

The end of thermal cars: Why electric vehicles aren't a silver bullet

March 22 2023, by Alexis Poulhès and Cyrille François



Credit: AI-generated image ([disclaimer](#))

On 8 June 2022, the European Parliament voted to ban the sale of new internal-combustion engine cars in Europe in [2035](#). This measure is part of European objectives to reduce greenhouse gas (GHG) emissions by 55% by 2030 and be carbon neutral by 2050.

With this decision, European policies are promoting the electric vehicle (EV) as the solution for reducing GHG emissions in the transport sector. Today, the sale of EVs is [rising swiftly](#), accounting for almost 10% of private car sales in Europe. The current evolution of the automobile market and the urgency of the climate crisis seem to be in line with the 2035 deadline.

While this rapid change generates a sense of inevitability, it's ultimately too simple a change in relation to such complex planetary problems. We must be aware not only of [environmental consequences](#) but also economic and social issues.

Car pollution, but not just from the exhaust

From an environmental point of view, multiple studies have compared the GHG emissions of internal combustion cars with [those of their electric equivalents](#). Emissions during the use of an electric car depend directly on the emissions level of the electricity mix used to charge the vehicles.

In the case of France, a large share of electricity comes from low-carbon sources because of the country's significant use of nuclear power, which is not the case in all European countries. However, the construction of EVs, and especially the fabrication of their batteries, emits high levels of GHG, and the environmental benefits can only be offset if the car is driven enough. This undermines the argument for restrained use, which is a major lever for climate mitigation.

By only considering emissions released within the national borders, carbon-accounting methods are not adapted to solutions that result in pollution emitted in other countries. According to these techniques, VEs appear to be effective in reducing the national carbon footprint. The desire to adopt them in France is therefore understandable but their

virtue does not extend to the global level.

Besides climate challenges, the ban on the sale of internal combustion vehicles in 2035 must respond to the issue of air quality in most of the world's major cities, with [impacts on the local economy and public health](#).

The [transport sector](#) is a major source of this pollution and VEs are an alternative solution to help reduce these emissions—a reduction that is nevertheless mitigated by the release of particles linked to the abrasion of tires, breaks and roads, which [remains high](#).

By enforcing low-emission zones, many European cities are obliging owners of the most polluting cars to buy newer cars, or even [electric vehicles](#), which emit fewer local pollutants.

Oil-related tax loss and EV subsidies

The all-electric transformation of vehicle fleets by 2035 will necessarily revolutionize the entire road-infrastructure [economic system](#). With the reduction in fossil fuel consumption, revenue from the French domestic consumption tax on energy products (TICPE) will also decrease.

This tax generated [33.3 billion euros in 2019](#) and is central to both the national budget and that of local authorities. Replacing the TICPE with a tax on electricity could make up for some of the tax losses but would affect all households, including those who travel less by car.

The subsidy system in place (bonuses and the conversion bonus) has strongly contributed to the current level of EV use but is set to become increasingly expensive. In 2020, it cost [700 million euros](#), with a 20% market share, including hybrid vehicles. In comparison, the 2018 "bike and active transport" plan allocated [350 million euros over seven years](#)

[for cycling infrastructures.](#)

Tax benefits and subsidies for the purchase of electric vehicles are currently more beneficial for users in urban areas, where this technology is adopted quicker thanks to the favorable conditions. Rural and [peri-urban areas](#) are more of a challenge in this race toward the all-electric transformation, as those living there have no choice but to use a car.

Tense markets and very uncertain costs

The government will therefore have to make significant contributions to support businesses and individuals in this transformation, and it remains to be seen what political choices will be made to redistribute this cost among taxpayers. Despite the installation of new electric generators, the rise in demand will greatly increase the [electricity bill of French households](#), especially if the residential sector also uses electricity for heating.

On a global scale, lithium and many other metals have become strategic resources for electric mobility. However, high demand and the geographical imbalance of deposits and exploitation create tensions that will weaken the supply and push up the prices of raw materials.

The electrification of Europe will therefore be dependent on imports of these raw materials, raising doubts about the ability to supply the entire European and global market with EVs at a reasonable price.

A quick fix for the climate, but far cry from an ecological solution

The all-electric transformation of vehicle fleets is a headlong rush that

relies on an innovation that does not call into question the way our society works. If EVs are part of the strategy for carbon neutrality by 2050, they will not be enough by themselves and will continue to maintain an unstable system dependent on a high level of construction and land artificialization and the abundant consumption of resources and energy.

The urgency related to climate change, with ambitious targets for 2030 and 2050, makes solutions viable that are beneficial in the short term, such as EVs, but these will no longer be feasible in 2100, in particular due to a lack of natural resources [beyond 2050](#). With the overselling of its ecological benefits, the electric vehicle stifles potential action to change our car-centered system. Promoting restrained use is the safest and most natural solution and offers multiple environmental and social benefits.

Transport systems, spatial planning and lifestyles are caught up in a decades-old inertia focused on speed and consumption. Despite the urgent need to end this "ecocidal" model, reflection on the future of currently car-based territories, between urban centers and [rural areas](#), are wanting.

The end of the internal combustion engine car in 2035 should not be synonymous with their systematic replacement by electric cars, but rather with a profound questioning of the place of the vehicle in our daily lives.

This article is republished from [The Conversation](#) under a Creative Commons license. Read the [original article](#).

Provided by The Conversation

Citation: The end of thermal cars: Why electric vehicles aren't a silver bullet (2023, March 22)
retrieved 20 April 2024 from

<https://techxplore.com/news/2023-03-thermal-cars-electric-vehicles-silver.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.