

Impacts of the Brussels low-emission zone on emissions from light-duty vehicles

In the autumn of 2020, The Real Urban Emissions (TRUE) Initiative assessed the emissions of more than 130,000 unique vehicles operating on the streets of Brussels. The 260,000 measurements collected during this study were analyzed to provide insights on the real-world emissions impacts of future implementation steps of the Brussels low-emission zone (LEZ).

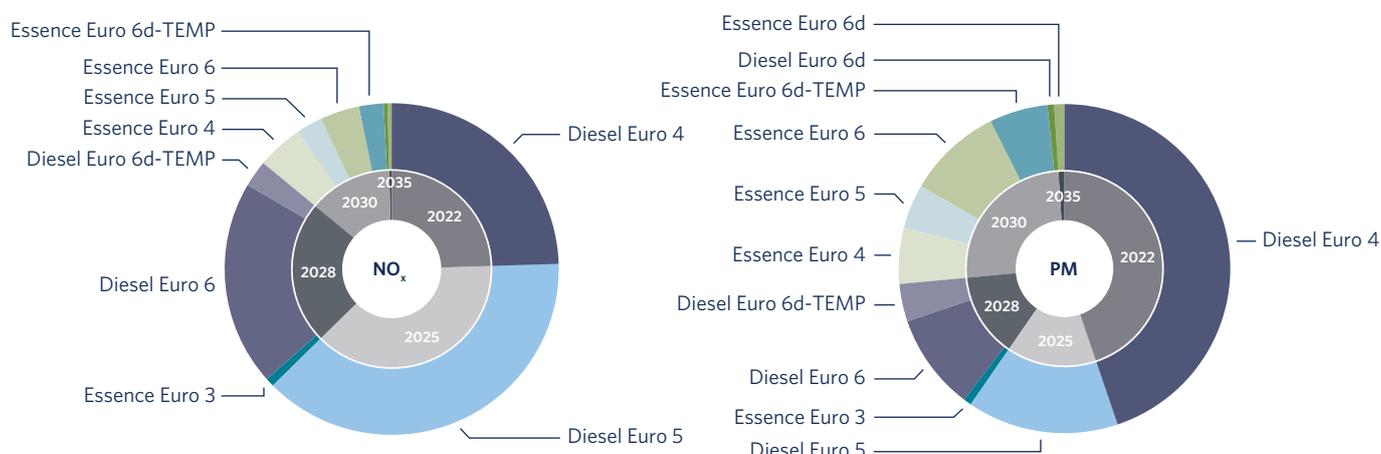
to the LEZ schedule, including the further tightening of access requirements and the extension to additional vehicle groups, has been proposed and is expected to be adopted by the end of 2021. Through the remote sensing emission testing campaign, the TRUE initiative was able to use real-world data to assess the impacts of the LEZ restrictions on tail-pipe emissions.

BACKGROUND

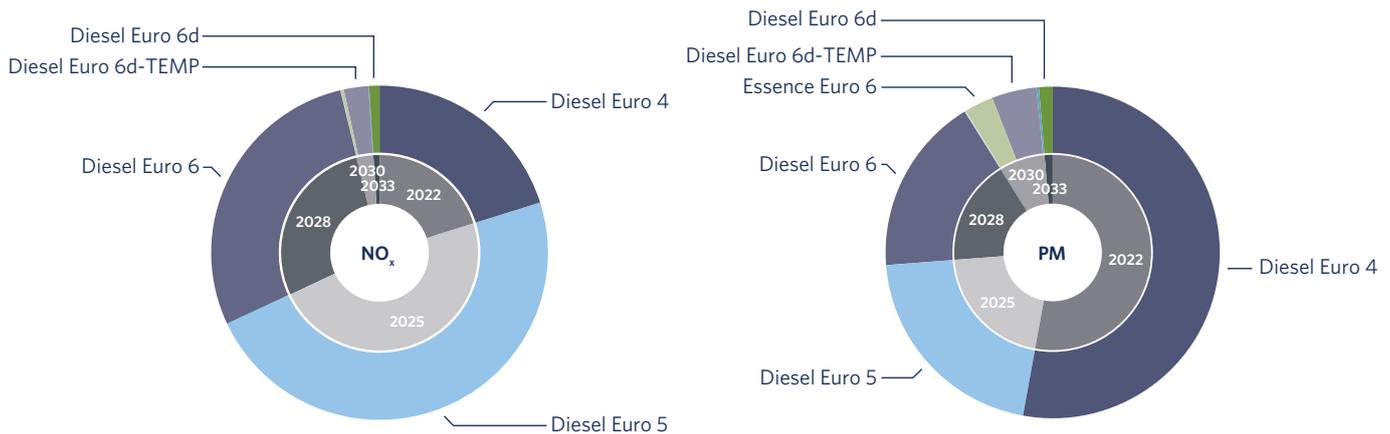
The Brussels-Capital Region introduced a low-emission zone to mitigate traffic-related pollution in 2018. The LEZ, which covers all 19 municipalities in the region, progressively restricts the access of high-emitting vehicle groups to the city and currently applies to passenger cars, light commercial vehicles, coaches, mini-buses, and buses. Since their introduction, LEZ restrictions have become more stringent, with the next implementation steps scheduled for January 2022, when restrictions will be extended to diesel vehicles certified to Euro 4 standards and 2025 when diesel Euro 5 vehicles will be banned. A long-term update

KEY FINDINGS

- Beginning in January 2022, the Brussels LEZ will extend access restrictions to Euro 4 diesel light-duty vehicles. Euro 4 diesel cars accounted for only 12% of the passenger cars measured for the TRUE study; however, they were estimated to contribute 26% of total passenger car nitrogen oxides (NO_x) emissions and 47% of total tailpipe particulate matter (PM) emissions. Similarly, Euro 4 diesel vehicles made up 15% of the measured light commercial vehicle (LCV) fleet, but account for more than half of total tailpipe PM emissions from this vehicle type. TRUE's



Estimated share of total NO_x and PM emissions from passenger cars operating in Brussels in the autumn of 2020 by emissions standard and fuel type. The inner ring breaks down total emissions by the year in which vehicle groups will be subject to LEZ restrictions.



Estimated share of total NO_x and PM emissions from light commercial vehicles operating in Brussels in the autumn of 2020, by emissions standard and fuel type. The inner ring breaks down total emissions by the year in which vehicle groups will be subject to LEZ restrictions.

findings indicate these new LEZ requirements will only impact a small percentage of the fleet but will have a disproportionately positive impact on reducing tailpipe emissions from vehicles operating within the city, in particular PM emissions.

- The two light-duty vehicle groups estimated to be responsible for the greatest shares of NO_x emissions—Euro 5 diesel cars and LCVs—will be allowed to circulate within Brussels until 2025 under the current LEZ implementation schedule. According to the data collected by TRUE, these vehicles contribute approximately 40% of total NO_x emissions from passenger cars and nearly 50% of emissions from LCVs. An earlier access phase-out from the LEZ would accelerate the NO_x emissions reduction benefits achievable from removing these high-emitting vehicles from the streets of the city.
- Under the proposed timeline for future implementation stages of the Brussels LEZ, Euro 6 diesel cars and LCVs, which were not subject to real-driving emission (RDE) tests, will be allowed to circulate in Brussels until 2028. After this date, restrictions will be tightened to allow access only to vehicles meeting at minimum Euro 6d-TEMP

or 6d emission standards, depending on the vehicle type. The elevated NO_x emissions of pre-RDE Euro 6 light-duty vehicles measured during this study show that this step is warranted. Furthermore, because the real-world NO_x emissions of pre-RDE Euro 6 diesel cars and LCVs are significantly greater than other passenger vehicle and LCV groups that will be allowed to access the Brussels LEZ from 2025, earlier action could be considered for these groups.

- In the autumn of 2020, Euro 6d vehicles represented a small share of emissions as these vehicles have only recently entered the market. Their share in the fleet and fraction of total emissions are expected to increase continuously at least until 2025-2027, when the Euro 7 standard is expected to replace the current standard. Furthermore, although 6d vehicles presented the lowest levels of regulated emissions of all standards, questions remain whether their emissions performance will be maintained as they age. Continuous emissions monitoring of these vehicles' real-world emissions over the upcoming years will be key to ensuring a clean fleet, especially as they will be allowed to operate within the Brussels LEZ until 2030 in the case of diesel vehicles and 2035 for petrol vehicles.



FIA Foundation and the International Council on Clean Transportation (ICCT) have established The Real Urban Emissions (TRUE) Initiative. The TRUE initiative seeks to supply cities with data regarding the real-world emissions of their vehicle fleets and equip them with technical information that can be used for strategic decision making.

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TO FIND OUT MORE:

For details on the Brussels remote-sensing project and related questions, contact Yoann Bernard, y.bernard@theicct.org. For more information on TRUE, visit www.trueinitiative.org.

Download the paper “Evaluation of real-world vehicle emissions in Brussels” <https://theicct.org/publications/true-brussels-emissions-nov21>