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Defining a European eco-score to support automotive industrial policy

Authors

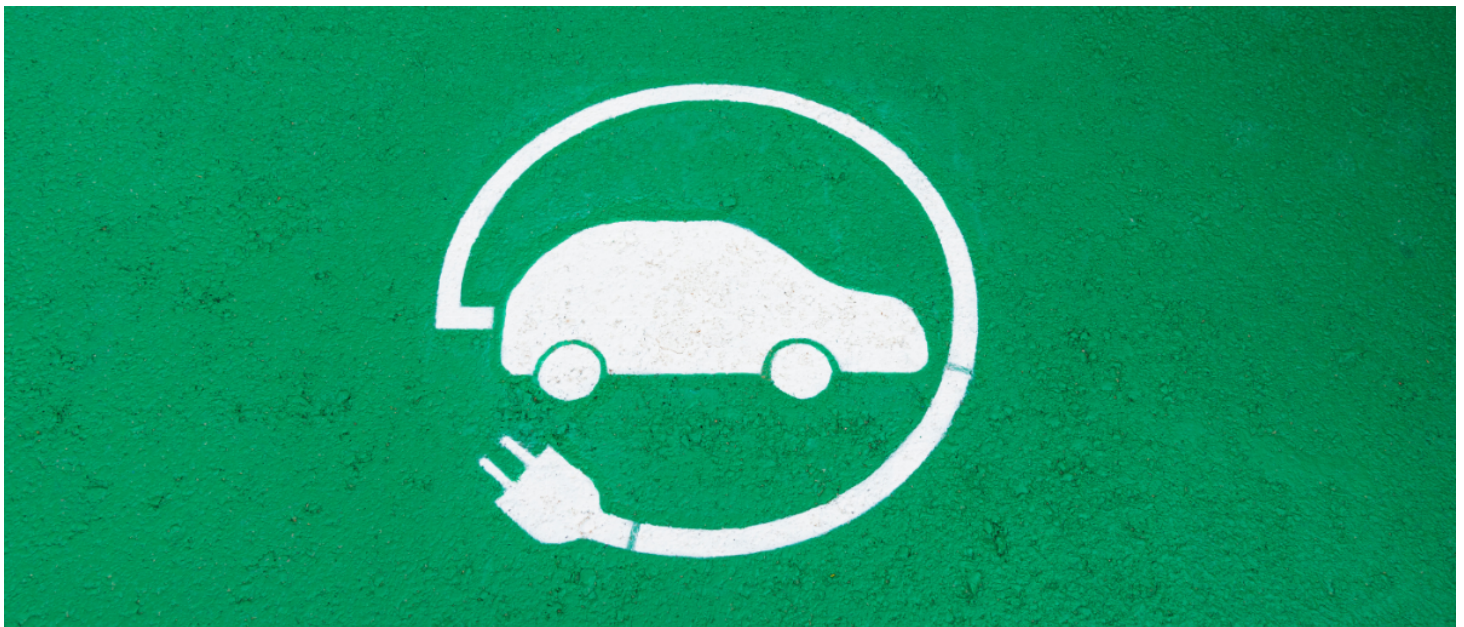
Louis-Pierre Geffray

Former associate Researcher

Malo Benoit

Stagiaire, Institut Mobilités en Transition

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The European Union's ambition to achieve carbon neutrality by 2050 requires a massive electrification of uses. This conversion is well under way, with electric vehicles accounting for 19% of French vehicle registrations as of early 2024. However, although beneficial from a health and climate point of view, an electric vehicle is not necessarily carbon neutral, because emissions are partially transferred from its use to its manufacturing phase (in particular the production of the battery). The aim of this blog post is to present the relevance and the need to develop a standardized methodological tool at European level for measuring environmental performance at the design and manufacturing stages of vehicles and batteries. In particular, it describes the joint proposal by the Institut Mobilités en Transition (IMT), Transport & Environnement (T&E) and the European Consumers Organisation (BEUC) to create a tool aimed at aggregating the key 'non-exhaust' impacts of electric vehicles, thereby making it possible to promote products or industrial players

promoting upstream decarbonization and the circular economy.

Context and issues

The electrification of vehicles has been underway for around 10 years. Market share has increased, but this sequence has also been characterized by a move upmarket (with a greater proportion of vehicles in higher segments) and by new models becoming heavier. Such models require larger batteries, more raw materials (steel, aluminium, critical raw materials) and more energy in the factory, which risks hampering efforts to use recycled raw materials and decarbonized energy. An economic or regulatory incentive to promote the environmental performance of electric vehicles in terms of energy efficiency or material efficiency is therefore necessary. In the CAFE (Corporate Average Fuel Economy) standard regulating emissions in use, an electric vehicle, whatever its size, weight, aerodynamics, or environmental footprint in production, counts for 0 gCO₂/km. Since 60% of an electric vehicle's total emissions come from its manufacturing phase, new tools are needed to provide a more complete picture of its carbon footprint. These tools will make it possible to pursue a trajectory that is compatible with the overall objective of carbon neutrality by 2050, and thus move towards enhanced decarbonization and better control of the environmental impact of the automotive industry.

When the CAFE CO₂ emission standards were tightened up in 2023, the European Commission was therefore given a mandate to put in place, by 2026, both a method of analysis to qualify the energy efficiency of zero-emission vehicles during use, and a proposal for a common methodology for analyzing the life cycle of cars. The rationale is positive, but the first approach (energy efficiency) is incomplete as it only deals with the use phase, and the second, which is intended to be more exhaustive, lacks ambition and is so complex that its implementation and use are likely to be difficult and delayed, at a time when there is an urgent need to send clear signals and a clear framework to manufacturers and consumers.

In addition, in the absence of an effective framework for differentiating the environmental performance of electric vehicles at European level, a number of national initiatives (within Member States) have already emerged, such as the French eco-score, which makes the ecological bonus conditional on a minimum carbon footprint. In practice, only electric vehicles with the lowest carbon footprint can now benefit from financial incentives in France. T&E, BEUC and ITM believe that a real impact on design will only be achieved if the tools are used on the scale of the entire European market, and would therefore like to propose a relatively similar tool for European use: known as an "eco-score", this environmental performance indicator is intended to be highly operational, quick to implement and an essential tool for supporting a European industrial policy that is already relatively effective on all these points, compared with non-European production.

Taking stock of the limits in terms of effectiveness of the mandates entrusted to the European Commission

The work undertaken by the European Commission on the efficiency of electric vehicles and the need to develop a standard methodology for robust, enforceable lifecycle analyses are a reminder that the electrification of vehicles is not an end in itself, but only one of the pillars required for the emergence of very low-emission mobility. Public policy must therefore not only address the energy transition of the sector, but also act on the nature of the vehicles generated¹ and their impact at the design, production, and end-of-life stages.

Based on these elements, we can make the following observations: (1) energy efficiency cannot deal with the material footprint of electric vehicles, given the weak correlation between the mass of an electric vehicle and its energy consumption in use. And if used as the sole assessment criterion, this indicator could be counter-productive, encouraging larger vehicles that benefit from their aerodynamic advantages but emit more CO₂ over their lifetime. (2) Having a common lifecycle analysis method that is generalized at European level will come up against numerous challenges and underlying implementation difficulties (definition of functional units, complex methodology versus the need for simple information for consumers, costs incurred, frequency of renewal of declarations and complexity of monitoring, geographical scope considered for calculating the carbon content of electricity, etc.). All these factors make it difficult to respond in a flexible way to the short-termist drifts observed.

A proposal incorporating both energy efficiency and material impact

The methodology proposed by T&E, BEUC and ITM is like a hybrid approach between the two mandates given to the European Commission mentioned above. The indicator is based on four elements: (1) the energy efficiency of vehicles, which is necessary (but not sufficient) to encourage the most frugal vehicles and limit the impact on the electricity distribution network; and the main emission sources identified at the manufacturing stage—production of (2) steel, (3) aluminium and (4) batteries. Our estimates show that the sum of these four components covers more than 80% of the vehicle's total emissions, without making reporting too complex. In fact, this indicator will be able to rely fully on the existing regulatory framework: battery emissions will very shortly be accounted for via the battery regulation; steel and aluminium via the Carbon Border Adjustment Mechanism (CBAM); and the vehicle's energy efficiency is already measured in an enforceable way via the WLTP (Worldwide harmonised Light-duty vehicles Test Procedure)/RDE (Real Driving Emissions) homologation cycles. The aim here is to capitalize on all these components to create a single European indicator that is simple and easy to deploy.

This proposal for an environmental score (which could be deployed when the [car labelling directive](#) is revised) is intended to be versatile, fair and flexible, taking into account the flexibility available to carmakers to improve the environmental performance of their production: sourcing parts and components from regions with lower-carbon content, decarbonizing related manufacturing processes, increasing the use of recycled steel and aluminium, using green steel (Direct Reduction of Iron, DRI), improving the energy efficiency of the vehicle and in particular its aerodynamic performance ([S.Cx](#)), reduced weight and on-board battery capacity are all variables that influence the eco-score offered.

The signal generated by this instrument should stimulate innovation and support the development of innovative sectors (recycling, upstream decarbonization, circular economy). As the indicator is designed to be modular, it will be possible to consider extending the criteria, for example to include a criterion relating to vehicle reparability, or the possibility of bi-directional vehicle-to-grid (V2G) charging. Ultimately, the [methodology](#) will not only encourage the production of more efficient vehicles, but will also provide the means for environmental differentiation that will benefit the European automotive industry.

¹ All the technical characteristics of cars that influence their environmental performance: in particular their size, mass, and segmentation, as well as their durability and reparability potential.