

GREEN MOBILITY: data to introduce a new paradigm for social sustainability

Black box data offer a new solution that can measure the actual environmental impact of individual cars for a fairer, more socially sustainable and inclusive mobility policy

When and how vehicles are used will count more than the Euro class of the engine for the purposes of calculating CO2 emissions

Brussels, 5 December 2023 – A new – more sustainable, fair and inclusive – paradigm for measuring the CO2 emissions of private cars, no longer based on the Euro class of the engine but instead detecting the specific movements of each vehicle.

This is the vision of The Urban Mobility Council (TUMC) – a think tank formed in 2022 on the initiative of the Unipol Group – presented today in Brussels at the headquarters of the European Parliament by **Matteo Laterza**, UnipolSai General Manager, and **Sergio Savaresi**, Head of the Electronics, Information and Bioengineering Department of the Polytechnic University of Milan, guests of **MEP Giuseppe Ferrandino** (Renew Europe). **MEP Maria Veronica Rossi**, Committee on Environment, Public Health and Food Safety, **MEP Massimiliano Salini**, Committee on Transport and Tourism, **MEP Patrizia Toia**, Committee on Industry, Research and Energy, **Dario Dubolino**, Policy Officer of the European Commission and DG MOVE also attended the event.

The initiative organised by TUMC comes at a crucial time for mobility policy following the adoption of the last two legislative proposals of the “Fit For 55%¹ package and in the context of COP 28, on the day preceding “EU Transport Day”.

The proposal advanced to the European Parliament from Italy **contributes to the European and international debate on the role of transport in the fight against climate change**, taking into account the social impacts connected to the electrification of vehicles, supported by the results of the E-Private Mobility Index² study conducted in collaboration with the Polytechnic University of Milan. According to these findings, in the next few years, approximately 70% of internal combustion engine vehicles will not be replaceable with electric cars for various reasons: range, recharges, production costs, consequent sales costs, etc.

¹ Legislative package presented by Europe which aims to reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.

² For the calculation of the *E-Private Mobility Index*, which represents the percentage of internal combustion engine vehicles that can be immediately electrified, i.e. that can be immediately replaced by completely electric vehicles, approximately 360 million movements by over 226,000 cars were processed, for a total of more than 70 million trips.

In this scenario of “coexistence” between electric and combustion vehicles, the experimental results that emerged from the study “Greenbox: use of telematics for a new paradigm of sustainability”², showed that **not all Euro 4 cars should be scrapped, and not all Euro 6 cars are virtuous.**

The results of the study are based on the analysis of emissions from a sample of 3,000 vehicles registered throughout the national territory in 2022. The vehicles were divided into three identical groups of 1,000 cars for each of the Euro 4, Euro 5 and Euro 6 engine classes; the distances analysed were medium to high (>15,000km/year), both inside and outside cities to record significant mobility figures.

Based on the sample of 1000 Euro 4 vehicles and 1000 Euro 6 vehicles (the “worst” and the “best” classes analysed), unsurprisingly, the average total CO2 emissions of the Euro 4 vehicles per year (4350kg) were around 20% higher than the average emissions of the Euro 6 vehicles (3650kg).

Conversely, comparing the actual (instead of average) emissions of the thousand Euro 4 and Euro 6 vehicles, the study shows that 26% of Euro 4 vehicles emitted less CO2 than the comparable number of Euro 6 vehicles.

The difference was even more evident when comparing “high emission” Euro 6 vehicles with “low emission” Euro 4 vehicles, with “high emission” Euro 6 vehicles emitting up to 6 times more CO2 than “low emission” Euro 4 vehicles.

Furthermore, a detailed analysis of distances travelled in urban settings alone highlighted that a “high emission” Euro 6 vehicle emits up to 10 times more than a “low emission” Euro 4 vehicle.

The environmental impact of cars thus depends on when and how they are used, but in order to measure this metric we need to shift from a model based on the Euro engine class to a vehicle-centric model in which individuals must be aware of their role in CO2 emissions.

In fact, **the driver has a decisive impact** on the quantity of emissions produced by the vehicle: driving style, average speed and km travelled are all variables that can significantly influence car emissions. In particular, travel speeds that are too high or too low generate, at otherwise equal conditions, a significant increase in CO2 emissions.

This model would also **avoid limiting individual mobility based on Euro engine class alone**, making it possible to **measure the actual contribution of each vehicle to the environmental sustainability of the planet**, compared to existing regulations that require a Euro class upgrade.

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Through the use of black boxes – which, in this new vision, would assume the role of green boxes – **the model measures the greenhouse effect created by each individual vehicle (CO₂)**, based on the type of road travelled, mileage, average speed and driving style, in addition to the technical specifications of the engine. This measurement could easily be extended to other variables, such as pollutants (in urban settings), public land use or risk to people.

In conclusion, **the proposal offers a new solution for measuring the CO₂ emissions of the fleet of private cars in circulation; a one-to-one model capable of measuring the environmental impact of each individual vehicle**, focusing the analysis on the driver as well as the car's engine.

A new paradigm which aims to leave no one behind, preventing cars from being scrapped for their engine, provided that they respect a limited mileage and "green" driving style. This logic requires the installation of a dedicated and certified black box on every vehicle, inextricably linked to the same, and that all drivers accept the measurement of their driving style and mileage.

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