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**REPORT FROM THE COMMISSION  
TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE EUROPEAN  
ECONOMIC AND SOCIAL COMMITTEE**

**Monitoring the CO<sub>2</sub> emissions from new passenger cars in the EU:  
data for 2009**

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## **1. INTRODUCTION**

According to Article 9 of Decision (EC) 1753/2000<sup>1</sup>, the Commission shall submit annual reports based on the monitoring data submitted by Member States to the European Parliament and Council. The present Report concerns the monitoring data for 2009.

From 2010 monitoring and reporting under Regulation (EC) No 443/2009<sup>2</sup> replaces the reporting based on Decision (EC) 1753/2000 since that Decision is repealed by the Regulation.

## **2. TRENDS IN NEW PASSENGER CARS**

### **2.1. Data quality and processing**

All Member States have submitted data for new passenger car registrations for 2009. Manual re-processing of data was necessary for a number of Member States due to the recording of other fuel types than those agreed upon, the handling of unknown vehicles, the application of the correction factor and other data implausibilities. These issues were addressed during the data evaluation process and were successfully solved without significant data losses. Caution should be used when analyzing the time series as not all EU Member States are included for all years as it can be seen from the tables in section 3. While the highest effort is taken to present consistent series, some breaks in trends due to methodology and monitoring improvements might occur.

In comparison to the reports in previous years, the aggregated data in this report refer to all fuels (previously only figures with respect to petrol and diesel were reported) and in contrast to earlier reports, the CO<sub>2</sub> emissions figures are not corrected by 0.7%. This correction of 0.7% had been applied in assessing the progress made by the manufacturing associations ACEA, JAMA and KAMA, in order to compensate for a change in the test procedure that took place after their voluntary commitments were made<sup>3</sup>. These commitments have now been superseded by the targets specified in Regulation (EC) No 443/2009. For reasons of continuity with previous reports, data per vehicle manufacturer association continue to be presented.

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<sup>1</sup> Decision (EC) 1753/2000 of the European Parliament and of the Council establishing a scheme to monitor the average specific emissions of CO<sub>2</sub> from new passenger cars, OJ L 202, 10.8.2000.

<sup>2</sup> Regulation (EC) 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars, OJ L 140, 5.6.2009

<sup>3</sup> More information related to the 0.7% correction can be found in COM(2002) 693 final and COM(2004) 78 final.

Data for alternative fuel vehicles (AFV) are included for the second time in the monitoring report due to their increasing market share and improved data quality. This includes vehicles in the following fuel categories: Liquefied Petroleum Gas (LPG), Natural Gas (NG), electricity, hydrogen, dual fuel, petrol-bioethanol, petrol-LPG, petrol-NG as well as vehicles reported in the category Other.

## 2.2. Average CO<sub>2</sub> emissions from new passenger cars

The average specific CO<sub>2</sub> emissions of new passenger cars registered in the European Union in 2009 were 145.7 gCO<sub>2</sub>/km. This represents a decrease by 5.1%, or 7.9 gCO<sub>2</sub>/km, from the previous year (153.6 gCO<sub>2</sub>/km in 2008) which is the largest relative drop in specific emissions since the beginning of the monitoring scheme. Some of this reduction may be due to the financial and economic crisis as well as to the design of the scrappage schemes implemented in several Member States. The data also indicate that there has been some downsizing of the car fleet, as the average engine power, vehicle mass and engine capacity slightly decreased in 2009. Diesel powered vehicles improved by nearly 6 grams, petrol powered vehicles improved by almost 9 grams and AFV vehicles by slightly more than 11 grams in 2009. The difference among new diesel and petrol vehicles decreased to around 2.3 grams. It is worth noting that 10 years ago there was more than 17 grams difference between new gasoline and diesel vehicles.

The proportion of new petrol cars surpassed that of diesel vehicles in 2009. In 2009 the share of AFV increased significantly. This is mostly due to the increase of petrol-LPG vehicles registered in Italy, which itself accounts for 92.8% of all new petrol-LPG passenger cars registered in EU27.

Table 1: Average CO<sub>2</sub> emissions from new passenger cars by fuel (EU27)

gCO <sub>2</sub> /km	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
All fuels	172.2	169.7	167.2	165.5	163.4	162.4	161.3	158.7	153.6	145.7
Petrol	177.4	175.3	173.5	171.7	170.0	168.1	164.9	161.6	156.6	147.6
Diesel	160.3	159.7	158.1	157.7	156.2	156.5	157.9	156.3	151.2	145.3
AFV	208.0	207.4	179.2	164.7	147.9	149.4	151.1	140.0	137.0	125.8

Table 2: Share of fuel type in new passenger cars (EU27)

%	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Diesel	31.0	35.9	40.7	44.4	47.9	49.1	50.3	51.9	51.3	45.1
Petrol	68.9	64.0	59.2	55.5	51.9	50.7	49.4	47.3	47.4	51.1
Petrol-LPG	0.00	0.01	0.04	0.01	0.02	0.08	0.23	0.59	1.14	3.61
Other AFV	0.11	0.10	0.09	0.10	0.14	0.17	0.10	0.14	0.16	0.14

Chart 1: Evolution of CO<sub>2</sub> emissions from new passenger cars by fuel (EU27)

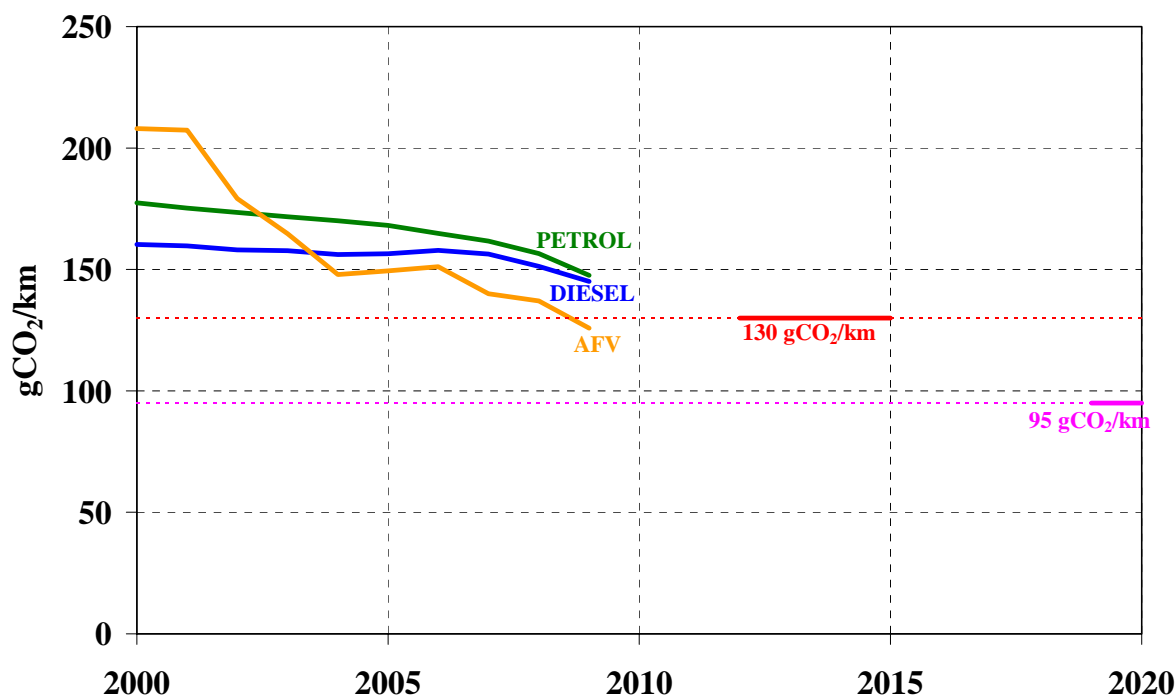


Table 3: Average CO<sub>2</sub> emissions (gCO<sub>2</sub>/km) from new passenger cars by region

EU aggregate <sup>4</sup>	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
EU27								158.7	153.6	145.7
EU25					163.4	162.4	161.3	158.7	153.4	145.6
EU15	172.2	169.7	167.2	165.5	163.7	162.6	161.5	158.8	153.3	145.2
EU12								157.8	156.8	154.2
EU10					157.2	158.1	157.3	157.7	155.5	153.0

The EU15 accounts for the vast majority of new passenger car registrations (94.6% in 2009). New cars in the EU15 are on average emitting 9 gCO<sub>2</sub>/km less than new cars in the EU12. While the EU15 average improved by 8.1 grams in 2009, the EU10 average improved by only 2.5 grams. The observation from previous monitoring reports, that new passenger cars registered in the EU15 have lower CO<sub>2</sub> emissions than new passenger cars in the EU10, is re-

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EU15 includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and UK (excluding Northern Ireland).

EU10 includes Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

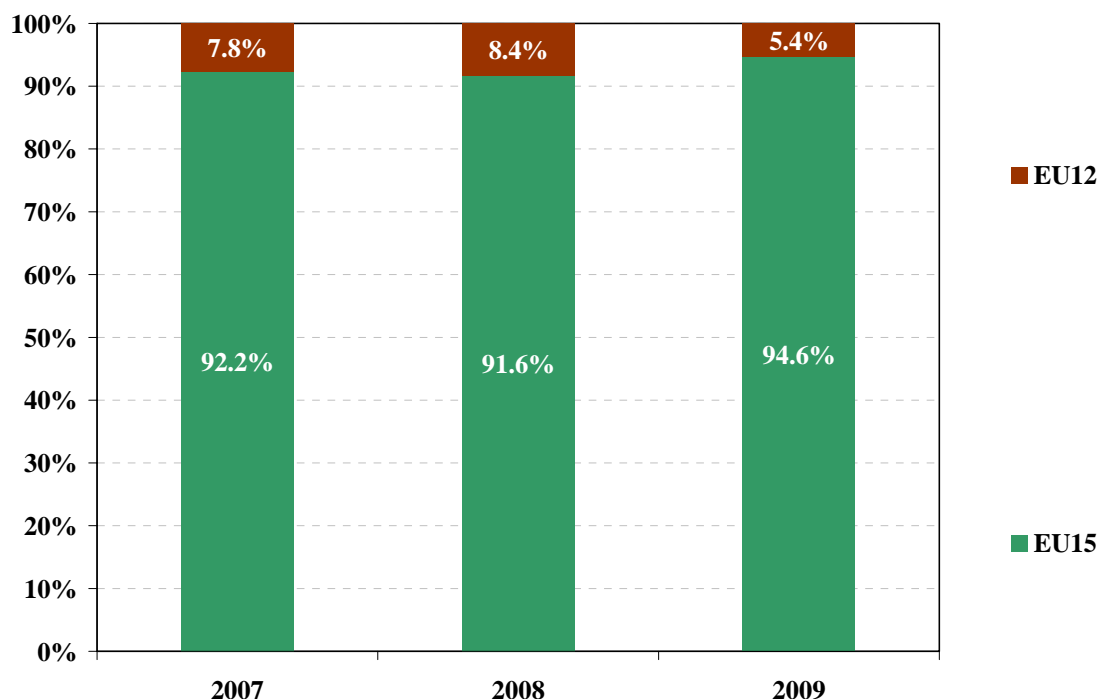
EU12 includes EU10, Bulgaria and Romania.

EU25 includes EU15 and EU10.

EU27 includes EU15 and EU12.

confirmed in 2009. However, it is not clear at this stage if this can be attributed to a permanent behavioural change of citizens in the EU15, or if this is one of the effects of the financial and economic crisis which started in 2008. Data are also influenced by various scrappage schemes implemented in several countries in 2009.

Chart 2: Registrations of new passenger cars by region in year 2009



### 2.3. Other car characteristics: engine power, engine capacity and mass

The average engine power of new diesel and petrol powered passenger cars had been increasing until 2007, it remained constant in 2008 and decreased in 2009. The average engine power of petrol powered vehicles decreased by 4 kW and offset the observed growth during last 7 years. Diesel powered vehicles decreased only by 2 kW to the levels of 2006. The 2009 data for the average engine power of AFV confirm the decreasing trend of previous years. The huge influence of petrol-LPG vehicles in Italy is the main driving factor for determining the average engine power of AFV.

Table 4: Average engine power of new passenger cars by fuel

kW	2002	2003	2004	2005	2006	2007	2008	2009
All fuels	77	79	80	81	83	84	84	80
Petrol	75	76	76	76	77	78	78	74
Diesel	81	82	83	85	89	91	91	89
AFV	77	74	69	69	69	61	61	58

The average engine capacity of new passenger cars in 2009 has seen a significant drop in 2009 by 83 cm<sup>3</sup>. Petrol powered vehicles observed the highest decrease (by 5% or by 77 cm<sup>3</sup>). The decrease in engine capacity of diesel powered vehicles is continuing and amounts to 37 cm<sup>3</sup> in 2009 (-2%). The engine size difference between petrol and diesel powered vehicles was decreasing until 2005 when it reached 313 cm<sup>3</sup> and since then it is widening again, and in 2009 the difference reached 378 cm<sup>3</sup>.

Table 5: Average engine capacity of new passenger cars by fuel

cm <sup>3</sup>	2001	2002	2003	2004	2005	2006	2007	2008	2009
All fuels	1714	1731	1743	1730	1726	1724	1729	1703	1620
Petrol	1560	1570	1572	1571	1573	1561	1556	1531	1454
Diesel	1981	1961	1948	1904	1886	1885	1892	1869	1832
AFV	1602	1672	1628	1581	1561	1562	1424	1387	1328

The average mass of new passenger cars registered in the EU in 2009 decreased by 36 kg. The difference between petrol and diesel vehicles has been increasing slowly but constantly since 2004 (226 kg) and in 2009 it reached 292 kg. The average mass decreased by 10 kg for diesel vehicles in 2009. On the other hand, new petrol powered vehicles became on average lighter by 22 kg and alternative fuel vehicles by 68 kg. The observed decreases are mainly due to a consumer shift to smaller segments of vehicles (known as A and B segment) as a consequence of the financial/economic crisis and the design of the scrappage schemes in operation during 2009. Data before 2004 are not shown in the table due to problems with Member State reporting of mass during that period of time. For data before 2004 as well as detailed explanations of the origin of the mass data and all other mass related notes see Table 2 in the Annex to report COM(2009)9 final.

Table 6: Average mass of new passenger cars by fuel

kg	2004	2005	2006	2007	2008	2009
All fuels	1347	1356	1372	1379	1373	1337
Petrol	1237	1235	1238	1235	1228	1206
Diesel	1463	1479	1501	1510	1508	1498
Alter. fuel	1415	1404	1392	1271	1237	1169

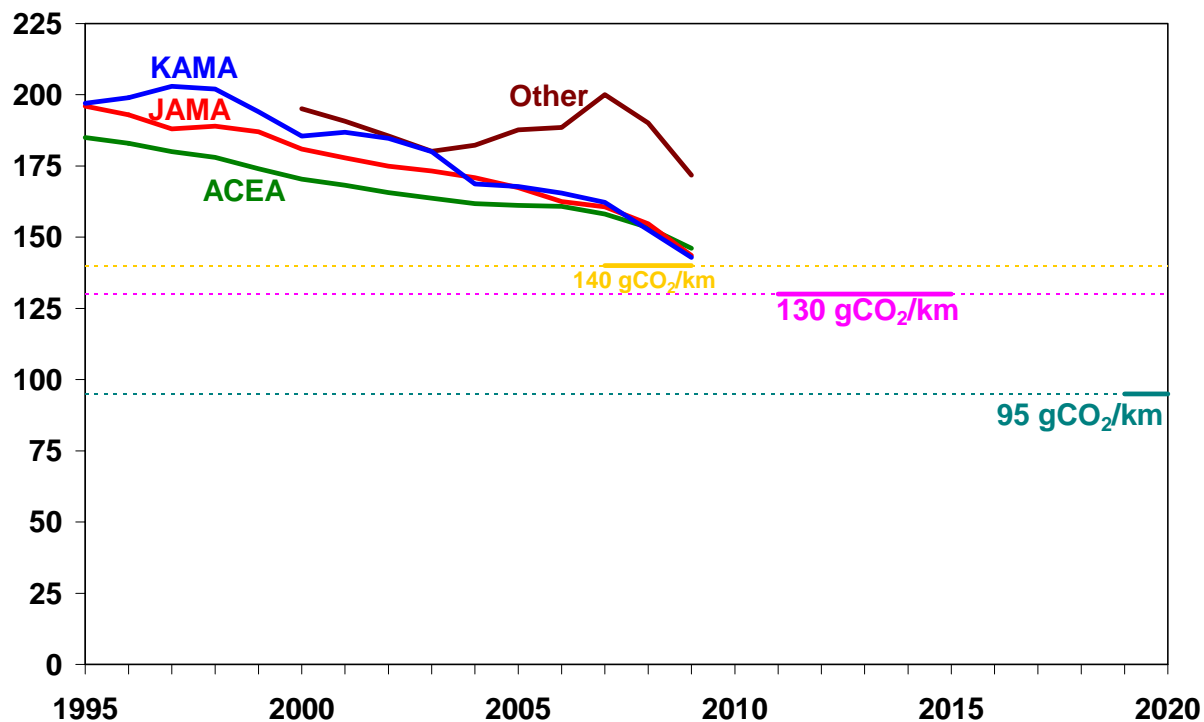
## 2.4. Monitoring data by association

For reasons of continuity with previous reports, data in this section are presented per vehicle manufacturer association. In 2009, CO<sub>2</sub> emissions from new passenger cars decreased for each association. In comparison to 2008, ACEA decreased its average emissions by 7.3 grams, JAMA by 11.2 grams, KAMA by 9.7 grams and other manufacturers on average by 18.4 grams. Both, KAMA and JAMA, had lower average emissions from new passenger cars in 2009 than ACEA while the situation was the reverse in 2007.

Table 7: Average CO<sub>2</sub> emissions from new passenger cars by association

gCO <sub>2</sub> /km	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
ACEA	170.4	168.2	165.6	163.7	161.8	161.1	160.8	158.1	153.4	146.2
JAMA	180.9	177.9	174.9	173.3	170.9	167.4	162.5	160.6	154.7	143.6
KAMA	185.5	186.8	184.7	180.0	168.7	167.8	165.5	162.2	152.6	142.8
Other	195.1	190.8	185.6	180.2	182.3	187.6	188.5	200.0	190.1	171.8

Chart 3: Evolution of CO<sub>2</sub> emissions from new passenger cars by association





The average mass of new passenger cars decreased for all manufacturers in 2009 between 36 and 46 kg. The average mass of a new passenger car from JAMA is 70 kg less than an average new car from ACEA. In the last 5 years, average emissions decreased by 10-16% for all associations while average mass changed between 0 and -2% (and vehicle power on average has not changed since 2004). This clearly indicates that specific CO<sub>2</sub> emissions have been reduced without any significant downsizing of vehicle fleet.

Table 8: Average mass of new passenger cars by association

kg	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
ACEA	1 351	1 369	1 418	1 407	1 355	1 365	1 380	1 386	1 384	1 348
JAMA	1 308	1 379	1 375	1 380	1 310	1 309	1 322	1 335	1 315	1 278
KAMA	1 295	1 366	1 447	1 446	1 298	1 341	1 383	1 379	1 336	1 290
Other	1 363	1 288	1 302	1 279	1 264	1 258	1 309	1 383	1 291	1 251

The effect of the current financial crisis, economic downturn as well as the scrappage schemes is influencing the number of new passenger car registrations for each association during 2008 and 2009. When compared to 2007 (the highest number of registration in the last 10 years), there was a decrease of 7.8% in 2008 and of 9.9% in 2009. When comparing 2009 to 2008, there was an increase of 9.8% in registrations of KAMA while at the same time the registrations of ACEA and JAMA fell by 2.2% and 7.4% respectively. ACEA is still, by far, the major player on the European market, keeping its share at around 81% of all new registrations for the last 5 years.

Table 9: Registrations of new passenger cars by association (in thousands)

'000	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
ACEA	10 864	11 088	11 603	11 472	12 164	12 027	12 121	12 473	11 599	11 344
JAMA	1 542	1 301	1 502	1 704	2 002	2 058	2 156	2 252	2 033	1 883
KAMA	415	322	325	437	630	736	711	754	644	707
Other <sup>5</sup>	20	50	70	69	58	37	22	27	23	40
Total <sup>6</sup>	12 840	12 761	13 500	13 682	14 853	14 858	15 010	15 505	14 299	13 975

### 3. Statistical annex with data by Member State

Empty cells indicate that either data have not been submitted by the Member State concerned or, due to submitted data implausibility, it is not appropriate to show the value.

<sup>5</sup> "Other" includes non-identified new passenger cars (vehicles for which Members States did not report correctly the required information)

<sup>6</sup> Total registration of new passenger cars as covered by reporting EU Member States

Table 10: Registration of new passenger cars by Member State [in thousands]

'000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	295	280	300	311	308	309	298	294	319
Belgium	497	468	459	485	480	526	525	536	475
Bulgaria							86	91	21
Cyprus				20	18	20	25	24	16
Czech Rep.				115	105	107	126	134	159
Denmark	97	113	102	124	147	154	160	148	111
Estonia				17	20	25	31	24	10
Finland	106	113	145	141	146	143	123	137	89
France	2 228	2 120	1 988	1 996	2 059	1 986	2 050	2 037	2 259
Germany	3 342	3 122	3 237	3 267	3 319	3 445	3 126	3 067	3 786
Greece	245	242	203	264	274	279	294	279	221
Hungary				230	199	193	167	163	66
Ireland	117	152	146	154	171	177	186	151	56
Italy	2 430	2 278	2 244	2 264	2 237	2 325	2 494	2 163	2 160
Latvia				11	16	25	31	19	5
Lithuania				9	11	15	21	22	7
Luxembourg	22	44	44	48	49	51	51	52	47
Malta				4	7	6	6	5	6
Netherlands	526	507	487	479	452	478	494	493	396
Poland				297	230	223	264	305	221
Portugal		232	194	202	208	199	204	215	159
Romania							313	286	115
Slovakia					45	65	65	57	70
Slovenia				37	64	62	69	72	60
Spain	400	969	1 319	1 606	1 640	1 622	1 606	1 165	964
Sweden	223	249	257	260	269	278	300	248	209
UK	2 232	2 611	2 558	2 512	2 386	2 295	2 390	2 112	1 968

Table 11: Average mass of new passenger cars by Member State [in kg]

kg	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	1 314	1 335	1 426	1 432	1 435	1 449	1 445	1 431	1 385
Belgium	1 288	1 319	1 361	1 375	1 396	1 407	1 423	1 425	1 406
Bulgaria									
Cyprus				1 205	1 277	1 316	1 354	1 372	1 367
Czech Rep.				1 704	1 242	1 247	1 261	1 275	1 335
Denmark		1 306	1 325	1 327	1 324	1 328	1 370	1 320	1 313
Estonia				1 349	1 408	1 433	1 465	1 456	1 471
Finland	1 752	1 759	1 336	1 355	1 381	1 401	1 437	1 442	1 447
France	1 254	1 280	1 305	1 327	1 341	1 349	1 375	1 387	1 326
Germany	1 332	1 352	1 381	1 408	1 412	1 424	1 433	1 425	1 347
Greece	1 172	1 223	1 262	1 277	1 287	1 304	1 314	1 311	1 423
Hungary				1 182	1 203	1 237	1 264	1 288	1 330
Ireland	1 248	1 276	1 265	1 314	1 341	1 372	1 441	1 440	1 440
Italy	1 604	1 632	1 649	1 259	1 277	1 294	1 287	1 285	1 255
Latvia				1 452	1 445	1 468	1 502	1 498	1 535
Lithuania				1 433	1 448	1 483	1 481	1 467	1 486
Luxembourg	1 834	1 851	1 442	1 471	1 487	1 504	1 498	1 490	1 462
Malta								1 317	1 182
Netherlands	1 260	1 264	1 301	1 314	1 337	1 332	1 350	1 324	1 295
Poland				1 181	1 242	1 271	1 304	1 260	1 261
Portugal		1 229	1 254	1 295	1 329	1 352	1 365	1 352	1 344
Romania							1 268	1 286	1 291
Slovakia					1 174				
Slovenia				1 246	1 305	1 316	1 340	1 350	1 346
Spain	1 266	1 725	1 317	1 335	1 374	1 395	1 416	1 400	1 394
Sweden	1 448	1 454	1 472	1 467	1 470	1 488	1 503	1 488	1 490
UK	1 347	1 356	1 392	1 387	1 374	1 390	1 394	1 380	1 358

Table 12: Average CO<sub>2</sub> emissions from new passenger cars by Member State

gCO <sub>2</sub> /km	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	165.6	164.4	163.8	161.9	162.1	163.7	162.9	158.1	150.2
Belgium	163.7	161.1	158.1	156.5	155.2	153.9	152.8	147.8	142.1
Bulgaria							171.6	171.5	172.1
Cyprus				173.4	173.0	170.1	170.3	165.6	160.7
Czech Rep.				154.0	155.3	154.2	154.2	154.4	155.5
Denmark	172.9	170.0	169.0	165.9	163.7	162.5	159.8	146.4	139.1
Estonia				179.0	183.7	182.7	181.6	177.4	170.3
Finland	178.1	177.2	178.3	179.8	179.5	179.2	177.3	162.9	157.0
France	159.8	156.8	155.0	153.1	152.3	149.9	149.4	140.1	133.5
Germany	179.5	177.4	175.9	174.9	173.4	172.5	169.5	164.8	154.0
Greece	166.5	167.8	168.9	168.8	167.4	166.5	165.3	160.8	157.4
Hungary				158.5	156.3	154.6	155.0	153.4	153.4
Ireland	166.6	164.3	166.7	167.6	166.8	166.3	161.6	156.8	144.4
Italy	158.3	156.6	152.9	150.0	149.5	149.2	146.5	144.7	136.3
Latvia				192.4	187.2	183.1	183.5	180.6	176.9
Lithuania				187.5	186.3	163.4	176.5	170.1	166.0
Luxembourg	177.0	173.8	173.5	169.7	168.6	168.2	165.8	159.5	152.5
Malta				148.8	150.5	145.9	147.8	146.9	135.7
Netherlands	174.0	172.4	173.5	171.0	169.9	166.7	164.8	156.7	146.9
Poland				154.1	155.2	155.9	153.7	153.1	151.6
Portugal		154.0	149.9	147.1	144.9	145.0	144.2	138.2	133.8
Romania							154.8	156.0	157.0
Slovakia					157.4	152.0	152.7	150.4	146.6
Slovenia				152.7	157.2	155.3	156.3	155.9	152.0
Spain	156.8	156.4	157.0	155.3	155.3	155.6	153.2	148.2	142.2
Sweden	200.2	198.2	198.5	197.2	193.8	188.6	181.4	173.9	164.5
UK	177.9	174.8	172.7	171.4	169.7	167.7	164.7	158.2	149.7

#### 4. Statistical annex with data by manufacturer

In the following table, the top 20 manufacturers based on the number of registrations in 2009 are shown. The complete database with data for all manufacturers is available on the Commission's website<sup>7</sup>. The table includes a column labelled "Target" corresponding to the specific emissions target calculated in accordance with the formula set out in Annex I to Regulation (EC) No 443/2009. It is, however, important to note that in meeting the target manufacturers may take account of the flexibilities set out in Regulation (EC) No 443/2009: super-credits (Article 5), biofuels (Article 6), pooling (Article 7), derogations (Article 11), and eco-innovations (Article 12).

Table 13: Selected data by manufacturer

	Mass [kg]	Target <sup>8</sup> gCO <sub>2</sub> /km	Average in 2009 gCO <sub>2</sub> /km	Registrations in 2009
VOLKSWAGEN	1 396	131	150.7	1 595 889
FORD	1 268	125	139.7	1 249 195
FIAT	1 134	119	130.1	1 206 362
RENAULT	1 308	127	137.7	1 079 984
PEUGEOT	1 292	126	133.6	966 013
CITROEN	1 328	128	137.9	850 753
OPEL	1 329	128	147.6	802 686
TOYOTA	1 277	126	131.7	691 518
BMW	1 526	137	151.2	680 768
DAIMLER	1 487	135	166.8	666 341
AUDI	1 605	141	160.2	586 764
SKODA	1 266	125	147.9	446 671
NISSAN	1 348	129	154.3	359 094
HYUNDAI	1 245	124	137.8	322 432
SEAT	1 253	125	140.1	307 811
KIA	1 384	131	145.9	240 986
VAUXHALL	1 321	128	151.9	233 400
HONDA	1 354	129	147.3	231 810
DACIA	1 182	121	151.9	226 618
MAZDA	1 251	124	149.5	199 299

<sup>7</sup> [http://ec.europa.eu/environment/air/transport/co2/co2\\_monitoring.htm](http://ec.europa.eu/environment/air/transport/co2/co2_monitoring.htm)

<sup>8</sup> Specific emissions target based on formulae in Annex I of Regulation (EC) 443/2009

Of all manufacturers that registered more than 10 000 vehicles in the European Union in 2009, one manufacturer already managed to fully meet the target set for year 2015: MARUTI (average mass: 932 kg, specific emissions target: 110 gCO<sub>2</sub>/km, average specific emissions in 2009: 104 gCO<sub>2</sub>/km, registrations in 2009: 14 095).