ZEV TRUCK DEPLOYMENT

CHALLENGES IN THE TRANSITION

4 Feb 2026

ECG Sustainability Days

Wörth, Germany

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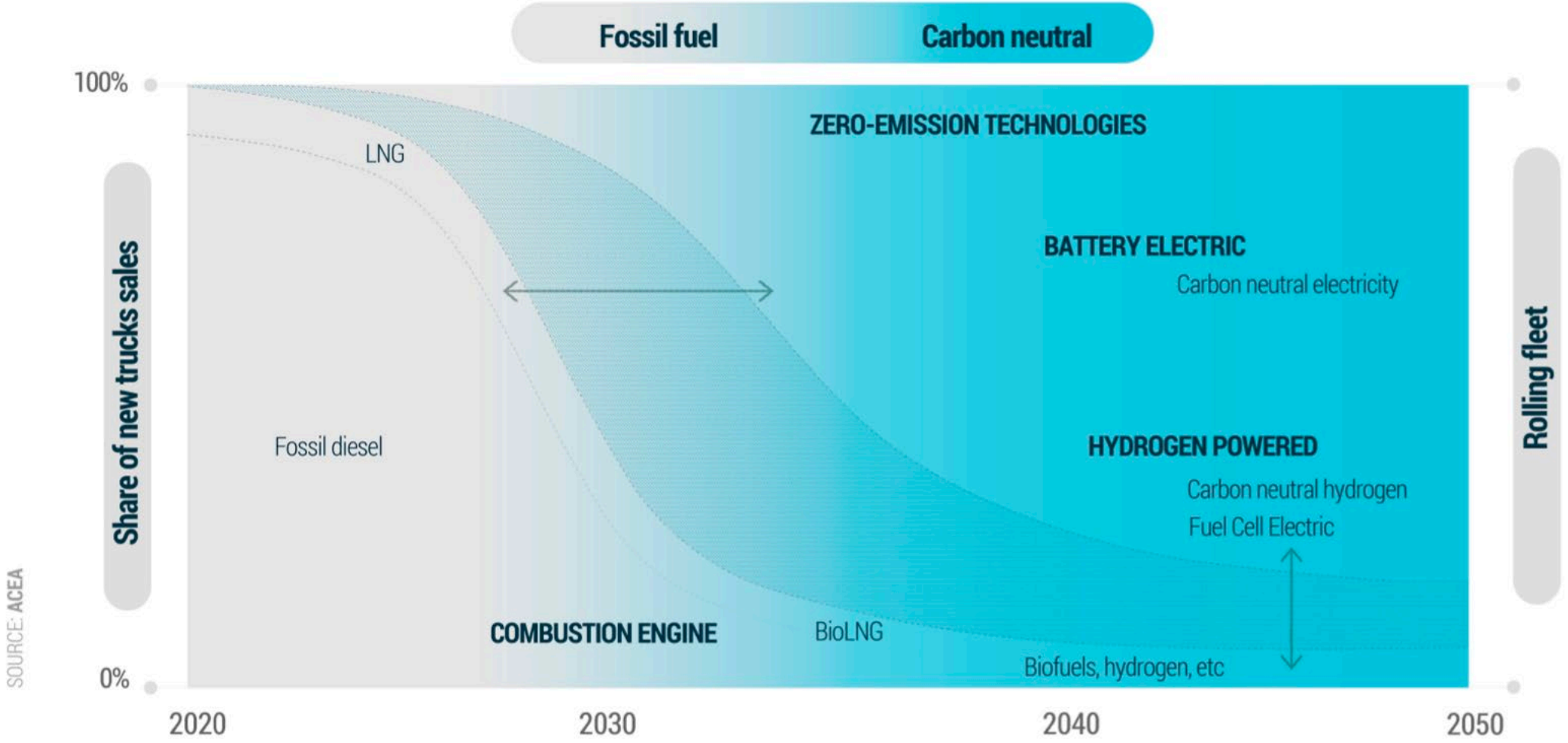
WHO WE REPRESENT

MEMBERS	BMW GROUP	DAF	DAIMLER TRUCK		Ford
HONDA	HYUNDAI	IVECO • GROUP	JLR		NISSAN
Renault Group	STELLANTIS	TOYOTA	TRATON	VOLKSWAGEN GROUP	VOLVO

HDV DECARBONISATION PATHWAY

FOSSIL-FREE BY 2040



DRIVING EUROPE'S GREEN TRANSITION WITH ZERO-EMISSION TRUCKS AND BUSES

- **Europe's truck and bus manufacturers are leading road transport's transition** to climate neutrality by introducing state-of-the-art zero--emission vehicles.
- **45+ zero-emission truck models now available** – from city deliveries to long-haul transport.
- **20+ zero-emission bus models on the market** – powering clean, quiet mobility in cities & beyond.

Source: https://www.acea.auto/news/driving-europes-green-transition-with-zero-emission-trucks-and-buses/

Zero and low-emission heavy-duty vehicles (trucks)

	Power train	GWV (t)	GTW (t)	Application (e.g. Long-haul, Construction etc.)	Range (km)	Availability (series production, announced)
IVECO						
S-eWay	BEV	44t		urban and regional application	up to 550km	in series production
S-eWay Fuel Cell						
DAF Trucks NV						
XB Electric						
XB Electric						
XB Electric						
XD Electric						
XD Electric						
XD Electric						
XD Electric						
XF Electric						
XF Electric						
Daimler Truck						
eCanter						
eActros 300						
eActros 400						
eEconic 300						
eActros 300 successor						
eActros 400 successor						
eActros 600						
GenH2						
Hyundai Truck						
XCIENT, 4x2						
XCIENT, 6x2						
MAN						
eTGX Tractor						
eTGS Tractor						
eTGX 4x2 Chassis						
eTGS 4x2 Chassis						
eTGX 6x2 Chassis						
eTGS 6x2 Chassis						
Bayernflotte						
hTGX						

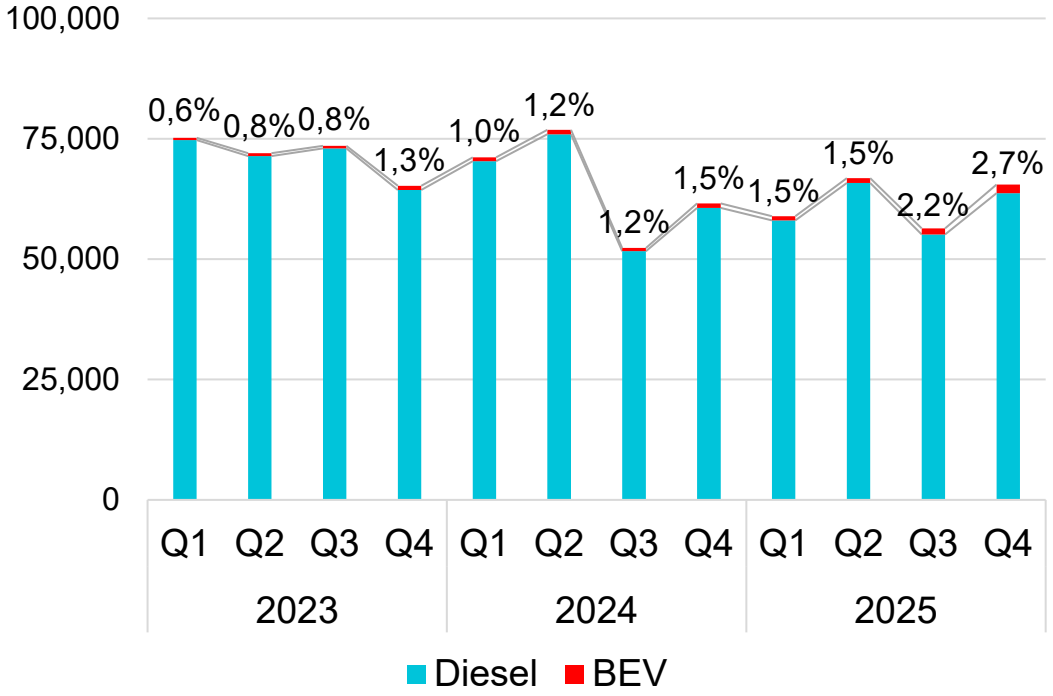
Zero and low-emission heavy-duty vehicles (trucks)

	Power train	GWV (t)	GTW (t)	Application (e.g. Long-haul, Construction etc.)	Range (km)	Availability (series production, announced)
Scania						
L, P	BEV	18 - 33t	36t	city	up to 350 km	in series production
P, G, R	BEV	18 - 33t	up to 74t	construction	up to 350 km	in series production
G, R	BEV	18 - 29t	up to 74t	regional	up to 450 km	in series production
R, S	BEV	18 - 29t	up to 74t	long haul	up to 550 km	in series production
Volvo Trucks						
FH Aero Electric	BEV	44t		regional	300 km	in series production
FH Aero Electric	BEV	48t		long haul	600 km	first orders from Q2 2026
FH Electric	BEV	44t		regional	300 km	in series production
FH Electric	BEV	48t		long haul	600 km	first orders from Q2 2026
FM Electric	BEV	44t		regional	300 km	in series production
FMX Electric	BEV	44t		construction	300 km	in series production
FM Low Entry	BEV	32t		city	200 km	in series production
FE Electric	BEV	27t		distribution	275 km	in series production
FL Electric	BEV	18.6t		distribution	450 km	in series production
Renault Trucks						
E-Tech Trafic	BEV	3.1t		distribution	up to 300 km	in series production
E-TECH Master	BEV	3.5 and 4.0t		distribution	up to 460 km	in series production
E-TECH D	BEV	12 - 14t		distribution	up to 220 km	orders from Q2 2026
E-TECH D	BEV	16 - 18t		distribution	up to 560 km	in series production
E-TECH D Wide	BEV	20 - 28t		distribution & city construction	up to 350 km	in series production
E-TECH T	BEV	20 - 28t	up to 50t	distribution & regional	up to 300 km	in series production
E-TECH T	BEV	20 - 28t	up to 50t	distribution & regional	up to 400 km	orders from Q2 2026
E-TECH T	BEV	20 - 28t	up to 50t	long-haul	up to 600 km	orders from Q2 2026
E-TECH C	BEV	20 - 28t	up to 50t	construction	up to 300 km	in series production
E-TECH C	BEV	20 - 28t	up to 50t	construction	up to 400 km	orders from Q2 2026
Ford Trucks						
F-Line E 4X2	BEV	19t		regional	up to 250 km	series production in September 2025
F-Line E 6X2	BEV	27t		regional	up to 300 km	series production in September 2025

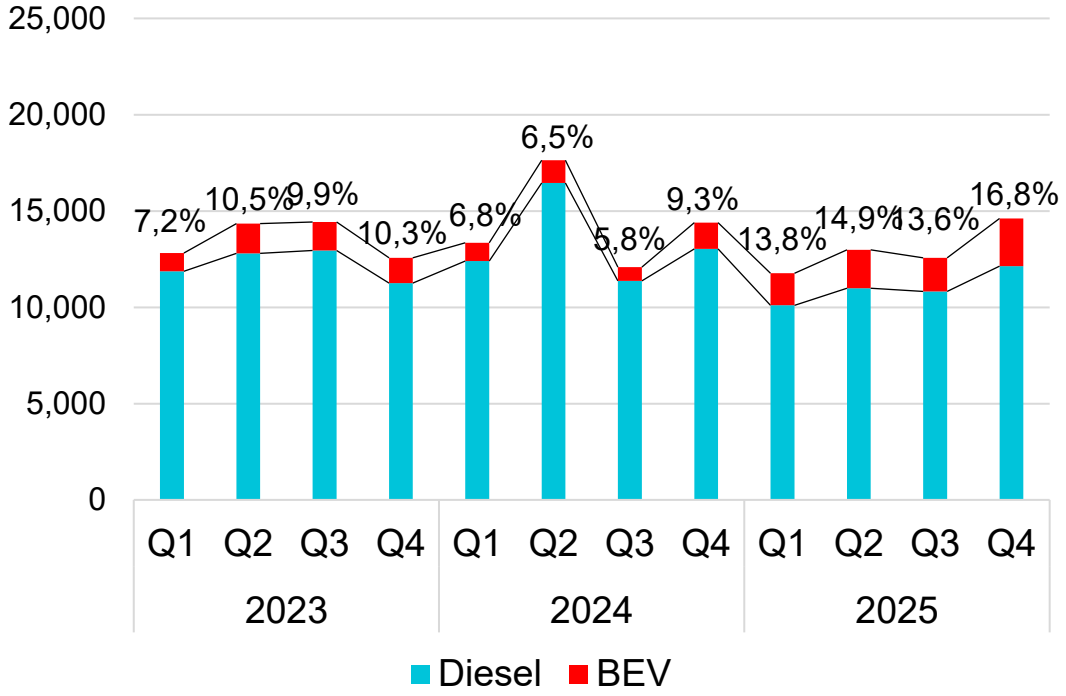
2025 ZEV MARKET SNAPSHOT

2.0% HDV, 14.8% MHDV

Heavy-duty trucks (>16t)
New registrations EU-27



Medium-duty trucks (3.5 – 16t)
New registrations EU-27

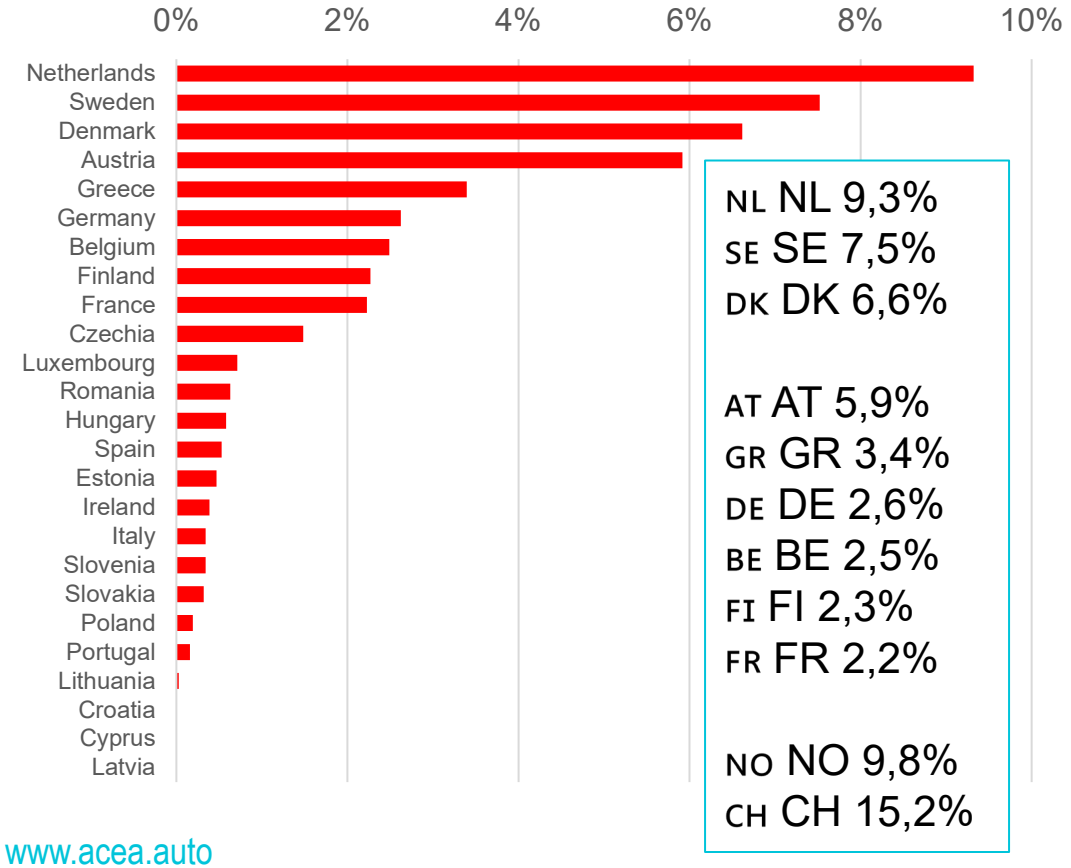


Note: Other powertrains excluded (2.7% of HDV, 2.0% of MHDV).

EUROPE'S ZEV MARKET

A THREE-SPEED TRANSITION

Heavy-duty trucks (>16t)
ZEV registrations EU-27

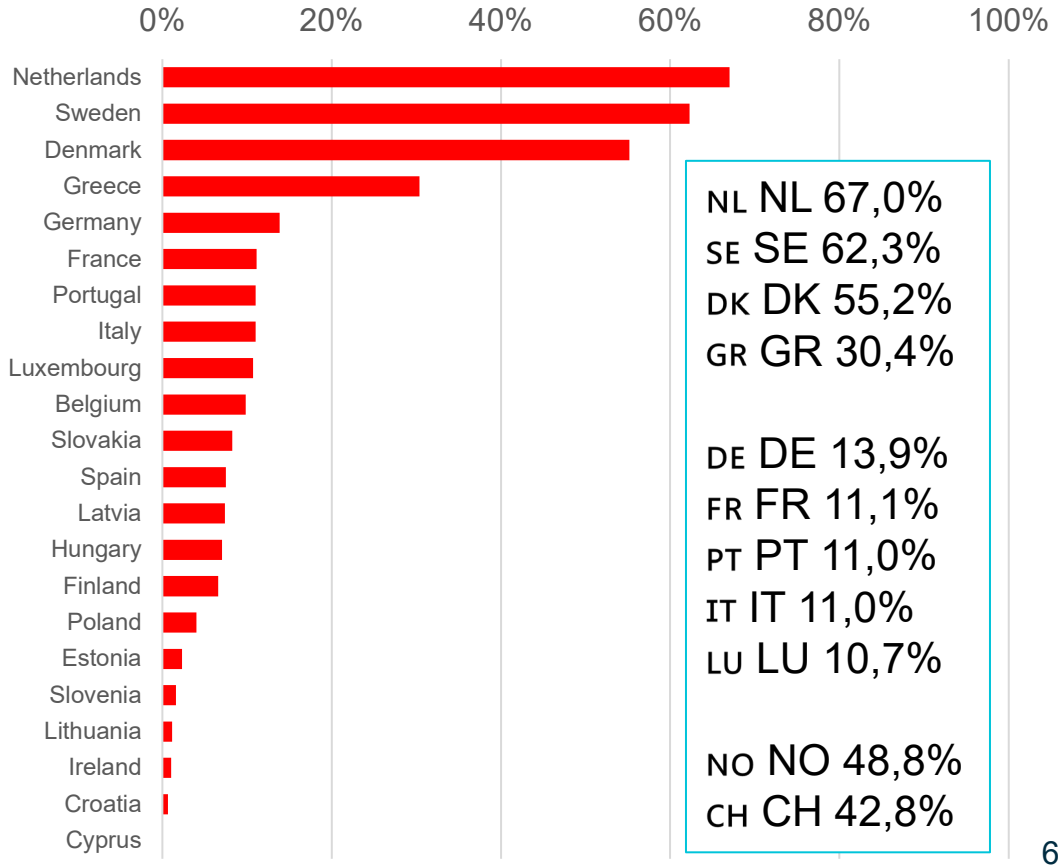


NL NL 9,3%
SE SE 7,5%
DK DK 6,6%

AT AT 5,9%
GR GR 3,4%
DE DE 2,6%
BE BE 2,5%
FI FI 2,3%
FR FR 2,2%

NO NO 9,8%
CH CH 15,2%

Medium-duty trucks (3.5 – 16t)
ZEV registrations EU-27



NL NL 67,0%
SE SE 62,3%
DK DK 55,2%
GR GR 30,4%

DE DE 13,9%
FR FR 11,1%
PT PT 11,0%
IT IT 11,0%
LU LU 10,7%

NO NO 48,8%
CH CH 42,8%

HDV CO2 TARGETS – ZEV TRAJECTORY

2030 targets require rapid ZEV uptake

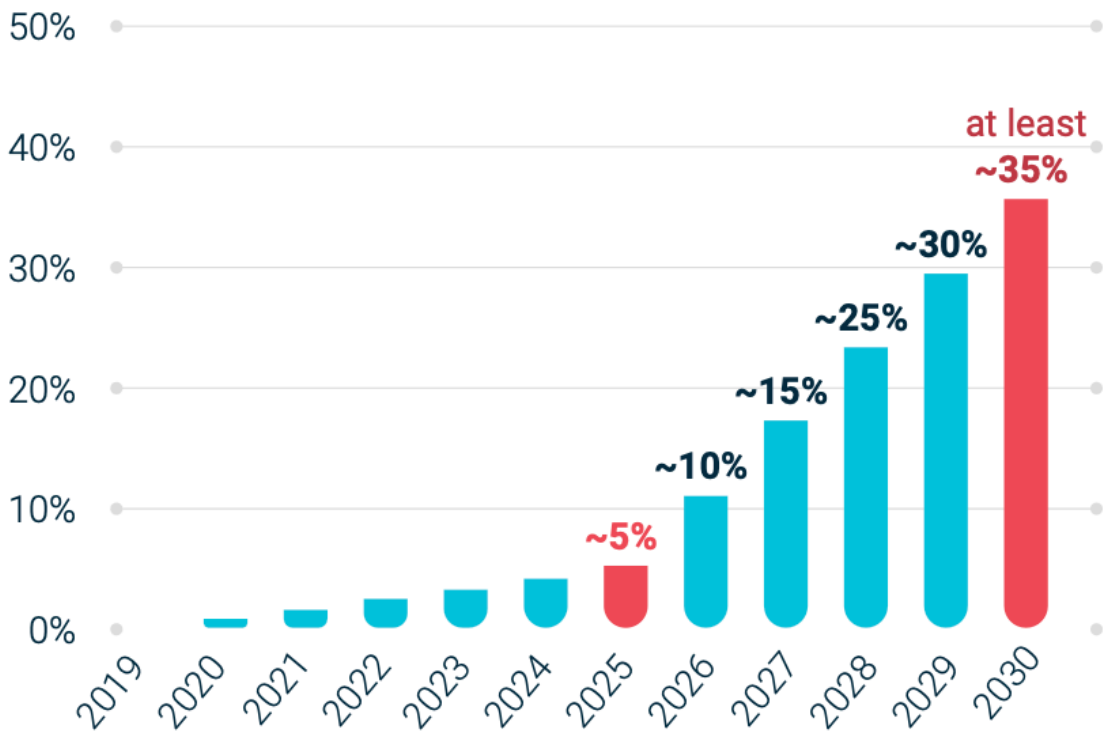
- **~400,000 ZEV** in operation by 2030
  - Total fleet ~6.2 million (HDV >3.5t)
- **~100,000 ZEV** registered annually
  - **>1/3 of annual registrations**

High non-compliance fines

- €4,250 per g CO2/ tkm x number of registered vehicles

Minimum ZEV share needed

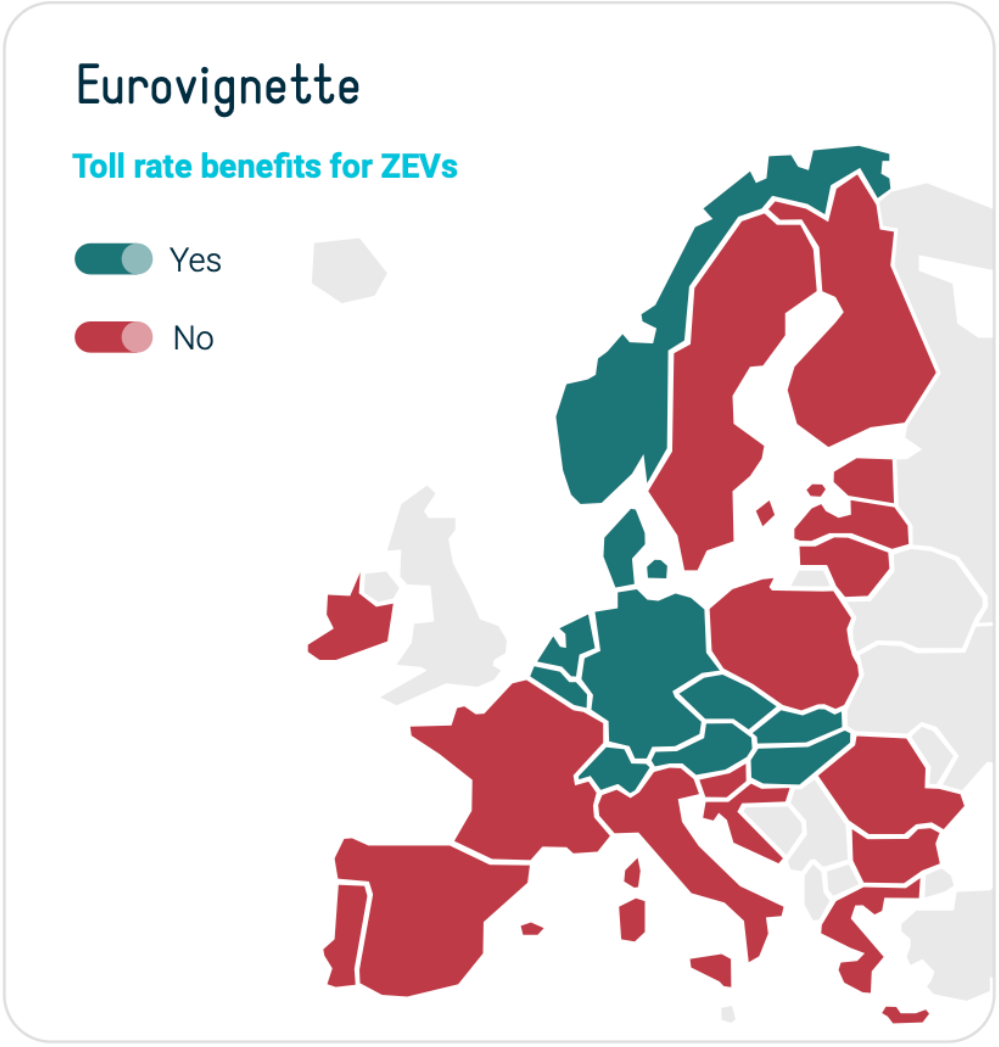
(to avoid non-compliance penalties)



HDV CHARGING INFRASTRUCTURE

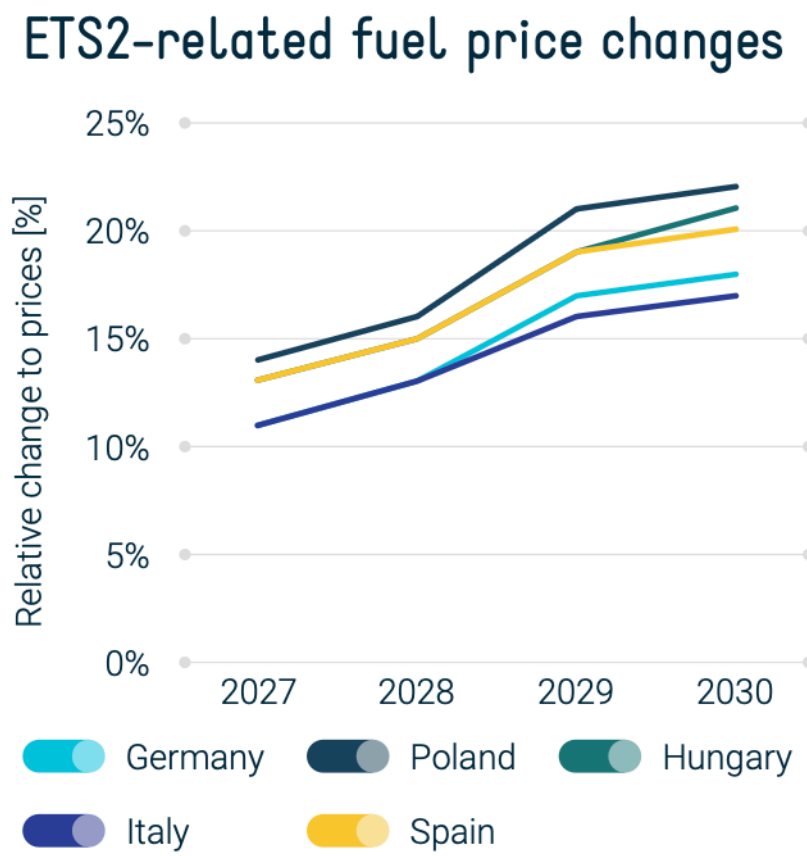
- Very **limited visibility** about charging infrastructure suitable for heavy-duty vehicles; no official figures available
- Several independent surveys (public infrastructure) conclude:
  - **ACEA** (based on EY survey, May 2025): **~1,000 HDV-suitable chargers** (350 kW+) in 12 countries (incl. CH, UK)
  - **IRU** (2025): **~120 dedicated HDV chargers** in EU-27
  - **Milence** (July 2025) **up to 1,100 dedicated high-power truck charging connectors** in 14 countries (incl. CH, UK)
- **~500 dedicated HDV public chargers** needed EVERY MONTH until 2030 to power the required ZEV fleet

EUROVIGNETTE IMPLEMENTATION



- **CO2-based road user charges with full exemption for zero-emission vehicles** are one of the most effective, targeted measures to enable ZEV cost parity
- However, on its own it is insufficient to fully reduce the TCO gap between ZEVs and conventional vehicles
  - Only in Germany, Austria, and Switzerland discount levels are currently high enough to drive ZEV demand
- Currently, **only two member states fully exempt ZEVs** from road tolls
  - Belgium and Germany
- **Ten member states apply reduced toll rates** for ZEVs
  - Austria, Bulgaria, Czechia, Denmark, Hungary, Latvia, Luxembourg, the Netherlands, Slovakia, Sweden

ETS2: A CORNERSTONE OF THE HDV TRANSITION



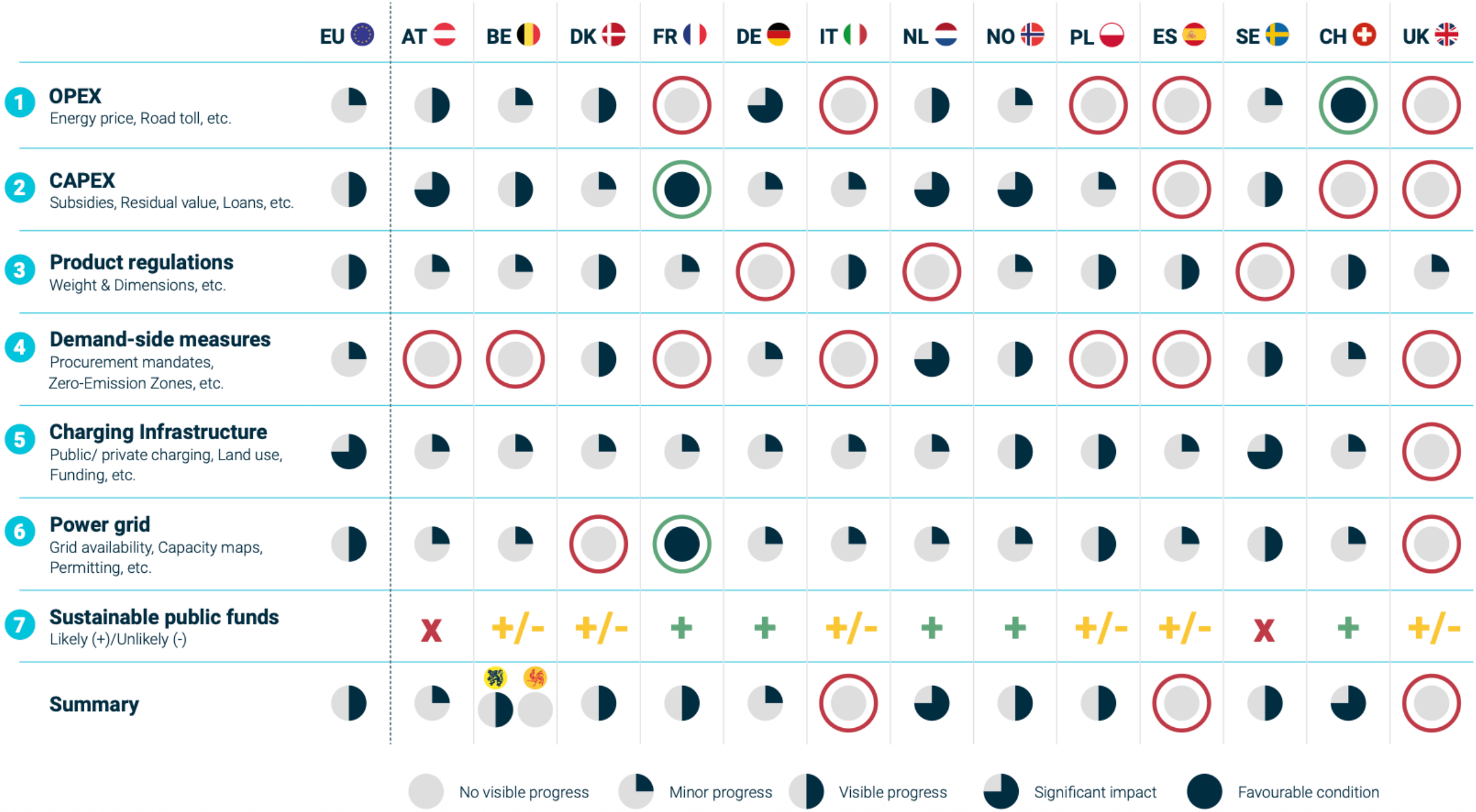
- The **ETS2 is indispensable** for the decarbonisation of heavy-road transport
- **Significant uncertainties persist** about its implementation and the expected impact on fuel prices
- **Current price projections for 2027 range from €55 to €92/t**
  - Expected to lead to a 10% – 15% increase of fuel prices
  - However, these are considered too low to close the TCO gap and actively drive the transition

Source: VEYT (2025)

BOOSTING ZEV UPTAKE

THE ROLE OF DEMAND-SIDE MEASURES

- **Prioritise ZEVs in public procurement** (vehicles and services)
- **Incentivise shippers and transport buyers** to increase ZEV uptake
- Apply **CO2-based road charges** across all Member States
- Use **EU and national funding** to support early ZEV investments
- Ensure a **coherent EU and national policy** framework


EU
AT
BE
DK
FR
DE
IT
NL
NO
PL
ES
SE
CH
UK
1 OPEX
Energy price, Road toll, etc.
2 CAPEX
Subsidies, Residual value, Loans, etc.
3 Product regulations
Weight & Dimensions, etc.
4 Demand-side measures
Procurement mandates, Zero-Emission Zones, etc.
5 Charging Infrastructure
Public/ private charging, Land use, Funding, etc.
6 Power grid
Grid availability, Capacity maps, Permitting, etc.
7 Sustainable public funds
Likely (+)/Unlikely (-)
x
+/-
+/-
+
+
+/-
+
+
+/-
+/-
x
+
+/-
Summary
No visible progress
Minor progress
Visible progress
Significant impact
Favourable condition

ZEV TRANSITION: QUO VADIS?

VEHICLES

HDV CO2 targets

- 2025/ 2030/ 2035/ 2040
- Globally most ambitious and comprehensive targets, including significant non-compliance penalties
- Review

INFRASTRUCTURE

AFIR

- Minimum targets 2025/ 2027/ 2030
- Pending MS implementation
- No requirements for depot charging
- Public charging beyond AFIR (e.g. Milence)
- Insufficient H2 availability
- Review 2026

Power grids

- Insufficient transparency about capacities
- Queuing and connection issues (first-come- first-serve)
- Investment frames from NRAs and lack of anticipatory investments

COST PARITY

Eurovignette

- Fragmented implementation and insufficient level

ETS-2

- Pending implementation

Weights & Dimensions Directive

- Stalled in Council

Energy Taxation Directive

- Stalled in Council

MCS Standard

- Delayed

Fleet renewal incentives

- Insufficient and fragmented

ZE zones and similar measures

- Fragmented

Public procurement requirements to support ZEVs

KEY TAKEAWAYS

1. Europe's **ZEV market is growing** but too slowly to meet 2030 targets
2. The **main bottleneck** is not supply but demand and TCO
3. **Fragmented implementation** of EU and national policies weakens impact and slows the transition
4. Public (and private depot) **infrastructure rollout** is improving but many projects struggle to unlock private capital

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