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Questions and Answers on the Commission strategy for reducing Heavy-Duty Vehicles' (HDVs) fuel consumption and CO2 emissions

What are Heavy-Duty Vehicles?

HDVs comprise trucks, buses and coaches. HDVs are defined as freight vehicles of more than 3.5 tonnes (trucks) or passenger transport vehicles of more than 8 seats (buses and coaches). The HDV fleet is very heterogeneous, with vehicles that have different uses and drive cycles. Even trucks are segmented into several categories, including long-haul, regional delivery, urban delivery and construction.

Why is the strategy needed?

Current trends in emissions from HDVs are unsustainable. From the mid-1990s until the start of the economic crisis in 2008, HDV freight transport grew steadily while HDV passenger transport remained broadly constant. Coupled with stable vehicle fuel consumption, these trends have led to increased HDV CO2 emissions. Between 1990 and 2010 HDV CO2 emissions are estimated to have grown by about 36%, despite the economic crisis interrupting the previous steady growth.

The Commission's Roadmap for moving to a competitive low carbon economy in 2050¹ and Transport White Paper² indicate that the transport sector should reduce its CO2 emissions by around 60% of its 1990 level by 2050. HDV emissions will need to be curbed if this objective is to be met.

Moreover, the fact that CO2 emissions from HDVs are currently not measured in a standardised way in the EU reduces transparency in the EU market. In addition, legislation or other action already taken or under preparation in Japan, the US, Canada and China to measure and reduce HDV emissions can have a beneficial effect on the relative competitiveness of HDV manufacturing in these regions.

In June 2007 the Council invited the Commission "to develop and implement policy instruments and measures to reduce greenhouse gas emissions from HDV vehicles."

What is the objective of the strategy?

The objective is to identify an approach which makes it possible to curb CO2 emissions from HDVs in a way that is cost-efficient and proportionate for stakeholders and society as a whole. The strategy aims to provide manufacturers and other stakeholders with a clear and coherent policy framework and to indicate likely regulatory developments. This will facilitate decision-making and investment planning.

What is HDVs' share of CO2 emissions?

According to the Impact Assessment that underpins the strategy, HDVs account for about a quarter of road transport emissions and around 5% of total EU CO2 emissions - a greater share than international aviation or shipping. However, these figures are estimates, as HDV emissions are currently not registered and monitored.

What will happen without EU action to reduce HDV emissions?

Without action, CO2 emissions from HDVs are expected to remain stable over the long term at around 35% above their 1990 level. The underlying assumptions are that HDV transport would continue to grow at a slow pace but this growth would be broadly counterbalanced by the improved fuel efficiency of trucks, buses and coaches in the coming decades.

As with any long-term scenario, these assumptions are subject to significant uncertainties. However, these 'no policy change' outcomes are clearly

incompatible with the objective of reducing greenhouse gas emissions from transport by around 60% of 1990 levels by 2050.

Why has it taken so long to address HDV emissions when emissions from cars and vans are already regulated?

Addressing CO₂ emissions from HDVs is more complex as they have never been certified and monitored. There is thus no baseline on which to act. Accordingly, the first priority is to close the knowledge gap on these emissions and, as proposed in the strategy, to start registering and monitoring these emissions. To this end the Commission has put great effort in recent years into developing a computer simulation tool known as VECTO to estimate HDVs' fuel consumption and emissions.

Wouldn't real on-road testing of HDV emissions be easier than developing a simulation tool?

On-road testing of new HDVs put on the market would be extremely cumbersome and costly for industry. Manufacturers agreed with the Commission that a simulation-based approach was the most promising avenue.

How does the Commission's approach compare with that of the United States and Japan?

The Commission strategy is based on a holistic approach that covers emissions from the entire vehicle, including not only key components such as the engine, transmission and auxiliary elements like air compressors but also properties such as air drag and rolling resistance. This holistic approach is not strictly comparable with that of the US and Japan.

The HDV CO₂ rule issued by the US Environmental Protection Agency (EPA) in 2011 does not cover the complete emissions of each vehicle, but only the cabin and chassis parts, in combination with a separate rule on engine emissions. It also relies to a large extent on self-declarations from manufacturers. Existing information points to the much lower energy efficiency of HDVs in the US, mainly due to much lower historical fuel prices than in Europe.

Commission and EPA staff have been in regular contact and the latter have agreed that a holistic approach is preferable. The EPA is currently preparing a revised rule for 2018 with the aim of covering the entire vehicles' emissions.

For its part, Japan has a fuel consumption rule with targets based on the best-performing vehicles. Over the long term the various national legislations are expected to converge, as those addressing emissions of vehicles' exhaust gases have done.

Manufacturers suggest that their HDVs are already highly energy efficient. What can the EU strategy add?

Converging conclusions from two studies from 2011 and 2012 suggest that much more can be done to improve the fuel efficiency of HDVs. Fuel consumption and CO₂ emissions could be reduced by 30 to 50%, depending on the type of vehicle.

An assessment for the Commission suggests that savings of at least 30% could be achieved cost-effectively. For instance, city buses could make considerable savings by adopting hybrid technologies, and long-haul trucks could do likewise if they were made more aerodynamic or introduced waste heat recovery. The Commission will regularly reassess the potential for improving the energy efficiency of HDVs.

If existing technology can save fuel and CO₂ emissions, why isn't it already installed on new HDVs?

There are probably a number of reasons for this, linked to what are generally understood as market barriers to the uptake of energy-efficient technology.

One of the studies on which the strategy is based found that cost-effective and new fuel-saving technologies were not installed on manufacturers' base vehicles systematically but only as options. Transport operators were generally well aware of existing fuel saving technologies, but in the absence of certified HDV CO₂ emissions they were not able to compare the performances of different manufacturers' HDVs.

Other studies found that transport operators wanted technical upgrades to pay for themselves through fuel savings within an average of three years, a much shorter period than the vehicles' average lifetime of 11 years. This may be due to the large second hand market in HDVs and requires further investigation.

Why isn't the Commission proposing to set CO₂ emission limits for HDVs as it has done for cars and vans?

Before limits can be considered a robust baseline reflecting today's level of CO₂ emissions from HDVs needs to be established. This is why the focus of the strategy in the short term is on registering, reporting and monitoring these emissions with the aim of closing the current knowledge gap and providing the various actors with more transparency. Greater transparency will foster competition based on the real energy performance of vehicles. Setting CO₂ limits for HDVs is an option for the medium to long term that will need to be fully assessed in due course.

What is the attitude of HDV manufacturers?

The industry is supportive of the Commission's approach to closing the knowledge gap. Manufacturers have engaged with the Commission in the development of the VECTO simulation model and provided key support through input into the design of the methodology and by carrying out tests of the model with their own vehicles.

See also IP/14/576

¹ :

COM(2011) 112 final

² :

Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system.

COM(2011) 144 final