13.02.2008

Communication from the Commission on Reducing CO_2 Emissions from Passenger Cars

Position of the VDA within the Scope of the Internet Consultation of the European Commission

Political Concerns for the German Automotive Industry

The German automotive manufacturers' **voluntary commitment** that expired in 2005 after being fulfilled proved that they are in a position to reduce CO_2 emissions in Germany effectively (bringing down the consumption of newly registered passenger cars by 25% from 1990 to 2005).

Such achievements are only possible if the innovation capability of the European manufacturers and their suppliers – which means **global competitiveness** – does not suffer lasting harm from inappropriate framework conditions. This great innovation capability not only benefits those EU countries that produce vehicles, but also affects the economic development in the whole European Union, in particular via the upstream input that now occurs almost throughout the EU. The increase in value-added that accompanies technology transfer accelerates the economic integration of the new EU Member States in which the vehicle-makers and their suppliers set up growing production facilities. Service and sales activities are also boosted by this development. New professions and job profiles illustrate the high level of innovative dynamism in the automotive sector.

Concerning future EU policy, in the wake of intensive discussion and investigations within the **VDA** and the **ACEA** the German manufacturers jointly put forward the following key points for further shaping the future regulatory framework for reducing CO_2 emissions from passenger cars in the EU:

Definition of the overall target for the EU's new passenger car fleet:

The VDA appeals for legal requirements with sufficient lead-time, a thorough impact assessment of the legislation and a feasibility study in which the manufacturers will be intensively involved. Future CO_2 legislation will not only apply to certain assemblies of the vehicle, but has a comprehensive effect right down to the "last screw". The timing of the implementation of such a regulation is therefore crucial to feasibility. For this reason, both the product development cycles and the product lifecycles must be taken into account.

- Steering effects can only be achieved where steering is still possible. This is no longer the case for a considerable proportion of the vehicles that will be registered after 2012 – either because they are already on the market, or because their development process has already largely been completed. Based on automotive product development processes and an appropriate legislative process, 2015 is the key date for the realistic, step-by-step implementation of a future CO_2 regulation. This would also complement other legal frameworks that concern the automotive industry (e.g. Euro 6 and Japan 2015) and would likewise have to be implemented by technical means.

- The political division into a package of measures for achieving 130 g/km and a package for a further reduction of 10 g/km should be investigated. Here the basic principle must apply that all technical and economic measures undertaken by the vehicle manufacturers and paid for by their customers, are to be treated equally and offset in full. By contrast, it seems appropriate to have separate treatment for the measures in the Integrated Approach whose effects and whose driving forces

are not located in the vehicles themselves but require action by other stakeholders such as the petroleum industry, agriculture and governments (biofuels, traffic optimization, driving behavior, etc.).

- The “Integrated Approach” for exploiting the cost-efficient reduction potentials of all stakeholders was a major element in the agreements of the industrial-policy initiative “CARS 21” in 2005. Therefore an updated and appropriate assessment of the reduction contributions of the various stakeholders in road traffic to achieving the overarching political EU objective of 120 g CO_2/km is required. The equivalents of measures such as biofuels, gear shift indicators, tire pressure control systems, driving behavior and traffic optimization are to be offset against the overarching objective of 120 g/km in accordance with their reduction potentials.

- As a basic principle, the reductions resulting from direct vehicle-based measures should be treated identically. Based on an estimate of the impacts of low rolling resistance tires (LRRT), tire pressure monitoring systems (TPMS), mobile air conditioning (MAC) and gear shift indicators (GSI), these items should likewise be off-set in full against the objective of 120 g/km. The details of a suitable approach are to be clarified in the wake of the impact assessment in a differentiated manner according to the individual measures.

- At this time the manufacturers are assuming that the measures of the Integrated Approach (biofuels, traffic infrastructure, motor vehicle taxation and driving behavior) and the complementary vehicle technology based measures mentioned in the Commission’s Communication have a reduction potential corresponding to at least 15 g/km.

- N1 vehicles must be exempted from targets at this time, because neither the status of total emissions nor the efficiency of reduction costs is clear, and neither are these measures necessary for the above-mentioned 10g/km equivalents.

- As a fundamental principle, harmonized framework conditions are essential in the automotive sector in Europe. Even today national measures relating to CO_2 (above all in motor vehicle taxation) are already causing increasing distortions on the internal market. The legal basis for future CO_2 legislation can therefore only be Article 95 of the European Treaty, in accordance with the political aim of developing the EU internal market.

Arguments against a unified CO_2 objective for the new car fleets of all manufacturers:

The German automotive industry is against a single standard target for new fleets because it would not take account of differing customer requirements, usage requirements or technical interdependencies.

- A sustainable reduction in CO_2 can only be achieved if all vehicles make their contribution, from compact cars to premium vehicles. Otherwise, depending on the segment structure, there would be virtually no necessity for some manufactur-

ers to continue reducing the CO_2 emissions of their vehicles, while others would face impossible requirements.

- Therefore the automotive industry is proposing objectives for all manufacturers that are ambitious, but possible to achieve. Only achievable objectives are effective objectives. A single limit value makes just as little sense as demanding that the energy consumption of a family home should be brought down to that of a one-room apartment.

- The proportion of vehicles with higher consumption is commonly overestimated. Most of the average "ecological leverage" for significant CO_2 reduction across the whole new car fleet rests with vehicles emitting between 120 and 160 g/km (market share in 2004: over 50%).

- A single standard limit value of 130 g CO_2/km for all German manufacturers is therefore impossible to achieve and massively endangers the market viability and the existence of some companies. This would have incalculable consequences, affecting the supply industry also.

- If a standard target forced individual manufacturers to shift their range of models massively towards the compact car segment, this would bring about a huge shift in competitive pressure in this sector and would lead especially to job losses precisely where the competitive pressure is already the greatest today.

Advantages of a differentiated, weight-based target:

- The European and German automotive industries are calling for a differentiated approach that does justice to different vehicle classes – in a linear fashion and on the basis of a vehicle's weight. This would match worldwide trends (such as in Japan and China) and would also be equivalent to a necessary global convergence of the regulatory framework. This approach excludes distortion of competition and maintains the product diversity of automotive industry in the EU. In this way an incentive is created for ambitious reductions in all vehicle classes.

- In this approach, different vehicles are treated differently - but without arbitrary categorization into "good" and "bad" vehicles. The linearity of the function means that every additional gram of CO_2 emitted is treated equally – no matter which vehicle it comes from.

- The differentiated targets called for also take account of the different conditions in the various segments by determining a corresponding function equation – and in fact it does this better than alternative tools do:

  - The reductions in emissions that are called for are the highest in absolute figures at the upper end of the product spectrum. The higher the weight, the greater the reduction demanded. Although sometimes discussed, legally imposed maximum consumption levels are, however, ineffective. For example, if the fuel consumption of the 50 vehicles with the highest consumption were reduced by 20 per cent, the consumption of the whole new car fleet would only

fall by 0.4 per cent (-0.6 g CO_2/km). Without reductions in the most popular sections of the market, the overall objective cannot be achieved.

- In the small vehicle segment there are certain limitations of further reducing CO_2 emissions, especially due to certain physical factors (e.g. the smaller the engine, the higher the relative internal energy losses). This is taken into account – but unlike the situation with a unified requirement, in this case a significant contribution to bringing down consumption is demanded in these segments, too.

- The transparent allocation of an emissions target value to the vehicle weight means that all vehicle classes - those with the highest fuel consumption and also the smaller ones – will make their own, appropriate, contribution.

These basic political positions are explained in more detail in the following **Technical Annex**.

Offer for discussion:

The VDA seeks a dialog with the European Commission and all interested players about the content of this position paper. The contact person at the VDA is:

Dr. Thomas Becker,
Deputy Managing Director,
Head of Economics Dept.
Westendstrasse 61, D-60325 Frankfurt

Tel.: +49 (0) 69 97507-235
Fax: +49 (0) 69 97507-261
Email: t.becker@vda.de

Annex

Technical Issues Concerning a Future Regulatory Framework

1. Background and initial situation from the industry's point of view

The **Commission's** proposal for legislative regulation of the CO_2 emissions from passenger cars is the political conclusion from its expectation that it will not succeed in the year 2008 in achieving an average value of 140 g/km for the CO_2 emissions from newly registered passenger cars in the EU. However, this action also simultaneously revokes the pledge made by Environment Commissioner Bjerregaard in 1998, which stipulated that before a decision on legislative regulation, the factors determining possible failure to achieve the targets were first to be analyzed in cooperation with the industry. To date the Commission has not commissioned any such analysis, and neither has an analysis been presented showing the extent to which either modified customer demands, or legal and quasi-regulatory requirements, have led to a situation in which efficiency potentials resulting from technological developments since 1995 have not also been translated into real reductions. Instead, the Commission has restricted itself to a critical stock-take of the increases in vehicle weight and performance.

However, in view of the position of the Commission and the Council, the German automotive industry is open to discussion of the form of political legal framework conditions that are to apply in the European Union in the future. From the point of view of the German automotive industry, it is crucial that the **framework conditions** for the manufacturers are shaped in such a way that they do not lead to any

- disadvantages in global competition for the European manufacturers,
- loss of total system capability or innovation capability,
- distortions of the competition between the manufacturers within the EU,
- disadvantages for individual automobile producing countries,
- risks to employment at manufacturers and suppliers.

To avoid these risks, the **specific design** of a future regulatory system is of decisive importance, in relation both to the overall objectives and to their "projection" onto the individual manufacturers and their products.

Against this background, some **key points** are set out below, which from the point of view of the German automotive industry should be fulfilled to allow regulation that is ecologically effective, competition-neutral and does not endanger the future of the automotive industry in Europe and Germany.

In this context **preparations should be made on two levels:**

1. definition of the targets for the vehicle manufacturers;
2. implementation or choice of environment-policy instruments.

This differentiation is important because these two aspects are frequently **confounded** in the political discussion. This is principally the case in the discussion on

emissions trading. This instrument in particular does not generate any targets, but instead merely represents a technical method for “distributing the burden”.

For this reason the two levels of “target definition” and “implementation” are discussed in a differentiated fashion below and only later are they handled together for drawing political conclusions. At the same time, the upcoming discussions should define the **targets** correctly, and then the right instruments for their **implementation**.

2. Definition of targets

2.1 Overall target level for new passenger cars in the EU

First of all, it is logical to abandon the existing range of different targets and time frames found amongst the manufacturers depending on their geographical origin (ACEA, JAMA and KAMA), and to **treat all manufacturers equally**.

For achieving the 120 g/km objective the Commission has proposed a combination of measures associated with the powertrain / engine technology amounting to 130 g/km, plus a package for a further10 g/km resulting from additional measures. Here an initial **clarification** is required that not only “engine and powertrain measures” for achieving vehicle-based objectives come into question, but also all the other vehicle-based measures not mentioned in the Communication (energy management, lightweight construction, aerodynamics, etc.).

However the Commission’s Communication ignores major elements of the **“Integrated Approach”** – namely the contributions explicitly proposed by CARS 21 of CO_2 based motor vehicle taxation and those of measures for influencing driving behavior are not offset against the quantitative targets. These statements and the political assessments underpinning them should be examined by conducting new evaluations of the reduction potentials of all stakeholders in road traffic (e.g. the petroleum industry, biofuels manufacturers, operators of infrastructures, and motorists) using cost-efficiency criteria.

Furthermore, the elements of the “10 g package” (complementary measures such as GSI, MAC, TPMS, LRRT, etc.) mentioned by the Commission still require precise evaluation and correct assignment:

- In sum, it can certainly be expected that it may be possible to achieve greater reductions than those supposed by the Commission up to now, by applying the vehicle-technology-based instruments listed in the Communication. However, upon closer inspection individual instruments may turn out to be inefficient or impossible to estimate.
- To the extent that this is the case, an opportunity should be created for also offsetting the reductions thus achieved against the reductions requirements remaining after deduction of the measures in the Integrated Approach.
- This is only fair since all these measures that are paid for by the customers are ultimately to be exploited by the automotive industry as it makes the corresponding investments.

- Here is one example: additional costs for tire pressure monitoring systems or gear shift indicators are no different from a manufacturer as well as a customer perspective than injection systems, which are treated differently.
- In addition, the measures need to be assigned correctly. Measures exerting their actions in the driving cycle should also be offset in this way. For example, one should differentiate between low rolling resistance tires on new vehicles and their use on vehicles already on the roads.

Based on today's knowledge, these potentials, taken together with the impacts of biofuels and other measures mentioned above, should be accorded a value greater than 15 g/km, so that the input needed for all further technical measures in vehicles can be measured according to the remaining reduction requirements. This will be based on the results of the **impact assessment**.

There also appears to be an urgent need to preserve **flexibility** within the individual tools for achieving an overall target, relating to minimizing the cost effects of all measures taken together and the resulting impacts on competitiveness.

2.2 Time frame for the targets

The target date of 2012 was originally put forward in the discussion held in the year 1998. Realistically it cannot be expected that effective regulatory legislation will come into force before 2010. For this reason alone it seems doubtful whether it makes sense to set the year **2012** as the target date. This problem is enhanced if one also considers that the development process has already been concluded for a whole series of vehicle models that will be offered as new cars in the year 2012. A considerable proportion of the vehicles that will be available in 2012 are already on the market today. In particular the platform-based product development used at many manufacturers makes modifications extremely costly for periods prior to 2015 and only limited improvements can be expected.

Moreover, the fact that the **Japanese industry** has had a period up to 2015 approved for meeting the recently defined new and demanding objectives, suggests that the target date should be reviewed in the EU too. Synchronization, e.g. with the EU emissions legislation (**Euro 6**), also speaks in favor of a review.

Therefore a **gradual step-by-step implementation** of the system is required that is compatible with the development cycles and model cycles of the automotive industry. A realistic key deadline for full implementation would be 2015.

While the definition of the overall target for the average of all vehicles in the EU is decisive for the situation of the industry as a whole, the impacts on the **competition between the manufacturers** depend on the form chosen for implementing the objectives. Here there are four conceivable approaches:

- Standard requirement for the average of the new car fleets of all manufacturers;
- Differentiated requirement for different fleets with a standard percentage reduction;
- Parameter-based differentiated requirements for every individual vehicle with stepwise progression;

- Parameter-based differentiated requirements with smooth/steady progression.

These **options** are discussed below.

2.3 Standard upper limit for new car fleets of all manufacturers

A standard target will propel the optimization of model ranges with totally different structures towards **one single value**.

However, this approach will necessarily lead to identical achievements being treated in **completely different ways**:

- A manufacturer reducing its fleet average by 15%, or 22 g/km, from 145 to 123 g/km, would be released from the responsibility to take any further measures.

- By contrast, a manufacturer making the same percentage reduction (15%) from 175 g/km to 149 g/km would be penalized – although in absolute terms it has actually made a greater reduction – of 26 g/km.

- This would in fact even be the case if this manufacturer presented even better reductions (e.g. 25%, or 44 g/km) than its "highly commended" competitor. A reduction that was double that of the competitor in absolute terms would still result in a penalty.

This is illustrated in the following table:

Consequences of a uniform target of 130 g/km in 2012
- Examples -

	Identical relative reduction Performance		Different relative reduction Performance	
	OEM 1	OEM 2	OEM 1	OEM 2
Fleet Average 2006 (in g/km)	175	145	175	145
Fleet Average 2012 (in g/km)	149	123	131	123
Absolute Reduction (in g/km)	**26**	**22**	**44**	**22**
Relative Reduction (in %)	15	15	**25**	**15**
Political Judgement/ conclusion	**Target missed**	**Target acheived**	**Target missed**	**Target acheived**

VDA Verband der Automobilindustrie

16

A standard requirement does not reward technological achievement, but instead leads to a "standard car" with a low level of technology:

- For example, design or quality induced sales-losses from models of the upper segments of a manufacturer are “rewarded” under climate policy, although there is no technological reduction activity behind it.

- In a system of standard targets, customer movement from one OEM to another always leads to a change in the political assessment of the manufacturers and thus of their competitive positions – even though nothing about the overall impacts on the environment changes.

- On the contrary: if, for example, the buyers of vehicles in the upper medium class switch from Manufacturer 2 to a more economical model from Manufacturer 1, they relieve Manufacturer 2 from having to take further action and lead to a political disadvantage for Manufacturer 1 whenever its average value rise as a result.

The **consequences for the industry** would be considerable:

Manufacturers with a large proportion of premium products would be forced to make extreme reductions in their vehicles in order to reach the target or, alternatively, to undertake huge restructuring of their range of models.

- If the adjusting factors are set so that within the given time frame it is only possible to avoid missing the target with acceptable costs by removing prominent models from the range, one can expect corresponding job losses precisely where until now jobs have been the most secure in the EU – at the producers of premium cars and their suppliers.

- On the other hand, a fleet-standard-triggered engagement of premium manufacturers in smaller segments of the markets would also trigger massive cut-throat competition amongst the European manufacturers in the volume segments, which would accelerate the processes of concentration in the European automotive industry.

- The future viability of large sections of the German automotive industry would endanger Germany in a key sector of its national economy: 60% of the approx. 750,000 jobs and Germany’s export surplus generated by automobiles of 100 bn euro is generated with premium products.

- Successes in segments of the premium market generating a great deal of value-added and with high employment would be penalized, while failures in these segments would be rewarded.

- A manufacturer’s product range must not be decided by achievement of targets, but by technical efficiency. Conversely, a larger success in relative terms in the smaller-car segments would automatically lead to a better position, independent of the measures taken to increase efficiency in these market segments, and independent of how efficient an individual vehicle model is.

A standard target for a new fleet is therefore incompatible with the objective of achieving change in **all market segments** and providing incentives for technological efficiency increases. With such a procedure, environment policy would have clear implications for the industry.

In terms of **technology policy** there would be a brake on the diffusion of new technologies in the field of fuel efficiency from the premium models to the volume models. A standard target explicitly allows manufacturers with a corresponding product structure to leave technological efficiency potentials unused and thus investments in new technologies will not be made.

For all of these reasons, an approach must be found that respects the different product structures of the European vehicle manufacturers and provides effective **incentives, especially for using innovative CO_2 reduction technologies** right across the product spectrum, to achieve the greatest possible ecological effects.

The first option with which this is possible is the **standard percentage reduction targets** based on the average CO_2 emissions of a certain initial reference year.

2.4 New car fleet limits differentiated by manufacturer

A general political reduction target would be implemented by all manufacturers having to achieve the **same reductions compared to a particular reference year**, measured as the average of their new car fleets.

However, with this approach there is the considerable methodological problem of the **“reference year”**:

- If a situation is to be avoided in which at the time when a new regulation comes into force, reductions that have already been made – called “early action” – become politically “worthless” (and conversely postponement of effort was rewarded), a reference year would have to be found that was correspondingly long ago.

- This would inevitably mean that structural changes in sales occurring since that point in time would be made the criterion for determining the “starting position”.

So, if with this approach a genuinely fair starting position is to be found for all manufacturers, this might require **considerable “adjustment work”** in terms of methodology.

There would also be a lack of clarity surrounding the issue of how to deal with **new entrants to the market**. To ensure identical and fair treatment of new market participants, there would also be considerable “adjustment work” to avoid disadvantages compared to other manufacturers. It is doubtful whether such an approach would stand up to such criteria as trade-policy demands.

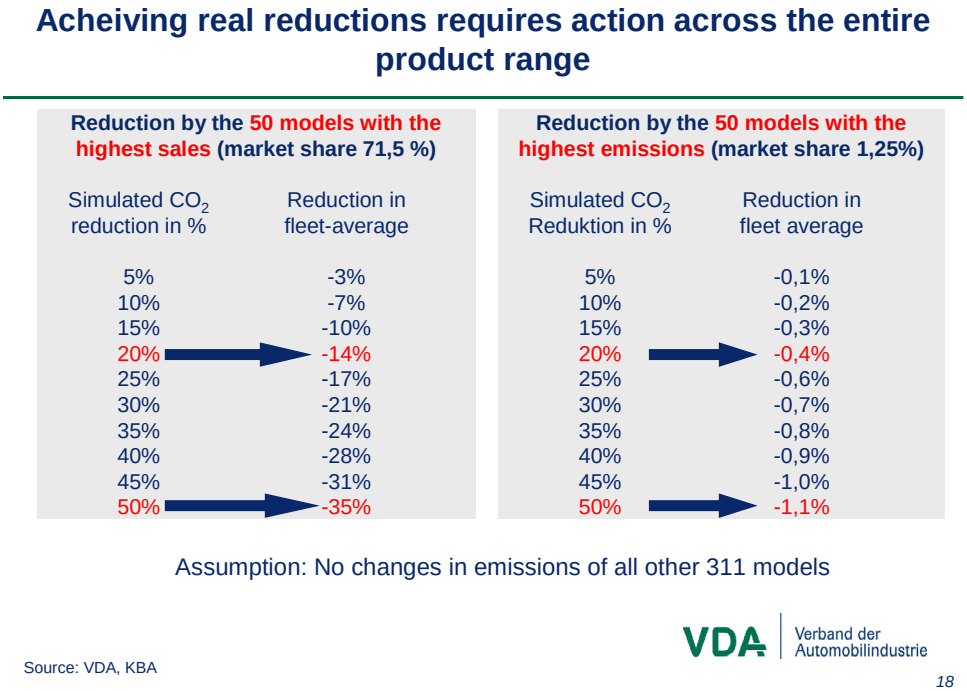
Since in any case complete **transparency of the model structure** of the particular manufacturer and an elaborate analysis are needed to design this approach fairly, the question arises of why a consistent benchmark-based approach should not be selected right away in which every vehicle is measured against its respective target.

2.5 Absolute Emission limits

Some stakeholders are proposing to impose "**caps**" in the EU (either uniform ones or graded according to weight classes) on emissions.

A simple analysis of the effects of a procedure like this shows, however, that such upper limits do **not have any appreciable effect** on the technological standard across the range of the model spectrum or on the average for the new vehicle fleet:

- Halving the emissions from the 50 vehicles on the German market emitting the most CO_2 (361 models) would bring down the average emissions of all new vehicles by only 1%.
- Even a total ban on these models would only reduce the total CO_2 emissions of new cars in Germany by a tiny 2%.
- At a European scale the effects would be even smaller.



At the same time, products would be prohibited that - in relation to their numbers sold - not only produce very high **value-added and employment** for the manufacturers, and above all for their suppliers, but which additionally play an important role for the implementation of new technologies.

Instead of selective interventions with a hugely distorted relationship between environmental benefit and economic damage, a promising policy must aim for to influence the **whole new car fleet** and to define an achievable and simultaneously ambitious target value for **every model**.

3. Differentiated vehicle-specific benchmarks based on technical vehicle parameters

3.1 Basic approach

The deficits of the approaches presented so far can be eliminated by combining the **following steps**:

- Every model of passenger car has an individual emissions benchmark (a political target value) assigned to it. This is done by allocating emission values to a standard technical parameter that reflects the range of vehicle models in a neutral fashion.

- Following an intensive comparison of the options that come into question (such as weight, vehicle size, performance, etc.) weight appears to be the parameter that is the most suitable for mapping differences between vehicles in a form that does justice to the interests of all the products (see below).

- The percentage difference between the benchmark values thus defined and today's technical status quo means that the political overall target is translated into an equitable individual target for each vehicle.

- The percentage difference between the defined benchmark values and today's technical status quo translates the overall political target for the EU-fleet-average into an equivalent target function.

- A manufacturer focusing its product range on larger / more powerful vehicles would be faced with technologically ambitious targets; achieving them would mean reducing the total emissions of its new vehicle fleet. However, it would not be measured against the consumption values of a compact car manufacturer.

- And a manufacturer of compact cars would also have to make improvements in efficiency. But here the reductions required for each model in g/km are much lower than those for a premium manufacturer. The technical restrictions that exist in particular at the bottom end of the model range are also taken into account by the grading of the target function.

3.2 Flexibility mechanisms

With this approach, what is crucial for the political assessment of a producer's success or failure is the **average deviation** between the vehicles it sells and the relevant benchmarks. So not every vehicle has to "hit its target", but instead what counts is the net result weighted by the number of vehicles doing better or worse than their nominal requirement.

Here is an illustration:

Model	Current emissions (g/km)	Benchmark value (g/km)	Deviation (g/km)	Sales volume (units)
A	170	150	20	10,000
B	130	140	-10	10,000
C	110	115	-5	20,000
Average overall	**130**	**130**	**0**	

This manufacturer would fulfill the requirement that applies to it across the sum of all its models because **levels that are higher or lower** than the targets for the different models balance one another out.

A system in which figures that overshoot or undershoot the corresponding targets for different models can be offset against one another creates an **option for balancing** the various elements of the product portfolio. So it is only the net average deviation from the benchmarks for individual products that forms the basis for sanctions.

The possibility of "**carrying forward**", i.e. of balancing figures above and below the targets over time, creates additional flexibility. For example, poorer results from the previous year can be compensated for by greater achievements in the following years. And vice versa, it must be possible to offset better results against lower performance in the following years. This would take account of the automotive product lifecycles. For example, at the beginning of the product lifecycle the number of vehicles sold gradually rises. Towards the end of the lifecycle the number of vehicles sold falls.

This is the basic approach used in **Japan** for passenger cars and in the **USA** for light trucks. The key aspect affecting the impacts on the industry is the definition of the relevant target.

3.3 Target with smooth vs. stepwise progression

In the political debate a stepwise parameter-based approach is proposed repeatedly, also with reference to the Japanese "**top-runner system**".

However, this approach brings with it considerable **disadvantages** owing to the stepwise structure chosen. At the transition from one band to the next an incentive arises to act in a manner that runs counter to environment policy. The closer the emissions values are to the transition to the next higher band, the more it "pays off" to raise the basic parameter, because this can bring a greater percentage increase of the "permitted" CO_2 value.

This methodological disadvantage can be eliminated by a **steady/smooth benchmark function:**

- In this case, a CO_2 emission volume is allocated to every additional unit of the basic parameter in accordance with a benchmark function. With a linear function this value is always the same, which facilitates both its application in the companies and its communication in politics and amongst the public.

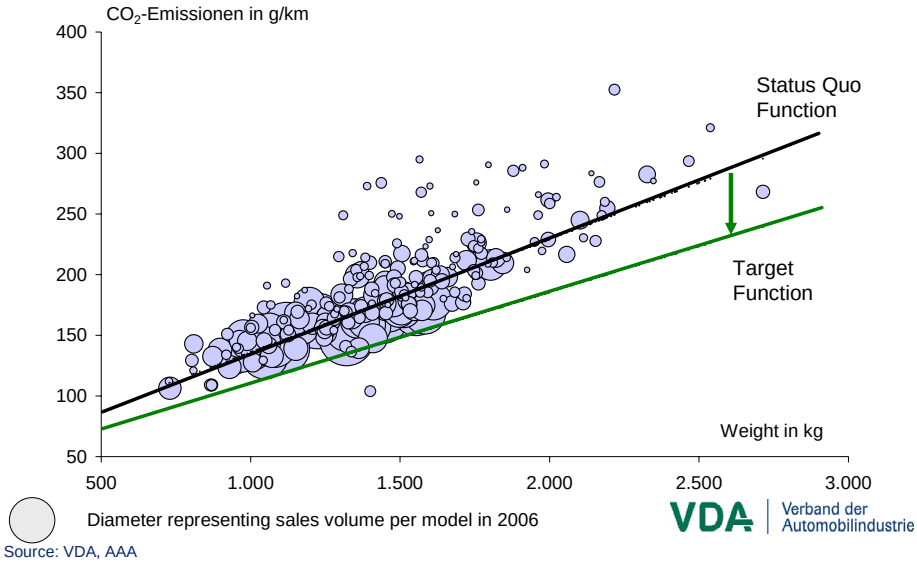
- So instead of a stepwise system there is a continuous function indicating the emission volume that corresponds to the political target value for each level of the basic parameter.

A **linear function** can be used to create a clear and comprehensible relationship between overarching political goals and the progression of the function, and a simple, politically transparent target that is comprehensible to the general public – a target that above all always treats identical deviations from the target equally. This linear function should create a direct relationship between the emissions behavior in today's market and the political target for the future. This would avoid incentives to increase the vehicle size (as often cited), which occur in the case of a stepwise function / class-related targets, and would implement a neutral CO_2 regulatory system.

3.4 Derivation from the political target

The benchmark function can be derived in a transparent way from the relevant trend or status quo function reflecting the current market average:

Differentiated parameter based target function
- presentation on weight basis -



- The starting point is the current empirical correlation between the basic parameter(s) and CO_2 emissions, as also reflected in the current new fleet average, in the form of an "status quo function".

- Then both the gradient and the position of the function are lowered in accordance with the desired reduction, and so a political reduction target is "translated" into a corresponding benchmark function.

- In practical political terms this means that if the benchmark function thus defined is realized - on average – by the newly registered vehicles, the average consumption of all new registrations will also be reduced by the corresponding percentage.

- The “target function” does not only lie below the “status function”. Its gradient is also less steep. The consequence is that the emissions reductions required are the greatest at the top end of the product spectrum ad the lowest for very small vehicles. The greater the weight, the greater the reductions required in comparison to the present status quo – and vice versa.

- It is therefore this “degree of tension”, that is, the distance between the benchmark function from the status quo function, that is the concrete yardstick to be used by politicians for comparing new vehicles with the current product range.

A benchmark function of this type would also make it possible to incorporate the political targets directly into the **development process.** All the decision-makers in the company would be able to see directly at their workplaces how their decisions affect the CO_2 balance and to include this in their decisions.

3.5 Basic parameters for a linear function

In relation to political transparency, but most importantly in relation to practical application by the companies, it is necessary to have a **comprehensible approach that is as simple as possible** for selecting suitable basic technical parameters. From a technical point of view this could include all the parameters that are clearly recorded in type-approval throughout the EU. At the same time, in other regions of the world successful approaches should not be discarded by the EU unnecessarily.

The VDA is therefore in favor of careful evaluation of a **CO_2 regulation based on the vehicle’s weight:**

- By applying a linear benchmark function as proposed here politicians would determine the additional quantity of emissions that would be permitted for each additional kilogram of vehicle weight.

- This value would be below the gradient of the statistical status quo of today’s new car fleet. This means that, in order to achieve the emissions target, the additional emissions volume associated with a given additional weight will be lower than the current level on the market.

Another point in favor of the parameter weight is that for the development of individual **components** of the vehicle, there is always transparency about the extent to which the decision taken affects the vehicle weight and thus the achievement of the CO_2 requirements. This applies – for instance – when materials are selected for important vehicle components and comparing the resulting increased or decreased weight in relation to the costs incurred.

An evaluation of worldwide regulatory approaches confirms the trends towards differentiated CO_2 targets dependent on vehicle size. **Other important countries such as Japan and China** have also chosen weight as a parameter for differentiated CO_2 goals. A tendency towards increasing vehicle weight, as is repeatedly claimed, cannot actually be found in Japan. In fact in recent years it has largely remained unchanged. At the same time efficiency has improved in all weight classes.

For **worldwide harmonization** of legal requirements and concomitant strengthening of the European automotive industry, the VDA recommends evaluation of the legislation proposed for Europe. This will also do justice to the principles set down in the CARS 21 initiative.

The VDA proposes **detailed calculation of each of these options** and in particular an investigation of whether effective incentives will be introduced in all vehicle segments and distortion will be avoided that would make it easier for certain vehicle categories to achieve their targets than for others.

4 Implementation mechanisms

4.1 Legal regulatory approach

In theory it is conceivable that reduction targets could be implemented by means of regulatory sanctions, in that overshoots (after exhausting all the “options of compensation” between models and over time, if applicable) would lead to termination of **homologation** of those new models whose production / marketing would trigger the overshoots in the EU.

Using this procedure for implementing a rigid new fleet limit would mean **stopping the production** of a large proportion of today’s assembly capacity in the EU. This would greatly endanger the future of premium manufacturers and thus also the automotive industry’s drive for innovation and generation of value-added.

Furthermore, for application to differentiated vehicle-specific targets, a ban on products represents a **disproportionate penalty**. This is different from limiting the emission of pollutants where these defined limit values serve to protect against health risks resulting directly from vehicles. In the case of climate protection the salient point is the net reduction of the volume of emissions for all vehicles taken together. The decisive factor is the achievement of targets across the whole fleet, and not an individual products’ compliance with a target value.

Against this background, it appears **untenable** to use such harsh sanctions for implementation - and not only in view of the interests of the automotive industry. It also appears to be inappropriate in view of the relationship between the reduction potentials that can be realized by changes to the vehicle technology and the expenditure required to mobilize these changes.

Therefore **more proportionate implementation strategies** must be applied.

4.2 Emissions trading

As numerous studies have shown - overall, including the traffic sector in the emissions trading system via fuels in the “**upstream mode**” would be the simplest solution in terms of environmental efficiency, and this solution would also be the most transparent, entailing a minimum of monitoring work. However, the industry recognizes that this approach, which affects the vehicle industry indirectly, has been rejected by

the Commission in favor of direct influence on the automotive manufacturers. Despite this it is open to a discussion of this alternative option.

By contrast, the VDA rejects the idea of a "**midstream model**", i.e. trading at the level of the vehicle manufacturers:

- In this model the overshooting or undershooting of the particular target definition is calculated for each manufacturer, which is possible based on each of the three above-mentioned target definitions.

- The result would be tied to the obligation to "buy in" volumes equal to the amount of emissions exceeding the pre-set target. Conversely, if the calculated value was lower than the target, emissions volumes would be released for sale.

What is crucial for the economic consequences is the question of whether a separate **closed** system would be set up for the automotive industry, or an **open** one in which the automotive producers have the full opportunity of buying in emissions volumes on the existing market.

The consequence of the **closed approach** is obvious: there will be transfer of the gains between the manufacturers, dependent on the development of their emissions volumes:

- In combination with a uniform fleet limit, a vehicle manufacturer focusing on the premium sector must make payments to manufacturers whose presence is concentrated in the volume segment – no matter what the relative efficiency of the products is.

- In any case new product developments (expanding the product portfolio) would be directly dependent on the measures of the competitors. This can be a motivation to apply certain measures (especially hoarding emissions rights). The "narrow" market for the European automotive producers is far more susceptible to misuse of emissions trading, for reasons of competition, than today's certificate market with its thousands of participating companies from various sectors.

- At the beginning of the development of a vehicle, that is about five years before it is launched onto the market, the vehicle manufacturers would have to trade emissions rights amongst themselves in order to secure the start of production. Such a procedure would considerably diminish reliability for planning, both for buyers and for sellers of emissions rights.

Independent of the strength of the structural intervention, which depends on the definition of the target, the emissions trading approach has a series of **decisive disadvantages**:

- The existing trading system serves to promote balancing of very different avoidance costs in the national economy – and not to distribute the burden between players with very similar cost structures.

- Emissions trading allows the purchase of rights by companies who are not in direct competition with one another – but a closed system does precisely this and would therefore require detailed monitoring and supervision to prevent misuse.

- The funding that would be used by the companies not achieving the targets is only mobilized for a minimum "return", because the avoidance costs for each tonne of CO_2 are the highest in the case of vehicle-based measures. If the same funds were used outside the automotive industry, it could do much more good for climate protection. Here the balance must be maintained between the burden of innovation capability and total system capability of the vehicle manufacturers by removing financial resources and the promotion of CO_2 reductions by means of more cost-efficient measures in other sectors.

- Furthermore, also the transfer of gains (organized by the state instead of being traded on an exchange), which is associated with "bonus-malus" systems as a variation of internal emissions trading, from companies that are penalized for missing their targets, to companies undercutting their targets, has to be viewed very critically concerning its effects on competition.

This means that such a system of intra-industry payments represents an inefficient approach for the economy as a whole. It would only be possible to overcome this disadvantage if a trading system valid for the automotive industry were **integrated into the existing system for the energy business and industry in general** (open system):

- If the automotive industry were included in the existing system, it would be possible to make unrestricted use of certificates released by savings elsewhere (e.g. in power generation) to pay the "debts" of the automotive industry, that is, to pay for the CO_2 emission volumes exceeding a given target.

- This approach is clearly the only efficient one from an economic perspective, because it does in fact ensure a reduction strategy for the whole economy that has minimum overall costs.

- However, if the automotive industry "joined" the system, the price of emissions certificates would climb all the more, with increasing limitation of allocation of the rights. Political resistance to this aspect is to be expected from the sectors concerned. In addition, burdens on global competitiveness can be expected, and therefore also problems for the sectors with lower avoidance costs than the automotive sector. Switching to a different location, e.g. moving aluminum production out of the EU owing to higher energy costs, would ultimately also damage the European automotive industry, since important material resources would leave the EU.

4.3 Consequences

To date, there is nowhere in the world where automobiles have been banned because of their fuel consumption, and nowhere where politicians have decided to introduce a closed emissions trading system. Initially, instead of instruments like this, in the EU the **systems established in other important countries** should also be

evaluated for their use in the implementation of future targets in the EU (and in the interest of global convergence of policies, too). This should apply in particular to the Japanese regulatory system and the **stepwise approach**, with which not only the above-mentioned calculation options exert their effects, but also factors that producers cannot influence would be considered before sanctions are imposed.

The VDA is open to discussing an appropriate approach for the EU based on an **analysis** of experience with existing systems.

One point here is definitely of key importance: to prevent **distortions on the internal market** it is absolutely essential to exclude national points of view and to take a common approach for the whole of the EU.

Moreover, it appears not to be practicable and not in the interest of the internal market to have separate monitoring of target achievement or failure for individual Member States. This too should be done **centrally, at European level**.

5. Political conclusions

A parameter-based, steady/smooth benchmark approach represents a policy ensuring incentives to raise fuel efficiency in **all segments**. A policy discriminating against premium vehicles would damage a key area for generating value-added and employment in the European automotive industry, and primarily in the German automotive industry.

The analysis given here clearly favors developing a **differentiated parameter-based efficiency target** based on the parameters reflecting the different customer requirements. Today's target for average emissions from all vehicles on the EU market would be translated into a percentage target reduction for each passenger car model.

Compared to all other options discussed, this procedure offers distinct **advantages**:

- It provides a clear and transparent target for the fuel efficiency of consumption/emissions for all vehicle segments, classes, models and types.

- Competition amongst the automotive manufacturers is not distorted by penalization of products in the upper segments, but instead an even pressure to improve fuel efficiency arises for all manufacturers in all segments.

- Risks to employment in the Member States resulting from a structural intervention in the automotive industry and its suppliers are avoided.

- In the medium term the basis for assessment of a parameter-based system can also be linked with other instruments, namely motor vehicle taxation and fuel consumption labeling.

- A transparent, reliable and effective instrument is provided for the internal planning and decision-making processes of the automotive manufacturers.

- All the necessary data are available in a transparent way and therefore the system is not susceptible to manipulation.