SMMT annual CO_2 report 2006 market

Quick facts

	2006	*2005*	*1997*
Average new car CO_2 emissions	**167.2g/km**	**169.4/km**	**189.8g/km**
% reduction vs 2006		*-1.3%*	*-11.9%*
Share of cars under 140g/km	**21.5%**	**18.0%**	**3.9%**
Total new car market	**2,344,864**	**2,439,717**	**2,170,725**

	2005	*2004*	*1997*
CO2 emissions from all cars*	**69.9 $MtCO_2$**	**71.0 $MtCO_2$**	**72.2$MtCO_2$**
% reduction vs 2006		*-1.6%*	*-3.2%*
Fuel consumed by all cars**	**22.2Mt**	**22.7Mt**	**23.1Mt**
% reduction vs 2006		*-2.3%*	*-3.9%*
Distance travelled by all cars**	**397.2bn kms**	**398.1bn kms**	**365.8bn kms**
% reduction vs 2006		*-1.3%*	*8.6%*
Total UK car parc	**30.7mn**	**30.3mn**	**26.3mn**
% reduction vs 2006		*1.3%*	*16.5%*
Average age – years	6.70	6.69	7.21

$MtCO_2$ = Million tonnes Carbon Dioxide. Mt = Million tonnes. Mn = Million

Sources

All data sourced from SMMT unless otherwise stated

* AEA Environment & Energy 2007

** DEFRA, 2007 and the DfT Transport Statistics Great Britain, 2006 edition (www.tso.co.uk/bookshop)

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***Accuracy of the data**. Data is sourced from manufacturers' own CO_2 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' CO_2 levels to the MVRIS new car registration database.*

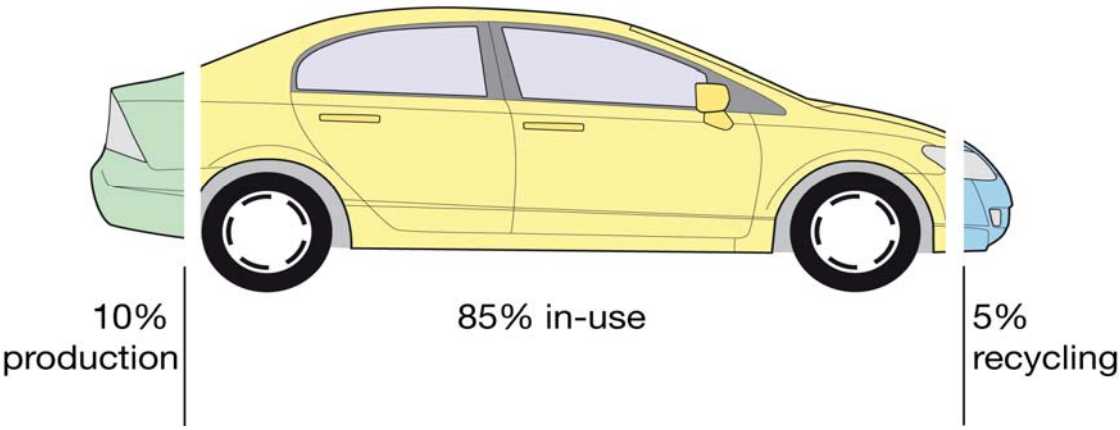
Overview

- The report details average new car CO_2 emissions which in 2006 were 167.2g/km
- The new car performance is set against the context of total CO_2 emissions from all cars in use, which have fallen by 3.2 per cent since 1997
- To tackle climate change further SMMT recommends adoption of the integrated approach

1. Since 2002 the SMMT has published the average new car's carbon dioxide (CO_2) performance annually, after it became mandatory in 2001 for all new cars to have a CO_2 emission rate. SMMT has been collating CO_2 data for cars from 1997. This report on the 2006 data reveals a ninth successive year of improvement. Between 1997 and 2006 the average new car registered in the UK has seen a 12 per cent reduction in CO_2 in grammes per kilometre (g/km). This rate of improvement is beyond the pace of Kyoto and the UK's own domestic targets for CO_2 reductions. It is not matching the rate expected of the pan-European voluntary agreement, a 25 per cent cut between 1995 and 2008. Greater improvements have been constrained by market diversity, as well as the impact of other regulations and demands, notably safety. The UK benefits less from clean diesel technology than in other parts of Europe, where the tax regimes are more favourable to diesel cars.

2. SMMT estimates that in the UK the improvements in the average new car CO_2 performance have delivered cumulative CO_2 savings of over five million tonnes since 1997 and are currently achieving savings of around a one million tonne per annum.

Chart 1 – Estimated life-time-emissions from a car (SMMT)



3. The average new car CO_2 figure is based on a test cycle, a standard test to give consistent test results across all vehicle types. The in-use phase of a vehicle's

life is typically said to produce 85 per cent of a vehicle's life-time emissions, 10 per cent comes from its construction and the remaining five per cent from the disposal of the vehicle. Real world CO_2 emissions will depend upon what fuel the car uses, when, where and how, as well as how far, the car is driven. New cars are only a small proportion of cars on the roads and in 2005 they made up eight per cent of the 2005 total car parc. Today CO_2 emission figures can be assigned to approximately 70 per cent of the cars in use.

4. Total CO_2 emissions from all cars have fallen by 3.2 per cent between 1997 and 2005, and declined by 1.6 per cent between 2005 and 2004 alone. This decline since 1997 comes despite there being a 16.5 per cent rise in the number of cars in use and an 8.6 per cent rise in the total distance cars travelled. These increases have greatly enhanced the mobility of the UK economy.

5. Total CO_2 emissions from road transport as a whole have increased by 2.8 per cent between 1997 and 2005 and increased by 0.4 per cent between 2005 and 2004. Since 1997, CO_2 emissions from light commercial vehicles have risen by almost a quarter and from heavy commercial vehicles by 10 per cent. These increases stem from improvements in UK economic growth and a greater need to shift goods about the country.

6. The voluntary agreement and improvements in technology have been the key role in reducing emissions. For more effective action, however, an integrated approach is needed. Industry (automotive, petroleum etc), government regulators and consumers all taking an active role to reduce emissions. The integrated approach seeks the lowest cost options, but collective action by all is sought and continuous improvement encouraged. The voluntary agreement called for European wide support in the form of fiscal measures and information to consumers. Together these two elements and vehicle technologies made up the 'three pillars' of the voluntary agreement. Whilst manufacturers can show the development and implementation of new technologies, the two other pillars have been lacking.

7. Studies, notably the Stern report, have shown that abatement costs to reduce CO_2 emissions are far higher in the automotive sector than in other areas. New and innovative fiscal measures may be necessary to stimulate change and encourage the use of lower CO_2 emitting vehicles and/or to drive fewer miles. Greater transparency of existing fiscal measures may also be appropriate. In 2005 the UK government received £28.2bn from motorists from fuel duty and vehicle excise duty – based on a €20 per tonne rate this could buy over two billion tonnes of CO_2 on the European CO_2 market – equivalent to almost 18 times the emissions from road transport, over 30 times the emissions from cars and nearly four times the total CO_2 emissions from the UK in 2005.

Part 1

Average new car CO_2 emissions - summary

- Average new car CO_2 emissions in 2006 were 167.2g/km
- This was 1.3 per cent below the 2005 level and 11.9 per cent down on 1997
- Over a fifth of market was below 140g/km, and almost one in 20 below 120g/km
- Annual average rate of reduction between 1997 and 2006 was 1.5 per cent

Table 1 - Average new car CO_2 emissions in the UK

Year	Average CO_2 g/km	y/y % change	y/y % ch 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%

8. SMMT has collated average new car CO_2 performance since 1997. There has been a continual improvement in performance since then, averaging 1.5 per cent or 2.5g/km per annum. Whilst in recent years the pace of the reduction has moderated, in 2006 it improved to its best rate since 2002.

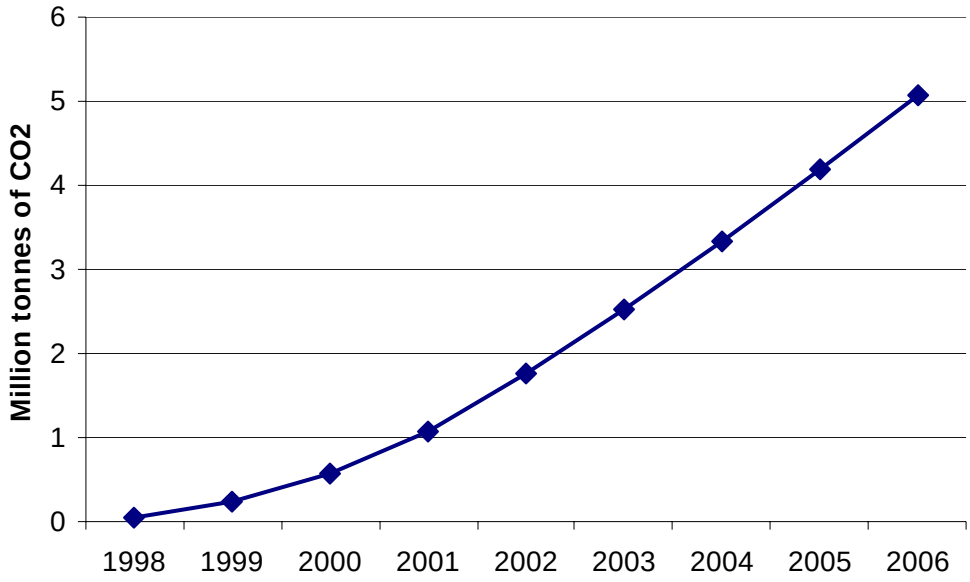
9. The gains over this period reflect improvements in vehicle technology, a shift towards diesel, and the introduction of very low CO_2 emitting hybrid vehicles. Fiscal measures designed to steer buyers into purchasing low CO_2 emitting vehicles have impacted. However, some of the gains have been offset by changes in consumer selection and purchasing choice. Other policy instruments have also added to the weight of vehicles and reduced their fuel efficiency.

10. The improvements in the 2006 CO_2 figure came from a further shift towards diesels and recovery in the small car (supermini) market. Diesel penetration hit a record 38.3 per cent in 2006, more than double 1997's 16.2 per cent share, despite the lack of fiscal support. The supermini market posted the largest volume increase in 2006, compared with 2005 and 1997, of any segment. The average supermini emitted 143.1g/km of CO_2 in 2006, 14.4 per cent below the UK average.

11. In 2006 3.7 per cent of the market was below 120g/km and 21.5 per cent was sub 140g/km. In 1997 no cars below 120g/km and only 3.8 per cent were below 140g/km. In 1997 over 45 per cent of the market was over 186g/km, or the 'F' band in the vehicle excise duty (VED) regime. In 2006 that figure had halved to 22.3 per cent, which includes the 7.5 per cent of the total market that was in the new 'G' band, for cars over 225g/km. In 2006 the majority (31.9 per cent) of cars were in the 'C' band (121-150g/km), compared with the 'F' band in 1997. In 1997 7.8 per cent of the market was in band 'C'.

12. SMMT estimates that the improvement in average new car CO_2 emissions since 1997 has cumulatively saved over five million tonnes of CO_2, and that the current annual saving has risen to approximately one million tonnes. This figure is calculated on the basis of the annual improvement in average new car CO_2 emissions from 1997 and applying an average mileage driven. The average mileage driven is calculated at 17,000kms per annum, which is based upon estimates of the private, company and other business split of the new car market and using government figures for annual mileage, as given in Transport Statistics GB, 2006 edition.

Chart 2 - Average new car CO_2 emissions in the UK

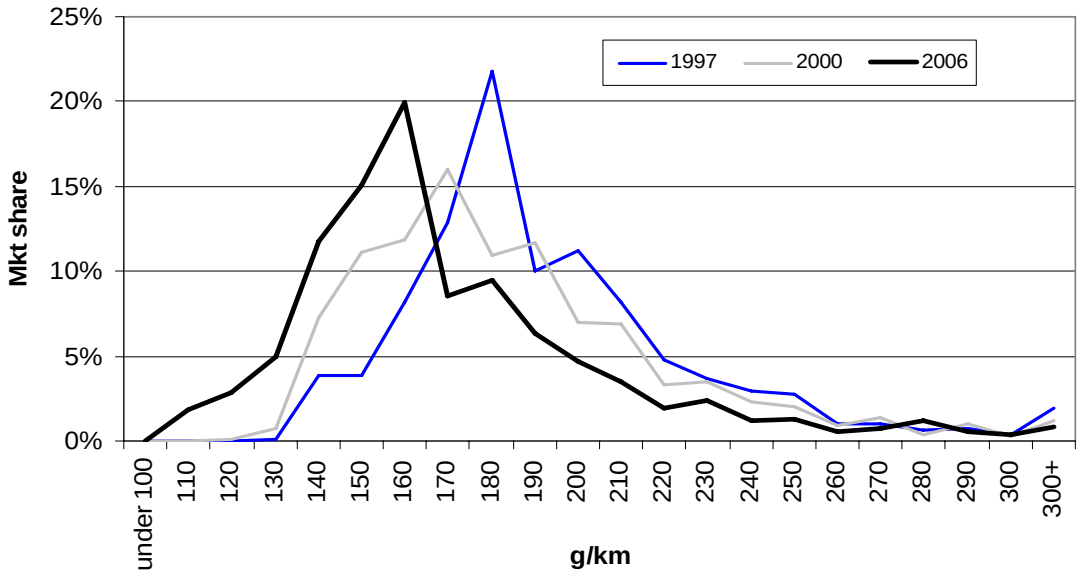


UK new car CO_2 emissions - distribution

13. Since the SMMT has recorded average new car CO_2 the figure has fallen in every year. This reflects more efficient vehicles, increased diesel sales, introduction of CO_2 based taxes, and greater awareness of the impact of vehicle emissions and the importance of climate change.

14. The following chart shows the changing distribution of the average new car fleet's CO_2 profile in 2006, 2000 and 1997 and highlights the improvements made by the profile shifting to the left. It is also noticeable that the shape or profile of the distribution has remained remarkably similar – indicating a market moving en masse into lower CO_2 emitting vehicles, rather than a significant change in the structural composition of the market. The chart is also positively skewed, with 60 per cent of the market being below the average CO_2 figure.

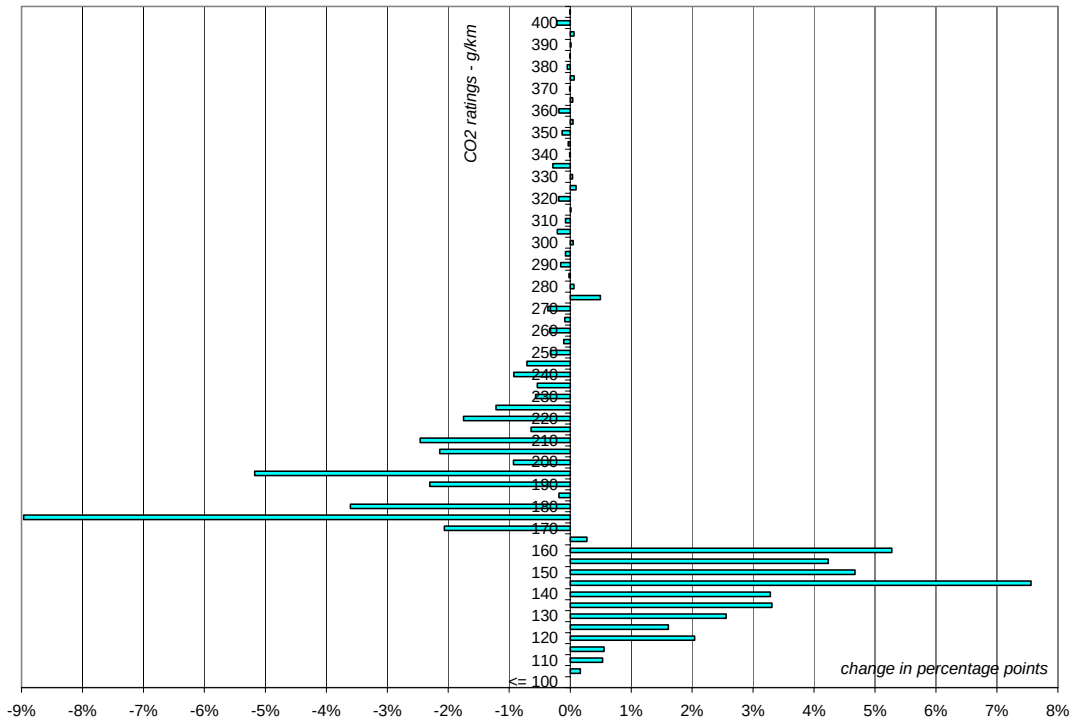
Chart 3 - CO_2 sales weighted distribution of UK new car market (1997–2006)



15. In 1997 the market saw a range starting from 130g/km, peaking in share terms at the 180g/km level and 1.9 per cent of the market was over 300g/km. In 2006 the range widened – with more low CO_2 emitting vehicles entering the market. In 2006 1.9 per cent of the market was below 110g/km, 4.7 per cent below 120/km and 21.5 per cent below 140g/km. In 1997 no vehicles were under 120g/km and less than four per cent were below 140g/km. In 2006 the 'peak' also moved down the scale, to 160g/km, and whilst there is still a long tail, just 0.9 per cent of the market was over 300g/km. The long tail represents the diverse nature of models available in the UK and demand for large cars, which help meet a number of consumer desires – space, off-road ability or high performance.

16. The chart below shows changes in the distribution of the new car market between 1997 and 2006, based on CO_2 ratings at 5g/km intervals. It shows how the market has 'downsized' in CO_2 terms, moving out of 170-270g/km cars and into 100-165g/km cars. It also demonstrates 'stickiness' in cars with CO_2 emissions above 250g/km. Here this groups' share of the annual registration total fell from 5.7 per cent to 4.2 per cent between 1997 and 2006, but the absolute volume was stable around 99,000 units. This is a varied group of high value, high performance and larger engined cars with strong utility roles.

Chart 4 - Volume of UK new car registrations 1997 to 2006, percentage point changes in distribution of registrations by CO_2 ratings at 5g/km intervals



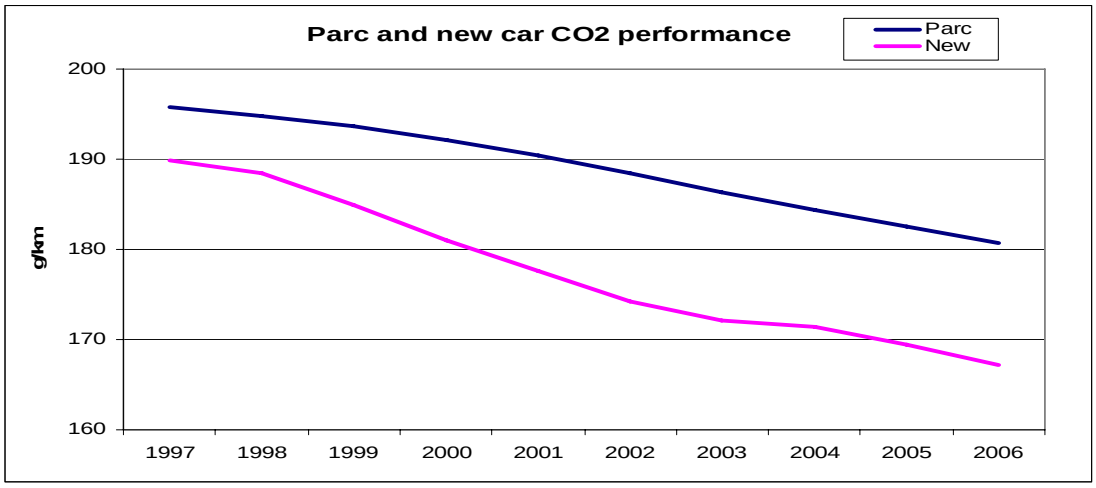
New cars vs existing stock

- New cars are some 7.5 per cent lower CO_2 emitting than the average car in use
- Difference between new and total fleet CO_2 rate has recently begun to widen again

17. Using assumptions, a figure for the average car in use can be derived. It is important to note that the in use data is SMMT's parc data for Great Britain and includes estimates for lapsed licences, whilst new car registration data is calculated on a UK basis. Since 1997 average annual CO_2 emissions can be assigned to new cars. Cars registered since 1997 represented 70 per cent of the car parc (vehicles in use) in 2005. Since 2001 it has been mandatory for new cars to have a CO_2 rating. Cars registered since 2001 represent half of the parc. CO_2 values for pre-1997 have been assumed in this analysis to have changed by a 1g/km per annum basis. More detailed work on generating a CO_2 number for past (and future) cars in use will be undertaken in the future by profiling the parc by segment and fuel type.

18. On the assumption above, the average CO_2 value for cars in use and new cars has been plotted below. The average car in use's CO_2 value is estimated to be 180.8g/km in 2006, having come down from an estimated 195.8g/km in 1997. This is a 7.7 per cent or 15g/km reduction, some two-thirds of the savings made by new cars over the same period. The average car in use currently has the same CO_2 performance as a new car had in 2000. As the new car average CO_2 performance has begun to decline more quickly in the past two years the gap between all and new has begun to widen.

Chart 5 - Parc and new car CO_2 performance, 1997 - 2006



19. A faster churn rate – replacement cycle – would ensure the average car in the fleet's CO_2 rating would improve more rapidly. This could be done by increasing the uptake of new cars into the fleet and/or removing older, higher CO_2 emitters more effectively.

Choice for consumer of new cars

- Lower CO_2 emitting vehicles are available in all model ranges and segments
- If everyone bought the lowest CO_2 emitter in each segment the UK average would be 30 per cent below actual level, at 116g/km, but are they fit for purpose?
- In 2006 12.5 per cent of all models supplied were below 140g/km

20. There is a vast array of models available in the UK market. Consumers are therefore able to purchase a car fit for their particular needs or use. SMMT's CO_2 database can be analysed by range and at individual model derivative level. In 2006 the database had 322 distinct model ranges (eg Ford Focus) and 8,938 distinct model range derivatives (eg Ford Focus 1.4 petrol, 3-door, GL specification). The table below shows the 2006 new car market by MVRIS segment, number of ranges and models. The supermini market is the largest segment by volume of registrations, and on par with other key segments in terms of number of model ranges. However, more derivatives are available in the lower and upper medium segments.

Table 2 - Number of ranges and models, by MVRIS segmentation

Segments	Ranges	Share	Models	Share	Mkt volume	Share
A – Mini	17	5.3%	74	0.8%	23,297	1.0%
B – Supermini	48	14.9%	1,368	15.3%	752,872	30.9%
C – Lower medium	44	13.7%	2,332	26.1%	695,428	28.5%
D – Upper medium	40	12.4%	2,199	24.6%	393,999	16.1%
E – Executive	19	5.9%	902	10.1%	100,339	4.1%
F – Luxury	17	5.3%	148	1.7%	13,227	0.5%
G – Sports	50	15.5%	333	3.7%	65,047	2.7%
H – Dual purpose	49	15.2%	679	7.6%	175,805	7.2%
I – MPV	38	11.8%	603	6.8%	124,850	5.1%
Total	322		8,638		2,344,864	

21. Of the 322 ranges 34, or just over 10 per cent, had a sales weighted average CO_2 figure of under 140g/km. Eleven ranges had a CO_2 average of under 120g/km in 2006. Almost a third of the ranges, 108, had a CO_2 figure of less than the market average, whilst almost a 100 had a CO_2 value of over 225g/km.

22. If the models are distributed into the current VED CO_2 bands, as in Table 3, it can be seen that whilst the majority of the market volume is in the 'C' and 'D' bands (121-165g/km), the volume of models available is higher in the 'G' and 'F' bands (over 185g/km). Of those, 278 models, or 3.2 per cent of the total, had a CO_2 value of 120g/km or less. There were 1,081 models, or 12.5 per cent of the total of the total, which had a CO_2 figure of 140g/km or less. Those 120g/km or less and 140g/km or less models represented 4.7 and 21.5 per cent of the registrations in the 2006 new car market.

Table 3 - Distribution of ranges and models by CO_2 based VED bands

VED Band (g/km)	Ranges	Share	Models	Share	Mkt volume	Share
A - sub 100	1	0.3%	1	0.0%	298	0.0%
B – 101-120	10	3.1%	277	3.2%	109,926	4.7%
C – 121-150	48	14.9%	1,466	17.0%	747,094	31.9%
D – 151-165	43	13.4%	1,482	17.2%	567,007	24.2%
E – 166-185	56	17.4%	1,403	16.2%	398,055	17.0%
F – 186-225	67	20.8%	2,377	27.5%	346,343	14.8%
G – 226+	97	30.1%	1,632	18.9%	176,141	7.5%

23. Low CO_2 emitting cars tend to be either very basic models or those using advanced, and therefore often expensive, technologies. Margins are more restricted on smaller, less specified cars. Market diversity is important for the wellbeing of the industry and the economy at large. Consumers' desire is often higher for larger, more highly specified, cars - with optional extras like air conditioning, satellite navigation systems, bigger wheels etc. These options add weight to a vehicle and therefore penalise its CO_2 performance. Whilst the supermini segment is the largest segment in the UK market and grew in 2006, since 1997 it has been the MPV and dual purpose 4x4 markets which have shown the strongest rates of growth – reflecting consumers' desire for vehicles offering more functionalilty, with additional seating or load space. Market acceptance of low CO_2 emitters may therefore be lower than society or policy makers' desire.

24. Table 4 below shows the 10 lowest emitters registered in 2006. Most models in the top 10 are diesel fuelled and superminis. The lowest CO_2 emitter, however, is a petrol electric hybrid – the Toyota Prius. Honda's hybrid Civic also features in the top 10.

25. Table 4 shows two lists. The first covers all models in the SMMT MVRIS database, which includes vehicles type approved to B1 standards, ie quadricycles, which undergo no crash testing. The second list excludes such vehicles.

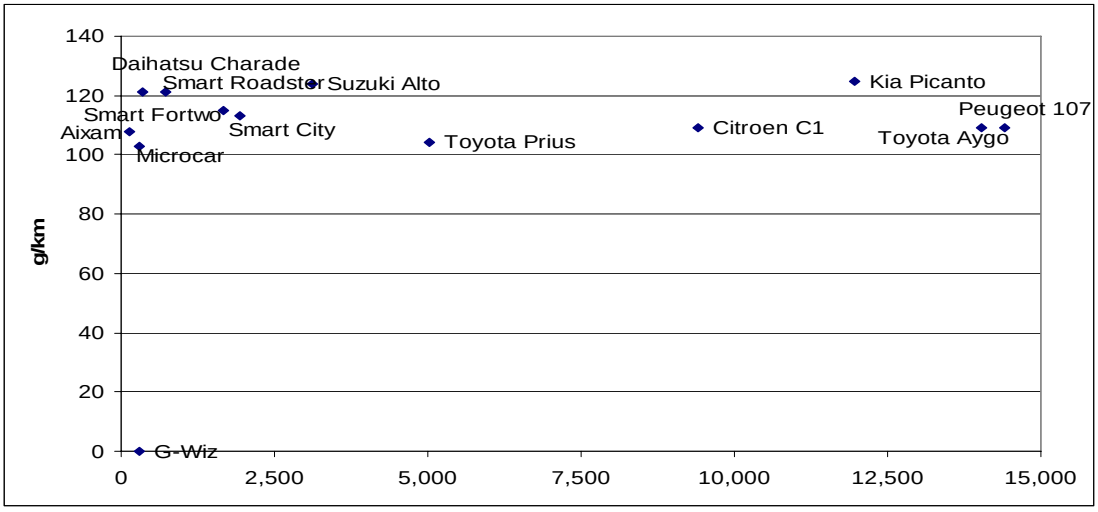
26. Charts 6 and 7 show data at a model range level. The first chart shows the ranges that had a sales weighted average CO_2 figure of below 130g/km. There were 17 ranges in this category, of which nine had less than 1,000 registrations in 2006 (although the chart combines coupe and cabriolet versions of the smart ranges). The Peugeot 107 and Toyota Aygo (both part of the PSA/Toyota small car collaboration alongside the Citroën C1) each had registrations over 14,000 units. The Kia Picanto recorded almost 12,000 registrations in 2006. The lowest CO_2 emitter – the Reva G-Wiz saw 298 registrations in 2006, the Toyota Prius recorded 5,015.

Table 4 - Top 10 lowest CO_2 emissions models registered in 2006, lowest emitter in range, (fuel type – D=diesel, E=electric, H=hybrid, P=petrol)

	Model	CO_2 g/km		Model	CO_2 g/km
1	REVA G-WIZ* (E)	0	1	TOYOTA PRIUS (H)	104
2	MICROCAR MC1* (P)	103	2	CITROEN C2 (D)	107
3	TOYOTA PRIUS (H)	104	3	CITROEN C1 (P&D)	109
4	CITROEN C2 (D)	107	4	CITROEN C3 (D)	109
5	AIXAM A751* (P&D)	108	5	HONDA CIVIC (H)	109
6	CITROEN C1 (P&D)	109	6	PEUGEOT 107 (P)	109
7	CITROEN C3 (D)	109	7	TOYOTA AYGO (P&D)	109
8	HONDA CIVIC (H)	109	8	RENAULT CLIO (D)	110
9	PEUGEOT 107 (P)	109	9	PEUGEOT 206 (D)	113
10	TOYOTA AYGO (P&D)	109	10	SMART CITY/FORTWO (P)	113

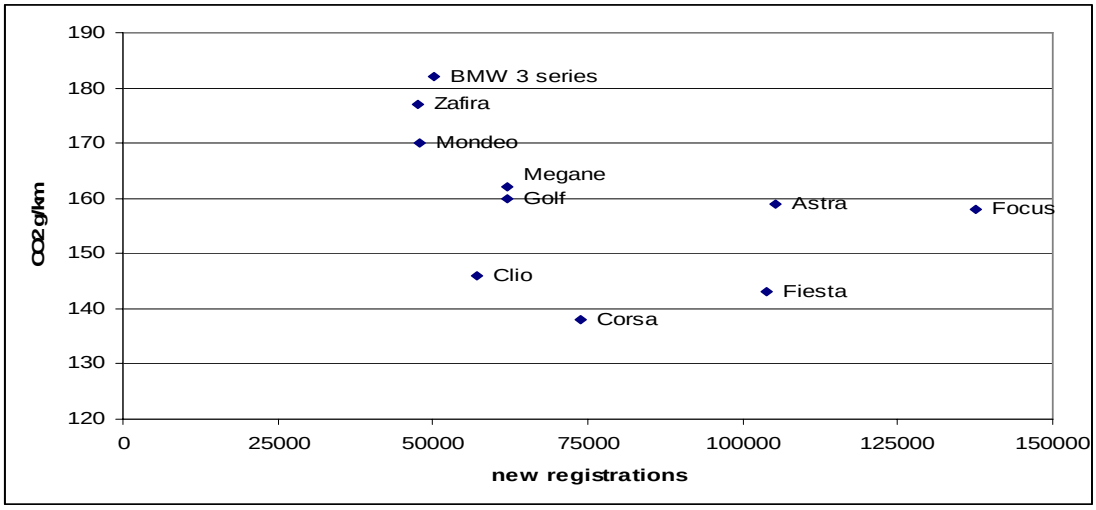
*B1 type approved only

Chart 6 - New registrations ranges under 130g/km of CO_2
(note smart ranges include Coupe and Cabrio)



27. Chart 7 shows the top 10 best sellers in the UK and their CO_2 performances. These models accounted for 31.9 per cent of the market with a collective volume of 747,837 registrations. They had a sales weighted average CO_2 level of 152g/km, six per cent below the industry average. The Ford Focus – the UK's best seller - had an average new car CO_2 figure level of 157.8g/km in 2006. This was 5.6 per cent below the industry average. The lowest CO_2 emitting Focus, at 124g/km, is 21.4 per cent cleaner than the average Focus and 25.8 per cent below the UK average.

Chart 7 - Top 10 best selling ranges – volume and CO_2 emissions



28. Consumers can change models within a range, such as the Ford Focus range above, and see a large variation in CO_2 performance. Moving to a smaller petrol engine typically sees a reduction of around five per cent in terms of reduced CO_2, eg moving from a 1.8 litre petrol Focus to a 1.6 version sees the CO_2 move from 167g/km to 159g/km (both Zetec models). If the move was from a petrol to a diesel the saving is far greater – between 10-20 per cent. Again for the Ford Focus, the 1.8 diesel Zetec model currently emits 137g/km, 14 per cent below the 1.4 petrol and 18 per cent below the 1.8 petrol version's CO_2 rating, although the diesel does cost more – in this example 6-10 per cent more.

29. If the consumer could be encouraged to step down in the class of car as well, so moving from a lower medium segment car to a supermini, eg the Focus to a Ford Fiesta, then further CO_2 savings are available. Moving from a petrol Focus to a diesel Fiesta would see the consumer's CO_2 figure reduce by 25 per cent plus and even moving from a diesel Focus to a diesel Fiesta a near 15 per cent saving could be made. Such a switch would also see the consumer buying a lower priced car, but clearly would be losing utility space and some performance loss. If a consumer were to move from a petrol to a diesel Range Rover the CO_2 savings would be 15 per cent, if they then moved to a diesel Discovery (the next model down in the Land Rover range) then a further 20 per cent saving is possible and if they were to move to a Freelander (the smallest model in the Land Rover range) a further 20 per cent saving is possible.

CO_2 performance by fuel type

30. A key reason for the improved average new car CO_2 performance has been the dieselisation of the fleet. More recently there has also been growth in alternative fuelled vehicles, notably hybrids, which offer lower CO_2 emissions.

31. Diesel cars are typically 10 – 20 per cent lower CO_2 emitting than a petrol equivalent model. For example a VW Golf with the same power – 140PS – can come with a 1.4 litre TSI petrol engine or a 2.0 litre diesel engine. The diesel emits 14 per cent less CO_2/km, at 145g/km vs 169g/km. On a sales weighted basis the gap in CO_2 performance is much smaller – at just 1.5 per cent. This reflects diesel engines being typically fitted to larger vehicles, such as estate, MPVs and 4x4 SUVs. Furthermore, the sales weighted average new diesel car CO_2 level has increased in each of the past four years. The figure for petrol cars has continued to improve in recent years and in 2006 made a 2.2 per cent improvement to 168.3g/km, compared with a 165.8g/km average for diesel cars. Since 1997 both petrol and diesel cars have made similar gains, of over 11 per cent, although by 2006 the petrol average had made a slightly greater net gain – reversing the trend over the previous few years.

Table 5 - Average CO_2 emissions by different fuel types – volume weighted

Fuel type	**2006**	***% ch vs '05***	***% ch vs '97***	**2005**	**2000**	**1997**
Diesel	165.8	*+0.6%*	*-11.2%*	164.8	167.7	186.7
Petrol	168.3	*-2.2%*	*-11.6%*	172.2	183.2	190.4
Petrol/gas	151.5	*-12.3%*	-	172.8	-	-
Petrol/alcohol	196.2	-	-	-	-	-
Petrol/electric	136.5	*+6.4%*	-	128.3	107.8	-
Electric	0.0	-	-	-	-	-
	Volume	**Market sh:**	**2006**	**2005**	**2000**	**1997**
Diesel	*898,521*		*38.3%*	*36.8%*	*14.0%*	*16.9%*
Petrol	*1,436,904*		*61.3%*	*62.9%*	*85.9%*	*83.1%*
Others	*9,439*		*0.4%*	*0.3%*	*0.0%*	*0.0%*

For dual fuel vehicles the lower CO_2 figure is used.

32. A key influence on the overall new car CO_2 emissions has been the market's shift to diesel products and, more recently, the growth in alternative fuelled vehicles (AFVs). Diesel penetration in 1997 was 16.9 per cent but by 2006 that had more than doubled to 38.3 per cent. AFVs still only make up 0.4 per cent of the 2006 market, but in volume terms the figure has risen from zero in 1997 to 9,439 units. The rise in the sales weighted average CO_2 emissions from petrol/electric hybrid cars reflects a change in the model mix of this sector of the market and arrival of larger vehicles (such as Lexus RX400h and GS450h).

CO_2 performance by segment

33. Another key reason for the improvement in average new car CO_2 emissions in 2006 was the recovery by the small car (supermini) market. The car market is fragmented and complex. People's choice of car varies for a variety of factors – number of people travelling, amount of space needed, motorway vs urban driving, whether 4x4 off-road capabilities are required, as well as the normal constraints of affordability. As shown earlier there were 322 different ranges identified in the SMMT database and 8,638 different models. SMMT differentiates the market into nine different segments, or vehicle classes, broadly based on the size and design of the vehicle range. These segments are listed below, with the 2006 best seller in each segment and the overall segments' share of the annual market in 2006, 2005 and 1997. The supermini market recovered in 2006 to post net growth and reclaim its position as the UK's largest volume segment. Since 1997 the dual purpose and MPV (multi-purpose vehicle) segments have shown the largest percentage gains.

Table 6 - SMMT segment classification and market share

Segment	Best seller	Mkt sh '06	Mkt volume	Mkt sh '05	Mkt sh '97
A – mini	Chevrolet Matiz	1.0%	23,297	1.1%	0.7%
B – supermini	Ford Fiesta	32.1%	752,872	30.0%	26.5%
C – lower medium	Ford Focus	29.6%	695,428	31.2%	32.4%
D – upper medium	BMW 3 Series	16.8%	393,999	17.5%	25.2%
E – executive	Mercedes C class	4.3%	100,339	4.6%	5.8%
F – luxury	Mercedes S class	0.6%	13,227	0.5%	0.7%
G – sports	Mazda MX5	2.8%	65,047	2.7%	2.9%
H – dual purpose 4x4	Honda CR-V	7.5%	175,805	7.7%	3.8%
I – MPV	Vauxhall Zafira	5.3%	124,850	4.8%	2.0%

34. The following table shows the 2006 average CO_2 figure in g/km for each segment, the change on the 2005 and 1997 figures and also the lowest CO_2 emitting models available in each segment in 2006. If everyone bought the lowest emitter in each segment the UK average would have been 116.2g/km or 30.5 per cent the actual level.

35. In 2006 all bar the upper medium segment made CO_2 reductions over the 2005 performance. The luxury car segment made the best improvement of the year, at 4.8 per cent. However, the supermini segment – the largest volume segment – also made an above average improvement, which was encouraging and buoyed by the arrival of several new model ranges.

36. Between 1997 and 2006 all segments made double digit gains, with the exception of the sports car segment. The sports car segment recorded an increase in average new car CO_2 emissions over this period, which reflects the changing model mix in this segment and in particular the demise of supermini based models like the Ford Puma from the segment. Since 1997 the MPV segment made the best gain, a sizeable 23.1 per cent improvement. The dual purpose 4x4 segment made the second best gain, of 17.8 per cent.

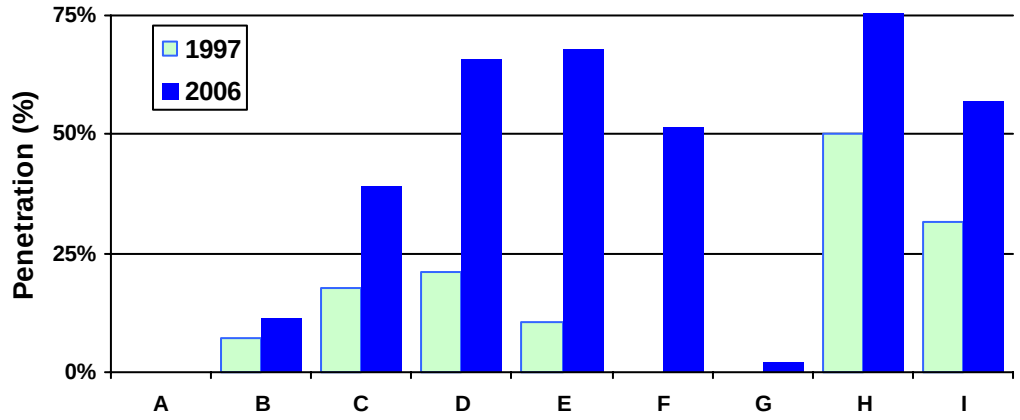
Table 7 - SMMT segment by CO_2 performance, in g/km

Segment	2006 CO_2	Ch vs '05	Ch vs '97	Lowest emitter
A – mini	129.2	-2.7%	-12.4%	0/113* (Smart)
B – supermini	143.1	-1.8%	-10.8%	107 (Citroen C2)
C – lower medium	159.6	-0.9%	-13.0%	109 (Honda Civic)
D – upper medium	171.6	0.0%	-13.2%	104 (Toyota Prius)
E – executive	201.5	-1.7%	-14.6%	146 (Saab 9-5)
F – luxury	268.9	-4.8%	-15.9%	209 (Merc S Class)
G – sports	229.6	-0.9%	4.4%	124 (Vauxhall Tigra)
H – dual purpose 4x4	234.5	-0.5%	-17.8%	173 (Honda CRV & Toyota Rav4)
I – MPV	182.9	-2.5%	-23.1%	136 (Skoda Roomster)

G-Wiz at 0/gkm, 113g/km is best non type B1 approved car

37. Notably the MPV and dual purpose segments have above average diesel penetration levels. Chart 6 shows diesel penetration of the different segments in 2006, and 1997 market for comparison.

Chart 8 - New car market segment by diesel penetration



38. Diesels accounted for 75.6 per cent of all dual purpose segment registrations in 2006, well above the national average of 38.3 per cent. Diesel models are now available in all segments whereas in 1997 no mini, luxury or sports cars were equipped with diesel engines. Diesel penetration of the dual purpose, executive,

upper medium, MPV and luxury segments is over 50 per cent. In the supermini segment diesel penetration has remained low, at 11.5 per cent. Like the largest volume segment, the second largest, lower medium, market has also seen comparatively low levels of diesel penetration. Diesel engines tend to be larger in physical size than petrol engines; they also tend to offer different driving characteristics, and so tend to feature more predominantly in cars where performance (acceleration) is not such an issue.

Vehicle Excise Duty (VED) profile of the new car market

39. The UK was one of the first of the European member states to have new car tax systems based on CO_2 emissions. Currently only 10 other member states include a CO_2 element to their taxation regimes. In March 2001 VED for new cars became based on CO_2 emissions and since April 2002 company car taxation has also been CO_2 based.

40. Since March 2001, the UK has had a VED scheme based upon CO_2 emissions for new cars, with engine size still used for pre-2001 cars. The scheme also includes a differential between fuel types, with lower rates for alternative fuelled cars.

41. The UK government varies VED to increase awareness amongst buyers of the importance of CO_2 emissions in their car choices. The original four band scheme has been expanded to seven bands. The core 121-185g/km range has seen remarkably little change in VED rate 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 also revised to make low CO_2 emitting cars more attractive. 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 8 - Annual VED payable, £

Band (g/km)	**From 23 March 2006**			**22 March 2007**		**1 April 2008**		**1 April 2009**	
	AFV	**Petrol**	**Diesel**	**AFV**	**Std****	**AFV**	**Std**	**AFV**	**Std**
Cars registered after 1 March 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 1 March 2001 (based on engine size)									
Sub 1549cc		110			115		120		125
Above 1549cc		175			180		185		190

*Only for cars registered after 23 March 2006
**Std – standard, petrol and diesel values aligned in Budget 2007

42. The VED scheme does have its vagaries. With a large number of different bands for new and existing cars it can be seen as complex. In some instances, the newer the car the higher the fee, even if it has the same emissions specification

as an older cars. This seems perverse as new cars typically are more environmentally friendly with better safety features. However, the market has clearly shifted into lower CO_2 emitting vehicles. The new car market, differentiated by VED band since 1997, is shown in the table below. There is still a noticeable lack of registrations of cars in the 'A' band. In 2006 there were just 289 such vehicles registered. The 'C' band was the most populated in 2006, compared with the 'F' band in 1997. The share of the market over 185g/km has more than halved since 1997 and just 7.5 per cent of the 2006 market was in the top rate 'G' band.

Table 9 - New car market distributed by VED band (% total market)

Band	CO_2 g/km	2006	2005	2000	1997
A	<100	0.0	0.0	0.0	0.0
B	101-120	4.7	3.3	0.1	0.0
C	121-150	31.9	30.8	19.2	7.8
D	151-165	24.2	24.9	23.8	15.1
E	166-185	17.0	17.2	22.7	32.0
F	186-225	14.8	23.8	34.3	45.1
G	>225	7.5			

43. Since the CO_2-based company car tax regime was introduced in 2002 the government has undertaken two reviews of the scheme. SMMT has called for a similar review of the VED scheme to take place. SMMT is also concerned that many family, business-need and automatic transmission cars fall into the two top VED bands. Despite the wide choice of cars available, this inevitably means an increase in the cost of motoring for those who may need larger vehicles or those with a particular need for automatic transmission. This raises issues of flexibility and fairness in the application of the regime.

44. VED has little impact on the use of a vehicle, once the duty is paid. Indeed, if the VED is higher than there could be a perverse incentive to drive more to spread the cost over a greater number of journeys or distance travelled. An estimated one million vehicles a year evade VED, the higher the VED rate the more likely it is that evasion will rise.

Company car tax (CCT) profile of the new car market

45. Since 1 April 2002 company car taxation has been based on CO_2 emissions. A benefit value is added to the driver's employment income and taxed (at 22 or 40 per cent income tax rates). The value is 15 to 35 per cent of the car's list price, depending upon which CO_2 band it sits in, with 35 per cent as a base non-discounted rate. Diesel cars have a three per cent surcharge relative to petrol (waived for Euro IV cars acquired before 1 January 2006), but do not exceed the 35 per cent top rate. The starting CO_2 rate for the 15 per cent tax rate was up to 165g/km in 2002/03, and was reduced 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 rates are set in the Budget with a two year lead time. There are 21 rate bands which move in 5g/km bands. On 1 April 2008 a new 10 per cent band will be introduced for sub 120g/km cars, there are also further discounts for alternatively fuelled cars.

46. Using HM Revenue & Customs (HMRC) national statistics on the numbers of company cars provided to employees and directors earning £8,500 or more and applying an estimate of the average CO_2 rating by the CO_2 data ranges in which the estimates are grouped, a weighted average CO_2 figure for company cars has been estimated. This is given in Table 10 below, together with analysis of the percentage distribution of these employees' cars by the CO_2 points given by HMRC and the split between diesel and petrol cars. It is to be noted that these cars cover an age profile of typically up to three years with currently up to 450,000 new cars being bought each year.

47. The HMRC statistics suggest that the number of company cars has fallen 12 per cent or 170,000 units over the three year period shown. Since 2000 the company car parc is down by over 400,000 cars. Between 2002/03 and 2004/05 the weighted CO_2 average has fallen from 185.5g/km to 171g/km, a 7.8 per cent reduction – or an average annual improvement of almost four per cent. The distribution of the company car market by CO_2 emissions, shows the number under 145g/km - the minimum CCT band - was 27.5 per cent in 2004/05. In 2002/03 the minimum CCT band was sub 165g/km and there was 41.6 per cent of all company cars up to this mark. By 2004/05 that share was 56.6 per cent.

48. Given that the introduction of the CO_2 based CCT scheme was five years ago most employees will have now replaced their car at least once. The scheme has clearly been effective and drivers have shifted to lower CO_2 emitting vehicles. However, evidence from HM Customs & Excise shows a net decline of 400,000 company car drivers since 1999 to 1.2mn[1]. This report states the single biggest

[1] second stage report http://www.hmrc.gov.uk/budget2006/company-car-evaluation.pdf

reason cited for opting out was the 2002 reform and CO_2 based incentives and disincentives. Most of those opting out of company cars have taken a cash value and a significant minority (an estimated 150,000 employees) have used this to enter into employee car ownership schemes (ECOS). Some of those opting out of company car schemes may be using older and less efficient cars, which may also feature less of the safety features new vehicles are fitted with.

Table 10 – UK company cars by CO_2 emissions and fuel type (at 5g/km intervals)

	2004/05	2003/04	2002/03
CO_2 emissions g/km			
<=145	27.5%		
150&155	20.8%	42.0%	
160&165	8.3%	8.4%	41.6%
170&175	10.8%	11.5%	12.4%
180&185	9.2%	9.9%	10.9%
190&195	7.5%	8.4%	9.5%
200&205	4.2%	5.3%	7.3%
210&215	3.3%	4.6%	4.7%
220&225	2.5%	3.1%	4.4%
230&235	1.7%	2.3%	2.9%
240&245	1.7%	1.5%	1.8%
250&255	0.8%	3.8%	1.1%
>=260	2.5%		3.6%
Diesel	54.2%	44.3%	33.6%
Petrol	46.7%	56.5%	66.4%
Total Volume (000s)	1,200	1,310	1,370
Average weighted CO_2 g/km	171.0	177.9	185.5

Please note due to rounding these percentages do not add up to 100 per cent

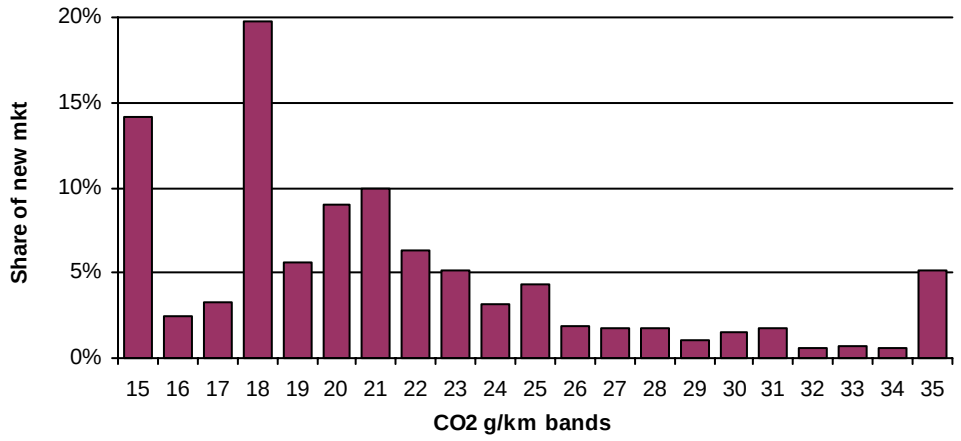
49. The clear guidance on future rates – given two years in advance – is a welcome attribute. The introduction of a new 10 per cent rate for cars below 120g/km in 2008 should also send a firm signal and incentive to encourage the take up of low CO_2 emitting vehicles. The SMMT has called for the three per cent surcharge on diesels to be removed for all Euro 5 cars, to encourage early adoption. Euro 5 and beyond should see regulated emissions (like PM and NO_x) for petrol and diesel cars being more closely aligned.

50. In past reports SMMT has used the fleet and business sectors of the SMMT MVRIS database as a proxy for the company car market, although noting in reality the CO_2 and model mix are likely to be different. The MVRIS

fleet/business market consisted of cars for fleets, leasing and contract hire companies, daily rental companies, Motability and demonstrators. The fleet/business market totalled 1.3mn new registrations in 2006 – whilst the overall number of drivers using company car schemes was 1.2mn. The fleet/business sectors accounted for 55.9 per cent of the 2006 new car market, compared with 53.9 per cent in 1997.

51. Chart 9 shows the distribution of the fleet/business market by CCT bands. Only petrol cars are in the 15-17 per cent tax bands, with diesels first appearing in the 18 per cent band due to the surcharge, hence the double peak in the distribution of the MVRIS fleet/business new car market volumes by CCT band as shown. In 2006, 25.3 per cent of petrol-fuelled company cars were sub 140g/km, this was more than double the rate in 2005 and almost triple the rate of 2004, of 8.7 per cent. A large cluster of petrol cars (12 per cent) are between 151-155g/km. 29.6 per cent of new diesel company cars were 140g/km or below, compared with 24.7 per cent in 2005. Again there is a clustering in the 146-150g/km and 151-155g/km bands. These clusters are likely to relate to step increases in engine size.

Chart 9 - 2006 new fleet/business car market – market share by CCT band



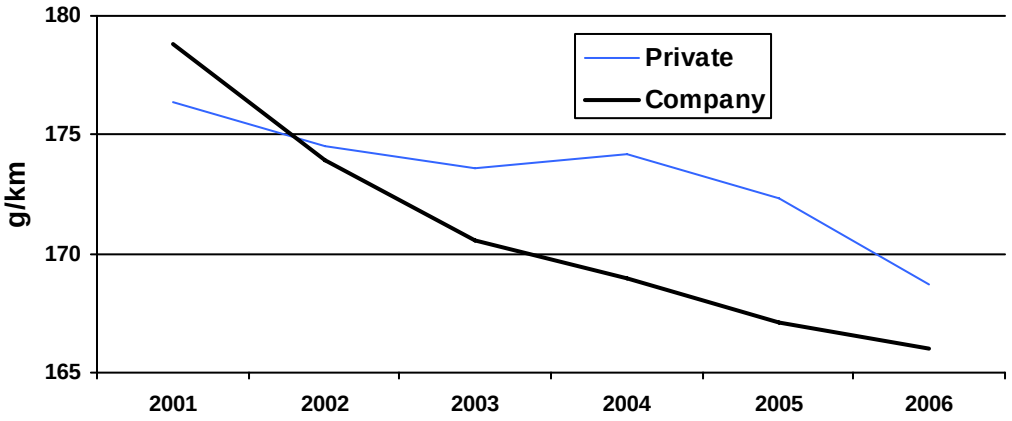
CO_2 profile of the new car market by sales type

52. The fleet/business and private sectors of the market had a similar average new car sales weighted CO_2 figure in 2001 and 2006. However, in 2001 the private sector's figure was 1.3 per cent below the fleet/business average, and by 2006 was 1.6 per cent above. Details of the relative performances since 2001 are shown in Table 11 and Chart 10 (fleet/business termed 'company').

Table 11 - New car CO_2 emissions by sales type

	2006	2005	2001
Company			
Average CO_2 g/km	166.0	168.7	178.8
2006 % change vs		-0.5%	-7.1%
Mkt share	55.9%	55.9%	50.7%
Private			
Average CO_2 g/km	168.7	172.3	176.4
2006 % change vs		-2.1%	-4.4%
Mkt share	44.1%	44.1%	49.3%

Chart 10 - Private and company average new car CO_2 emissions



53. Since 2001, the year before the CCT change, the average new company cars' CO_2 figure has fallen by 7.1 per cent or 12.8g/km, compared with an overall market drop of 5.9 per cent and a decline of just 4.4 per cent in the private market. Company cars moved from having a higher average figure to a lower average figure than private cars. However, in 2006 the gap closed, with private buyers recording a reduction of 2.1 per cent, almost four times the rate made by the company sector. This improvement could be due to greater awareness of the issue from the private sector – helped by the launch of the CO_2 label on new cars, as well as growth in the supermini market and a greater increase in the take up of diesel models by the private sector in 2006.

CO_2 performance by region in the UK

54. Data on new car CO_2 performance by geographical region shows that on a sales weighted average basis all regions are within 8g/km of the national average. The lowest CO_2 emitting region, the Channel Islands, has an average new car CO_2 rate 4.7 per cent lower than the national average and the highest, the South East, has a rate 2.6 per cent above the average. The South East is also the largest region by volume of registrations, which will influence the national average.

Table 12 - Average new car CO_2 performance by geographical region

Area	CO_2 performance g/km	Rank	Market share
Channel Islands	159.3	1	0.5%
East Anglia	168.4	12	3.5%
East Midlands	165.4	8	7.5%
Isle of Man	165.8	9	0.1%
North	163.8	4	4.4%
Northern Ireland	163.4	3	2.8%
North West	165.2	6	12.6%
Scotland	164.1	5	8.3%
South East	171.6	13	29.7%
South West	166.1	10	7.1%
Wales	163.3	2	3.4%
West Midlands	165.7	8	12.1%
Yorks/Humberside	167.3	11	8.0%

55. If the highest and lowest emitters are excluded then the range is just 5.1g/km, with regions either just -2.4 per cent or +0.7 per cent away from the UK national average.

CO_2 new car performance across Europe

56. In 1998 European car manufacturers in the ACEA organisation agreed to reduce average new car CO_2 emissions across Europe by 25 per cent from their 1995 levels by 2008 to 140g/km. Members of the Japanese and Korean trade associations (JAMA and KAMA) signed similar agreements in 1999 to reach 140g/km target by 2009. There were also interim targets set for 2003/04, which the industry met.

57. Estimated data for 2005 for ACEA members only in the EU15 shows that a further 0.6 per cent gain was recorded over the 2004 level and that since 1995 – the baseline for the commitment – a 14.9 per cent improvement has been achieved. Over the same periods, ACEA members made a 0.6 and 12.6 per cent reduction in average new car CO_2 levels in the UK.

Table 13 – Estimated performance in average new car CO_2 emissions across EU

	2005 CO_2/g/km	1995 CO_2/g/km	% ch 2005 vs 2004	% ch 2005 vs 1995
ACEA	160	188	-0.6%	-14.9%
UK market	167	191	-0.6%	-12.6%

58. Since 2002 the UK has matched or bettered the EU average annual reduction. Average new car CO_2 levels were lowest in Portugal again in 2005, at 144g/km – this was 10 per cent below the EU15 average. Italy and France also recorded CO_2 levels below 150g/km. The UK had the fourth highest average new car CO_2 emissions in the EU15 again in 2005, with only the Netherlands, Germany, Finland and Sweden having higher figures. The UK figure was still 4.4 per cent above the EU15 average in 2005. In Germany – Europe's largest market - the average new car CO_2 figure was 173g/km, 8.1 per cent above the EU15 average. Sweden had the highest CO_2 figure which at 195g/km was 21.9 per cent above the EU15 average. Since 1995 Italy has made the largest improvement of 18.3 per cent. Finland has made the least, at 5.3 per cent.

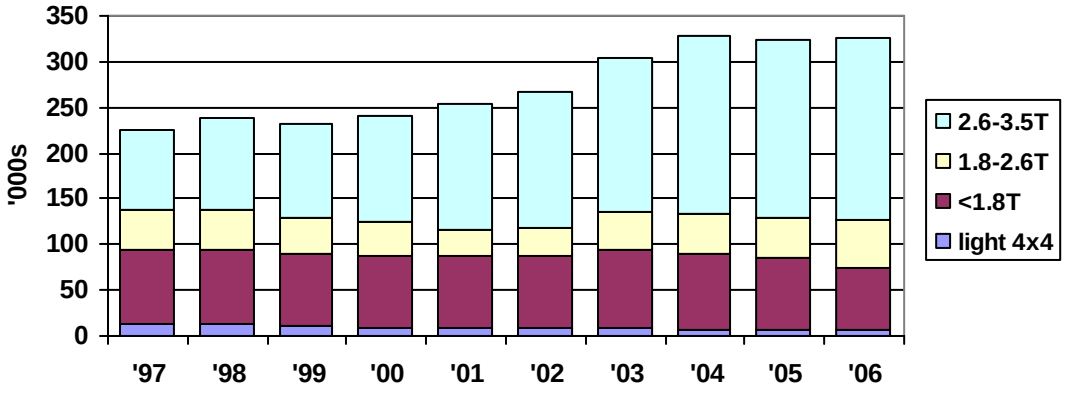
59. The UK performance has been constrained by far lower diesel penetration than across the rest of the EU. In 2005 diesel penetration in the EU15 was 49.8 per cent – a third higher than the 36.8 per cent level in the UK. The UK has the highest fuel duty rates in Europe (32 and 84 per cent above the EU15 average for petrol and diesel respectively, according to the ACEA *Tax Guide 2007* - data at July 2006). In the UK diesel and petrol face the same rates, whereas in Europe diesel rates are much lower than for petrol, typically by 38 per cent in the EU15. The UK has also experienced far higher economic growth than the EU average in recent years, which means consumers here are more affluent and can afford larger more highly specified cars.

Commercial Vehicles (CVs)

60. Whilst the main focus of this report is cars, they are not the only vehicles on the roads or the only source of road transport CO_2 emissions. Cars make up some 80 per cent of the vehicles in use and 60 per cent of road transport CO_2 emissions. However, vans, trucks and buses tend to have higher CO_2 emissions than a car and also tend to do a far higher average annual mileage. In recent years new registrations, parc volumes, distance travelled and fuel used by CVs has increased at a faster rate than for cars.

61. In 2006, 386,958 CVs were newly registered in the UK. This was a 0.3 per cent rise over the 2005 level and the second highest annual market since the 2004 peak of 389,923 units. Since 1997 the CV market has grown by 112,717 units or 41.1 per cent. Over 90 per cent of the volume of growth over this nine year period has come from the light commercial vehicle (LCV) sector, of vehicles below 3.5Tonnes. LCVs accounted for 84.5 per cent of all CVs in 2006, up from 81.9 per cent in 1997. Within the LCV market the growth has been concentrated at the heavier end of the market, in particular in the 2.6-3.5 tonne sector, as shown in the chart below. The market for pick-up trucks, including double-cabs, rose by 325 per cent between 2001 and 2006, an increase of some 28,000 units to over 40,000 units – equivalent to 12.3 per cent of the LCV market, from under five per cent in 2001.

Chart 11 - LCV registrations, 1997 - 2006



62. SMMT is collating CO_2 data for LCVs, but currently it is not part of the type approval process, unlike for cars. Many LCVs share the same engines and engine technologies as passenger cars. However, measuring CO_2 levels is complicated by the vast array of different body styles and different pay-loads that CVs can adopt. CVs are principally bought and used for business purposes. Reducing emissions from CVs may therefore be at odds with the business case for using the vehicle and may potentially limit the role these vehicles play in the

economy at large. The recent communication from 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 – 13 and 20 per cent respectively below the 2002 base year level. The 2002 van estimate is 22 per cent above the average new car CO_2 emission level across the EU in 2002.

63. Diesel engines are already fitted to 99 per cent of the CV market, leaving less scope for dieselisation (as in the car market). CVs could, however, benefit from a shift towards alternative fuel power sources. CVs are arguably better suited to using alternative fuels as they have larger bodies to accommodate the new technologies, are less performance orientated, could be more centrally maintained/refuelled and, having typically a higher mileage could offer a better pay-back period.

Table 14 – Registrations of CVs by fuel type

	2006	2005	2004	2003	2002	2001	2000
Total	389,496	388,410	392,225	366,106	324,742	316,084	301,547
Diesel	386,362	381,953	384,238	355,823	315,943	308,559	292,476
Petrol	2,517	4,635	6,025	6,984	7,720	7,393	8,953
Petrol/gas	601	1,800	1,943	3,264	1,040	40	17
Electric	16	22	16	35	39	92	101
Hydrogen	0	0	3	0	0	0	0

64. In 2006 AFV registrations fell by almost two-thirds to 617 units, from 1,822 in 2005. AFV penetration of the market fell to 0.2 per cent, from 0.5 per cent in 2004. Back in 1997 the market from AFVs was almost zero. The AFV market peaked in 2003 at 3,299 units, or 0.9 per cent of the market. LCVs accounted for 99 per cent of the AFV market in 2003, with petrol/gas powered vehicles representing 86 per cent of the LCV AFV market. Ford and Vauxhall dominated the AFV market, but have seen their volumes slide since 2003.

65. When looking at the CO_2 performance of the CV market and measures to reduce emissions moving forward, it is important to note that the CV market is a business to business purchasing choice. The utility function is dependent upon weight and capacity volume, a high standard of dieselisation already exists and complementary measures still apply, but different opportunities and issues to cars need to ensure a tailor-made for vans solution is delivered.

Part 2

Total CO_2 emissions

- Total CO_2 emissions from all cars in use are falling, by 1.6 per cent in 2005 alone
- Emissions decline comes despite more cars in use and greater distance travelled
- CO_2 emissions from road transport is increasing, due to greater use of CVs, which in turn reflect economic growth and the greater need to move goods

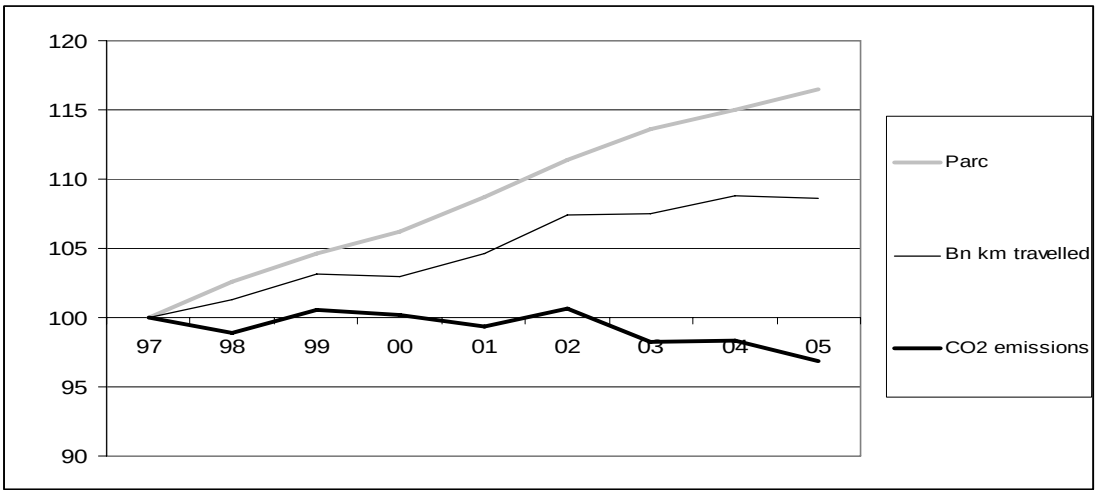
66. CO_2 emissions from new cars are falling. They fell by 1.6 per cent in 2005, compared with 2004 levels, and were down 3.2 per cent on the 1997 level. Over this same 1997 – 2005 period the number of cars on the roads in the UK has increased by 16.5 per cent and the distance travelled by car has increased by 8.6 per cent. The data also shows in 2005 a car emitted on average 2.28 tonnes per annum, 17 per cent below the 2.75 tonne average in 1997, and that over the same period the distance travelled by each car had fallen by seven per cent from around 14,000kms to 13,000kms.

Table 15 - Summary: car CO_2 emissions, fuel consumption, parc size and distance travelled

Year	1997	2005	% change	*Annual rate*
CO_2 emissions (mn tonnes)	72.2	69.9	-3.2%	*-0.4%*
Fuel consumed (mn tonnes)	23.1	22.2	-2.3%	*-0.3%*
Parc size (mn vehicles)	26.3	30.7	16.5%	*2.1%*
Distance travelled (bn kms)	365.8	397.2	8.6%	*1.1%*

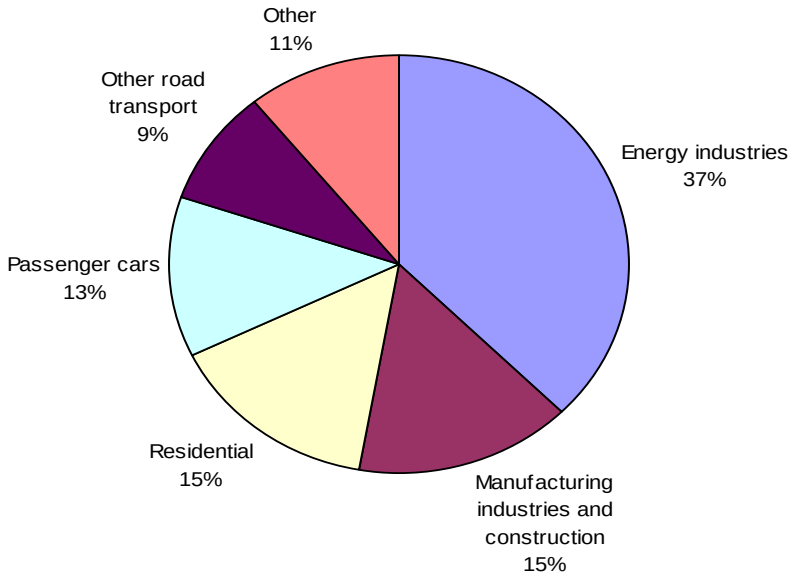
Source: CO_2 – AEA E&E, DfT - Transport Statistics GB 2006 edition for fuel and distance travelled, SMMT Motorparc for parc

Chart 12 - Trends in car CO_2 emissions, parc size and distance travelled. 1997 = 100



67. Emissions from passenger cars are the fourth largest source of CO_2 emissions, according to Integrated Pollution Prevention and Control (IPPC) source category data, as detailed in the following chart. They accounted for an eighth of all CO_2 emissions in 2005.

Chart 13 - 2005 UK CO_2 emissions, by IPPC source category (Source AEA Energy & Environment)



68. Between 1997 and 2005 total CO_2 emissions in the UK from all sources (except land use change and forestry) have increased by 1.5 per cent, although the performance between 2004 and 2005 showed a modest 0.1 per cent fall. Provisional data for 2006 suggests UK CO_2 emissions rose by 1.2 per cent on the 2005 level, reflecting the switch from gas to coal in electricity generation.

69. Between 1997 and 2005 CO_2 emissions from road transport increased by 2.8 per cent, almost double the rate of the overall UK performance. Compared with the 2004 level, road transport CO_2 emissions in 2005 increased by 0.4 per cent, which was below the growth rate in energy and other industries, but total UK CO_2 emissions fell, due to a decline in CO_2 emissions from residential sources. Road transport accounted for 21.6 per cent in 2005. Since 1997 this share has been fairly stable, at 21-22 per cent.

Table 16 - CO_2 emissions in the UK, million tonnes, by source, 1990 – 2005

	2005	**2004**	**1997**	**1990**	***% ch 05 vs 04***	***% ch 05 vs 97***
Road	119.9	119.4	116.6	109.4	*0.4%*	*2.8%*
Share (%)	*21.6*	*21.5*	*21.3*	*18.6*		
Total	556.2	556.5	547.9	589.3	*-0.1%*	*1.5%*

(source AEA Energy & Environment 2007)

70. Total CO_2 emissions from road transport are derived from the type of vehicle used and the distance travelled. The vehicle choice (including fuel type), efficiency, load factor, how it is driven, how far it is driven and the efficiency of the transport infrastructure it uses in all play a role in formulating total emissions.

71. When looking at the breakdown of road transport CO_2 emissions, the data shows that 60 per cent comes from cars. Commercial vehicles (CVs) account for the bulk of the remaining emissions, with other vehicles accounting for just 3.8 per cent of total road transport CO_2 emissions. Emissions from cars have remained broadly constant since 1990 – increasing by under one per cent. However, in 2005 they fell by 1.6 per cent and since 1997 have declined by 3.2 per cent.

Table 17 - CO_2 emissions by vehicle type, Million tonnes, by source, 1990–2005

	2005	**2004**	**1997**	**1990**	***% ch 05 vs 04***	***% ch 05 vs 97***
Cars	69.9	71.0	72.2	70.4	*-1.5%*	*-3.2%*
HGVs	28.6	27.9	26.0	22.0	*2.5%*	*10.0%*
LCVs	16.8	15.9	13.5	11.4	*5.7%*	*24.4%*
Buses and Coaches	3.6	3.5	4.2	4.7	*2.9%*	*-14.3%*
Other	1.0	1.0	0.6	0.8	-	*66.7%*

(source AEA Energy & Environment, 2007)

72. HGVs accounted for 23.9 per cent of all road transport CO_2 emissions in 2005. Since 1990 their emissions have risen by 30 per cent, and since 1997 have increased by 10 per cent. LCVs have recorded the strongest growth in emissions, up 47 per cent since 1990 and 24 per cent since 1997. In 2005 LCVs accounted for 14 per cent of all CO_2 emissions from road transport, reflecting the strong growth in the new LCV market. This in turn reflects general strong growth in the UK economy and in particular increased use of these types of vehicles, especially for home deliveries. Emissions from buses and coaches have fallen by almost a quarter since 1990, and by nearly 14 per cent since 1997.

Total CO_2 emissions projections

73. The February 2006 Department for Trade and Industry (DTI) CO_2 projections to 2020 show emissions from motor vehicles are set to rise by 13 per cent from a 2000 base. With average new car CO_2 emissions levels declining, the rise suggests growth in the number of vehicles, vehicles being driven further and the influence of congested journeys on the infrastructure network for those vehicles.

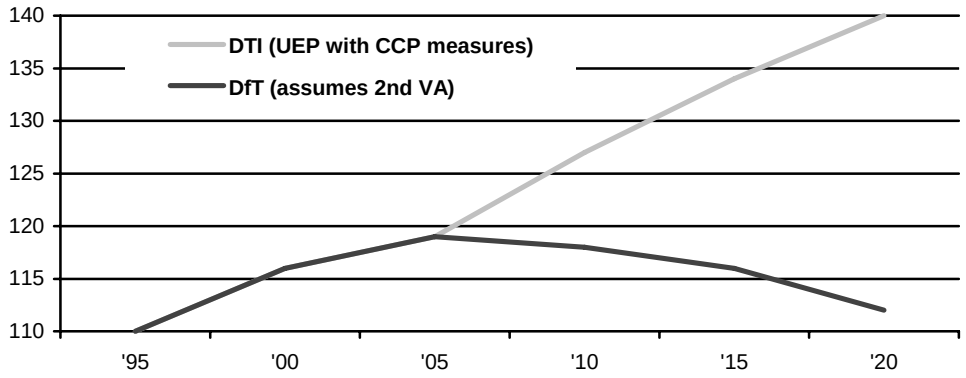
Table 18 - CO_2 emissions from motor vehicles, $MtCO_2$, 1990 – 2020

	2020	2010	2000	1990
Motor vehicles	132	127	117	110
Of which cars	*63.6%*	*63.6%*	*62.8%*	*64.7%*

(source: Table 18 Emissions projections (central scenario) UK Energy and CO_2 emissions Projection, DTI, February 2006)

74. The Department for Transport (DfT) also calculate CO_2 projections, but uses different planning scenarios, one of which is that average new car CO_2 levels will fall (through the assumption of a second voluntary agreement, or equivalent). The DfT scenario suggests CO_2 emissions will fall from 2005 levels onwards. By 2020 the DfT and DTI scenarios shown here for road transport CO_2 emissions differ by 25 per cent.

Chart 14 - Road transport CO_2 emissions projections – DfT and DTI, $MtCO_2$



Fuel used

75. Total fuel consumption in Great Britain has been stable at under 38 million tonnes per annum since 1997. However, there has been a marked switch to diesel which in 2005 represented more than half of the total for the first time ever. Cars are taking a lower proportion of the total fuel consumed, as demand has fallen following improved efficiencies and the shift from petrol to diesel. Demand for diesel fuel for cars has risen by 76.4 per cent since 1997, ensuring that diesel penetration of car fuel sales has almost doubled between 1997 and 2005, moving from 10.5 per cent to 19.3 per cent.

Table 19 - Fuel consumption GB, million tonnes, 1997 - 2005

	2005	2004	2000	1997	*% ch '05 vs '04*	*% ch '05 vs '97*
Total	37.98	37.81	36.84	37.04	*0.4%*	*2.5%*
Petrol	18.54	19.30	21.21	22.06	*-3.9%*	*-16.0%*
Diesel	19.44	18.51	15.63	14.98	*5.0%*	*29.8%*
Share	*51.2%*	*49.0%*	*42.4%*	*40.4%*		
Cars	22.18	22.70	23.10	23.08	*-2.3%*	*-3.9%*
Share	*58.4%*	*60.0%*	*62.7%*	*62.3%*		
CVs	14.49	13.85	12.52	12.52	*4.6%*	*15.7%*

Source: DfT - Transport Statistics GB 2006 edition

76. The net growth in total fuel consumption since 1997 has stemmed from CVs. The amount of fuel consumed by CVs has risen by 15.7 per cent since 1997. Over that period fuel demand from LCVs rose by 18.4 per cent and for HCVs by 14.3 per cent. Diesel is the predominant fuel for CVs, taking a 100 per cent share of that used by HCVs (and buses and coaches) and 90.5 per cent of LCVs - the latter up from a 71.2 per cent share in 1997. The diesel share of fuel used by LCVs will rise, as 99 per cent of all new LCV registrations in 2006 were diesel fuelled. Higher fuel use by CVs reflects the increase in the number of CVs and the greater distance they travel. As previously outlined in this report this greater use of CVs is reflective of strong economic growth recorded in the UK in recent years.

The development of sustainable alternative fuels

77. SMMT is engaged in and monitoring the development of sustainable alternative fuels. In the future is likely that vehicle and fuel technology will combine to give greater CO_2 savings than fuel alone. In the UK the development of the Renewable Transport Fuels Obligation (RTFO) will increase the content of biofuels in the fuel supply to less than one per cent currently to five per cent by 2010. Biofuels offer well to wheel performance between seven and 77 per cent better than carbon fuels. (Source Concawe). The UK is leading the world in

establishing standards for sustainable biofuels, to ensure that production of these important resources is not jeopardised by the destruction of natural habitat, for instance.

78. Further into the future the automotive sector looks forward to the development of second generation biofuels and synthetic fuels. These fuels will greatly enhance the scope of manufacture from a range of waste products. Automotive manufacturers and fuel companies are investing in research and development into this fuel today.

79. Biofuels, synthetic fuels, electricity and hydrogen all offer the potential opportunity to reduce reliance on a carbon based fuel, but sustainable low carbon product at an economic affordable price is key to success.

UK parc (vehicles in use) data

80. The parc is the number of vehicles in use on the 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.

81. The data shows that the number of vehicles in use has increased by almost 17 per cent since 1997. Cars represent almost nine out of every 10 vehicles in use, although the growth in the CV parc, and particularly LCVs, has been above the national average. Within the car parc the number of diesel cars has more than doubled since 1997, with two in five of the parc being diesel-fuelled – although this is only half the penetration level in the new car market. The average age of the car parc fell between 1997 and 2004, but has recently stabilised as the new car market has moderated.

Table 20 - Parc size UK, million vehicles, 1997 - 2005

	2005	**2004**	**2000**	**1997**	***% ch '05 vs '04***	***% ch '05 vs '97***
Total	34.592	34.087	31.423	29.635	*1.5%*	*16.7%*
Cars	30.650	30.267	27.960	26.318	*1.3%*	*16.5%*
Ave age (yrs)	*6.70*	*6.69*	*7.11*	*7.21*		
Diesel cars	6.02	5.34	3.36	2.65	12.7%	127.1%
CVs	3.941	3.819	3.463	3.317	*3.2%*	*18.8%*

Source: SMMT Motorparc

82. In 2005 there were 34.6mn cars and CVs in use on the UK roads (the data here does not include two and three wheelers or off-highway vehicles). This was 1.5 per cent more than in 2004 and up 16.7 per cent since 1997. Cars represented 88.6 per cent of the total, a level almost unchanged since 1997. The number of CVs in use has increased at a slightly faster rate than for cars, more so in recent years. The growth in the number of CVs in use has largely reflected the significant growth in the LCV market. In 2006 82.6 per cent of all CVs were LCVs, up from 80.5 per cent in 1997.

83. Two thirds of the volume of growth within the car parc has stemmed from diesels. Diesels accounted for 19.6 per cent of the 2005 car parc, two percentage points more than in 2004 and almost double the 10.1 per cent share taken in 1997.

84. The average age of cars in use edged up very slightly in 2005 to 6.70 years. Compared with the 1997 average of 7.21 years the parc has become younger, reflecting the recent run of high annual new car markets. With new car demand

now stabilising at a lower level, the influence of the amount scrapped will play a key role to ensuring the UK car parc remains relatively new – and therefore full of cleaner and safer vehicles.

Road traffic growth

85. As the amount of vehicles on the roads has increased so too has the distance travelled. The rates have not been proportionate and, as seen earlier in this report, the growth areas are CVs and in particular light vans. This is reflective of sustained economic GDP growth averaging 2.9 per cent over the past decade, changes in logistics and distribution, greater imports of products into the UK, UK planning policy and also a shift in shopping habits, such as increased home deliveries. Whilst the distance travelled has increased there has been virtually no change in the road network capacity. However, the network has been maintained and enhanced through traffic information and similar systems.

Table 21 - Road and traffic GB, billion kms, 1997 - 2005

	2005	2004	2000	1997	*% ch '05 vs '04*	*% ch '05 vs '97*
Total	499.4	498.6	467.1	450.3	*0.2%*	*10.9%*
Cars	397.2	398.1	376.8	365.8	*-0.2%*	*8.6%*
Share	*81.2%*	*80.7%*	*79.8%*	*79.5%*		
Other	100.2	100.5	90.3	84.5	*1.7%*	*20.9%*
Road length '000 kms	388.0	387.7	390.2	387.9	*0.1%*	*0.0%*

Source: DfT - Transport Statistics GB 2006 edition

86. Road traffic (measured in billion vehicle-kms) increased by 10.9 per cent, or almost 50 billion kms, between 1997 and 2005. Cars make up four out of every five of the total kms driven, but the proportion is falling as other vehicles have seen a growth rate more than double that of cars. LCVs, which make up over 60 per cent of 'other' traffic in the table above, have recorded a 28.8 per cent rise since 1997. This included a three per cent rise between 2004 and 2005, whereas cars saw a decline in traffic.

87. Between 1997 and 2005 the statistics showed that the length of the British road network was almost unchanged, and as such has failed to keep pace with the growth in the number of vehicles and the distance being travelled. There was a step change (downwards) in the 2004 figure on road lengths, as new information enabled better estimates of minor road lengths. Between 1994 and 2003 figures suggested road lengths rose by 0.2 per cent per annum, and then the 2004 figure showed a 1.2 per cent drop. Whilst the road network has not grown, the Highways Agency has targeted expenditure on maintenance and improving the traffic flow on the existing infrastructure, through improved information gantries, etc. Further investment will be needed to ensure congestion, and therefore emissions from transport, do not increase. The minimal change in fuel consumed suggests that improvements in vehicle efficiency have offset the impacts of more vehicles driving further.

Reducing CO_2 emissions through the Integrated Approach

88. Managing, reducing and mitigating effects of climate change from road transport are the priority of all stakeholders. The automotive industry has been progressive in its measures to tackle climate change. In 2006 there were now 1,081 car range derivatives that had tailpipe emissions of under 140g/km, with new technologies through hybrid vehicles, alternative fuels, stop/start technology and better fuel economy. This has helped to reduce emissions for cars in the UK, despite an increase in the number of cars and greater distances travelled.

89. The European Commission recently published a communication to legislate for tailpipe CO_2 emissions. The proposed figure is for cars to reach 120g/km of CO_2 by 2012 (130g/km with a further 10g for complementary measures, eg bio-fuels and low-rolling resistance tyres) and to achieve 95g/km by 2020. Targets for vans have also been set for 175g/km by 2012, and 160g/km by 2015. The Integrated Approach, which encourages a burden-sharing approach amongst stakeholders, is also explored in the communication, through the possibility of increased consumer information through advertising and harmonised fiscal measures. However, reduction of CO_2 through technology remains at the forefront.

90. 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 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. Collective action, according to the Integrated Approach, should take several forms:

91. *Fiscal Measures*: Industry has called for harmonisation of tax regimes designed to encourage a shift to lower CO_2 emitting vehicles. Whilst about half the member states have introduced CO_2 based taxes they are not harmonised. There is also the key issue that taxation is a Member State, rather than EU, competence.

92. *Alternative Fuels*: The use of alternative fuels provides one of the main options for reducing road transport sector CO_2 and there needs to be strategies in place to support this. The AFV market is growing, but remains low volume. Infrastructure also needs to be set up to encourage the take-up of alternative

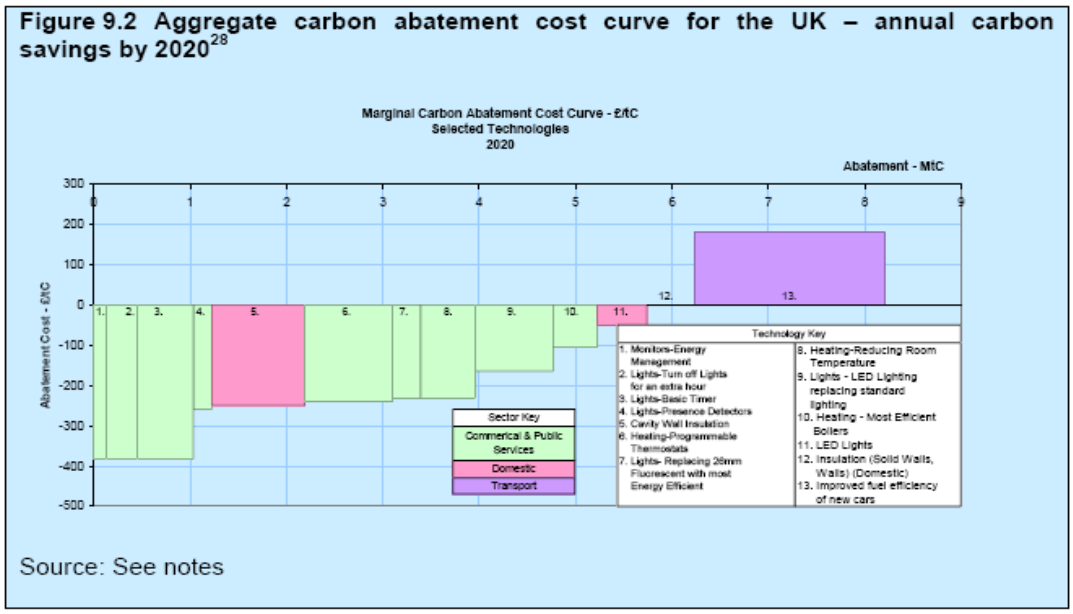
fuels. Greater acceptance of the need to change and overcoming concerns over safety, reliability and so on must also be delivered.

93. *Consumer Behaviour*: The importance of eco-driving cannot be underestimated. If properly trained, it can lead to efficiency savings of up to 25 per cent according to ACEA, with significant and sustainable effects of five to seven per cent under everyday driving conditions. Greater occupancy of vehicles, perhaps through car sharing schemes, and more flexible working practices could also be encouraged to deliver real world CO_2 savings. Such measures have been tried, but the scale of take up remains low and would not impact on test cycle emissions.

94. *Infrastructure*: Cars give their worst CO_2 performance in stop start congested traffic flows. Improving the flow of traffic would therefore help, eg substituting normal traffic lights for modern dynamic traffic lights that generate optimal traffic flow could give annual savings of 2.4MtCO_2. Driver information, such as satellite navigation systems, road side messages and radio alerts, have been introduced but wider scale use could generate lower CO_2 emissions.

95. *Consumer information*: Better information can lead to consumers making a more informed choice when choosing their vehicle. In the UK the voluntary colour coded environmental label at point of sale has raised awareness amongst consumers of the vehicles CO_2 emissions and running costs. Harmonisation of labelling across the EU must take place to raise consumer awareness.

Chart 15 – Carbon abatement cost curve – Stern 2006



96. It is evident that the Integrated Approach can bring significant benefits in reducing tailpipe CO_2 if it is properly implemented, with the commitment of all stakeholders. According to the recent Stern Report, abatement in transport is expensive in the short term because 'low carbon technologies tend to be expensive and the welfare costs of reducing demand for travel are high' and therefore it is likely to be 'among the last sectors to bring its emissions down below current levels.'[2]

97. A crucial part to reducing carbon emissions from cars is market transformation and collective action. Challenges going forwards to reduce tailpipe CO_2 emissions can be identified as:

- Legislative measures only apply to new vehicles, rather than the existing vehicle parc (of which in the UK only eight per cent of the vehicle parc is new)
- Emissions from road transport have been predicted to rise
- Raising consumer awareness of the impact of CO_2 has begun in individual member states, but it has happened slowly. Just 11 member states have CO_2 based fiscal measures in place designed to alter consumer behaviour. In addition, the UK and Holland are the only member states to have begun advertising campaigns to raise awareness of eco-driving.
- Vehicle weights may well continue to increase, which in turn raises CO_2 levels

2The Stern Review's Annex 7c on the Transport sector: (http://www.hmtreasury.gov.uk/media/3DD/5D/Transport_annex.pdf)

Influences on past performance

- Other regulations pulling CO_2 emissions in the wrong direction
- Consumer appetite for bigger, more powerful cars - regulatory need vs market preference

CO_2 vs other regulatory needs

98. The pan-European voluntary agreements by vehicle makers have certainly delivered significant savings – well above Kyoto targets. However, the savings have not gone far enough to offset changes in the market structure so as to achieve even greater improvements. This section of the report highlights some of the influences which have offset the technological improvements and also demonstrates that in some cases technological advances have been shunned by the buying public, negating their impact.

99. Airbags and changing body structures (front and side impact protection, crumple zones, etc), as well as active safety measures (ABS, traction control, etc) have helped make the vehicles we drive far safer. Emission levels have also been brought down to comply with Euro 3 and then Euro 4 environmental emission standards. Catalytic converters and diesel particulate filters have also been fitted. To reduce noise, increased sound deadening has been fitted, and to also meet customer demand and improve a range's competitive performance, comfort and luxury items have been fitted, such as air conditioning, electric windows and seats, bigger hi-fis and sat nav.

100. Many of these features add weight. The heavier weight means increased braking and tougher suspension is needed, which entails a further weight penalty. The features could also mean the vehicle itself is expanded to fit in all the additional items, as well as accommodating the increase in the physical size of the drivers and passengers and greater luggage space. This results in the engine being taxed more to move the vehicle around, leading to demand for more powerful engines to ensure performance is not restricted.

101. In 2005 a study by Ricardo for DfT *'A study into passenger car CO_2 reduction'* suggested UK CO_2 savings have been countered by up to 50 per cent as a result of weight increases. JAMA's *'Looking to the Future'* reports that the average weight of its members vehicles have increased by 99kgs between 1999 and 2005. It is estimated that 27kgs of this is due to 'regulation and quasi-regulation' and the remainder to 'market changes'. This weight increased despite more use of lightweight materials, such as aluminium and plastics. JAMA estimates that a 10 per cent increase in weight equates to a five per cent increase in CO_2 emissions. It also estimates that a 10 per cent increase in aerodynamic drag equates to a two per cent increase in CO_2 emissions. Expanded frontal areas, higher and larger vehicles are some of the reasons aero drag has increased.

Market transformation

102. There has been a shift in the type of vehicle demanded in the market. For cars, the supermini market remains the largest segment, but demand for large vehicles, especially MPV and SUV segments, has been very strong. Twenty years ago these two segments barely existed, in 1997 they accounted for 5.8 per cent of the market, and in 2006 took a 12.8 per cent share. It is often believed that these vehicles took over from traditional estate cars, but the estate car market is virtually unchanged in volume size since 1997. Instead the saloon and hatchback market from the lower and upper medium segments has declined. Likewise in the LCV market, demand for more useable space has ensured larger models are required by today's society. Consumer choice compared with the regulators' desire for small low emitters needs to be addressed to ensure how society achieves the lower CO_2 emission targets are realistic.

Difficulties in finding market acceptance of low emitters

103. Low CO_2 emitters tend to be either very basic models or those using advanced technologies which are likely to be very expensive, although more economical. This leads to a number of issues and constraints on their market success. There have been a number of low CO_2 emitting vehicles which manufacturers have launched onto the market, which have struggled in the sales charts. Some of those models were ultimately withdrawn like the Audi Duo, Vauxhall Corsa three litre and Ford Think!

104. Such cars may have failed in the marketplace because they offer (or perceive to offer) the wrong vehicle utility. This may relate to physical size, to the range the product can cover, concerns over the longevity of the alternative technology, safety fears over that technology, and availability of infrastructure. Additionally the model could be too expensive or appear too cheap, especially if it does not come with the necessary comfort features. Furthermore, the profitability for manufacturers trying to introduce new technologies is likely to be circumspect.

105. Consumers appear unwilling to pay (in large enough numbers) a higher price for lower CO_2 emitting vehicles. It may be more cost effective if the user is driving a higher mileage, hence the higher take up of diesels in the company car, against the private, market as business users do a greater mileage and so can offset the higher cost of the diesel engine over a shorter payback period. There is also an issue that if the vehicle was more efficient it may encourage the user to use it more often.

106. A greater understanding of why models failed in the marketplace would ensure that such issues can be overcome in the future. This understanding should take place via the integrated approach.

Part 3

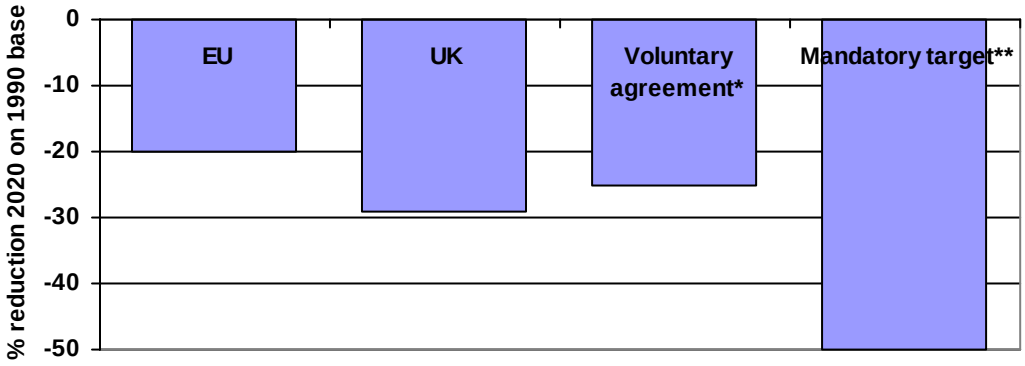
Political aspirations for change

107. Climate change is seen as one of the most important issues facing mankind. Reducing CO_2 emissions has become a key political debate. Increasingly ambitious targets are being called for. The Kyoto Protocol was the first international treaty to set legally binding emissions reduction targets on developed countries that have ratified it. Targets were set to reduce overall emissions of six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) by 5.2 per cent below 1990 levels over the period 2008-2012. The EU took an eight per cent reduction target, with the UK accepting a 12.5 per cent reduction over the 20 year period and seeking a 20 per cent aspirational target.

108. In February 2007 the European Union environment ministers approved a new set of greenhouse gas emissions targets to be met by 2020, of a 20 per cent reduction on a 1990 base; and to cut emissions by 30 per cent as part of an international agreement.

109. The UK government is keen to be at the forefront of emissions reductions. With emissions trading, the UK government believes that it will almost double the reductions required under the Kyoto target, with an estimated 23.6 per cent reduction in greenhouse gases on 1990 levels by 2010. Whilst the UK may be moving off-track to meet its own domestic target of a 20 per cent cut in CO_2 by 2020, on 1990 levels, it is keen to be setting – and be seen setting – ambitious plans for the future. In the Climate Change Bill, the UK has set out a long-term goal to achieve a 60 per cent reduction in CO_2 emissions by 2050 and plans to put in place legally binding targets of a 26 – 32 per cent reduction by 2020.

Chart 16 – CO_2 targets being sought by 2020 (from 1990 base)



* Voluntary agreement from a 1995 base by 2012
** Mandatory target from a 1995 base

110. For the UK and EU to achieve these ambitious aims all sources of emissions must be tackled. Governments seem particularly keen on ensuring road transport emissions play their role. The recent communication from the European Commission said a legislative framework to reduce CO_2 emissions from new cars and vans should be proposed by the end of 2007 and mid-2008 at the latest. It is calling for average emissions from new cars to reach 120g/km by 2012 – with vehicle technology reducing the average to no more than 130g/km and a further 10g/km from complementary measures (biofuels, more efficient tyres and air-conditioning, etc). This is a reduction of 25 per cent from current levels, or some two per cent per annum - significantly above EU or UK economy-wide targets. By 2020 the aim is to get cars to a 95g/km average, a further 20 per cent reduction in just eight years. The 95g/km target represents a halving of the 1995 baseline figure – or a target 2.5 times tougher than the EU is looking for economy wide by 2020. For vans, targets would be equally challenging, at 175/km by 2012 and 160g/km by 2015, from a 201g/km base in 2002.

What are other Member States doing to reduce tailpipe CO_2?

111. Technological advances have moved more quickly than fiscal or consumer information measures to alter consumer behaviour when purchasing vehicles. However, changes have begun to take place across the EU. In 2005, just two Member States had fiscal measures targeted at reducing CO_2 emissions from cars. Today, that number has increased to 11 and Germany is in the planning stages of introducing similar measures.

112. CO_2 taxation has the power to influence consumer decisions, if it is targeted and established for the long-term. The countries that have CO_2-based taxation (either fully or partially) are: Austria, Belgium, Cyprus, Denmark, France, Italy, Luxembourg, the Netherlands, Portugal, Sweden and the UK. These nations make up approximately 60 per cent of the EU market.

113. The 11 tax regimes are all different and therefore have varying effects. The majority use CO_2 in setting circulation or registration taxes. The Cyprus, Denmark, Italy, Luxembourg, Sweden and the UK have circulation taxes using CO_2 emissions, whilst France, Holland, Portugal, Austria and Cyprus use CO_2 for setting the registration tax. The UK, France and Belgium have company car tax regimes based on CO_2 emissions. The Italians operate a vehicle scrappage scheme for Euro 0 or 1 type vehicles, if simultaneously a Euro 4 (or higher) car is bought which has CO_2 emissions below 140g/km. It is apparent that all of the tax regimes differ and therefore it is difficult for industry to design vehicles to meet common tax regimes.

114. From the consumer education perspective, the European Commission produced a black and white label to educate consumers on the level of CO_2 emissions from their vehicles in 2001, but use of this across the EU area has been negligible. The UK has produced a colour-coded label with the help of industry and other stakeholders. It mirrors labels available for white goods, with which consumers are already familiar.

115. A limited number of member states have launched media campaigns to encourage the reduction of CO_2 emissions in surface transport. The UK Government has recently launched the first phase of such a campaign. The information is based around a website (http://www.dft.gov.uk/ActOnCO2/), broadcast and billboard advertising to encourage the consumer to think more about their effects on the environment. Tips to consumers consist of keeping tyres pumped up, regularly servicing the vehicle, removing weight from the vehicle (superfluous items in the car boot) and not revving the engine excessively.

116. Raising awareness of 'eco-driving' also contributes to consumer education. Holland is an exemplar in this area, with a national eco-driving centre in Utrecht. Eco-driving is a feature of the Dutch driving test (it is also a feature of driving tests in other Member States). The UK will follow with inclusion of eco-driving incorporated into UK driving tests from 2008.

117. Italy has recently re-introduced a scrappage incentive scheme, which is weighted to aid the purchase of low CO_2 emitting vehicles. Several member states introduced scrappage incentive schemes in the late 1990s in an effort to improve the environmental profile of their parc. The schemes proved largely effective and cost-free to government (with revenue raised from VAT on the additional sales). It did have a distortionary impact on the timing of sales however. Spain still, currently, maintains its scheme.

Other UK policy instruments to reduce CO_2 emissions

118. The UK has also pushed for the inclusion of road transport into the EU emissions trading scheme. The move only received a lukewarm reception from other member states. Incumbents of the current scheme believe the inclusion of road transport may fundamentally change the dynamics of the existing scheme. Current EU ETS is for direct emitters, in road transport's case this would be the consumer. The complexity and administrative burden of incorporating millions of motorists into the EU ETS is, at present, too great. Vehicle manufacturers have no control over the use of the vehicle, so are not seen as good candidates to be involved. Fuel companies are not the end user, so again have only limited influence on fuel. There are concerns that if the burden was placed on the fuel industry it would merely lead to a pass through of costs to the consumer, although studies suggest the pump price would only marginally increase. The fuel industry also has the renewables transport fuel obligation to comply with. Introducing road transport to the EU ETS could in effect cause rationing, which may well be politically acceptable – especially with the fuel companies deciding where fuel is available across Europe.

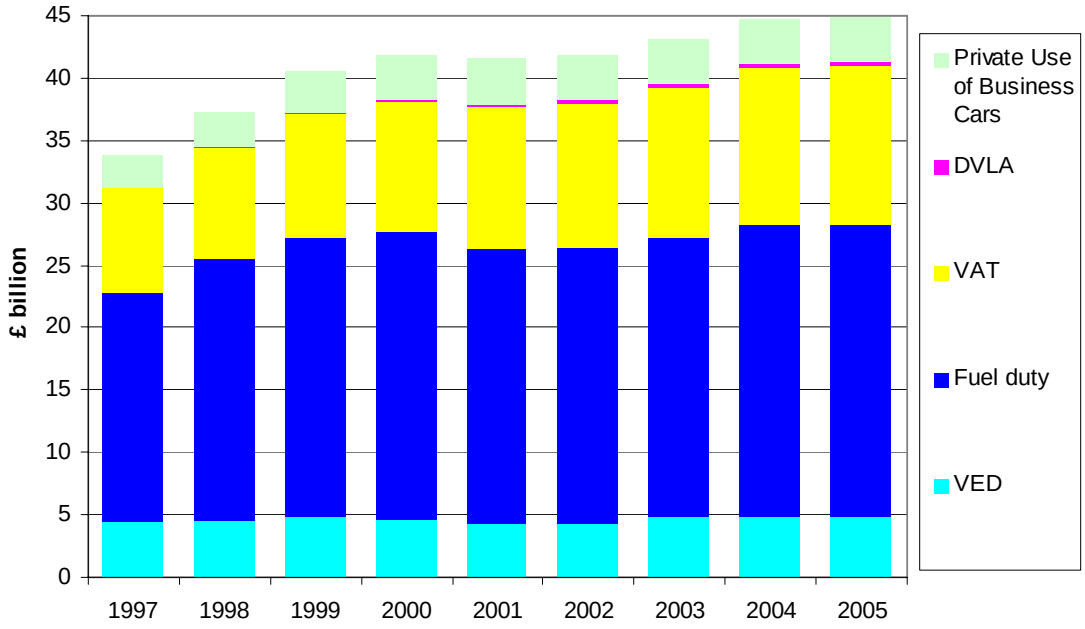
119. Fuel duty could be seen as a proxy for a CO_2 tax. The more fuel used, the higher the CO_2 emissions. Duty is easy to collect, directly hits the polluter, tackles all forms of motoring not just new cars, naturally knocks those with larger more fuel inefficient vehicles, hits those in congestion more and brings in substantial revenues. This could be used to develop cleaner technologies and encourage the shift to low carbon vehicles. In the UK the fuel duty on petrol and diesel cars are equivalent, whereas in most member states the duty rates are lower for diesels, so encouraging the use of diesel cars. This has helped contribute to lower average new car CO_2 emissions in some member states than in the UK. The duty on fuel is also a significant contributor of revenues to the government.

Greater transparency of existing fiscal measures may also be appropriate going forward if new CO_2 based taxes are to be introduced.

120. In 1993 the Conservative government introduced the fuel duty escalator – an annual above inflation increase in the fuel duty rate. Originally the rate was three per cent above inflation, this quickly became five per cent and when Labour came to power in 1997, the Chancellor set the escalator at six per cent. Between 1993 and 2000 the duty rate virtually doubled. The automatic duty increase was removed in 1999/2000 after fuel protests over high pump prices. Between 2001 and 2006 planned increases in duty rates have been deferred and then not implemented in light of the surge in oil prices. However, in the November pre-Budget report the Chancellor announced fuel duty rises for December 2006 and the most recent March 2007 Budget saw an announcement of a September increase. These recent rises have been in line with inflationary increases, and similar rises are expected in forthcoming years.

121. It is estimated that if the escalator had remained in place government revenues from fuel would have been in the region of £40bn per annum, instead of the £23bn it has levelled off at. This represents a significant loss in revenue for the UK government.

Chart 17 – Tax revenues from the motorist in the UK



122. In the UK currently collects over £28bn from motorists each year from VED and fuel duties - this figure rises to £45bn if VAT, CCT, etc is also included. Assuming a forward price of €20 a tonne in the EU emissions trading scheme,

then £28bn would purchase more than 2,116 million tonnes of CO_2 – almost four times the total UK's CO_2 emissions and nearly 18 times more than road transport emits.

Table 22 – Tonnes of CO_2 that could be bought with UK motoring tax revenues

	Revenue £bn	Revenue €bn*	Allowances can buy (millions)**
VED	4.87		
Fuel duty	23.35		
Total	28.22	42.33	2,116
	Mt CO_2 emitted	**Revenue/emissions**	
Road transport	119.9	17.7:1	
Cars only	69.9	30.3:1	
Total UK	556.2	3.8:1	

*based on £1=€1.5

** assumed price of €20 a tonne. The current price in phase I of EU ETS allowances is less than €1, and the forward price for phase II allowances is currently around €17

Conclusion

123. Average new car CO_2 emissions in the UK have fallen in every year SMMT has collated the data. The 2006 figure of 167.2g/km was 11.9 per cent or 22.6g/km below the 1997 level – an average annual reduction of 1.5 per cent or 2.5g/km. In 2006 21.5 per cent of the market was below 140g/km and 3.7 per cent of the market was below 120g/km. The reductions follow improvements in vehicle technologies, and in particular from increased dieselisation of the fleet. Market diversity remains and has strengthened, with small cars (superminis) taking an increased share of the market, but also growth in demand for vehicles offering more utility space, such as MPVs and SUVs.

124. The efficiency improvements in the new car fleet have helped ensure that total CO_2 emissions from cars are falling. In 2005 the total fell by 1.6 per cent on the 2004 level. The reductions in total CO_2 emissions from cars come despite there being more cars in use and the distances driven by the total car fleet rising. However, emissions from total road transport are increasing, stemming from an increased number and further distances being travelled by CVs. This growth is a reflection of the economic success of the UK and also more goods being imported to the UK and more deliveries being required through internet shopping and so on.

125. The pace of reduction in average new car CO_2 emissions performance and total emissions is not enough to satisfy policy-makers who have announced some very challenging targets on CO_2 reductions. The motor industry understands the importance of the challenge ahead and is keen to ensure that it plays an active role in the solution. The solution the automotive industry believes is correct, and as endorsed by CARS21, is the integrated approach. 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 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.

Further Information

SMMT has a dedicated section on its website designed to keep members and other stakeholders up-to-date with develops on CO_2 – log on to www.smmt.co.uk/climatechange

Media enquiries should be addressed to communications@smmt.co.uk

For further data on the UK market by CO_2 performance please contact CO2@smmt.co.uk

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