



**for a living planet**

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**Submission to EC's consultation on the strategy for reducing CO<sub>2</sub> emissions from cars**  
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In 2004, CO<sub>2</sub> emissions from the Transport sector accounted for 26% of the EU-25 total. Road transport was responsible for 86% of this sectoral contribution. Since 1990 the sector increased its energy consumption by about 30%, the largest growth of any energy-consuming sector. Given this context, WWF strongly welcomes the Commission's intention to table as soon as possible a proposal for a legislative framework for improving vehicle efficiency / reducing CO<sub>2</sub> from cars in the European Union, to help meet the common objectives of staying below 2°C global warming. WWF appreciates this opportunity to contribute to the consultation.

**Basic principles**

*Well-to-Wheels = Well-to-Tank + Tank-to-Wheels*

- Referring to the widely adopted Well-to-Wheels model of automotive energy analysis, WWF strongly recommends that *vehicle* efficiency targets should apply exclusively to the Tank-to-Wheels segment. Vehicle manufacturers should be held accountable for increasing the energy efficiency of their products, regardless how the energy which their products consume is extracted, processed, distributed, and sold.
- This distinction is fundamentally important to ensure that responsibility is properly and justly assigned, and to avoid complications arising from overlap with complementary legislation. While this distinction may appear to be self-evident, WWF should like to make the point explicit because the European Commission's consultation website mentions the possibility of permitting car manufacturers to count biofuels towards meeting their [CO<sub>2</sub> reduction] targets. This would be wrong in principle, with negative consequences, for the reasons outlined below:
  1. The EU Biofuel target, as agreed by the European Council in March 2007, imposes a 10% volume target of all fuels used in vehicles by 2020. It is based on strict sustainability criteria and the introduction of 2<sup>nd</sup> generation biofuels to ensure *inter alia* that only biofuels which deliver significant CO<sub>2</sub> reduction benefits will count towards meeting the target. A proposal for implementation of this target in the 27 Member States is likely to be included in the upcoming 'roadmap' for renewable energy due by the Commission later in 2007.
  2. In parallel, the forthcoming EU Fuels Quality Directive specifically addresses the overall and annual reduction of carbon emissions of transportation fuels by 1% per year that is, and will remain, the exclusive domain of the transport fuel suppliers. They have the responsibility to select the appropriate feedstocks and production processes necessary to meet those targets.

3. These two legislative initiatives are clearly and rightly intended to address the Well-to-Tank segment of the energy chain. It would therefore be wrong in principle to allow biofuel gains to also count towards the Tank-to-Wheels segment, i.e. the vehicle manufacturers' obligations. Likewise, it would be wrong (and surely met with fierce resistance by the automobile industry) for vehicle manufacturers to be *penalised* as a result of transport fuel suppliers investing heavily in unconventional and highly energy-intensive hydrocarbon resources, such as tar sands, oil shale, coal-to-liquids, etc. Disincentives for these types of activities should apply exclusively to the fuel suppliers, as should incentives for sustainable biofuels.

### *Energy Efficiency versus CO<sub>2</sub> Emissions*

- The automotive sector is currently dominated by vehicles which depend for their motive energy upon the consumption of hydrocarbons in internal combustion engines (ICEs). As such, CO<sub>2</sub> emissions have been broadly accepted as a reasonable proxy for vehicle energy efficiency: the less CO<sub>2</sub> per kilometre, the more efficient the vehicle. WWF argues that it is now appropriate to implement a *direct* measure of vehicle efficiency, i.e. energy consumed per kilometre, to replace the CO<sub>2</sub> metric, for the following reasons:
  1. Whether intentionally or accidentally, the CO<sub>2</sub> proxy maintains the false perception that cars *must* burn fuels. Automotive technologies are available today, becoming commercially viable within the timescale of the proposed EU strategy, which do not rely upon on-board combustion of hydrocarbons to derive their motive energy.
  2. Grid-connected solutions such as plug-in hybrid electric vehicles (PHEVs) and battery-electric vehicles (BEVs) have the potential to render CO<sub>2</sub> targets redundant, especially in the latter case of BEVs which have zero *vehicular* emissions. Of course, zero emissions do not equate to 100% efficiency: PHEVs and BEVs are still subject to the same basic principles of energy efficiency, i.e. it's possible to place grid-connected vehicles on a scale from supremely efficient to horribly inefficient. Thus, vehicle efficiency targets should apply equally to PHEVs and BEVs, notwithstanding the additional associated benefits of lower noise and reduced urban pollution (which are not comprehended by CO<sub>2</sub> targets, either).
  3. The electric drivetrain, whether powered from rechargeable batteries or in future via on-board fuel cell generators, is inherently more efficient than the mechanical drivetrain which currently dominates automotive design. Therefore, to avoid erecting unintentional barriers to the commercialisation of an inherently superior technology, the European Commission must develop metrics which are meaningful to ALL automotive technologies, not just those which we are accustomed to seeing on our roads.
  4. Having already established (above) that vehicle manufacturers should be responsible for improving the efficiency of their vehicles, NOT for reducing the carbon content of fuels, it makes perfect sense to assign energy efficiency standards, such as **MJ/km**, which are neutral towards automotive technology. It is a trivial exercise to convert

diesel, gasoline, LPG, biofuels or any other carbon-based fuel into energy units which then permit a direct comparison with other energy carriers such as electricity.

5. The so-called long tailpipe theory – “The electricity still has to be produced, and what if that electricity comes from coal?” – is an irrelevant distraction in this case. The carbon intensity of electricity should and will be addressed elsewhere, in dedicated Power sector legislation, just as the carbon intensity of transport fuels should and will be addressed by the EU Fuels Quality Directive. For instance in the EU, Power sector emissions are being addressed by the European Emissions Trading Scheme (EU-ETS). For vehicle manufacturers, the origin of the energy is a non-issue; they should be required to focus purely on increasing the energy efficiency of their appliances, i.e. factors which remain within their control.
6. By analogy, when defining energy efficiency standards / labels to refrigerators and microwave ovens, domestic appliance manufacturers are not required to consider whether their products will be running on coal-fired electricity or carbon-free Wind power. Automotive vehicles are appliances in exactly the same way, except that we currently have our range of energy options limited by dependence on ICEs burning hydrocarbons on-board. This fuel specificity is unique to the Transport sector, and must change over time if we are to address the combined challenges of Climate Change and Energy Security.
7. The widely discussed target of 120gCO<sub>2</sub>/km by 2012 equates to an energy efficiency target of approximately 1.76MJ/km. This is an average of the figures derived for gasoline (petrol) and diesel, since the density and energy content of these fuels differ slightly. Of course, any such differences between fuel types will soon be taken into account in the EU Fuels Quality Directive, which governs the carbon content of the fuel per unit energy.
8. Finally, we urge that this vehicle efficiency indicator shift from “carbon” to “energy” because WWF believes that in the mid to long term – while sustainable biofuels are buying time for us to protect the climate in an ICE-dominated market – the electrification of transport could be environmentally sustainable. We note that there are many low-carbon and sustainable renewable-based energy options which can supply a transport system based on electricity.

#### *Other Principles*

- Regulatory gaps should be avoided as these risk additional feet-dragging and non-compliance. Targets should be in place by 2010 at the latest, and apply for every successive year to provide vehicle manufacturers with sufficient regulatory certainty enabling them to take long-term strategic / investment decisions;
- Fleet-average energy efficiency of new cars sold within the European Union should smoothly increase year-on-year, so as to achieve continuous improvements from 1.76MJ/km by 2012, 1.18MJ/km by 2020, and 0.88MJ/km by 2025. These figures are

the energy efficiency equivalents (average of gasoline and diesel) corresponding to 120gCO<sub>2</sub>/km, 80gCO<sub>2</sub>/km, and 60gCO<sub>2</sub>/km respectively;

- In subsequent cost/benefit analyses of the various technology and policy options, sufficient consideration should be given to the non-CO<sub>2</sub> benefits of vehicle efficiency and technology improvements, such as: reduced noise pollution, suppression of other airborne pollutants, increased energy security through reduced dependence on crude oil imports, relief of pressure on fragile ecosystems due to oil exploration & production, etc. Many of these additional benefits are more consistent with energy efficiency (MJ/km) metrics, rather than CO<sub>2</sub> emissions targets;
- Light-duty commercial vehicles (vans) should be included;
- A similar system should be developed for all heavy-duty commercial vehicles because their climate impact / energy consumption in EU is rising even faster than that of private vehicles. Road-based freight transport grew by more than half since 1990 and passenger transport by “only” 27% in same period;
- Energy efficiency targets for car manufacturers could be given (and auctioned?) for each individual company respecting the specific circumstances and technological achievements so far, as long as the overall energy consumption target for EU25 remains as stated above. WWF also is in favour of some flexibility for car manufacturers to meet their specific target of fleet energy efficiency. Trading between car companies should be allowed as long as the overall fuel / energy efficiency is in compliance. However, any trading is to remain solely within the transport sector and not to be linked to the EU-ETS which deals with absolute emission caps of the companies involved.

### **Compliance Mechanism**

- The system should definitely NOT be linked to the EU-ETS or to any other external carbon credit or compensation scheme (this point is moot if the European Commission follows the principle, preferred by WWF for the reasons explained above, of establishing minimum vehicle energy efficiency targets rather than limits based on CO<sub>2</sub>);
- Analogous to the compliance scheme of the EU-ETS (100€/tCO<sub>2</sub> compliance fee *and* missed emissions reductions carried over to the subsequent commitment period), WWF proposes a similar scheme here. At the end of the target period, vehicle manufacturers shall pay a penalty in the range of 10€ for every kJ – or 0.001MJ – which they ‘overshoot’ the fleet efficiency target, for *every* vehicle sold.
- By way of example, a vehicle manufacturer selling 200,000 cars, whose average fleet efficiency is 1.83MJ/km versus a 1.76MJ/km target (i.e. 70kJ/km in excess, which is equivalent to roughly 5gCO<sub>2</sub>/km), would pay a penalty of 10 x 70 x 200,000 = €140m.
- A trading system between manufacturers should be designed, in order to create clear financial incentives for car makers to *exceed* the energy efficiency targets.

## **Transparency & Reporting**

Progress versus annual targets should be reported through robust and transparent mechanisms such as company financial statements, since non-compliance represents a clear and increasing financial liability. This information would then be easily accessible to members of the public and, importantly, the investor community. This should help to emphasize energy efficiency as an item for competition among automobile manufacturers.

## **Supporting Measures**

WWF notes that all of the following additional supporting measures, though helpful, are essentially attempts to modify driver behaviour. They do not *directly* contribute to meeting energy efficiency targets nor should they be accountable to meet the targets since the driver of the vehicle may choose to ignore them:

- Fitting of gear shift indicators, 'green' zones on rev meters, and cruise control; installation of tyre pressure monitoring systems; ambitious rolling resistance standards for, and green labelling of, tyres; stringent standards for mobile air conditioning systems, ensuring that the regulation offers an incentive to sell cars without air conditioning;
- Commercial incentives for advanced / synthetic engine lubricants and gear oils to reduce friction losses;
- Better enforcement of the [energy efficiency] labelling directive, updated to accommodate advertising in new media, based on the colours used in "white goods" energy labelling;
- Binding automobile advertising regulations which outlaw false green claims and the association of cars with nature, and bans on advertising of cars which fail to meet the annual energy efficiency target by more than 50%;

## **For further information**

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