Reaction to the Public Consultation on CO2 from passenger cars

contribution concerning the 130 g/km objective through vehicle technology

Introductory remarks: *The current contribution focuses only on the part of the strategy concerning the regulatory measure on vehicle technology. It wants to clarify how such a measure can be designed in order to meet the objectives set out by the Commission: competition neutrality, safeguarding diversity, socially equitable, equitable to the diversity of the industry & sustainable.*

EU automotive regulation: a tradition of "one size fits all"

When a new regulation has to be defined, it is logical to look first at the past. Over the last decades, a large number of directives and regulations in the automotive field have been adopted. The rule applied has generally been that each car should meet the same standard, irrespective of its size. The tool to enforce the standards is simple: if a car does not meet the standard, it is not admitted on the EU market. However, applying pollutant emission and safety standards is usually more challenging for small cars. Adaptation of the limits to take account of these difficulties has never been accepted in the political process. The most recent example is the Euro5-6 regulation, which is clearly more difficult to meet for small diesel cars than for larger ones, both from a technical (feasibility, packaging) as from an economical point of view (is the customer prepared/capable of carrying the additional cost). The total set of regulatory requirements on cars has therefore led to an artificial upsizing of the market and represents a serious barrier for developping small cars dedicated to urban use or cars for low-income customers.

When it comes to CO2, however, it is clear that an ambitious single CO2 limit value that each individual car has to meet is not feasible for some types of cars. Therefore, if product diversity is to be maintained, the future regulation cannot follow stricly the traditional approach followed in past EU automotive regulations. Adaptations can be made by adding flexibility or by specifying the limits for different types of cars. On CO2, small cars have for the first time an advantage in meeting the same limit values, compared to larger ones. It would be socially unfair towards the customers of those cars if this advantage would now be neglected by strongly adapting the CO2 targets to the vehicle size. Therefore the adaptations one has to make in the regulatory system to **take account of the diversity of products should be sought firstly by adding more flexibility**. Of course, the flexibility elements should not undermine the environmental effectiveness of the policy. **Only as a last resort, a certain differenciation of CO2 targets** could be applied.

Competition neutrality: avoid applying reductions compared to a reference year

Avoiding distortion of competition is not a difficult problem. Key is to apply the same rules to all players, old and new. That means that the targets applied to industrial players should not be depending on past CO2 figures, which are related to the past positioning on the market. OEMs should be free to investigate other segments, both upmarket or downmarket and not get any advantage or disadvantage from such a move with respect to the CO2 regulation. Moreover, a % reduction would also raise the problematic issue of defining what the reference year is and penalise the ones that were performing well at that date.

Some migt be tempted to think that fixing reduction targets for OEMs based on their average utility in a reference year, rather than their utility in the compliance year, would lead to certainty of reaching the target. This idea is false, as it does not cover against an increase of market share of the brands with higher CO2 targets. This has occurred during the 1995-2006 period and contributed to the lack of progress under the ACEA commitment. Moreover, the issue of unfair competition remains, as is shown in the following illustrative example.

Illustrative example of unfair competition by fixing CO2 targets using past references
Consider OEM1, which was in the reference year concentrated on segment C with a CO2 value of 150 g/km, and OEM2, concentrated on segment E with a CO2 of 200 g/km. Based on their market positioning, OEM1 receives a 2012 reduction target of 10% and OEM2 of 20%, leading to CAFÉ targets of 135 g/km and 160 g/km respectively. Tempted by higher profits, OEM1 might want to move upmarket and concentrate on the D segment. OEM2 might want to move downmarket as this is an easy way to meet his CO2 targets and will also concentrate on the D segment. This leads both manufacturers to compete with a similar model portfolio in the same market segments, but with totally different CO2 targets, only due to past positions. This would be totally unacceptable from a competition point of view. While it might be acceptable that a policy tries to downsize the market, this should be done by applying regulatory pressure on the market segment as a whole and not on individual manufacturers.

Finally, the idea that financial payments from one manufacturer to another would consitute a distortion of competition should be rejected. If a regulation would make some OEMs pay for not achieving CO2 targets, while others receive credits for overachieving them, this is in no respect unfair competition. It is a fully acceptable principle ("polluter pays") and for example the main mechanism of the EU-ETS, leading to cost-effectiveness across the sector.

Averaging at OEM level: an indispensible flexibility to safeguard diversity

Averaging means OEMs can offset cars sold with emissions above their car-specific limit with cars below the limit. Such a possibility, not present in today's emission regulation, provides industry with significant flexibility to **reduce costs**, and thereby also benefits consumers and society. It should be fully supported as it does not create any environmental disadvantage. This measure is also key for **safeguarding product diversity**, as a limited number of specific cars which have structural difficulties to meet the CO2 targets (such as sports cars) can still be sold by compensating with low-CO2 cars.

It also means that **all segments will contribute** to CO2 emission reductions, independently of the regulatory curve as each manufacturer will seek to take the most cost-effective route to meet his CO2 targets. There will also be a transfer of burden from some customers to others, such as from gasoline to diesel cars (this can be seen as internal trading within the company portfolio). No strict definition of what constitutes a manufacturer is needed. It is sufficient to give companies the option to present joint figures of different entities to the regulator. A new enforcement tool would however be needed as no single car can be banned from the market by refusing type approval, as it could be compensated.

Other elements of flexibility to safeguard diversity: fees, rebates and trading

The new enforcement mechanism or "stick" will probably need to be the **payment of fees in case of non-compliance**. This would be fully consistent with the "polluter pays" principle that should consistently apply to the car sector. In addition, it can also be seen as an additional flexibility for the manufacturers which may, especially with the short leadtime, not be capable of meeting their CO2 targets in time. It is important to give industry as soon as possible an indication on the level of penalties as this is the main element for making the correct investment decisions. It seems reasonable to have some consistency with other sectors, as indicated by the EU-ETS scheme. Although currently actors involved in ETS trade a tonne of CO2 at prices around or below 20€, the penalty is 100€ per tonne of CO2. This level could also be applied to manufacturers as of 2012 by translating the amount of g/km shortfall into tonnes of CO2, taking into account the typical mileage of the cars concerned.

Although available studies might indicate that compliance costs are higher, such a penalty level would amount to a very significant financial burden and certainly trigger major adaptations by OEMs. If the scheme generates significant revenues for authorities, it would be possible to reinvest these funds in research into battery technology or 2nd generation biofuels, which are the main bottlenecks to finding long-term solutions for CO2 from transport.
The revenues of such a scheme could also be used for giving **incentives to manufacturers to go further than the CO2 targets** via rebates. In such a way, the scheme can be cost-neutral for public authorities and equally effective in terms of CO2 reduction (as non-compliance by some can be compensated by over-compliance by others).
The most elegant solution would be a trading scheme, as this would automatically lead to the most cost-effective solutions. The concern that only a limited number of players would not lead to a functioning market seems unfounded. The same groups do make business deals on sharing engines and vehicle platforms, so why not on CO2 quotas?

What regulatory curve: set the slope that gives a fair burden for each segment

If the above flexibilities are not considered to be sufficient for safeguarding the diversity, differentiation by using a utility parameter can be envisaged. The simplest and fairest approach seems to be the one used in the TNO/CAIR/IEEP study, using the sales weighted regression line of today's cars as shown in the graph below. Compliance can then easily be checked with the average utility value for an OEM, which gives a CO2 target that can be compared with the achieved CAFE.

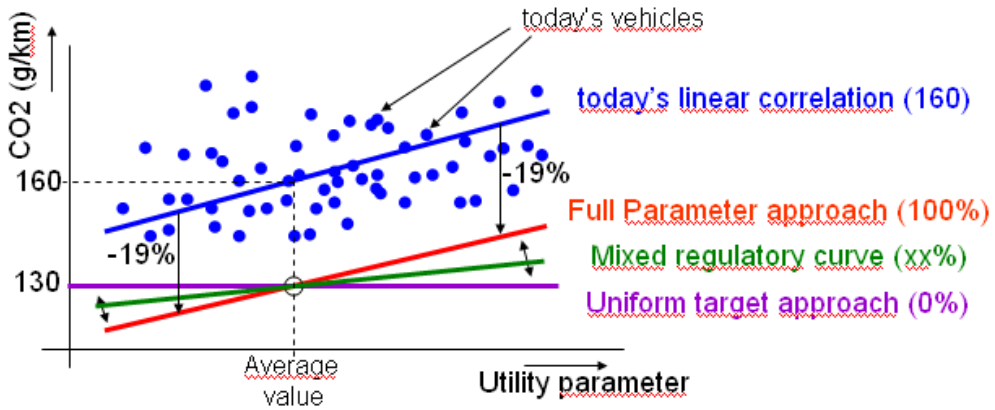

Figure 1: Illustration of construction of a straight line regulatory curve, by mixing the full parameter approach and the uniform target approach

Some might be tempted by other forms of curves, such as S-shape or steps. Other continuous curves are more complex, without any justification, and do not increase significantly the coverage of today's market (indicated by the R-square), as most of the variation is found in vertical direction among cars with similar utility. It would also fix reduction targets based on today's performance of the different segments, penalizing those segments that are better performing than others (such as the medium segment, where sales are decreasing most). A stepped regulatory curve should be avoided as well as this inevitably leads to perverse incentives around the discontinuity between two steps.
A straight line obtained with the TNO/CAIR/IEEP study would correspond to a full-parameter approach, which can subsequently be mixed in any proportion with the uniform target approach. In order to aim for an overall target of 130, all lines need to have 130 as CO2 value at the average value of the utility parameter. The convention chosen to indicate the slope in this paper is to indicate the percentage of parameter in the regulatory "cocktail".

The capital question is then what slope would be the most appropriate. A separate consideration is that the smaller the slope the less uncertainty there is about meeting the final objective (given the enforcement mechanism is efficient). The additional cost for compliance with the CO2 regulation should be seen in relation to the car price. It is a well-known fact that customers in the smaller segment are more sensitive to the same percentage increase in price than in higher segments. In order to have a fair burden for each customer, that would mean that the % price increase due to CO2 measures should gradually increase when looking from the lowest to the highest segment.
The % price increases are given in the figure below for the most important market segments and for different slopes of a regulation based on kerb weight. One can see that the price increase is slightly increasing for a 50% slope and more for a 30% slope, but decreasing for the slopes above 50%. If a similar burden should be carried by each segment, **the regulatory curve should not have a slope above 50%.**

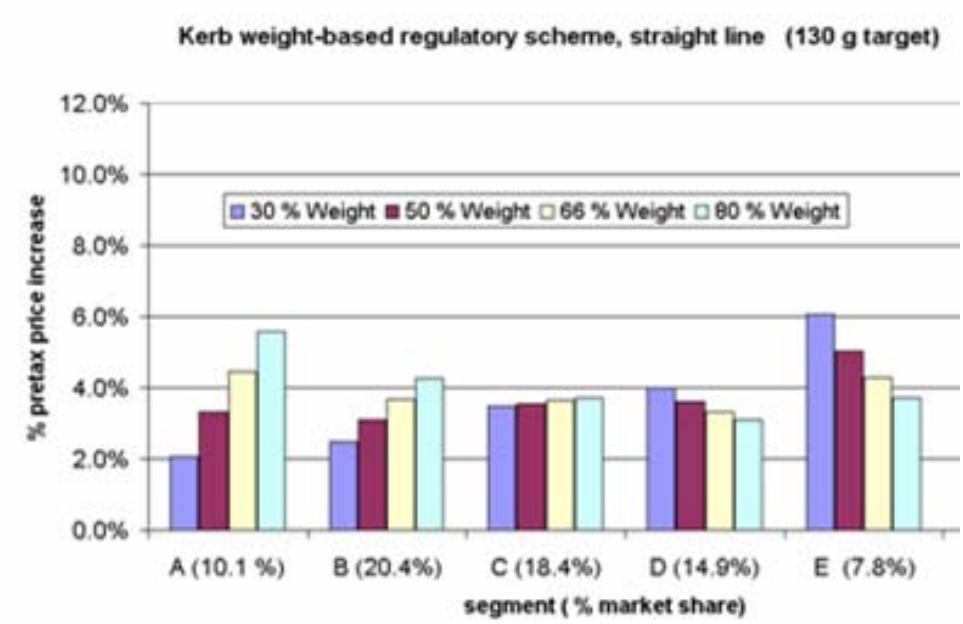

Figure 2: Average cost for cars in each segment to reach regulatory curve, based on 2006 AAA sales data for EU-15 and 2005 TNO cost curves

Parameter issue: footprint or weight

The ACEA position supporting weight is based on the consensual view among manufacturers that it is an acceptable parameter from a burden sharing perspective. But weight has the disadvantage of being directly linked to many CO2 reduction technologies.
Some technologies (dieselisation, hybridisation) get an extra benefit, as OEMs adopting them not only get the CO2 reduction but, due to increased vehicle weight, also a higher CO2 target. Weight reduction, on the other hand, is penalized as a manufacturer capable of reducing a vehicle's weight will also get a more stringent CO2 target. Moreover, the increase of average vehicle weight in the EU over the last years has been generally recognized as a factor limiting the progress under the voluntary agreement. It would be rather strange to base CO2 targets on this parameter.

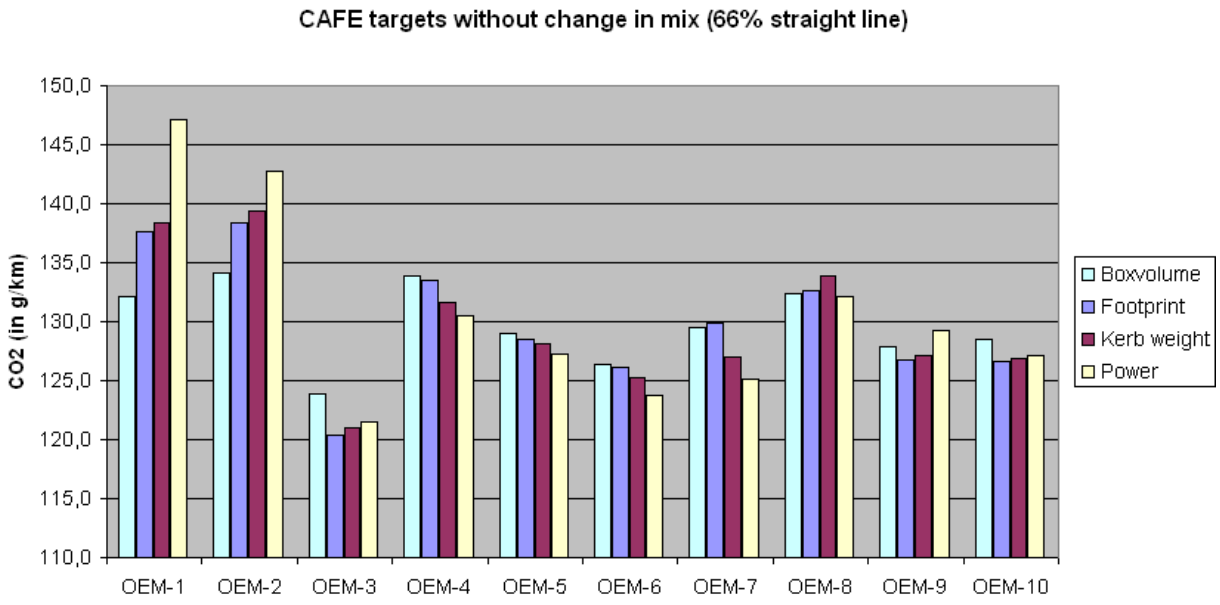

Figure 3: CAFE targets for the major OEMs on the EU market for a 66% regulationbased on different parameters. Source: 2006 AAA data.

As shown in the figure above, footprint (wheelbase x track) is equivalent to weight on burden sharing, with differences in OEM targets limited to 1 or 2 g/km, unlike boxvolume or power. But footprint does not interfere with the CO2 technologies: it ensures a level-playing field. Moreover, it is a robust parameter, which is difficult to manipulate as it is linked to a vehicle architecture. Finally, due to the beneficial link with weight reduction, footprint is considered positively in consideration of safety policy in the USA as it limits the divergence in mass across the car fleet.

Industrial diversity: all groups have a full-range product offer, but past efforts vary widely

The diversity of the EU car market is indeed an asset, but this is due to the variety in products, technologies and brands. The manufacturer groups, however, have over the past 10-15 years become more and more similar, integrating different brands and a wide range of market segments. The VW group managed to move into the superior segment, mainly via the Audi brand, although their CAFE stagnated somehow as a consequence. DC and BMW have since 1995 investigated lower segments via new brands (Smart, Mini) or new product offers (A & B class, 1 series), which contributed heavily to the CAFE reduction observed for these groups. The manufacturer groups active in the EU, which are the reporting entity if averaging is allowed, are still diverse but definitely less than 10 years ago and all have product offers in practically every segment.

When one looks at how the different segments have evolved in terms of CO2 and energy mix since 1995, interesting differences appear. The figure below shows that, of the volume segments, the lower segments have reduced their CO2 significanlty more than the higher segments. This is the inverse of what could be expected a priori, due to the higher acceptability of cost increase acceptability and the higher fuel saving potential in upper ranges. What is even more striking is that the lower segments have benefited the least from dieselisation. In the superior segment (S), the overall CO2 reduction is practically only due to dieselisation as individual reduction for gasoline and diesel are below 4%.

CO2 evolution per segment (1995 - 2006)

	CO2 gasoline			CO2 diesel			CO2 Global		
Segment	CAFE 1995 (g/km)	CAFE 2006 (g/km)	Prog. 1995-2006 (%)	CAFE 1995 (g/km)	CAFE 2006 (g/km)	Prog. 1995-2006 (%)	CAFE 1995 (g/km)	CAFE 2006 (g/km)	Prog. 1995-2006 (%)
I	161,7	142,7	-11,8%	152,2	121,4	-20,3%	160,6	136,1	-15,3%
M1	186,5	171,4	-8,1%	165,2	143,7	-13,0%	180,9	155,3	-14,2%
M2	202,4	194,5	-3,9%	177,9	160,1	-10,0%	194,9	170,8	-12,4%
S	228,4	226,4	-0,9%	197,9	190,6	-3,7%	220,6	200,6	-9,1%
M1-N1	271,2	177,9	-34,4%	248,1	182,9	-26,3%	253,8	181,9	-28,3%
SUV	266,6	226,7	-15,0%	284,8	221,5	-22,2%	273,5	222,8	-18,5%
Total	188,3	164,0	-12,9%	178,8	155,0	-13,3%	186,1	159,3	-14,4%

Market evolution per segment (1995 - 2006)

	Diesel share			Market mix		
Segment	Diesel % 1995	Diesel % 2006	Evolution 1995-2006	Market share 1995	Market share 2006	Evolution 1995-2006
I	12,1%	31,0%	18,9%	33,0%	36,4%	3,4%
M1	26,3%	58,2%	31,8%	31,2%	32,2%	1,0%
M2	30,6%	69,0%	38,4%	18,5%	11,8%	-6,7%
S	25,7%	72,2%	46,5%	13,9%	10,8%	-3,1%
M1-N1	75,4%	80,4%	5,0%	0,7%	2,3%	1,6%
SUV	37,8%	75,4%	37,6%	2,7%	6,5%	3,8%
Total	22,9%	52,2%	29,3%	100,0%	100,0%	0,0%

Figure 4: Progress in CO2 reduction per energy and market composition for different segments over 1995-2006 period. Source: AAA data on 1995 & 2006 for EU-15. Segment definition: I= small, M1= Lower medium, M2 = Upper medium, S = Luxury, M1-N1= cars derived from LCVs, SUV

Progress in engine technology has taken place across the board, but this progress has apparently been used in a different way among the segments. This points to a large potential in the higher segments where by choosing a different compromise among CO2 and driving performance, extra reductions can be achieved at practically no cost.

What is sustainable: progress in each segment but also influencing market evolution

The 130 target can be achieved via technology alone or by also trying to influence the market mix. In order to have a chance to meet the long-term targets needed to control climate change, the transport sector remains a major challenge. Car technology potential is limited, and so are biofuels. Therefore, it seems reasonable to set policies that exert a downsizing pressure on the market, that might limit the current upsizing observed over the last years. This could be done via fiscal measures but also by applying greater regulatory pressure to the higher segments.

Conclusion: the future CO2 regulation can meet all EU objectives

- safeguarding diversity: firstly by adding several flexibility elements, such as averaging and feebates, and secondly some (limited) differenciation of CO2 targets
- competition neutrality: by avoiding regulatory requirements based on a reference year
- socially equitable: by not penalising customers of small cars via setting of a reduced slope
- sustainable: by giving incentive to some downsizing of the market via a reduced slope
- equitable to the diversity of the industry: by applying larger reductions to the segments where past progress on CO2 was lower via a reduced slope

Many reasons exist why a straight line regulation based on footprint, with a slope significantly below 50% of the current market trend, with OEM averaging would be capable of meeting all objectives set out in the Communication. Beyond 2015, this slope could then be progressively reduced until it reaches a uniform target of 100 g/km in 2020.