

Impact of EU regulation on road decarbonization

Report summarizing the impacts of European regulations on the decarbonization of road freight transport in Europe by 2040.

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Feb 2026

With the contribution of

EY
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About New Energies

The New Energies Coalition, initiated in 2019 by CMA CGM, is a consortium of key players in international supply chains, working across various sectors and industries. Through a collaborative approach, they aim to develop innovative technologies and energy solutions to decarbonize maritime, air, and road activities worldwide. Additionally, to address the need for a regulatory framework that encourages the recognition and development of new energies and low-carbon and renewable fuels, the members of the New Energies Coalition produce studies and manifestos for public and private representatives in the transportation and logistics sector. New Energies thus operates on two levels: solutions and mobilization.

The study was financed by Renault Group, CMA CGM and CEVA Logistics.

About EY

EY is a global leader in assurance, consulting, strategy, and sustainability services, supporting public and private organizations in navigating complex regulatory, economic, and environmental transitions. EY's work included the collection and analysis of publicly available data, a review of regulatory and fiscal frameworks, the evaluation of market and technology readiness for alternative solutions, and the review of key cost drivers for total cost of ownership (TCO) modelling.

To contribute to this study, EY undertook the following reviews:

- Analyze the European and national regulations, incentives, and taxes related to road freight transport decarbonization.
- Review the projected TCO for alternative fuel trucks in Europe, considering the cost impact of technology and regulation for a truck purchased in 2025, 2030 and 2035 and operated over a 10-year period. This analysis encompasses many configurations: types of truck, energy sources, inland corridors, transition scenarios…
- Assess market and infrastructure maturity by examining OEMs' readiness, fuel availability, and mapping low-carbon infrastructure.

Foreword to the report

Transport is responsible for nearly a quarter of global energy-related CO_2 emissions[1], and unlike other sectors, **its emissions continue to rise due to increasing demand for mobility and international trade**. In Europe, road transport accounts for 20% of total GHG emissions, with heavy-duty vehicles (HDVs) generating over a quarter of that total.[2]



Decarbonizing freight is thus essential for the EU to meet its climate targets. Under the European Green Deal and the "Fit for 55" package, **the EU has committed to reducing its GHG emissions by 55% by 2030 compared to 1990 levels**, and by 90% by 2040, with full carbon neutrality targeted in 2050. These targets are supported by a diverse and evolving set of regulatory and fiscal measures at both EU and national levels, including:

- CO_2 emission standards for new HDVs, with increasingly stringent targets for 2030 and 2035;
- The inclusion of road transport in the EU Emissions Trading System (ETS2) from 2028 onwards;
- The Energy Taxation Directive, which aims to align fuel taxation with climate performance;
- The Alternative Fuels Infrastructure Regulation (AFIR), setting binding targets for the rollout of charging and refueling infrastructure;
- National-level mechanisms such as vehicle subsidies, tax credits, toll exemptions, and biofuel incentives, which vary widely across Member States.

These measures not only influence the cost structure of freight operations but also reinforce carbon performance as a central pillar of the sector's transition. **The accelerated deployment of Zero-Emission Vehicles (ZEVs), such as battery electric and hydrogen fuel cell trucks, is now** more than an objective, **is a really**, driven by both regulatory pressure and market dynamics:

Carbon dioxide (CO2) standards for heavy trucks came into effect in Q3 2025. Manufacturers are required to lower the CO2 emissions of Heavy trucks first registered in the period Q3 2025–Q2 2026 by 15% compared with trucks first registered over the period Q3 2019–Q2 2020.

[1] IEA, Transport - Energy System - IEA
[2] Heavy-duty vehicles - European Commission

Sales of ZE trucks subject to this regulation grew by 30% from Q2 to Q3 of 2025.[3]

As a result, policies and performance trends are reshaping the economics of road freight transport. However, the complexity and evolving nature of European regulations make it difficult to assess the long-term cost competitiveness of low-emission options. **Understanding the real impact of these frameworks on the cost of heavy-duty freight is essential to support the sector's transition and decarbonization**. It is essential not only to anticipate future costs and mitigate investment risks but also to establish a shared understanding of market needs.

The main objective of this study is to assess how EU and national climate and energy policies affect the total cost of ownership and economic competitiveness of alternative fuel trucks (electric, B100, HVO) compared with conventional diesel in European road freight both two different types of markets:



Finished Vehicles transported on long distance by car-carriers



26t Heavy Trucks (4x2 tractor) transporting Freight across Europe long distance corridors

In this context, the New Energies Coalition mandated EY to conduct a forward-looking study assessing the impact of European climate and energy policies on **the Total Cost of Ownership (TCO)** of alternative fuels trucks, in comparison with conventional diesel vehicles.



[3] ICCT, Dec 2025 Report

Executive Summary

One of the central objectives of this study **is to demonstrate that EU climate and energy regulations are making the shift to zero-emission trucks unavoidable**, turning the deployment of Zero-Emission Vehicles (ZEVs) from a strategic choice into a de facto regulatory requirement for freight operators.

- **Biofuels such as B100 and HVO offer immediately deployable**, cost-competitive **transition solutions**, but their long-term role is constrained by tax uncertainty, limited sustainable feedstocks, and prioritization of these fuels for aviation and maritime.
- **By around 2030, battery-electric trucks are expected to reach or surpass diesel on Total Cost of Ownership (TCO)** in many use cases, provided that policy support, energy prices, and route characteristics are aligned.
- **The decisive impact of regulatory scheme such as CO_2-differentiated tolls, ETS2 carbon pricing, and targeted subsidies**—combined with AFIR-driven deployment of charging and hydrogen refueling infrastructure—**will largely determine the pace and shape of the transition.**
- **Meeting the EU's 2035 CO_2 targets will require a massive scale-up of European industrial capacity for ZEV trucks production**, with annual production needing **to approach today's entire truck market volume**.

The electrification of essential transportation assets has significant long-term potential and sustainability tailwinds.



Table of Content

Introduction 7

1.In Europe, the rapid adoption of ZEVs is no longer optional, it is now a regulatory imperative 10

2.Biofuels (B100, HVO) are short-term transition options, but their long-term role remains uncertain 11

3.By 2030, electric trucks will become cost-competitive, but their economic viability depends on route characteristics and policy alignment 13

4.Enforcing existing public policies is key to ensuring the competitiveness of low-carbon technologies 15

5.European infrastructure needs to be developed to support the ZEV transition, especially in regions where electrification is just starting 17

6.European OEMs must ramp up industrial capacity to meet the growing demand for zero-emission trucks 19

Conclusions 21

Glossary 22

Introduction

The primary objectives of the study were to:

1. **Evaluate the effect of EU and national policies:** regulations, taxes, and incentives on the cost dynamics of alternative energy options
2. **Compare the economic competitiveness of four energy options:** Diesel B7, Battery Electric, B100 (biodiesel), and HVO (Hydrotreated Vegetable Oil), across different vehicle types, use cases, and time horizons.
3. **Evaluate the maturity and readiness** of low-carbon technologies and markets, including the industrial capacity of OEMs and the deployment status of the necessary infrastructure to support each decarbonization pathway.

Methodology and scope

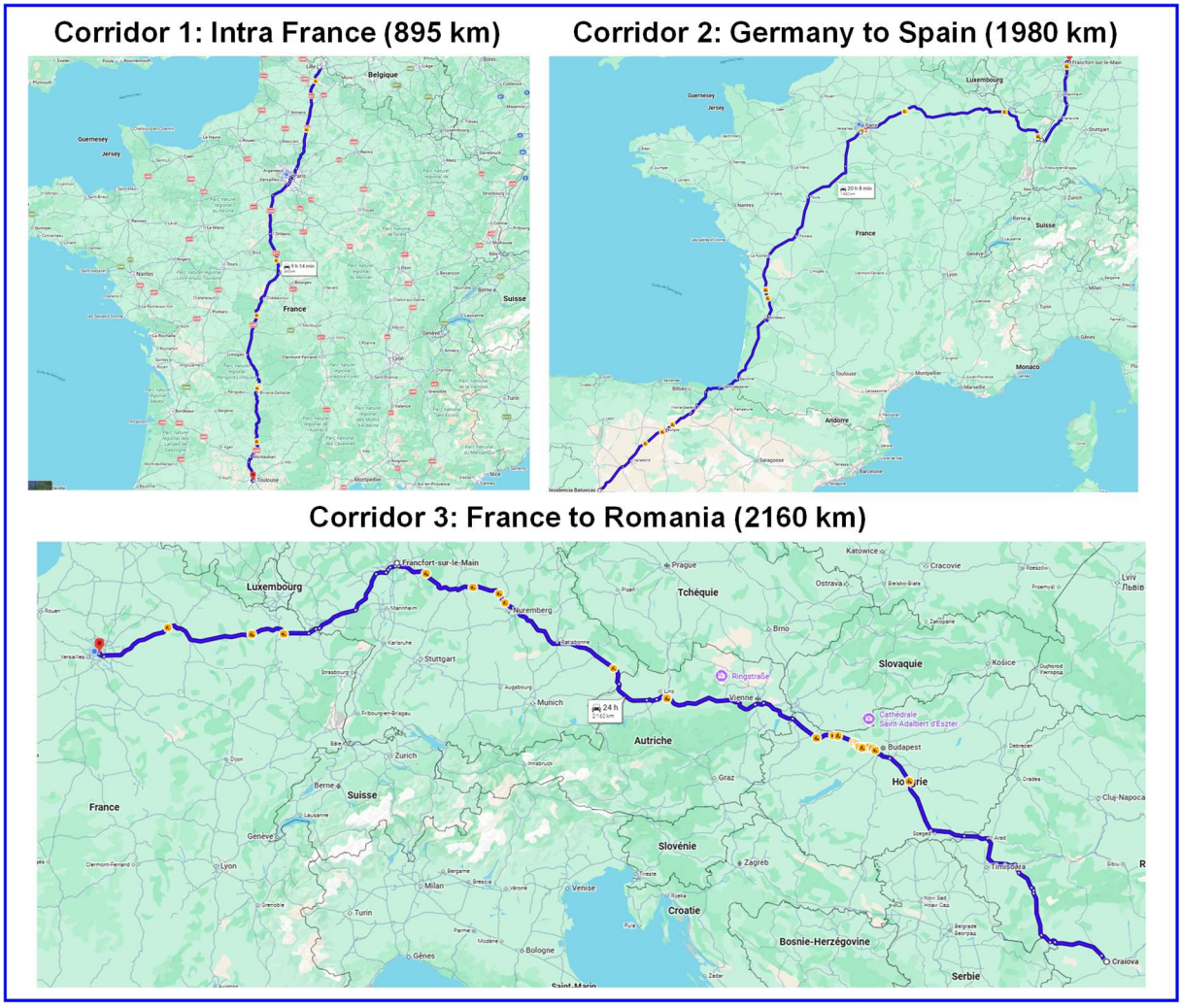
To achieve these objectives, a Total Cost of Ownership (TCO) model was developed. The TCO is defined as the cumulative cost of purchasing, operating, and reselling a vehicle over its useful life, encompassing capital expenditures (CAPEX), operating expenditures (OPEX), and residual value.

The analysis focused on two (2) freight markets:

Finished Vehicle Logistics (FVL) represented by a car transporter (~40t)	**Freight on long distance,** represented by a 4x2 tractor (~26t).
	

The model covers the following parameters:

- **4 energy sources:** Diesel B7, electric, B100, HVO
- **3 transport corridors:** Intra-France, Spain to Germany, France to Romania



- **3-time horizons:** 2025-2035, 2030-2040, and 2035-2045 (ten-year ownership period)
- **3 transition scenarios:** Current Policies, Well Below 2°C, Net Zero Emissions, based on NGFS scenarios

The model includes the following parameters:

TOTAL COST OF OWENRSHIP							
	CAPEX	Vehicle			Battery	Depot Charging Infra	Parameters excluded[4]
		Vehicle Retail Price / Financing Cost	Purchase Subsidies	Registration Fees	Battery Replacement Cost	Charger and Electrical Costs	
	OPEX	Vehicle		Fuel		Human Resource	Infrastructure
		Maintenance Cost	Toll Charges	Fuel Consumption	Energy Charges at Depot	Driver Cost	Depot Charging Infrastructure O&M Costs
		Insurance Cost	EU ETS II Charges	Fuel Retail Price	Energy Charges at public places		
	RESIDUAL VALUE	Vehicle	Battery				
		Vehicle Resale Value	Battery Resale Value				

Note: infrastructure investments (e.g., depot charging installation, grid upgrades) are not included in this analysis.

Purpose of the report

This report summarizes the main findings of the study and offers insights about the **economic viability of diesel alternatives under different regulatory trajectories on long-distance transport**. It is intended as a contribution to the policy and industry dialogue on transport decarbonization, by highlighting how current and future regulatory frameworks shape the total cost landscape for freight operators across Europe.



[4] Likewise, broader corporate-level benefits (e.g. VAT exemptions, tax breaks) are excluded but acknowledged as potential complementary levers.

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1. In Europe, the rapid adoption of ZEVs is no longer optional, it is now a regulatory imperative

The decarbonization of road transport is no longer a matter of long-term positioning, it is becoming a regulatory imperative. The European regulatory framework has significantly tightened, making the large-scale deployment of Zero-Emission Vehicles (ZEVs) unavoidable.

The recently adopted Regulation (EU) 2024/1610 sets binding CO_2 emission reduction targets for new heavy-duty vehicles, requiring a -45% reduction by 2030, -65% by 2035, and -90% by 2040, compared to pre-2020 levels. These ambitious targets cannot be met without a widespread adoption of zero-emission trucks, powered by battery-electric or hydrogen technologies, currently the only options enabling a structural and sustained reduction in tailpipe emissions.

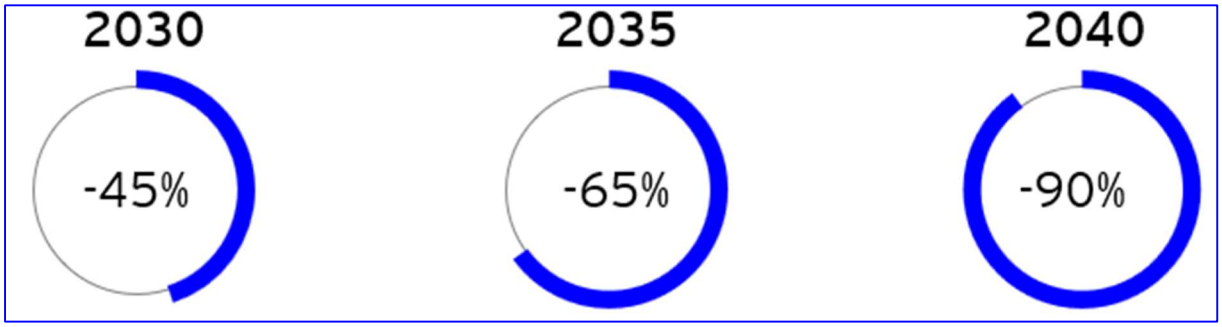


Figure 1: New Heavy-Duty Vehicles Standards: CO2 emissions reduction targets compared to pre-2020 levels

In parallel, **the Renewable Energy Directive (RED III) introduces a mandatory 14.5% reduction in the carbon intensity of transport fuels by 2030**, along with dedicated sub-targets for advanced biofuels and renewable hydrogen.



This dual regulatory pressure, on new vehicles' emissions and fuels' carbon intensity, positions ZEVs as the only viable long-term lever for ensuring compliance with EU climate and energy legislation. Hence, for fleet operators, investing in zero-emission technologies is no longer a choice: it is now a transformation required by the EU regulations.

2. Biofuels (B100, HVO) are short-term transition options, but their long-term role remains uncertain

Among the available alternatives to diesel, biofuels such as B100 (pure biodiesel) and HVO (Hydrotreated Vegetable Oil) currently represent some of the most operationally accessible and immediately deployable low-carbon options.

In the short term, particularly by 2025, they achieve near or full economic parity with conventional diesel, largely thanks to favorable tax treatments. For instance, in France, **B100 benefits from a full exemption from the domestic consumption tax on energy products (TICPE), making it a competitive alternative for fleet operators**, especially in captive or regional operations.



From a technical standpoint, these fuels offer a notable advantage: they can be used in existing internal combustion engines with minimal or no modifications. This compatibility allows transport operators to achieve immediate GHG emissions reductions, typically in the range of 55% to 82% on a life-cycle basis[5], without waiting for new vehicle investments or infrastructure deployment. As such, biofuels are seen as pragmatic and cost-effective transition solutions, particularly for applications that are harder to electrify in the short term.

However, their competitiveness and availability are subject to structural uncertainties. First, their cost advantage is largely driven by tax exemptions, which remain fragile and politically debated, both at the national and EU levels. Several countries have already signaled a reassessment of biofuel tax incentives in future budgetary cycles, citing concerns over revenue loss and policy consistency. **Without these fiscal levers, the TCO of B100 prices would rise significantly**, undermining their short-term competitiveness.

[5] Well-to-wheel estimates based on emission factors from ADEME's Base Carbone (v23.6). The range of results depends on the type and origin of the biomass used for biofuel production.

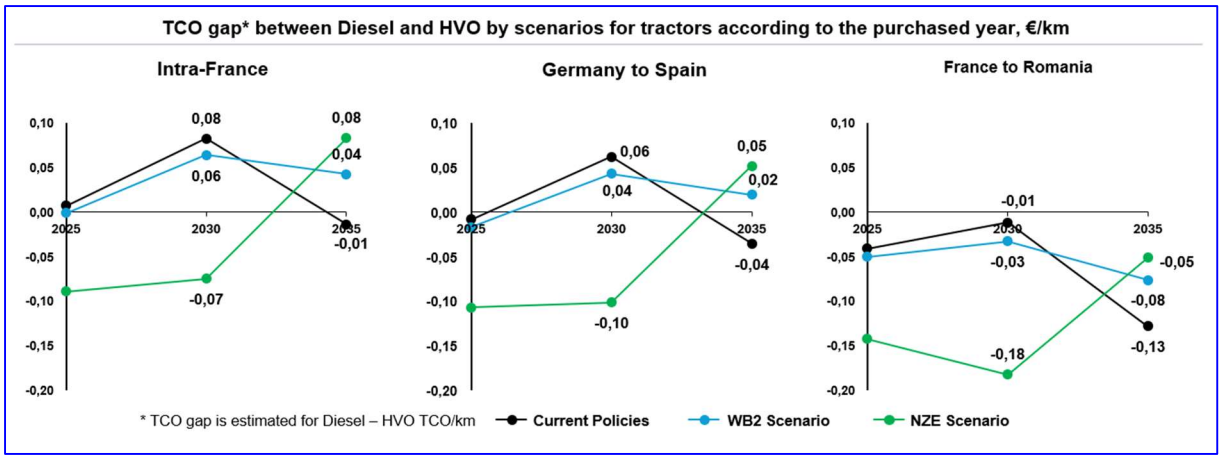


Figure 2: TCO gap between Diesel and HVO by scenarios for tractors in €/km

Second, in the medium to long term, the **availability of sustainable feedstocks** and the increasing competition between sectors is likely to constrain the role of biofuels in road transport. **Under the RED III Directive, advanced biofuels and Renewable Fuels of Non-Biological Origin (RFNBOs) are prioritized for use in aviation and maritime transport**, where decarbonization options are more limited. This may create a potential supply bottleneck for road transport, especially as the sustainability criteria tighten and the demand from hard-to-abate sectors increases.

Finally, the long-term role of biofuels in road transport **will depend on the clarity and stability of regulatory frameworks**. Key questions remain open regarding the future eligibility of road transport within REDIII targets, the evolution of national tax regimes, and the availability of sustainable biomass feedstocks. In the absence of clear, long-term policy direction, operators may hesitate to make sustained investments in biofuel-based strategies.

3. By 2030, electric trucks will become cost-competitive, but their economic viability depends on route characteristics and policy alignment



By 2030, electric trucks are expected to become cost-competitive across a wide range of use cases in Europe. Their TCO continues to decline, supported by three key drivers: lower electricity prices compared to diesel, reduced maintenance and operational costs, and a growing set of regulatory and financial incentives in favor of zero-emission vehicles. These structural advantages are enabling electric trucks to compete head-on with diesel, particularly on national and regional routes where policy frameworks are most supportive. However, this competitiveness varies considerably depending on the corridor, the type of vehicle, and the context of national policy.

Case 1 – 4x2 tractor, intra-France corridor

In the TCO analysis conducted for 2030, an electric 4x2 tractor operating exclusively within France is **16% cheaper** over a ten-year ownership period than its diesel counterpart, assuming current levels of support. This cost advantage stems from lower electricity costs per kilometer, CO_2-based toll reductions, and substantial purchase subsidies of up to €60,000 per vehicle.

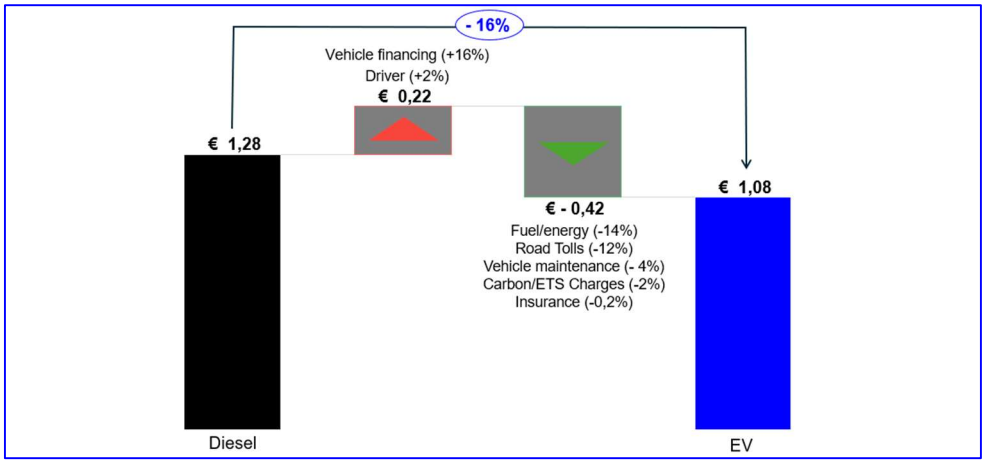


Figure 3: TCO for diesel vs electric tractor purchased in 2030, Intra-France, in €/km (source: New Energies Coalition analysis)

Case 2 – Car carrier, France–Romania corridor

The situation is notably different when looking at other vehicle types or more complex transport routes. For a car carrier operating between France and Romania, the electric option faces multiple layers of disadvantage. The vehicle itself requires a higher upfront investment due to its more specialized design and the limited maturity of electric alternatives in this segment. Cross-border operations further weaken the economics: national policy incentives vary along the route, toll schemes are not harmonized, and electricity prices differ significantly between countries reducing the cost advantage typically associated with electric power. As a result, even under an optimistic policy scenario, the TCO advantage of the electric car transporter is **limited to 7%** over a ten-year ownership period.

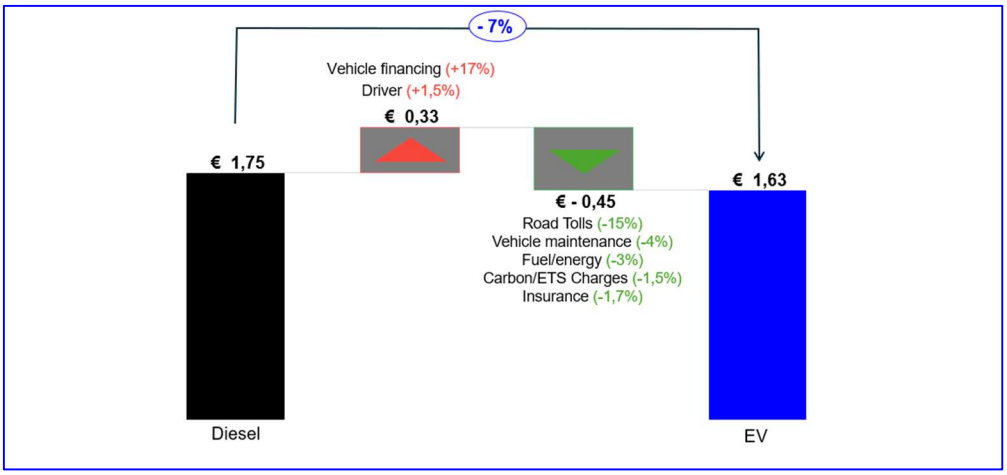


Figure 4: TCO for diesel vs electric car transporter purchased in 2030, France to Romania, in €/km (source: New Energies Coalition analysis)

These contrasts point to a key conclusion: **the competitiveness of electric trucks in 2030 will not be determined by technology alone. It will depend on the careful alignment of multiple factors: vehicle configuration, route characteristics, national and EU-level policy frameworks, and energy price dynamics.**

While battery-electric trucks are on track to become the standard low-carbon option for many use cases, their deployment must be strategic for transport operators to enhance their competitiveness. Operators will need to identify corridors where regulatory incentives are aligned, energy prices are favorable, and infrastructure is in place. Without this targeted approach, the full economic and environmental potential of zero-emission trucks may remain out of reach.

4. Enforcing existing public policies is key to ensuring the competitiveness of low-carbon technologies

The transition to low-carbon freight transport does not solely rely on technological readiness or vehicle performance, it depends on the economic viability of alternatives to diesel. Today, the competitiveness of zero- and low-emission trucks, particularly electric vehicles, is increasingly improving, but this trend is largely driven by public policy instruments that offset the higher upfront costs and support the operational profitability of these solutions.

In the short to medium term, **public support mechanisms play a decisive role in reducing the TCO of alternative solutions and accelerating their market uptake**. Several key instruments underpin this shift:

- **Purchase subsidies**: substantial incentives help offset the higher upfront cost of electric heavy-duty vehicles. In France, for example, operators can receive €50,000 to €60,000 for the purchase of an electric truck over 26 tonnes, significantly lowering the investment barrier for fleet renewal.

- **CO_2-differentiated tolling systems**: these are among the most impactful short-term measures. Enabled by the revised Eurovignette Directive, Member States shall now adapt toll fees based on vehicles' emissions. Such toll schemes not only reduce the cost gap with diesel but also create a direct and visible incentive for operators, influencing day-to-day route economics and fleet choices. Germany, for example, has implemented a surcharge of €200 per ton of CO_2, resulting in meaningful toll reductions for zero-emission vehicles compared to conventional diesel trucks.

- **Extension of the EU Emissions Trading System to road transport (ETS 2)**: from 2027, fossil fuels used in road transport will be subject to carbon pricing, starting at €45/tCO_2 for tank-to-wheel emissions. This will gradually raise the cost of diesel relative to decarbonized alternatives, reinforcing the long-term financial case for switching to electric, biofuel, or hydrogen-powered fleets.

The decisive influence of such public policy instruments is clearly reflected in our TCO analysis.





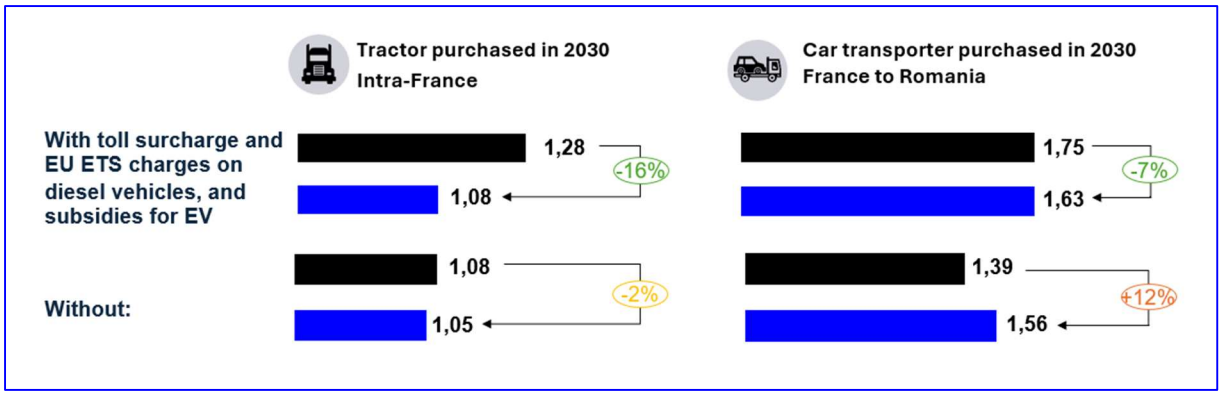


Figure 5: TCO gap between diesel and electric trucks on 2030-2040: comparison of a 4x2 tractor on an intra-France corridor and a car transporter on a France–Romania corridor, with and without policy support (toll differentiation, EU ETS, subsidies)

For a 4x2 electric tractor operating within France, even in the absence of differentiated tolls or EU-level carbon pricing, the TCO remains close to diesel. This outcome reflects the strength of national advantages, such as lower electricity prices and supportive infrastructure. In contrast, for a car transporter travelling from France to Romania, the absence of carbon pricing or harmonized toll reductions reverses the balance: diesel becomes 12% cheaper over a ten-year ownership period due to disparities in electricity prices along the route.

These contrasting outcomes demonstrate that **electrification strategies must be tailored to the specific policy and market conditions of each corridor**.

When implemented in a coordinated manner, these instruments create a strong and coherent policy signal, making clean technologies economically viable and investment-worthy. But without sustained and well-aligned public support, the path to cost parity could be delayed or even blocked altogether for certain vehicle types or routes.

It is therefore essential that these incentives be not only maintained but also reinforced, through consistent and ambitious CO_2-differentiated toll surcharges and better harmonized across Member States. **A stable, predictable, and transparent policy framework is critical to reduce investment risks**, guide operational decisions, and ensure that the transport sector remains on track to meet its decarbonization targets, especially during this pivotal scale-up phase, when markets remain nascent and infrastructure unevenly deployed.

5. European infrastructure needs to be developed to support the ZEV transition, especially in regions where electrification is just starting

The transition to ZEV will not materialize without the rapid and coordinated deployment of charging and refueling infrastructure across Europe. While some regions have made significant progress, many others, particularly those where electrification is just beginning, still lack the foundational infrastructure needed to support widespread ZEV operations.

The roll-out of high-power charging stations, hydrogen refueling networks, and grid upgrades remain fragmented and largely uncoordinated across countries and corridors. As a result, even when ZEVs are cost-competitive, operators often face deployment limitations due to inadequate infrastructure, particularly for long-distance operations and cross-border freight.

To address this, the Alternative Fuels Infrastructure Regulation (AFIR) sets binding targets for Member States to ensure minimum coverage of recharging and refueling infrastructure along the TEN-T network. **By 2025, AFIR requires the installation of electric charging stations every 60 km for heavy-duty vehicles on the core TEN-T and by 2030 on the comprehensive TEN-T**, with suitable capacity for trucks. For hydrogen, the regulation mandates **the deployment of refueling stations every 200 km along the core TEN-T by 2030**. However, the speed and consistency of implementation across Member States remain a challenge, potentially slowing the uptake of zero-emission freight solutions.

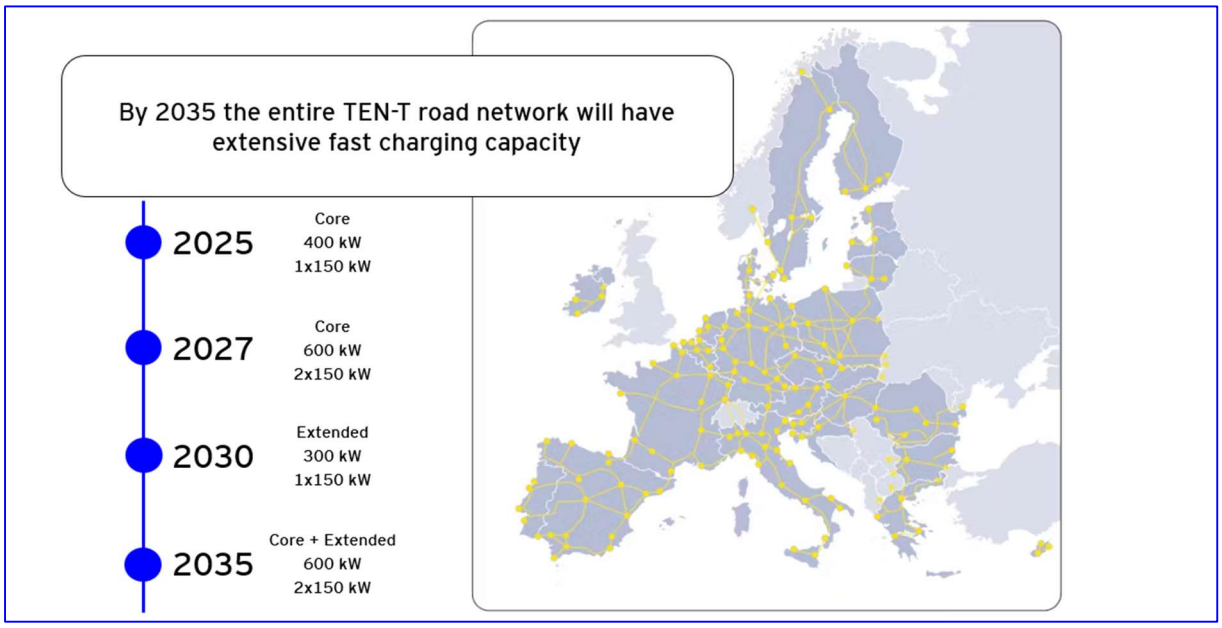


Figure 6: AFIR: Ten-T Network charging upgrades

In addition, the effectiveness of zero-emission trucks in reducing greenhouse gas emissions depends critically on the decarbonization of upstream energy supply. Electrification only delivers its full climate benefit if the electricity is produced from low carbon sources. Similarly, the climate value of hydrogen trucks depends on the availability of green or low-carbon hydrogen, produced through sustainable processes such as electrolysis powered by renewable energy.

Bridging this double gap on low-carbon production capacity and infrastructure deployment is essential to enable the transition from pilot deployments to large-scale adoption. This will require:

- **Accelerated investment in production facilities**, components, and energy carriers.
- **Integrated planning and coordination** across Member States and logistics **corridors.**
- **Stable and harmonized policy frameworks**, to give clarity to manufacturers, utilities, and operators.

Without urgent action on both sides, the risk is a misalignment between ambition, capacity, and implementation, slowing down Europe's path to decarbonize road transport.

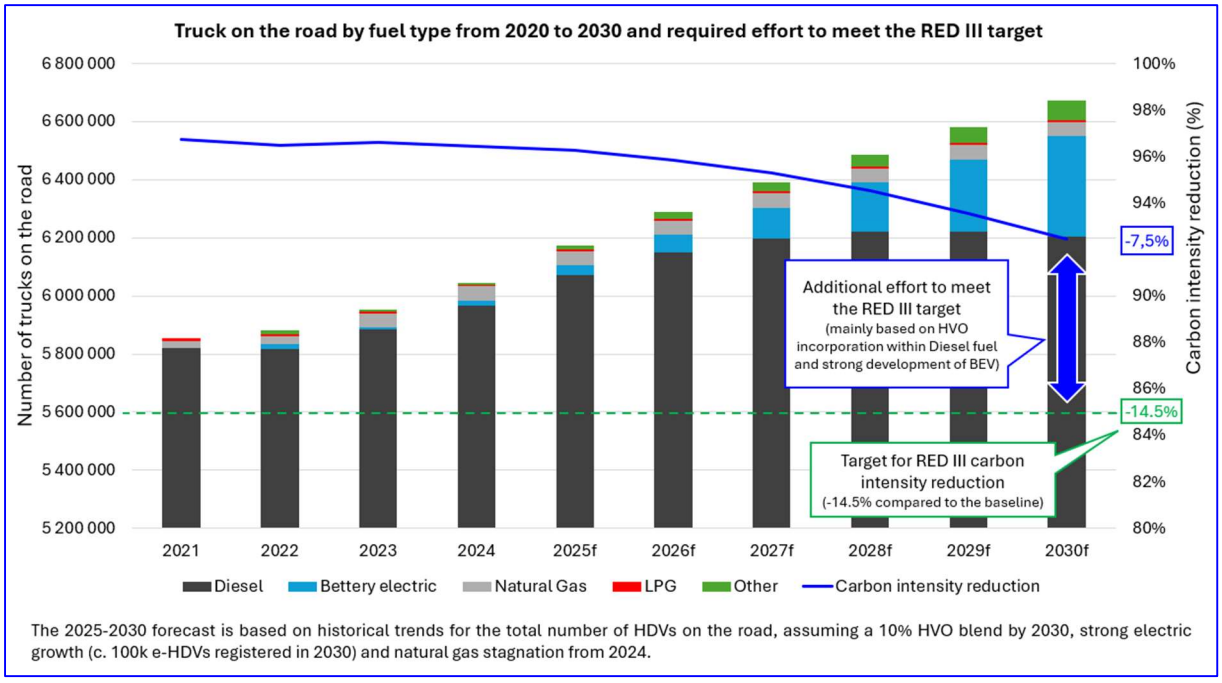


Figure 7: Trucks on European roads by type of fuels from 2021 to 2030 and future projections to meet the RED III target

6. European OEMs must ramp up industrial capacity to meet the growing demand for zero-emission trucks

Demand for ZEVs is expected to accelerate significantly in the coming years, driven by increasingly ambitious CO_2 standards, the emergence of green freight corridors, and a rising focus on sustainable logistics. In parallel, new players, particularly from China, are entering the European market with competitive zero-emission vehicle offerings, adding pressure on domestic supply chains and reshaping the competitive landscape.

To meet the EU's decarbonization targets, including a 65% reduction in CO_2 emissions from new heavy-duty vehicles by 2035, **annual ZEV production volumes will need to reach around 350,000 units by the next decade**, a volume almost equal to today's entire new truck market in Europe. Yet in 2024, electric truck sales were only **~12,000 units**, highlighting the need for a more than thirty-fold scale-up within a single decade.

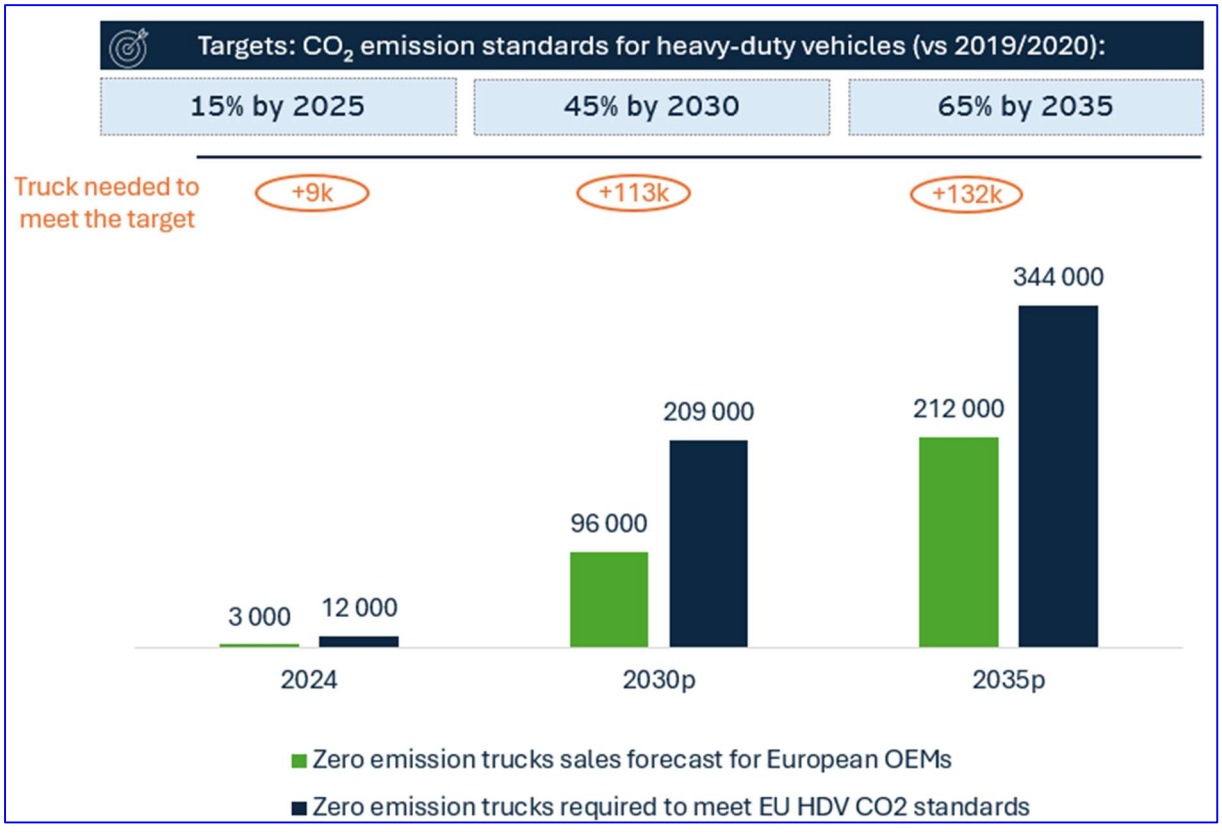


Figure 8: Comparison of zero emission trucks needs with sales forecast from European OEMs by 2035

Building this capacity is not only a climate imperative but also a matter of industrial sovereignty and economic resilience. While European OEMs are increasingly mobilized, supporting this shift at scale will depend on clear regulatory signals, stable investment frameworks, and public-private coordination to secure critical materials, skilled labor, and technological innovation.

Without a concerted effort to strengthen industrial capabilities, Europe risks falling behind in a global race that is already well underway.



Conclusions

This report confirms that the decarbonization of European road freight is no longer a distant ambition but an unavoidable transformation, structurally driven by EU climate policy, national measures, and accelerating market dynamics.

Policies are now in place to accelerate the electrification of road freight transport. **However, industrial production capacity for zero-emission trucks must be significantly scaled up to deliver the volumes required to comply with these regulations** as annual ZEV production volumes will need to reach around 350,000 units by the next decade.

Zero-emission trucks, supported in the short term by transitional solutions such as biofuels, are on track to become economically competitive across a growing share of use cases, provided that regulatory signals remain strong, predictable, and well-coordinated across Member States.

Delivering this transition at scale will require three parallel efforts:

1. **Sustained, stable and enforced policy support** (CO_2-differentiated tolls, ETS2, targeted incentives),
2. **Rapid deployment of charging and refueling infrastructures**, and a substantial ramp-up of European industrial capacity.
3. For policymakers, manufacturers, logistics providers, and energy players, the key challenge is no longer to decide whether to decarbonize road freight, but **to organize and sequence investments** so that technology readiness, infrastructure rollout, and regulatory frameworks converge in time **to keep the sector on a cost-effective, credible pathway to the EU's 2030 and 2050 climate objectives**.

The recent Sustainable Transport Investment Plan (STIP) announced by European Commission and the acceleration of the electric Heavy Trucks order are good signs to sustain continuous growth on ZEV deployment and breakeven point on ZEV ordering book by 2030. On long-distance, technical challenges remain but may be addressed case by case in coordination with charging station deployment,

Glossary

AFIR (Alternative Fuels Infrastructure Regulation): EU regulation setting binding targets for the deployment of charging and refueling infrastructure across the TEN-T network, including electric and hydrogen stations for heavy-duty vehicles.

B100: a pure biodiesel fuel (100% fatty acid methyl esters, or FAME) produced from vegetable oils or animal fats. It can be used in adapted diesel engines and offers significant GHG reduction potential on a life-cycle basis.

ETS 2 (EU Emissions Trading System – Phase 2): the extension of the EU carbon pricing system to the road transport and building sectors, starting in 2028. It introduces a price per ton of CO_2 on fossil fuel consumption, based on tank-to-wheel emissions.

GHG (Greenhouse Gas): gases that trap heat in the atmosphere and contribute to climate change, including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

HVO (Hydrotreated Vegetable Oil): a renewable diesel substitute produced through hydrotreatment of vegetable oils or waste fats. HVO is compatible with standard diesel engines and offers high GHG savings depending on the feedstock.

OEM (Original Equipment Manufacturer): a company that designs and produces vehicles or major components. In this context, refers to truck manufacturers operating in the European market.

RED III (Renewable Energy Directive III): the third revision of the EU directive promoting renewable energy, including a target for reducing the carbon intensity of transport fuels by 14.5% by 2030, and sub-targets for advanced biofuels and renewable hydrogen.

TCO (Total Cost of Ownership): a comprehensive calculation of all costs associated with owning and operating a vehicle over its lifetime, including purchase, maintenance, energy/fuel, taxes, and resale value.

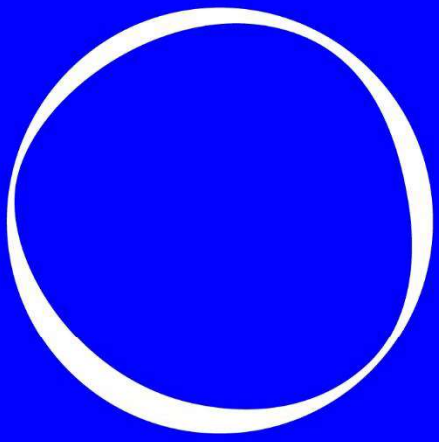
TEN-T (Trans-European Transport Network): a European Commission initiative to build an integrated and sustainable transport network across the EU. AFIR targets apply specifically to the core and comprehensive TEN-T corridors.

VECTO (Vehicle Energy Consumption Calculation Tool): the official EU tool used to measure and certify CO_2 emissions and fuel consumption from heavy-duty vehicles. It is central to CO_2 regulation and standard setting for trucks.

Well-to-Wheel (WTW): a methodology for assessing GHG emissions from fuel production (well) through to vehicle use (wheel). It includes both upstream (e.g., electricity generation or fuel processing) and downstream emissions.

Tank-to-Wheel (TTW): a more limited scope of emissions accounting, considering only the emissions produced when the vehicle is driven (i.e., tailpipe emissions).

ZEV (Zero-Emission Vehicle): a vehicle that produces no tailpipe emissions. In the freight sector, this typically refers to battery-electric or hydrogen fuel cell trucks.



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