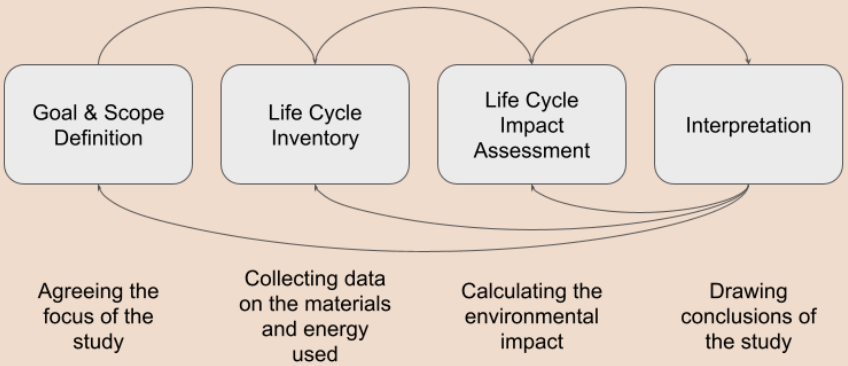
Why the EU should oppose a LCA approach for vehicle emission standards - T&E note

Summary: As environmentalists, we oppose an LCA approach for vehicle emission standards

- **Life Cycle Assessment (LCA) is a valuable tool but it is unsuitable for vehicle emissions standards** and should not replace the current tailpipe approach. Tailpipe standards provide a clear, enforceable, and harmonised basis for regulation.
- **LCA introduces high complexities** which are directly opposed to the industry's demands for simplification. It requires thousands of data points, creating a complex bureaucratic reporting and verification exercise of supply chain actors.
- LCA approaches are **inconsistent and far from being harmonised** under a robust methodology.
- **LCA-based regulation would dilute the market signal for BEVs,** by encouraging inappropriate solutions like biofuels.
- By extending the scope of the coverage, **responsibilities for reaching the targets are blurred between a wide range of stakeholders** (fuel and electricity producers, end users, suppliers, etc). If everyone is responsible, nobody is accountable.
- **Stakeholders advocating for an LCA-based regulation have an interest in slowing down the transition to EVs** and are increasingly vocal opponents to going all-electric.
- **Policymakers should retain the tailpipe vehicle CO2 emissions standards** as the foundation of vehicle regulation while developing other complementary policy instruments to tackle vehicle carbon footprint.

What is LCA?

LCA stands for Life Cycle Assessment. It is a method of calculating all the environmental impacts across the life span of a product or service. It is most commonly used as the methodology behind the **carbon footprint** but it is used to understand many other environmental impact categories[1]. The steps of calculating LCA are well established in international standards[2]:



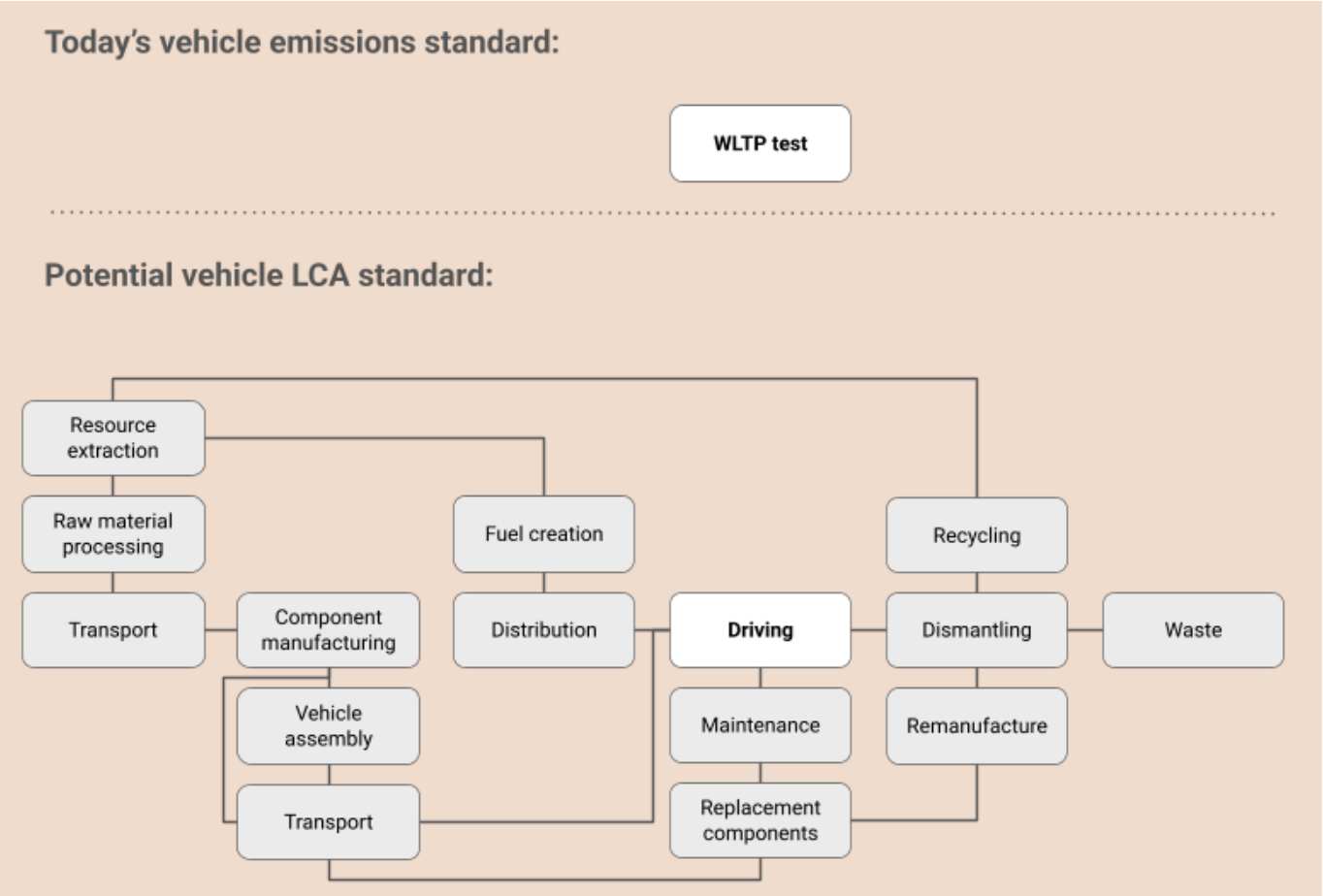
[1] For the purpose of this briefing, LCA refers to the carbon footprint impacts only.

[2] ISO 14040:2006 standardises the concepts of LCA and ISO 14044:2006 the methodologies.

1. LCA methodology is too complex to regulate vehicle emission standards

With the current tailpipe approach, regulators and industry benefit from a single, repeatable measurement that is both enforceable and controllable. All these practical benefits would be abandoned with an adoption of LCA-based regulation.

The current tailpipe emission standards are based on the Worldwide Harmonised Light Vehicles Test Procedure (WLTP) which offers a practical approach to physically testing and comparing the tailpipe emissions of every passenger vehicle that comes to market.



LCA, on the other hand, is a long series of calculations spanning the entire automotive supply chain. From the production side, this involves researching thousands of vehicle parts for each vehicle. Downstream, this requires predicting what will happen to the vehicle, how far it will drive, what fuel is used, how it gets maintained and what happens at its end of life.

In the absence of real world data being readily available on up to 100,000 elements per vehicle,[3] LCA practitioners must use estimates from secondary databases and averages that predict but never actually measure the impacts across the supply chain.

[3] 100,000 items per vehicle is referenced in UNECE's most recent draft Automotive LCA document dated July 2025.

An LCA regulation would be severely challenged by the global complexity of automotive supply chains. Burdens of responsibility would shift from the carmakers and the emissions performance of their engines, to the decarbonisation efforts of suppliers well beyond a carmaker's visibility and control.

A well-intended LCA regulation would not only become a bureaucratic nightmare and run against the industry's own demands on simplification, but also reduce supplier productivity and distract sustainability teams away from projects that have real world impact today.

2. Vehicle LCAs are inconsistent and far from harmonisation

The complexities of LCA make it implausible to compare the results of one vehicle model to the next. Practical attempts to adopt LCA into regulation will demonstrably weaken vehicle emissions standards.

Today, most carmakers already use LCA to monitor the environmental impact of their products - T&E reviewed 17 LCA publications from manufacturers and found a wide range of approaches.[4]

While it is positive that most carmakers are voluntarily offering LCA publications, the result is a mix of granularity and transparency on what the LCA result means and what key assumptions were made to get there. Comparison of vehicle LCA results is not possible. Several carmakers correctly put a disclaimer in publications that LCA results cannot be compared from one vehicle to another. Ultimately, if we cannot compare, we cannot regulate.

Efforts to build an international harmonised vehicle LCA methodology[5] have been delayed as key assumptions are not agreed upon among stakeholders.

With carmakers, component suppliers and fuel suppliers all lobbying for a solution that works best for them, it does not appear likely that a harmonised and robust methodology will be agreed any time soon. The risk is that the methodologies end up being very weak and flexible to accommodate for the demands of each stakeholder, thus aligning on the lowest common denominator in terms of ambition.

3. LCA-based regulation risks derailing the shift to EVs by diluting the focus

Tailpipe emissions from the car are the number one source of greenhouse gases in the transport sector. Switching from a combustion engine to an electric powertrain is the single

[4] See Annex for further details.
[5] in UNECE, the EU and from the now concluded Transensus LCA project.

most effective way to tackle transport sector emissions. LCA-based regulation would distract us from both progressing on transport decarbonisation and industrial transformation.

It was the LCA that confirmed the benefits of the EV - as a means of comparing different powertrain technologies alongside each other. Study after study after study concluded that, yes, the BEV is a genuine and best solution to tackling climate change, unlike many others. T&E's own online LCA calculator illustrates how EVs perform better than ICEs (internal combustion engines): on average 3 times less emissions over the lifetime. Even in worst case scenarios (electricity from Poland, battery from China), EVs emit 30% less than ICEs.

But, today, the LCA is at risk of being hijacked as a means to promote "technological neutrality" through a range of inappropriate solutions. A vehicle's carbon footprint can be reduced without going all-electric by adding biofuels or e-fuels into a combustion engine. This is why most opponents to electrification promote an LCA-based approach.

This has the consequence of shifting the emissions reduction responsibility from the carmaker to a wide range of stakeholders (fuel and electricity producers, end users, suppliers, etc). This blurring of responsibility is another reason why some carmakers favour this approach: if everyone is responsible, nobody is accountable.

Global decarbonisation requires both action on tailpipe and on production emissions, not a trade-off between them. Transport emissions come from the tailpipe, and any diluting of vehicle regulation with industrial or upstream energy emissions will delay electrification. Delayed electrification risks throwing off the transition to BEVs, and placing both the automotive sector and the climate into a dead end.

Technological neutrality jeopardises investments into the electric future

At least one in every four new cars sold in 2025 has a plug.[6] The automotive world is going electric regardless of Europe. It is a question of what role Europe's automotive sector wants to play in a post-combustion industry.

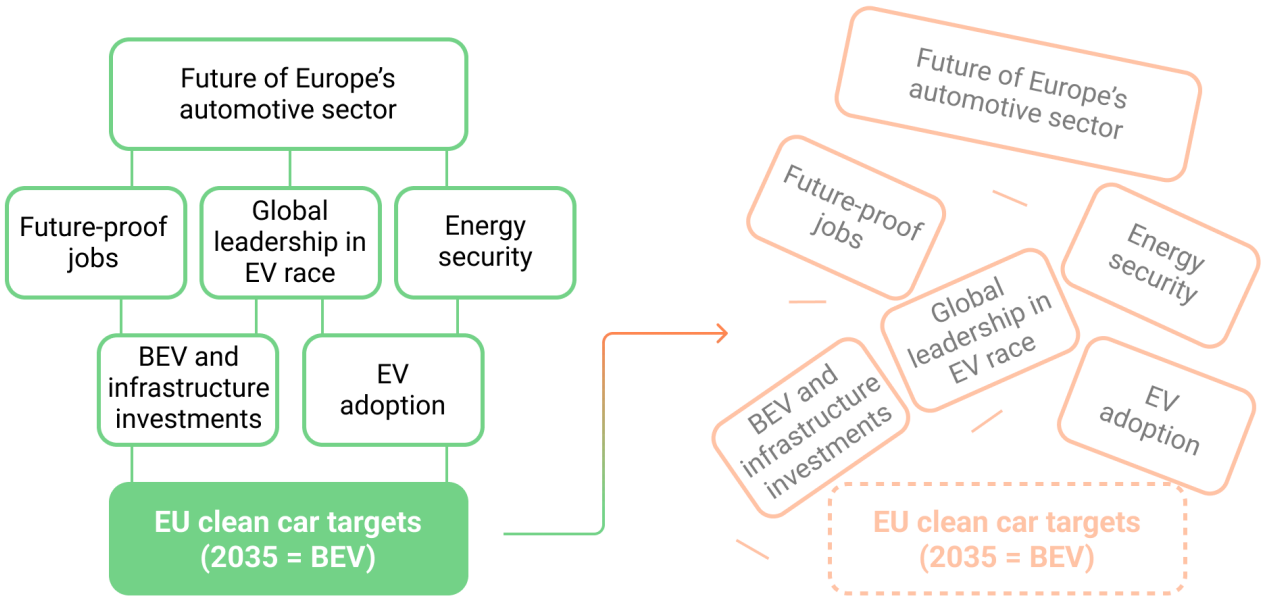
So far, Europe's carmakers have seen record growth in EVs this year. Collectively, they have witnessed 38% growth in BEV sales in the first seven months of 2025.

The tailpipe emissions standard has been pivotal in achieving this growth, by building a clear destination of zero tailpipe emissions in 2035. As the "foundation stone" of Europe's automotive future, hundreds of billions of euros of investments have poured into the sector

[6] See analysis on EV demand from IEA: https://www.iea.org/news/more-than-1-in-4-cars-sold-worldwide-this-year-is-set-to-be-electric-as-ev-sales-continue-to-grow

(e.g. infrastructure and vehicle platforms) to make the EV transition happen[7].

If the clean car targets disappears, with tech neutrality everything collapses with all the benefits



Source: T&E

Promoting technology neutrality would take that foundation away. The certainty of how many EVs would be sold in 2030 and 2035 would be lost. With a fractured mix of technologies, investors would shy away from building the new automotive sector.

LCA-based regulation risks all the economic benefits a European all-electric future would bring.

4. Recommendations

T&E recommends that decision makers should consider the following:

1. The EU should keep the tailpipe approach in the vehicle CO2 standards to safeguard the BEV transition and sector decarbonisation. It should stay away from regulating vehicles on an LCA standard.

[7] Battery producers and charging infrastructure providers rely on the market certainty to make investments. See declaration from 200 CEOs: https://takechargeeurope.org/

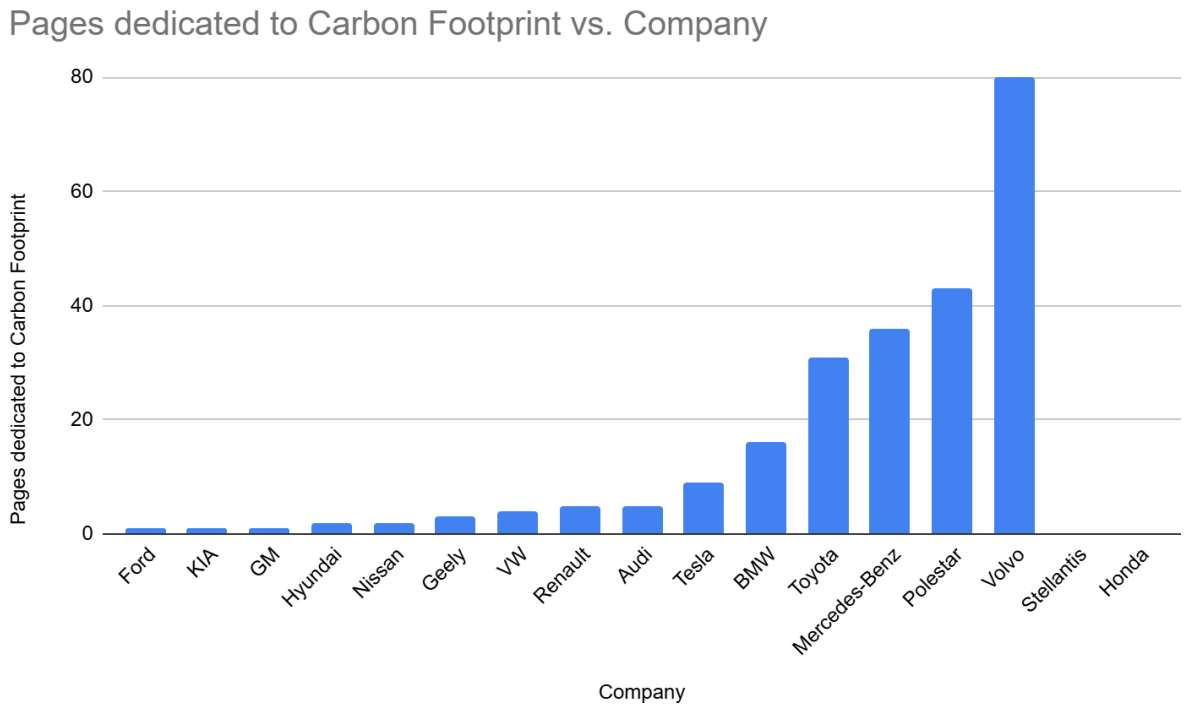
2. The EU should consider other pragmatic and complimentary policy routes to tackling industrial emissions and cleaning up components. Focus should be on the key materials in terms of CO2 emitting contributors: batteries, steel and aluminium.
3. The Car Labelling Directive review should focus on providing information to consumers on the real world emissions as well as the CO2 footprint from the key materials (battery, steel and aluminium).
4. LCA should continue to be adopted as:
    a. A practical tool for consumer environmental education
    b. An internal hotspotting tool for car manufacturers to make continual improvements.

Annex: The inconsistent landscape of OEM LCAs today

T&E reviewed 17 OEM published LCA results in summer 2025. It found that:

- 15 OEMs provided LCA results (Stellantis and Honda indicate they conduct LCA but no data was found published)
- 7 OEMs provided LCA results inside dedicated “carbon footprint” themed publications, the rest referred to LCA results within broader sustainability, impact or other corporate level reports.
- Only 2 OEMs publish LCA reports on their websites (Volvo; Polestar). All others only offer a summary of results.

Unlike WLTP tailpipe emissions, there is no requirement for OEMs to publish car LCAs. While it is positive that most OEMs are voluntarily offering LCA results, the result is a complete mix of granularity and transparency on what the LCA result means and what key assumptions were made to get there (see chart).



By publishing only the results, OEMs retain full freedom to frame the data in the most favourable way, for example by highlighting that a model performs better than its predecessor, the market average, or a competing powertrain.