



Swedish Society for Nature Conservation

Report A Weighty Decision

Potential Loopholes in the EU's Proposed
Cars and Carbon Dioxide Legislation

Lotta Silfver and Michael Koucky

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Preface

Reducing the fuel consumption of new cars is essential for combating climate change.

In December 2007 the European Commission launched a proposal which aims to make European passenger cars more energy efficient.

In order to contribute to the discussion, the Swedish Society for Nature Conservation has scrutinised the proposal in detail. Our review reveals some important shortcomings which, if the proposal is adopted in its original form, would include loopholes for very heavy, and therefore very energy-consuming, vehicles.

In this report, prepared by Michael Koucky and Lotta Silfver at Koucky & Partners AB, we identify these shortcomings and give concrete proposals for amendments that

could secure the robustness of the legislation. We hope that EU governments as well as the European Parliament make use of these proposals and, as far as possible, include them in the upcoming legislation.

We would like to thank the Swedish National Road Administration for their financial support.



Svante Axelsson
Secretary General
Swedish Society for Nature Conservation

1. Introduction

The European Union has adopted a goal to reduce the average emissions from new light-duty vehicles to 120 g of CO₂/km by 2012. To achieve this goal, the European Commission presented in December 2007 a proposal for a regulation to limit the average CO₂ emissions from new cars sold within the European Union to 130 g of CO₂/km by 2012. An additional 10 g/km should be achieved by complementary measures.

The aim of this report is to scrutinise the Commission's proposal for potential loopholes that car manufacturers could use to escape regulation. Experience from the American CAFE regulations on the fuel economy of cars shows that loopholes in vehicle regulations can be exploited by car manufacturers, potentially undermining the effectiveness of the regulation.

The report further aims to provide suggestions for changes or parallel measures that complement the Commission's proposal, to ensure that the intentions of the CO₂ regulation can be achieved. Finally, it gives suggestions on how light-duty commercial vehicles could be integrated in the regulation.

1.1 Experience from the US CAFE regulations

The Corporate Average Fuel Economy (CAFE) regulations in the United States, first enacted in 1975, are federal regulations intended to improve the average fuel economy of cars and light trucks (trucks, vans and sport utility vehicles) sold in the US. Historically, it is measured by the sales-weighted fuel economy of a manufacturer's fleet of current model year passenger cars or light trucks manufactured for sale in the United States. Only vehicles with a gross vehicle weight rating of 8 500 pounds (3 856 kg) or less are included.

The US Congress adopted the first efficiency standards for cars in 1975: a minimum of 27.5 mpg to be achieved within 10 years (sales-weighted fleet average for each manufacturer). When the CAFE standards were first adopted, light trucks (pick-ups, vans and a few SUVs) were mainly

used in farming, construction and commerce. Congress left it up to the National Highway Traffic Safety Administration to set the levels for the 17-20 per cent of vehicles which were defined as light trucks. The adopted truck standards were far less demanding than the goals for passenger cars. The industry responded by turning more than half of all vehicles into trucks. They also added weight to vehicles to bump them above the 8 500 pounds threshold so they were exempt from CAFE altogether.

The car/truck distinction has been stretched well beyond the original purpose of the regulation, drastically reducing the effectiveness of CAFE.

To again create a standard that has a real impact on fuel economy, the US standard will change in 2011 to include many larger vehicles. The current standard is 27.5 mpg (8.6l/100 km) for passenger cars and 20.7 mpg (11.4l/100 km) for light trucks (sales-weighted fleet average).

The US experience demonstrates the importance of well-specified rules that cover all vehicle groups and minimize the possibility of manufacturers finding loopholes in the regulation. Otherwise, vehicle manufacturers will try to escape regulations by adapting existing models and by developing and marketing new categories of cars, as the example of SUVs in the US has shown.

2. Description of the Current Proposal

The European Commission published in December 2007 its proposal for a regulation of the CO₂ emissions standards for new cars. It forms part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles. The proposal includes provisions to reduce the average emissions from new cars sold in Europe to 130 g of CO₂/km by 2012. The regulation is to be supplemented with measures that will provide additional emissions reductions of 10 g/km, thereby achieving the Community's objective of 120 g/km by 2012¹.

The following points in the proposal are relevant for the discussion of potential loopholes:

- The Regulation shall apply to motor vehicles of category M₁ as defined in Annex II to Directive 2007/46/EC with a reference mass not exceeding 2 610 kg, and vehicles to which type approval is extended in accordance with Article 2(2) of Regulation (EC) No 715/2007 ('passenger cars') which are registered in the Community for the first time and which have not previously been registered outside the Community ('new passenger cars').
- The objective will be achieved through improved vehicle technology as measured in accordance with Regulation (EC) 715/2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and its implementing measures.
- The proposal sets targets for the specific emissions of CO₂ from new passenger cars in the Community as a function of their mass.
- The proposal sets mandatory targets for the specific emissions of CO₂ from passenger cars from 2012 onwards. The targets will apply to the average specific emissions of CO₂ in grams per kilometre (g/km) for each manufacturer registered in the EU in each calendar year. Manufacturers may form a pool in order to meet their targets.
- The targets under the Regulation are established on the basis of the best knowledge currently available. In the establishment of the targets, the projected evolution of new cars' mass until 2012 should be taken into account, and potential incentives to increase vehicle mass just in order to benefit from a consequential increase of the CO₂ reduction target should be avoided.
- If a manufacturer fails to meet its target, it will be required to pay an excess emissions premium in respect of each calendar year from 2012 onwards.
- Manufacturers who are responsible for less than 10 000 new passenger cars registered in the Community per calendar year have the right to apply for derogation.
- According to the proposal the regulation shall not apply to special purpose vehicles as defined in paragraph 5 of Annex II to Directive 2007/46/EC.

¹ See T&E's report 'Regulating CO₂ emissions from new cars' for a detailed description of the history of the 120 g/km goal. www.transportenvironment.org

3. Potential Loopholes and Suggested Solutions

The vast majority of ordinary cars are covered by the current proposal. However, for the following vehicle groups, the proposal contains potential loopholes or incentives for car manufacturers to change vehicle design to escape regulation. Light commercial vehicles are not covered by the proposal at all.

A: Heavy passenger cars

- Cars with a reference mass between 2 610 kg and 2 840 kg, for example the Range Rover and Toyota Land Cruiser.
- Cars with a reference mass close to 2 610 kg, for example the Mercedes G55 AMG.
- Cars with a reference mass over 2 840 kg, not covered by the current proposal, for example the Hummer H2.

B: Vehicles that can be used as both a passenger car and a commercial vehicle

- Multi-purpose vehicles that can carry multiple passengers and have a separated luggage compartment or a pick-up truck rear, for example the Hummer H2 SUT and the Nissan Navara.

C: Light commercial vehicles

- Commercial vehicles, for example the Peugeot Partner and the Volkswagen Crafter Double Cab.

3.1 Heavy passenger cars

The proposed regulation applies to passenger cars with a reference mass not exceeding 2 610 kg and vehicles to which type approval is extended in accordance with Article 2(2) of the Euro 5/6 legislation. The latter can apply to vehicles with a reference mass between 2 610 kg and 2 840 kg. For these vehicles, the manufacturer may currently choose the kind of type approval (passenger car or truck). According to the proposed regulation, this implies that it is dependent on the manufacturer's choice of type approval whether a car model

is subject to the CO₂ regulation or not.

Vehicles above 2 840 kg are not covered by the proposed CO₂ regulation at all.

A consequence of the proposal is that all vehicles weighing more than 2 610 kg can avoid the regulation. There are currently a number of cars on the market with a reference mass higher than 2 610 kg, such as the Range Rover TdV8 Turbo diesel, Toyota Land Cruiser V8 and Cadillac Escalade.



Range Rover. Reference mass 2 735 kg, CO₂ emissions 299 g/km. Photo: Land Rover

Since it is likely to be beneficial for car manufacturers that their heaviest models are not covered by the regulation, there may be a risk that manufacturers of vehicles close to 2 610 kg will add weight to the vehicle in order to exceed the limit. Experience from the US CAFE standards shows that this strategy has been used by car manufacturers. An example of a vehicle close to the weight boundary is the Mercedes G55 AMG (2 575 kg).



Mercedes G55 AMG. Reference mass 2 575 kg, CO₂ emissions 378g/km
Photo: Mercedes-Benz

There are currently only a few car models that weigh more than 2 840 kg and are therefore not covered by the proposal. The one example that has been found is the Hummer H2.



Hummer H2, classified as a passenger car. Reference mass 3 135 kg, CO₂ emissions 412 g/km. Photo: GM Corp.

Suggested solutions

Remove weight boundary

In order to ensure that cars heavier than 2 610 kg will be regulated, it is suggested that the weight boundary be removed. It is further suggested that the reference to type approval also be removed. With these changes, all vehicles defined as category M_1 (passenger cars) will be subject to the CO₂ regulation, and the possibility for manufacturers to freely choose whether to include their heaviest models is removed.

The removal of the weight boundary has also been suggested by Guido Sacconi, Member of the European Parliament and the EP's rapporteur on this dossier for the environment committee, in his Draft Report dated May 8, 2008. The suggestion by Sacconi addresses the problem, but the loophole remains since it is voluntary for manufacturers to choose how to get type approval for vehicles between 2 610 kg and 2 840 kg.

Ensure that CO₂ is measured according to the European driving cycle for passenger cars

The proposal states that carbon dioxide emissions are to be measured in accordance with regulation 715/2007 (Euro 5/6 legislation, New European Driving Cycle NEDC). However, regulation 715/2007 does not apply to vehicles with a reference mass above 2 840 kg or vehicles above 2 610 kg for which the manufacturer has chosen type approval as a truck. For these vehicles, directive 1999/96/EC applies. To ensure that even the really heavy passenger cars are covered by the CO₂ regulation, it is necessary to change the proposal.

Article 2, paragraph 1 Scope	
Text proposed by the Commission	Proposed amendment
This Regulation shall apply to motor vehicles of category M_1 as defined in Annex II to Directive 2007/46/EC with a reference mass not exceeding 2 610 kg and vehicles to which type approval is extended in accordance with Article 2(2) of Regulation (EC) No 715/2007 ('passenger cars') which are registered in the Community for the first time and which have not previously been registered outside the Community ('new passenger cars').	This Regulation shall apply to motor vehicles of category M_1 as defined in Annex II to Directive 2007/46/EC (<i>deletion</i>) ('passenger cars') which are registered in the Community for the first time and which have not previously been registered outside the Community ('new passenger cars').
Justification	
Eliminating mass as a reference for the scope of the regulation will prevent very heavy vehicles from being exempt from it.	

The New European Driving Cycle is used to measure the emissions of carbon dioxide and other substances from light-duty vehicles in a combined chassis dynamometer test according to the Euro 5/6 legislation. It consists of a city cycle with braking and acceleration manoeuvres (maximum 50 km/h) and an overland cycle with a maximum speed of 120 km/h. The NEDC is supposed to represent typical usage of cars in Europe.

Emissions from heavy-duty vehicles are measured using a different method and driving cycles according to Euro V/VI legislation, consisting of measurements of steady state and transient loads.

Article 1 Subject matter and objectives	
Text proposed by the Commission	Proposed amendment
This Regulation establishes CO ₂ emission performance requirements for new passenger cars in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new car fleet should achieve CO ₂ emissions of 120 g CO ₂ /km. The Regulation sets the average CO ₂ emissions for new passenger cars at 130 g CO ₂ /km by means of improvement in vehicle motor technology as measured in accordance with Regulation (EC) No 715/2007 and its implementing measures. This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.	This Regulation establishes CO ₂ emission performance requirements for new passenger cars in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new car fleet should achieve CO ₂ emissions of 120 g CO ₂ /km. The Regulation sets the average CO ₂ emissions for new passenger cars at 130 g CO ₂ /km by means of improvement in vehicle motor technology. <i>(deletion) The CO₂ emissions shall be measured in accordance with the current European Driving Cycle for light-duty vehicles.</i> This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.
Justification	
By including a clear reference to the most current driving cycle for light-duty vehicles, the regulation becomes more specific on how CO ₂ emissions are to be measured, and specifies that the same measuring procedure is used for all vehicles covered by the regulation irrespective of weight.	

3.2 Vehicles that can be used both as passenger car and commercial vehicle

A risk with the current proposal is that vehicle manufacturers could relatively easily build cars that are marketed and sold as passenger cars, although they are formally defined as trucks/commercial vehicles. Vehicle categories are defined in Directive 2007/46. According to the directive, a multi-purpose vehicle is not a passenger car if the luggage compartment is permanently separated from the passenger compartment (see Appendix 1 Definitions). A vehicle with a pick-up truck rear is therefore classified as a commercial vehicle, even if its main purpose is to transport passengers.

An example of this is the Hummer H2 SUT with a pick-up style rear. Due to the design of its trunk, the car is classified as a truck and falls outside the regulation. However, the very similar Hummer H2 with integrated luggage compartment is classified as a passenger car. Both models are marketed as passenger cars.



Left: Hummer H2 SUT– not classified as a passenger car since the luggage space is separated from the passenger compartment. Right: Hummer H2, classified as a passenger car. Photo: GM Corp.

Suggested solutions

There are two solutions to address this loophole:

- Ideally, the definition of passenger car in Directive 2007/46, Annex II, Part C, paragraph 1, would be changed in such a way that even multi-purpose vehicles with separated luggage compartments can be passenger cars, if certain conditions are fulfilled. The conditions already defined in the directive are adequate.
- Alternatively, the new CO₂ regulation would be extended to include these vehicles.

Article 2, paragraph 1 b (new) Scope	
Text proposed by the Commission	Proposed amendment
	<p>The regulation shall further apply to multi-purpose vehicles as defined in Annex II, Section 1 of Part C of Directive 2007/46 with separated luggage compartment.</p> <p>However, the regulation does not apply if such a vehicle meets both of the following conditions:</p> <ol style="list-style-type: none"> 1. The number of seating positions, excluding the driver, is not more than six. A 'seating position' shall be regarded as existing if the vehicle is provided with 'accessible' seat anchorages; 'accessible' shall mean those anchorages which can be used. In order to prevent anchorages being accessible, the manufacturer shall physically obstruct their use, for example by welding over cover plates or by fitting similar permanent fixtures which cannot be removed by use of normally available tools; and 2. $P - (M + N * 68) > N * 68$ <p>where</p> <p>P = technically permissible maximum laden mass in kg M = mass in running order in kg (reference mass) N = number of seating positions excluding the driver.</p>
Justification	
<p>With this definition of passenger cars, heavier vehicles that can carry some load, but not much in relation to their number of seats, will also be covered by the legislation.</p>	

With this change, vehicles like the Hummer H2 SUT with relatively small capacity to transport goods are covered by the legislation. Vehicles mainly designed for the transportation of goods, like the Volkswagen Crafter Double Cab, are exempt since they meet both conditions in the regulation.



Volkswagen Crafter Double Cab. Photo: Volkswagen

However, there are still loopholes for Sport Utility Trucks (SUTs) that can carry a substantial load besides the passengers and can be used both as passenger cars and commercial vehicles. Examples are cars like the Nissan Navara and Mazda BT-50. These cars are in many respects similar to saloons and are in most cases marketed as passenger cars. Since these vehicles have a dual character as both passenger cars and commercial vehicles, it may be difficult to fit them into the more strict definition of passenger cars. To solve this, the legislation also has to cover light commercial vehicles.



Nissan Navara. CO₂ emissions 270 g/km. Photo: Nissan



Mazda BT-50. CO₂ emissions 244 g/km. Photo: Mazda

3.3 Light-duty commercial vehicles

The proposed regulation setting emission performance standards for new passenger cars covers passenger cars only. Light commercial vehicles are not part of the proposal, even though they are an increasingly important part of the vehicle fleet.

However, the EU objective of achieving 120 g CO₂/km for new cars by 2012 includes all light-duty vehicles – both passenger cars and light commercial vehicles – according to the European Commission’s communication about the strategy to reduce CO₂ emissions (February 2007). To ensure progress in fuel efficiency improvements in light commercial vehicles, regulations are therefore suggested for this vehicle category too.

Regulations for light commercial vehicles would also tighten the loophole for the so-called SUTs (multi-purpose vehicles that can be both light commercial vehicles and passenger cars) as described above. It would ensure that these vehicles are covered by CO₂ regulations, regardless what category they fall in.

Light commercial vehicles form a vehicle category with great diversity in size and purpose, from small delivery vehicles such as the Peugeot Partner to large pick-up trucks like the beforementioned Volkswagen Crafter or vans like the Peugeot Boxer. This diversity can make general regulations for this vehicle group more difficult, but not impossible, to create.

Suggested solutions

There are a number of potential solutions to regulate emissions from light-duty commercial vehicles. One option is a separate regulation for this vehicle category, similar to the regulation for passenger cars.

Another option would be to include light commercial vehicles in the regulation for passenger cars to create a regulation that covers all light-duty vehicles. Such a change would also reduce the need to draw clear-cut boundaries between passenger cars and light commercial vehicles, and would ‘scoop up’ vehicles with substantial CO₂ emissions such as the Nissan Navara and other SUTs as mentioned above.

To integrate light commercial vehicles in the current proposal for passenger cars, two possible alternatives are suggested, as presented in the following page.



Left: Peugeot Partner. Right: Peugeot Boxer. Photos: Peugeot

ALTERNATIVE 1 Article 1 Subject matter and objectives	
Text proposed by the Commission	Proposed amendment
<p>This Regulation establishes CO₂ emission performance requirements for new passenger cars in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new car fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets the average CO₂ emissions for new passenger cars at 130 g CO₂/km by means of improvement in vehicle motor technology as measured in accordance with Regulation (EC) No 715/2007 and its implementing measures. This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.</p>	<p>This Regulation establishes CO₂ emission performance requirements for new light-duty vehicles (passenger cars and light-duty commercial vehicles) in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new light-duty vehicle fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets the average CO₂ emissions for new light-duty vehicles at 130 g CO₂/km by means of improvement in vehicle motor technology. <i>(deletion) The CO₂ emissions shall be measured in accordance with the current European Driving Cycle for light-duty vehicles.</i> This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.</p>
Justification	
<p>The Commission proposal does not include light commercial vehicles. Light commercial vehicles should be included in this regulation because they are responsible for approximately 2 per cent of the EU's total transport emissions.</p>	

ALTERNATIVE 2 Article 1 Subject matter and objectives	
Text proposed by the Commission	Proposed amendment
<p>This Regulation establishes CO₂ emission performance requirements for new passenger cars in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new car fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets the average CO₂ emissions for new passenger cars at 130 g CO₂/km by means of improvement in vehicle motor technology as measured in accordance with Regulation (EC) No 715/2007 and its implementing measures. This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.</p>	<p>This Regulation establishes CO₂ emission performance requirements for new light-duty vehicles (passenger cars and light-duty commercial vehicles) in order to ensure proper functioning of the internal market and achieve the overall objective that the average new light-duty vehicle fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets a target, for new passenger cars, of an average of 130 g CO₂/km and for light-duty commercial vehicles of 175 g CO₂/km as from 1 January 2012, by means of improvement in vehicle motor technology. <i>(deletion) The CO₂ emissions shall be measured in accordance with the European Driving Cycle for light-duty vehicles.</i> This Regulation will be complemented by additional measures to reach the overall goal of 120 g CO₂/km as part of the Community's integrated approach.</p>
Justification	
<p>The Commission proposal does not include light commercial vehicles. Light commercial vehicles should be included in this regulation because they are responsible for approximately 2 per cent of the EU's total transport emissions.</p>	

By including light commercial vehicles in the same regulation, the distinction between passenger cars and light commercial vehicles becomes less important and ambiguities can be avoided. The suggested change might put slightly more pressure on vehicle manufacturers to improve fuel efficiency by vehicle technology than the current proposal, since improvements in light commercial vehicles no longer count as complementary measures.

A separate, less strict target for light commercial vehicles can be justified with the argument that, due to their purpose, many of these vehicles need to be heavier and stronger than passenger cars. Reductions in weight and engine power are therefore more difficult to achieve. To ensure that the overall goal of 120 g CO₂/km for all light-duty vehicles is nevertheless achieved, the goal for complementary measures needs to be more flexible.

4. Putting It All Together

Below, the suggested changes to articles 1 and 2 in the proposal of the European Commission are summarised and presented next to the original text. With these suggested changes, the regulation's loopholes as identified in this re-

port have been addressed.

Please observe that in some cases, several suggestions for changes have been presented in each chapter above. In the summary below, only one option is presented.

Article 1 Subject matter and objectives	
Text proposed by the Commission	Proposed amendment
<p>This Regulation establishes CO₂ emission performance requirements for new passenger cars in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new car fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets the average CO₂ emissions for new passenger cars at 130 g CO₂/km by means of improvement in vehicle motor technology as measured in accordance with Regulation (EC) No 715/2007 and its implementing measures. This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.</p>	<p>This Regulation establishes CO₂ emission performance requirements for new light-duty vehicles (passenger cars and light-duty commercial vehicles) in order to ensure proper functioning of the internal market and achieve the EU's overall objective that the average new light-duty vehicle fleet should achieve CO₂ emissions of 120 g CO₂/km. The Regulation sets the average CO₂ emissions for new light-duty vehicles at 130 g CO₂/km by means of improvement in vehicle motor technology. (deletion) The CO₂ emissions shall be measured in accordance with the current European Driving Cycle for light-duty vehicles. This Regulation will be complemented by additional measures corresponding to 10 g/km as part of the Community's integrated approach.</p>
Justification	
<p>The Commission proposal does not include light commercial vehicles. Light commercial vehicles should be included in this regulation because they are responsible for approximately 2 per cent of the EU's total transport emissions.</p> <p>By including a clear reference to the most current driving cycle for light-duty vehicles, the regulation becomes more specific on how CO₂ emissions would be measured and that the same measurement procedure would be used for all vehicles covered by the regulation irrespective of weight.</p>	

Article 2, paragraph 1 Scope	
Text proposed by the Commission	Proposed amendment
<p>This Regulation shall apply to motor vehicles of category M_1 as defined in Annex II to Directive 2007/46/EC with a reference mass not exceeding 2 610 kg and vehicles to which type approval is extended in accordance with Article 2(2) of Regulation (EC) No 715/2007 ('passenger cars') which are registered in the Community for the first time and which have not previously been registered outside the Community ('new passenger cars').</p>	<p>This Regulation shall apply to motor vehicles of category M_1 as defined in Annex II to Directive 2007/46/EC (deletion) ('passenger cars') which are registered in the Community for the first time and which have not previously been registered outside the Community ('new passenger cars').</p>
Justification	
<p>Eliminating mass as a reference for the scope of the regulation will prevent very heavy vehicles from being exempt from it.</p>	

Article 2, paragraph 1 b (new) Scope	
Text proposed by the Commission	Proposed amendment
	<p>The regulation shall further apply to multi-purpose vehicles as defined in Annex II, Section 1 of Part C of Directive 2007/46 <i>with</i> separated luggage compartment.</p> <p>However, the regulation does not apply if such a vehicle meets both of the following conditions:</p> <ol style="list-style-type: none"> 1. The number of seating positions, excluding the driver, is not more than six. A 'seating position' shall be regarded as existing if the vehicle is provided with 'accessible' seat anchorages; 'accessible' shall mean those anchorages which can be used. In order to prevent anchorages being accessible, the manufacturer shall physically obstruct their use, for example by welding over cover plates or by fitting similar permanent fixtures which cannot be removed by use of normally available tools; and 2. $P - (M + N * 68) > N * 68$ <p>where</p> <p>P = technically permissible maximum laden mass in kg M = mass in running order in kg (reference mass) N = number of seating positions excluding the driver.</p>
Justification	
<p>With this definition of passenger cars, heavier vehicles that can carry some load, but not much in relation to their number of seats, will also be covered by the legislation.</p>	

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Web sites

National Highway Traffic Safety Administration www.nhtsa.gov

Different vehicle manufacturers' websites

Appendencies

Appendix 1: Definitions

Appendix 2: Weight and emission data for selected car models

Appendix 1

Definitions	
Regulation (EC) No 715/2007, Article 2.1.	This Regulation shall apply to vehicle of categories M ₁ , M ₂ , N ₁ and N ₂ as defined in Annex II to Directive 70/156/EEC with a reference mass not exceeding 2 610 kg.
Regulation (EC) No 715/2007, Article 2.2	At the manufacturer's request, type approval granted under this Regulation may be extended from vehicles covered by paragraph 1 to M ₁ , M ₂ , N ₁ and N ₂ vehicles as defined in Annex II to Directive 70/156/EEC with a reference mass not exceeding 2 840 kg and which meet the conditions laid down in this regulation and its implementing measures.
Category M according to the definition in Annex II to Directive 2007/46/EC	Motor vehicles with at least four wheels designed and constructed for the carriage of passengers.
Category M ₁ according to the definition in Annex II to Directive 2007/46/EC	<p>Vehicles designed and constructed for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat.</p> <p>The type of bodywork shall be indicated by the following codification:</p> <p>AA Saloon – ISO Standard 3833-1977, term No 3.1.1.1, but including also vehicles with more than four side windows. AB Hatchback (Saloon AA with a hatch at the rear end of the vehicle)</p> <p>AC Station wagon – ISO Standard 3833-1977, term No 3.1.1.4 (estate car)</p> <p>AD Coupé - ISO Standard 3833-1977, term No 3.1.1.5</p> <p>AE Convertible - ISO Standard 3833-1977, term No 3.1.1.6</p> <p>AF Multi-purpose vehicle - Motor vehicle other than those mentioned in AA to AE intended for carrying passengers and their luggage or goods, in a single compartment. However, if such a vehicle meets both of the following conditions:</p> <p>(i) the number of seating positions, excluding the driver, is not more than six.</p> <p>A "seating position" shall be regarded as existing if the vehicle is provided with "accessible" seat anchorages; 'accessible' shall mean those anchorages, which can be used. In order to prevent anchorages being accessible, the manufacturer shall physically obstruct their use, for example by welding over cover plates or by fitting similar permanent fixtures which cannot be removed by use of normally available tools; and</p> <p>(ii) $P - (M + N * 68) > N * 68$</p> <p>where</p> <p>P = technically permissible maximum laden mass in kg M = mass in running order in kg (reference mass) N = number of seating positions excluding the driver.</p> <p>This vehicle is not considered to be a vehicle of category M₁.</p>
Category M ₂ according to the definition in Annex II to Directive 2007/46/EC	Vehicles designed and constructed for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5 tonnes.

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Category N according to the definition in Annex II to Directive 2007/46/EC	Motor vehicles with at least four wheels designed and constructed for the carriage of goods.
Category N ₁ according to the definition in Annex II to Directive 2007/46/EC	<p>Vehicles designed and constructed for the carriage of goods and having a maximum mass not exceeding 3,5 tonnes.</p> <p>BA Lorry – See Directive 97/27/EC of the European Parliament and of the Council of 22 July 1997 relating to the masses and dimensions of certain categories of motor vehicles and their trailers (1) Annex 1 item 2.1.1</p> <p>BB Van – Lorry with the cab integrated into the body</p> <p>BC Semi-trailer towing vehicle – See Directive 97/27/EC Annex 1 item 2.1.1</p> <p>BD Trailer towing vehicle (road tractor) - See Directive 97/27/EC Annex 1 item 2.1.1</p> <p>However, if a vehicle defined as BB with a technically permissible maximum mass not exceeding 3 500 kg:</p> <p>- has more than 6 seating positions excluding the driver or meets both of the following conditions:</p> <p>(i) the number of seating positions, excluding the driver, is not more than 6 and</p> <p>(ii) $P - (M + N * 68) \geq N * 68$</p> <p>This vehicle is not considered to be a vehicle of category N.</p> <p>However, if a vehicle defined as BA, BB with a technically permissible maximum mass exceeding 3 500 kg, BC or BD meets at least one of the following conditions:</p> <p>(i) the number of seating positions, excluding the driver, is more than 8 and</p> <p>(ii) $P - (M + N * 68) \geq N * 68$</p> <p>This vehicle is not considered to be a vehicle of category N.</p>
Category N2 according to the definition in Annex II to Directive 2007/46/EC	Vehicles designed and constructed for the carriage of goods and having a maximum mass exceeding 3,5 tonnes but not exceeding 12 tonnes.
'Special purpose vehicle' according to the definition in Annex II paragraph 5 to Directive 2007/46/EC	<p>'Special purpose vehicle' means a vehicle intended to perform a function which requires special body arrangements and/or equipment. This category shall include wheel-chair accessible vehicles.</p> <p>For example: Motor Caravan, Armoured vehicles, Ambulances, Hearses, Wheelchair accessible vehicle, Trailer caravans, Mobile cranes, Other special purpose vehicles</p>
Reference mass according to Regulation (EC) No 715/2007 Article 3	The mass of the vehicle in running order, less the uniform mass of the driver of 75 kg and increased by a uniform mass of 100 kg (In Sweden this relates to the vehicles 'tjänstevikt' + 25 kg)
Light duty vehicles	Passenger cars and vans. M and N vehicles below 2 610 kg
Light commercial vehicles (LCV)	N ₁ vehicles. Goods vehicles with a maximum allowed mass of up to 3.5 tonnes.

Appendix 2

Below, weight and CO₂ emission data for selected car models is presented to illustrate the different types of vehicles discussed in this report.

Note that the sales-weighted average emission of cars sold within the EU in 2006 was 160 g CO₂/km according to T&E:s report *Reducing CO₂ Emissions from New Cars: A Study of Major Car Manufacturers' Progress in 2006*.

Weight and emission data for selected car models					
Car model	Reference mass (kg) *	Total weight (kg)	CO ₂ emission (g/km)	Number of seating positions, excluding the driver	Source
Hummer H2	3 135	3 500	412	4	Hedins Bil 031-67 94 00
Hummer H2 SUT	Approx. 3 135	3 500	412	4	Hedins Bil 031-67 94 00
VW Multivan 1,9 TDI	2 224	3 200	208	6	www.volkswagen.se
Chrysler Grand Voyager 2008 3,8	2 125	2 690	302	7	www.chrysler.se
BMW X3 2,0i	1 755	2 200	215	4	www.bmw.se
Audi Q7 3.0 TDI Quattro	Approx. 2 545	3 120	260	6	www.audi.se
Volvo V70 T6 AWD	1 811	2 390	275	4	www.volvocars.com
Nissan Navara double cab	2 146-2 173	2 805	276	4	www.nissan.se
Land Rover, Range Rover TdV8 Turbo diesel	2 735	3 200	299	4	www.landrover.se
Toyota Land Cruiser V8 4,5 D4D	2 825	Approx. 3 500	270	6	www.toyota.se
Cadillac Escalade 6,2 V8	2 635	3 221	383	6	www.cadillaceurope.com
Mercedes G55 AMG	2 575	3 200	378	4	www.mercedes-benz.se
Mazda BT-50	1 937	3 030	244	4	www.mazda.se

* According to Regulation (EC) No 715/2007 Article 3. In Sweden, 'reference mass' translates to the vehicle's 'tjänstevikt' + 25 kg. The reference mass for all vehicles are based on information available in May and June 2008.

The aim of this report is to scrutinise the European Commission's proposal on CO₂ emissions from cars for potential loopholes that manufacturers could use to escape regulation. Experience from the American CAFE regulations on the fuel economy of cars shows that loopholes in vehicle regulations can be exploited by car manufacturers, potentially undermining the effectiveness of the regulation. The report further aims to provide suggestions for changes or parallel measures that complement the Commission's proposal, to ensure that the intentions of the CO₂ regulation can be achieved. Finally, it gives suggestions on how light-duty commercial vehicles could be integrated in the regulation.



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The Swedish Society for Nature Conservation is an environmental organisation with power to bring about change. We spread knowledge, map environmental threats, create solutions, and influence politicians and public authorities, at both national and international levels. Moreover, we are behind one of the world's most challenging ecolabellings, "Bra Miljöval" (Good Environmental Choice).

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