



REAL-WORLD FUEL CONSUMPTION AND CO₂ EMISSIONS OF NEW PASSENGER CARS IN EUROPE

“Real-world” fuel consumption and CO₂ emissions of new European passenger cars exceeded official type-approval values by approximately 40 percent in 2014, according to a new update to the International Council on Clean Transportation’s *From Laboratory to Road* study. **Since 2001, the gap between official measurements of vehicle efficiency and actual performance in everyday driving has more than quadrupled.**

KEY FINDINGS

» **Average divergence of real-world from type-approval CO₂ emissions increased from roughly 8 percent in 2001 to about 40 percent in 2014.** The trend was particularly

pronounced in recent years: the gap doubled between 2009 and 2014.

- » As a result, less than half of the on-paper reductions in CO₂ emissions since 2001 have been realized in practice. **Since 2010, hardly any real-world reductions in CO₂ emission values have been achieved.**
- » Company cars generally show a higher divergence (approximately 45 percent) than private vehicles (approximately 36 percent). **The level of divergence differs significantly among vehicle manufacturers and market segments.** Hybrid vehicles, especially plug-in hybrid electric vehicles, stand out with particularly high divergence values.

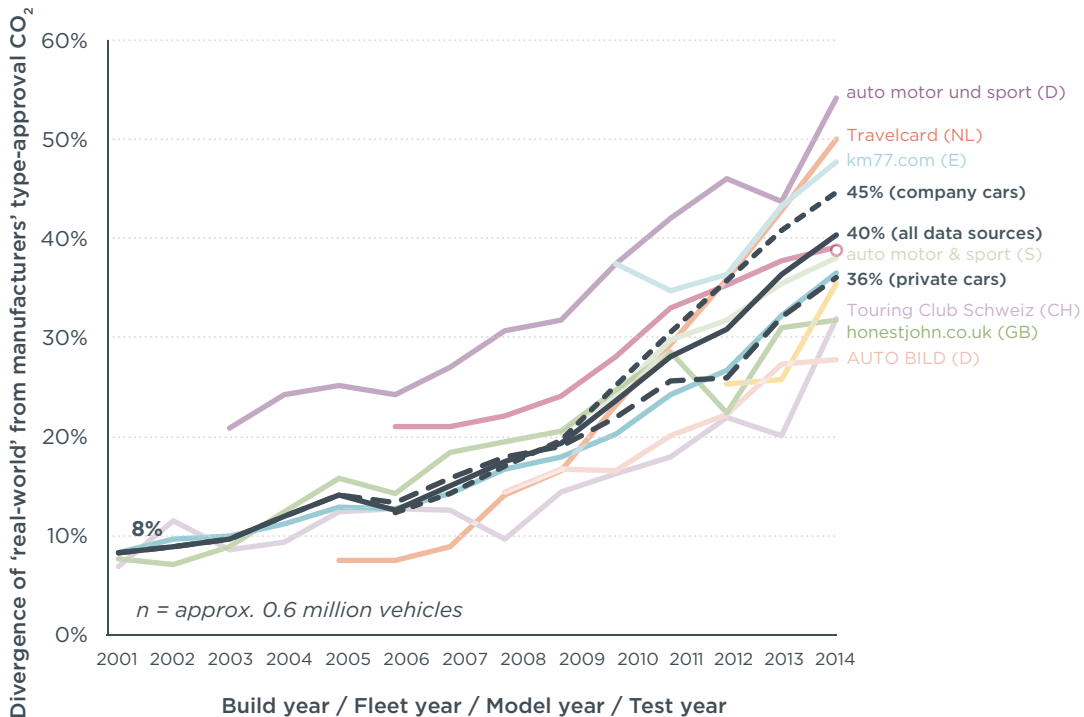


Figure 1. Divergence between real-world and manufacturers’ type-approval CO₂ emissions for various real-world data sources, including average estimates for private cars, company cars, and all data sources.

- » For an average vehicle owner, **the divergence translates into additional fuel expenses amounting to approximately €450 per year.**
- » The exploitation of tolerances and flexibilities in the type-approval procedure accounts for the increasing divergence. In other words, **the gap is a result of increasingly unrealistic type-approval CO₂ values rather than changes in driving behavior.**
- » **The divergence between real-world and official CO₂ emission values is expected to continue to grow unless the certification test procedure changes.** The average gap would likely grow to about 50 percent by 2020 under a business-as-usual scenario retaining the current driving cycle for type-approval tests. With the Worldwide Harmonized Light Vehicles Test Procedure (WLTP) being implemented as planned by 2017, the gap would likely decrease to approximately 30 percent by 2020.
- » The WLTP itself is expected to introduce new shortcomings and should therefore be complemented by implementing other forms of vehicle testing: **random conformity testing of production vehicles by independent bodies** (as already mandated by U.S. fuel economy regulations) and **on-road testing of CO₂ emissions** (as will be mandated for nitrogen oxide emissions in the EU by 2016).
- » of 170 grams per kilometer (g/km), which corresponds to a fuel consumption figure of roughly 7.0 liters per 100 kilometers (l/100 km). After mandatory CO₂ fleet targets for new passenger cars were introduced in the EU in 2008, average CO₂ emission values decreased sharply, to 123 g/km (roughly 5.1 l/100 km) in 2014. The 130 g/km fleet target for 2015 was reached two years in advance.
- » In 2013, collaborating with the Institute for Energy and Environmental Research (IFEU) and the Netherlands Organisation for Applied Scientific Research (TNO), the ICCT published *From Laboratory to Road*, documenting for the first time a divergence between real-world and type-approval CO₂ emission values that was increasing over time. The report has been updated each year since.
- » The 2015 update to the *From Laboratory to Road* series brings together data for nearly 600,000 vehicles from six countries and eleven data sources. The data includes user entries from free web services (Spritmonitor.de — Germany, honestjohn.co.uk — United Kingdom), fuel consumption measurements from company cars (Travelcard — Netherlands, LeasePlan — Germany, Cleaner Car Contracts — Netherlands), and vehicle tests from magazines and websites (*AUTO BILD* — Germany, *auto motor und sport* — Germany, *auto motor & sport* — Sweden, km77.com — Spain, *What Car?/Emissions Analytics* — United Kingdom, Touring Club Schweiz — Switzerland).
- » The divergence of real-world from type-approval values is expressed as a percentage of the type-approval figure. While driving style, vehicle characteristics, and driving conditions vary, aggregating large amounts of real-world data reveals clear trends in the average performance gap.

BACKGROUND AND METHODOLOGY

- » Official CO₂ and fuel consumption values of new passenger cars (so-called *type-approval* or *certification* values) are determined in laboratory tests using the New European Driving Cycle (NEDC).
- » In 2001, new passenger cars in the EU had an average type-approval CO₂ value

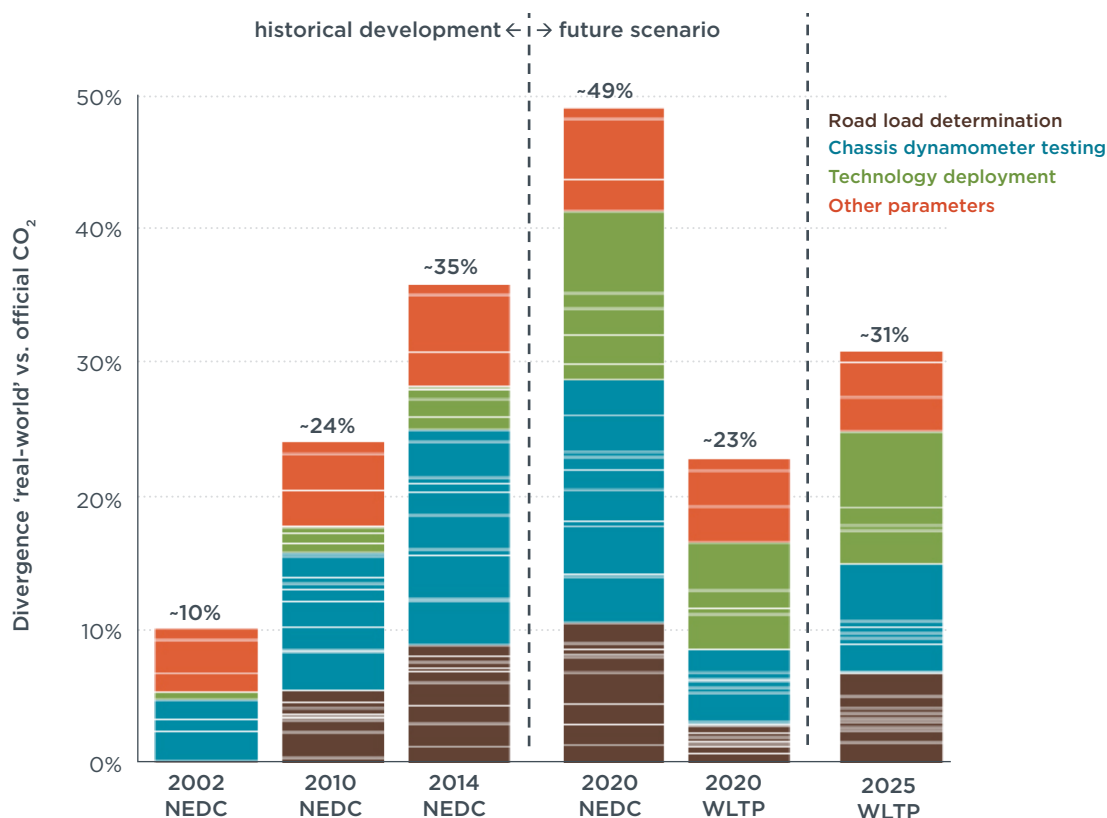


Figure 2. Estimate of the reasons for the divergence between type-approval and real-world CO₂ emission levels for new passenger cars in the past as well as in the future, with and without introduction of the WLTP.

FURTHER INFORMATION

From Laboratory to Road — A 2015 update of official and “real-world” fuel consumption and CO₂ values for passenger cars in Europe

DOWNLOAD

<http://theicct.org/laboratory-road-2015-update>

AUTHORS

Uwe Tietge, Nikiforos Zacharof, Peter Mock, Vicente Franco, John German, Anup Bandivadekar, Norbert Ligterink, Udo Lambrecht

CONTACT

Peter Mock, +49 30 847129-102, peter@theicct.org



The International Council on Clean Transportation is an independent nonprofit organization founded to provide first-rate, unbiased research and technical analysis to environmental regulators.

2015 © INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION