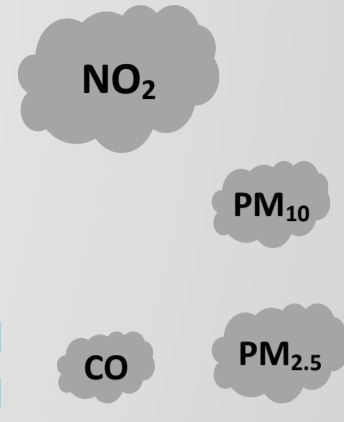


The Euro 6/VI standards and their efficacy

The gap between regulated emissions and on-road/real-world emissions, especially for emissions from diesel vehicles, has been recognised by law makers in Europe and other jurisdictions. As a result, the Euro 6/VI standard has been amended in stages since it was first introduced in Europe in 2014, in order to increase its effectiveness.

Although the harmful gas emission limits are similar throughout Euro 6a to Euro 6d and Euro VI-a to Euro VI-e, the newer iterations change testing procedures to ensure that the intended reductions are actually achieved, both in the laboratory and in real-world driving.



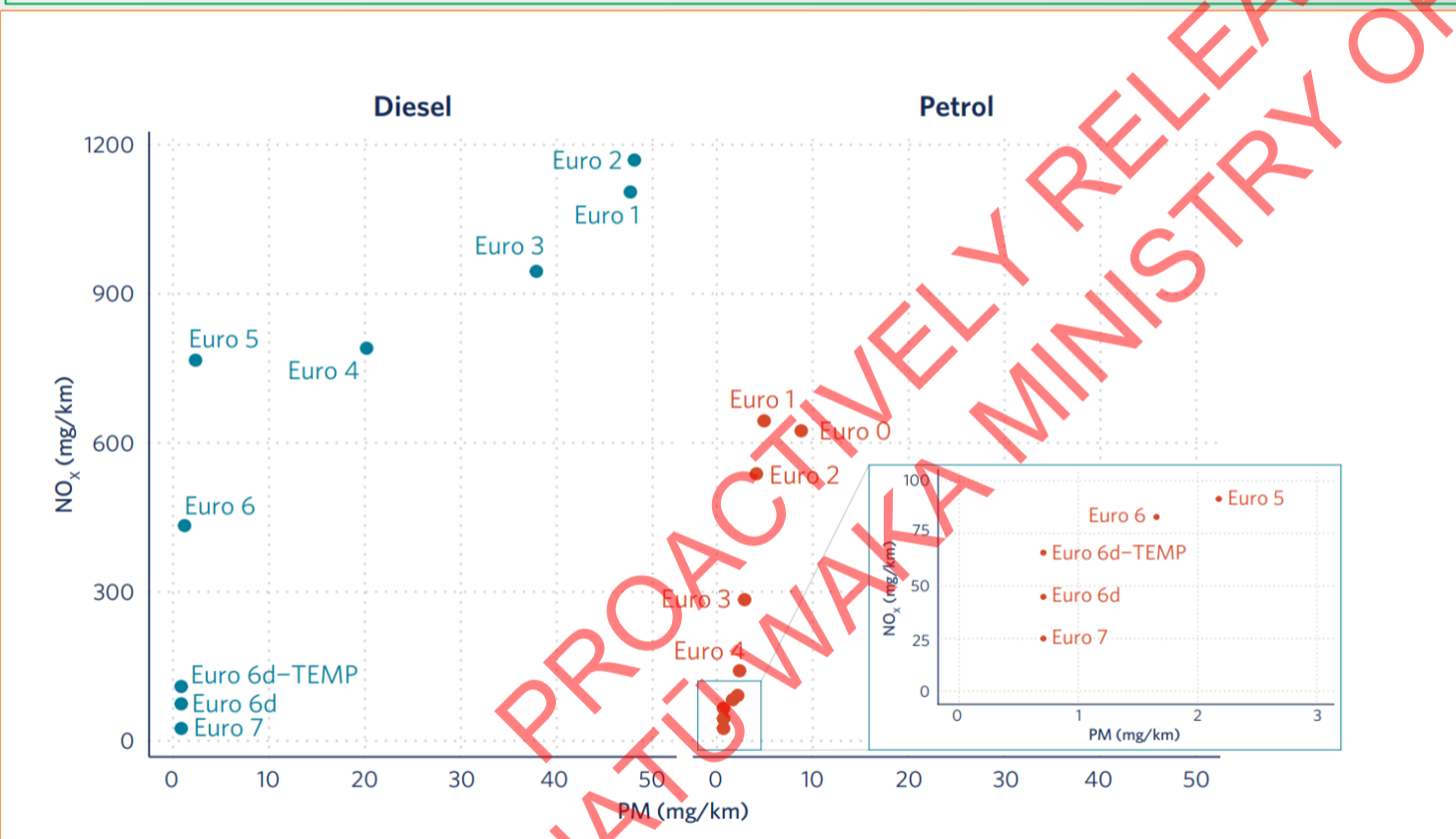
This graph depicts the social costs of motor vehicle emissions.

Euro 6d is one of the first harmful emissions standards to accelerate real-world emissions improvements.

It clearly shows a large reduction in social costs compared to the average fleet emission vehicles.

Given New Zealand vehicles stay in the fleet for an average of 20 years, it is paramount we adopt Euro 6/VI as soon as possible.

Petrol Euro 6d vehicles have only marginally higher social costs from air pollution to electric vehicles; the only local pollutants associated with EVs are tyre and road wear.



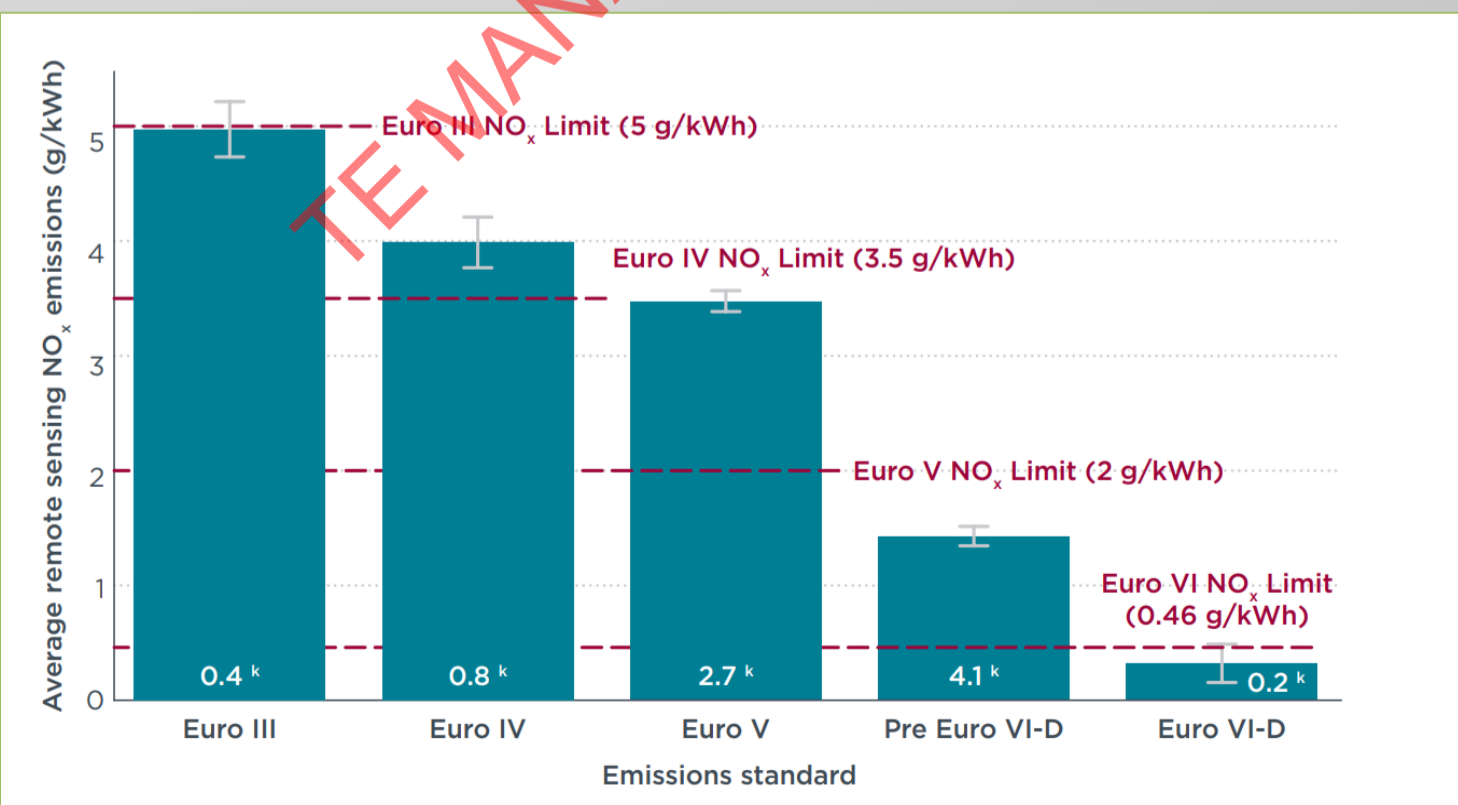
Comparison of real-world NOx and PM emissions estimated from remote sensing. Results are grouped by Euro standard with diesel vehicles shown in blue and petrol vehicles in red.

This graph depicts the real-world performance of the different Euro standards for light petrol and diesel vehicles. Light diesel vehicles include commercial vehicles, such as vans and utes.

Euro 6d vehicles emit significantly lower emissions for diesel vehicles (blue), which cause the bulk of air pollution harm in Aotearoa.

Euro 5 diesel vehicles actually emit higher levels of NOx than Euro 4 vehicles. The newer iterations of Euro 6 have more stringent testing procedures to ensure vehicles deliver emissions reductions in the real-world, as opposed to laboratory testing.

This is why we are seeking to implement the most recent standard – Euro 6d, which achieves the most significant reductions in harmful emissions.



NOx emissions limits across the Euro standard for heavy vehicles

This graph depicts the real-world performance of the Euro standards for heavy vehicles, such as trucks and buses.

On average, Euro IV, V, and even Euro VI-C exceed their allowed NOx emissions, resulting in very high levels of emissions.

Euro VI-D was the first emissions standard for heavy vehicles to achieve its NOx limit in the real world. This is why we are seeking to implement the most recent iteration of the standard, Euro VI-E.

Citations
<https://theicct.org/wp-content/uploads/2021/12/Impacts-of-LEZ-Sofia-TRUE-Report-EN-v4-dec21.pdf>
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 Metcalfe J and Kuschel G (2022). Estimating the impacts of introducing Euro 6/VI vehicle emission standards for Aotearoa. Report prepared by Emission Impossible Ltd for NZ Ministry of Transport, 12 April 2022.