



Service contract to carry out economic analysis and business impact assessment of CO2 emissions reduction measures in the automotive sector

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**FINAL REPORT
Annexes**

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ANNEXES

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Final Report: June 2005 Release version

To respond to commercial sensitivity concerns, this released report has the manufacturers codified and the order of manufacturers presented differently for different sets of results.

ANNEX 1: Grouping companies for the purpose of analysis

This note summarises the agreed approach to the grouping of companies for the economic analysis, and notes some key points related to the choice. The agreement follows team proposal to DGENV and integration of their suggestions/comments.

The table below gives a summary of the main groups for the purposes of analysis, followed by some issues. In the table below there are now 21 'groups' – more or less looking at legal entities who could be the trading agents (with some grouping of very minor players – imports and minor EU manufacturers). While it would make the analysis easier to group further, we should follow business reality; further grouping would run the risk of inappropriate grouping (ie we do not wish to group manufactures together that are not under common ownership) or of subsequent problems for negotiations (ie we cannot drop some players from the analysis as other can then criticise the analysis). Hence we adopt the following groupings:

- ACEA: have 9 ACEA manufacturer groups
- JAMA: 7, as in the table
- KAMA: 2
- Others (e.g. small EU manufacturers with specialised vehicles)

Group
ACEA / Europe
Volkswagen
Renault
PSA Peugeot-Citroen
Porsche
GM
Ford
Fiat
DaimlerChrysler
BMW
JAMA
Toyota
Suzuki
Subaru
Nissan
Mitsubishi
Mazda
Honda
KAMA
Hyundai
Daewoo
Other
Other US imports
Small European manufacturers
Other imports

* these are the main ones which will be included in the analysis. Where others are very minor they will be excluded (eg specialist sports cars with very small volumes)- in short other names excluded unless new statistics suggest otherwise.

Notes/Issues

Note also that in operational terms, it is clear that the eventual CO₂ regime (including emissions trading and possible fines for non-compliance) would have to deal with the legal entities, the companies themselves, not ACEA, JAMA, etc – hence the reason for the groupings noted in the table above.

Note also that in terms of historical precedent, when there were import restrictions on Japanese cars the EU-Japan agreement was with JAMA as a whole. Thereafter, the Japanese companies sorted out among themselves the actual share of sales. While, this could also be done in terms of CO₂ emissions, for the purpose of our analysis we will assume that it is the market that decides – in other words companies trade, letting the price decide the shares, rather than developing an upfront quota system.

Note also that thus far imports into the EU have been largely from Japan and Korea, and from the existing major industry groups. However, over time this will probably change, with for example India and China emerging as export sources – and not necessarily just with companies that are captive elements of larger corporate groups. This is not worrying for the current analysis, though legislation would have to take this into account (note that this would not be a problem for the 120g/km target or the utility based CO₂ curve – only an issue for the % reduction target as the starting point would have to be agreed)

ANNEX 2: Allocation to Segments

SEG	Segments	S	M	L
1	Mini	x		
2	Small	x		
3	Lower Medium		x	
4	Medium		x	
5	Upper Medium			X
6	Luxury			X
7	Sport			X
M	MPV			X
T	HCV1= 3,501 - 5,99 t			X
U	HCV2= 6,0 - 15,99 t			X
V	HCV3= > = 16,0 t			X
W	Busse			X
A	Car Derived Vans			X
B	Micro Van			X
D	NCDV < 3,5 t			X
F	Off-Road			X
G	Pick-Up			X
J	Unspec.			X

Source: segments 1 to J from the Polk database

ANNEX 3: Detailed results from the cost assessment model (in addition to the results presented in Chapter 4).

Sales volumes per manufacturer per segment in 2002 (based on Polk Marketing Systems data) and estimated sales volumes for 2008 and 2012

2002	p,s	p,m	p,l	d,s	d,m	d,l	Total
<i>ACEA</i>	<i>2954777</i>	<i>2772735</i>	<i>547316</i>	<i>921759</i>	<i>3242307</i>	<i>771703</i>	<i>11210597</i>
A1	96339	193002	69778	0	145826	85875	590820
A2	63097	187506	147005	22664	224833	197855	842960
A3	460243	161066	15567	60118	215241	33174	945409
A4	362642	484348	98002	64491	380771	110860	1501114
A5	415917	494098	51967	61713	318152	26771	1368618
A6	0	0	21612	0	0	0	21612
A7	620215	384906	29820	297837	646454	88343	2067575
A8	420356	310756	45503	176754	395162	89853	1438384
A9	515968	557053	68062	238182	915868	138972	2434105
<i>JAMA</i>	<i>413116</i>	<i>553553</i>	<i>183982</i>	<i>36513</i>	<i>151640</i>	<i>121527</i>	<i>1460331</i>
J1	40360	80433	32236	0	5945	0	158974
J2	12792	75731	24723	225	24893	2468	140832
J3	101538	138179	10892	1154	55259	31895	338917
J4	0	48298	12949	0	14047	20672	95966
J5	1318	12701	6308	0	0	0	20327
J6	69813	12879	29583	0	414	11826	124515
J7	187295	185332	67291	35134	51082	54666	580800
<i>KAMA</i>	<i>84650</i>	<i>107631</i>	<i>39481</i>	<i>0</i>	<i>20409</i>	<i>37875</i>	<i>290046</i>
K1	55109	80774	38377	0	20409	37548	232217
K2	29541	26857	1104	0	0	327	57829
O1	0	94371	10498	0	29687	0	134556
O2	0	0	111	0	0	0	111
O3	914	5343	510	349	0	248	7364
Total 2002	3453457	3533633	781898	958621	3444043	931353	13103005

2008	p,s	p,m	p,l	d,s	d,m	d,l	Total
ACEA	2606477	2445894	552511	1508544	3939194	847654	11900275
A1	84983	170252	70367	17283	189421	94862	627167
A2	55659	165403	148246	35378	272303	217830	894819
A3	405991	142080	15698	146383	257377	36041	1003571
A4	319895	427255	98830	133515	491087	122882	1593463
A5	366890	435855	52406	140124	426364	31176	1452816
A6	0	0	22368	0	0	574	22942
A7	547106	339535	30072	427425	755275	95361	2194773
A8	370806	274125	45887	263038	475221	97796	1526874
A9	455147	491389	68637	345398	1072146	151134	2583852
JAMA	364419	488302	185536	112871	260275	138768	1550171
J1	35602	70952	32508	7240	20740	1711	168754
J2	11284	66804	24932	2534	40010	3932	149496
J3	89569	121891	10984	19441	83447	34435	359767
J4	0	42605	13058	0	23576	22631	101870
J5	1163	11204	6361	236	2279	335	21578
J6	61584	11361	29833	12524	2750	14124	132175
J7	165217	163486	67859	70896	87473	61601	616531
KAMA	74672	94944	39814	15186	40973	42301	307890
K1	48613	71253	38701	9886	36155	41895	246503
K2	26059	23691	1113	5300	4818	406	61387
O1	0	83247	10587	0	48443	557	142834
O2	0	0	112	0	0	6	118
O3	806	4713	514	534	959	290	7817
Total 2008	3046375	3117100	789074	1637135	4289844	1029576	13909104

2012	p,s	p,m	p,l	d,s	d,m	d,l	Total
ACEA	2423450	2274143	546780	1858658	4370206	910238	12383473
A1	79015	158296	69563	27403	215980	102375	652633
A2	51751	153789	146552	42983	301690	234388	931152
A3	377482	132103	15519	197320	283574	38321	1044320
A4	297432	397253	97700	174389	558377	133013	1658164
A5	341127	405249	51807	186474	491980	35169	1511806
A6	0	0	22694	0	0	1179	23873
A7	508688	315692	29728	505412	823571	100797	2283889
A8	344768	254876	45363	314813	524897	104154	1588871
A9	423187	456884	67852	409864	1170137	160842	2688766
JAMA	338830	454013	183416	157841	324959	154056	1613114
J1	33102	65970	32137	11480	29445	3472	175606
J2	10492	62113	24647	3887	49038	5389	155566
J3	83279	113332	10858	30156	100344	36405	374375
J4	0	39613	12909	0	29255	24229	106006
J5	1081	10417	6289	375	3613	679	22454
J6	57259	10563	29492	19858	4121	16249	137542
J7	153616	152006	67084	92084	109142	67633	641565
KAMA	69428	88277	39359	24078	53159	46090	320391
K1	45199	66249	38259	15675	45520	45610	256512
K2	24229	22028	1101	8403	7639	480	63879
O1	0	77401	10466	0	59636	1131	148634
O2	0	0	111	0	0	12	123
O3	750	4382	508	645	1520	329	8134
Total 2012	2832457	2898216	780640	2041222	4809479	1111855	14473869

2008/9: Net costs to manufacturers (technology costs excl. taxes & margins and excl. fuel savings), net costs to society (net costs excl. taxes, incl. fuel savings), and costs to the consumer (incl. taxes, incl. fuel savings) for reaching 140 g/km in 2008/9.

	interest rate for NPV =	net costs to manufacturers excl. taxes & margins, excl. fuel savings	net costs to society excl. taxes & margins, incl. fuel savings	net costs to society excl. taxes & margins, incl. fuel savings	costs to consumer incl. taxes & margins, incl. fuel savings	costs to consumer incl. taxes & margins, incl. fuel savings
			0.0%	5.0%	0.0%	5.0%
Petrol - Small	total [MEuro]	712	-1255	-709	-5132	-3313
	average [Euro/vehicle]	234	-412	-233	-1685	-1088
	average [Euro/g/km]	8				
	average [Euro/tonne]		-81	-46		
	marginal [Euro/g/km]	14			-49	-28
Petrol - Medium	total [MEuro]	857	-1831	-1085	-7246	-4760
	average [Euro/vehicle]	275	-587	-348	-2325	-1527
	average [Euro/g/km]	7				
	average [Euro/tonne]		-86	-51		
	marginal [Euro/g/km]	14			-49	-27
Petrol - Large	total [MEuro]	331	-669	-392	-2672	-1747
	average [Euro/vehicle]	420	-848	-496	-3386	-2214
	average [Euro/g/km]	8				
	average [Euro/tonne]		-85	-50		
	marginal [Euro/g/km]	15			-48	-26
Diesel - Small	total [MEuro]	234	-187	-70	-701	-377
	average [Euro/vehicle]	143	-114	-43	-428	-230
	average [Euro/g/km]	11				
	average [Euro/tonne]		-50	-19		
	marginal [Euro/g/km]	14			-30	-14
Diesel - Medium	total [MEuro]	701	-648	-274	-2346	-1307
	average [Euro/vehicle]	163	-151	-64	-547	-305
	average [Euro/g/km]	11				
	average [Euro/tonne]		-54	-23		
	marginal [Euro/g/km]	14			-30	-14
Diesel - Large	total [MEuro]	232	-155	-48	-611	-313
	average [Euro/vehicle]	225	-151	-46	-593	-304
	average [Euro/g/km]	12				
	average [Euro/tonne]		-45	-14		
	marginal [Euro/g/km]	14			-29	-13
Total	total [MEuro]	3067	-4745	-2578	-18708	-11816
	average [Euro/vehicle]	220	-341	-185	-1345	-850
	average [Euro/g/km]	9				
	average [Euro/tonne]		-75	-41		
	marginal [Euro/g/km]	14			-39	-21
	marginal [Euro/tonne]		-44	-10		

2008/9: CO₂-emission values for 2002 and 2008, and net costs to the manufacturers per car per manufacturer per segment for 2008.

manufacturer	2002							2008/2009														total techn. costs [Meuro]	average technology costs [Euro/veh.]	marginal technology costs [Euro/g/km]						
	CO ₂ -emission per car [g/km]						average CO ₂ emission [g/km]	CO ₂ -emission per car [g/km]						average CO ₂ emission [g/km]	average reduction per car 1 [g/km]	technology costs per car [Euro/vehicle]														
	p.S	p.M	p.L	d.S	d.M	d.L		p.S	p.M	p.L	d.S	d.M	d.L			p.S	p.M	p.L	d.S	d.M	d.L									
ACEA																														
A1	167	198	253	134	160	215	192.8	142	163	201	124	148	199	164.1	27.1	225	261	389	140	159	203	142.9	228	13.3						
A2	116	202	263	90	166	205	194.4	91	167	212	81	153	190	167.5	26.5	225	261	389	140	159	203	206.1	230	13.3						
A3	139	185	236	140	152	187	152.9	114	150	184	113	138	171	128.3	23.4	225	261	389	140	159	203	203.5	203	13.3						
A4	157	185	254	122	149	210	172.7	132	150	202	113	136	194	145.7	25.6	225	261	389	140	159	203	344.1	216	13.3						
A5	148	187	244	127	159	204	168.6	123	153	192	112	145	188	141.0	25.8	225	261	389	140	159	203	310.8	214	13.3						
A6			273			227	273.1			221			211	221.2	52.3			389			203	8.8	385	13.3						
A7	154	178	189	124	145	172	152.8	129	143	138	114	132	157	130.6	21.5	225	261	389	140	159	203	423.1	193	13.3						
A8	145	176	196	115	155	179	154.3	120	141	144	105	140	163	130.8	22.7	225	261	389	140	159	203	305.4	200	13.3						
A9	152	181	244	127	151	188	160.6	126	146	192	115	138	173	137.9	22.1	225	261	389	140	159	203	507.5	196	13.3						
JAMA																														
J1	141	174	217	118	158	207	166.9	114	137	162	104	137	185	134.5	30.9	257	302	444	165	196	268	167.2	271	15.8						
J2	147	175	228	137	162	232	171.7	120	138	173	107	141	211	140.5	29.3	257	302	444	165	196	268	93.5	260	15.8						
J3		173	239		146	268	198.5		135	184		129	245	164.6	32.6		302	444		196	268	29.3	288	15.8						
J4	133	175	217	106	134	180	171.0	105	137	161	94	126	160	132.0	36.8	257	302	444	165	196	268	50.7	301	15.8						
J5	174	196	216	141	171	188	192.8	146	158	160	127	152	165	155.7	34.8	257	302	444	165	196	268	43.5	291	15.8						
J6	144	173	200	115	196	205	166.2	116	136	145	103	136	181	130.6	34.0	257	302	444	165	196	268	38.9	294	15.8						
J7	167	236	227	134	196	188	228.8	140	198	171	122	180	168	184.0	41.2	257	302	444	165	196	268	7.1	328	15.8						
KAMA																														
K1	149	177	229	120	161	221	184.7	114	129	159	102	131	187	139.9	43.2	424	522	746	279	368	528	124.9	507	27.7						
K2	158	210	228	127	174	262	184.2	123	162	159	109	150	219	140.4	40.3	424	522	746	279	368	528	27.7	452	27.7						
Other																														
O1		179	185		163	153	176.0		146	135		146	155	145.0	29.0		245	367		142		31.1	218	12.3						
O2			205			170	205.2			191			172	190.0	15.8			133				0.01	126	5.5						
O3	131	189	277	176	157	298	190.9	134	177	279	156	158	293	180.0	8.2		93					0.44	56	4.9						
Average	149	184	238	123	153	201	166.3	123	148	184	111	139	184	140.1	25.1	234	275	420	143	163	225	315	220							

¹⁾ CO₂-reduction resulting from technical measures

2008/9: Retail price increase and net costs to the consumer per manufacturer per segment for reaching 140 g/km in 2008

manufacturer	2008/2009																					
	retail price increase per car [Euro/vehicle]						total price increase [Meuro]	average price increase [Euro]	net costs to consumer (NPV) interest rate = 0.0% incl. fuel savings [Euro]						average net costs [Euro]	net costs to consumer (NPV) interest rate = 5.0% incl. fuel savings [Euro]						average net costs [Euro]
	p.S	p.M	p.L	d.S	d.M	d.L			p.S	p.M	p.L	d.S	d.M	d.L		p.S	p.M	p.L	d.S	d.M	d.L	
ACEA																						
A1	450	523	779	279	319	406	285.8	456	-1664	-2293	-3314	-424	-541	-564	-1480	-1077	-1512	-2178	-229	-303	-295	-943
A2	450	523	779	279	319	406	412.1	461	-1664	-2293	-3314	-424	-541	-564	-1395	-1077	-1512	-2178	-229	-303	-295	-880
A3	450	523	779	279	319	406	406.9	405	-1664	-2293	-3314	-424	-541	-564	-1270	-1077	-1512	-2178	-229	-303	-295	-805
A4	450	523	779	279	319	406	688.2	432	-1664	-2293	-3314	-424	-541	-564	-1400	-1077	-1512	-2178	-229	-303	-295	-892
A5	450	523	779	279	319	406	621.7	428	-1664	-2293	-3314	-424	-541	-564	-1439	-1077	-1512	-2178	-229	-303	-295	-921
A6			779			406	17.7	770			-3314			-564	-3245			-2178			-295	-2131
A7	450	523	779	279	319	406	846.3	386	-1664	-2293	-3314	-424	-541	-564	-1108	-1077	-1512	-2178	-229	-303	-295	-694
A8	450	523	779	279	319	406	610.8	400	-1664	-2293	-3314	-424	-541	-564	-1193	-1077	-1512	-2178	-229	-303	-295	-751
A9	450	523	779	279	319	406	1015.0	393	-1664	-2293	-3314	-424	-541	-564	-1131	-1077	-1512	-2178	-229	-303	-295	-709
JAMA																						
J1	513	603	889	330	393	536	334.5	542	-1767	-2426	-3495	-473	-613	-690	-1712	-1134	-1585	-2279	-250	-334	-350	-1086
J2	513	603	889	330	393	536	186.9	520	-1767	-2426	-3495	-473	-613	-690	-1602	-1134	-1585	-2279	-250	-334	-350	-1014
J3		603	889		393	536	58.7	576		-2426	-3495		-613	-690	-1758		-1585	-2279		-334	-350	-1110
J4	513	603	889	330	393	536	101.4	601	-1767	-2426	-3495	-473	-613	-690	-2169	-1134	-1585	-2279	-250	-334	-350	-1400
J5	513	603	889	330	393	536	86.9	581	-1767	-2426	-3495	-473	-613	-690	-1991	-1134	-1585	-2279	-250	-334	-350	-1277
J6	513	603	889	330	393	536	77.7	588	-1767	-2426	-3495	-473	-613	-690	-1952	-1134	-1585	-2279	-250	-334	-350	-1247
J7	513	603	889	330	393	536	14.2	656	-1767	-2426	-3495	-473	-613	-690	-2466	-1134	-1585	-2279	-250	-334	-350	-1600
KAMA																						
K1	848	1045	1493	558	735	1056	249.8	1013	-2036	-2779	-3978	-552	-733	-875	-2108	-1236	-1718	-2460	-244	-325	-339	-1242
K2	848	1045	1493	558	735	1056	55.5	903	-2036	-2779	-3978	-552	-733	-875	-2120	-1236	-1718	-2460	-244	-325	-339	-1281
Other																						
O1		489	733		284		62.3	436		-2226	-3222		-499		-1705		-1472	-2125		-281		-1111
O2			266				0.03	252			-1010				-960			-656				-624
O3		186					0.88	112		-864					-521		-572					-345
Average	467	550	840	285	327	450	630	441	-1685	-2325	-3386	-428	-547	-593	-1345	-1088	-1527	-2214	-230	-305	-304	-850

2012: Overview of technology costs to manufacturers, excl. taxes & margins and excl. fuel savings.

net costs to manufacturers excl. taxes & margins excl. fuel savings	costs		per car	per manufac- turer	trading	trading volume [MEuro]	trading volume [g CO2/km]	per car	per manufac- turer	trading
fixed target	total	MEuro/y	14284	10136	8356	2572	5.42E+07	100%	71%	58%
	average	Euro/vehicle	987	700	577			100%	71%	58%
	average	Euro/(g/km)	48	34	28			100%	71%	58%
	marginal	Euro/(g/km)	53	49	47			100%	92%	90%
%reduction	total	MEuro/y	8554	8397	8356	201	4.24E+06	60%	59%	58%
	average	Euro/vehicle	591	580	577			60%	59%	58%
	average	Euro/(g/km)	29	28	28			60%	59%	58%
	marginal	Euro/(g/km)	49	47	47			92%	90%	90%
utility based fixed CO2(U) function $V^{2/3}P^{1/3}$	total	MEuro/y	10722	8752	8356	1288	2.71E+07	75%	61%	58%
	average	Euro/vehicle	741	605	577			75%	61%	58%
	average	Euro/(g/km)	36	29	28			75%	61%	58%
	marginal	Euro/(g/km)	51	48	47			96%	91%	90%
utility based optimised CO2(U) function $V^{2/3}P^{1/3}$	total	MEuro/y	10202	8947	8356	939	1.98E+07	71%	63%	58%
	average	Euro/vehicle	705	618	577			71%	63%	58%
	average	Euro/(g/km)	34	30	28			71%	63%	58%
	marginal	Euro/(g/km)	50	48	47			94%	91%	90%
utility based fixed CO2(U) function pan area (I*w)	total	MEuro/y	10818	9185	8356	1870	3.94E+07	76%	64%	58%
	average	Euro/vehicle	747	635	577			76%	64%	58%
	average	Euro/(g/km)	36	31	28			76%	64%	58%
	marginal	Euro/(g/km)	49	48	47			93%	91%	90%
utility based optimised CO2(U) function pan area (I*w)	total	MEuro/y	10758	9091	8356	991	2.09E+07	75%	64%	58%
	average	Euro/vehicle	743	628	577			75%	64%	58%
	average	Euro/(g/km)	36	30	28			75%	64%	58%
	marginal	Euro/(g/km)	49	48	47			93%	91%	90%

2012: Overview of costs to society, excl. taxes & margins, incl. Net Present Value of the fuel cost savings accounted for with an interest rate of 0% (upper table) and 5% (lower table).

net costs to society excl. taxes & margins incl. fuel savings	interest rate	0.0%		per car	per manufac- turer	trading	per car	per manufac- turer	trading
fixed target	total	MEuro/y		7773	3611	1837	100%	46%	24%
	average	Euro/vehicle		537	250	127	100%	46%	24%
	average	Euro/tonne		143	67	34	100%	46%	24%
	marginal	Euro/tonne		171	149	141	100%	87%	82%
% -reduction	total	MEuro/y		2067	1878	1837	27%	24%	24%
	average	Euro/vehicle		143	130	127	27%	24%	24%
	average	Euro/tonne		38	35	34	27%	24%	24%
	marginal	Euro/tonne		149	142	141	87%	83%	82%
utility based fixed CO ₂ (U) function $V^{2/3} \cdot P^{1/3}$	total	MEuro/y		4141	2231	1837	53%	29%	24%
	average	Euro/vehicle		286	154	127	53%	29%	24%
	average	Euro/tonne		76	41	34	53%	29%	24%
	marginal	Euro/tonne		160	145	141	93%	84%	82%
utility based optimised CO ₂ (U) function $V^{2/3} \cdot P^{1/3}$	total	MEuro/y		3639	2425	1837	47%	31%	24%
	average	Euro/vehicle		251	168	127	47%	31%	24%
	average	Euro/tonne		67	45	34	47%	31%	24%
	marginal	Euro/tonne		153	146	141	89%	85%	82%
utility based fixed CO ₂ (U) function pan area (I*w)	total	MEuro/y		4241	2662	1837	55%	34%	24%
	average	Euro/vehicle		293	184	127	55%	34%	24%
	average	Euro/tonne		78	49	34	55%	34%	24%
	marginal	Euro/tonne		150	146	141	88%	85%	82%
utility based optimised CO ₂ (U) function pan area (I*w)	total	MEuro/y		4171	2568	1837	54%	33%	24%
	average	Euro/vehicle		288	177	127	54%	33%	24%
	average	Euro/tonne		77	47	34	54%	33%	24%
	marginal	Euro/tonne		151	145	141	88%	85%	82%

net costs to society excl. taxes & margins incl. fuel savings	interest rate	5.0%		per car	per manufac- turer	trading	per car	per manufac- turer	trading
fixed target	total	MEuro/y		9579	5421	3645	100%	57%	38%
	average	Euro/vehicle		662	375	252	100%	57%	38%
	average	Euro/tonne		176	100	67	100%	57%	38%
	marginal	Euro/tonne		205	182	174	100%	89%	85%
% -reduction	total	MEuro/y		3867	3686	3645	40%	38%	38%
	average	Euro/vehicle		267	255	252	40%	38%	38%
	average	Euro/tonne		71	68	67	40%	38%	38%
	marginal	Euro/tonne		182	175	174	89%	85%	85%
utility based fixed CO ₂ (U) function $V^{2/3} \cdot P^{1/3}$	total	MEuro/y		5967	4040	3645	62%	42%	38%
	average	Euro/vehicle		412	279	252	62%	42%	38%
	average	Euro/tonne		110	74	67	62%	42%	38%
	marginal	Euro/tonne		193	178	174	94%	87%	85%
utility based optimised CO ₂ (U) function $V^{2/3} \cdot P^{1/3}$	total	MEuro/y		5460	4235	3645	57%	44%	38%
	average	Euro/vehicle		377	293	252	57%	44%	38%
	average	Euro/tonne		101	78	67	57%	44%	38%
	marginal	Euro/tonne		186	179	174	91%	88%	85%
utility based fixed CO ₂ (U) function pan area (I*w)	total	MEuro/y		6066	4471	3645	63%	47%	38%
	average	Euro/vehicle		419	309	252	63%	47%	38%
	average	Euro/tonne		112	82	67	63%	47%	38%
	marginal	Euro/tonne		183	179	174	90%	87%	85%
utility based optimised CO ₂ (U) function pan area (I*w)	total	MEuro/y		5999	4378	3645	63%	46%	38%
	average	Euro/vehicle		414	302	252	63%	46%	38%
	average	Euro/tonne		110	81	67	63%	46%	38%
	marginal	Euro/tonne		184	178	174	90%	87%	85%

2012: Overview of net costs to consumers, incl. taxes & margins, incl. Net Present Value of the fuel cost savings accounted for with an interest rate of 0% (upper table) and 5% (middle table), and vehicle retail price increase incl. taxes & margins (lower table).

net costs (NPV) to consumers incl. taxes & margins incl. fuel savings	interest rate	0.0%		per car	per manufac- turer	trading	per car	per manufac- turer	trading
fixed target	average	Euro/vehicle	594	13	-229	100%	2%	-39%	
	marginal	Euro/(g/km)	40	32	29	100%	80%	73%	
% -reduction	average	Euro/vehicle	-184	-224	-229	-31%	-38%	-39%	
	marginal	Euro/(g/km)	32	29	29	80%	73%	73%	
utility based fixed CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	average	Euro/vehicle	64	-176	-229	11%	-30%	-39%	
	marginal	Euro/(g/km)	36	30	29	89%	75%	73%	
utility based optimised CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	average	Euro/vehicle	2	-149	-229	0%	-25%	-39%	
	marginal	Euro/(g/km)	33	31	29	83%	77%	73%	
utility based fixed CO ₂ (U) function - pan area (I*w)	average	Euro/vehicle	79	-117	-229	13%	-20%	-39%	
	marginal	Euro/(g/km)	32	30	29	81%	77%	73%	
utility based optimised CO ₂ (U) function - pan area (I*w)	average	Euro/vehicle	65	-130	-229	11%	-22%	-39%	
	marginal	Euro/(g/km)	32	30	29	81%	76%	73%	

net costs (NPV) to consumers incl. taxes & margins incl. fuel savings	interest rate	5.0%		per car	per manufac- turer	trading	per car	per manufac- turer	trading
fixed target	average	Euro	977	398	155	100%	41%	16%	
	marginal	Euro/(g/km)	58	50	47	100%	86%	81%	
% -reduction	average	Euro	195	160	155	20%	16%	16%	
	marginal	Euro/(g/km)	50	47	47	86%	81%	81%	
utility based fixed CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	average	Euro	457	208	155	47%	21%	16%	
	marginal	Euro/(g/km)	54	48	47	93%	83%	81%	
utility based optimised CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	average	Euro	392	235	155	40%	24%	16%	
	marginal	Euro/(g/km)	51	49	47	89%	84%	81%	
utility based fixed CO ₂ (U) function - pan area (I*w)	average	Euro	472	267	155	48%	27%	16%	
	marginal	Euro/(g/km)	50	49	47	87%	84%	81%	
utility based optimised CO ₂ (U) function - pan area (I*w)	average	Euro	460	254	155	47%	26%	16%	
	marginal	Euro/(g/km)	51	49	47	87%	84%	81%	

vehicle retail price increase to consumer incl. taxes & margins, excl. fuel savings			per car	per manufac- turer	trading	per car	per manufac- turer	trading
	average	Euro/vehicle	1974	1401	1155	100%	71%	58%
% -reduction	total	MEuro	17108	16795	16711	60%	59%	58%
	average	Euro/vehicle	1182	1160	1155	60%	59%	58%
utility based fixed CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	total	MEuro	21443	17503	16711	75%	61%	58%
	average	Euro/vehicle	1482	1209	1155	75%	61%	58%
utility based optimised CO ₂ (U) function - $V^{2/3} \cdot P^{1/3}$	total	MEuro	20404	17895	16711	71%	63%	58%
	average	Euro/vehicle	1410	1236	1155	71%	63%	58%
utility based fixed CO ₂ (U) function - pan area (I*w)	total	MEuro	21637	18371	16711	76%	64%	58%
	average	Euro/vehicle	1495	1269	1155	76%	64%	58%
utility based optimised CO ₂ (U) function - pan area (I*w)	total	MEuro	21516	18183	16711	75%	64%	58%
	average	Euro/vehicle	1487	1256	1155	75%	64%	58%

2012: Technology costs to manufacturers (excl. taxes & margins, excl. fuel savings) per vehicle class.

		Uniform target 120 g/km			% reduction			CO ₂ (V ² /3*P ¹ /3) fixed			CO ₂ (V ² /3*P ¹ /3) optim.			CO ₂ (pan area) fixed			CO ₂ (pan area) optimised		
Total technology costs, average costs per car and marginal costs to the manufacturer		Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars ¹ (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)
Petrol Small	total [MEuro]	302	1296	-448	1506	1507	1484	4036	1454	3144	2616	1396	4710	2220	1365	1944	2660	1380	5926
	average [Euro]	107	457	-158	532	532	524	1425	513	1110	924	493	1663	784	482	686	939	487	2092
	marginal [Euro/g/km]	22	41	47	48	47	47	86	46	47	65	45	47	59	44	47	66	44	47
Petrol Medium	total [MEuro]	2938	2556	2649	1692	2054	2040	1976	2190	1759	2194	2247	1371	2257	2303	2042	2170	2277	1032
	average [Euro]	1014	882	914	584	709	704	682	756	607	757	775	473	779	795	705	749	786	356
	marginal [Euro/g/km]	58	51	47	43	48	47	45	49	47	48	49	47	49	49	47	48	49	47
Petrol Large	total [MEuro]	2994	1524	1926	539	757	715	818	920	550	1201	1040	-50	1964	1182	1410	1842	1141	549
	average [Euro]	3835	1953	2468	691	970	916	1047	1179	705	1538	1332	-63	2516	1514	1806	2359	1462	704
	marginal [Euro/g/km]	108	66	47	40	48	47	47	53	47	59	56	47	82	59	47	78	58	47
Diesel Small	total [MEuro]	-238	558	-1297	1147	705	774	1255	649	1059	584	620	2086	347	597	165	499	605	2599
	average [Euro]	-116	273	-635	562	345	379	615	318	519	286	304	1022	170	293	81	244	296	1273
	marginal [Euro/g/km]	14	39	47	65	47	47	68	44	47	42	43	47	32	42	47	38	42	47
Diesel Medium	total [MEuro]	3016	2775	2763	2880	2507	2491	1491	2561	1058	1811	2579	315	1525	2587	1105	1362	2570	-1656
	average [Euro]	627	577	574	599	521	518	310	532	220	377	536	65	317	538	230	283	534	-344
	marginal [Euro/g/km]	52	47	47	52	47	47	34	47	47	38	47	47	34	47	47	32	47	47
Diesel Large	total [MEuro]	5272	1427	2762	789	868	853	1147	977	785	1795	1065	-76	2506	1152	1690	2226	1119	-95
	average [Euro]	4741	1284	2484	710	781	767	1031	879	706	1615	958	-69	2254	1036	1520	2002	1007	-85
	marginal [Euro/g/km]	156	60	47	46	48	47	53	51	47	72	53	47	92	55	47	84	54	47
Total	total [MEuro]	14284	10136	8356	8554	8397	8356	10722	8752	8356	10202	8947	8356	10818	9185	8356	10758	9091	8356
	average [Euro]	987	700	577	591	580	577	741	605	577	705	618	577	747	635	577	743	628	577
	marginal [Euro/g/km]	53	49	47	49	47	47	51	48	47	50	48	47	49	48	47	49	48	47

¹) costs per segment based on an division of total deficit costs over the various segments on the basis of comparing to a fixed percentage reduction per car to all segments. This, however, does not yield correct deficits!!

2012: Total technology costs to manufacturers (excl. taxes & margins, excl. fuel savings) per manufacturer.

Total costs per manufacturer in MEuro's	Uniform target 120 g/km			% reduction			CO ₂ (V ² /3*P ¹ /3) fixed			CO ₂ (V ² /3*P ¹ /3) optim.			CO ₂ (pan area) fixed			CO ₂ (pan area) optimised		
	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)
ACEA																		
A1	1643	1424	1072	446	434	434	963	868	774	1036	990	644	1169	1092	906	1130	1050	629
A2	2908	2277	1666	635	629	628	1117	1001	952	1436	1257	640	1790	1505	1281	1665	1413	640
A3	397	170	37	534	538	538	539	508	507	412	405	712	377	354	324	402	385	803
A4	2018	1380	1343	1005	968	967	1474	1204	1193	1426	1247	1127	1559	1270	1251	1550	1255	1096
A5	1283	917	917	876	860	860	1187	1132	1112	1090	1075	1197	1073	1022	1016	1083	1038	1180
A6	203	202	100	21	21	21	75	75	58	100	100	39	144	144	84	137	137	57
A7	652	518	338	1268	1222	1222	1528	965	946	1087	839	1211	929	737	663	1039	772	1204
A8	608	368	235	848	832	831	686	553	506	556	503	624	507	466	386	528	481	639
A9	1702	1284	1273	1537	1516	1516	1628	1329	1322	1415	1318	1344	1371	1241	1225	1399	1235	1145
JAMA																		
J1	516	247	232	377	377	377	264	229	209	263	233	199	317	260	249	307	262	276
J2	529	244	243	236	237	237	294	230	229	311	233	223	349	235	234	336	234	220
J3	621	247	185	78	79	79	243	99	96	316	128	58	390	153	134	363	141	51
J4	82	50	37	99	95	95	31	27	-2	35	32	-18	50	42	24	47	41	4
J5	252	245	208	112	109	109	190	140	136	194	163	105	198	182	168	194	175	102
J6	81	34	22	77	75	75	66	41	32	52	39	37	61	51	46	63	53	86
J7	122	102	59	21	19	19	91	61	44	97	70	38	101	81	52	98	78	40
KAMA																		
K1	438	241	218	240	243	220	144	108	108	179	137	61	241	175	169	224	167	86
K2	95	65	56	68	64	55	123	119	84	108	104	96	103	98	74	107	103	104
Other																		
O1	109	104	104	75	76	74	60	50	39	70	61	10	69	64	59	64	60	-15
O2	0.2	0.2	0.2	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	0.1	0.1	0.1	0.1	0.1	-0.1
O3	26	14	12	2	2	-1	18	12	11	19	12	10	21	13	11	20	12	10
Average	14284	10136	8356	8554	8397	8356	10722	8752	8356	10202	8947	8356	10818	9185	8356	10758	9091	8356

2012: Average technology costs per car to manufacturers (excl. taxes & margins, excl. fuel savings) per manufacturer.

Average technology costs per car per manufacturer in Euro's	Uniform target 120 g/km			% reduction			CO ₂ (V ² /3*P ¹ /3) fixed			CO ₂ (V ² /3*P ¹ /3) optim.			CO ₂ (pan area) fixed			CO ₂ (pan area) optimised		
	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)
ACEA																		
A1	2517	2182	1642	684	665	665	1475	1330	1185	1588	1517	986	1791	1673	1388	1732	1608	964
A2	3123	2446	1789	682	675	675	1199	1075	1022	1542	1350	688	1923	1616	1376	1789	1517	688
A3	380	163	35	511	516	515	516	487	485	394	388	681	361	339	311	385	369	769
A4	1217	833	810	606	584	583	889	726	719	860	752	680	940	766	754	935	757	661
A5	849	607	606	579	569	569	785	748	735	721	711	792	710	676	672	716	686	781
A6	8514	8476	4177	865	882	880	3160	3156	2413	4180	4172	1645	6031	6025	3500	5728	5724	2373
A7	285	227	148	555	535	535	669	423	414	476	367	530	407	323	290	455	338	527
A8	383	232	148	534	523	523	432	348	318	350	316	393	319	294	243	332	303	402
A9	633	478	474	572	564	564	606	494	492	526	490	500	510	462	456	520	459	426
JAMA																		
J1	804	385	362	587	588	588	412	357	326	410	364	311	494	406	387	479	409	430
J2	1412	652	649	631	634	632	784	613	612	831	623	596	932	628	626	898	624	587
J3	5859	2333	1741	739	747	744	2293	933	907	2981	1209	544	3677	1439	1266	3423	1335	477
J4	466	284	209	563	543	539	178	155	-9	201	185	-104	285	239	138	270	233	21
J5	1617	1577	1335	718	700	699	1218	900	874	1248	1048	674	1274	1173	1080	1248	1122	654
J6	589	247	162	559	549	547	482	295	234	376	283	265	444	368	334	461	386	622
J7	5436	4550	2630	928	852	844	4065	2720	1963	4319	3120	1672	4480	3610	2315	4369	3489	1791
KAMA																		
K1	1708	939	850	937	949	857	563	423	423	698	535	237	941	683	657	875	650	336
K2	1492	1023	875	1057	1001	862	1924	1870	1316	1688	1631	1508	1608	1532	1158	1668	1613	1628
Other																		
O1	732	699	699	505	513	499	402	334	259	471	410	67	462	432	398	431	400	-104
O2	1345	1329	1325	197	177	-704	244	243	-440	393	391	-1208	731	730	633	667	666	-518
O3	3241	1750	1515	266	236	-107	2157	1420	1310	2316	1498	1221	2540	1547	1392	2472	1519	1188
Average	987	700	577	591	580	577	741	605	577	705	618	577	747	635	577	743	628	577

2012: Marginal technology costs (in Euro/(g/km)) to manufacturers (excl. taxes & margins, excl. fuel savings) per manufacturer.

Marginal costs per manufacturer in Euro's per g/km	Uniform target 120 g/km			% reduction			CO ₂ (V ^{2/3} *P ^{1/3}) fixed			CO ₂ (V ^{2/3} *P ^{1/3}) optim.			CO ₂ (pan area) fixed			CO ₂ (pan area) optimised		
	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)	Each car	Each manufacturer	All cars (trading)
ACEA																		
A1	102	103	47	50	48	47	79	74	47	82	81	47	86	87	47	84	84	47
A2	122	109	47	48	47	47	64	63	47	76	73	47	84	82	47	80	79	47
A3	31	25	47	47	46	47	47	45	47	38	39	47	35	36	47	37	38	47
A4	59	58	47	49	46	47	58	53	47	55	54	47	55	55	47	55	55	47
A5	52	49	47	49	47	47	57	56	47	53	54	47	50	52	47	51	53	47
A6	193	192	47	45	45	47	100	100	47	120	120	47	153	153	47	148	148	47
A7	30	29	47	51	47	47	53	41	47	43	38	47	38	35	47	41	36	47
A8	36	29	47	48	46	47	41	36	47	35	34	47	33	33	47	34	33	47
A9	44	43	47	50	48	47	50	44	47	45	44	47	42	42	47	43	42	47
JAMA																		
J1	46	38	47	50	48	47	40	36	47	37	37	47	39	39	47	39	39	47
J2	62	51	47	51	50	47	54	49	47	53	50	47	54	50	47	54	50	47
J3	145	104	47	51	51	47	80	58	47	94	68	47	106	76	47	102	72	47
J4	37	31	47	46	43	47	26	25	47	26	26	47	28	29	47	28	29	47
J5	85	82	47	53	50	47	72	58	47	74	64	47	74	68	47	73	66	47
J6	37	30	47	48	45	47	44	33	47	37	32	47	38	36	47	40	37	47
J7	175	153	47	58	53	47	144	109	47	150	119	47	154	131	47	152	128	47
KAMA																		
K1	77	68	47	70	68	47	53	47	47	56	52	47	61	58	47	60	57	47
K2	79	76	47	80	75	47	109	107	47	97	99	47	93	95	47	96	98	47
Other																		
O1	51	48	47	41	40	47	36	31	47	39	35	47	38	36	47	37	35	47
O2	52	51	47	11	11	47	13	13	47	19	19	47	32	32	47	30	30	47
O3	97	82	47	19	17	47	88	71	47	88	73	47	89	75	47	89	74	47
Average	53	49	47	49	47	47	51	48	47	50	48	47	49	48	47	49	48	47

2012: CO₂-emissions per car per manufacturer per segment

manufacturer	2008							2012							2012										
	CO ₂ -emission per car [g/km]							each car - uniform target							each car - % reduction										
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red		
ACEA																									
A1	142	163	201	124	148	199	164	120	120	120	120	120	120	120	27%	122	140	173	106	127	171	140	14%		
A2	91	167	212	81	153	190	167	120	120	120	120	120	120	120	28%	78	144	182	70	131	163	144	14%		
A3	114	150	184	113	138	171	128	120	120	120	120	120	120	6%	98	129	158	97	119	147	110	14%			
A4	132	150	202	113	136	194	146	120	120	120	120	120	120	18%	113	129	174	97	117	167	125	15%			
A5	123	153	192	112	145	188	141	120	120	120	120	120	120	15%	106	131	165	97	124	162	121	14%			
A6		221				211	221	120	120	120	120	120	120	46%			190			181	190	14%			
A7	129	143	138	114	132	157	131	120	120	120	120	120	120	8%	111	123	118	98	114	135	112	14%			
A8	120	141	144	105	140	163	131	120	120	120	120	120	120	8%	103	121	124	90	120	140	112	14%			
A9	126	146	192	115	138	173	138	120	120	120	120	120	120	13%	109	126	165	99	118	148	118	14%			
JAMA																									
J1	114	137	162	104	137	185	135	120	120	120	120	120	120	11%	98	118	139	89	118	159	115	14%			
J2	120	138	173	107	141	211	140	120	120	120	120	120	120	15%	103	118	148	92	121	181	121	14%			
J3		135	184			245	165	120	120	120	120	120	120	27%		116	158		111	211	142	14%			
J4	105	137	161	94	126	160	132	120	120	120	120	120	120	9%	91	118	139	81	108	137	113	15%			
J5	146	158	160	127	152	165	156	120	120	120	120	120	120	23%	126	136	138	109	131	142	134	14%			
J6	116	136	145	103	136	181	131	120	120	120	120	120	120	8%	100	117	125	89	117	155	112	14%			
J7	140	198	171	122	180	168	184	120	120	120	120	120	120	35%	120	170	147	105	155	145	157	15%			
KAMA																									
K1	114	129	159	102	131	187	140	120	120	120	120	120	120	14%	98	111	137	88	113	161	120	14%			
K2	123	162	159	109	150	219	140	120	120	120	120	120	120	15%	106	139	136	94	129	188	120	15%			
Other																									
O1		146	135		146	155	145	120	120	120	120	120	120	17%		125	116		125	133	125	14%			
O2			191			172	190	120	120	120	120	120	120	37%			164			147	163	14%			
O3	134	177	279	156	158	293	180	120	120	120	120	120	120	33%	115	152	240	134	136	252	154	14%			

manufacturer	2008							2012							2012										
	CO ₂ -emission per car [g/km]							each car - CO ₂ (V ^{2/3} *P ^{1/3}) fixed							each car - CO ₂ (V ^{2/3} *P ^{1/3}) optimised										
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red		
ACEA																									
A1	142	163	201	124	148	199	164	93.3	126	157	95.7	127	157	130	21%	99.9	125	148	102	126	148	127	22%		
A2	91	167	212	81	153	190	167	93.3	126	157	95.7	127	157	136	19%	99.9	125	148	102	126	148	132	21%		
A3	114	150	184	113	138	171	128	93.3	126	157	95.7	127	157	111	14%	99.9	125	148	102	126	148	113	12%		
A4	132	150	202	113	136	194	146	93.3	126	157	95.7	127	157	122	16%	99.9	125	148	102	126	148	121	17%		
A5	123	153	192	112	145	188	141	93.3	126	157	95.7	127	157	117	17%	99.9	125	148	102	126	148	118	16%		
A6		221				211	221	93.3	126	157	95.7	127	157	157	29%	99.9	125	148	102	126	148	148	33%		
A7	129	143	138	114	132	157	131	93.3	126	157	95.7	127	157	114	12%	99.9	125	148	102	126	148	116	11%		
A8	120	141	144	105	140	163	131	93.3	126	157	95.7	127	157	116	11%	99.9	125	148	102	126	148	117	10%		
A9	126	146	192	115	138	173	138	93.3	126	157	95.7	127	157	120	13%	99.9	125	148	102	126	148	120	13%		
JAMA																									
J1	114	137	162	104	137	185	135	93.3	126	157	95.7	127	157	121	10%	99.9	125	148	102	126	148	121	10%		
J2	120	138	173	107	141	211	140	93.3	126	157	95.7	127	157	121	14%	99.9	125	148	102	126	148	121	14%		
J3		135	184			245	165	93.3	126	157	95.7	127	157	138	16%	99.9	125	148	102	126	148	133	19%		
J4	105	137	161	94	126	160	132	93.3	126	157	95.7	127	157	125	6%	99.9	125	148	102	126	148	123	6%		
J5	146	158	160	127	152	165	156	93.3	126	157	95.7	127	157	130	17%	99.9	125	148	102	126	148	127	18%		
J6	116	136	145	103	136	181	131	93.3	126	157	95.7	127	157	118	9%	99.9	125	148	102	126	148	119	9%		
J7	140	198	171	122	180	168	184	93.3	126	157	95.7	127	157	134	27%	99.9	125	148	102	126	148	131	29%		
KAMA																									
K1	114	129	159	102	131	187	140	93.3	126	157	95.7	127	157	129	8%	99.9	125	148	102	126	148	127	9%		
K2	123	162	159	109	150	219	140	93.3	126	157	95.7	127	157	111	21%	99.9	125	148	102	126	148	113	20%		
Other																									
O1		146	135		146	155	145	93.3	126	157	95.7	127	157	129	11%	99.9	125	148	102	126	148	127	12%		
O2			191			172	190	93.3	126	157	95.7	127	157	157	17%	99.9	125	148	102	126	148	148	22%		
O3	134	177	279	156	158	293	180	93.3	126	157	95.7	127	157	124	31%	99.9	125	148	102	126	148	123	32%		

manufacturer	2008								2012								2012							
	CO ₂ -emission per car [g/km]								each car - CO ₂ (pan area) fixed								each car - CO ₂ (pan area) optimised							
	p,S	p,M	p,L	d,S	d,M	d,L	avg		p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red
ACEA																								
A1	142	163	201	124	148	199	164	102	124	134	105	127	140	125	24%	99.7	125	136	103	128	143	126	23%	
A2	91	167	212	81	153	190	167	102	124	134	105	127	140	129	23%	99.7	125	136	103	128	143	130	22%	
A3	114	150	184	113	138	171	128	102	124	134	105	127	140	114	11%	99.7	125	136	103	128	143	113	12%	
A4	132	150	202	113	136	194	146	102	124	134	105	127	140	121	17%	99.7	125	136	103	128	143	121	17%	
A5	123	153	192	112	145	188	141	102	124	134	105	127	140	119	16%	99.7	125	136	103	128	143	118	16%	
A6			221			211	221	102	124	134	105	127	140	134	39%	99.7	125	136	103	128	143	136	38%	
A7	129	143	138	114	132	157	131	102	124	134	105	127	140	117	10%	99.7	125	136	103	128	143	117	11%	
A8	120	141	144	105	140	163	131	102	124	134	105	127	140	118	10%	99.7	125	136	103	128	143	118	10%	
A9	126	146	192	115	138	173	138	102	124	134	105	127	140	120	13%	99.7	125	136	103	128	143	120	13%	
JAMA																								
J1	114	137	162	104	137	185	135	102	124	134	105	127	140	119	11%	99.7	125	136	103	128	143	119	11%	
J2	120	138	173	107	141	211	140	102	124	134	105	127	140	120	14%	99.7	125	136	103	128	143	121	14%	
J3		135	184		129	245	165	102	124	134	105	127	140	130	21%	99.7	125	136	103	128	143	131	20%	
J4	105	137	161	94	126	160	132	102	124	134	105	127	140	121	8%	99.7	125	136	103	128	143	122	8%	
J5	146	158	160	127	152	165	156	102	124	134	105	127	140	125	19%	99.7	125	136	103	128	143	126	19%	
J6	116	136	145	103	136	181	131	102	124	134	105	127	140	116	11%	99.7	125	136	103	128	143	116	11%	
J7	140	198	171	122	180	168	184	102	124	134	105	127	140	127	31%	99.7	125	136	103	128	143	128	31%	
KAMA																								
K1	114	129	159	102	131	187	140	102	124	134	105	127	140	124	11%	99.7	125	136	103	128	143	125	11%	
K2	123	162	159	109	150	219	140	102	124	134	105	127	140	114	19%	99.7	125	136	103	128	143	113	19%	
Other																								
O1		146	135		146	155	145	102	124	134	105	127	140	126	13%	99.7	125	136	103	128	143	127	12%	
O2			191			172	190	102	124	134	105	127	140	135	29%	99.7	125	136	103	128	143	137	28%	
O3	134	177	279	156	158	293	180	102	124	134	105	127	140	123	32%	99.7	125	136	103	128	143	123	32%	

2012: CO₂-emissions per car per manufacturer per segment (cont.)

manufacturer	2008							2012							2012													
	CO ₂ -emission per car [g/km]							per manufacturer - uniform target							per manufacturer - % reduction													
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	red	p,S	p,M	p,L	d,S	d,M	d,L	avg	red					
ACEA																												
A1	142	163	201	124	148	199	164	106	115	134	102	114	147	120	27%	124	139	167	112	130	170	141	14%					
A2	91	167	212	81	153	190	167	55	117	142	59	117	137	120	28%	74	143	178	70	135	162	143	14%					
A3	114	150	184	113	138	171	128	107	141	170	105	131	158	120	6%	96	127	151	99	121	144	110	14%					
A4	132	150	202	113	136	194	146	110	120	161	100	115	161	120	18%	114	126	169	102	119	167	125	14%					
A5	123	153	192	112	145	188	141	104	128	157	99	126	159	120	15%	105	129	159	100	126	160	121	14%					
A6			221			211	221			119			138	120	46%			190			187	189	14%					
A7	129	143	138	114	132	157	131	119	130	119	108	122	139	120	8%	111	118	104	102	114	128	112	14%					
A8	120	141	144	105	140	163	131	111	128	126	99	129	145	120	8%	103	117	112	94	122	135	112	14%					
A9	126	146	192	115	138	173	138	110	125	162	104	121	147	120	13%	108	122	158	103	119	144	118	14%					
JAMA																												
J1	114	137	162	104	137	185	135	103	121	140	96	124	165	120	11%	98	115	132	93	120	159	115	14%					
J2	120	138	173	107	141	211	140	103	114	140	96	122	184	120	15%	103	115	141	96	122	185	120	14%					
J3		135	184			245	165		90	121		97	196	120	27%		112	152		112	218	141	14%					
J4	105	137	161	94	126	160	132	97	125	145	89	117	145	120	9%	91	118	134	85	112	137	113	14%					
J5	146	158	160	127	152	165	156	119	121	109	111	125	124	120	23%	129	135	129	117	135	138	133	14%					
J6	116	136	145	103	136	181	131	109	125	130	98	126	164	120	8%	102	116	117	94	119	155	112	14%					
J7	140	198	171	122	180	168	184	95	137	87	95	140	107	120	35%	122	174	138	111	164	141	158	14%					
KAMA																												
K1	114	129	159	102	131	187	140	99	108	130	93	115	164	120	14%	99	108	129	93	115	164	120	14%					
K2	123	162	159	109	150	219	140	106	137	124	99	134	186	120	15%	106	138	125	99	134	187	120	14%					
Other																												
O1		146	135		146	155	145		120	99		124	98	120	17%		124	106		128	103	124	14%					
O2			191			172	190			119			132	120	37%			161			180	163	14%					
O3	134	177	279	156	158	293	180	77	114	171	120	117	230	120	33%	106	152	222	138	144	269	154	14%					

manufacturer	2008							2012							2012												
	CO ₂ -emission per car [g/km]							per manufacturer - CO ₂ (V ² /3 ³ *P ¹ /3) fixed							per manuf. - CO ₂ (V ² /3 ³ *P ¹ /3) optimised												
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	red	p,S	p,M	p,L	d,S	d,M	d,L	avg	red				
ACEA																											
A1	142	163	201	124	148	199	164	114	126	150	107	121	158	130	21%	112	123	146	106	119	155	127	22%				
A2	91	167	212	81	153	190	167	68	135	167	67	129	154	136	19%	65	130	161	65	126	150	132	21%				
A3	114	150	184	113	138	171	128	97	128	152	99	121	145	111	14%	99	131	157	101	124	148	113	12%				
A4	132	150	202	113	136	194	146	112	123	164	101	116	163	122	16%	111	122	164	101	116	163	121	17%				
A5	123	153	192	112	145	188	141	102	124	153	98	123	156	117	17%	103	125	154	98	124	157	118	16%				
A6			221			211	221			157			164	157	29%			147			157	148	33%				
A7	129	143	138	114	132	157	131	114	122	109	104	116	131	114	12%	115	124	112	105	118	133	116	11%				
A8	120	141	144	105	140	163	131	107	123	120	97	126	141	116	11%	108	124	121	97	127	142	117	10%				
A9	126	146	192	115	138	173	138	110	124	161	104	121	146	120	13%	110	124	161	104	121	147	120	13%				
JAMA																											
J1	114	137	162	104	137	185	135	103	122	141	96	124	166	121	10%	103	122	141	96	124	166	121	10%				
J2	120	138	173	107	141	211	140	104	115	141	97	123	185	121	14%	104	115	141	97	123	185	121	14%				
J3		135	184			245	165		109	147		109	214	138	16%		104	140		106	210	133	19%				
J4	105	137	161	94	126	160	132	101	130	151	91	121	150	125	6%	100	129	150	90	120	149	123	6%				
J5	146	158	160	127	152	165	156	126	131	123	115	132	134	130	17%	124	129	120	114	130	131	127	18%				
J6	116	136	145	103	136	181	131	108	123	127	97	124	162	118	9%	108	123	128	97	125	163	119	9%				
J7	140	198	171	122	180	168	184	105	151	106	101	149	119	134	27%	102	147	101	99	147	116	131	29%				
KAMA																											
K1	114	129	159	102	131	187	140	107	118	143	97	122	174	129	8%	105	115	140	96	120	172	127	9%				
K2	123	162	159	109	150	219	140	97	126	108	93	126	175	111	21%	99	129	112	95	128	178	113	20%				
Other																											
O1		146	135		146	155	145		130	113		132	108	129	11%		127	110		130	106	127	12%				
O2			191			172	190			156			164	157	17%			147			154	148	22%				
O3	134	177	279	156	158	293	180	81	119	177	122	120	235	124	31%	80	118	176	122	119	234	123	32%				

manufacturer	2008							2012							2012								
	CO ₂ -emission per car [g/km]							per manufacturer - CO ₂ (pan area) fixed							per manuf. - CO ₂ (pan area) optimised								
	p,S	p,M	p,L	d,S	d,M	d,L	avg	CO ₂ -emission per car [g/km]							avg	CO ₂ -emission per car [g/km]							avg
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	red	p,S	p,M	p,L	d,S	d,M	d,L	avg	red
ACEA																							
A1	142	163	201	124	148	199	164	111	121	143	105	118	153	125	24%	111	122	144	105	118	154	126	23%
A2	91	167	212	81	153	190	167	62	127	156	63	124	146	129	23%	63	128	158	64	125	148	130	22%
A3	114	150	184	113	138	171	128	101	133	159	102	125	150	114	11%	100	132	158	101	124	149	113	12%
A4	132	150	202	113	136	194	146	111	122	163	100	116	162	121	17%	111	122	163	101	116	162	121	17%
A5	123	153	192	112	145	188	141	103	126	155	99	124	157	119	16%	103	126	155	99	124	157	118	16%
A6			221			211	221			134			148	134	39%			136			149	136	38%
A7	129	143	138	114	132	157	131	116	126	114	106	119	135	117	10%	116	125	113	105	118	134	117	11%
A8	120	141	144	105	140	163	131	109	125	123	98	127	143	118	10%	108	125	122	98	127	142	118	10%
A9	126	146	192	115	138	173	138	111	125	162	104	122	147	120	13%	111	125	162	104	122	148	120	13%
JAMA																							
J1	114	137	162	104	137	185	135	102	120	139	95	123	164	119	11%	102	120	139	95	123	164	119	11%
J2	120	138	173	107	141	211	140	104	115	141	96	123	185	120	14%	104	115	141	97	123	185	121	14%
J3		135	184		129	245	165		101	136		104	206	130	21%		102	138		105	208	131	20%
J4	105	137	161	94	126	160	132	98	127	147	89	119	146	121	8%	98	127	147	89	119	147	122	8%
J5	146	158	160	127	152	165	156	123	127	117	113	129	129	125	19%	124	128	118	114	130	130	126	19%
J6	116	136	145	103	136	181	131	106	121	124	96	123	160	116	11%	105	120	123	96	122	159	116	11%
J7	140	198	171	122	180	168	184	100	144	96	98	144	113	127	31%	100	145	97	98	145	114	128	31%
KAMA																							
K1	114	129	159	102	131	187	140	103	112	136	95	118	169	124	11%	103	113	137	95	118	169	125	11%
K2	123	162	159	109	150	219	140	100	130	114	95	129	179	114	19%	99	129	113	95	128	178	113	19%
Other																							
O1		146	135		146	155	145		127	109		129	105	126	13%		128	110		130	106	127	12%
O2			191			172	190			134			143	135	29%			136			145	137	28%
O3	134	177	279	156	158	293	180	80	117	175	121	119	233	123	32%	80	118	175	122	119	233	123	32%

2012: CO₂-emissions per car per manufacturer per segment (cont.)

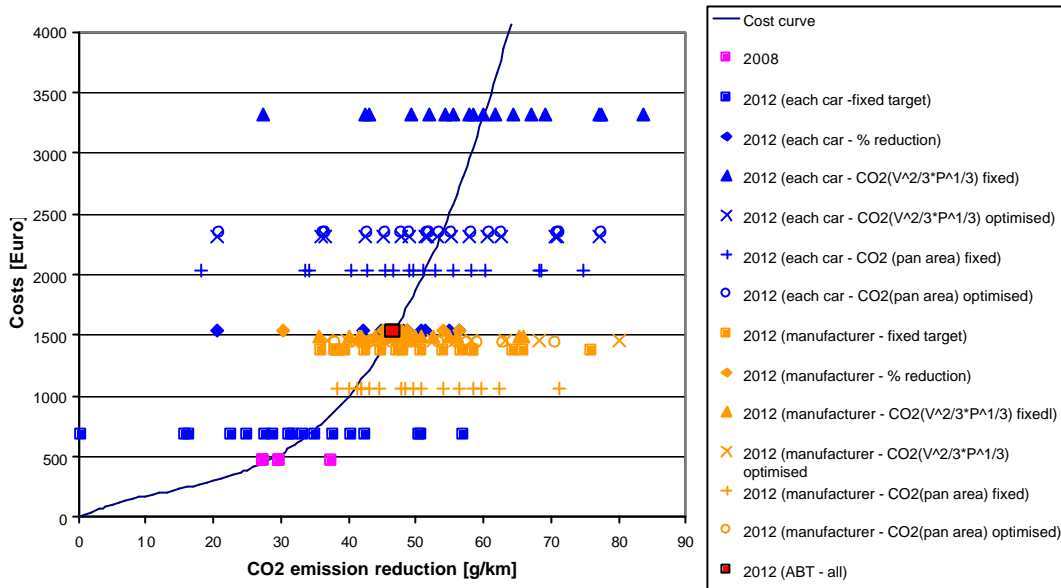
manufacturer	2008								2012								2012							
	CO ₂ -emission per car [g/km]								all cars (trading) - uniform target								all cars (trading) - % reduction							
	p,S	p,M	p,L	d,S	d,M	d,L	avg		p,S	p,M	p,L	d,S	d,M	d,L	avg	red	p,S	p,M	p,L	d,S	d,M	d,L	avg	red
ACEA																								
A1	142	163	201	124	148	199	164	124	139	167	113	130	170	141	14%	124	139	167	113	130	170	141	14%	
A2	91	167	212	81	153	190	167	74	143	178	70	135	162	143	14%	74	143	178	70	135	162	143	14%	
A3	114	150	184	113	138	171	128	96	126	150	99	120	143	109	15%	96	126	150	99	120	143	109	15%	
A4	132	150	202	113	136	194	146	114	126	169	102	118	166	124	15%	114	126	169	102	118	166	124	15%	
A5	123	153	192	112	145	188	141	105	128	158	100	126	160	121	15%	105	128	158	100	126	160	121	15%	
A6		221			211		221			188			185	188	15%			188			185	188	15%	
A7	129	143	138	114	132	157	131	111	118	104	102	114	128	112	14%	111	118	104	102	114	128	112	14%	
A8	120	141	144	105	140	163	131	102	116	111	94	121	134	111	15%	102	116	111	94	121	134	111	15%	
A9	126	146	192	115	138	173	138	108	122	158	103	120	145	118	14%	108	122	158	103	120	145	118	14%	
JAMA																								
J1	114	137	162	104	137	185	135	98	115	132	93	120	160	115	14%	98	115	132	93	120	160	115	14%	
J2	120	138	173	107	141	211	140	105	116	143	97	124	186	122	13%	105	116	143	97	124	186	122	13%	
J3		135	184		129	245	165		114	154		113	219	143	13%		114	154		113	219	143	13%	
J4	105	137	161	94	126	160	132	90	115	131	84	111	135	111	16%	90	115	131	84	111	135	111	16%	
J5	146	158	160	127	152	165	156	130	137	131	118	136	139	135	14%	130	137	131	118	136	139	135	14%	
J6	116	136	145	103	136	181	131	101	114	115	93	118	153	111	15%	101	114	115	93	118	153	111	15%	
J7	140	198	171	122	180	168	184	124	177	142	112	166	144	161	13%	124	177	142	112	166	144	161	13%	
KAMA																								
K1	114	129	159	102	131	187	140	107	118	143	97	122	174	129	8%	107	118	143	97	122	174	129	8%	
K2	123	162	159	109	150	219	140	116	151	143	105	143	199	131	7%	116	151	143	105	143	199	131	7%	
Other																								
O1		146	135		146	155	145		120	100		125	98	120	17%		120	100		125	98	120	17%	
O2			191		172	190				121			134	122	36%			121			134	122	36%	
O3	134	177	279	156	158	293	180	89	130	192	127	128	246	134	25%	89	130	192	127	128	246	134	25%	

manufacturer	2008								2012								2012							
	CO ₂ -emission per car [g/km]								all cars (trading) - CO ₂ (V ² /3*P ¹ /3) fixed								all cars (trading) - CO ₂ (V ² /3*P ¹ /3) optim.							
	p,S	p,M	p,L	d,S	d,M	d,L	avg		p,S	p,M	p,L	d,S	d,M	d,L	avg	red	p,S	p,M	p,L	d,S	d,M	d,L	avg	red
ACEA																								
A1	142	163	201	124	148	199	164	124	139	167	113	130	170	141	14%	124	139	167	113	130	170	141	14%	
A2	91	167	212	81	153	190	167	74	143	178	70	135	162	143	14%	74	143	178	70	135	162	143	14%	
A3	114	150	184	113	138	171	128	96	126	150	99	120	143	109	15%	96	126	150	99	120	143	109	15%	
A4	132	150	202	113	136	194	146	114	126	169	102	118	166	124	15%	114	126	169	102	118	166	124	15%	
A5	123	153	192	112	145	188	141	105	128	158	100	126	160	121	15%	105	128	158	100	126	160	121	15%	
A6		221			211		221			188			185	188	15%			188			185	188	15%	
A7	129	143	138	114	132	157	131	111	118	104	102	114	128	112	14%	111	118	104	102	114	128	112	14%	
A8	120	141	144	105	140	163	131	102	116	111	94	121	134	111	15%	102	116	111	94	121	134	111	15%	
A9	126	146	192	115	138	173	138	108	122	158	103	120	145	118	14%	108	122	158	103	120	145	118	14%	
JAMA																								
J1	114	137	162	104	137	185	135	98	115	132	93	120	160	115	14%	98	115	132	93	120	160	115	14%	
J2	120	138	173	107	141	211	140	105	116	143	97	124	186	122	13%	105	116	143	97	124	186	122	13%	
J3		135	184		129	245	165		114	154		113	219	143	13%		114	154		113	219	143	13%	
J4	105	137	161	94	126	160	132	90	115	131	84	111	135	111	16%	90	115	131	84	111	135	111	16%	
J5	146	158	160	127	152	165	156	130	137	131	118	136	139	135	14%	130	137	131	118	136	139	135	14%	
J6	116	136	145	103	136	181	131	101	114	115	93	118	153	111	15%	101	114	115	93	118	153	111	15%	
J7	140	198	171	122	180	168	184	124	177	142	112	166	144	161	13%	124	177	142	112	166	144	161	13%	
KAMA																								
K1	114	129	159	102	131	187	140	107	118	143	97	122	174	129	8%	107	118	143	97	122	174	129	8%	
K2	123	162	159	109	150	219	140	116	151	143	105	143	199	131	7%	116	151	143	105	143	199	131	7%	
Other																								
O1		146	135		146	155	145		120	100		125	98	120	17%		120	100		125	98	120	17%	
O2			191		172	190				121			134	122	36%			121			134	122	36%	
O3	134	177	279	156	158	293	180	89	130	192	127	128	246	134	25%	89	130	192	127	128	246	134	25%	

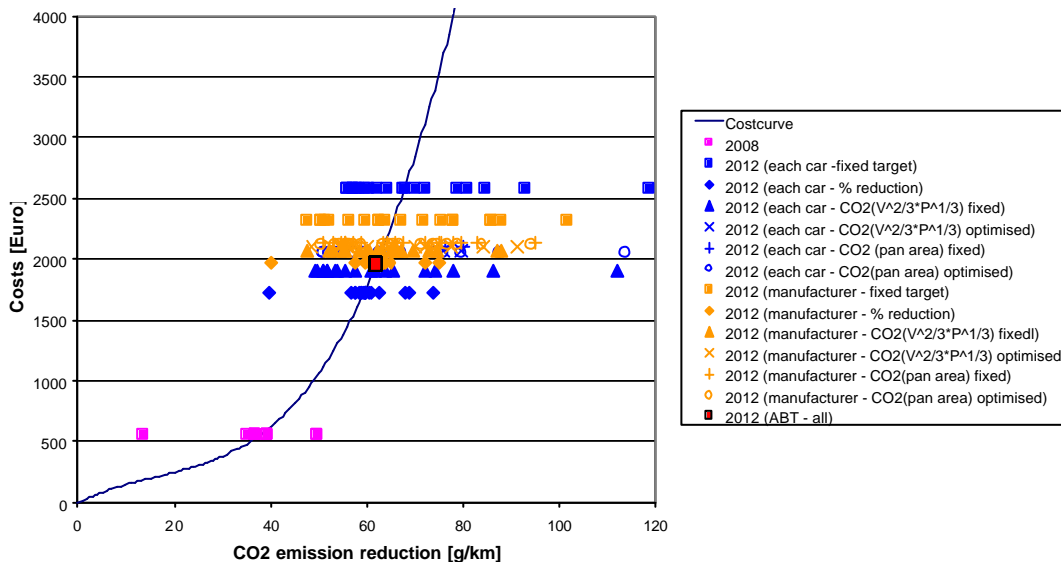
manufacturer	2008							2012							2012								
	CO ₂ -emission per car [g/km]							all cars (trading) - CO ₂ (pan area) fixed							all cars (trading) - CO ₂ (pan area) optim.								
	p,S	p,M	p,L	d,S	d,M	d,L	avg	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red	p,S	p,M	p,L	d,S	d,M	d,L	avg	avg red
ACEA																							
A1	142	163	201	124	148	199	164	124	139	167	113	130	170	141	14%	124	139	167	113	130	170	141	14%
A2	91	167	212	81	153	190	167	74	143	178	70	135	162	143	14%	74	143	178	70	135	162	143	14%
A3	114	150	184	113	138	171	128	96	126	150	99	120	143	109	15%	96	126	150	99	120	143	109	15%
A4	132	150	202	113	136	194	146	114	126	169	102	118	166	124	15%	114	126	169	102	118	166	124	15%
A5	123	153	192	112	145	188	141	105	128	158	100	126	160	121	15%	105	128	158	100	126	160	121	15%
A6			221			211	221			188			185	188	15%			188			185	188	15%
A7	129	143	138	114	132	157	131	111	118	104	102	114	128	112	14%	111	118	104	102	114	128	112	14%
A8	120	141	144	105	140	163	131	102	116	111	94	121	134	111	15%	102	116	111	94	121	134	111	15%
A9	126	146	192	115	138	173	138	108	122	158	103	120	145	118	14%	108	122	158	103	120	145	118	14%
JAMA																							
J1	114	137	162	104	137	185	135	98	115	132	93	120	160	115	14%	98	115	132	93	120	160	115	14%
J2	120	138	173	107	141	211	140	105	116	143	97	124	186	122	13%	105	116	143	97	124	186	122	13%
J3		135	184			245	165		114	154		113	219	143	13%		114	154		113	219	143	13%
J4	105	137	161	94	126	160	132	90	115	131	84	111	135	111	16%	90	115	131	84	111	135	111	16%
J5	146	158	160	127	152	165	156	130	137	131	118	136	139	135	14%	130	137	131	118	136	139	135	14%
J6	116	136	145	103	136	181	131	101	114	115	93	118	153	111	15%	101	114	115	93	118	153	111	15%
J7	140	198	171	122	180	168	184	124	177	142	112	166	144	161	13%	124	177	142	112	166	144	161	13%
KAMA																							
K1	114	129	159	102	131	187	140	107	118	143	97	122	174	129	8%	107	118	143	97	122	174	129	8%
K2	123	162	159	109	150	219	140	116	151	143	105	143	199	131	7%	116	151	143	105	143	199	131	7%
Other																							
O1		146	135		146	155	145		120	100		125	98	120	17%		120	100		125	98	120	17%
O2			191			172	190			121			134	122	36%			121			134	122	36%
O3	134	177	279	156	158	293	180	89	130	192	127	128	246	134	25%	89	130	192	127	128	246	134	25%

CO₂ reductions per segment for individual manufacturers under various target-instrument combinations, as a function of the average costs per car for the complete segment. Cost per car for each individual manufacturer can be assessed by drawing a vertical line from a data point to the cost curve. NOTE: All costs in these graphs are expressed in Euros retail price increase.

Small petrol

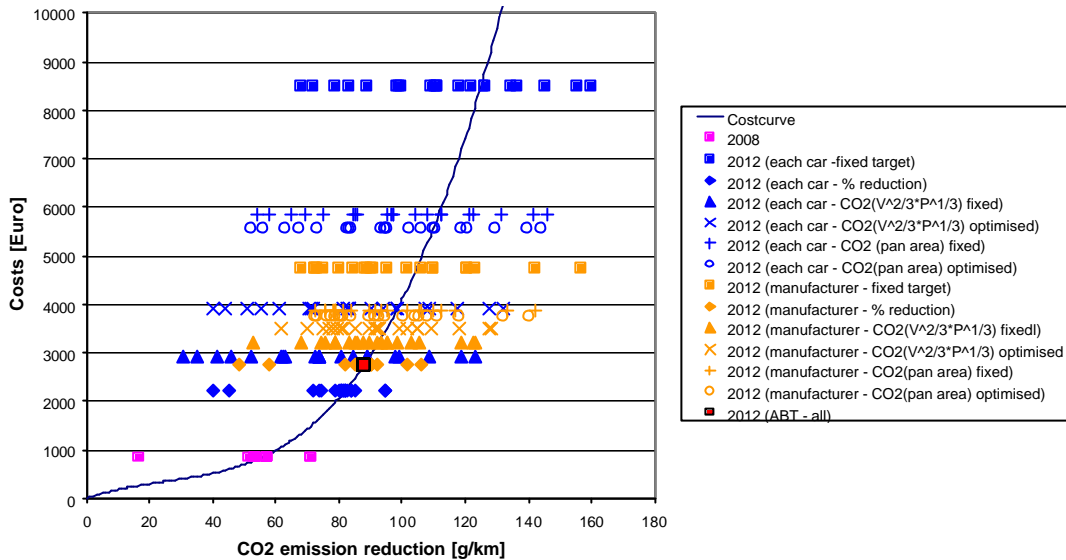


Medium petrol

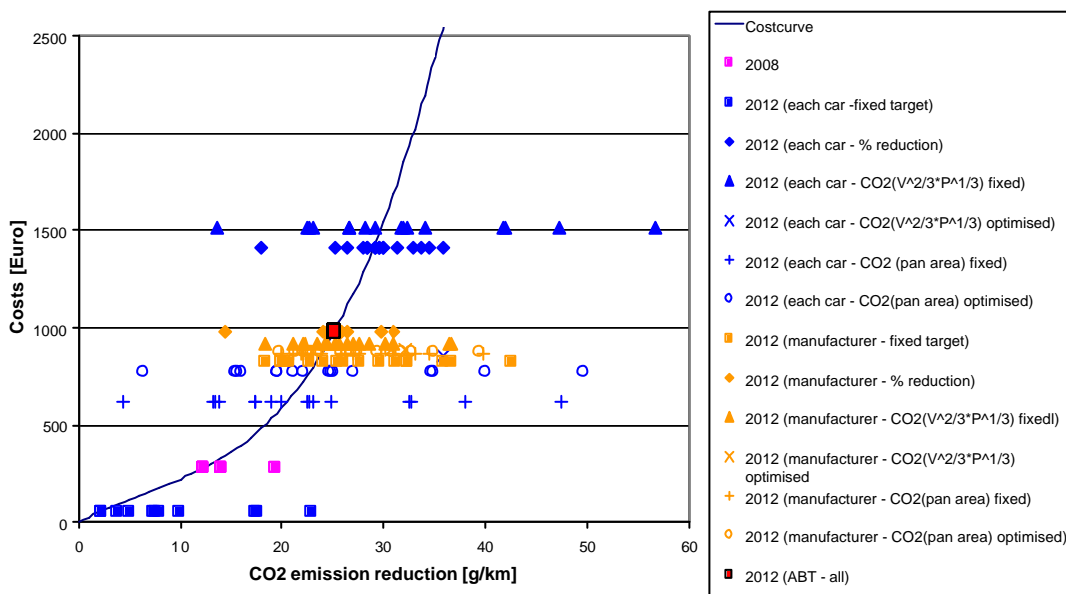


CO₂ reductions per segment for individual manufacturers under various target-instrument combinations, as a function of the average costs per car for the complete segment. Cost per car for each individual manufacturer can be assessed by drawing a vertical line from a data point to the cost curve. NOTE: All costs in these graphs are expressed in Euros retail price increase.

Large petrol

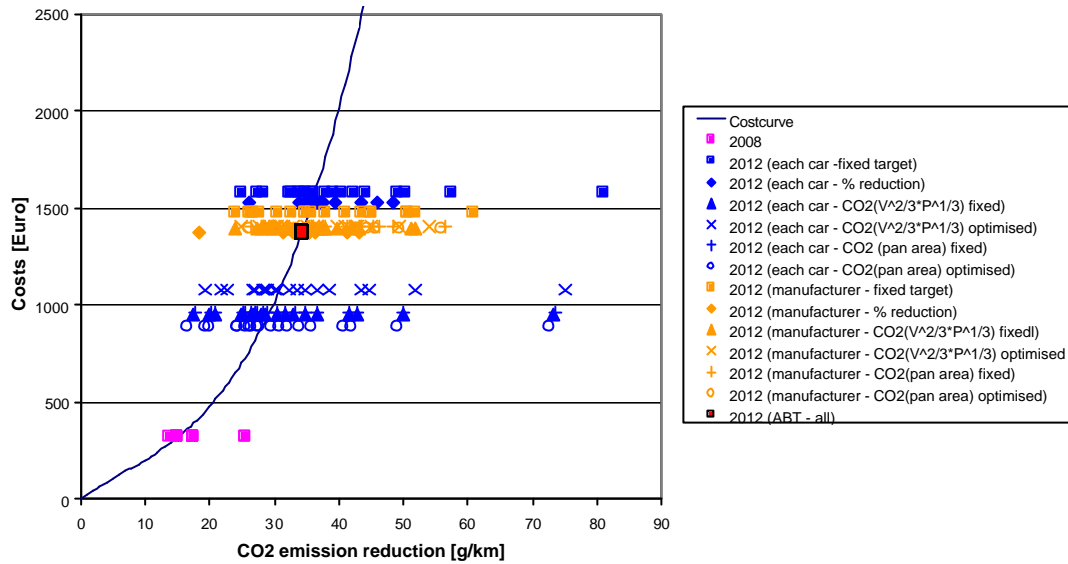


Small diesel

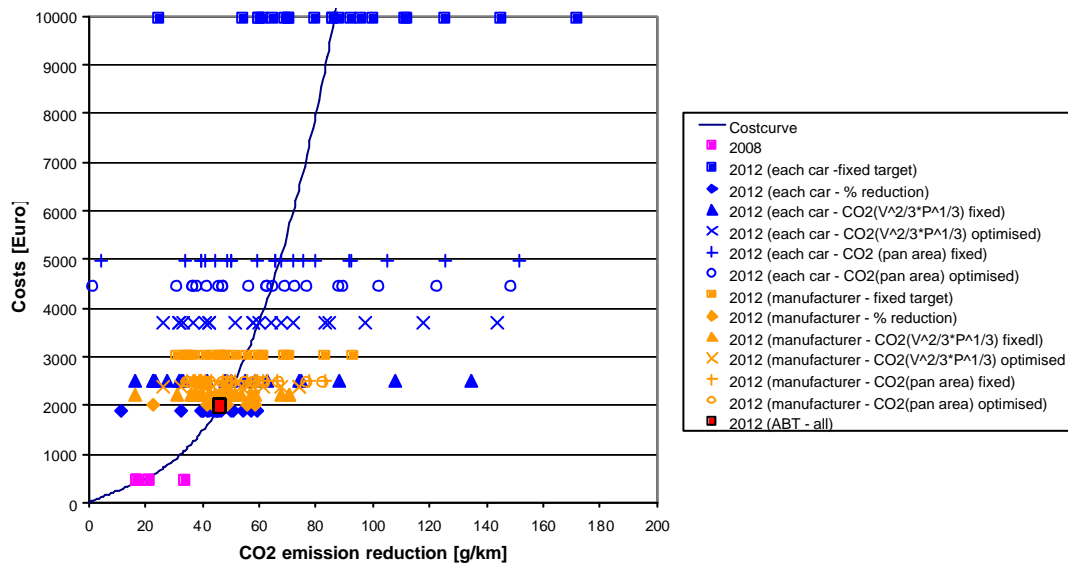


CO₂ reductions per segment for individual manufacturers under various target-instrument combinations, as a function of the average costs per car for the complete segment. Cost per car for each individual manufacturer can be assessed by drawing a vertical line from a data point to the cost curve. *NOTE: All costs in these graphs are expressed in Euros retail price increase.*

Medium diesel



Large diesel



2012: Detailed results per manufacturer for scenario's with trading (excl. taxes & margins, excl. fuel savings)

manufacturer	2008	2012 all cars (trading) - uniform target								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	643		1072	656	1642
A2	167	143	14.5%	931152	640	1025		1666	688	1789
A3	128	109	14.7%	1044320	562		525	37	538	35
A4	146	124	14.6%	1658164	1001	342		1343	604	810
A5	141	121	14.5%	1511806	878	39		917	580	606
A6	221	188	15.2%	23873	23	77		100	969	4177
A7	131	112	14.3%	2283889	1221		883	338	535	148
A8	131	111	14.9%	1588871	882		648	235	555	148
A9	138	118	14.3%	2688766	1510		237	1273	562	474
JAMA										
J1	135	115	14.3%	641565	375		143	232	584	362
J2	140	122	13.4%	374375	214	29		243	572	649
J3	165	143	13.3%	106006	71	114		185	665	1741
J4	132	111	15.9%	175606	112		75	37	636	209
J5	156	135	13.5%	155566	99	108		208	638	1335
J6	131	111	15.3%	137542	84		61	22	608	162
J7	184	161	12.7%	22454	16	43		59	703	2630
KAMA										
K1	140	129	7.8%	256512	108	110		218	422	850
K2	140	131	6.9%	63879	23	33		56	366	875
Other										
O1	145	120	16.9%	148634	101	3		104	678	699
O2	190	122	35.6%	123	0.1	0.0		0.2	1211	1325
O3	180	134	25.4%	8134	7	5		12	840	1515
Total				14473869	8356	2572	2572	8356	577	577

manufacturer	2008	2012 all cars (trading) - % reduction								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	6		434	656	665
A2	167	143	14.5%	931152	640		12	628	688	675
A3	128	109	14.7%	1044320	562		24	538	538	515
A4	146	124	14.6%	1658164	1001		34	967	604	583
A5	141	121	14.5%	1511806	878		18	860	580	569
A6	221	188	15.2%	23873	23		2	21	969	880
A7	131	112	14.3%	2283889	1221	1		1222	535	535
A8	131	111	14.9%	1588871	882		52	831	555	523
A9	138	118	14.3%	2688766	1510	6		1516	562	564
JAMA										
J1	135	115	14.3%	641565	375	2		377	584	588
J2	140	122	13.4%	374375	214	22		237	572	632
J3	165	143	13.3%	106006	71	8		79	665	744
J4	132	111	15.9%	175606	112		17	95	636	539
J5	156	135	13.5%	155566	99	9		109	638	699
J6	131	111	15.3%	137542	84		8	75	608	547
J7	184	161	12.7%	22454	16	3		19	703	844
KAMA										
K1	140	129	7.8%	256512	108	112		220	422	857
K2	140	131	6.9%	63879	23	32		55	366	862
Other										
O1	145	120	16.9%	148634	101		27	74	678	499
O2	190	122	35.6%	123	0.1		0.2	-0.1	1211	-704
O3	180	134	25.4%	8134	7		8	-1	840	-107
Total				14473869	8356	201	201	8356	577	577

2012: Detailed results per manufacturer for scenario's with trading (excl. taxes & margins, excl. fuel savings) (cont.)

manufacturer	2008	2012 all cars (trading) - utility based CO ₂ -curve (V ^{2/3} *P ^{1/3})								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	345		774	656	1185
A2	167	143	14.5%	931152	640	311		952	688	1022
A3	128	109	14.7%	1044320	562		56	507	538	485
A4	146	124	14.6%	1658164	1001	192		1193	604	719
A5	141	121	14.5%	1511806	878	234		1112	580	735
A6	221	188	15.2%	23873	23	34		58	969	2413
A7	131	112	14.3%	2283889	1221		275	946	535	414
A8	131	111	14.9%	1588871	882		377	506	555	318
A9	138	118	14.3%	2688766	1510		188	1322	562	492
JAMA										
J1	135	115	14.3%	641565	375		166	209	584	326
J2	140	122	13.4%	374375	214	15		229	572	612
J3	165	143	13.3%	106006	71	26		96	665	907
J4	132	111	15.9%	175606	112		113	-2	636	-9
J5	156	135	13.5%	155566	99	37		136	638	874
J6	131	111	15.3%	137542	84		51	32	608	234
J7	184	161	12.7%	22454	16	28		44	703	1963
KAMA										
K1	140	129	7.8%	256512	108	0		108	422	423
K2	140	131	6.9%	63879	23	61		84	366	1316
Other										
O1	145	120	16.9%	148634	101		62	39	678	259
O2	190	122	35.6%	123	0.1		0.2	-0.1	1211	-440
O3	180	134	25.4%	8134	7	4		11	840	1310
Total				14473869	8356	1288	1288	8356	577	577

manufacturer	2008	2012 all cars (trading) - optimised utility based CO ₂ -curve (V ^{2/3} *P ^{1/3})								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	216		644	656	986
A2	167	143	14.5%	931152	640		0	640	688	688
A3	128	109	14.7%	1044320	562	149		712	538	681
A4	146	124	14.6%	1658164	1001	126		1127	604	680
A5	141	121	14.5%	1511806	878	319		1197	580	792
A6	221	188	15.2%	23873	23	16		39	969	1645
A7	131	112	14.3%	2283889	1221		10	1211	535	530
A8	131	111	14.9%	1588871	882		259	624	555	393
A9	138	118	14.3%	2688766	1510		167	1344	562	500
JAMA										
J1	135	115	14.3%	641565	375		176	199	584	311
J2	140	122	13.4%	374375	214	9		223	572	596
J3	165	143	13.3%	106006	71		13	58	665	544
J4	132	111	15.9%	175606	112		130	-18	636	-104
J5	156	135	13.5%	155566	99	6		105	638	674
J6	131	111	15.3%	137542	84		47	37	608	265
J7	184	161	12.7%	22454	16	22		38	703	1672
KAMA										
K1	140	129	7.8%	256512	108		47	61	422	237
K2	140	131	6.9%	63879	23	73		96	366	1508
Other										
O1	145	120	16.9%	148634	101		91	10	678	67
O2	190	122	35.6%	123	0.1		0.3	-0.1	1211	-1208
O3	180	134	25.4%	8134	7	3		10	840	1221
Total				14473869	8356	939	939	8356	577	577

2012: Detailed results per manufacturer for scenario's with trading (excl. taxes & margins, excl. fuel savings) (cont.)

manufacturer	2008	2012 all cars (trading) - utility based CO ₂ -curve (pan area = I*w)								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	477		906	656	1388
A2	167	143	14.5%	931152	640	641		1281	688	1376
A3	128	109	14.7%	1044320	562		238	324	538	311
A4	146	124	14.6%	1658164	1001	250		1251	604	754
A5	141	121	14.5%	1511806	878	138		1016	580	672
A6	221	188	15.2%	23873	23	60		84	969	3500
A7	131	112	14.3%	2283889	1221		558	663	535	290
A8	131	111	14.9%	1588871	882		496	386	555	243
A9	138	118	14.3%	2688766	1510		285	1225	562	456
JAMA										
J1	135	115	14.3%	641565	375		126	249	584	387
J2	140	122	13.4%	374375	214	20		234	572	626
J3	165	143	13.3%	106006	71	64		134	665	1266
J4	132	111	15.9%	175606	112		87	24	636	138
J5	156	135	13.5%	155566	99	69		168	638	1080
J6	131	111	15.3%	137542	84		38	46	608	334
J7	184	161	12.7%	22454	16	36		52	703	2315
KAMA										
K1	140	129	7.8%	256512	108	60		169	422	657
K2	140	131	6.9%	63879	23	51		74	366	1158
Other										
O1	145	120	16.9%	148634	101		42	59	678	398
O2	190	122	35.6%	123	0.1		0.1	0.1	1211	633
O3	180	134	25.4%	8134	7	4		11	840	1392
Total				14473869	8356	1870	1870	8356	577	577

manufacturer	2008	2012 all cars (trading) - optimised utility based CO ₂ -curve (pan area = I*w)								
	average emission [g/km]	average emission [g/km]	average reduction	sales	techn. costs [MEuro]	credits bought [MEuro]	credits sold [MEuro]	total costs [MEuro]	techn. costs [Euro/car]	total costs [Euro/car]
ACEA										
A1	164	141	14.2%	652633	428	201		629	656	964
A2	167	143	14.5%	931152	640		0	640	688	688
A3	128	109	14.7%	1044320	562	241		803	538	769
A4	146	124	14.6%	1658164	1001	95		1096	604	661
A5	141	121	14.5%	1511806	878	303		1180	580	781
A6	221	188	15.2%	23873	23	34		57	969	2373
A7	131	112	14.3%	2283889	1221		17	1204	535	527
A8	131	111	14.9%	1588871	882		243	639	555	402
A9	138	118	14.3%	2688766	1510		365	1145	562	426
JAMA										
J1	135	115	14.3%	641565	375		99	276	584	430
J2	140	122	13.4%	374375	214	6		220	572	587
J3	165	143	13.3%	106006	71		20	51	665	477
J4	132	111	15.9%	175606	112		108	4	636	21
J5	156	135	13.5%	155566	99	2		102	638	654
J6	131	111	15.3%	137542	84	2		86	608	622
J7	184	161	12.7%	22454	16	24		40	703	1791
KAMA										
K1	140	129	7.8%	256512	108		22	86	422	336
K2	140	131	6.9%	63879	23	81		104	366	1628
Other										
O1	145	120	16.9%	148634	101		116	-15	678	-104
O2	190	122	35.6%	123	0.1		0.2	-0.1	1211	-518
O3	180	134	25.4%	8134	7	3		10	840	1188
Total				14473869	8356	991	991	8356	577	577

2012: Costs to consumer per vehicle class (all costs in Euros retail price)Interest rate for NPV = **0.0%**

2008							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	467	550	840	285	327	450	441
fuel savings [Euro]	2152	2875	4226	714	874	1043	1786
net costs [Euro]	-1685	-2325	-3386	-428	-547	-593	-1345
2012 each car - uniform target							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	214	2027	7670	-233	1254	9483	1974
fuel savings [Euro]	321	2237	5001	-462	1149	3678	1380
net costs [Euro]	-107	-209	2669	230	105	5805	594
2012 each car - % reduction							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1064	1168	1381	1124	1197	1420	1182
fuel savings [Euro]	1433	1681	2059	939	1172	1513	1366
net costs [Euro]	-370	-513	-678	185	26	-93	-184
2012 each car - utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	2850	1363	2095	1229	620	2062	1482
fuel savings [Euro]	2378	1739	2141	930	722	1533	1418
net costs [Euro]	472	-375	-46	299	-102	529	64
2012 each car - optimised utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1847	1514	3077	573	753	3229	1410
fuel savings [Euro]	1865	1863	2855	583	828	2068	1408
net costs [Euro]	-18	-349	222	-10	-75	1161	2
2012 each car - utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1568	1557	5032	340	634	4507	1495
fuel savings [Euro]	1691	1897	3927	402	733	2515	1416
net costs [Euro]	-123	-340	1105	-62	-99	1992	79
2012 each car - optimised utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1878	1497	4719	489	566	4004	1487
fuel savings [Euro]	1883	1849	3776	523	675	2352	1421
net costs [Euro]	-5	-352	943	-34	-109	1653	65
2012 per manufacturer - uniform target							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	915	1764	3905	546	1154	2568	1401
fuel savings [Euro]	1199	1965	3384	582	1045	1920	1387
net costs [Euro]	-284	-201	521	-35	109	648	13
2012 per manufacturer - % reduction							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1064	1417	1939	691	1042	1562	1160
fuel savings [Euro]	1436	1895	2557	719	1083	1618	1384
net costs [Euro]	-372	-478	-618	-29	-41	-56	-224
2012 per manufacturer - utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1027	1511	2358	636	1065	1757	1209
fuel savings [Euro]	1377	1917	2756	676	1077	1693	1385
net costs [Euro]	-350	-406	-398	-39	-12	64	-176
2012 per manufacturer - optimised utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	986	1551	2665	607	1073	1916	1236
fuel savings [Euro]	1332	1929	2912	652	1069	1751	1386
net costs [Euro]	-346	-378	-247	-45	3	165	-149
2012 per manufacturer - utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	964	1589	3028	585	1076	2071	1269
fuel savings [Euro]	1302	1934	3077	633	1057	1800	1387
net costs [Euro]	-338	-345	-49	-48	19	271	-117
2012 per manufacturer - optimised utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	974	1571	2924	592	1069	2013	1256
fuel savings [Euro]	1317	1930	3034	640	1058	1783	1387
net costs [Euro]	-343	-359	-110	-48	11	230	-130

2012: Costs to consumer per vehicle class (all costs in Euros retail price) (cont.)

Interest rate for NPV = 0.0%

2012 all cars (trading) - uniform target							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	-317	1828	4935	-1270	1149	4969	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	-1754	-65	2399	-1994	61	3366	-229
2012 all cars (trading) - % reduction							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	1048	1408	1831	758	1036	1534	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	-390	-485	-705	35	-53	-70	-229
2012 all cars (trading) - utility based CO2-curve (V²/3*P¹/3)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	2220	1214	1410	1038	440	1413	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	783	-679	-1127	315	-649	-191	-229
2012 all cars (trading) - optimised utility based CO2-curve (V²/3*P¹/3)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	3325	946	-127	2044	131	-137	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	1888	-947	-2663	1321	-958	-1741	-229
2012 all cars (trading) - utility based CO2-curve (pan area = I*w)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	1372	1409	3611	162	459	3040	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	-65	-484	1075	-561	-629	1437	-229
2012 all cars (trading) - optimised utility based CO2-curve (pan area = I*w)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	4184	712	1407	2547	-689	-170	1155
fuel savings [Euro]	1437	1893	2537	723	1088	1603	1384
net costs [Euro]	2747	-1181	-1129	1823	-1777	-1773	-229

¹) costs per segment based on an division of total deficit costs over the various segments on the basis of applying a fixed percentage per car to all segments. This, however, does not yield correct deficits due to disturbances in market shares resulting from the petrol-diesel shift!!

2012: Costs to consumer per vehicle class (all costs in Euros retail price) (cont.)

Interest rate for NPV = 5.0%

2008							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	467	550	840	285	327	450	441
fuel savings [Euro]	1555	2077	3053	516	631	753	1290
net costs [Euro]	-1088	-1527	-2214	-230	-305	-304	-850
2012 each car - uniform target							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	214	2027	7670	-233	1254	9483	1974
fuel savings [Euro]	232	1616	3614	-334	830	2658	997
net costs [Euro]	-18	411	4057	101	424	6825	977
2012 each car - % reduction							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1064	1168	1381	1124	1197	1420	1182
fuel savings [Euro]	1036	1215	1488	679	847	1093	987
net costs [Euro]	28	-47	-107	445	351	327	195
2012 each car - utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	2850	1363	2095	1229	620	2062	1482
fuel savings [Euro]	1719	1256	1547	672	521	1108	1024
net costs [Euro]	1132	107	548	557	99	955	457
2012 each car - optimised utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1847	1514	3077	573	753	3229	1410
fuel savings [Euro]	1348	1346	2063	421	598	1494	1018
net costs [Euro]	499	168	1014	152	155	1735	392
2012 each car - utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1568	1557	5032	340	634	4507	1495
fuel savings [Euro]	1222	1371	2838	290	530	1817	1023
net costs [Euro]	346	187	2194	50	104	2690	472
2012 each car - optimised utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1878	1497	4719	489	566	4004	1487
fuel savings [Euro]	1361	1336	2729	378	488	1699	1027
net costs [Euro]	517	161	1990	111	79	2305	460
2012 per manufacturer - uniform target							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	915	1764	3905	546	1154	2568	1401
fuel savings [Euro]	866	1420	2445	420	755	1387	1002
net costs [Euro]	48	344	1460	126	399	1180	398
2012 per manufacturer - % reduction							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1064	1417	1939	691	1042	1562	1160
fuel savings [Euro]	1038	1370	1847	520	783	1169	1000
net costs [Euro]	26	48	92	171	260	393	160
2012 per manufacturer - utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	1027	1511	2358	636	1065	1757	1209
fuel savings [Euro]	995	1386	1992	488	778	1224	1001
net costs [Euro]	32	126	367	148	287	534	208
2012 per manufacturer - optimised utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	986	1551	2665	607	1073	1916	1236
fuel savings [Euro]	963	1394	2104	471	773	1265	1001
net costs [Euro]	23	157	560	136	300	651	235
2012 per manufacturer - utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	964	1589	3028	585	1076	2071	1269
fuel savings [Euro]	941	1398	2223	457	763	1301	1002
net costs [Euro]	23	192	805	128	312	770	267
2012 per manufacturer - optimised utility based CO₂-curve (pan area = I*w)							
	p.S	p.M	p.L	d.S	d.M	d.L	average
car price increase [Euro]	974	1571	2924	592	1069	2013	1256
fuel savings [Euro]	951	1395	2192	462	765	1289	1002
net costs [Euro]	23	176	731	130	304	725	254

2012: Costs to consumer per vehicle class (all costs in Euros retail price) (cont.)

Interest rate for NPV = 5.0%

2012 all cars (trading) - uniform target							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	-317	1828	4935	-1270	1149	4969	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	-1355	460	3102	-1793	363	3810	155
2012 all cars (trading) - % reduction							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	1048	1408	1831	758	1036	1534	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	9	40	-1	236	249	375	155
2012 all cars (trading) - utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	2220	1214	1410	1038	440	1413	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	1181	-154	-423	515	-347	254	155
2012 all cars (trading) - optimised utility based CO₂-curve (V^{2/3}*P^{1/3})							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	3325	946	-127	2044	131	-137	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	2287	-422	-1960	1522	-656	-1296	155
2012 all cars (trading) - utility based CO₂-curve (pan area = I*w)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	1372	1409	3611	162	459	3040	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	334	42	1778	-361	-327	1882	155
2012 all cars (trading) - optimised utility based CO₂-curve (pan area = I*w)							
	p,S	p,M	p,L	d,S	d,M	d,L	average
car price increase [Euro]	4184	712	1407	2547	-689	-170	1155
fuel savings [Euro]	1039	1368	1833	523	786	1158	1000
net costs [Euro]	3146	-656	-426	2024	-1475	-1328	155

¹⁾ costs per segment based on an division of total deficit costs over the various segments on the basis of applying a fixed percentage per car to all segments. This, however, does not yield correct deficits due to disturbances in market shares resulting from the petrol-diesel shift!!

2012: Net costs to the manufacturer per vehicle class (excl. taxes & margins, excl. fuel savings)

	p,S	p,M	p,L	d,S	d,M	d,L	average
2008	234	275	420	143	163	225	220
each car - uniform target	107	1014	3835	-116	627	4741	987
each car - % reduction	532	584	691	562	599	710	591
each car - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1425	682	1047	615	310	1031	741
each car - optimised utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	924	757	1538	286	377	1615	705
each car - utility based CO ₂ -curve (pan area = l*w)	784	779	2516	170	317	2254	747
each car - optimised utility based CO ₂ -curve (pan area = l*w)	939	749	2359	244	283	2002	743
per manufacturer - uniform target	457	882	1953	273	577	1284	700
per manufacturer - % reduction	532	709	970	345	521	781	580
per manufacturer - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	513	756	1179	318	532	879	605
per manufacturer - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	493	775	1332	304	536	958	618
per manufacturer - utility based CO ₂ -curve (pan area = l*w)	482	795	1514	293	538	1036	635
per manufacturer - optim. utility based CO ₂ -curve (pan area = l*w)	487	786	1462	296	534	1007	628
all cars (trading) - uniform target	-158	914	2468	-635	574	2484	577
all cars (trading) - % reduction ¹	524	704	916	379	518	767	577
all cars (trading) - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1110	607	705	519	220	706	577
all cars (trading) - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1663	473	-63	1022	65	-69	577
all cars (trading) - utility based CO ₂ -curve (pan area = l*w)	686	705	1806	81	230	1520	577
all cars (trading) - optim. utility based CO ₂ -curve (pan area = l*w)	2092	356	704	1273	-344	-85	577

¹) costs per segment based on an division of total deficit costs over the various segments on the basis of applying a fixed percentage per car to all segments. This, however, does not yield correct deficits due to disturbances in market shares resulting from the petrol-diesel shift!!

2012: Retail price increase per vehicle class

	p,S	p,M	p,L	d,S	d,M	d,L	average
2008	467	550	840	285	327	450	441
each car - uniform target	214	2027	7670	-233	1254	9483	1974
each car - % reduction	1064	1168	1381	1124	1197	1420	1182
each car - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	2850	1363	2095	1229	620	2062	1482
each car - optimised utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1847	1514	3077	573	753	3229	1410
each car - utility based CO ₂ -curve (pan area = l*w)	1568	1557	5032	340	634	4507	1495
each car - optimised utility based CO ₂ -curve (pan area = l*w)	1878	1497	4719	489	566	4004	1487
per manufacturer - uniform target	915	1764	3905	546	1154	2568	1401
per manufacturer - % reduction	1064	1417	1939	691	1042	1562	1160
per manufacturer - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1027	1511	2358	636	1065	1757	1209
per manufacturer - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	986	1551	2665	607	1073	1916	1236
per manufacturer - utility based CO ₂ -curve (pan area = l*w)	964	1589	3028	585	1076	2071	1269
per manufacturer - optim. utility based CO ₂ -curve (pan area = l*w)	974	1571	2924	592	1069	2013	1256
all cars (trading) - uniform target	-317	1828	4935	-1270	1149	4969	1155
all cars (trading) - % reduction ¹	1048	1408	1831	758	1036	1534	1155
all cars (trading) - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	2220	1214	1410	1038	440	1413	1155
all cars (trading) - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	3325	946	-127	2044	131	-137	1155
all cars (trading) - utility based CO ₂ -curve (pan area = l*w)	1372	1409	3611	162	459	3040	1155
all cars (trading) - optim. utility based CO ₂ -curve (pan area = l*w)	4184	712	1407	2547	-689	-170	1155

¹) costs per segment based on an division of total deficit costs over the various segments on the basis of applying a fixed percentage per car to all segments. This, however, does not yield correct deficits due to disturbances in market shares resulting from the petrol-diesel shift!!

2012: Net costs to consumer per vehicle class (all costs in Euros retail price)

Interest rate for NPV =

	0.0%							5.0%						
	p.S	p.M	p.L	d.S	d.M	d.L	average	p.S	p.M	p.L	d.S	d.M	d.L	average
2008	-1685	-2325	-3386	-428	-547	-593	-1345	-1088	-1527	-2214	-230	-305	-304	-850
each car - uniform target	-107	-209	2669	230	105	5805	594	-18	411	4057	101	424	6825	977
each car - % reduction	-370	-513	-678	185	26	-93	-184	28	-47	-107	445	351	327	195
each car - utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	472	-375	-46	299	-102	529	64	1132	107	548	557	99	955	457
each car - optimised utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	-18	-349	222	-10	-75	1161	2	499	168	1014	152	155	1735	392
each car - utility based CO2-curve (pan area = l*w)	-123	-340	1105	-62	-99	1992	79	346	187	2194	50	104	2690	472
each car - optimised utility based CO2-curve (pan area = l*w)	-5	-352	943	-34	-109	1653	65	517	161	1990	111	79	2305	460
per manufacturer - uniform target	-284	-201	521	-35	109	648	13	48	344	1460	126	399	1180	398
per manufacturer - % reduction	-372	-478	-618	-29	-41	-56	-224	26	48	92	171	260	393	160
per manufacturer - utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	-350	-406	-398	-39	-12	64	-176	32	126	367	148	287	534	208
per manufacturer - optim. utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	-346	-378	-247	-45	3	165	-149	23	157	560	136	300	651	235
per manufacturer - utility based CO2-curve (pan area = l*w)	-338	-345	-49	-48	19	271	-117	23	192	805	128	312	770	267
per manufacturer - optim. utility based CO2-curve (pan area = l*w)	-343	-359	-110	-48	11	230	-130	23	176	731	130	304	725	254
all cars (trading) - uniform target	-1754	-65	2399	-1994	61	3366	-229	-1355	460	3102	-1793	363	3810	155
all cars (trading) - % reduction ¹	-390	-485	-705	35	-53	-70	-229	9	40	-1	236	249	375	155
all cars (trading) - utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	783	-679	-1127	315	-649	-191	-229	1181	-154	-423	515	-347	254	155
all cars (trading) - optim. utility based CO2-curve ($V^{2/3} \cdot P^{1/3}$)	1888	-947	-2663	1321	-958	-1741	-229	2287	-422	-1960	1522	-656	-1296	155
all cars (trading) - utility based CO2-curve (pan area = l*w)	-65	-484	1075	-561	-629	1437	-229	334	42	1778	-361	-327	1882	155
all cars (trading) - optim. utility based CO2-curve (pan area = l*w)	2747	-1181	-1129	1823	-1777	-1773	-229	3146	-656	-426	2024	-1475	-1328	155

¹) costs per segment based on an division of total deficit costs over the various segments

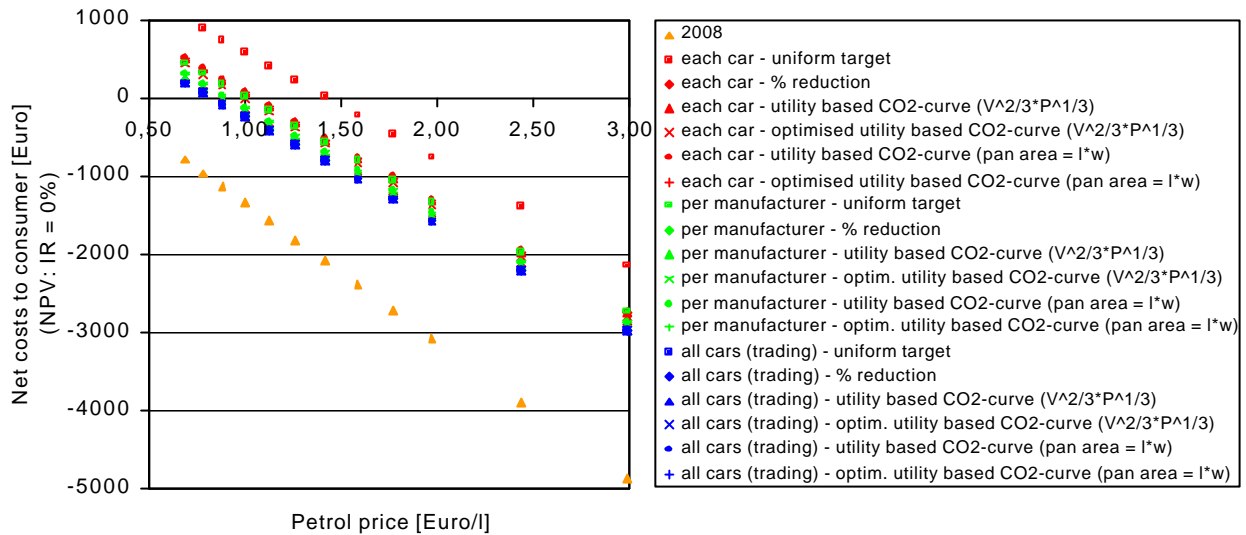
on the basis of applying a fixed percentage per car to all segments. This, however, does not

yield correct deficits due to disturbances in market shares resulting from the petrol-diesel shift!!!

2012: Impacts on fuel consumption (expressed in yearly savings for the newly sold cars compared to the situation without technical measures)

	petrol savings [10 ⁹ l/y]	diesel savings [10 ⁹ l/y]	total fuel savings [10 ⁹ l/y]	total energy savings [PJ/y]	fuel cost savings excl. taxes [10 ⁹ Euro/y]	fuel cost savings incl. taxes [10 ⁹ Euro/y]	CO ₂ -em. reduction [Mtonne/y]
2008	1.45	0.56	2.01	66.85	0.60	1.91	4.89
each car - uniform target	0.87	0.81	1.68	57.14	0.50	1.54	4.18
each car - % reduction	0.81	0.87	1.68	57.16	0.50	1.52	4.18
each car - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	1.03	0.66	1.70	57.10	0.51	1.58	4.18
each car - optimised utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	0.99	0.70	1.69	57.11	0.50	1.57	4.18
each car - utility based CO ₂ -curve (pan area = l*w)	1.03	0.67	1.70	57.10	0.51	1.58	4.18
each car - optimised utility based CO ₂ -curve (pan area = l*w)	1.05	0.65	1.70	57.09	0.51	1.58	4.18
per manufacturer - uniform target	0.90	0.78	1.69	57.13	0.50	1.54	4.18
per manufacturer - % reduction	0.89	0.79	1.68	57.13	0.50	1.54	4.18
per manufacturer - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	0.89	0.79	1.68	57.13	0.50	1.54	4.18
per manufacturer - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	0.90	0.79	1.68	57.13	0.50	1.54	4.18
per manufacturer - utility based CO ₂ -curve (pan area = l*w)	0.90	0.79	1.68	57.13	0.50	1.54	4.18
per manufacturer - optim. utility based CO ₂ -curve (pan area = l*w)	0.90	0.79	1.68	57.13	0.50	1.54	4.18
all cars (trading) - uniform target	0.89	0.80	1.68	57.13	0.50	1.54	4.18
all cars (trading) - % reduction	0.89	0.80	1.68	57.13	0.50	1.54	4.18
all cars (trading) - utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	0.89	0.80	1.68	57.13	0.50	1.54	4.18
all cars (trading) - optim. utility based CO ₂ -curve ($V^{2/3} \cdot P^{1/3}$)	0.89	0.80	1.68	57.13	0.50	1.54	4.18
all cars (trading) - utility based CO ₂ -curve (pan area = l*w)	0.89	0.80	1.68	57.13	0.50	1.54	4.18
all cars (trading) - optim. utility based CO ₂ -curve (pan area = l*w)	0.89	0.80	1.68	57.13	0.50	1.54	4.18

2012: Impact of petrol price on the average net costs to the consumer, with Net Present Value of fuel costs savings accounted for at an interest rate of 0%. Diesel price is 0.82 times the petrol price.



2012: Impact of petrol price on the average net costs to the consumer, with Net Present Value of fuel costs savings accounted for at an interest rate of 5%. Diesel price is 0.82 times the petrol price.

