

New Car CO₂ Report 2014

The 13th report



THE SOCIETY OF
MOTOR MANUFACTURERS
AND TRADERS LIMITED

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INTRODUCTION

The UK new car market saw sales-weighted average CO₂ emissions fall 3.6% to 128.3g/km in 2013. This was the first time emissions fell below 130g/km, an important milestone as it marks the achievement of the pan-European 2012-2015 target. It was also encouraging to see that the 3.6% rate of reduction matched that of 2012 and continued the impressive trend in performance improvement evident since 2008. The performance was the result of huge investment in advanced low CO₂-emitting technologies by industry and was also influenced by consumers' increasing prioritisation of improved fuel efficiency in their purchasing decisions.

2013 also saw the registration of record numbers of alternatively-fuelled cars. While petrol and diesel models are becoming more fuel-efficient, in the longer-term the switch to alternatively-fuelled vehicles will be necessary to achieve increasingly challenging CO₂ targets. Those targets are now set at a European level to 2020, with a one-year phase-in, and discussions will begin shortly on the definition of longer-term targets.

Environmental regulations, motoring taxation and consumer information will play an important role in enabling industry to deliver even more efficient models and encouraging consumers to adopt them. SMMT welcomes the government's ongoing support to accelerate the uptake of ultra-low emitting models, with an additional £500 million investment secured to support market transformation between 2015 and 2020. The recently-launched 'Go Ultra-low' campaign (see www.goultralow.com) shows how government and industry are working together to promote the advantages of ultra-low emission vehicles and educate consumers about the feasibility and benefits of adjusting their purchasing decisions to consider such vehicles.

The Automotive Sector Strategy, published in 2013, is designed to enable the UK automotive sector to support the development, production and market for lower-emitting vehicles and ensure that the UK's industrial and economic ambitions are aligned with its environmental aspirations.

This, the 13th New Car CO₂ Report, provides the latest annual update of the UK's performance and outlines some key market changes that have helped to deliver this continuing progress. For more detailed findings and regular updates, see www.smmt.co.uk/co2report. SMMT plans to publish a series of reports in 2014 documenting additional aspects related to the UK automotive sector's environmental performance.

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Key:

Notes: Sources – all data is SMMT unless

AFV	alternatively-fuelled vehicle
CO₂	carbon dioxide
g/km	grammes per kilometre
Mn	million
mpg	miles per gallon
MtCO₂	million tonnes of CO ₂
t	tonnes
ULEV	ultra-low emitting vehicle (up to 75g/km CO ₂).

otherwise stated.

SMMT CO₂ data is collated by SMMT's Motor Vehicle Registration Information Systems (MVRIS) and links the vehicle's CO₂ levels to the MVRIS new registrations database to create sales-weighted figures. The CO₂ data is sourced from manufacturers' own CO₂ figures (as supplied on the vehicle's first registration document) and checked with type approval data from the Vehicle Certification Agency (VCA).

SUMMARY

- Average UK new car CO₂ emissions fell for 16th successive year to 128.3g/km in 2013
- Advances in new car efficiency enabling emissions from all cars in use to fall, despite increased number of cars in use and distance travelled.
- Industry has challenging targets to deliver a 45% reduction by 2020 on 2007 and will require greater market take-up of ultra-low emitting vehicles to meet those targets.

Average UK new car CO₂ emissions



A new car is some 20% lower CO₂ emitting than the average car in use, which at 7.7 years old had CO₂ emissions of 160.2g/km.



Total CO₂ emissions from all cars in use cut by 15.1% between 2012 vs 2000



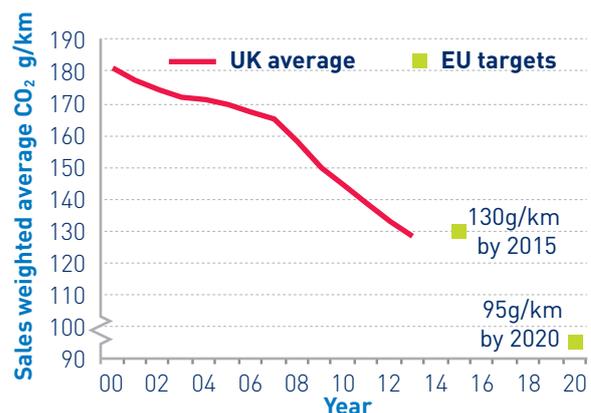
Reasons for further improvement in average new car CO₂ emissions in 2013

- Technology – enhanced technologies delivered across manufacturers' model ranges, especially new drive trains (including introduction of more alternatively-fuelled cars).
- Market shift – consumer preference for lower CO₂ emitting models strengthened by challenging economic conditions and desire to reduce running costs. Improved mpg = lower CO₂ emissions. Fuel economy has improved by 42% since 2000.
- New Car CO₂ Regulation and other legislation encourage lower CO₂ emitting cars.
- CO₂-based taxes and enhanced information also drives move to more efficient cars.
- Introduction of fiscal incentives, such as Plug-In Car Grant, have encouraged up-take of ultra-low emitting vehicles.

Outlook for CO₂ emissions

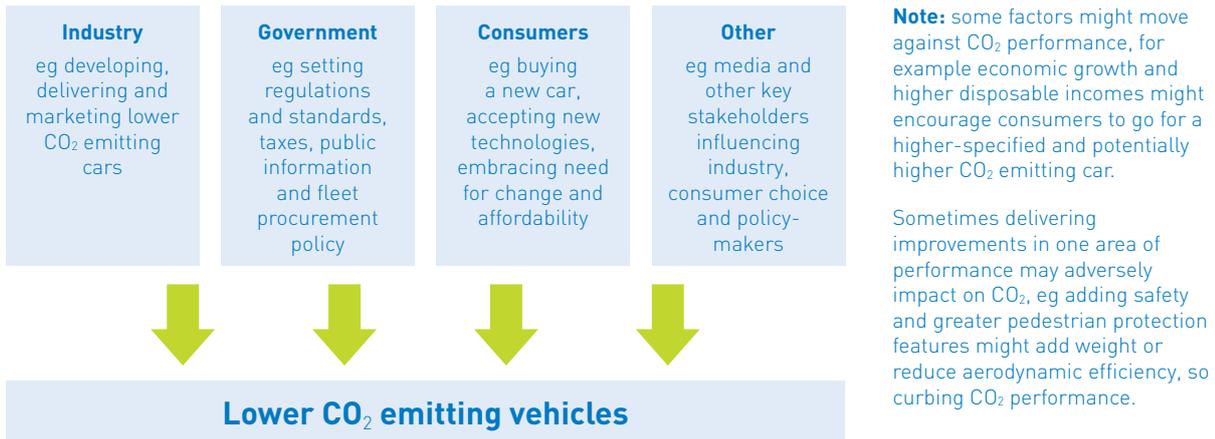
- Further gains expected as manufacturers continue to develop and introduce lower CO₂-emitting models to meet tougher environmental regulations and consumer demands for more efficient cars.
- EU has toughest new car CO₂ regulations in the world, with a 27% improvement required between 2015 and 2020 to 95g/km across the EU.

Chart 1 UK new car CO₂ emissions and EU targets



DRIVERS OF CHANGE

The Integrated Approach: Industry is committed to improving further the efficiency of its products, but to deliver a reduction in CO₂ emissions in the most cost-effective manner requires the participation of all stakeholders moving in a common direction. This is the Integrated Approach – which sees industry, government, regulators, consumers and other stakeholders working together to deliver lower CO₂-emitting cars. How these stakeholders are influencing and can further influence, the shift to more efficient cars is summarised below. Of particular note is the EU New Car CO₂ Regulation and consumer demand. These have both encouraged industry to bring lower emitting cars to market, which is highlighted by showing variants available at certain bands in SMMT’s new car CO₂ database.



EU New Car CO₂ Regulation

Regulation 443/2009 sets a pan-European sales-weighted average new car CO₂ emissions target of 130g/km by 2015 and 95g/km by 2020 – the latter representing a 45% reduction since 2007. Post 2020 targets are yet to be agreed.

Manufacturers face their own specific emissions target, which includes a weight-based element to reflect the different composition of product offerings. Derogations can be made for lower-volume manufacturers.

Those manufacturers missing targets face penalties of up to €95 per g/km CO₂ over target, per car registered.

The targets are phased in – eg 75% of the fleet must meet the 2015 target in 2013, and manufacturers can also use super-credits and eco-innovations to meet their targets.

Consumer demand

Consumers primarily look at cost and functionality when deciding which car to purchase. Running costs are an important consideration, especially as a result of the recession and the squeeze on incomes, and increased fuel costs.

With CO₂-based vehicle taxation and fuel prices rising by over 70% since 2000 (and more than 40% since 2007), the efficiency and CO₂ performance of the vehicle is in sharp focus.

Consumer demand, reflected by SMMT registrations data, shows the shift to lower CO₂-emitting vehicles. Advances in technology and fuel switching have allowed consumers broadly to maintain their vehicle choices. Steeper future emissions reductions may lead consumers to make more radical purchasing decisions regarding vehicle type, drivetrain and performance characteristics.

Increased choice of lower CO₂-emitting variants - number of variants, at selected CO₂ breakpoints, in SMMT’s new car registrations CO₂ database

CO ₂ (at or below)	2000	2007	2013
75g/km	0	4	27
130g/km	70	482	3,183
200g/km	3,175	4,788	7,406
Total	5,933	7,208	7,989

AVERAGE NEW CAR CO₂ EMISSIONS

UK sales-weighted average new car CO₂ emissions fell to 128.3g/km in 2013. This was a 3.6% reduction on 2012 and a 29.1% reduction on 2000. While data is available from 1997, only 80% of the market then had a CO₂ value. This rose to 100% in 2000 and therefore this report looks at CO₂ performance from 2000 to 2013.

Chart 2 UK new car CO₂ emissions, 1997 – 2013



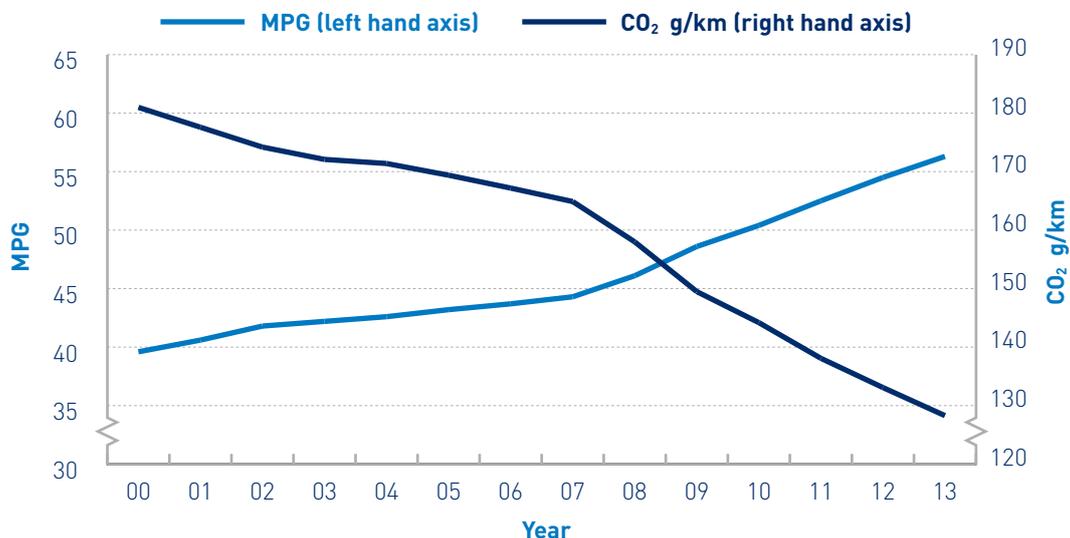
Since 2008, the market has averaged a 4.1% annual reduction in CO₂ emissions, compared with a 1.4% average improvement between 2000 and 2007. The enhanced rate of progress reflects the impact of a combination of factors. These include the introduction of lower-emitting models in response to the 2009 EU New Car CO₂ Regulation and, prior to that, the European manufacturers' voluntary commitment.

Consumers have also become more concerned with vehicle efficiency post-recession in response to factors such as rising fuel costs, a more

differentiated CO₂-based vehicle taxation regime (eg VED), and increased awareness of vehicles' CO₂ emissions as a result of enhanced marketing and the new car fuel efficiency label.

The rate of progress in 2009 and 2010 was also enhanced by the Scrappage Incentive Scheme. This fiscal incentive helped replace old cars with new more efficient models, most notably with Mini and Supermini segment cars, helping reduce both total CO₂ emissions and the new car market average CO₂ emissions.

Chart 3 UK new car average CO₂ performance and mpg



MARKET DISTRIBUTION

The UK market is shifting to lower CO₂-emitting cars. In 2013 63.3% of new car registrations met the EU's 2015 CO₂ target of 130g/km and so were not liable for VED in year one. In addition, 3.3% of the UK market is now below the EU's 2020 target of 95g/km

- Chart 4 shows: Market has moved into sub-130g/km cars, with step change in pace post 2007. We also see the increased emerge of 95g/km and below cars and the erosion in volumes of cars emitting CO₂ over 200g/km.
- Consumers still demand vehicles to meet their own particular characteristics, eg space, utility, performance, which helps ensure a diverse marketplace and so a broad range of CO₂ emitting vehicles.
- Chart 5 shows the market by VED bands, and gives further evidence of market shift. Record numbers of cars pay no VED and sales of top-band cars fell from over 100,000 units in 2000 to less than 10,000 in 2013 (0.4% of market).

Chart 4 New car market by selected CO₂ bands

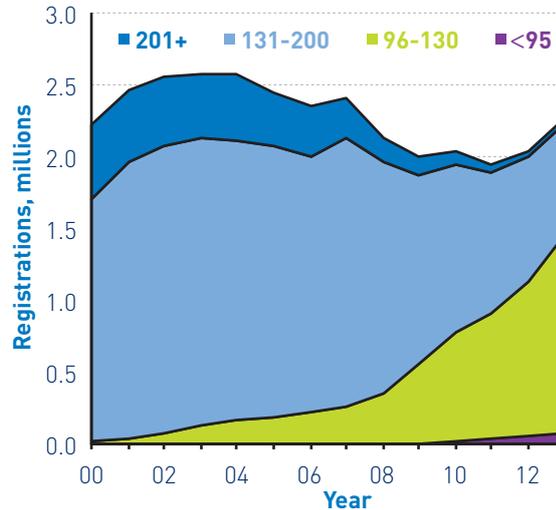
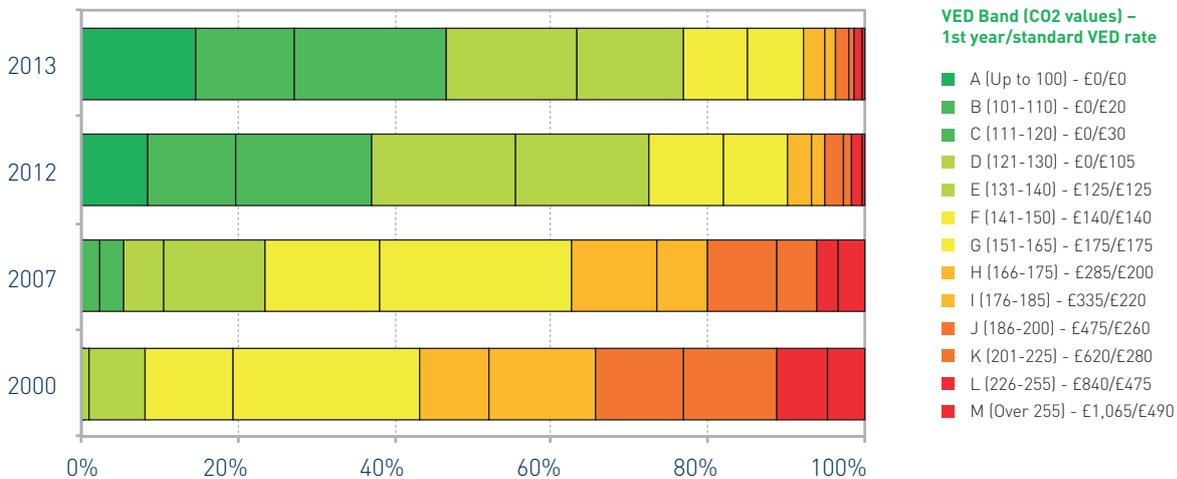


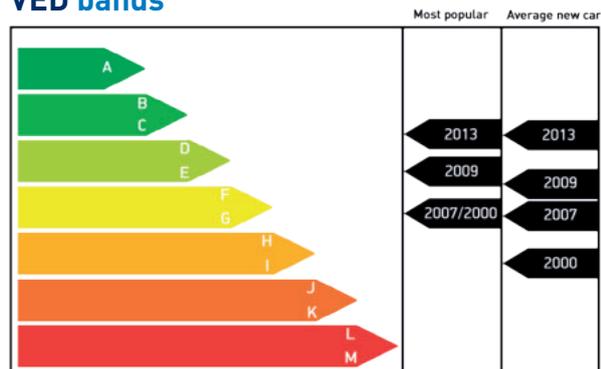
Chart 5 New car market by current VED bands, selected years



B and C was the most populated, by registration volumes, VED band in 2013, moving from Band G in 2007, as the market has shifted to lower CO₂ emitting vehicles. The average car, by CO₂, would sit in VED Band D in 2013, one below the average in 2012 and six below the average in 2000.

The average new car would save £90 per annum in VED and £300 per annum in lower fuel costs (based on driving 10,000 miles per annum) compared with the average new car bought in 2007, given the improvements in average CO₂.

VED bands



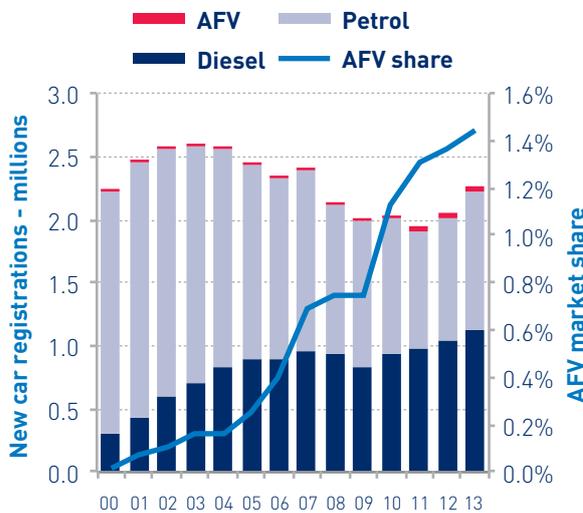
PERFORMANCE BY FUEL TYPE

Petrol and diesel cars still account for 99% of total market by volume. Diesel cars are lower CO₂-emitting on a like-for-like basis than petrol, but on a sales-weighted basis they have virtually the same CO₂ emissions due to the market mix.

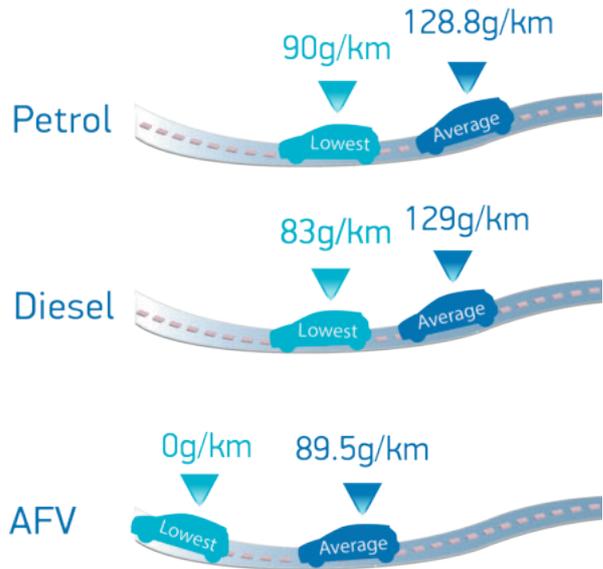
Alternatively-fuelled vehicles (AFV) are on average 30% lower CO₂-emitting than petrol/diesel cars.

Diesels achieved a record volume in registrations in 2013, but their market share slipped. AFV volumes and share continued to rise in 2013.

Chart 6 New car market by fuel type



CO₂ of different fuel types – average and lowest



Increased AFV registrations have been fuelled by the introduction of new models, as shown in chart 7.

Pure electric cars offer zero tailpipe emissions. In 2013 there were 12 pure electric vehicle models in SMMT's registration database, this was more than double the number in 2010.

The lowest CO₂-emitting diesel and petrol models have emissions broadly equivalent to the average AFVs, at 83g/km and 90g/km respectively.

Chart 7 Number of AFV models available

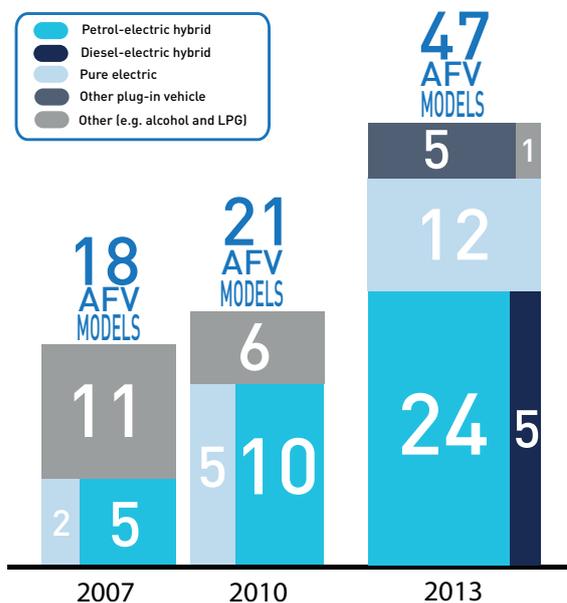


Table 1 Top 20 lowest CO₂ emitting models in 2013

Rank	Range	Fuel type	CO ₂ g/km
1=	BMW i3 - Citroën C-Zero - Ford Focus - Mia - Mitsubishi i - Nissan LEAF - Peugeot Ion - Renault Fluence and Zoe - smart for two coupe/cabrio - VW e-Up!	EV	0
12	BMW i3	PHEV	13
13	Vauxhall Ampera	PHEV	27
14	Chevrolet Volt	PHEV	27
15	Volvo V60	PHEV	48
16	Toyota Prius Plug-in	PHEV	49
17	Porsche Panamera	PHEV	71
18	Toyota Yaris	HEV	79
19	Renault Clio	D	83
20	Hyundai i20	D	84

EV - electric vehicle, PHEV - plug-in hybrid EV and range extender
HEV - hybrid EV and D - diesel

PERFORMANCE BY SEGMENT

SMMT splits the market into different segments, related to a car's size and functionality, eg body style.

All segments have seen improvements in CO₂ emissions over time, see chart 8. The biggest reduction has come in the Luxury segment, where dieselisation has helped reduce emissions. Dieselisation, as well as increased market diversification, has also helped reduce average CO₂ emissions in the Dual Purpose and MPV segments.

The Dual Purpose and MPV segments have seen some of the strongest growth in registrations, as evident in chart 9.

The Mini, Supermini and Lower Medium segment cars have the lowest average new car CO₂ emissions. These sectors account for 65% of the market, and in the case of the small car (Mini and Supermini) market have seen strong growth, contributing to the overall reduction in CO₂ emissions.

PERFORMANCE BY SALES TYPE

Average new car CO₂ emissions of private and fleet registered cars are very similar, as shown in chart 10. Private buyers tend to buy small – Mini and Supermini segment, petrol-fuelled cars - while fleets buy predominantly diesel-powered cars, reflecting their different motoring requirements.

The overall new car market grew by 10.8% in 2013 to 2.265 million units, supported by a 15.6% rise in private registrations. As consumer confidence has improved, buyers have been attracted back into the market. Excellent financial deals and enhanced product substance also helped to boost sales.



Chart 8 CO₂ emissions by segment, 2000-2013

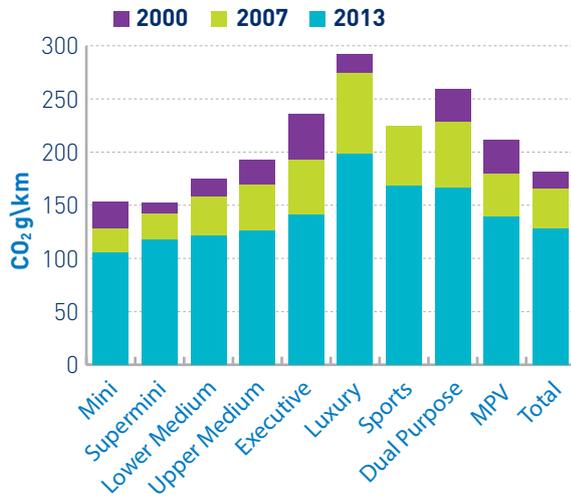


Chart 9 Registrations by segment, 2000 - 2013

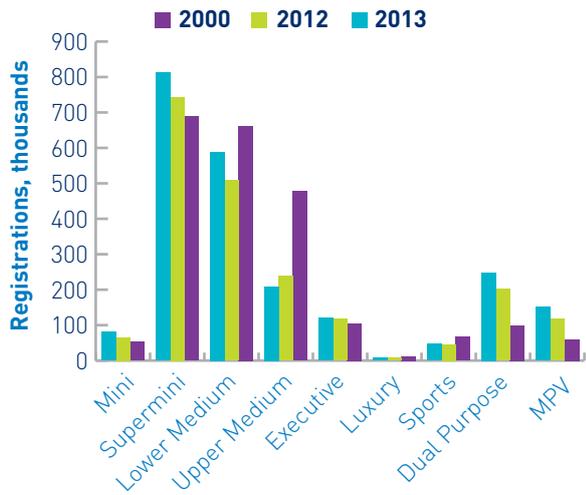
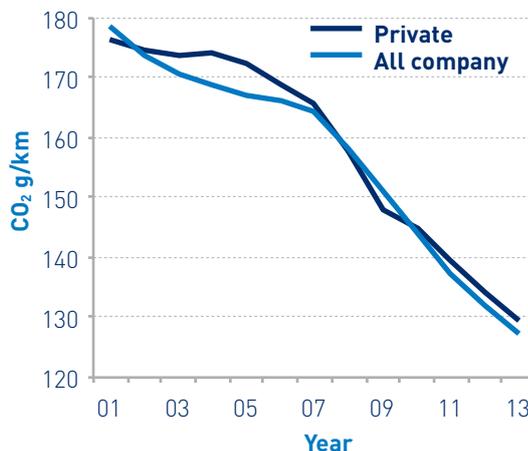


Chart 10 New car CO₂ by sales type



UK PERFORMANCE VS EU

Average new car CO₂ emissions in the UK have fallen faster than in the EU27.

Average new car CO₂ emissions in the EU were 132.2g/km in 2012. In the UK, at 133.1g/km, they were just 0.5% higher, compared with a 3.8% difference in 2007 and 7.7% difference in 2000.

The gap has narrowed reflecting the product offerings in the markets being similar, but also as diesel share in the UK has risen to be closer to that in Europe – see chart 12. Diesel duty is lower in Europe, compared with petrol fuel, see chart 13, providing a greater fiscal incentive to drive diesel.

Denmark and Portugal had the lowest emissions, both below 120g/km, while Germany, the EU's largest market, had the highest at 141.5g/km.

Chart 11 UK and EU new car CO₂ performance (Source EC)

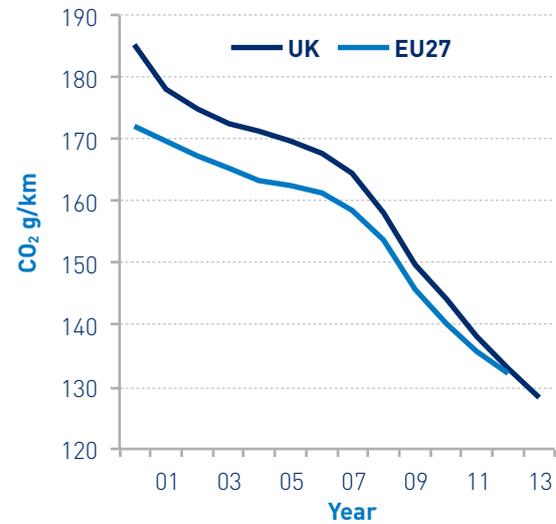


Chart 12 Diesel share UK and EU15 (Source ACEA)

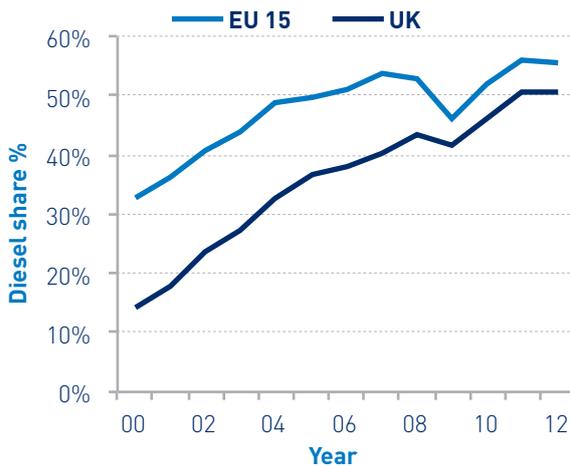
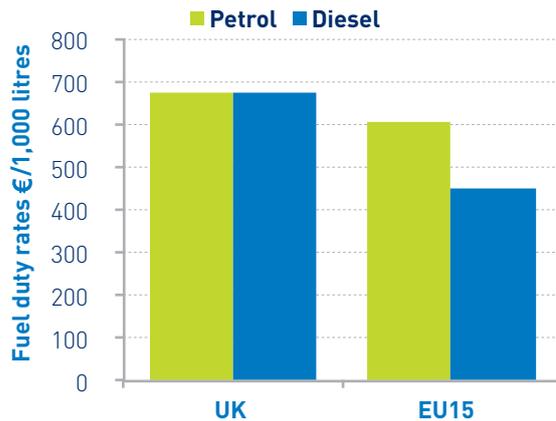


Chart 13 Diesel duty UK and EU15 (Jan 14) (Source The AA)



UK MANUFACTURERS' CO₂ EMISSIONS

The UK new car market and production figures have been a bright spot in an otherwise subdued EU landscape. The UK new car market grew, while the overall EU market shrank. Car production increased in the UK by 3.1% to over 1.5 million units, despite the weakness of the EU market – a key export destination for UK-built cars.

The UK is home to several class-leading CO₂ products, including the electric Nissan LEAF, hybrid Toyota Auris and sub 100g/km models such as the MINI, Honda Civic and Vauxhall Astra. Average CO₂ emissions of UK-built cars were above the UK market average, reflecting the composition of UK-based manufacturers and model types. The UK also makes over 2.5 million

engines per annum, including new generations of highly fuel-efficient power units from BMW and Ford, which are fitted to UK-built and EU-sourced models.

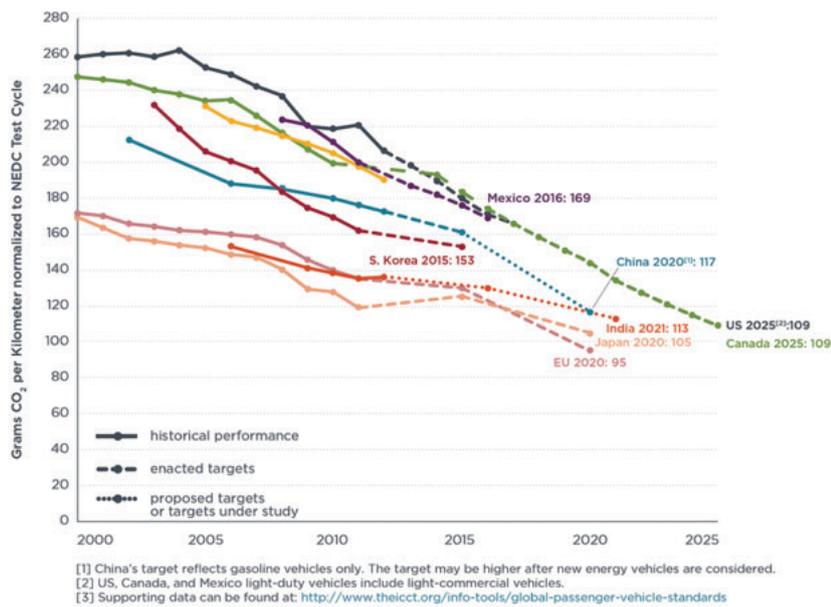
The sector is developing increasingly efficient vehicles and models, to ensure its products meet market demand and remain attractive. Support from government through R&D funding in low emission technology, including recently announced plans for an Advanced Propulsion Centre, is welcome. The sector is well positioned to deliver future improvements, given its long history of advanced engineering through companies such as Jaguar Land Rover, Lotus and McLaren.

LEVEL OF AMBITION

The EU has a target to reduce greenhouse gas emissions (GHG) by 20% by 2020, compared to 1990, and by 40% by 2030. The UK has legally binding targets to deliver an 80% reduction in GHG by 2050, versus 1990 levels. To help deliver this target the UK has a series of legally-binding Carbon Budgets to direct, monitor and assess progress. The Committee on Climate Change (CCC) advise government on the carbon budgets.

The EU has the most stringent new car CO₂ emission targets in the world, to achieve 95g/km by 2020 (with a phase-in, 95% by 2020 and 100% of fleet by 2021), as shown by chart 14. Longer-term targets for the period post 2020 are yet to be developed.

Chart 14 EU has the most stringent new car CO₂ targets in the world (Source ICCT)



The automotive sector is committed to improving vehicle efficiency and is the largest industry investor in R&D in Europe. Delivering on existing and future emissions targets will require across-the-board improvements in powertrains, weight savings, aerodynamics and the efficiency of ancillary devices and components.

Determining which powertrain technologies will be the most appropriate and successful in the future is difficult to predict, given their different characteristics and costs. Manufacturers, and others, are developing a number of different solutions. The massive investment required to do this is leading to an increasing number of collaborations amongst vehicle manufacturers, as well as with other suppliers.

Encouraging consumers to consider new powertrains or different vehicle types (eg downsizing) will also be challenging, especially as more demanding cuts to CO₂ emissions are sought. Economic conditions and the relative cost of cars will also play an important role in delivering such progress. There is concern that

robust economic growth might see consumers forsake running costs for higher-specified derivatives which emit more CO₂, conversely it could also enable them to afford new innovative CO₂ saving technologies.

Government's Carbon Plan sets out a trajectory to meet carbon budgets. The scenario sees battery electric and plug-in cars taking a 60% share of the market by 2030. This is very ambitious and well above the rate most other commentators suggest (see outlook for AFVs on next page for more detail). To achieve decarbonisation of the fleet will also require power to come from low carbon sources.

Petrol and diesel cars are also making important technological strides, and in addition the Renewable Transport Fuels Obligation (RTFO) will allow increased use of biofuels to contribute to CO₂ savings. Currently around 3% of petrol-diesel fuel is from biofuels and industry is developing cars capable of running on higher blends.

OUTLOOK FOR ALTERNATIVELY - FUELLED VEHICLES

Petrol and diesel cars are still widely expected to represent the vast majority of the new car market by 2020 and further technical innovations in petrol & diesel cars will be introduced to deliver additional CO₂ savings. At the same time the market will increasingly shift to alternatively-fuelled vehicles (AFV).

As shown earlier, the number of AFV in the market has more than doubled since 2010, with the addition of new hybrid vehicles, pure electric vehicles, range-extender variants and other plug-in hybrids and new diesel-hybrid vehicles.

Despite only representing a modest 1.4% share of the market, if AFV were not in the market place emissions would be around 0.5% higher. Given the lower CO₂ emissions associated with AFV, increasing their share of the market can make them even more influential on the fleet average.

Forecasting the future pace of AFV up-take is difficult, given the wide range of push-pull factors at work in the market place. These include uncertainty about the relative development and deployment cycles of competing technologies and the success with which initial consumer purchasing reticence can be addressed. Long-term government support is a key factor in ensuring the stability of the market. Consumers will be strongly influenced by the purchase price, running costs, incentives, residual values, performance and battery range

of AFV, as well as ease, speed and safety with which they can be refuelled/recharged when compared with conventional petrol and diesel cars. Other factors, such as developments in the wider economy, technology, transport, energy and the built-environment will also impact on the speed at which AFV become more mainstream.

Numerous studies and market take-up forecasts/expectations have been published. The majority of these suggest the CCC expected rate of uptake is at the top end of the range. The RAC Foundation's 2013 report, Powering Ahead (www.racfoundation.org), reviews 14 separate studies which suggest all hybrids could take a 5-20% market share by 2020, with battery electric and plug-in hybrids taking a possible a 2-10% market share. ACEA, the European vehicle manufacturers association expects a 2-8% share over the next decade (by 2023) to be taken by electrically-chargeable vehicles (www.acea.be).

It is clear that industry is committed to delivering and improving the availability of AFV and Table 2 highlights some of the new products due. This demonstrates the wide range of emerging technologies coming to market. At the same time, progress on petrol and diesel cars will continue. In 2014, several diesel cars with CO₂ emissions in the low 80g/km range will enter the market, such as Peugeot's 308, and it is unlikely to be long before sub-75g/km models are seen.

Table 2 Expected new AFV models due, all 2014 unless stated otherwise (Source various)

Pure EV	Other plug-in	Hybrid	Hydrogen
Citroën DS3 Electrum	Audi A1	Audi A8	Hyundai ix35
Lexus IF-cc	Audi A3	BYD Qin (15)	Nissan Terra
Mercedes-Benz B-Class	Audi A4	Infiniti Q50	
Mercedes-Benz SLS AMG	Audi Q7	Ferrari LaFerrari	
Tesla Model S	Bentley SUV (17)	Ford C-Max	
Tesla saloon (16)	BMW i8	Honda Jazz	Other
VW e-Golf	Ford Mondeo Energi	Honda Vezel	VW Eco Up! (CNG)
Kia Soul	Mercedes-Benz Series 500	Lexus CT200h	VW Passat EcoFuel (CNG)
Renault Kangoo Maxi	Mitsubishi Outlander	Mazda3	Audi A3 (CNG)
	Mitsubishi Evo X (16)	McLaren P1	Peugeot 2008 Hybrid Air (16) (Compressed Air)
	Porsche 918	Range Rover Sport	
	VW Polo (15/16)		
	BMW X5 eDrive (15)		
	VW Golf GTE		

ROLE OF GOVERNMENT

Government and other policy makers form a key part of the solution to increasing the take-up of lower CO₂-emitting vehicles. They can encourage both supply and demand through appropriate regulations and policy frameworks, fiscal incentives, other incentives (eg free parking or use of bus lanes), their own fleet procurement and through public education. Industry would welcome government setting long-term strategies to enable better planning.

Regulations

The UK government is part of the wider EU, which sets New Car CO₂ Regulations and also the Euro emission standards. These will fundamentally shape the types of vehicle industry brings to the market and also the timing of their introduction. It is important that the UK maintains a strong and influencing voice in these future decision-making processes.

Standards

A car's CO₂ values are derived from rigorous tests, undertaken under laboratory type conditions to ensure reliably comparable figures for different vehicles. The government is also a contributor to the ongoing discussions to develop a replacement for the current emissions test procedure – the NEDC (New European Drive Cycle) with the WLTP (Worldwide harmonised Light vehicle Test Procedure) in the coming years. The intention is to design the test to be more representative of 'in use' emissions. Euro standards, while not directly addressing CO₂ emissions, also result in step changes in engine design.

Information and education

All new cars must have a new car fuel efficiency colour-coded label at point of sale, to help consumers identify the car's CO₂ emissions. CO₂ data is also shown in advertising and marketing material and in media reviews of new cars. In the past, government has run advertising campaigns to encourage uptake of more efficient vehicles or better driving standards – including eco-driving to reduce emissions. In January 2014, the 'Go Ultra-Low' campaign was launched in association with the SMMT and 5 OEMs, to encourage the take up of ULEVs (see www.goultralow.com).

Tax

The government sets motor vehicle taxation in the Budget Statement each year. Industry would like to see stable and clear tax regimes



in place to assist industry and consumers alike with better planning. The structure of Company car tax rates have been set out several years in advance - which is very useful for planning, whilst VED is adjusted on an annual basis. The move to ever more efficient vehicles has eroded tax revenues and with the anticipated increased prevalence of AFVs, the tax regime could be subject to change. Industry is keen to engage closely and as early as possible with government in reviewing any future changes to motoring taxation.

Fiscal incentives

The government, through its Office for Low Emission Vehicles (OLEV) is funding the Plug-in Car Grant, providing 25% of the price of a qualifying ULEV (up to £5,000), infrastructure support and R&D support for the development of more efficient cars. These measures are highly valued by industry, especially given the emerging nature of these markets. Industry has welcomed government's commitment to support further market transformation with an additional £500 million package available for 2015-2020 and has provided input into the current strategy review.

Own fleet/procurement

The government and its agencies are volume buyers of new cars. Internal measures to improve the efficiency of the government's own fleets will support the overall drive to lower-emitting vehicles and send out an important signal to other consumers. Government can also influence other large-volume new car buyers, such as Motability and leasing and rental companies, through policies and regulations it introduces.

Local government

Local policy and regimes can also influence vehicle choice, through measures such as CO₂-based vehicle use restrictions (eg congestion charging or low-emission zones) and parking restrictions. It is critical there is national co-ordination and consistency to ensure market stability.

TOTAL CO₂ EMISSIONS FROM ALL CARS IN USE

Cars represented 13.4% of all CO₂ emissions in the UK in 2012, see chart 15. Emissions from all cars in use fell by 1.3% in 2012 to 63.65 million tonnes CO₂, reports the Department for Energy and Climate Change (DECC). This was a 15.1% cut since 2000, almost 90% of which has been achieved since 2007.

This step change in performance reflects the increased pace of progress in new car efficiency, alongside the impact of recession on vehicle use. Chart 16 shows how CO₂ emissions from all cars in use have become largely decoupled from distance travelled (source Department for Transport).

Driving style, vehicle maintenance and road conditions also strongly influence total emissions.

SMMT's parc database shows the average car in use emitted 160.2g/km in 2013. A new car was 19.9% more efficient, therefore offering considerable environmental benefits as well as lower fuel and tax bills for the consumer.

The average car in use saw emissions improve by 2.3% in 2013 over 2012, as more efficient new cars replaced less efficient ones.

During the recession, the average age of the car fleet increased. Reversing this trend and speeding up the rate of replacement will deliver lower CO₂ emissions from the parc.

Life-cycle analysis

The majority of emissions are associated with the vehicle's use phase, but progress is being made on all fronts. This balance will shift over time, especially as new technologies emerge, and an increased focus on 'well-to-wheel' CO₂ calculations is expected.

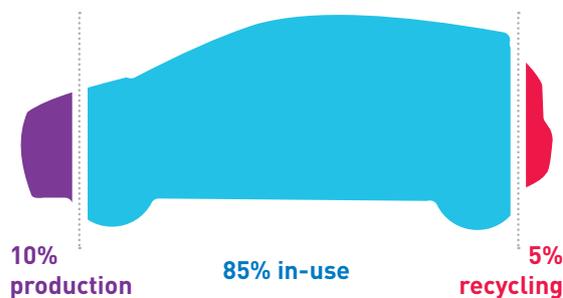


Chart 15 2012 UK CO₂ emissions by source (Source DECC)

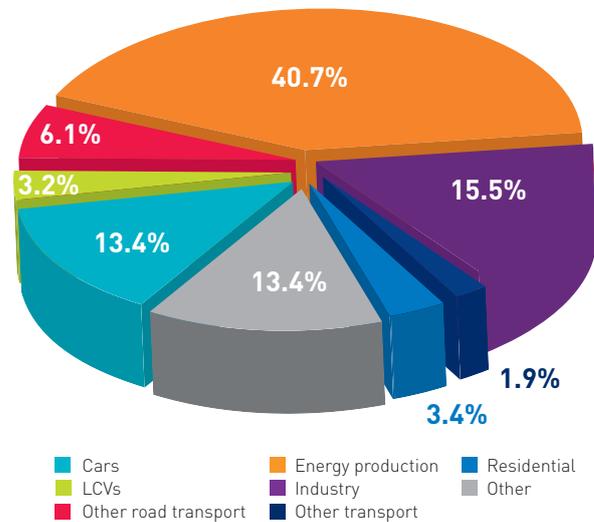
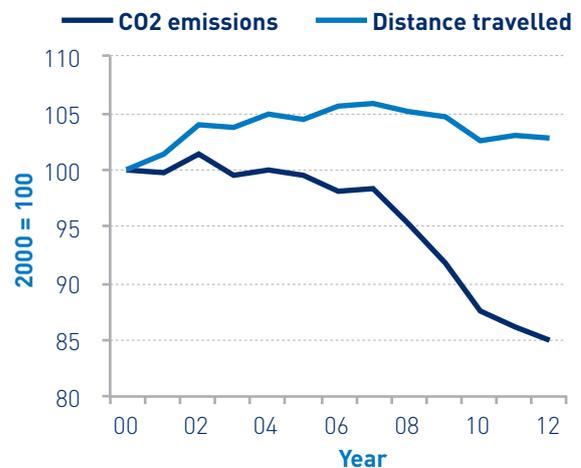


Chart 16 CO₂ emissions from all cars in use, and distance travelled (Source DfT)



Other emissions

Industry is committed to tackling all emissions, not just CO₂.

Department for Transport statistics show total particulate matter from all cars in use has fallen by 35.8%, nitrogen oxides by 61.9% and carbon monoxide emissions by 81.6% between 2000 and 2011.

Euro standards will see those emissions cut further as Euro-6 standards become mandatory in September 2015. Some cars registered in 2013 are already Euro-6 compliant.

LIGHT COMMERCIAL VEHICLES (LCVS)

CO₂ emissions from LCVs (vans) fell by 1.2% in 2013 to 186.1g/km.

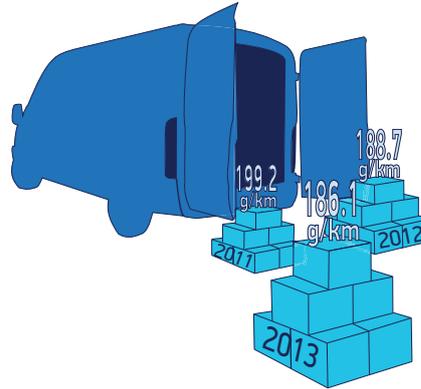
LCV manufacturers are delivering technological improvements to vehicles, to help reduce CO₂ emissions. Minimising vehicle operating costs will already be a key ambition of businesses. For example, 99% of all LCVs are already diesel-fuelled.

LCVs are also functional vehicles bought as a work tool, so vehicle type will play an important role in the fleet's overall average CO₂ performance. Different CO₂ values by LCV type are shown in chart 17. The market mix, and in recent years the shift to higher-payload vans, will have constrained the overall rate of progress in new LCV CO₂ performance.

The increased use of LCVs resulted in rapid growth in total CO₂ emissions from the total fleet. Improvements in new vehicle efficiency have helped ensure emissions have not risen as steeply as van use and the recent impact of the recession is also evident (see chart 19).

As for cars, there is a CO₂ Regulation for LCVs to meet 175g/km in 2014-17 and 147g/km in 2020. Like cars there are phase-ins, derogations, super-credits and eco-innovations available to meet targets.

Average new LCV CO₂ performance



The importance of vehicle type is evident by all vans below two tonnes already meeting the 2020 target. Manufacturers will have to deliver further technological progress, and in 2014 a number of new, smaller, more efficient vans are due to enter the market, such as the new Ford Transit Connect and Transit Courier. The UK is also home to a number of LCV manufacturers, such as Land Rover, MINI and Vauxhall that are also developing lower emitting models.

Government support through the Plug-In Van Grant seeks to encourage uptake of AFVs, currently very low, with an incentive of up to 20% off a sub 75g/km van's list price (up to £8,000).

Chart 17 LCV CO₂ emissions by type

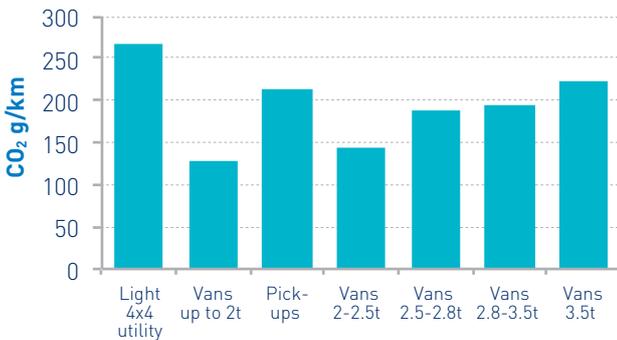


Chart 18 LCV registrations by vehicle type

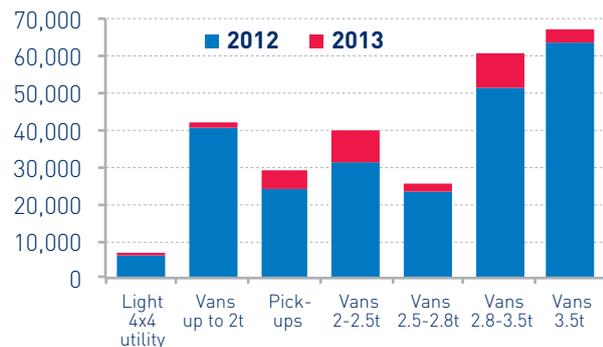
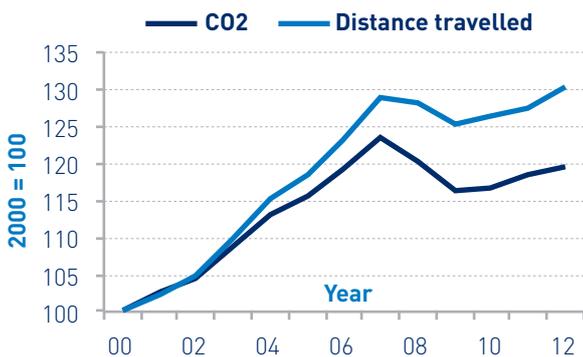


Chart 19 LCVs total emissions and distance travelled



SUMMARY DATA

Figures are CO₂ g/km for cars, with registrations in thousands (shown in blue)

		2000	2007	2012	2013	% change 2013 vs 2012	
						2012	2000
	Total	181.0	164.9	133.1	128.3	-3.6%	-29.1%
		2,222	2,404	2,045	2,265	10.8%	1.9%
Fuel type	Diesel	167.7	164.3	133.3	129.2	-3.1%	-23.0%
		313	967	1,039	1,127	8.5%	260.0%
	Petrol	183.2	193.6	139.3	128.8	-7.5%	-29.7%
		1,908	1,420	978	1,105	12.9%	-42.1%
	AFV	127.3	127.0	101.2	95.5	-5.6%	-25.0%
		0	17	28	33	17.6%	9068.3%
Sales type	Private	176.4	165.9	133.6	128.1	-4.1%	-27.4%
		1,212	1,046	929	1,075	15.6%	-11.3%
	Fleet	175.4	165.8	134.4	129.5	-3.7%	-26.2%
		1,031	1,195	1,026	1,084	5.7%	5.1%
	Business	195.0	164.2	132.0	127.2	-3.6%	-34.8%
		214	163	90	106	18.0%	-50.6%
Segment	Mini	153.8	128.5	105.6	105.2	-0.4%	-31.6%
		52	22	65	80	23.9%	54.0%
	Supermini	152.9	141.8	122.1	117.6	-3.7%	-23.1%
		689	771	743	813	9.4%	18.1%
	Lower Medium	175.3	158.6	126.6	121.2	-4.3%	-30.9%
		662	722	508	588	15.8%	-11.1%
	Upper Medium	192.4	169.1	130.5	126.4	-3.1%	-34.3%
		477	386	238	208	-12.3%	-56.3%
	Executive	235.6	192.6	144.5	140.8	-2.5%	-40.2%
		105	104	117	120	2.1%	14.5%
	Luxury	292.3	273.8	213.4	198.7	-6.9%	-32.0%
		11	13	8	8	3.2%	-26.8%
Sports	220.5	224.0	168.8	168.5	-0.2%	-23.6%	
	67	66	46	48	3.1%	-29.3%	
Dual Purpose	259.4	228.3	175.4	166.6	-5.0%	-35.8%	
	99	176	201	248	23.3%	150.0%	
MPV	211.0	179.7	147.7	139.1	-5.8%	-34.1%	
	60	144	118	151	28.1%	151.3%	
Distribution g/km	0	0	0	1	3		
	<= 50	0	0	1	1		
	75	0	0	0	0		
	80	0	0	1	3		
	85	0	0	2	5		
	90	0	0	13	22		
	95	0	0	29	42		
	100	0	0	128	258		
	105	0	11	59	96		
	110	0	45	169	184		
	115	0	11	147	189		
	120	3	61	211	251		
	125	1	50	100	117		
	130	16	76	271	264		
	135	43	74	148	115		
	140	118	236	205	193		
	145	103	191	76	71		
	150	143	159	118	115		
	155	160	210	61	52		
	160	103	238	78	78		
	165	263	144	25	26		
	170	92	112	31	38		
	175	106	143	28	25		
	180	136	73	24	19		
	185	168	89	17	15		
186-200	246	206	48	36			
201-225	264	124	19	18			
226-255	142	66	25	20			
Over 255	106	84	9	9			

Key facts

	2000	2007	2012	2013
Average new car CO₂ emissions	181.0g/km	164.9g/km	133.1g/km	128.3g/km
% change on 2000		-8.9%	-26.5%	-29.1%
Share of market with CO ₂ emissions				
Up to and including 95g/km	0.0%	0.0%	2.3%	3.3%
Up to and including 130g/km	0.9%	10.6%	55.4%	63.3%
Total new car market	2,221,647	2,404,707	2,044,609	2,264,737
Diesel share	14.1%	40.2%	50.8%	49.8%
Alternatively-fuelled car share	0.0%	0.7%	1.4%	1.4%
	2000	2007	2011	2012
Total CO₂ emissions from all cars in use	75.0MtCO₂	73.7MtCO₂	64.5MtCO₂	63.7MtCO₂
% change on 2000		-1.7%	-14.0%	-15.1%