

Why diesel NO_x emissions factors (EFs) have changed in COPERT for light duty vehicles (LDVs)

Information on emission control failures of diesel cars in the US and the EU has raised concerns on the representativity of diesel LDVs EFs, used for official reporting by parties to the Long-Range Transboundary Air Pollution (LRTAP) convention. In addition, although the NO_x emission limits for diesel LDVs have dropped significantly over the last 15 years, the type-approval driving pattern, specifically the New European Driving Cycle (NEDC), has since long been criticized in being unrepresentative of real-world conditions, involving only gentle accelerations, long constant speed modes, and a rather low maximum speed. Tests over the NEDC have for long been known to result to emission levels that significantly deviate from typical real-world levels.

Comprehensive emissions models, like COPERT, are used to calculate emissions in air quality studies, and in the framework of integrated assessment studies for target-setting and monitor progress towards legally binding ceilings. COPERT delivers the EFs and the methodology required to estimate total emissions at a fleet level. The compromised emission control of diesel vehicles may have significant impacts on the EFs used in these models and, in turn, to the monitoring and reporting approaches of the member states and the parties to the Convention.

COPERT 5 v1.0 and COPERT 4 v11.4 launched in September 2016 contain a new set of Euro 6 NO_x EFs for passenger cars and light commercial vehicles (LCVs) and updated NO_x emission factors for Euro 5 LCVs. These are based on latest emission information collected by ERMES parties and by individual Member States. This is an interim set of EFs aim at reflecting average measured levels so far and our best estimate of future technology progress.

These new EFs lead to almost twice as high levels for Euro 6 diesel NO_x for vehicles put in circulation until 2016 compared to our previous estimates.

With the transitional introduction of Euro 6 Real Drive Emissions (RDE) regulation, diesel emission levels are considered to further improve in time. Additional data are being collected in the EU that will help establish the rate of improvement. Based on these, a more refined dataset is prepared to be included in the 2017 version of COPERT 5 but our current assessment is that it should not substantially differ from the 2016 interim one.

References

Leonidas Ntziachristos, Giannis Papadimitriou, Norbert Ligterink, Stefan Hausberger, "Implications of diesel emissions control failures to emission factors and road transport NO_x evolution", Atmospheric Environment, Volume 141, September 2016, Pages 542-551, ISSN 1352-2310.

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