

ANALYSIS OF A PROBLEM OF ENERGY EFFICIENCY OF VEHICLES AND AIR POLLUTION

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Modern transport and environmental policy involves making mobility as environmentally sound as possible. This is a major challenge in view of the constant growth in transport volume. The latest transport forecast for 2030 indicates that goods transport will increase by 38 % compared with 2010 and passenger transport by 13 %.

The consequences: greenhouse gas, pollutant and noise emissions increase and construction of roads and transport infrastructure results in land take, carves up the landscape and causes fragmentation of the natural world. Whether these consequences are inevitable depends crucially on whether and in what way growth in transport occurs, on the efficiency of the technologies and sustainability of the fuels used and how quickly alternative drive technologies become established.

The energy efficiency of the road, rail, air and waterways transport modes must continue to improve if energy consumption in the transport sector is to be reduced and greenhouse gas emissions cut as a result. Two EU regulations – (EC) № 443/2009 and (EC) № 510/2011 – which set fleet-based CO₂ targets for new passenger cars and light commercial vehicles respectively – are currently making the greatest contribution to achieving this.

The regulation on cars sets specific CO₂ targets for the average new car fleet in the EU at 130 gr. of CO₂ per kilometre in 2015 (which corresponds to about 5.2 litres per 100 kilometre), although new cars have already had to comply with this value since 2012 (under a phase-in arrangement). In 2020/21, a value of 95 gr. of CO₂ per kilometre (about 3.8 litres per 100 kilometre) may not be exceeded. The targets for light commercial vehicles are 175 gr. of CO₂ per kilometre (about 6.7 litres per 100 kilometre) in 2017 (phase-in from 2014) and 147 gr. of CO₂ per kilometre in 2020 (about 5.6 litres per 100 kilometre). The specific fuel efficiency of new cars will be a factor of two higher in 2020/2021 than in the 1995 baseline year.

Implementation of the regulations is currently making rapid progress. For example, the European Commission was already able to report that an average value of 127 grams CO₂ per kilometre had been achieved for the EU passenger car fleet in 2013. These improvements have also contributed to the fact that CO₂ emissions in the transport sector have been declining for a number of years in the EU.

The specific fuel efficiency of heavy goods vehicles is higher than that of passenger cars because most of them have diesel engines and users have a greater interest in cost-efficient transport. Nevertheless, there is still room for improvement in efficiency here. Thus, manufacturers set themselves the goal of increasing specific fuel efficiency by 20 % by 2020 (compared with 2005). The European Commission is also planning emissions reductions that go beyond that target. As a first step, it intends to propose legislation requiring standardised measurement of the fuel consumption and CO₂ emissions of heavy goods vehicles as part of the type approval

procedure. In parallel to that, it intends to review the possibility of statutory measures to limit CO₂ emissions from new heavy goods vehicles.

In 2015, the European Parliament and Council also adopted Regulation 2015/757 regulating international maritime transport, which to date is not included in the EU's commitment to reduce greenhouse gas emissions. The Regulation provides for the introduction of a system to monitor CO₂, starting in 2018. Regular reporting of CO₂ emission trends is essential if measures to mitigate the climate impact of maritime transport that are urgently required are to be actually implemented. The German government advocates global action and is therefore taking a very active role in the negotiations taking place within the International Maritime Organization (IMO) and has put forward a number of its own proposals for possible future action. Currently, a text for a global CO₂ monitoring system is being discussed. The Commission has indicated that if a global CO₂ monitoring system were introduced it would modify Regulation 2015/757 accordingly.

Similarly, to date there has not been any binding regulation limiting CO₂ emissions from international aviation. At the 2010 session of the International Civil Aviation Organization's Assembly (ICAO), the member states agreed to increase efficiency by two percent a year, but this is not legally binding. Likewise, the aviation industry also set itself the non-binding target of increasing efficiency by 1.5 percent a year. This roughly equates to the actual trend in recent years.

However, at the autumn 2013 session of the ICAO assembly, the 191 participating states agreed to develop a global market-based mechanism (MBM) regulating aviation's CO₂ emissions by 2016. It is scheduled to be adopted at the next session of the ICAO assembly in 2016 and to enter into force in 2020.

Increasing the energy efficiency of vehicles can continue to make a decisive contribution to meeting the environmental and climate targets in the transport sector. Taking appropriate action to further increase the efficiency of all modes of transport is therefore one of the German government's priority objectives.

To reduce emissions from road traffic, the European legislation on vehicle exhaust gases has been gradually taken forward and made more stringent every four to five years over the last 20 years. From 1 September 2015, the Euro 6 exhaust emissions standard applies to all new passenger cars and light commercial vehicles (Regulation (EC) Number 715/2007). The Euro VI exhaust emissions standard has been applicable to heavy goods vehicles, buses and all other heavy duty vehicles since 31 December 2013 (Regulation (EC) Number 595/2009).

Whereas a significant improvement in the emission behavior of heavy goods vehicles and buses in real on-road driving conditions was achieved through the Euro VI exhaust emissions standard, new diesel passenger cars and light commercial vehicles still have markedly higher real nitrogen oxide emissions than was expected given the more stringent exhaust emission limits. In the light of this, intensive work on a new test procedure to measure real-driving emissions (RDE) began in Europe. The RDE test procedure was adopted at EU level in May 2015. To achieve the marked reductions in nitrogen oxide emissions required and therefore help to improve air quality.