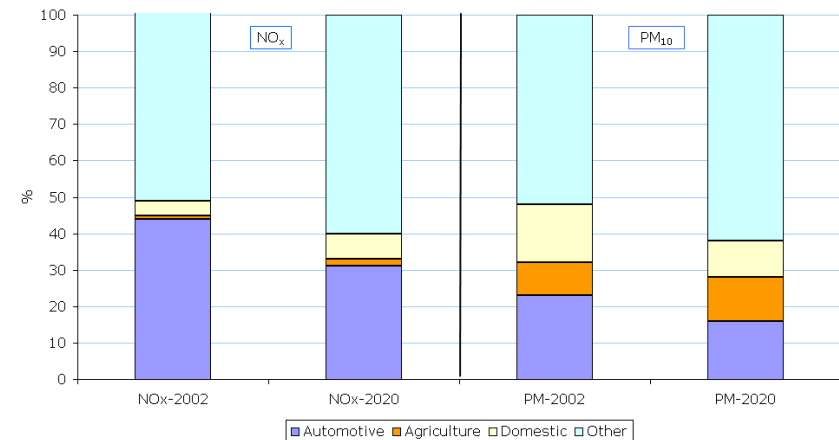
There are many abatement measures for controlling air quality emissions from road transport. The main focus for many years has been on controlling emissions of nitrogen oxides (NO_x) and particulate matter (PM) as these are more problematic for after treatment systems.

The introduction of tighter European car and HGV emission standards (EURO 4 and 5) has improved new vehicle NO_x and PM emissions by over 80% to date and will reach over 94% by 2015. (See the dates on the graph axis above and percentage reductions in the table above).⁽¹¹⁾

Emission limits for heavy duty vehicles have been subject to the same scrutiny as passenger vehicles. European institutions are currently working to finalise the Euro VI standard to be introduced from 2014 for all new for trucks, lorries and buses. The proposal is for a 75% reduction in NO_x and 66% in PM emissions compared to Euro V.

Actual emissions from road transport fell 37% for PM₁₀ and 50% for NO_x between 1995 and 2005.⁽⁶⁾

NO_x and PM₁₀ emissions



Source: NAEI⁽¹²⁾

The graph above shows UK NO_x and PM₁₀ emissions by sector for 2002 and 2020. Taking into account current trends, automotive derived emissions are forecast to reduce from 44% to 31% of overall emissions for NO_x and from 23% to 16% for PM. This decrease is very significant in real terms, lowering annual NO_x emissions from 700kt to 265 kt and PM₁₀ emissions from 35kt to 22.4 kt per annum.⁽¹²⁾

Noise

Many factors contribute to running noise from road vehicles. The main ones are vehicle exhausts, road surface material and tyre noise.

Road vehicle noise levels have been cut by 90% since 1970⁽¹³⁾. European legislation fixed the noise limits at 74 dB(A) for cars and 80 dB(A) for commercial vehicles in 1996. They have not been changed since as further vehicle noise reduction would not result in lower noise perception by society. Tyre/road noise started becoming the dominant noise factor and the vehicle noise test method was no longer representative of driving behaviour. As a result, United Nations Economic Commission for Europe (UN-ECE) Working Group on Noise (GRB)⁽¹⁰⁾ is working on a new test method with modified limit values and off cycle checks.

Recent research submitted to GRB has shown that road surfaces are probably the most important part of the traffic noise system and the difference in sound power level between best and worst cases is between 15-18 dB. The best noise reduction is achieved by a two layer drainage or a porous elastic asphalt. The level difference between these low noise surfaces and dense asphalt is five to eight dB for constant speed running, and three to four dB for start-acceleration running. Porous elastic and two layer drainage surfaces also result in safer driving conditions in wet weather due to significant increases in grip levels and reduction in spray.

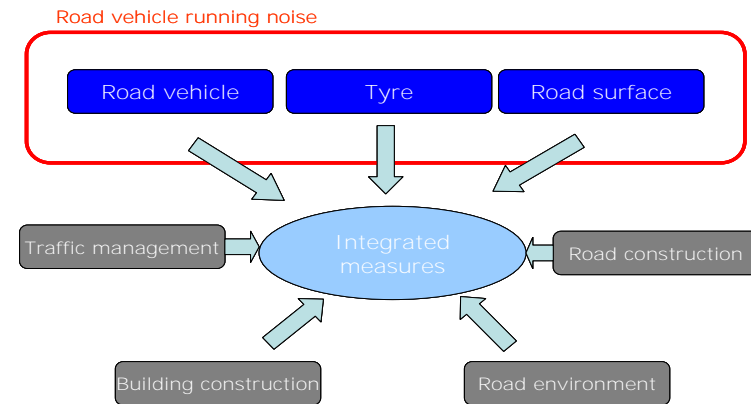
Research has shown that it is possible to reduce vehicle noise on average by about ten dB by integrating the latest noise reduction technologies for vehicles, tyres and surfaces.

Most tyre noise is created by the tread as it comes into contact with the road. Manufacturers are striving to combine low noise tyres with low rolling resistance performance. The number of tyres on the market that combine low noise, low rolling resistance and good performance in terms of wet grip is increasing rapidly.

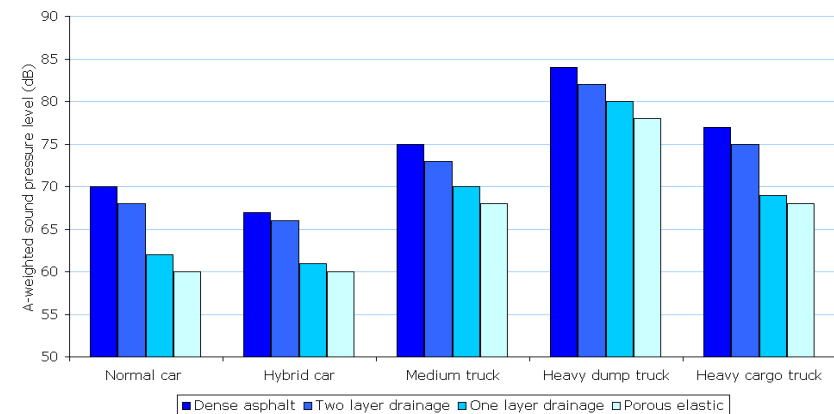
Tyre noise has also been reduced by improvements in vehicle design that help to shield tyre noise and techniques that assist motorists in maintaining the correct inflation pressure to their tyres, such as Tyre Pressure Monitor Systems (TPMS, see also page 28).

**More tyres
now
combine
low noise,
low rolling
resistance
and good
grip in the
wet**

Integrated noise reduction measures



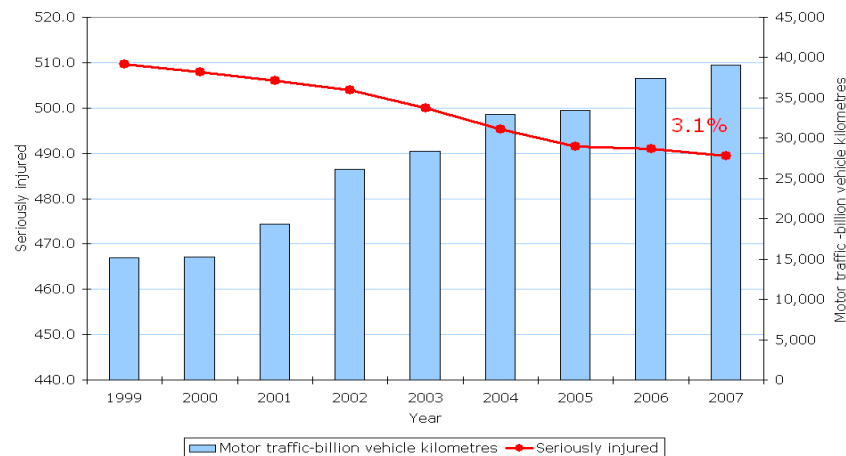
Noise output at constant speed (60km/h)



Source: GRB - Japan

Safety

Serious injuries - down 3.1%



Source: DFT ⁽⁶⁾

Road safety is essential to save lives and reduce congestion. The motor industry has a long-standing tradition of innovation to deliver this goal.

Serious injuries have almost halved in the past decade, while traffic itself has increased. The automotive industry has contributed significantly to initiatives for safer use of roads and through continuous improvements in the active and passive measures to ensure occupant and pedestrian safety.

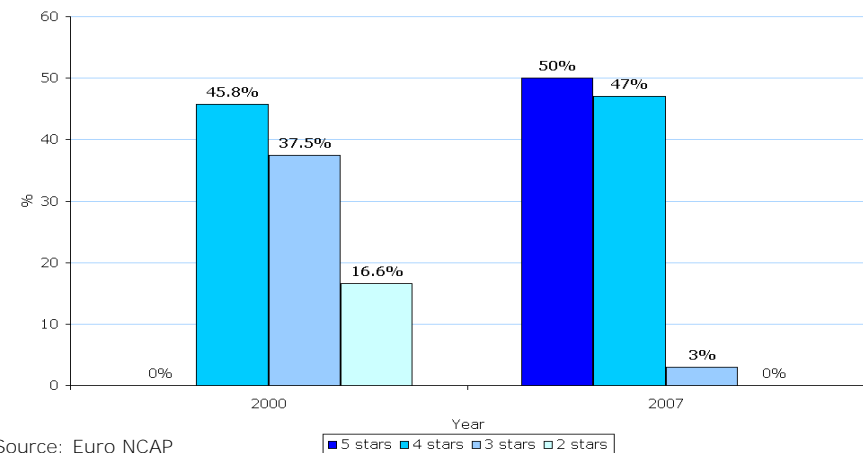
The development and introduction of seatbelts, airbags and ABS have contributed to an 80% drop in fatal or serious injuries among vehicle passengers.⁽¹⁷⁾

Future safety measures

Manufacturers are strengthening efforts in developing tools to improve "active safety": 90% of all accidents are caused by human error. Intelligent technology and electronic devices can help or correct driver control enormously. Many of these technologies, whilst increasingly aimed at accident avoidance and crash mitigation, also protect more vulnerable road users, including pedestrians and cyclists.⁽¹⁷⁾

The European Commission (EC) has decided that all new cars will be fitted with electronic stability control (ESC) from 2012. Mandatory ESC, which will be

Product safety - up 8%



Source: Euro NCAP

The independent European New Car Assessment Programme (Euro NCAP) tests all the most popular cars awarding them a safety rating between one and five stars.

The graph shows a significant market shift, testament to **manufacturers' commitment to offering the best possible** safety performance to occupants, other road users and pedestrians. Fifty per cent of new cars are now five star for passenger safety, when none achieved that seven years ago. The number of new cars awarded four stars or more rose from 46% in 2000 to 89% in 2006 and 97% in 2007.

**97% of
new cars
get four or
five Euro
NCAP
stars**

phased in from 2012 for new cars and commercial vehicles, with all new cars being equipped by 2014. In dry conditions, ESC can reduce accidents by more than 20% while its benefits are even more significant under wet or icy conditions where it can prevent skidding and the accident reduction rate increases to between 30 and 40%.

In addition, the EC has announced that lorries and other heavy vehicles should be fitted with advanced emergency braking systems (AEBS) and lane departure warning (LDW) systems as of 2013.

Chapter 6

Vehicle end of life



The End of Life Vehicle (ELV) Directive

The ELV Directive 2000/53/EC was adopted in September 2000 and focused the approach to end-of-life management for cars and light vans (M1/N1) on three complementary strategies:

- Avoiding waste by improving product design.
- Increasing the recycling and re-use of waste.
- Improving the environmental handling of ELVs.

As waste prevention is the primary objective of the Directive, vehicle, material and equipment manufacturers must:

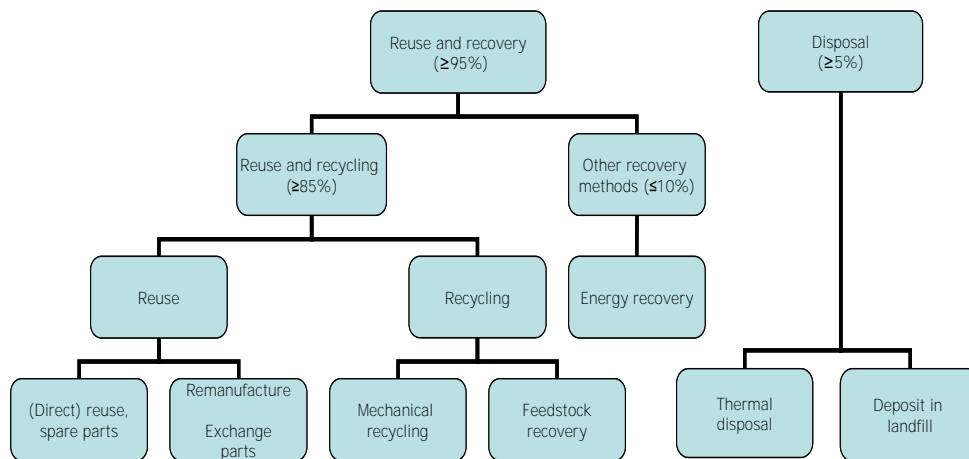
- Endeavour to reduce the use of hazardous substances when designing vehicles;
- Design and produce vehicles which facilitate the dismantling, re-use, recovery and recycling of end of life vehicles;
- Increase the use of recycled materials in vehicle manufacture; ensure that components of vehicles placed on the market after 1 July 2003 do not contain certain hazardous materials.

The Directive was implemented in the UK through regulations in 2003 and 2005. They establish systems for collection of all end of life vehicles. These systems ensure that all qualifying end of life vehicles that are delivered to authorised treatment facilities (ATFs) will be accepted at no cost to the last owner and a Certificate of Destruction (CoD) will be issued. Qualifying vehicles can be defined as a complete vehicle (as defined in the UK ELV Regulations), free from additional waste.

The storage and treatment of end of life vehicles is also subject to strict control. Establishments carrying out processing operations must strip vehicles after depolluting them of all environmentally hazardous components. Priority must be given to the reuse and recycling of vehicle components (such as batteries, tyres and oil).

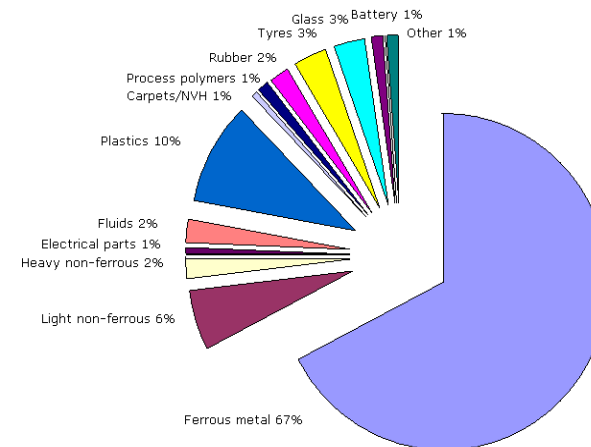
The aim of the ELV Directive is to prevent waste and promote the collection, reuse and recycling of vehicles and their materials (including car components). The directive sets a target for reuse, recycling and recovery of vehicles and their components to 85% of the total weight of the vehicle by 2006.

Waste management options for ELV



Source: ACEA ⁽¹⁴⁾

Average material breakdown of ELV car



Source: SMMT

**Recovery is
up 10%
since 1998**



Weights and recycling/recovery targets

UK Government shredder trial in 2005 conducted under the auspices of the Consortium for Automotive Recycling (CARE), established that the average metallic content of cars being scrapped is 75% and a further 1% is fuel, all of which is recycled.

VMs' authorised networks of ATFs achieved their 85% recovery

Producers and authorised treatment facilities therefore had to reuse, recycle or recover an additional 9% by the vehicle weight to meet the 85% target set by the ELV regulations for all vehicles processed through their network from 2006 onwards.

Some ATFs will remove components for resale or for specific material stream recycling. Ultimately, cars will end up at a shredder where the car will be reduced to small pieces and separated into material streams, including metals and plastics, for onward recycling or energy recovery.

In 2006, vehicle manufacturers' authorised networks achieved the 85% recovery target, an increase of 10% since 1998.

ELV Directive targets

	Target (%)	
	Minimum reuse and recovery rate	Minimum reuse and recycling rate
By 1 Jan 2006		
Vehicles pre 1980	75	70
Vehicles 1980 onwards	85	80
Vehicles January 2015	95	85

Recyclability

The RRR Directive 2005/64/EC on type approval of vehicles for reusability, recyclability, and recoverability came into force in December 2005 and requires cars and light vans (M1/N1), newly introduced to the market after December 2008 to be 85% reusable and/or recyclable and 95% reusable/recoverable by mass.

Recyclability has been an integral part of the new model planning process for many years. In consequence, for end of life vehicles advanced recycling methods (post shredder treatment) exist that today allow the recycling and recovery of literally all materials. However, it should be noted that life cycle assessment showed limited environmental impact of mechanical recycling for non-metals. In addition, virtual and actual dismantling analyses showed limited impact of changing vehicle design for improving recyclability.

Neutralisation of pyrotechnic devices

During the development phase, the vehicle electronics are designed so that all pyrotechnic devices (airbags etc) can be neutralised safely and simply by ATF operatives using a common interface (ISO 26021). For vehicles already on the market, there are vehicle specific adapters available to enable the dismantlers safely to deploy all pyrotechnic devices.

Draining

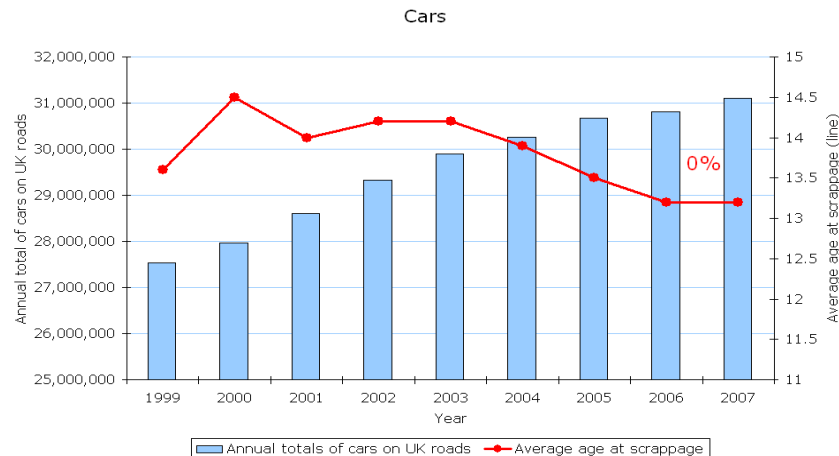
Components which contain fluids are positioned so that they can be accessed quickly. Opening or drilling components containing fluids at their deepest point allows gravity to play its part in the preliminary depollution process. Specific components such as the fuel tank and shock absorbers are drained using specially designed tools.

Materials

All components are labelled in accordance with international ISO standards, enabling materials to be sorted according to type. Recycled materials are used for some components, including wheel arch liners, made from recycled plastic.

Ongoing studies into efficient material separation technologies for end-of-life vehicles, are promoting the utilisation for shredder residue and a strategy for boosting the usage of recycled materials for some specific car components to meet the challenging 95% recovery target by 2015.

Average age at scrappage



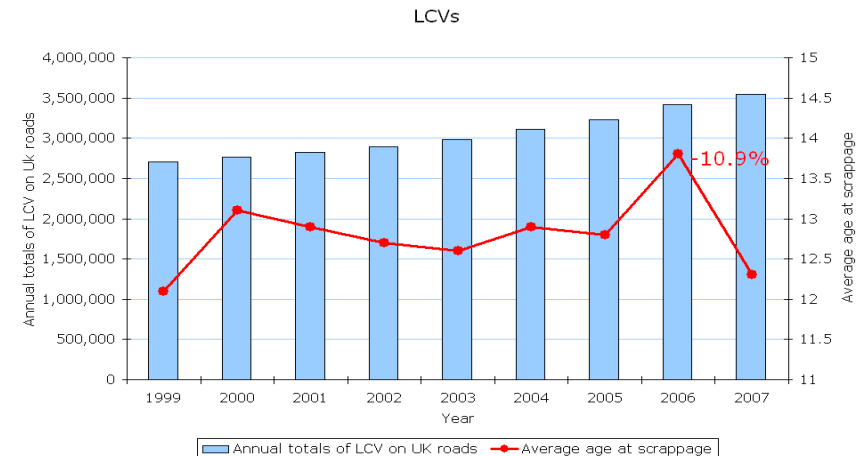
Source: SMMT

The graphs above show the average age of cars and vans at scrappage in relation to the number of vehicles on the roads (parc).

Cars tend to continue in use longer than vans, and their average age at scrappage has fallen 7% in the past five years. Age at scrappage was stable in 2007 at 13.2 years. The downward trend is likely to be a reflection of nearing saturation point in the parc. Used car prices have steadily fallen in recent years and this will mean the ratio between the value of the car and the cost of repairs diminishing. This has tended to result in cars coming to the end of their economic life more quickly.

**Age of cars
at scrappage
fell 7% in
five years**

If the fleet could be renewed more quickly, this would bring environmental benefits in terms of more fuel efficient vehicles with lower CO₂ emissions producing fewer air pollutant. Younger vehicles also contain greater occupant and pedestrian safety features.



Source: SMMT

The shorter life cycle of vans (light commercial vehicles) is probably a result of them generally being worked harder than the average car, involving higher mileage and loads.





On the whole, the average age of a van at scrappage has a similar falling trend to cars, although it did spike in 2006. Like cars, the average age at scrappage has not varied enormously over time, between 12 and 13 years (with the notable exception of 2006).

Strong supply in the new van market could, as in the car market, be driving down used prices and encouraging the earlier retirement of models.

**Vans are
worked
harder and
retired a
year earlier
than cars**

Chapter 7

Stakeholder engagement

Fuel Economy		
CO ₂ emission figure (g/km)		
<= 100	A	
101-120	B	
121-150	C	
151-180	D	
181-210	E	
211-240	F	
241+	G	
Fuel cost (estimated) for 12,000 miles <small>A fuel cost figure indicates to the consumer a guide fuel price for comparison purposes. The figure is calculated by using the combined drive cycle (town centre and motorway) and average fuel price. Re-calculated annually, the correct cost per litre is as follows – petrol 105p, diesel 113p and LPG 56p (VCA May 2008).</small>		
VED for 12 months <small>Vehicle excise duty (VED) or road tax varies according to the CO₂ emissions and fuel type of the vehicle</small>		
Environmental Information <small>A guide on fuel economy and CO₂ emissions which contains data for all new passenger car models is available at any point of sale free of charge. In addition to the fuel efficiency of a car, driving behaviour as well as other non-technical factors play a role in determining a car's fuel consumption and CO₂ emissions. CO₂ is the main greenhouse gas responsible for global warming.</small>		
Make/Model:		Engine Capacity (cc):
Fuel Type:		Transmission:
Fuel Consumption:		
Drive cycle	Litres/100km	Mpg
Urban		
Extra-urban		
Combined		
Carbon dioxide emissions (g/km): Important note: Some specifications of this make/model may have lower CO ₂ emissions than this. Check with your dealer.		
<div>    </div>		

Stakeholder engagement

The motor industry has been committed for many years to working towards sustainable development in partnership with stakeholders.

During 2007, the industry was involved with a number of innovative programmes and campaigns aimed at improving the environmental performance of its products, greater choice of lower CO₂ emitting models and raising awareness among consumers.



The colour coded new car CO₂ label is displayed in 91% of dealerships

Recognising the partnership that exists between car manufacturers and motorists, the UK automotive sector worked with the Low Carbon Vehicle Partnership (LowCVP) to introduce a unique programme of environmental labelling for new vehicles displayed for sale. This provides consumers with **information on each car's CO₂ emissions** as well as annual fuel and vehicle excise duty (VED) costs. In this way the motorist can minimise the environmental impact by choosing the most appropriate model for their needs.



The latest survey showed that 91% of dealerships now display the colour-coded new car CO₂ label, compared with 74% in 2006. ⁽¹⁸⁾



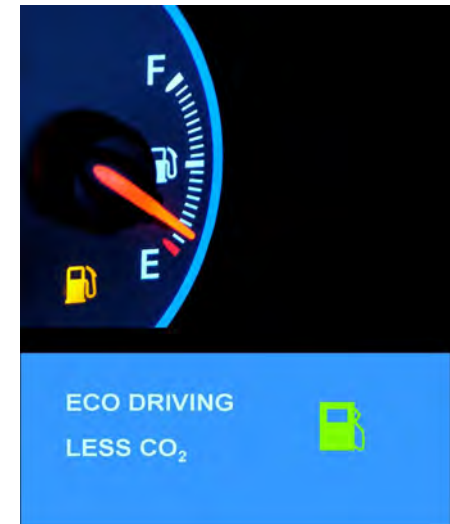
The Society of Motor Manufacturers and Traders is taking an active role in the current work on reviewing the CO₂ car “labelling” directive, using the expertise acquired during years of co-operation with government and environmental groups on successful introduction of the UK colour-coded fuel economy label.

Even though the UK has a strict regulatory regime with regard to advertising, the industry is still looking to strengthen its self-regulation by developing a Code of Sustainable Advertising Practice.

The UK automotive industry welcomed publication of a draft EU regulation on reduction in CO₂ emissions from light duty vehicles released by the European Commission in 2007. The industry is fully cooperating with the Commission to ensure a balanced

regulatory framework to maximise environmental, social and economic gains while maintaining the diversity and dynamism of the UK market and its manufacturing base.

The industry is keen to maximise CO₂ reductions from road transport with an integrated approach, combining the efforts of automotive manufacturers, fuel companies, consumers and government in the most appropriate and cost-effective way.





Whilst there are limitations on the amount to which any industry can influence the use of its products beyond the point of sale, the motor industry has undertaken a number of initiatives to encourage responsible use of its vehicles.

The industry actively supports the government's Act on CO₂ campaign and has been working with them to develop and target the messages within its campaigns. This follows the industry's own *Drive Green - Drive Safely* (2006) and *Guide to*

More Responsible Motoring (2003). Both have similar aims, to educate motorists that they can play their part in reducing emissions by choosing a vehicle most appropriate for their needs, adopting a smoother driving style and taking advice to reduce fuel use and ultimately CO₂.

SMMT is working with DfT to develop a website to provide comprehensive van CO₂ information. Its purpose is to enable buyers to choose the right vehicle for its function, taking into account environmental as well as economical factors. The website will be coupled with a van buyers guide offering practical advice to van buyers and drivers enabling them to choose the right vehicle for the purpose which could lower real world CO₂ emissions.



The Motor Industry Code of Practice for Service and Repair was developed by the Retail Motor Strategy Group to address complaints raised by the National Consumer Council and government.

Motor Codes Ltd was set up to co-ordinate and operate the process by which individual garages can demonstrate their commitment to operate as responsible businesses with a transparent and quick dispute resolution process. The Code safeguards consumer interests and encourages businesses to raise their standards of customer service in all areas.

The European Automobile Manufacturers' Association (ACEA) represents interests of the European car, truck and bus manufacturers at EU level, maintaining a close relationship with organisations with an interest in the automotive industry.

Currently ACEA is drafting the first automotive sector sustainability report at European level. The SMMT is supporting this process by sharing its experience of producing a similar report for the last nine years.



Government road safety initiatives - THINK, SaFED and Driving for Better Business - are widely supported throughout the industry. Campaigns promote not only safe

but sustainable travel and include complementary messages on how planning safer and sustainable travel can assist business in cutting vehicle emissions, reducing accidents and ultimately lowering running costs.

Appendices

Appendix Table 1. Sector fact sheet

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Automotive manufacturing sector turnover (WI) (£ billion)	44.1	42.2	42.6	44.7	46.3	46.9	48.2	49.3	51.0
Share of total transport manufacturing turnover (UK turnover) (%)	64.4	64.5	64.1	67.6	68	67.1	67.7	66.7	66.7
Total net capital investment (WI) (£ billion)	2.1	2	2.1	1.3	1.2	1.4	1.3	1.4	1.5
Automotive sector value added (WI) (£ billion)	9.7	8.4	9.4	9.4	9.2	9.4	9.4	9.9	10.3
Total employees directly dependent on the automotive sector (WI)	929,000	907,000	898,000	886,000	889,000	866,000	874,000	841,000	841,000
Value of exports (WI) (£ billion)	19.3	19.8	18	20.9	21.9	22.5	23.7	24.1	24.5
Percentage of total UK export (%)	11.5	10.5	9.5	11.2	11.6	11.8	11.2	9.9	11.1
Sector value added share of UK GVA (%)	4.0	3.5	3.8	3.7	3.7	3.4	3.3	3.2	3.0
UK sector share of global passenger car production (%)	4.5	4.0	3.7	4.0	4.0	3.8	3.5	3.0	3.0
Number of UK volume passenger car manufacturers (WI)	-	9	9	9	9	9	8	7	7
Number of UK commercial vehicle (CV) manufacturers (WI)	-	10	10	9	9	9	9	9	9
Number of cars and CVs produced (million)	1.98	1.81	1.69	1.82	1.85	1.86	1.80	1.65	1.75
New car registrations (AC) (million)	2.19	2.22	2.45	2.56	2.58	2.57	2.44	2.34	2.40
Cars and light CVs on the road (million)	30.10	30.58	31.27	32.05	32.70	33.20	33.70	34.24	34.65

Appendix Table 2. Production and distribution inputs

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total combined energy use (GWh) (AS)	6,110	7,013	6,857	6,540	6,126	5,337	5,104	4,851	4,672
Energy use per employee (kWh) (AS)	64,175	70,108	71,166	74,685	69,912	69,923	70,559	64,007	71,051
Energy use per £1million turnover (kWh) (AS)	303,828	309,717	281,036	186,943	156,419	154,062	129,602	115,847	107,010
Energy use per vehicle produced (MWh/unit) (VMS)	3.1	3.9	4.3	4	2.8	2.5	2.3	2.5	2.2
Total combined water use ('000m ³) (AS)	-	9,620	10,105	9,108	8,404	7,037	7,127	6,779	6,053
Water use per employee (m ³) (AS)	-	96.2	104.9	101.8	95.9	92.2	98.5	89.4	92.0
Water use per £1million turnover (m ³) (AS)	-	457	414	255	215	203	181	162	139
Water use per vehicle produced (m ³) (VMS)	-	5.3	6.2	5.6	3.4	3.4	3.2	3.3	3



Appendix Table 3. Production and distribution material outputs

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total combined CO ₂ equivalent (tonnes) (AS)	1,821,586	2,182,926	2,149,771	1,954,295	1,679,832	1,447,900	1,417,129	1,363,189	1,338,244
CO ₂ equivalent per employee (tonnes) (AS)	19.3	21.8	22.3	23.9	19.2	19.0	19.6	18.0	20.4
CO ₂ equivalent (tonnes) per £1million turnover (AS)	90.6	95.3	88.1	59.9	42.9	41.8	36.0	32.6	30.6
CO ₂ equivalent per vehicle produced (tonnes) (VMS)	1.1	1.1	1.3	1.2	0.7	0.7	0.6	0.7	0.6
VOC emissions (cars) (g/m2)(VMS)	55.0	55.0	50.0	47.0	47.0	50.0	48.0	49.0	45.0
VOC emissions (vans) (g/m2)(VMS)	0.0	0.0	59.0	82.0	60.0	66.0	67.0	65.0	69.0
Total combined waste to landfill (tonnes) (AS)	54,954	80,399	121,207	70,897	56,743	52,842	44,910	39,862	30,004
Waste to landfill per employee (tonnes) (AS)	0.6	0.8	1.3	0.8	0.6	0.7	0.6	0.5	0.5
Waste to landfill per £1million turnover (tonnes) (AS)	2.7	3.7	4.9	2.0	1.4	1.5	1.1	1.0	0.7
Waste to landfill per vehicle produced (kg) (VMS)	-	40.3	66.4	40.5	17.9	19.8	14.5	17.0	12.8
Total combined site waste for recycling (tonnes) (AS)						145,797	197,752	207,832	248,437
Site waste for recycling per employee (kg) (AS)						1,910.2	2,733.8	2,742.2	3,777.9
Site waste for recycling per £1million turnover (kg) (AS)						4,208.7	5,021.4	4,963.3	5,689.9
Site waste for recycling per vehicle produced (kg) (VMS)						78.2	99.7	108.2	131.64
Total combined site waste for recovery (tonnes) (AS)						3,373	2,506	1,566	3,019
Site waste for recovery per employee (tonnes) (AS)						0.0	0.0	0.0	0.0
Site waste for recovery per £1million turnover (tonnes)						0.1	0.1	0.0	0.1
Site waste for recovery per vehicle produced (kg) (VMS)						2.2	1.5	0.9	1.74

* Large vehicle manufacturer excluded from 2004 data

Appendix Table 4. Economic indicators	1999	2000	2001	2002	2003	2004	2005	2006	2007
UK automotive manufacturing sector turnover (£ billion) (WI)	44.1	42.2	42.6	44.7	46.3	46.9	48.2	49.3	51
Signatories' combined turnover (£ billion) (AS)	20.1	21.0	24.4	35.7	39.2	34.6	39.4	41.9	43.7
Total UK number of new cars produced (AC)	1,799,004	1,641,452	1,492,365	1,629,744	1,657,558	1,646,750	1,595,697	1,442,085	1,534,567
Total UK number of new CVs produced	185,905	172,442	192,872	191,267	188,871	209,293	206,753	207,704	215,686
Total UK number of new vehicles produced	1,984,909	1,813,894	1,685,237	1,821,011	1,846,429	1,856,043	1,802,450	1,649,789	1,856,043
Total number of new vehicles produced by signatories		1,572,642	1,470,659	1,441,794	1,731,894	1,614,981	1,769,810	1,897,921	1,788,048
Total number of new car registrations (AC)	2,197,615	2,221,647	2,458,769	2,563,631	2,579,050	2,567,269	2,439,717	2,344,864	2,404,007
Total number of new CV registrations	288,100	298,043	313,411	322,258	363,687	389,923	385,969	386,968	392,481
Total number of new vehicle registrations	2,485,715	2,519,690	2,772,180	2,885,889	2,942,737	2,957,192	2,825,686	2,731,832	2,796,488

Appendix Table 5. Employment indicators	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of jobs dependent on the sector	929,000	907,000	898,000	886,000	889,000	866,000	874,000	841,000	841,000
· Automotive manufacturing	279,000	267,000	253,000	248,000	236,000	224,000	213,000	195,000	183,000
· Automotive supply and use	650,000	640,000	645,000	638,000	653,000	642,000	661,000	646,000	658,000
Signatories' total combined employees (AS)	95,214	100,036	96,357	89,455	87,625	76,327	72,337	75,789	65,761

Data in the report is quoted in a number of ways:

Whole industry data	(WI)
All car sales in the United Kingdom	(AC)
All signatories	(AS)
UK vehicle manufacturing signatories	(VMS)

References

- (1). Life Cycle Assessment of Lightweight and End-of-Life Scenarios for Generic Compact Class Passenger Vehicles. Wulf-Peter Schmidt et al (2004)
- (2). Sustainable resource use in the motor industry: a mass balance approach. Elghali, McColl-Grubb, Schiavi and Griffiths TRL 2004
- (3). Life cycle inventory for the Golf A4. Schweimer and Levin (2000)
- (4). Annual survey report 2007– Recruitment, retention and turnover; Chartered Institute of Personnel and Development
- (5). Climate Change and Transport: Future Challenges; ACFO Conference, Michael Hurwitz, Department for Transport
- (6). Transport Statistics Great Britain– Edition 2007; Department for Transport
- (7). New car CO₂ report 2008– Driving down emissions; SMMT
- (8). Digest of United Kingdom energy statistics 2008; BERR
- (9). <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0019:FIN:EN:PDF>
- (10). <http://www.unece.org/trans/main/wp29/wp29wgs/wp29grb/grbinf47.html>
- (11). European Automobile Industry Report 07/08; ACEA
- (12). Air Quality and Climate Change: A UK perspective; Defra;
- (13). http://www.acea.be/index.php/news/news_detail/long_standing_environmental_track_record/
- (14). Drive toward compliance; Wolfgang A. Reinhardt; Waste management world
- (15). <http://www.freightbestpractice.org.uk/default.aspx?appid=1953>
- (16). http://www.dft.gov.uk/rfa/_db/_documents/Report_of_the_Gallagher_review.pdf
- (17). http://www.acea.be/images/uploads/pr/Background_on_Safety_Oct06--Background_on_Safety_Oct06.pdf
- (18). Low Carbon Vehicle Partnership dealership survey on colour coded new car label (2008)
- (19). UK end-of-life vehicles reuse, recycling and recovery performance 2006; BEER June 2008; Automotive Consortium on recycling and disposal 2001 report; ACORD

Contact information

Organisation	Website	Organisation	Website
Auto Industry	www.autoindustry.co.uk	The National Skills Academy	www.manufacturing.nsacademy.co.uk
The Carbon Trust	www.thecarbontrust.co.uk	Royal Society for the Prevention of Accidents	www.rosipa.org.uk
Department for the Environment, Food and Rural Affairs (DEFRA)	www.defra.gov.uk/environment/sustainable	Society of Motor Manufacturers and Traders	www.smmmt.co.uk
Department for Transport (DfT)	www.dft.gov.uk	The Sustainable Development Commission	www.sd-commission.org.uk
Department for Business, Enterprise and Regulatory Reform	www.berr.gov.uk/	Sustainable Development Research Network	www.sd-research.org.uk
EC Sustainable Development	www.europa.eu.int/comm/sustainable	The World Business Council for Sustainable Development	www.wbcsd.org
Energy Savings Trust	www.transportenergy.org.uk	UK Climate Change Impact Programme	www.ukcip.org.uk
Environment Agency	www.environment-agency.gov.uk	UK Commission for Integrated Transport	www.cfit.gov.uk
European Environment Agency	www.eea.eu.int	UK GOV SITE	www.sustainable-development.gov.uk
Foresight Vehicle Programme	www.foresightvehicle.org.uk	UN Division for Sustainable Development	www.un.org/esa/sustdev
LowCVP	www.lowcvp.org.uk	United Kingdom Petroleum Industries Association	www.ukpia.com
The Institute for the Motor Industry	www.motor.org.uk	Vehicle Certification Agency	www.vca.gov.uk



Signatory

Website

Bentley Motors	www.bentleymotors.com
BMW Group	www.bmw.co.uk and www.mini.co.uk
Daimler Chrysler	www.daimlerchrysler.com
Ford Motor Company	www.ford.com
General Motors UK Limited	www.gm.com
GKN Driveline	www.gknplc.com
Honda UK Manufacturing	www.mfg.honda.co.uk
Jaguar Cars	www.jaguar.com
Land Rover UK	www.landrover.com
LDV	www.ldv.com
Nissan	www.nissan.co.uk and www.nissan-global.com
PSA Peugeot Citroën Automobiles	www.sustainability.psa-peugeot-citroen.com
Toyota	www.toyotauk.com and www.toyota.co.jp
Volvo Car UK	www.volvocars.co.uk
Volkswagen Group	www.volkswagen-environment.de

Look for links to about us or company to be directed to sustainability and environmental information.

Published by:

The Society of Motor Manufacturers and Traders Ltd, October 2008. SMMT and the SMMT Logo are registered trademarks of SMMT Ltd. © All rights reserved
Printed on 9Lives 80 using 80% recovered fibre comprising 10% packaging waste, 10% best white waste, 60% de-inked waste fibre and 20% virgin TCF fibre sourced from sustainable forests.

Images from www.freefoto.com, www.dreamtime.com



The Society of Motor Manufacturers and Traders
Forbes House, Halkin Street, London, SW1X 7DS UK
Telephone: +44 (0)20 7344 9200 E-mail: sustainability@smmmt.co.uk
Website: www.smmmt.co.uk/sustainability