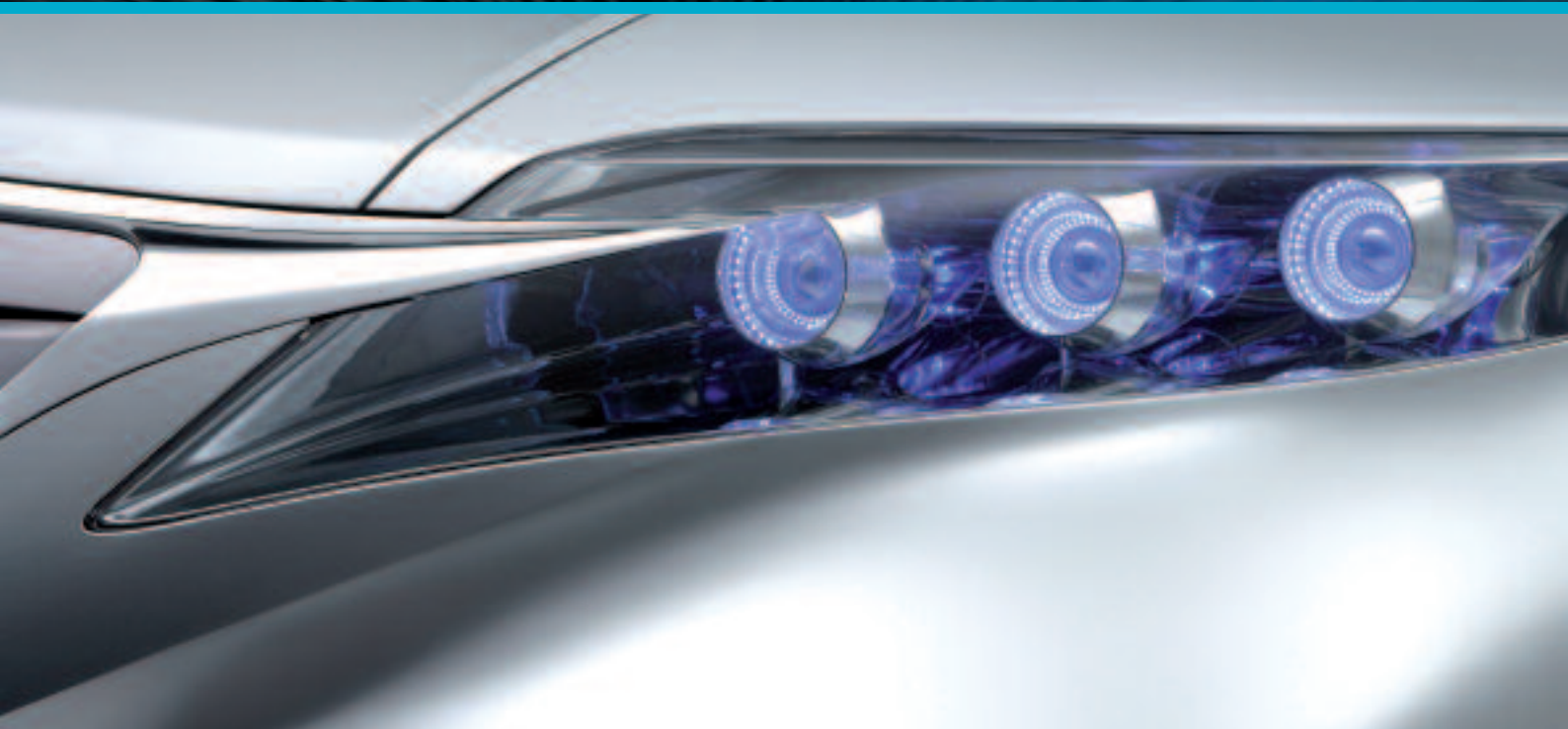




SMMT
New car CO₂ report 2008



Driving down emissions



Introduction

Paul Everitt, SMMT chief executive

Open and honest reporting is an imperative for any responsible industry. In this respect, the UK motor industry can rightly claim a strong track record.



The new car CO₂ report – the first I present as the Society’s new chief executive – is one of a series of annual SMMT publications that highlight progress on a range of sustainability criteria. Collectively, these reports present a message of accountability. But they also paint an optimistic picture from a forward-thinking sector that is making progress and is willing to embrace the challenges of the future.

The UK new car market is characterised by significant and consistent CO₂ reductions and we are justifiably proud of our achievements. The introduction of lower carbon emitting cars has driven down average new car CO₂ emissions by 13% since 1997. This achievement, in this timeframe, is beyond the rates set out for the Kyoto or domestic UK targets. Nevertheless, there will be those who will say we should have gone further.

At the same time the industry has made significant reductions in other emissions, notably NO_x and PMs. Safety and security features have also been substantially improved upon over the past decade, thanks to multi-billion Euro investment.

Market-shift is fundamental to achieving even greater progress on CO₂ reductions. These pages show how much choice there is in the market, within segments and across individual model ranges. The report also makes the point that demand factors remain crucial in the drive to cut CO₂ further. It also demonstrates that we should always be mindful that new cars are a relatively small part of the overall vehicle ‘parc’ and that the role of older vehicles and factors like driving style, load and distance travelled must not be overlooked in the drive to cut emissions.

The motor industry supports an integrated approach. This means ensuring that vehicle technology improvements are complemented by better roads, improved fuel supply and incentives for our customers. Without this joined-up approach the motor industry’s investments in technology will not deliver the more significant reductions that society rightly demands.

Finally, a point about costs. It is a fact that UK motorists more than pay the cost of their carbon emissions – some £45 billion in taxes each year. Over half of these costs are under the guise of environmental taxes (principally fuel duty and vehicle excise duty). The cost of CO₂ emissions for all road transport represents about ten per cent of the revenue these environmental taxes provide to the UK Government.

The motor industry welcomes CO₂-based circulation taxation. It has a role to play in an integrated approach. However, we must work within a consistent framework for taxation and incentives to help further the move to lower carbon cars, while maintaining diversity of UK manufacturers and choice in the market place.

Quick facts

- Average new car CO₂ has fallen 13.1% since 1997, to 164.9 g/km
- Total CO₂ emissions from all cars in use has fallen by 4.8% since 1997
- Almost a quarter of all new cars registered in 2007 were under 140g/km and over 10% were under 130g/km
- There are record numbers of model ranges available to consumers, providing choice to meet a broad spectrum of consumer demands

	2007	2006	1997
Average new car CO₂ emissions	164.9g/km	167.2g/km	189.8g/km
<i>% reductions vs 2007</i>		-1.4%	-13.1%
Share of cars under:			
120g/km	5.4%	4.7%	0.0%
130g/km	10.6%	9.7%	0.1%
140g/km	23.5%	21.5%	3.9%
Total new car market	2,404,007	2,344,864	2,170,725
<i>Diesel penetration</i>	40.2%	38.3%	16.2%
<i>Supermini segment share</i>	32.1%	32.1%	26.5%

	2007	2006	1997
Total CO₂ emissions cars*	68.7 MtCO₂	71.0 MtCO₂	72.2 MtCO₂
Fuel consumed by cars*	21.9Mt	22.3Mt	23.1Mt
Total UK car parc	31.0mn	30.7mn	26.3mn
Total distance travelled by cars*	402.4bn kms	397.2bn kms	365.8bn kms
Government revenue – all motorists	£45.06bn	£44.72bn	£33.83bn
Of which:			
Fuel duty**	£23.45bn	£23.35bn	£18.36bn
Vehicle Excise Duty (VED)**	£5.01bn	£4.76bn	£4.44bn

SOURCES

All data sourced from SMMT unless otherwise stated

* DEFRA, 2008 and the DfT Transport Statistics Great Britain, 2007 edition

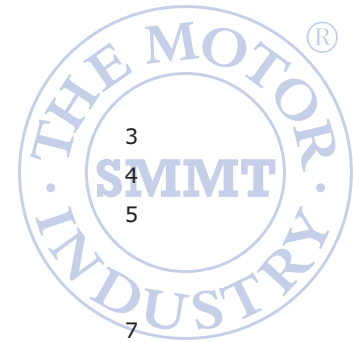
** ONS (www.statistics.gov.uk)

MtCO₂ = Million tonnes carbon dioxide.

Mt = Million tonnes. Mn = Million. Bn = billion. Bn kms = billion kilometres



2007 UK car registrations by CO₂ performance

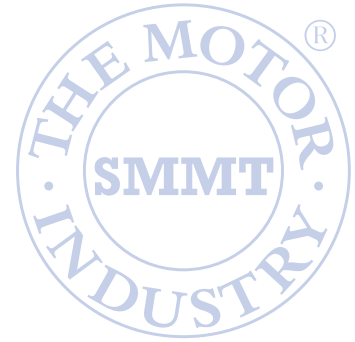


Contents

Introduction	3
Quick facts	4
Contents page	5
Chapter 1 – Summary car CO₂ emissions	
Average new car CO ₂ emissions – summary	7
Average CO ₂ emissions of cars in use since 1997	8
Total CO ₂ emissions from all cars	10
Chapter 2 – Trends within the UK new car market	
Distribution of new car market by CO ₂ emissions	13
Distribution of new car market by VED bands	14
Trends by fuel type	16
Trends by market segment	22
Impact of company car tax	26
Chapter 3 – The move towards lower CO₂ emitting vehicles	
Size of the task ahead	29
Consumer choice	30
New technologies coming to the market	35
New models coming to the market	37
Chapter 4 – Taxes and the motorist	
Government revenue from the motorist	39
Motorists covering their environmental costs	40
Future of motoring taxes	40
Annexes	
1 Accuracy of the data	42
2 Total CO ₂ emissions from road transport	43
3 Commercial vehicles	46
4 The UK VED scheme	47
5 European CO ₂ data	48
6 Company car tax	50

Accuracy of the data. Data is sourced from manufacturers' own CO₂ figures (supplied on the first registration document) and checked with type approval data from the Vehicle Certification Agency to ensure accuracy. Since 2003, the low volume of missing data was estimated by using other models in the range or using models of a similar segment/engine size and type. SMMT believes the database it has compiled is the most accurate and reliable available and therefore provides the best source for analysing the UK's performance. The data is collated by SMMT's Motor Vehicle Registration Information Service (MVRIS). It links vehicles' CO₂ levels to the MVRIS new car registration database.





Chapter 1

Summary Car CO₂ emissions

- Average new car CO₂ emissions fallen 13.1% since 2007
- CO₂ data now available for approximately three-quarters of all cars in use
 - Total CO₂ emissions from cars declining, despite more cars in use and greater distance driven

Average new car CO₂ emissions – summary

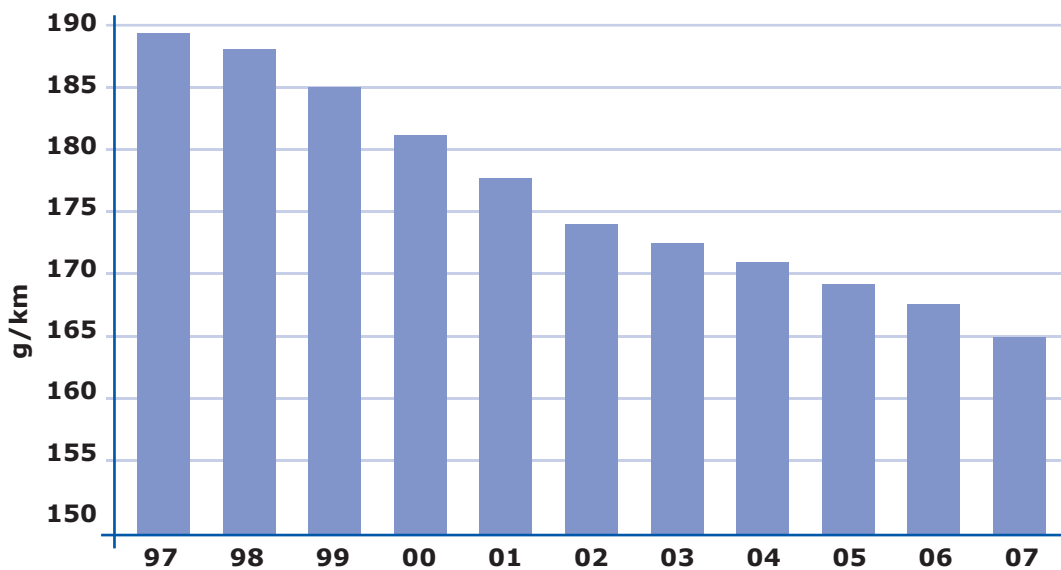
- Average new car CO₂ emissions in 2007 were 164.9g/km
- Emissions down 1.4% on 2006, better than average annual rate since 1997
 - Technology change has been fundamental to making progress

Table 1 – Average new car CO₂ emissions in the UK			
Year	Average CO₂ g/km	y/y % change	y/y % change on 1997
1997	189.8	–	–
2000	181.0	-2.2%	-4.6%
2005	169.4	-1.2%	-10.7%
2006	167.2	-1.3%	-11.9%
2007	164.9	-1.4%	-13.1%

1 Average new car CO₂ emissions have fallen every year since SMMT first collated data, down 13.1 per cent since 1997, an average rate of 1.3% per annum. The improvement in 2007 over 2006 was 1.4%, just above the 2006 rate and the overall average since 1997. The rate of reduction

in the UK and across Europe must improve to meet the challenge of 130g/km, the average EU new car emissions by 2012/15 figure set by the European Commission in its draft new car CO₂ regulation. Annex 1 gives details of how the CO₂ data is collated.

Chart 1 – UK average new car CO₂ emissions

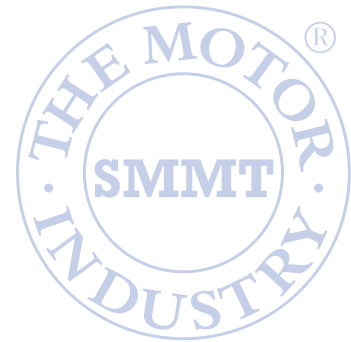


2 The number of cars under 120g/km rose to 5.4% or 128,646 units – the highest ever level. The sub 120g/km market did not really pick up until 2001/2002. Even in 2002 the market volume was just 52,268 units, only about 40% of the 2007 volume. The sub 130g/km market represented 10.6 per cent of the 2007 market, at 254,458 units. The share of the market under

140g/km reached 23.5% in 2007 – a record level. The volume at 564,616 units was up 12.1% on the 2006 market and the share taken was over six times that of 1997, when the market was just 68,584 units. The CO₂ improvements have come across all segments in 2007 and gains have been made in both average petrol and diesel CO₂ emissions.

Average CO₂ emissions of cars in use since 1997

- Based on assumptions average CO₂ figure of 175.3g/km for all cars post-1997
 - These represent over three-quarters of all cars on UK roads
 - Average CO₂ figure is 6.3%, 10.4g/km, above the new car 2007 figure



3 Based on some simple calculations and using a number of assumptions, the average CO₂ emissions of all cars in use since 1997 can be derived. The average CO₂ figure for all cars on UK roads is calculated to be 175.3g/km – 10.4g/km or 6.3% above the 2007 new car figure. The assumptions include the ‘survival rates’ of cars presented

in Table 2, and that the survival rate is only applied to the average new car CO₂ emissions in each year. No adjustment has been made for maintenance factors, or that higher value – and higher CO₂ emitting – cars are likely to last longer. Cars registered since 1997 represent over three-quarters of the total number of cars in use (the parc).

Table 2 – Average CO₂ emissions of cars still in use, registered since 1997				
	New Car Regs	Survival rate	Parc volume	Ave CO₂
1997	1,742,251	81.5%	1,419,935	189.8
1998	1,993,301	88.0%	1,754,105	188.4
1999	2,125,465	91.5%	1,944,800	185.0
2000	2,212,786	94.5%	2,091,083	181.0
2001	2,457,368	96.5%	2,371,360	177.6
2002	2,562,764	97.5%	2,498,695	174.2
2003	2,579,050	98.0%	2,527,469	172.1
2004	2,567,269	98.5%	2,528,760	171.4
2005	2,439,717	99.0%	2,415,320	169.4
2006	2,344,864	99.5%	2,333,140	167.2
2007	2,404,007	100.0%	2,404,007	164.9
Total	25,290,882		24,288,673	175.3

4 In general, the newer the vehicle, the lower its CO₂ emissions. Recent strong growth in the new car market – with registrations around the 2.4-2.6 million unit mark – and

a sharp pick up in the volume of older cars being removed from the parc has improved the environmental profile of the UK vehicle fleet. New cars also tend to higher annual

mileage than older cars, so ensuring low carbon vehicles are being bought will improve the profile of the fleet's emissions. Consistent and long-term signals are required to shape the market on a pathway to lower CO₂ emitting vehicles. In other countries in Europe measures have been taken to encourage a quicker replacement of the fleet.

- 5 The car parc has grown significantly since 1997, aided by cars lasting longer, growing economic wealth, and a growing population which also remains active for longer. The Commission for Integrated Transport says

that historically economic growth and carbon emissions have been strongly linked and while that link may be weakening, increased incomes allow for greater travel and demand for goods and services. It also means that consumers are more likely to choose larger and better equipped cars, which run counter to aims of improving efficiency. The growth in the distance travelled has increased, albeit at a slightly lower rate than the parc growth. However, the total CO₂ emissions from cars have actually fallen since 1997. According to UK Government figures, they fell from 72.2 to 68.7 million tonnes annually.

Total CO₂ emissions – and influences on them – parc size and distance travelled

- Total CO₂ emissions from all cars in use has fallen
- Amount of fuel consumed also fallen 5% since 1997
- Pace of growth of car fleet slowed, but distance travelled still increasing

- 6 Total CO₂ emissions from all cars have fallen in recent years. In 2006 CO₂ emissions were down 4.8% from their 1997 level.

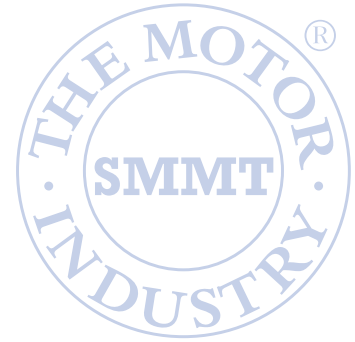
in the amount of fuel consumed in 2006 compared with 1997. These improvements have been made despite further growth in the number of cars on the roads and distance travelled.

- 7 This reduction is in line with a 5% reduction

Table 3 – Car CO₂ emissions, fuel consumption, distance travelled and parc summary, 1997-2006

	2006	2005	1997	% ch '06 vs '05	% ch '06 vs '97
CO ₂ emissions (Mn tonnes)	68.7	69.9	72.2	-1.4%	-4.8%
Fuel consumed (Mn tonnes)	21.86	22.26	23.01	-1.8%	-5.0%
Parc size (Mn vehicles)	30.99	30.65	26.32	1.1%	17.8%
Distance travelled (bn kms)	402.4	397.2	365.8	1.3%	10.0%

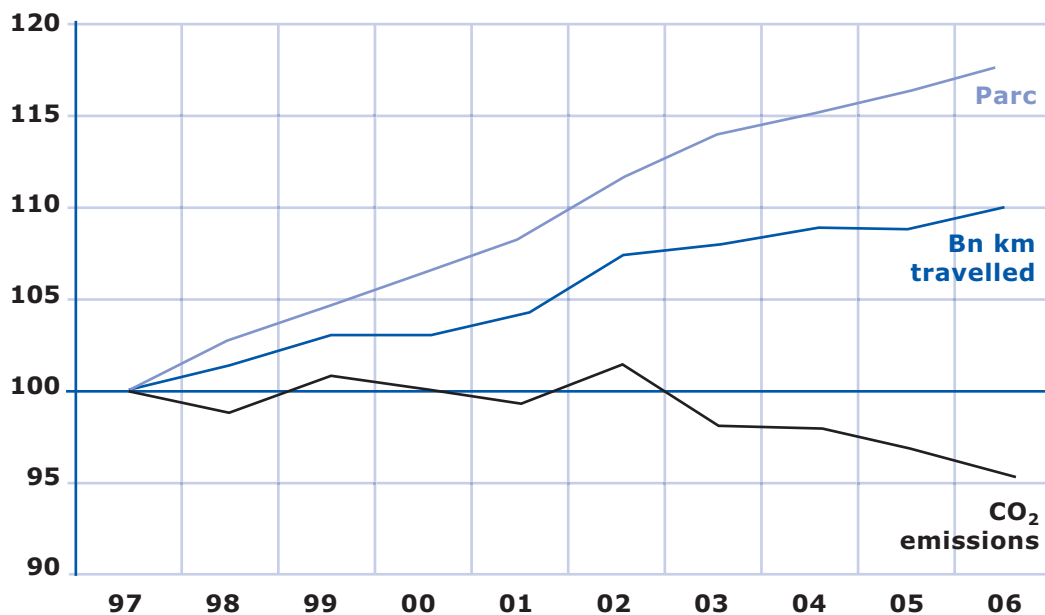
Source: CO₂ – AEA E&E 2008, DfT – Transport Statistics GB 2007 edition for fuel and distance travelled, SMMT Motorparc for parc



8 The amount of fuel consumed by cars has fallen in six of the past ten years. The rate of decline in 2006 was the second highest over that period. This came despite a modest

pick-up in the distance travelled. The shift to more fuel-efficient vehicles, and in particular the growth in the diesel car market, has helped offset the increase in distance travelled.

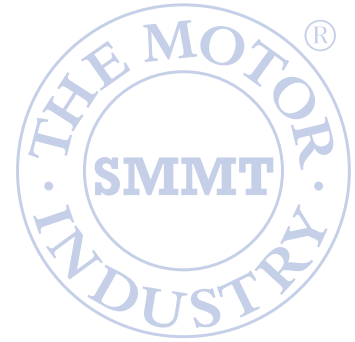
Chart 2 – Trends in car CO₂ emissions, parc size and distance travelled. 1997 as a base year



9 Annex 2 gives more detail of total car CO₂ emissions, fuel consumption, distances travelled and parc size trends between 1997 and 2006.

10 This report is focused on cars. A short description of emissions from commercial vehicles (CVs) and trends in the CV market is given in Annex 3.





Chapter 2

Trends within the UK new car market

Trends within the UK new car market by CO₂ emissions

13

11 This section of the report studies the new car market by CO₂ performance in more detail. It looks at the breakdown by distribution, VED band, fuel type, sales type and segment.

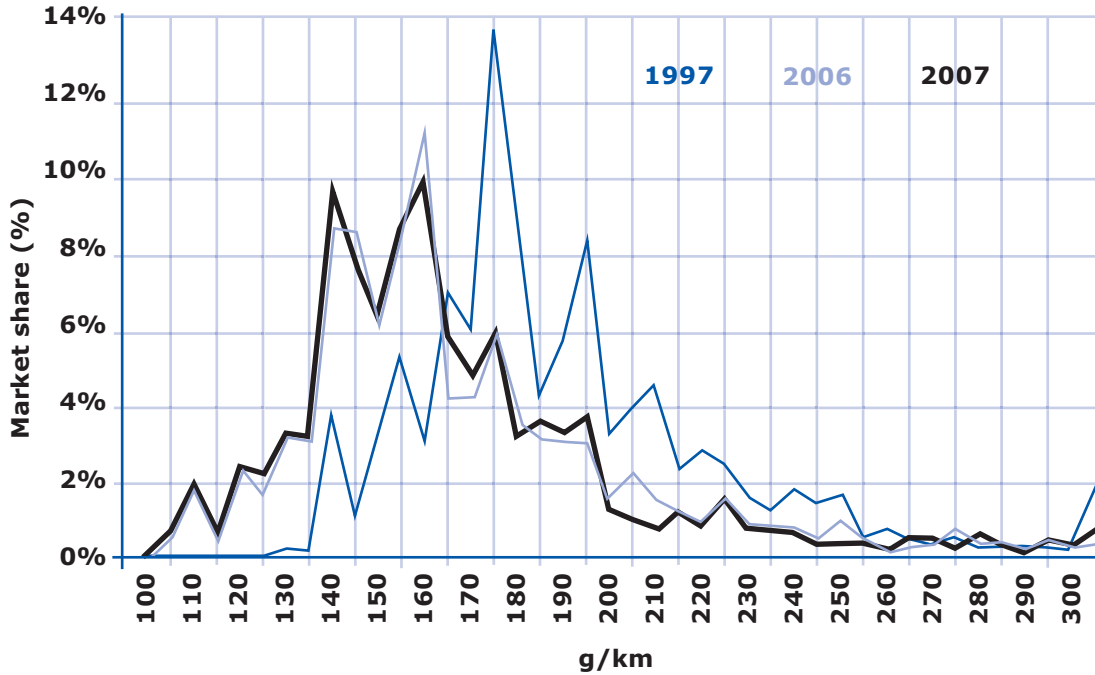
It also focuses on key trends influencing CO₂ performance, namely the growth of the diesel market, the alternatively fuelled car market and also market shift by segment.

Distribution of new car market by CO₂ emissions

12 The new car market has shifted into lower CO₂ emitting vehicles, following the greater availability of lower CO₂ emitting cars and in particular the trend to diesel variants. In 1997 there were no cars registered below 120g/km, just 0.1% of the market was sub-130g/km and only 3.9% was below 140g/km. By 2007 those shares had risen to 5.4%, 10.6% and 23.5% respectively. In 2007, 564,616 cars were registered below 140g/km, with 254,458 units sub-130g/km and 128,646 units sub-120g/km. Chart 3 – which shows distribution of the market by 5g/km bands, shows two peaks in 2007, at 135-140g/km

and 155-160g/km, which compares with the single peak in 2007 at 170-175g/km. This shows the general lowering of CO₂ emissions, but also the growth in the diesel market (the majority of the lower peak). In 2007 80% of the market was in the 100-185g/km range. There continues to be a long tail to the chart representing the market for larger or higher performance cars, as well as automatics. By 2007 just 11.4% of the market was over 200g/km, 273,696 units, which compares to a 28.1% share back in 1997 and is less than 20,000 units above the volume under 130g/km in 2007.

Chart 3 – Distribution of the new car market by CO₂ performance



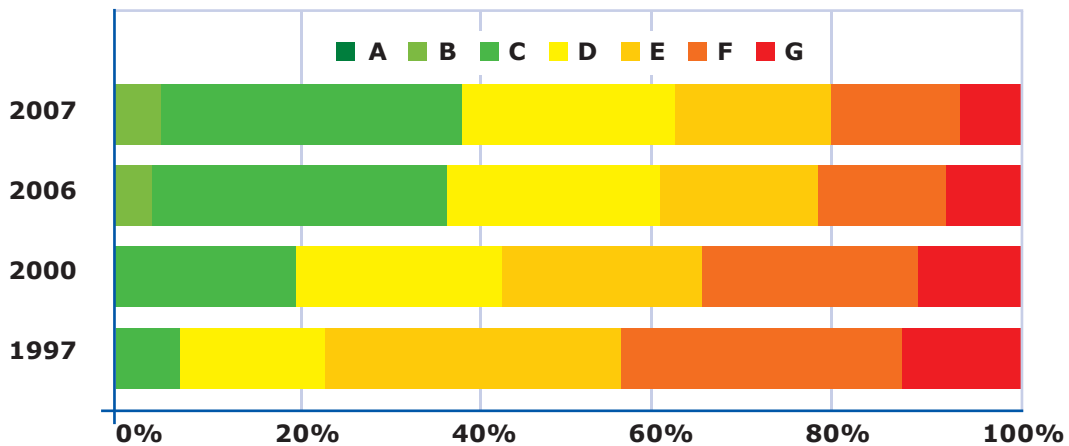
Distribution of new car market by VED bands

13 Looking at the market by vehicle excise duty (VED) band also gives a strong visual

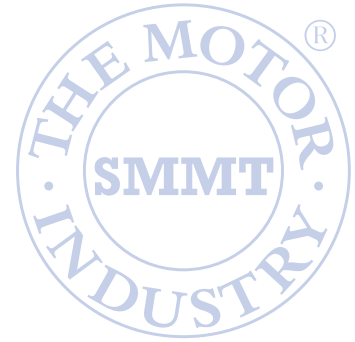
demonstration of how the UK new car market is distributed by CO₂ performance.

Chart 4 – New car market split by VED bands

(see Annex 4 for VED details. Chart colour-coded in line with the new car label*)



* <http://www.smm.co.uk/articles/article.cfm?articleid=10744>



**Table 4 – New car market split by VED bands
(see Annex 3 for details)**

VED band	2007 volume	2007 share	1997 share
A (sub 100g/km)	544	0.0%	0.0%
B (101-120g/km)	128,102	5.3%	0.0%
C (121-150g/km)	785,955	32.7%	7.8%
D (151-165g/km)	592,108	24.6%	15.1%
E (166-185g/km)	418,097	17.4%	32.0%
F (186-225g/km)	329,352	13.7%	32.3%
G (over 225g/km)	149,849	6.2%	12.8%

15

14 Since March 2001 the UK's VED scheme has been based on CO₂ emissions for new cars. The number of bands has increased since 2001 so currently there are seven bands. The data presented above is split into these seven bands (in 1997 there were only four VED bands, see Annex 4 for details).

15 There are still virtually no cars registered in the A band. The share in the B band was a record 5.3% in 2007, up from 4.7% in 2006 and under one per cent in 2001. In 2007 the C band was most heavily populated, accounting for 32.7% of the

market. In 1997 such vehicles only represented 7.8% of the market and the largest (equivalent) band was F, which represented 32.3% of the market. In 2007 that band only took a 13.7% share.

16 The shift into lower CO₂ emission cars has come from increased dieselisation in the market and some growth of alternatively fuelled vehicles. The market has also moved into small cars (superminis), as well as into MPVs and dual-purpose 4x4 style vehicles, the two segments which have seen the most significant CO₂ reductions since 1997.

Trends by fuel type

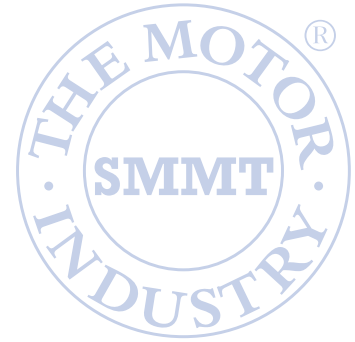
17 The diesel car market has grown significantly over the past decade, from a low of 13.8% share of the total market, at 303,945 units in 1999, to a 40.2% share in 2007 at 967,436

units. This has helped the overall new car market's CO₂ performance as diesel cars are typically 10-20% more fuel efficient than their petrol equivalent. Table 5 gives some examples.

Table 5 – Examples of differences in CO₂ emissions of petrol and diesel models

Model	Fuel	CO ₂	Difference
Peugeot 207 (supermini)			
1.4 (95bhp)	Petrol	145	
1.4 HDI (90bhp)	Diesel	120	-17.2%
Ford Focus 3/5dr manual (lower medium)			
1.6 Duratec Ti-VCT (115ps)	Petrol	157	
1.6 Duratorq (110ps)	Diesel	115	-26.8%
BMW 3 series saloon manual (upper medium)			
318i	Petrol	142	
318d	Diesel	123	-15.2%
Mercedes E class (W211) manual (executive)			
E200 Kompressor	Petrol	195	
E200 CDI	Diesel	160	-17.9%
Honda CRV manual (dual purpose)			
ES	Petrol	192	
ES	Diesel	173	-9.9%
Vauxhall Zafira MY08 5dr manual (MPV)			
1.8i 16v VVT	Petrol	187	
1.9 CDTi 120ps	Diesel	162	-13.4%

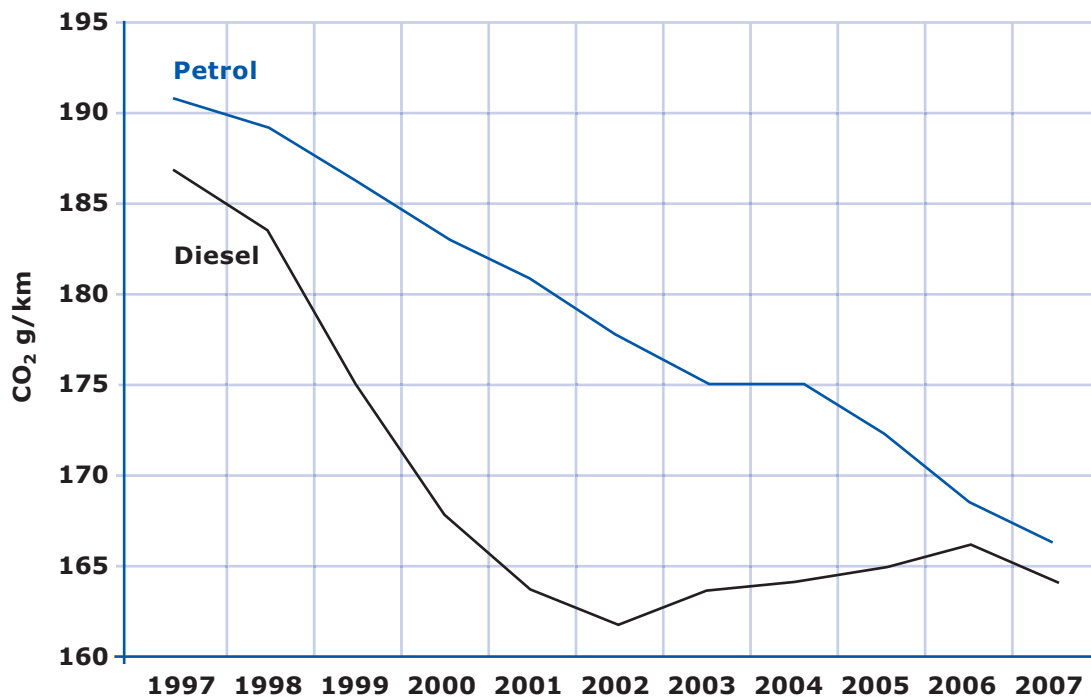
Source: VCA (www.vcacarfueldata.org.uk)



18 However, the sales weighted performance of average new car CO₂ emissions by fuel type, as detailed in Chart 5, shows the gap between diesel and petrol powered cars is far closer. In 2007 the difference was just 0.8%. The average sales weighted CO₂ figure for diesel cars was 164.3g/km, compared with petrol

cars at 165.7g/km. Since 1997 the average diesel car CO₂ emissions have fallen by 12.0%, whilst petrol cars have seen a 13.0% decline. However, average diesel emissions did fall in 2007 for the first time since 2002, by 0.9%. In 2007 petrol cars made an average reduction of 1.6%.

Chart 5 – Diesel vs petrol CO₂ emissions, average sales weighted



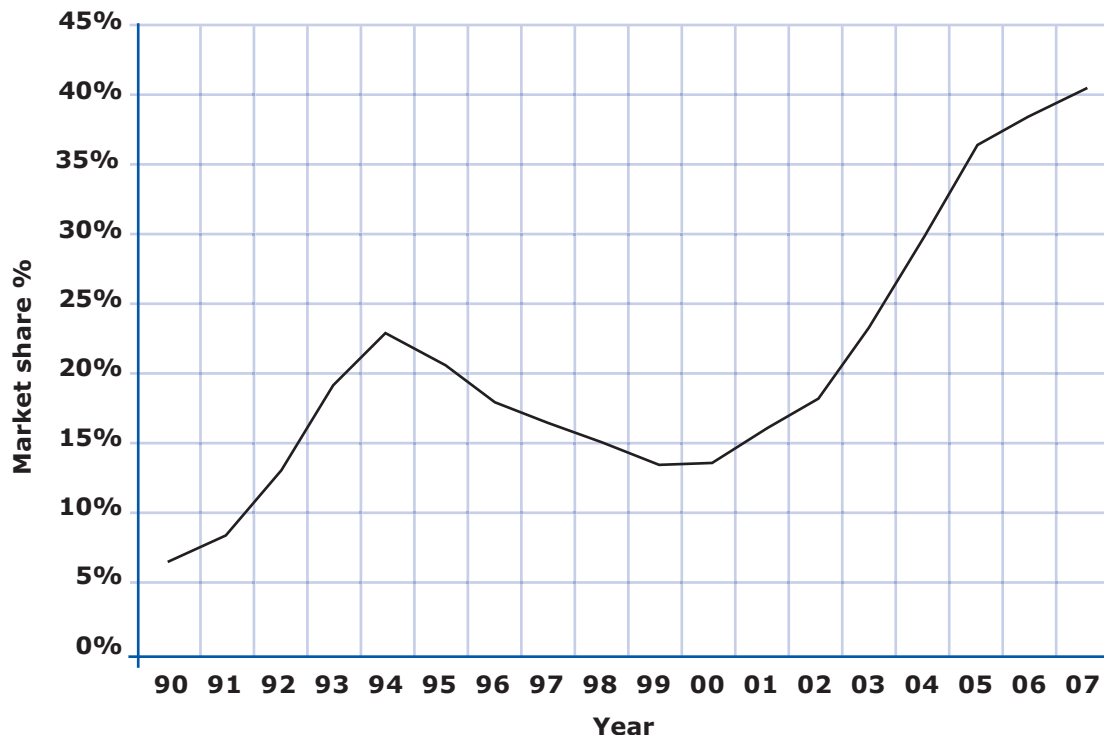
19 The new diesel car market has steadily improved since 2000. The market since 1999 has more than trebled in volume from 303,925 units to 967,436 units. Diesel penetration stood at 40.2% in 2007, up from 16.2% since 1997. Since the start of 2002 the diesel rate has more than doubled, as shown in chart 6 on the 12 month moving annual total (12MMAT) diesel penetration.

20 Diesel demand has improved for a number of reasons. Diesels offer lower CO₂ emissions and also give greater fuel efficiency. This helps those looking to lower their carbon footprint, or to take advantage of CO₂ based tax measures such as lower VED or company car tax charges. Diesel

technology has also improved and models are now much quieter and more refined, offering comparable performance to petrol cars. The availability and choice of diesel products has also expanded rapidly. For some cars, where pulling power not acceleration/top speed is an issue, diesel attributes are more appropriate, such as for dual-purpose 4x4s and MPVs, both of which have been growing sectors of the market.

21 In 1995 the government aligned diesel and petrol duty rates, where previously the diesel rate was lower. Diesel penetration has steadily increased since 1999, but concerns have always remained that growth could be impacted upon by government policy.

Chart 6 – Diesel penetration of the UK new car market, annual 1990-2007



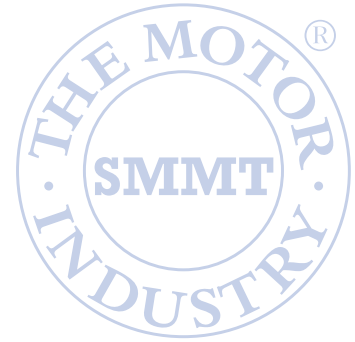


Table 6 – New car market by fuel type, volume (and market share), 1997–2007

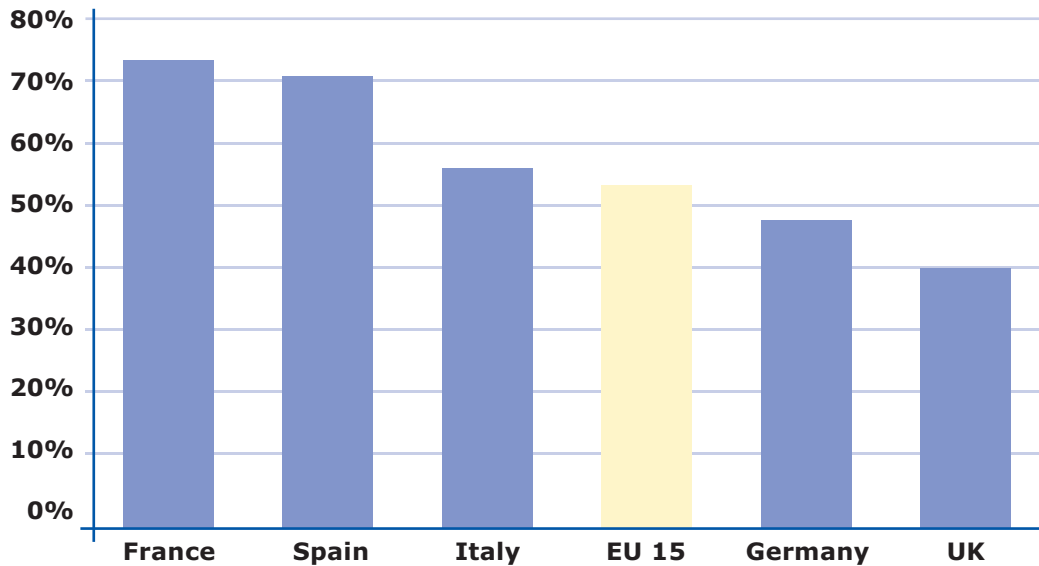
Year	Petrol	Diesel	Other
1997	1,819,812 (83.8%)	350,913 (16.2%)	0
2000	1,908,098 (85.9%)	313,192 (14.1%)	357 (0.0%)
2006	1,436,904 (61.3%)	898,521 (38.3%)	9,439 (0.4%)
2007	1,419,931 (59.1%)	967,436 (40.2%)	16,640 (0.7%)

22 Improvements in diesel technologies and particulate traps have greatly reduced the particulate emissions from diesels. Successive tightening of Euro (environmental) standards have brought diesel and petrol car emissions closer and they should be on a par by Euro 5/6 (*expected September 1st 2009 and September 1st 2014 respectively for new cars*).

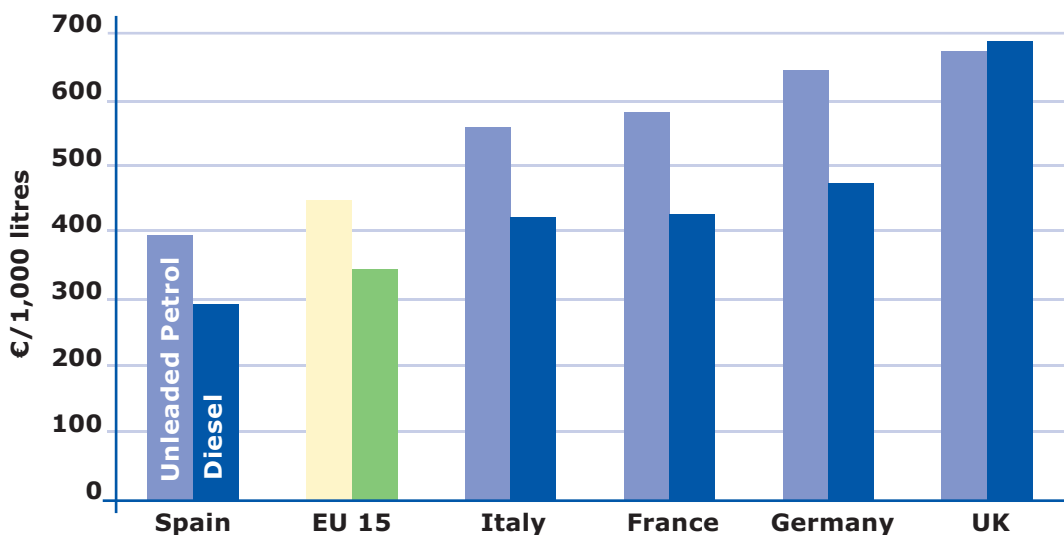
23 Despite the massive growth in diesel penetration in the UK, the UK rate still remains well below the EU15 average – see Chart 7. In 2007 EU15 diesel penetration was 53.6% and in some member states as high as 70%, in France for example it was 73.9% and in

Spain 70.9%. In Germany – the EU’s largest market – diesel cars account for 47.8% of the market. The UK is the only country in Europe where the duty on diesel and petrol fuel is the same, see Chart 8. In 2006 the EU27 diesel duty was on average 24% lower than petrol. The UK duty rates were 54% and 106% higher for petrol and diesel respectively than the EU27 averages. Diesel penetration would also be higher in the UK if the 3% surcharge on diesels in the company car regime were to be scrapped. Annex 5 shows average new car CO₂ emissions in different member states – this shows that the member states detailed above with high diesel penetration tend to have low CO₂ emissions.

Chart 7 – Diesel penetration across EU15 (source ACEA)



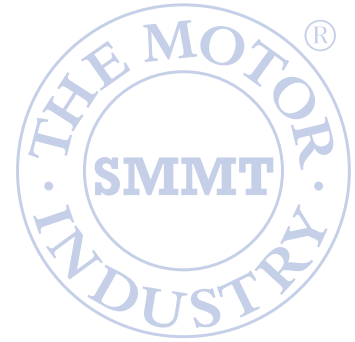
**Chart 8 – Fuel duty rates across EU27
(Source ACEA tax guide, July 2006 rates)**



24 It is not just diesel car demand that has grown rapidly in recent years. Demand for alternatively fuelled vehicles (AFVs) has also risen, although volumes are still small. In 2007 AFVs accounted for 0.7% of the market, with volumes of 16,640 units. In 1997 there were no AFV vehicles newly

registered. The 2007 market was 76.3% larger in volume terms than in 2006.

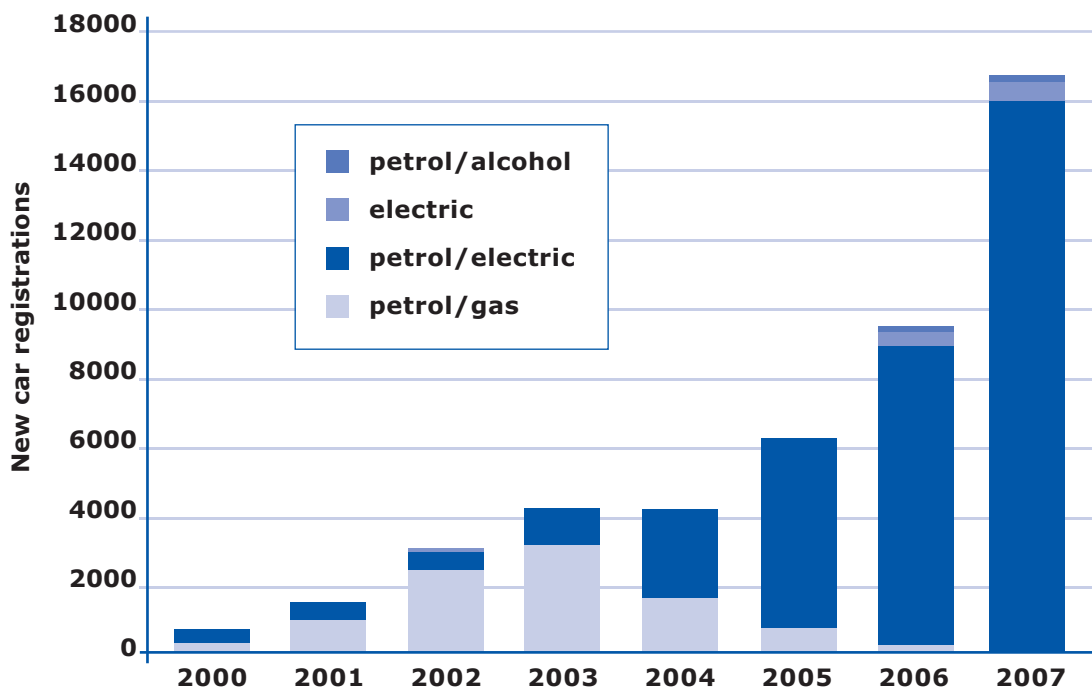
25 Hybrids now dominate the AFV market. In 2007, 96% of all AFVs registered were hybrid petrol/electric vehicles. The Toyota Prius with 8,755 units is the sector leader.



Toyota's sister company Lexus registered almost half this amount in 2007, with the RX (dual purpose 4x4) the marque's top seller with 3,504 registrations. Full year registrations of the Honda petrol/electric Civic total 2,812 units, almost four and a half times the volume recorded in 2006.

26 Registrations of all-electric cars rose by 33.2% in 2007 to 397 units, largely reflecting the arrival of the Aixam Mega. Registrations of E85 bio-fuelled cars jumped 85.5% to 269 units in 2007. Saab and Ford were the leaders in this sector.

Chart 9 – Registrations of AFVs by fuel type since 2000



27 Chart 9 above shows the demise of the petrol/gas market, eg LPG and CNG fuelled cars. In 2002 these vehicles represented 87% of the AFV market and in 2003 over

3,000 gas fuelled cars were newly registered. However, the removal of the Powershift grant – an incentive to promote the purchase of AFVs, saw the market fall

back sharply. By 2006 just 39 gas-fuelled cars were registered. In 2007 that figure had fallen to just three units.

28 Since 2000 45,712 alternatively fuelled cars

have been newly registered in the UK. Of those 77.8%, or 35,556 units have been petrol/electric hybrids. Gas powered cars account for the majority of the remainder, with just over 9,000 units.

Trends by MVRIS (Motor Vehicle Registration Information Service) market segment

29 The UK new car market is dominated by two segments – the supermini and lower medium segments. They represent 32.1% and 30.0% respectively. The upper medium segment – typified by the Ford Mondeo or BMW 3 series – used to be of a similar status – accounting for over a quarter of all new registrations in 1997, but has declined in volume and share terms. The upper medium segment has declined, while the lower medium segment, MPVs and dual-purpose 4x4 vehicle segments have grown.

30 The table below shows the market shares taken by each segment between 1997 and

2007 and the best selling model in 2007. Charts 10 and 11 – depict the market size and transformation graphically. They show the significant percentage growth of the MPV and dual-purpose 4x4 markets. These two segments have seen volumes treble and double respectively since 1997. In absolute volume terms the supermini market has seen the strongest growth since 1997 – up almost 200,000 units, but MPV and dual-purpose 4x4s volumes have collectively shown the same increase. Lower medium volumes have fallen by over 150,000 units over the same period.

Table 7 – SMMT’s MVRIS segment classification and market share

Segment	Best seller	Mkt sh '07	Mkt sh '06	Mkt sh '97
Mini	Chevrolet Matiz	0.9%	1.0%	0.7%
Supermini	Ford Fiesta	32.1%	32.1%	26.5%
Lower medium	Ford Focus	30.0%	29.6%	32.4%
Upper medium	BMW 3 Series	16.1%	16.8%	25.2%
Executive	Mercedes C class	4.3%	4.3%	5.8%
Luxury	Mercedes S class	0.5%	0.6%	0.7%
Specialist sports	Audi TT	2.7%	2.8%	2.9%
Dual purpose 4x4	Honda CR-V	7.3%	7.5%	3.8%
MPV	Vauxhall Zafira	6.0%	5.3%	2.0%

Chart 10 – New car registrations by MVRIS segment, 1997-2007

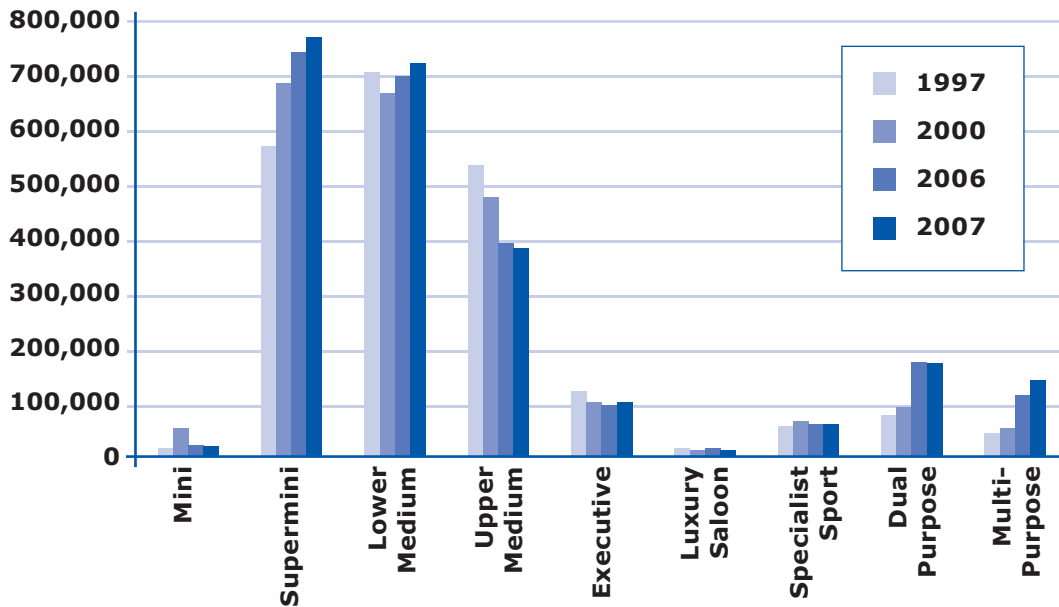
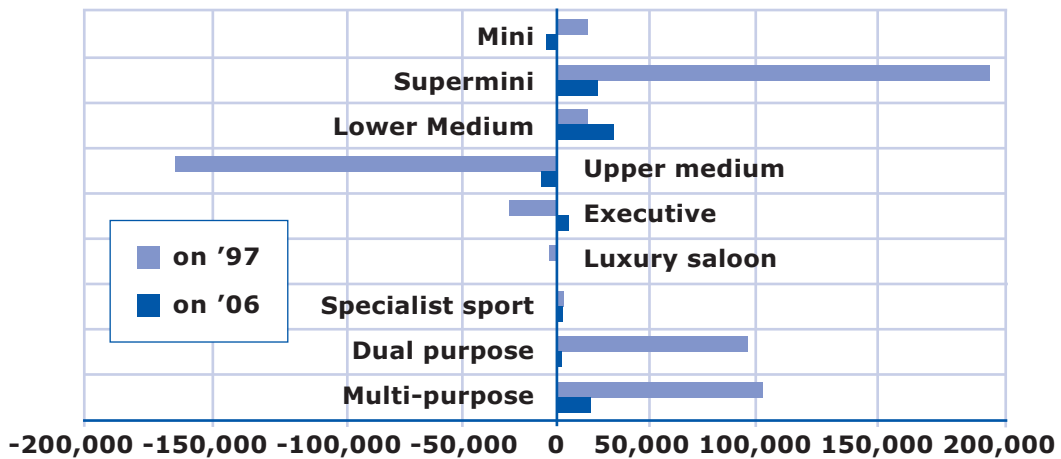


Chart 11 – Change in MVRIS segment registrations, 2007 on 2006 and 1997



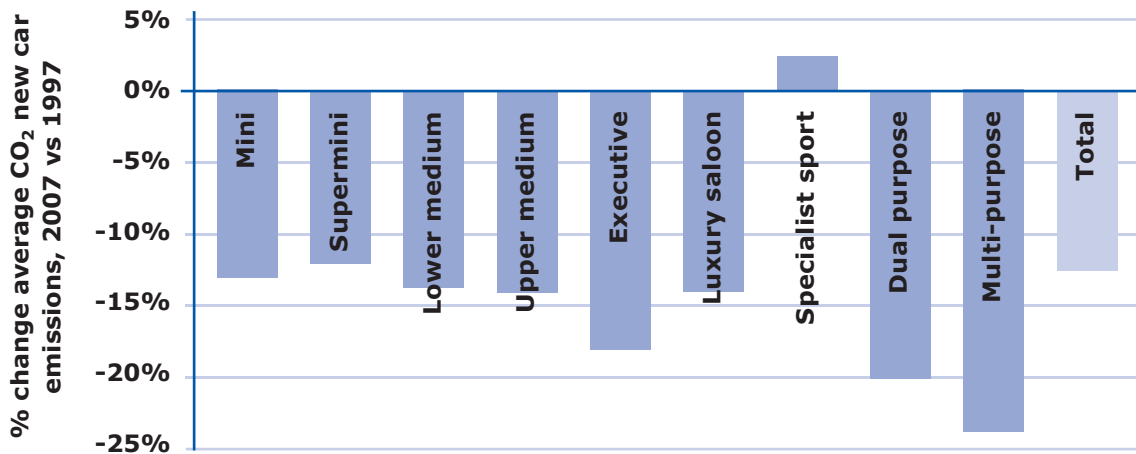
31 In general, the smaller the car, the lower the CO₂ emissions. Cars in the mini segment have the lowest CO₂ emissions, at 128.5g/km. Superminis and lower medium segment cars are also below the national average, while for larger cars like the upper medium, executive and luxury segments, the CO₂ emissions are higher. The sports, dual-purpose 4x4 and MPV markets are broad descriptions of the large range of vehicles in those segments, but on the whole their CO₂ emissions are above the industry average.

32 Since 1997 the MPV and dual-purpose segments have made the most significant reductions in average CO₂ emissions, at 24.4% and 20% respectively, or nearly 60g/km each. Since 1997 only the sports car market has posted an increase in CO₂ emissions, which reflects a change in the structure of the sector, and in particular the loss of volume sellers of supermini-based models like the Ford Puma and Vauxhall Tigra (note a new Vauxhall Tigra was launched in 2007).

Table 8 – SMMT segment by CO₂ performance, in g/km

Segment	2007 CO ₂	Ch vs '06	Ch vs '97	Ch g/km vs '97
Mini	128.5	-0.5%	-12.9%	-19.0
Supermini	141.8	-0.9%	-11.7%	-18.7
Lower medium	158.6	-0.6%	-13.6%	-24.9
Upper medium	169.1	-1.4%	-14.4%	-28.4
Executive	192.6	-4.4%	-18.3%	-43.2
Luxury	273.8	1.8%	-14.4%	-45.9
Specialist sports	224.0	-2.4%	1.9%	4.1
Dual purpose 4x4	228.3	-2.7%	-20.0%	-57.0
MPV	179.7	-1.8%	-24.4%	-58.0

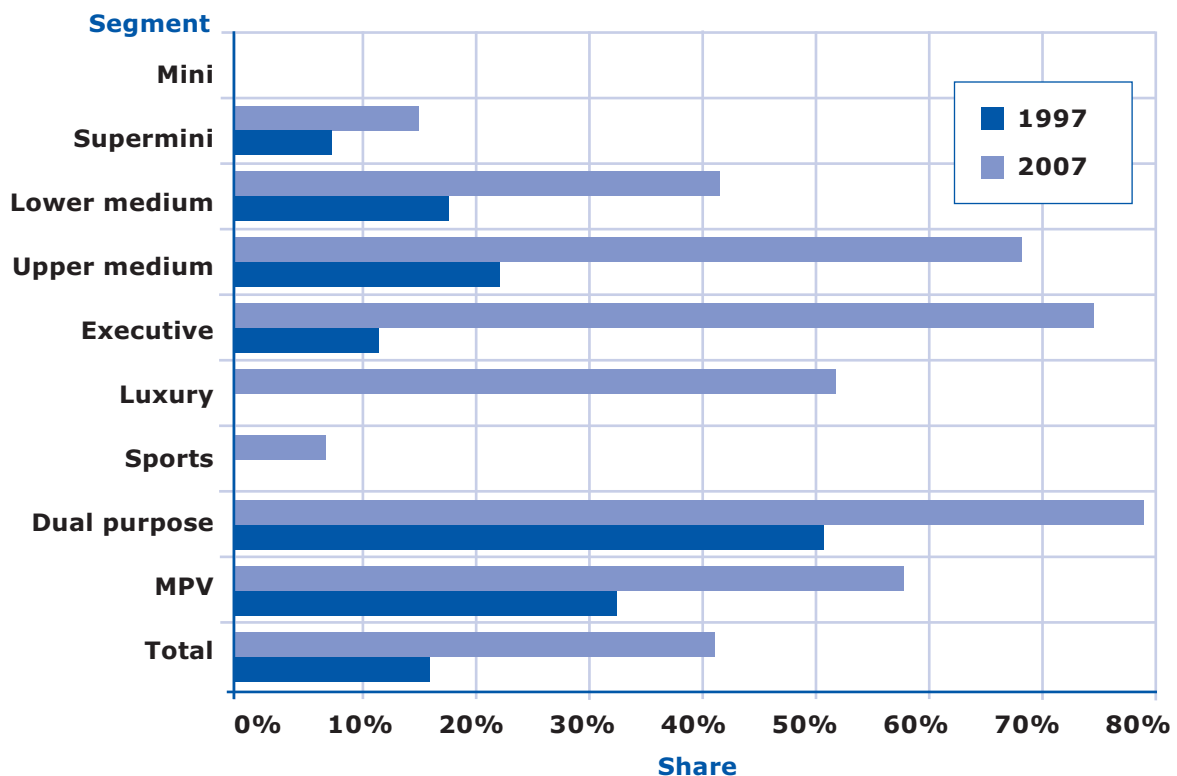
Chart 12 – Change in CO₂ between 1997 and 2007



33 Part of the success in emissions reduction since 1997 is due to the increased diesel penetration, as discussed earlier. Chart 13 shows diesel penetration by segment. Diesels are now available in every segment and penetration levels have risen in every segment, although in the mini and sports car market it remains low. Five of the nine segments – dual-purpose 4x4, executive, upper medium, MPVs and luxury cars – all saw diesel penetration above 50% in 2007 and in the dual-purpose segment it was

almost 80%. It is, however, noticeable that diesel penetration in the supermini market is relatively low – only around a third of the market average. Diesel engines tend to be a larger capacity unit than the petrol equivalent, so making packaging into a small car more complex. They are also more expensive, so the relative price increase in a small car is also more significant. Diesels tend to be more cost-effective when high mileage is involved, whereas superminis tend to be bought for shorter distances/local journeys.

Chart 13 – Diesel penetration, by segment, 1997 and 2007



Impact of Company Car Taxation (CCT)

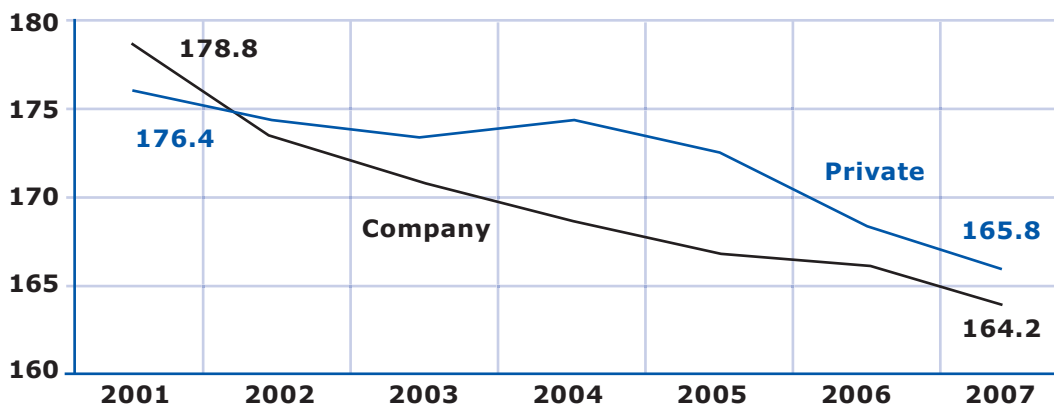
34 The rate of reduction in overall CO₂ emissions has also been aided by the shift in the market towards company cars. Since April 2002 CCT has been CO₂ based – see Annex 4. This has helped focus company car buyers' attention on CO₂ and encouraged a shift into lower emitting vehicles. For the purposes of this report company cars are classified as the MVRIS fleet and business sectors. The 2006 report highlighted the difference between these figures and HMRC figures on estimates of those receiving company cars. Company

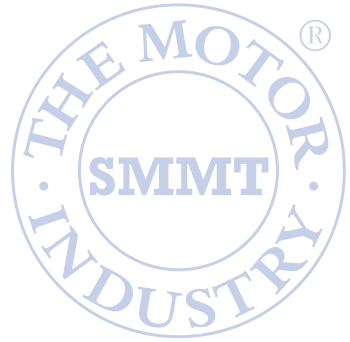
cars have lower CO₂ emissions, on a sales weighted average basis, than private cars. The difference is however only modest, at one per cent. However, in 2001 company cars had a higher CO₂ on average than petrol cars, by 1.4%. Between 2001 and 2007 the company car market had a slightly better rate of improvement than that for private cars, although the situation has been reversed in each of the past two years. Between 2001 and 2007 the private car market has declined by 13.7%, whilst the fleet market has grown by 9%.

Table 9 – New car CO₂ emissions by sales type

	2007	2006	2001
Company			
Average CO ₂ g/km	164.2	166.0	178.8
2007 % change		-1.1%	-8.2%
Mkt share	56.5%	55.9%	50.7%
Private			
Average CO ₂ g/km	165.8	168.7	176.4
2007 % change		-1.7%	-6.0%
Mkt share	43.5%	44.1%	49.3%

Chart 14 – Private and company average new car CO₂ emissions

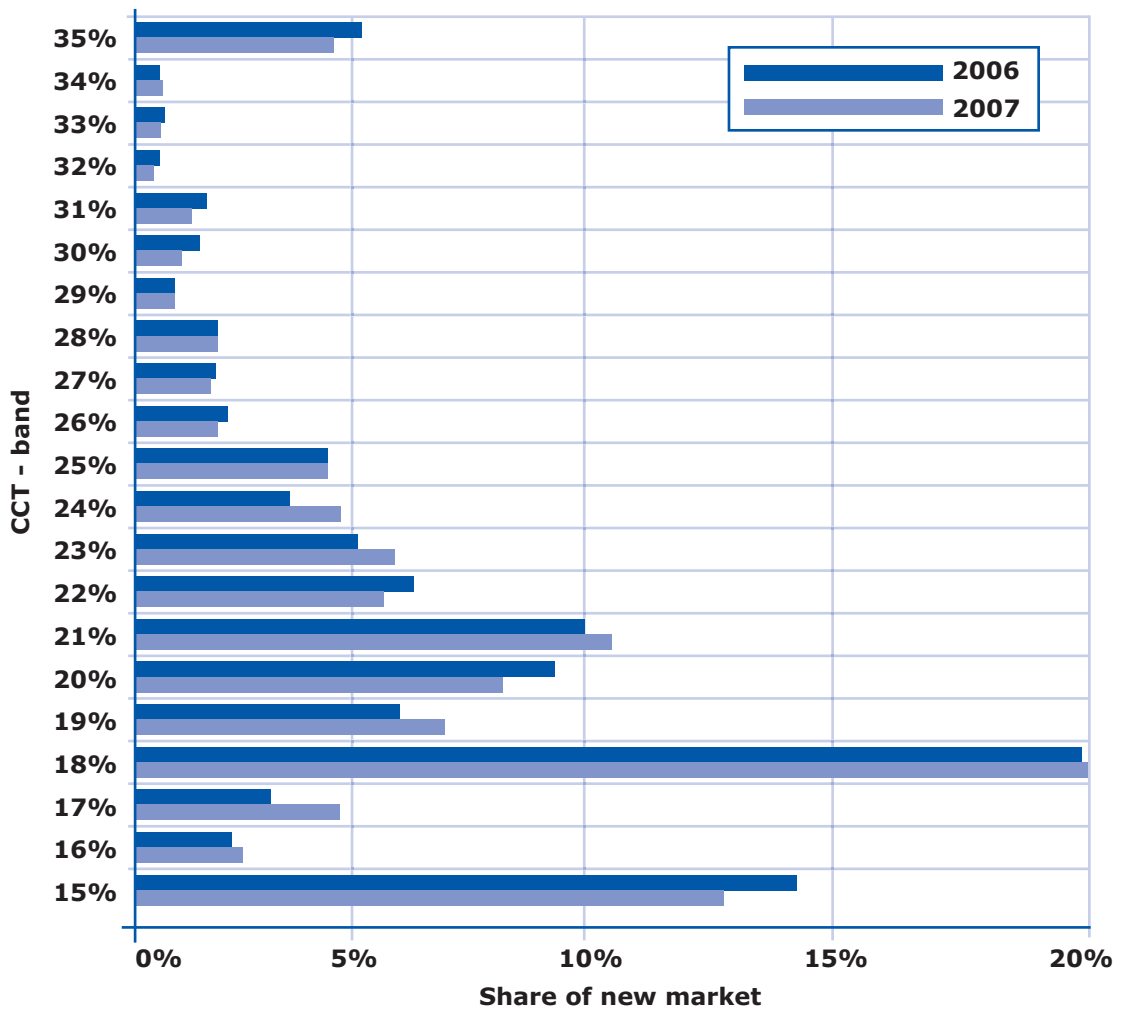




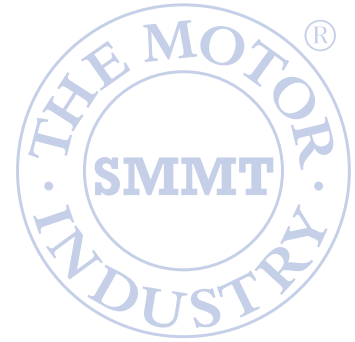
35 Annex 6 also shows the fleet/business market by CCT band. This shows 22% of the market in the minimum 140g/km and lower band (irrespective of fuel type), up

from 20.8% in 2006. However, the switch to diesels means that the proportion in the 15% band in 2007 declined, as depicted in Chart 15.

Chart 15 – New company car market, by CCT rate bands







Chapter 3

The move towards lower CO₂ emitting vehicles

Size of the task ahead

29

- 36** In December 2007, the European Commission published legislative proposals on how to regulate CO₂ emissions from passenger cars. This move goes beyond the voluntary agreement that the trade associations for the European, Japanese and Korean car manufacturers signed in 1998-1999. Their aim was to reach 140g/km by 2008-2009 respectively. See Annex 6 for CO₂ emissions by member states.
- 37** The EC's target is for average new cars registered in the EU as a collective to achieve 130g/km by 2012. A further 10g/km saving will be achieved through complementary measures, which would be increased use of biofuels, gear-shift change indicators, minimum efficiency standards for mobile air conditioning, low rolling resistance tyres. The regulation will apply to M1 vehicles, ie passenger cars only, that are whole vehicle type approved (ECWVTA Directive 2007/46/EC). The 130g/km figure will be calculated from manufacturers' sales weighted performance across the whole of the EU.
- 38** To reflect the need for different vehicle types and to ensure all manufacturers have a challenging target, the EC has proposed a weight based parameter¹ to be applied to the targets.
- 39** It is proposed that failure to meet the target will incur severe penalties, of €20 per g/km above the target for each car registered in 2012, rising to €95 by 2015. So, for example, a manufacturer missing its target average by 10g/km in 2015 and which registers a million vehicles across the whole of Europe would face a €950 million fine.
- 40** Achieving such savings will require enormous effort by the vehicle manufacturers to deliver new technologies to the market place. It will also require a more integrated approach, as highlighted in the 2006 report. The integrated approach is a partnership of stakeholders, which includes the automotive industry, the fuel industry, government at local, national and European level, and consumers. CARS21 – which included representatives from the

¹<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0856:FIN:EN:PDF>

automotive industry, the European Parliament, national governments and other stakeholders – supported the use of the integrated approach and judged that only the combined efforts from all involved would improve both the environmental performance of cars and the competitive strength of the industry.

41 The industry will also have to overcome issues related to the impact of other regulations, notably safety and air quality, and consumer preference for larger cars. Heavier and larger cars have had a negative impact on efficiency and CO₂ emissions. It is unlikely these trends will diminish in the future.

Consumer Choice

42 The importance of consumers in this forum is key. Market demand drives what cars are bought and what cars are brought to the market place. Vehicle choice is important to reflect the differing needs of the population. People demand particular sizes of car, performance attributes, levels of comfort, etc.

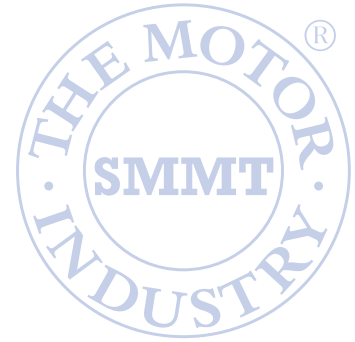
43 To reflect this diverse market place a move to maintain choice should be paramount, so we do not end up with a regulatory car, a one-size fits all vehicle, which may ultimately be ineffective, eg if a family had to buy two vehicles to transport them about as one 'regulatory' car might not be big enough.

44 The UK market is one of the most open and competitive in the world. The number of manufacturers and models available is vast. This great diversity is key to ensuring consumers get the right vehicle for their specific needs. The King Review² details the importance of different factors consumers look for when buying a car. Table 10 is taken from the review. It shows that most important is size, price and running costs – which could relate to fuel type. Brand and performance come next. A consumer may therefore decide to purchase a particular type of vehicle – eg small car, MPV, dual purpose, then look for the fuel type then which manufacturer, then which model and finally which specification best suits their needs.

Table 10 – Factors that are important to consumers in deciding which car to buy (as in King Report 2007)

Most important	Medium importance	Least important
Vehicle price	Performance	Depreciation
Size	Power	Sales package
Reliability	Image	Personal experience
Comfort	Brand name	Dealership
Safety	Insurance costs	Recommendation
Running costs	Engine size	Road tax
Fuel consumption	Equipment	Environment
Appearance		Vehicle emissions
		Alternative fuel

² http://www.hm-treasury.gov.uk/pbr_csr/reviews/pbr_csr07_king_index.cfm



45 It is important that factors like emissions and environment become more important to consumers, if the drive to lower CO₂ is to continue. However, there may need to be incentives to speed up the replacement cycle in the parc, to ensure new low CO₂ emitting cars make up a greater proportion of vehicles in use.

46 SMMT is supportive of measures to encourage the take up of lower CO₂ emitting cars and SMMT members have voluntarily introduced the colour-coded label in new car showrooms to help provide consumers with information about environmental and running costs when

buying a new car. The industry is also supportive of the government's Act on CO₂ campaign³, to encourage the purchase of best-in-class low CO₂ emitters and the efficient use of cars.

47 In 2007 the SMMT's CO₂ database showed 345 distinct ranges (eg Ford Focus, VW Golf) – up 7.1% from 322 in 2006. The Vehicle Certification Agency (VCA) publishes a list of all models available for sale⁴. This shows the number increased to its highest ever level at over 3,500 in 2008, see Chart 16. The volume has more than doubled since 2000. The 2007 figure is impacted by the loss of MG Rover products.

³ <http://www.dft.gov.uk/ActOnCO2> ⁴ www.vcacarfueldata.org.uk/downloads

Chart 16 – Number of models detailed on the VCA database

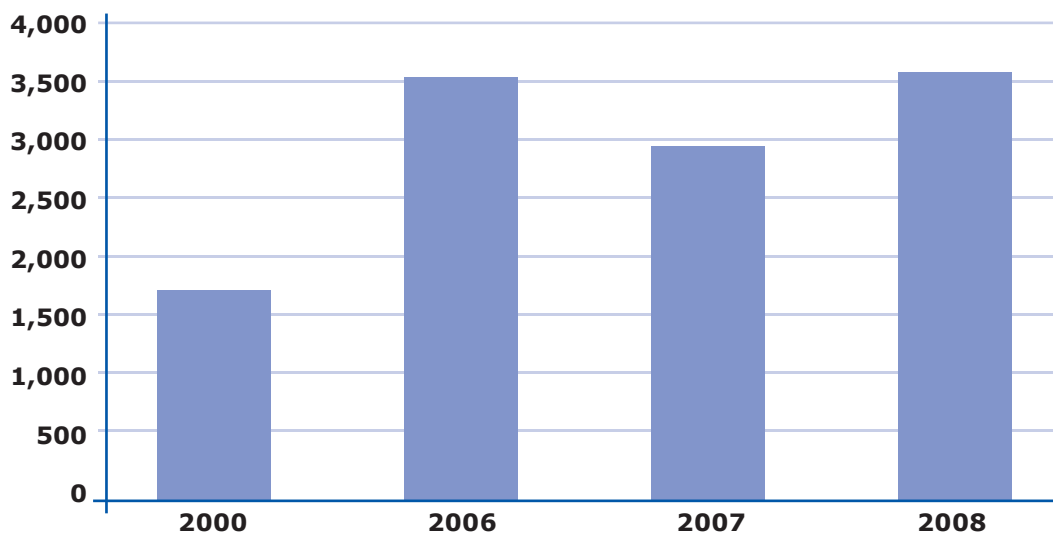
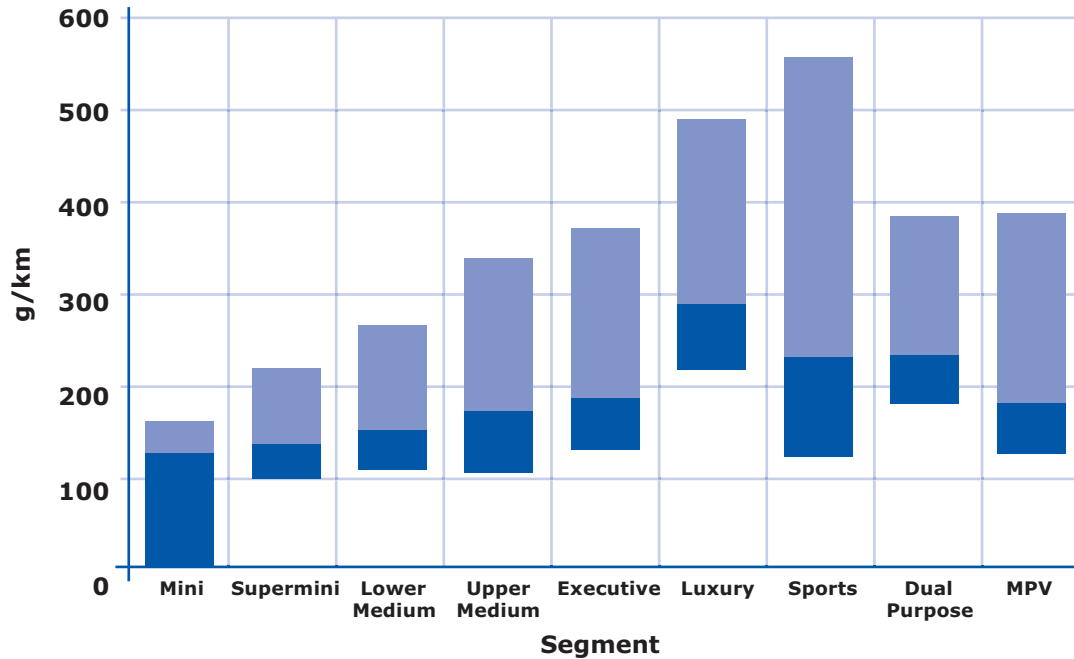


Chart 17 – range of CO₂ emissions and average in each segment



48 Chart 17 shows the range of CO₂ emissions available in each segment. This highlights the importance of choice and model diversity available to the market. On the

whole, the average sales weighted new car CO₂ emissions are in the lower end of the range, typically in the bottom quarter to third of the range.

Table 11 – Lowest emitter in each segment, CO₂ in g/km, in 2007

Segment	Average	Lowest emitter	Make/model	Lowest vs average
A – mini	128.5	0	smart Fortwo Coupe	-
B – supermini	141.8	99	VW Polo	-30.2%
C – lower medium	158.6	109	Honda Civic	-31.3%
D – upper medium	169.1	104	Toyota Prius	-38.5%
E – executive	192.6	136	BMW 5-series	-29.4%
F – luxury	273.8	210	Audi A8	-23.3%
G – sports	224.0	124	Vauxhall Tigra	-44.7%
H – dual purpose 4x4	228.3	171	Suzuki Jimny	-25.1%
I – MPV	179.7	127	Ford C-Max	-29.3%

49 Theoretically, if the lowest CO₂ emitter was bought in each segment, see Table 11, then emissions could be reduced by approximately 30%. Most of these models are alternatively fuelled or diesel powered. Some consumers may find certain low-emitting models unsuitable for their specific needs, eg requirements for additional seating or load space, automatic gearboxes, etc. Similarly many of the highest emitters in each segment are highly

specialised models and are typically to be sold in very low numbers.

50 If consumers bought the lowest CO₂ option in each of the 345 model ranges then the average CO₂ emissions of the UK market in 2007 would have been 139g/km. That is inside the pan-European voluntary agreement target for 2008/09 and some 15.7%, or almost 26g/km, below the actual 2007 figure.

Table 12 – top ten lowest CO₂ emissions models in 2007 (lowest emitter in range)

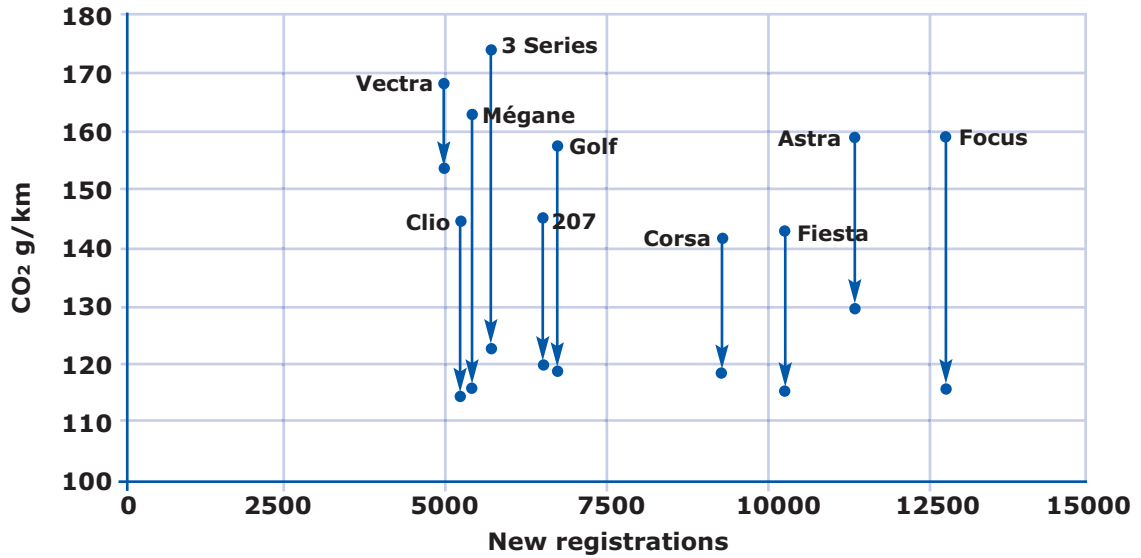
	Model	Fuel type	CO₂ g/km
1	Smart Fortwo	Electric	0
2	VW Polo	Diesel	99
3=	MINI	Diesel	104
3=	Toyota Prius	Petrol/electric	104
5=	Citroën C1	Diesel & petrol	109
5=	Citroën C3	Diesel	109
5=	Honda Civic	Petrol/electric	109
5=	Peugeot 107	Petrol	109
5=	Toyota Aygo	Diesel & petrol	109
10	Fiat 500	Diesel	111

Note: Aixam, Ligier, Microcar and Reva not included as only type B1 approval.

51 The top ten lowest emitters, as depicted in Table 12, represented a net volume of some 56,000 units, equivalent to 2.3% of the total new car market in 2007. The top ten best selling models overall, as detailed in the chart below, represent 33% of the new car market.

Their sales weighted CO₂ average was 154.5g/km in 2007, 6.3% or 10.4g/km below the national average. If the lowest emitter in each range was bought, also indicated on Chart 18, then the sales weighted average would be 32.6g/km or 21.1% lower, at 121.9g/km.

Chart 18 – Top ten best selling models, average CO₂ emissions and registrations



52 The section below looks at the distribution of sales by CO₂ emissions of the top selling model in the two best selling segments – the supermini and lower medium segments. This highlights the range of choice available to consumers in each model range. On the whole the key sellers were in the middle of the CO₂ range. The two peaks in the lower medium Ford Focus range’s distribution

reflect the petrol and diesel options. For the supermini Ford Fiesta the concentration is more focused, which reflects the much lower diesel penetration in this segment of the market. The charts are also colour-coded to depict the VED band the ranges fall into. The Focus range is predominantly C and D band, and the Fiesta range is concentrated in the C band.

Chart 19 – Registrations distribution by CO₂ of top selling lower medium car – Ford Focus

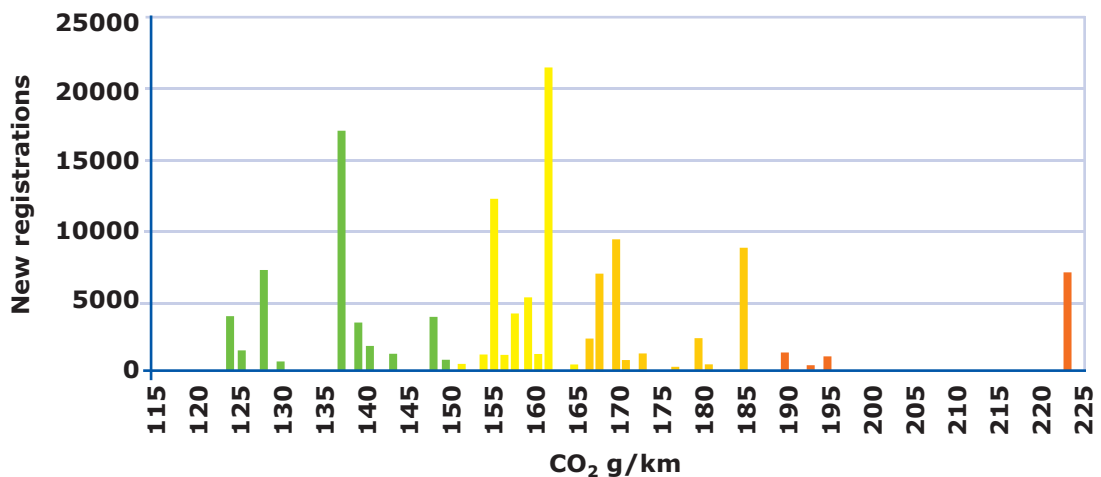
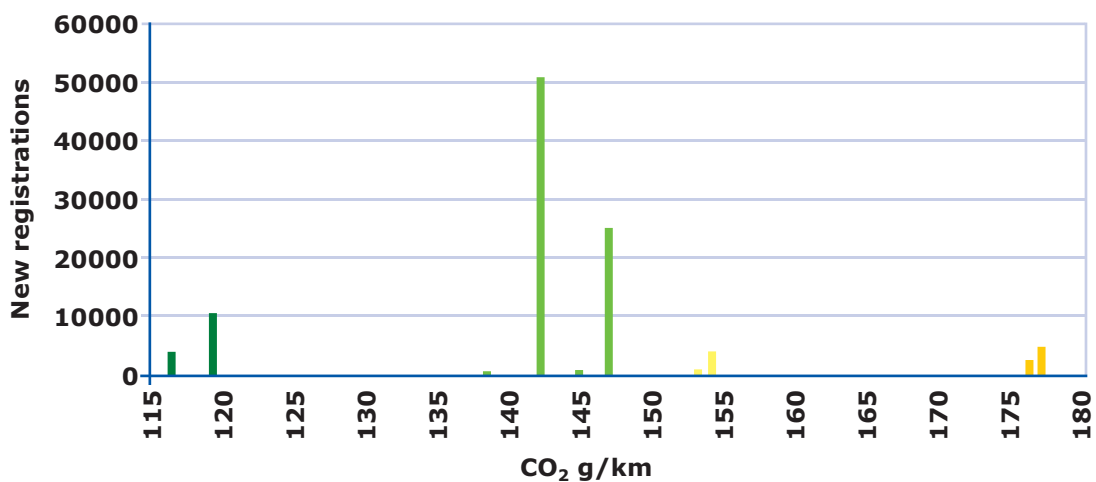


Chart 20 – Registrations distributed by CO₂ of top selling supermini car – Ford Fiesta



53 Since 1997 the average new car price has fallen, notably after a 10% reduction in UK list prices in 2000. This cut in new car prices, allied to sustained economic growth since 1997, has meant that cars have become more accessible to more people.

This will have allowed some new buyers into the market place and allowed others to afford a larger or better equipped car. These larger and better equipped vehicles are likely to be higher CO₂ emitters than smaller or more basic variants.

New technologies coming to the market

54 At €20 billion, the automotive sector is Europe’s largest investor in R&D, driving industry forward and helping deliver more sustainable motoring for the 21st century.

sustainable low carbon products at an economically affordable price is key to success.

55 Much of that is being spent on a number of different technical solutions to cut new car CO₂ emissions, as there appears to be no one single technology emerging above the others.

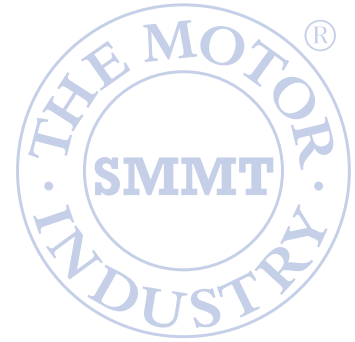
57 The King Review (‘Part 1: the potential for CO₂ reduction⁵⁾) suggests 30% lower CO₂ efficiency savings could be in place within ten years by refining, switching and adapting existing or near-to-market developments in vehicles, fuel and use patterns, supplemented with more use of hybrids and sustainable biofuels. The report suggests a 50% reduction in CO₂ emissions per km could be achieved by 2030 and at a low cost by smarter vehicle

56 Biofuels, synthetic fuels, electricity and hydrogen all offer the potential to reduce reliance on a carbon-based fuel, but delivering

⁵ http://www.hm-treasury.gov.uk/pbr_csr/reviews/pbr_csr07_king_index.cfm

supply and firmer adoption of battery-electric hybrids and sustainable bio-fuels. Complete de-carbonisation of road transport is seen as realistic in the long-term, probably through electric or hydrogen-powered vehicles. Here, the crucial off-set is that of achieving low-cost near zero carbon electricity generation. The capacity of the generators to supply the transport sector, alongside the need of households and industry, may also be an issue.

- 58** It takes a significant amount of time to develop and introduce a new car, let alone a new technology. Development of a car – from design to production logistics – takes up to five years. That car would then typically remain in production for around seven years. The concept phase and production cycles of engines and transmission are even longer, typically seven to ten years.
- 59** It should be noted that reducing CO₂ emissions through vehicle technology alone is very expensive – ACEA suggests it is up to ten times more expensive than measures like increasing the use of biofuels, better infrastructure and traffic management, or adopting ‘eco-driving’.
- 60** ACEA estimates that to achieve the 130 grammes CO₂/km target by 2012 will result in average car prices rising by around €3,000. Such costs will be difficult to pass onto consumers, because of fierce competition within Europe and abroad. A significant price increase in new cars could slow the renewal of the parc, which would counter improvements to the environmental performance of the entire fleet.
- 61** The Commission for Integrated Transport (www.cfit.gov.uk) supports the view that technology-based measures to tackle CO₂ emissions are ‘relatively expensive’ and that there is an ‘additional opportunity to capture greater cost-effective carbon savings through measures to encourage behavioural change’.
- 62** Traditional internal combustion engines – petrol and diesel powered – also have potential for further improvements in their emission’s performance. Technology such as advanced fuel injection, recirculating exhaust gases, direct injection gasoline (like VW’s FSI), turbo-chargers, super-chargers, more efficient transmission systems, wider take-up of stop-start technologies – which can save 3%-10% (Source: Ricardo), can all play a role in improving fuel efficiency and lowering CO₂ emissions.
- 63** The renewable transport fuels obligation (RTFO) requires a 5% biofuel blend for petrol and diesel fuels by 2010. From March 2008 the UK will begin seeing the biofuel blend increase, although this will impact on all vehicles in the parc. E85 (85% bioethanol) is a much higher blend and would require significant changes to the drivetrain. Establishing standards for sustainable biofuels is important. In addition, the automotive sector looks forward to the development of second generation biofuels and synthetic fuels.
- 64** Hybrids have already entered the UK market and account for the majority of alternatively fuelled vehicle (AFV) registrations. Stop-start vehicles are known as micro hybrids. In mild hybrids an additional motor provides extra power when needed. Full hybrids allow for the vehicle to be run on a zero (tailpipe) emissions basis.
- 65** Although they have been around for some time, electric vehicles are being developed which offer much improved range and recharging times. Reducing weight and availability of recharging infrastructure are also areas which need to be tackled. It is important to note this technology moves the emission point from the tailpipe to the electricity generator.
- 66** For both hybrids and electric vehicles the life cycle emissions of the batteries and their possible need for replacement needs to be considered. The production, servicing and recycling/disposal issue needs to be understood.
- 67** Hydrogen vehicles are often classed as a long-term solution. Hydrogen is the carrier, rather than the source, of the energy. While the only tailpipe emissions are water, the lifecycle emissions will depend upon how hydrogen is produced. Providing the infrastructure for a shift to a new technology will also be



problematic, with hydrogen being difficult to store and bulky to transport.

- 68** It is also important to note the difference between some savings which will deliver greater real world reductions, rather than just on the test cycle used to measure vehicles' fuel efficiency and CO₂ emissions.
- 69** Reducing weight and improving aerodynamic efficiencies also have significant roles to play in helping to reduce emissions. Technical, but

non-powertrain items, such as electric power steering, smart cooling or oil circulating systems, can also contribute to CO₂ emissions reductions.

- 70** The UK could benefit from the development of low carbon vehicles, as we have a strong history and large skill base in innovation and technology. We are already seeing the emergence of new technologies and designs from our specialist car manufacturers, R&D firms and motor-sport companies.

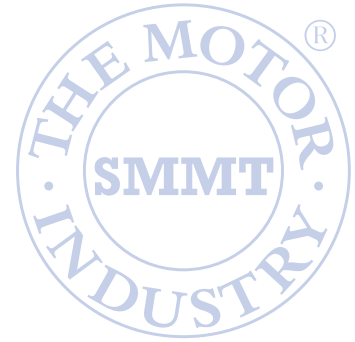
New models coming to the market

37

- 71** A number of manufacturers have already launched low CO₂ emitting model ranges, for example, VW has the BlueMotion, Renault the eco2 range and Vauxhall the ECOFlex. In 2008 there will be more developments. The BlueMotion technology is being incorporated by other VW Group brands like SEAT with its Ecomotive range and Skoda with the Greenline label.
- 72** Ford has launched an ECONetic range, with a new lower emitting Focus. PSA has launched schemes to point consumers to their lowest CO₂ offerings, for Peugeot the Blue Lion Badge scheme and Citroën the Airdream scheme.
- 73** Saab, Ford and Volvo are currently supplying E85 biofuel cars to the UK market. Others are set to join the market in 2008 and beyond, such as PSA.
- 74** Toyota and Honda have been the market leaders in hybrid technologies. Other manufacturers are looking to enter this market soon. Audi and Porsche, for example are to introduce hybrid technology to the Q7 and Cayenne ranges and Chevrolet aims to bring the Volt to the market within two years.
- 75** A number of manufacturers are looking to electric cars, such as GM, Volvo and Chrysler, as well as specialist marques like Lotus (notably through the Tesla project) and the Lightning Car Company. The issue of range and recharging times is of significant importance, as well as ensuring the electricity is generated from a low carbon source.
- 76** Honda launched the hydrogen FCX in the USA. BMW has been leasing cars which can run on hydrogen power in the UK.
- 77** To help speed up the replacement of the parc and encourage the take-up of lower carbon cars some European governments introduced scrappage incentive schemes, whereby consumers buying a low CO₂ emitting car got a discount if they scrapped a car of a certain vintage. Vauxhall launched its version of this in the UK⁶, whereby a £1,000 was given if the consumer scrapped a vehicle and bought a low emitting model.

⁶ <http://www.vauxhall.co.uk/vx/carandvans/customerofferbyoffername.do?method=retrieveCustomerOffersByOffer&vehicleType=C&offerName=EcoFlex%20Offer&offerId=3859>





Chapter 4

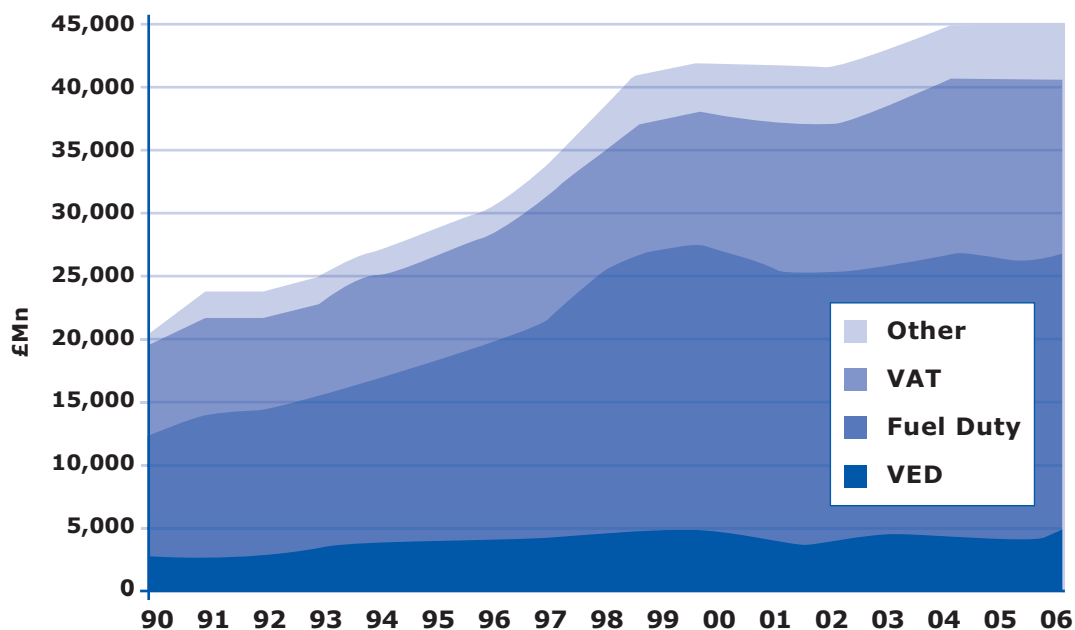
Taxes and the motorist

Government revenue from the motorist

78 Motorists are the number one tax contributor in Europe. In the UK motorists already pay some £45 billion per annum to the Treasury through motoring taxes. The majority of this is from fuel duty, which in 2006 was £23.4 billion. The rapid growth

reflects the increase in fuel duty, brought about through the fuel duty escalator. This came to an end in 1999/2000 – following the fuel protests. Between 1990 and 1999 the revenue doubled to £40 billion (see Chart 21).

Chart 21 – revenue from motorists, 1990-2006



Motorists cover their environmental costs

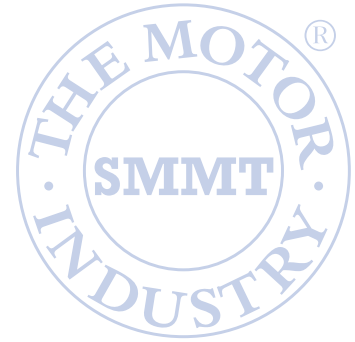
- 79** Road transport emitted some 120 million tonnes CO₂ in 2006. At a price of €25 per tonne (just above the current market rate) these emissions have a market cost of some €3 billion. This represents less than 4.5 per cent of the total revenue from motorists and just over 10% of the revenue received by fuel duty and VED revenues only. The government includes these two measures in its revenue from environmental taxes⁷.
- 80** However, money raised from motorists is not hypothecated, nor is there a proportion that claims to cover environmental costs. Instead the money goes into central government funds. Fuel and VED revenue is equivalent (at €25/tonne) to over 14 times its CO₂ costs, although of course there are other costs involved with road transport, including the impact of other emissions, congestion, accidents, etc.
- 81** SMMT notes the RAC Foundation 'Roads and Reality' report published in November 2007⁸
- says that road users 'currently pay more than enough tax to meet the full cost of road transport, including all environmental costs. Among all energy users, only road users pay more in tax than the full price of carbon emissions.'
- 82** The issue of revenue and how it should be spent needs to be addressed. In the past, lack of infrastructure investment has left the UK with an inadequate roads network, which is a contributor to the congestion and therefore higher emission levels we face. While investment in public transport is necessary, significant investment in ensuring a better flow of traffic must be undertaken. SMMT supports the Act on CO₂ campaign⁹, but feels more revenue needs to be assigned to help educate motorists on eco-driving and buying low CO₂ emitting vehicles. Revenue could also be assigned to incentivise R&D on the development of lower carbon vehicles. In several other countries, notably in the US, public money is set aside for such purposes.

⁷ <http://www.statistics.gov.uk/statbase/Expodata/Spreadsheets/D5688.xls>

⁸ <http://www.racfoundation.org/files/Main%20document.pdf> ⁹ <http://www.dft.gov.uk/ActOnCO2>

Future of motoring taxes

- 83** Clear direction creating a pathway to lower CO₂ emitting vehicles, while maintaining consumer choice and market diversity, is needed from the taxation system. SMMT supports the use of long term and consistent signals. Ideally the taxation system must be harmonised across Europe to ensure consistency and allow manufacturers to supply and market vehicles cost-effectively.
- 84** SMMT is keen to ensure that future taxation measures based on CO₂ emissions adopt a linear system, no segmentation, are technology neutral and involve no increase
- in the overall tax burden on motorists.
- 85** A CO₂ based taxed system raises awareness of the importance of CO₂ to consumers and demonstrates that their reduction is a priority. Carefully designed measures can assist customers to make the choice of purchasing a lower CO₂ emitting vehicle.
- 86** A linear system, as opposed to banded measures (like the VED scheme), encourages all users to shift into lower CO₂ emitting cars. A linear system means that every g/km of CO₂ will make a difference to the rate of tax paid. A system using bands



may encourage movers at the margin, but are less progressive, can create 'winners' and 'losers' among manufacturers' products and in some cases ensure that consumers do not opt for the lowest CO₂ product to suit their needs – indeed it could encourage them to buy a product just below the upper limit of a band.

87 Tax policies should not provide any advantage or disadvantage to a specific technology. In particular, policies should not penalise diesel-powered cars, as they contribute substantially towards reducing CO₂ emissions.

88 Long term, consistent clear and balanced policies on vehicle taxation will play a key contributory role in government's ambitious national targets for CO₂ cuts. Despite the undoubted significance of the environmental agenda we should not lose sight of the need to keep future regimes fair, simple, neutral, compatible and responsive.

89 The 'in-use phase' typically accounts for 85% of a car's lifetime emissions. A tax on use, like fuel duty, will therefore create the impact to aid the move into lower CO₂ emitting

vehicles. A registration tax goes against this principle and could also delay the purchase of new vehicles, which are typically more environmentally friendly and safer.

90 SMMT is increasingly concerned that many different national and local schemes (eg local congestion charging and parking schemes) are being developed which may not follow the same basic structure, eg linear/non-linear and if non-linear, have different band widths. This will create a patchwork of schemes which consumers and manufacturers alike will find confusing and difficult to adjust to and know what type of product to buy/provide respectively.

91 The automotive sector, with the regulatory framework, will see increased numbers of lower CO₂ emitting vehicles enter the market place. The increased use of the integrated approach should allow better information for consumers, the fuel industry to supply the necessary infrastructure and for policy makers to apply the correct taxes and incentives to help the market adopt and more efficiently use those vehicles.

Annex 1

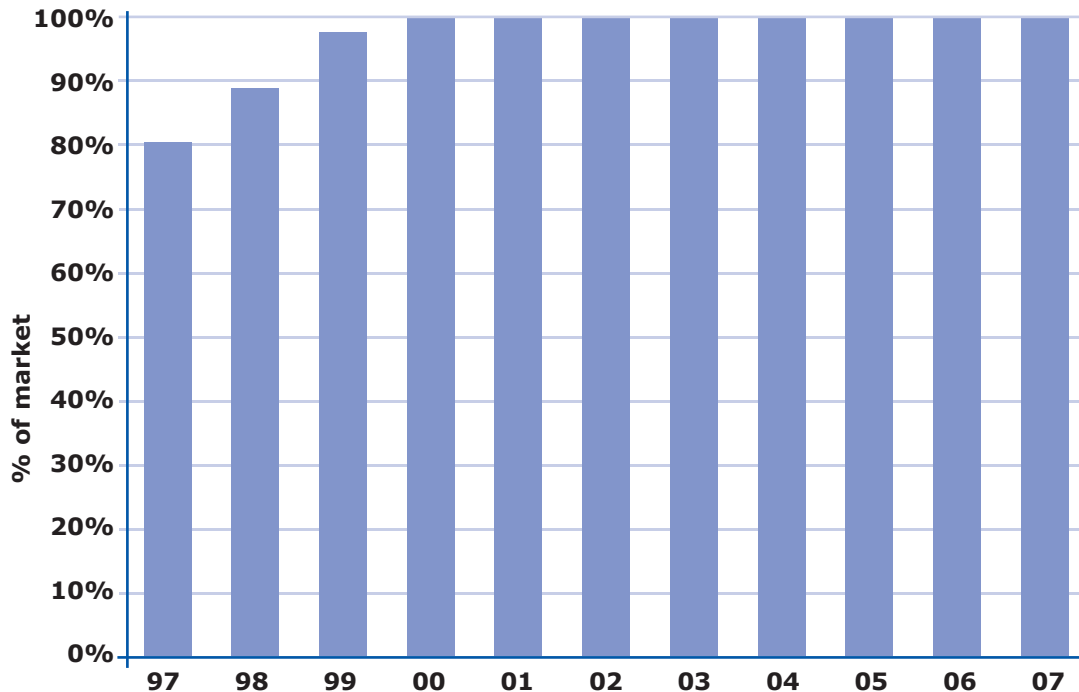
Accuracy of SMMT data

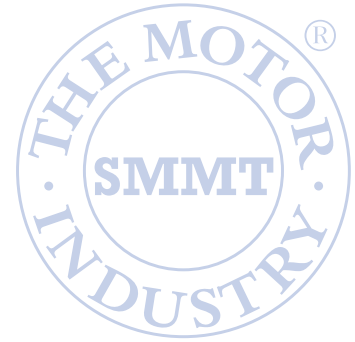
SMMT has published an annual CO₂ data report since 2002 and has CO₂ new car data from 1997 onwards. This data is sourced from manufacturers' own CO₂ figures (supplied on the first registration document) and checked with type approval data from the Vehicle Certification Agency to ensure accuracy. Since 2003, the low volume of missing data was estimated by using other models in the range or using models of a similar segment/engine size and type. SMMT believes the database it has compiled is the most accurate and reliable

available and therefore provides the best source for analysing the UK's performance. The data is collated by SMMT's Motor Vehicle Registration Information Service (MVRIS). It links vehicles' CO₂ levels to the MVRIS new car registration database.

The chart below shows that since 2002 100 per cent of new registrations have a CO₂ value assigned, between 1999-2001 the data was more than 95 per cent accurate. Just over 80 per cent of the 1997 market had CO₂ data assigned.

Chart 22 – share of UK average new car market with CO₂ data





Annex 2

Total CO₂ emissions from road transport

Total CO₂ emissions

Total UK CO₂ emissions have been stable since 1997. They show a slight increase over the past decade, but did ease in more recent years. Emissions from road transport have edged forward, but their share has remained constant between 21%-22%. Within this total, however, emissions from cars have fallen and emissions from

commercial vehicles, and in particular light vans, have increased. The increase from CVs reflects increased economic wealth, larger population, and changes to the way goods are bought and distributed. CV operators have made efforts to increase the efficiency of their fleets and ensure vehicles run fully loaded as much as possible.

Table 13 – UK transport CO₂ emissions, million tonnes, by source, 1997–2006

	2006	2005	1997	% change 06 vs 05	% change 06 vs 97
UK total	556.5	557.3	547.5	-1.4%	1.6%
Of which: Road	120.3	119.9	116.6	0.3%	3.2%
(share)	21.6%	21.5%	21.3%		
Of which: Cars	68.7	69.6	72.2	-1.4%	-4.8%
HGVs	25.8	25.5	24.9	1.4%	3.6%
Light duty vehicles	19.9	19.1	13.9	3.9%	42.9%
Buses	4.9	4.6	4.9	5.6%	-0.3%

Source: AEA Energy & Environment 2008

Fuel used

Total fuel consumption in Great Britain has been stable since 1997, increasing by less than 3% over the period. In 2006 consumption edged up 0.4% on the 2005 level. For cars, fuel consumption fell by 2.3% during the year. Since 1997 fuel consumption has fallen by 3.9%. The growth in total fuel consumption reflects increased use by commercial vehicles.

The growth in car fuel consumption has been tempered by the switch from petrol to diesel fuel. Diesel cars typically realise 10%-20% better miles per gallon (mpg) than petrol-fuelled cars. Diesel accounted for 20.8% of all fuel consumed by cars in 2006, up from 19.7% in 2005 and 10.5% in 1997.

Table 14 – Fuel consumption GB, million tonnes, 1997-2006

	2006	2005	1997	% change 06 vs 05	% change 06 vs 97
Total	38.03	37.89	36.96	0.4%	2.9%
Petrol	17.89	18.46	21.99	-3.1%	-18.6%
Diesel	20.14	19.43	14.97	3.7%	34.5%
Share	53.0%	51.3%	40.5%		
Cars	21.86	22.26	23.01	-1.8%	-5.0%
Share	57.5%	58.7%	62.3%		
CVs	14.85	14.35	12.51	3.5%	18.7%

Source: DfT – Transport Statistics GB 2007 edition

UK parc (vehicles in use) data

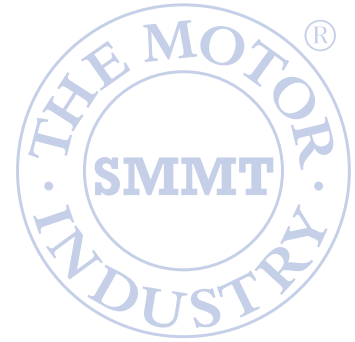
The parc is the number of vehicles in use on UK roads. SMMT has been collating this data since 1982. It is based on DfT statistics, but is cleansed by SMMT and also includes an estimate for vehicles being re-licensed, in the process of resale, under

repair or on the road without a valid tax disc. The UK car parc rose to almost 31 million units in 2006. The parc has grown in every year since SMMT began producing the figures, but the 2006 growth rate was the second lowest on record.

Table 15 – Parc size UK, million vehicles, 1997-2006

	2006	2005	1997	% change 06 vs 05	% change 06 vs 97
Total	35.14	34.59	29.63	1.6%	18.6%
Cars	30.99	30.65	26.32	1.1%	17.8%
Diesel cars	6.65	6.02	2.65	10.5%	150.8%
CVs	4.14	3.94	3.32	5.1%	25.0%

Source: SMMT Motorparc



Growth in the diesel parc remained firm in 2006, up 10.5% to equate to over a fifth of the overall parc for the first time. Since 1997 the overall parc has increased by 4.68 million units, or 17.8%. The diesel car parc has grown by four million units and represents 85.5% of the total growth in the parc since 1997.

The total parc has increased by 5.5 million units since 1997 to over 35 million cars and commercial vehicles. While cars still make up 88% of the

parc, it has been the growth in CVs which has been the more rapid, especially in recent years. Since 1997 the CV parc has increased by 25% and between 2006 and 2005 increased by a rate over four times faster than the car parc.

The growth in the car parc has not directly related to the growth in the distance travelled. The car parc has grown by 17.8% since 1997, while the distance travelled has increased by 10%.

Table 16 – Road and traffic GB, billion kms, 1997-2006					
	2006	2005	1997	% change 06 vs 05	% change 06 vs 97
Total	506.4	499.4	450.3	1.4%	12.5%
Cars	402.4	397.2	365.8	1.3%	10.0%
Share	79.5%	81.2%	79.5%		
Other	104.0	100.2	84.5	3.8%	23.1%
Road Length '000 kms	398.4	388.0	387.9	2.7%	2.7%

Source: DfT – Transport Statistics GB 2007 edition

Annex 3

Commercial vehicles (CVs) and CO₂ emissions

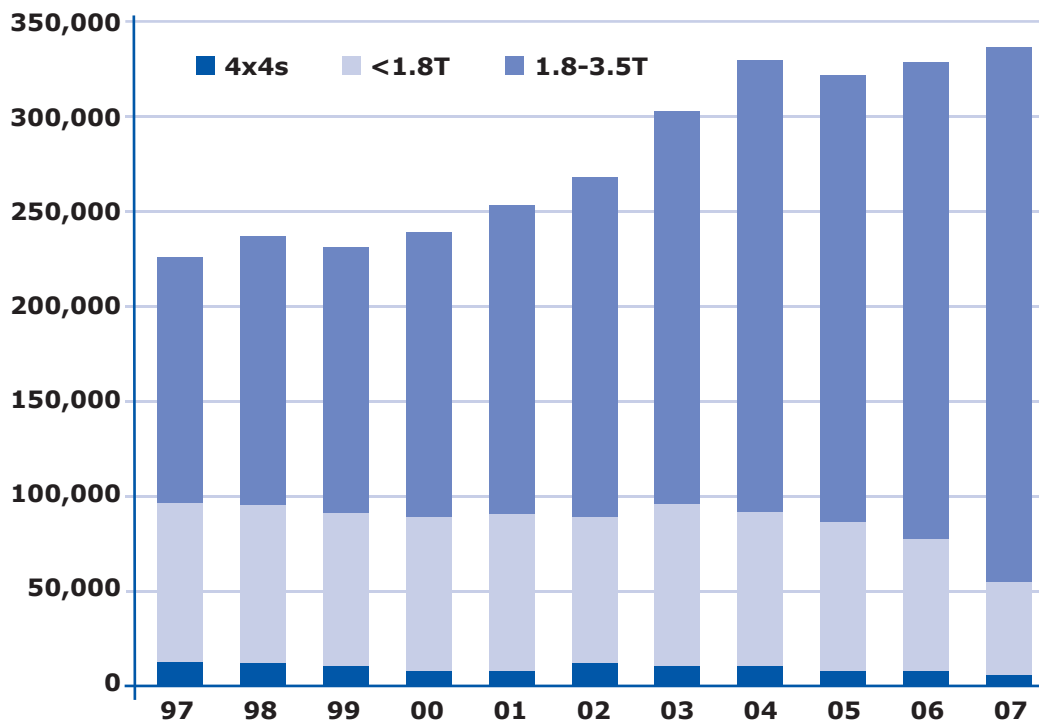
While cars make up some 80% of the vehicles in use they only account for 57.1 per cent of road transport CO₂ emissions. HGVs and light duty vehicles account for the majority of the remainder – as detailed in Table 13, accounting for 21.4 and 16.5% respectively of total road transport emissions. Both have seen emissions increase since 1997 – up 3.6% for HGVs and 42.9% for LCVs.

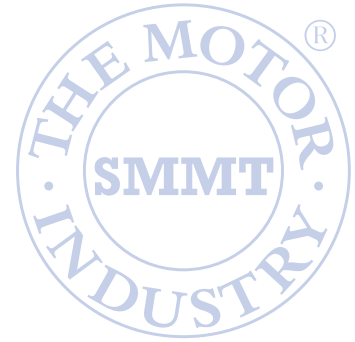
Part of the issue has been the rapid growth in the volume of CVs registered and in particular the growth of the LCV market. This increase follows a number of factors, such as general economic prosperity, growth of the construction

sector, rise in self-employment, outsourcing, growth in local deliveries and greater competition within the LCV market itself.

The total CV market has grown 43.1% since 1997 to 392,481 units in 2007. LCVs accounted for 86.1% of all CVs registered in 2007, up from 81.9% in 1997, and posted growth of 50.3% since 1997 to 337,741 units. This growth is five times the rate recorded in the new car market over the same period. Over this period the LCV market has also moved into larger vehicles, as detailed in Chart 23. These vehicles offer greater flexibility for the business user.

Chart 23 – LCV registrations, 1997-2007





SMMT does not collate CO₂ data for CVs as it is not, currently, part of the type approval process. LCVs look increasingly likely to face some form of regulatory CO₂ targets, following on from cars. In 2007 the EC announced aspirational targets for vans for 2012 of 175g/km and 2015 of 160g/km from a base figure of 201g/km in 2002.

Measuring CO₂ levels remains complicated by the vast array of different body styles and different pay-loads that CVs can adopt. Most CVs are already powered by diesel engines and

have benefited from the advances in technologies that have characterised the improvement in efficiency of passenger cars.

Policy makers must ensure that whatever policies are put in place, they encourage the take-up of lower CO₂ emitting vehicles, do not distort the market and in particular penalise larger vehicles, or create a situation where one large vehicle is being replaced by two or more small vehicles. This is neither environmentally or economically sensible.

Annex 4

UK vehicle excise duty (VED) scheme

In March 2001 the UK moved to a VED scheme based on CO₂ emissions for new cars. Engine size is still used for pre-2001 cars.

The UK was one of the first countries in Europe to introduce new car tax systems based on CO₂ emissions. Currently only 11 other member states include a CO₂ element to their taxation regimes. Since April 2002 company car taxation has also been CO₂ based.

Over 17.35 million cars have been registered under the CO₂ based VED scheme – some 56% of the current parc.

The UK government varies VED to increase

awareness among buyers of the importance of CO₂ emissions in car choice. The original four band scheme has been expanded to seven bands. The core 121-185g/km range has seen remarkably little change since 2001, but two new bands were introduced below this level, at 100g/km and 120g/km breakpoints and then in March 2006 a new higher rate band for cars over 225g/km was introduced. In 2006, and again in 2007, the rates were revised. In 2007 the government also took the step to set out VED rates to 2009-10, much in the same way as they do with company car tax rates. This will help send a clearer longer term signal to consumers of the costs associated with vehicle choice.

Table 17 – Annual VED payable, £									
Band (g/km)	From March 23rd 2006			March 22nd 2007		April 1st 2008		April 1st 2009	
	AFV	Petrol	Diesel	AFV	Std**	AFV	Std	AFV	Std
Cars registered after March 1st 2001									
A (<100)	0	0	0	0	0	0	0	0	0
B (101-120)	30	40	50	15	35	15	35	15	35
C (121-150)	90	100	110	95	115	100	120	105	125
D (151-165)	115	125	135	120	140	125	145	130	150
E (166-185)	140	150	160	145	165	150	170	155	175
F (186-225)	180	190	195	190	205	195	210	200	215
G* (226+)	200	210	215	285	300	385	400	385	400
Cars registered before March 1st 2001 (based on engine size)									
Sub 1549cc	110	115	120	125					
Above 1549cc	175	180	185	190					

*Only for cars registered after March 23rd 2006

**Std – standard, petrol and diesel values aligned in Budget 2007

The scheme does have its vagaries. In some instances the newer the car the higher the fee, even if it has the same emissions specification as an older car.

Annex 5

European CO₂ data

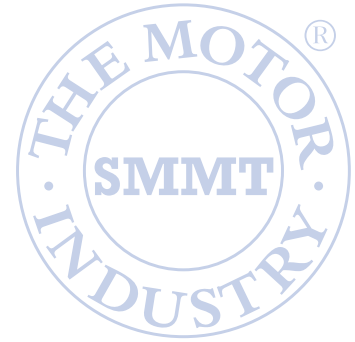
The European Commission has not yet made public average new car CO₂ figures for 2005 or 2006. The European Federation for Transport and Environment (T&E) has published data to 2006¹⁰. This shows a net reduction of 0.7% or 1g/km in 2006 compared with 2005 to 160g/km. The UK was ranked 17th within the EU24. The T&E data suggests the UK made a 2g/km saving. Data shows European car makers (ACEA members) had average CO₂ emissions of 160g/km in 2006. Equivalent figures for Japanese and Korean car makers (JAMA/KAMA members) were 161g/km and 164g/km.

Figures from T&E based on ACEA members-only performance suggests the rate of progress

in reducing CO₂ emissions has slowed recently. It should be noted that SMMT figures are not comparable, as we have full market coverage by CO₂ on all cars registered in the MVRIS system. Data for ACEA members only covers the European car producers. When ACEA members signed a voluntary agreement to reduce average new car CO₂ emissions across the EU15 by 25% to 140g/km they used 1995 as a baseline. No data for 1997 is presented. 1997 is the earliest SMMT data available.

Between 1995 and 2006 average new car CO₂ emissions across Europe came down 14.9%, from 188g/km to 160g/km. Over this period UK data is shown as having fallen 12.6% from

¹⁰ www.transportenvironment.org



191g/km to 167g/km. In each of the past five years the UK has been in line or above the EU rate of reduction. The figures suggest no change in emissions took place between 2006 and 2005 across the EU15 as a whole, or in the UK.

In 2006 the UK had the 12th highest average new car CO₂ emissions in Europe, only

Germany, Finland and Sweden have higher. The UK figure is 4.4% above the European average and 15.2% above the lowest, Portugal. The UK is one of the wealthiest in Europe, has seen the best economic growth since 1997, and has a lower diesel penetration than the European average and the market for larger cars tends to be more prolific.

Table 18 – New car CO₂ emissions in EU15 – T&E data for ACEA members only

	2006 (g/km)	2005 (g/km)	1995 (g/km)	% change '06 vs '95
Austria	162	159	186	-12.9%
Belgium	152	153	182	-16.5%
Denmark	160	164	188	-14.9%
Finland	181	179	189	-4.2%
France	147	149	177	-16.9%
Germany	172	173	194	-11.3%
Greece	167	167		
Ireland	164	165	179	-8.4%
Italy	148	147	180	-17.8%
Luxembourg	167	167	187	-10.7%
Netherlands	166	169	188	-11.7%
Portugal	145	144	171	-15.2%
Spain	152	151	177	-14.1%
Sweden	190	195	221	-14.0%
UK	167	167	191	-12.6%
<i>Total</i>	<i>160</i>	<i>160</i>	<i>188</i>	<i>-14.9%</i>

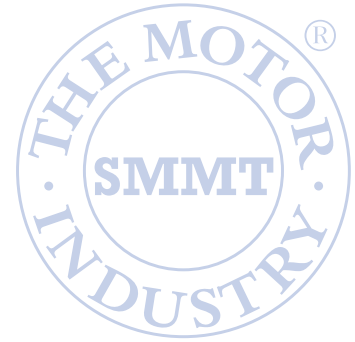
Source: www.transportenvironment.org

Annex 6

Company car tax (CCT)

Table 19 – UK company cars by CO₂ emissions and fuel type (at 5g/km intervals)

CO ₂ emissions g/km below	2007	2006
140	22.0%	20.8%
145	6.5%	7.0%
150	6.1%	6.2%
155	9.4%	9.4%
160	12.2%	13.0%
165	6.7%	4.6%
170	4.9%	4.2%
175	6.3%	6.6%
180	3.2%	3.7%
185	4.0%	3.6%
190	4.2%	3.4%
195	3.5%	3.2%
200	1.3%	1.9%
205	1.1%	2.0%
210	0.6%	1.2%
215	0.9%	0.9%
220	0.7%	0.9%
225	1.2%	1.1%
230	0.5%	0.7%
235	0.6%	0.5%
over 235g	3.9%	4.8%
Sub 120g	3.7%	3.4%
Petrol	52.4%	54.7%
Diesel	47.0%	45.0%
Other	0.7%	0.4%
Total volume	1,358,200	1,310,793
Ave CO ₂	164.2g/km	166.0g/km



Since April 1st 2002 an individual's CCT liability has been based on their vehicle's CO₂ emissions. A driver is taxed (at 22% or 40% depending upon their income tax rate) on 15%–35% of the vehicle's list price, cross-referencing to the CO₂ band in which it sits. Diesels pay a 3% surcharge, up to the 35% top rate.

The starting CO₂ rate for the 15% tax rate was 165g/km or less in 2003-03, which was ratcheted down to 140g/km in 2005-06, where it will remain until 2008-09, when it moves to 135g/km. It is set to remain at this level in 2009-10.

The company car market as distributed by CCT bands 5g/km intervals for 2007 and 2006 are detailed in table 19. This shows the move into lower CO₂ emitting vehicles and away from high end polluters. Over a fifth of the market is sub 140g/km.

The rates are currently set in the Budget with a

two-year lead-time. On April 1st 2008 a new 10% band will be introduced for sub 120g/km cars.

For the purposes of this section of the report the new company car market is deemed to be the fleet and business sectors of the SMMT database. The SMMT fleet/business market totalled 1.358 million new registrations in 2007 – while the overall number of drivers using company car schemes is estimated to be about 200,000 less. Using the HMRC estimates, the company car market is more likely to be in the region of 400,000 new car registrations per annum.

SMMT has called for the 3% surcharge on diesels to be removed for all Euro 5 cars, to encourage early adoption. New Euro standards should soon see regulated emissions (like PM and NO_x) for petrol and diesel cars being virtually the same.



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