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Global Powertrain Outlook

An exploration of future electrical technologies

Electrical Steel summit

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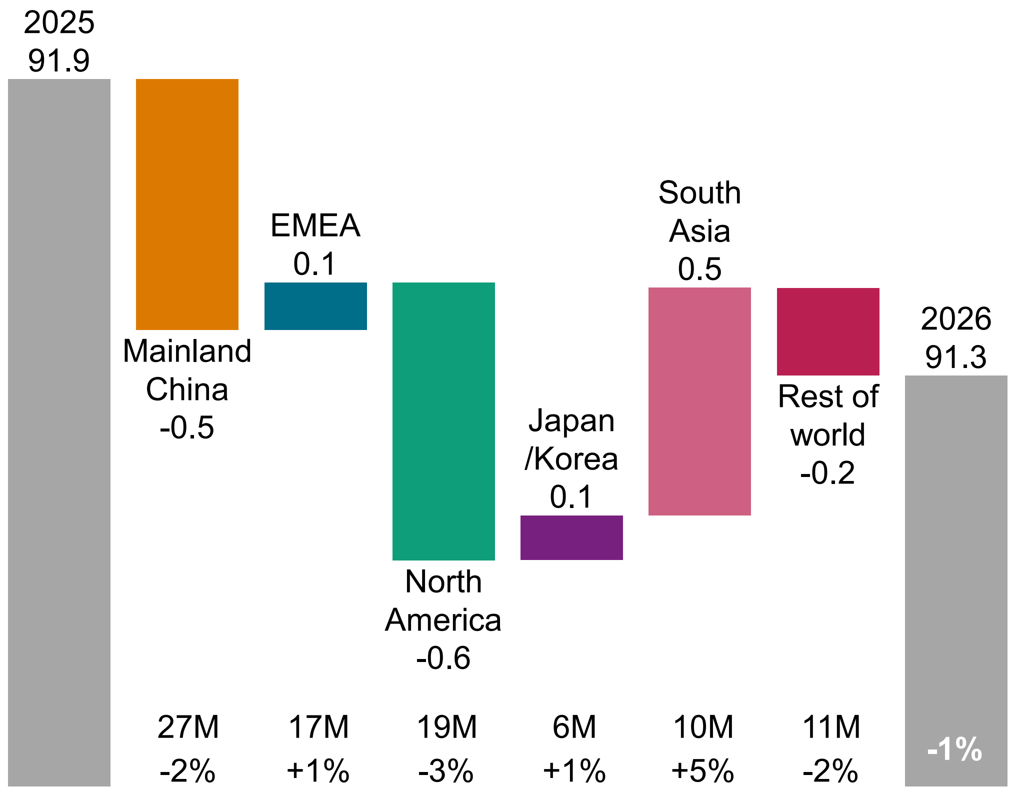
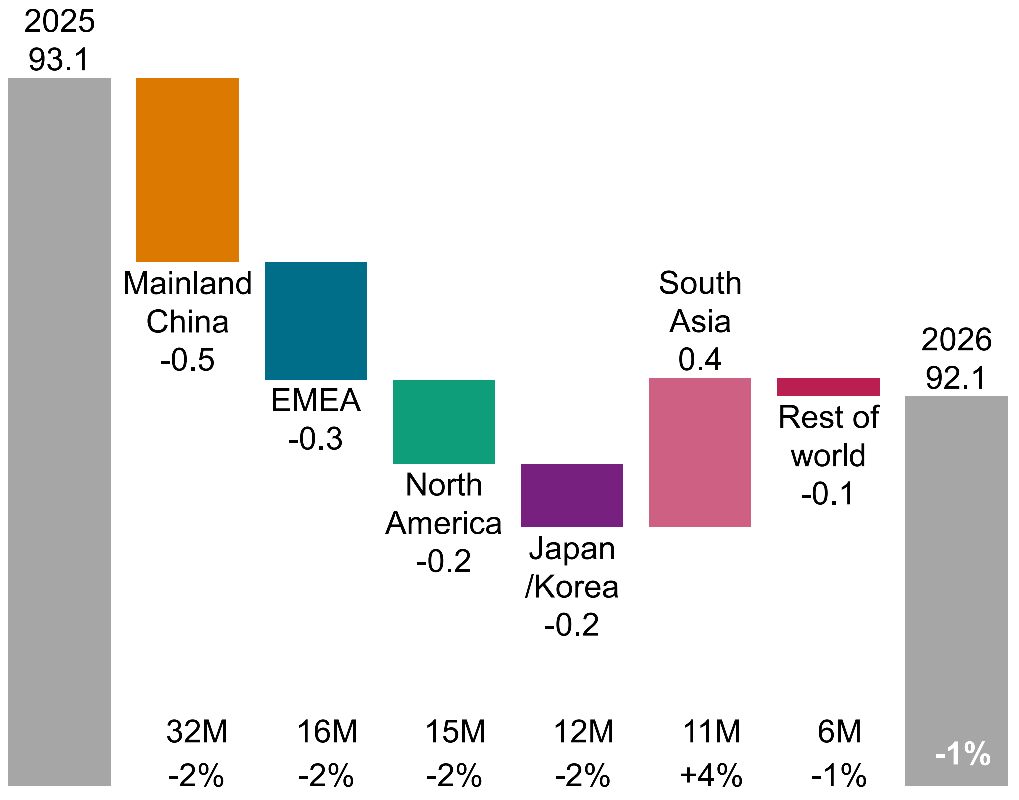
2026 forecast: Regional dynamics

A drop in mainland China and Iran leads to a global downturn. India becomes the main pocket of growth.

Sales



Production



Data compiled March 2026.
EMEA = Western Europe + central Europe + Turkey + Morocco + South Africa.
Source: S&P Global Mobility.

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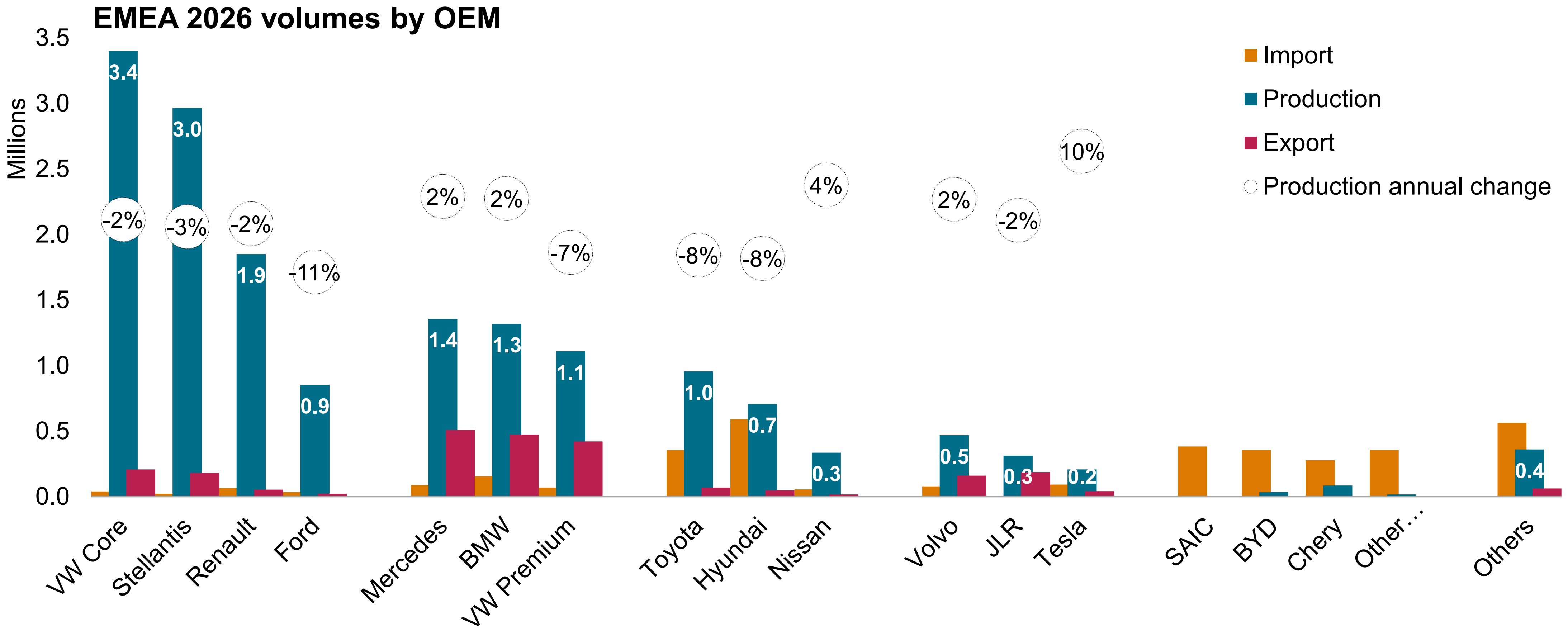
EMEA: 2026 OEM review

Mainstream OEMs undergo import growth; premium specialists recover owing to product cycles.



Data compiled March 2026.

EMEA = Western Europe + central Europe + Turkey + Morocco + South Africa.

Source: S&P Global Mobility.

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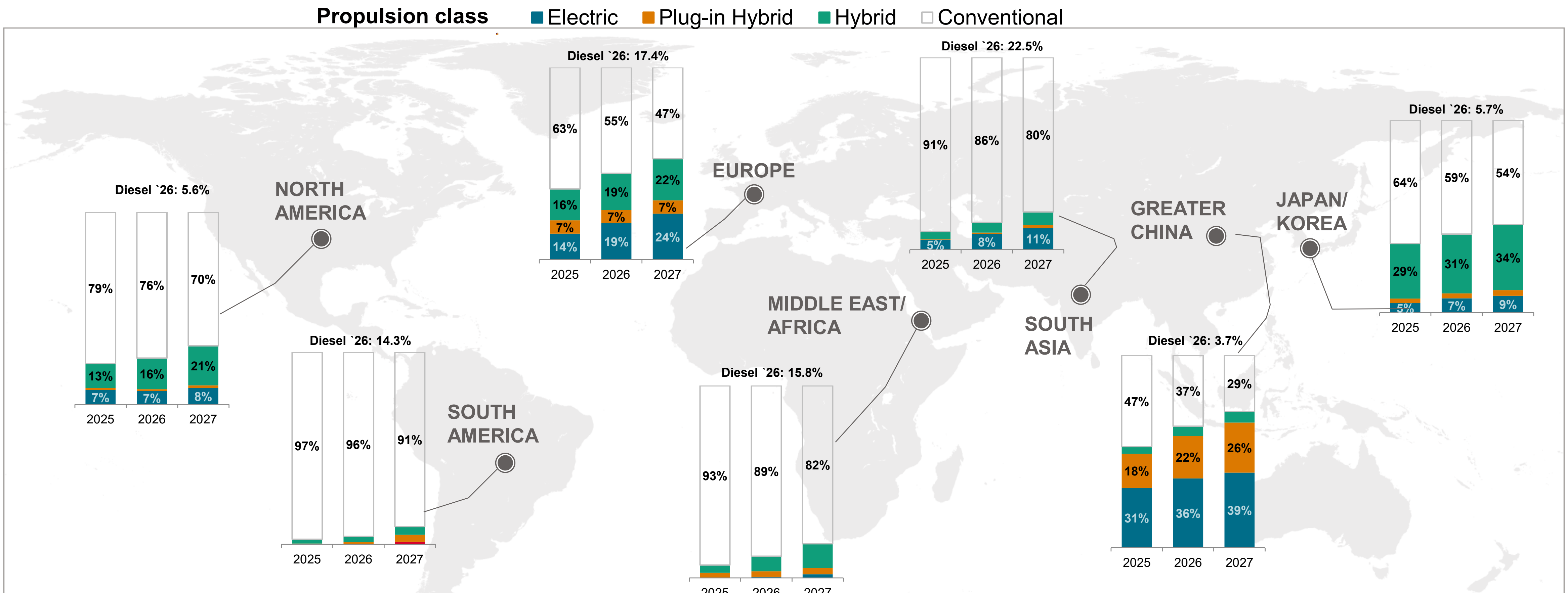
Short-term global electrification outlook



Propulsion Class is a combination of PSD Plus values: Electric (BEV+FCEV), Plug-in Hybrid (PHEV+REEV), Hybrid (FHEV+Series+MHEVe), Conventional (MHEV+ICE+ICEss)
MHEVe = Mild hybrid electric vehicle with basic electric drive

Date compiled March 2026.
Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2026

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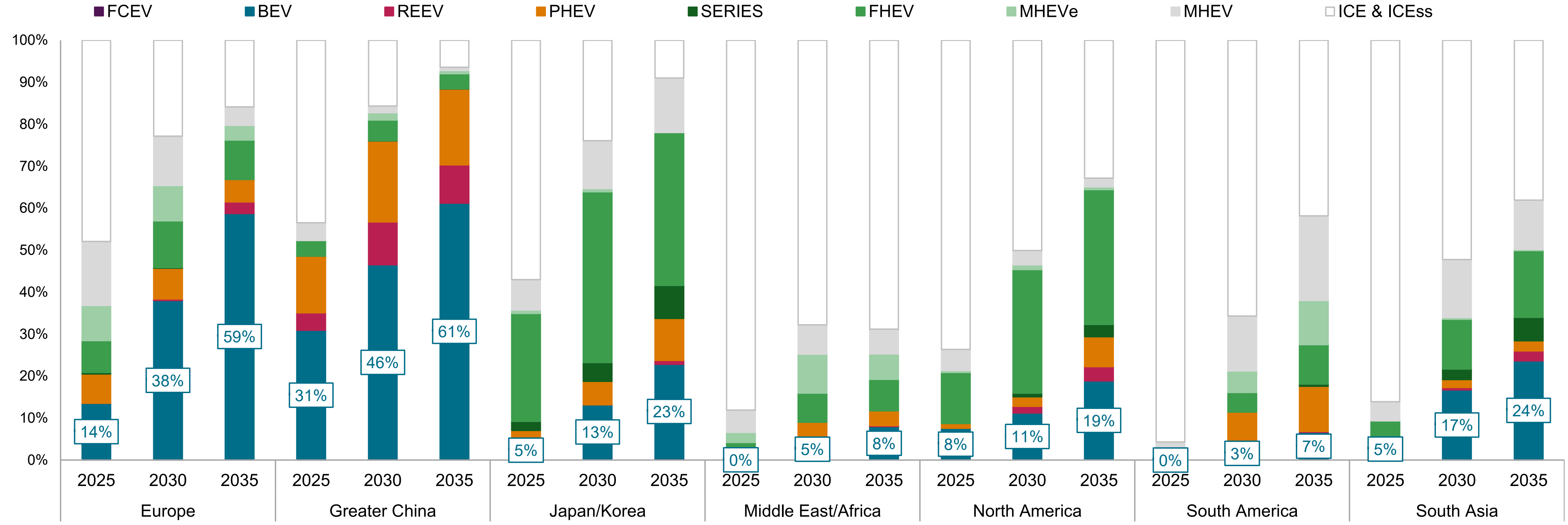
Global electrification projections by vehicle production region

Specific market frameworks and associated product strategy will lead to a polarized worldwide industry

Global production xEV share



FCEV = fuel cell electric vehicle, BEV = battery-electric vehicle, REEV = range-extended electric vehicle, PHEV = plug-in hybrid electric vehicle, FHEV = full hybrid electric vehicle, MHEV = mild hybrid electric vehicle, ICE = internal combustion engine, S/S = start/stop

Date compiled March 2026.
Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2026

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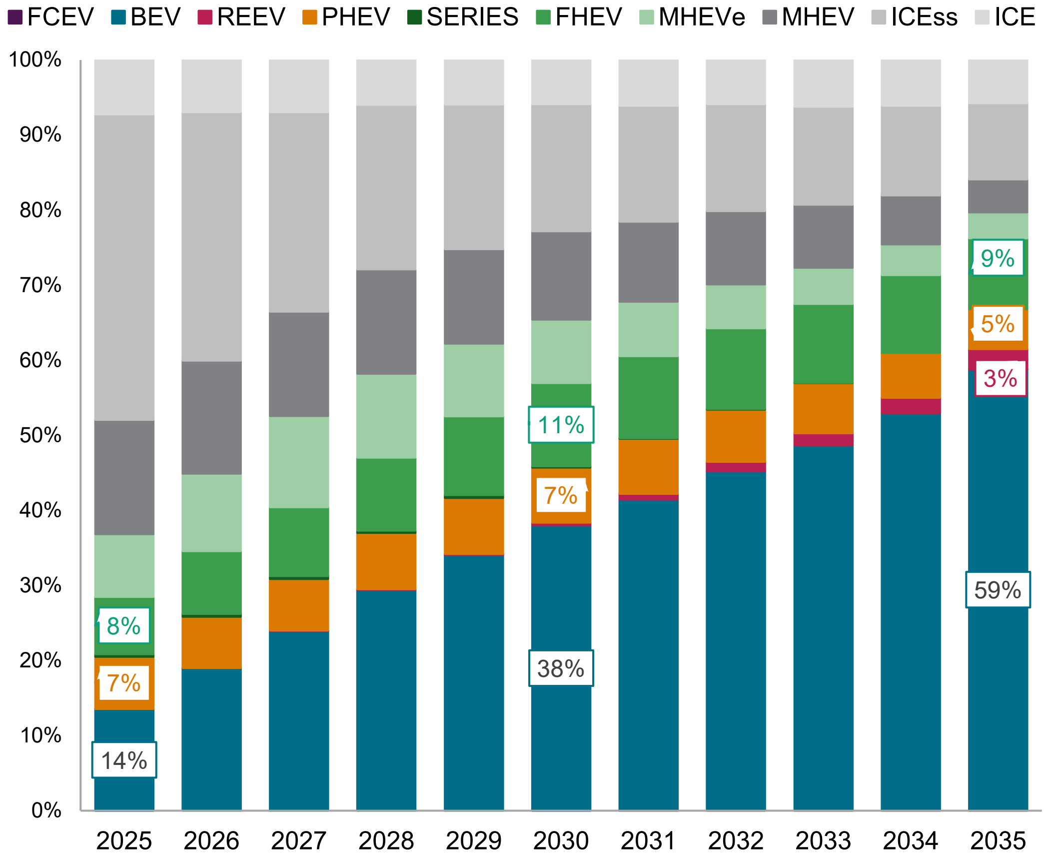
European long-term production outlook in detail

Alongside BEVs, what will be the main technologies in Europe in the next decade?

European production



As of February 2025.

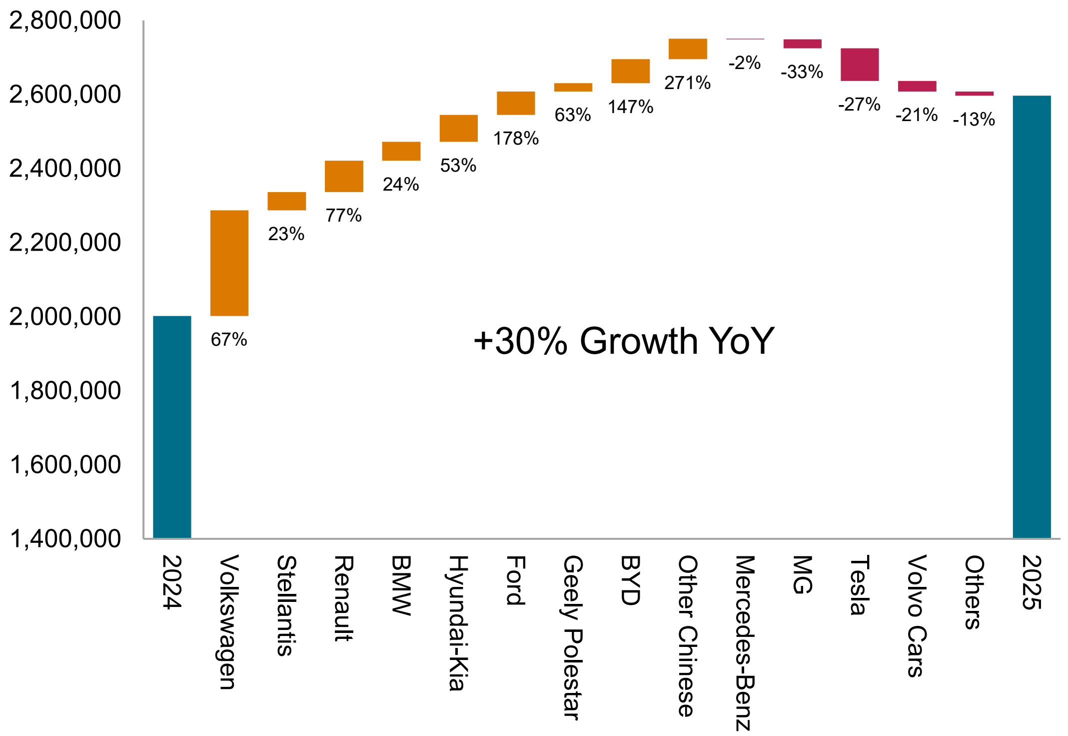
Light Vehicle Powertrain Production Forecast, February 2026.
Source: S&P Global Mobility.

- **BEV** to become the mainstream technology in Europe by the end of the decade.
- **PHEV** to remain at relatively low volumes in Europe.
- **REEV** seen as a long-term solution to bring flexibility on BEV platform.
- **HEV** increasingly popular with consumers. Mainstream brands without this offering to respond ASAP
- **MHEVe** / **MHEV** 48V systems offer wide range of variants but limited in reducing tailpipe CO_2 emissions.
- **ICE S/S** programs extension due to a relaxed Euro 7.

European Passenger Cars BEV market snapshot

Strong growth of the BEV market in EU pushed by VW group and Renault

YoY EU Passenger Car BEV Sales Growth



Data compiled February, 2026
Source: S&P Global Mobility, Global Auto Demand Tracker

- Strong YoY growth in 2025 compared to 2024. More than 50% of that growth is driven by VW, with ramp-up of new models such as Elroq, Q6/A6 etron or ID.7 and Renault with the R5.

BEV Share	2024	2025
Volkswagen	12.6%	20%
BMW	22.7%	26.9%
Stellantis	10.9%	13.8%
Renault	8.5%	14.2%
Mercedes	18.9%	19%
Hyundai-Kia	12.8%	20%
Total EU market	15.4%	19.4%

EU including UK, Norway, Iceland and Switzerland

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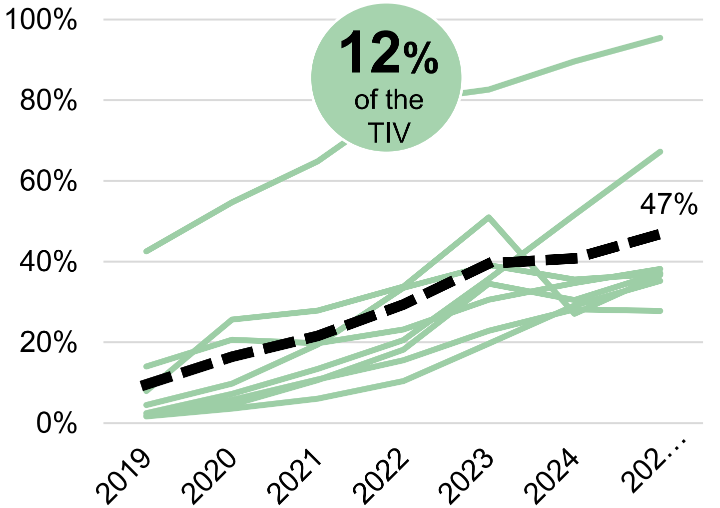
Europe is not a country | Electrification is developing at 3 different speeds

The growth pace of the past five years would need to highly accelerate in market clusters 2 and 3 to get somewhere close to what is targeted by the European Commission.

Market cluster 1: BEV progressive

27%-96% BEV sales share

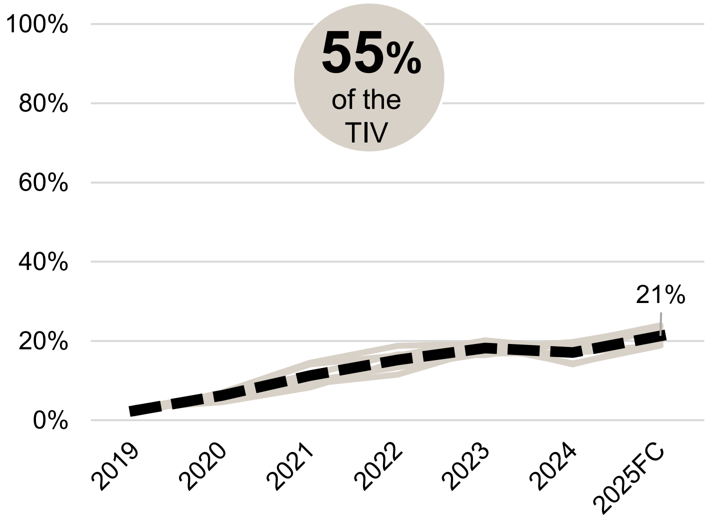


Included countries: Norway, Denmark, Netherl., Finland, Sweden, Iceland, Belgium, Luxemb.

Average – – –

Market cluster 2: BEV balanced

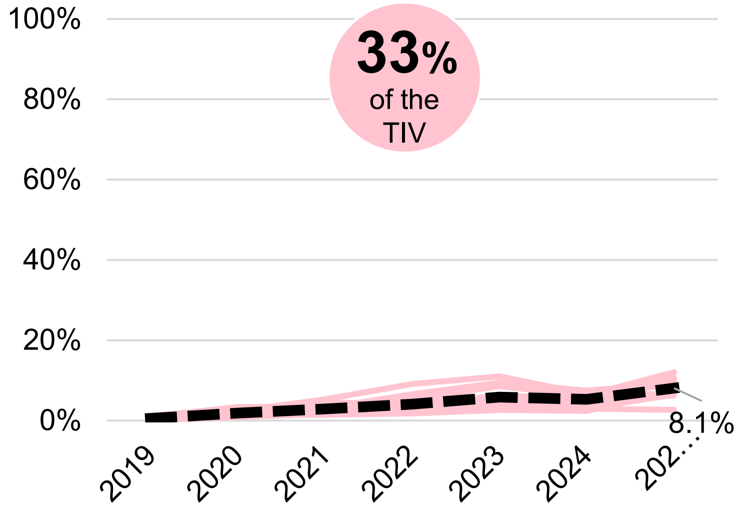
18%-25% BEV sales share



Included countries: UK, Portugal, Austria, Germany, France, Ireland

Market cluster 3: BEV laggards

3%-11% BEV sales share



Included countries: Slovenia, Estonia, Bulgaria, Hungary, Lithuania, Spain, Latvia, Slovakia, Romania, Poland, Greece, CzechRp., Italy, Croatia

Market definition: Passenger cars, excluding vans.
TIV = total industry volume.
Europe: EU27, including Norway and Iceland.
2025FC: 2025 full-year forecast.
Source: S&P Global Mobility Sales-based Powertrain Forecast, Dec 2025.

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EC Automotive Package proposes major amendment to ‘Fit for 55’ / Green Deal

Green Deal

2025-
- -15% 93.6g/km (M1)
- -15% 153.9g/km (N1)
- ZLEV Benchmark

2030-
- -55% 49.5g/km (M1)
- -50% 90.6g/km (N1)

2035
- -100% 0g/km (M1)
- -100% 0g/km (N1)
- BEV & FCEV only

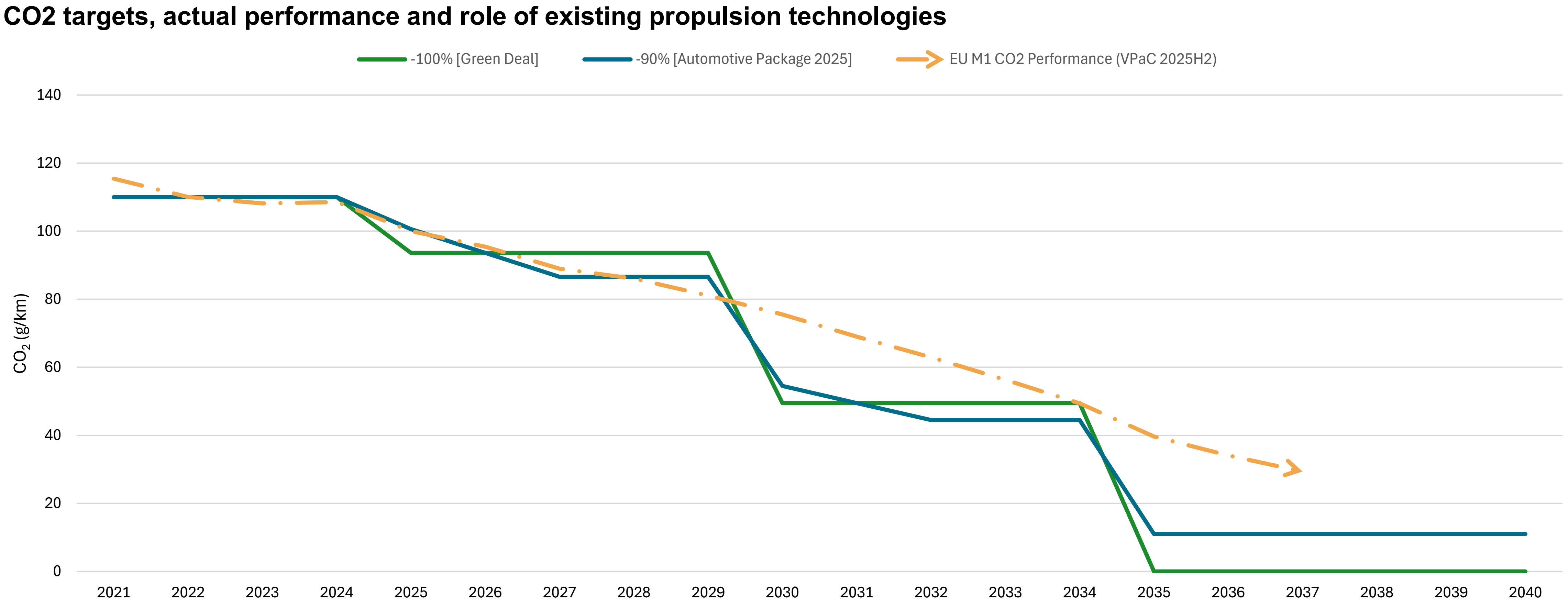
-90% Automotive Package

2025-
- -15% 93.6g/km (M1)
- -15% 153.9g/km (N1)
- **Averaged over 3 years (2025-2027)**

2030-
- -55% 49.5g/km (M1)
- **-40% 108.6g/km (N1)**
- **Averaged over 3 years (2030-2032)**
- **M1E (Small affordable EV built in EU) 1.3 multiplier**
- **Mandatory corporate fleet ZLEV target**

2035-
- **-90% 11g/km (M1)**
- **-90% 18g/km (N1)**
- **Remaining 10% of tailpipe emissions must be offset by OEM score for use of EU made low carbon steel (7%) and sustainable renewable fuel (3%)**
- **Other propulsions can be sold**

How far has the regulator eased the compliance challenge?



Date compiled January 2026.

Source: S&P Global Mobility, Vehicle Performance and Compliance, October 2025

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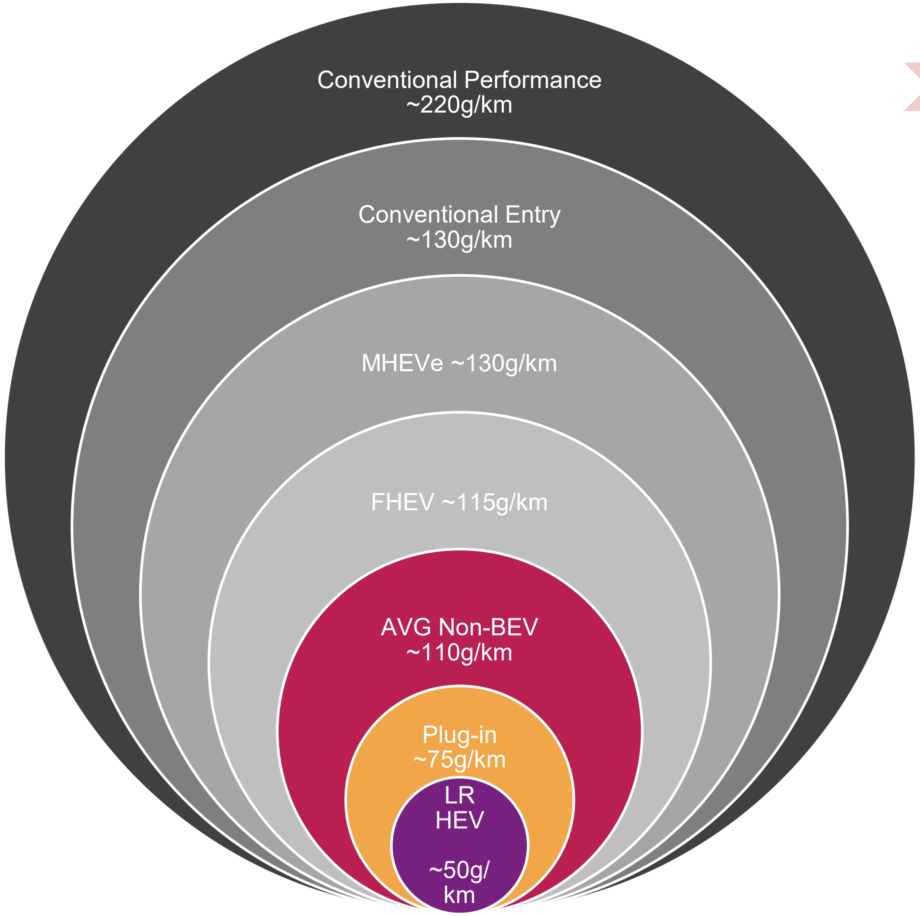
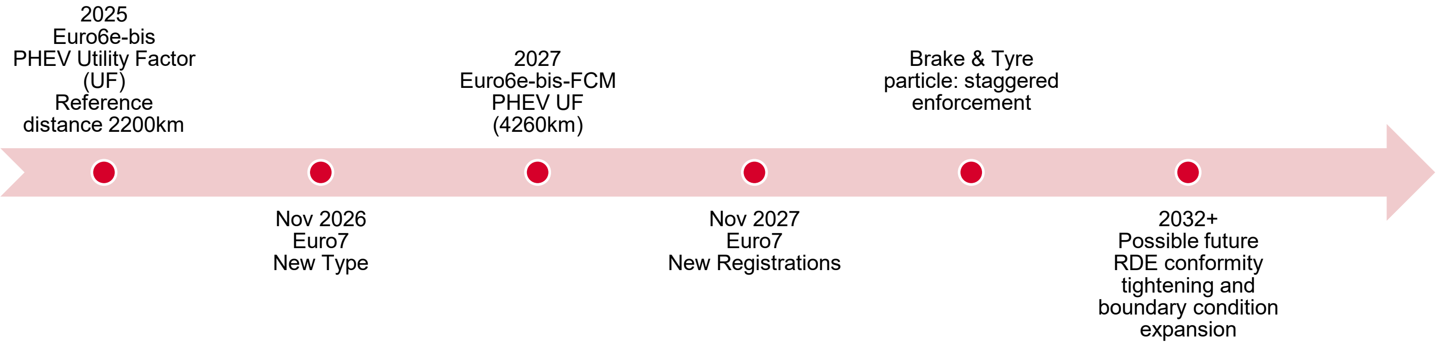
How many and what type of non-BEV in 2035 and beyond?

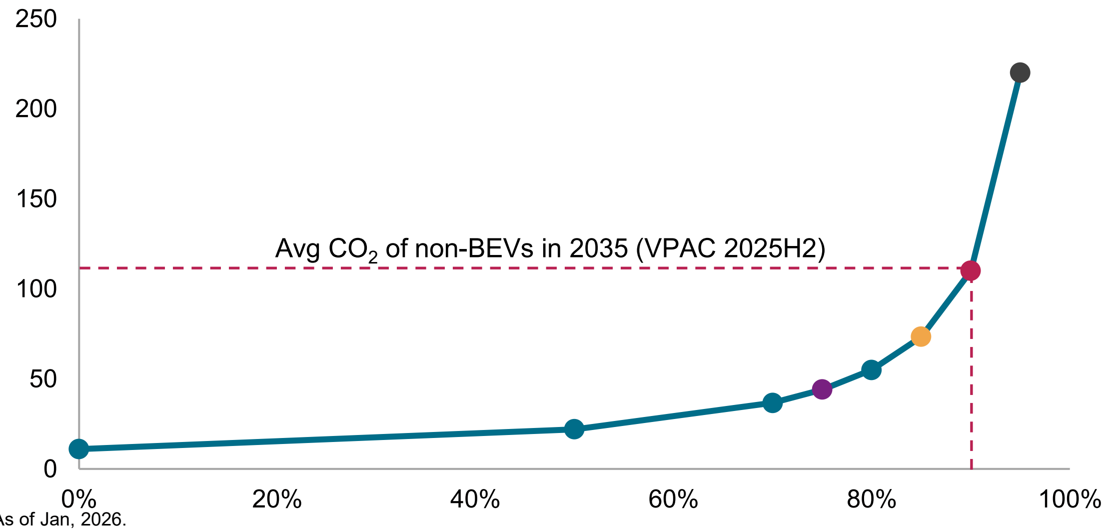


Date compiled January 2026.

Source: S&P Global Mobility, Vehicle Performance and Compliance, October 2025



Average CO2 of non-BEVs required to comply in 2035 as a function of BEV



As of Jan, 2026.
Source: S&P Global Mobility.

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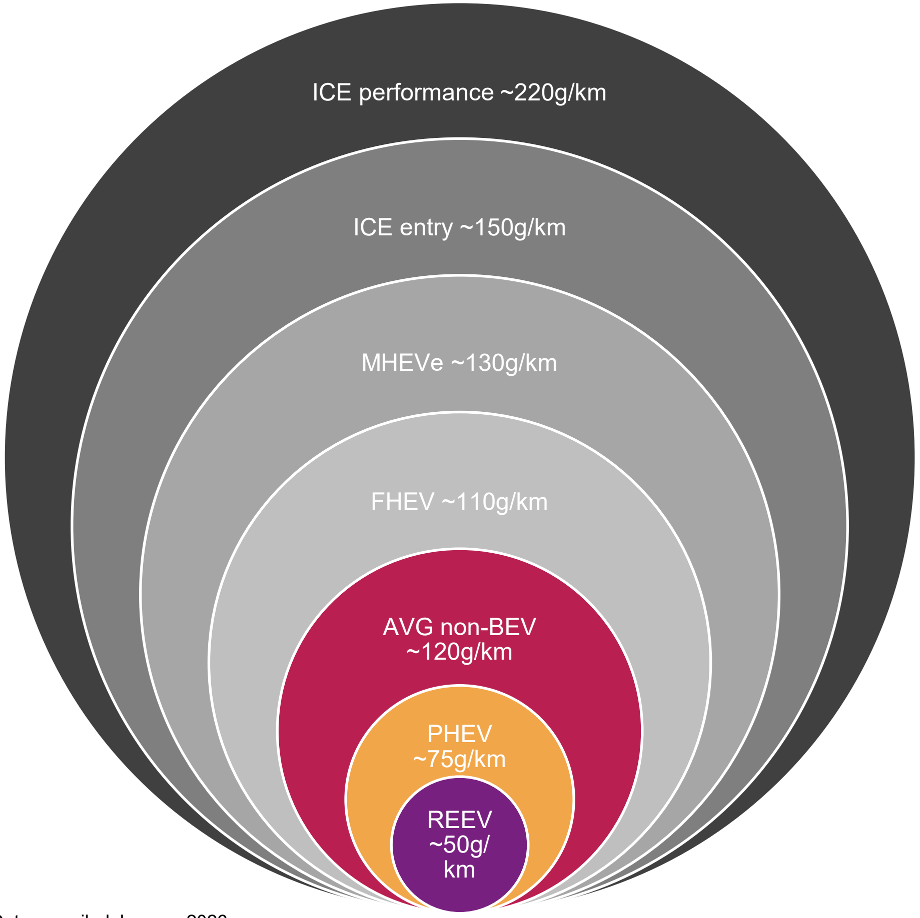
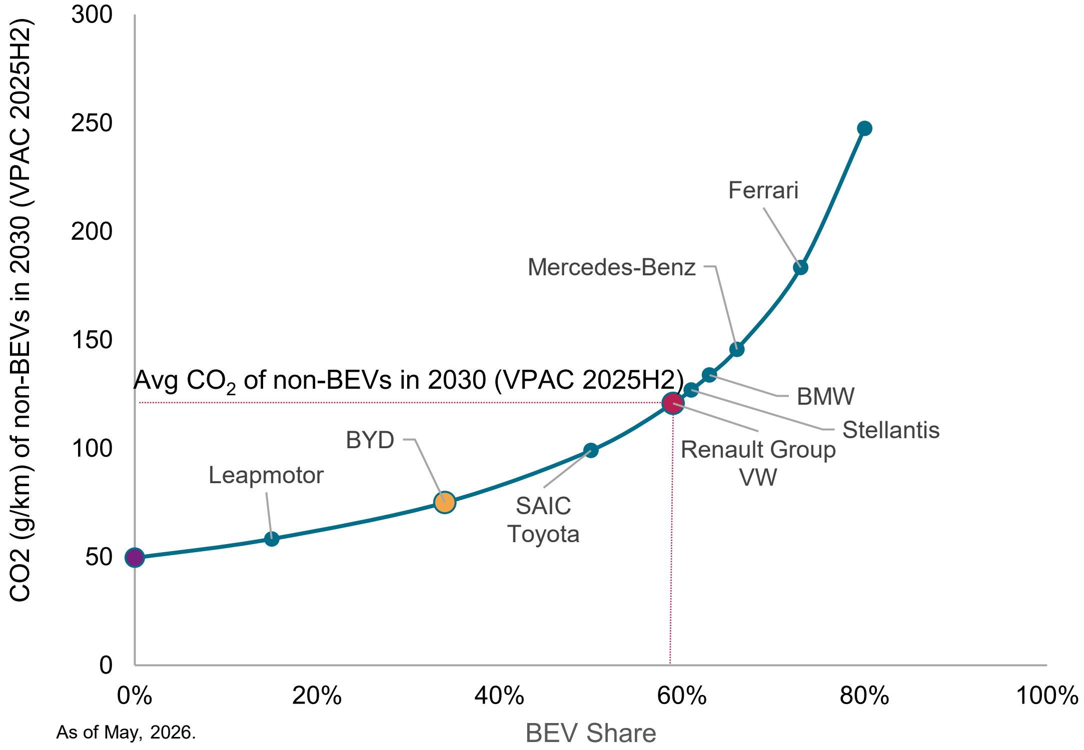
In 2030, powertrain strategies and optimization are key to reach compliance



Date compiled January 2026.
BEV = battery-electric vehicle, REEV = range-extended electric vehicle, PHEV = plug-in hybrid electric vehicle, FHEV = full hybrid electric vehicle, MHEV = mild hybrid electric vehicle, ICE = internal combustion engine.
Source: S&P Global Mobility, Vehicle Performance and Compliance, October 2025

Average CO2 of non-BEVs required to comply to 49.5g/km target in 2030, as a function of BEV Share



As of May, 2026.
Source: S&P Global Mobility.

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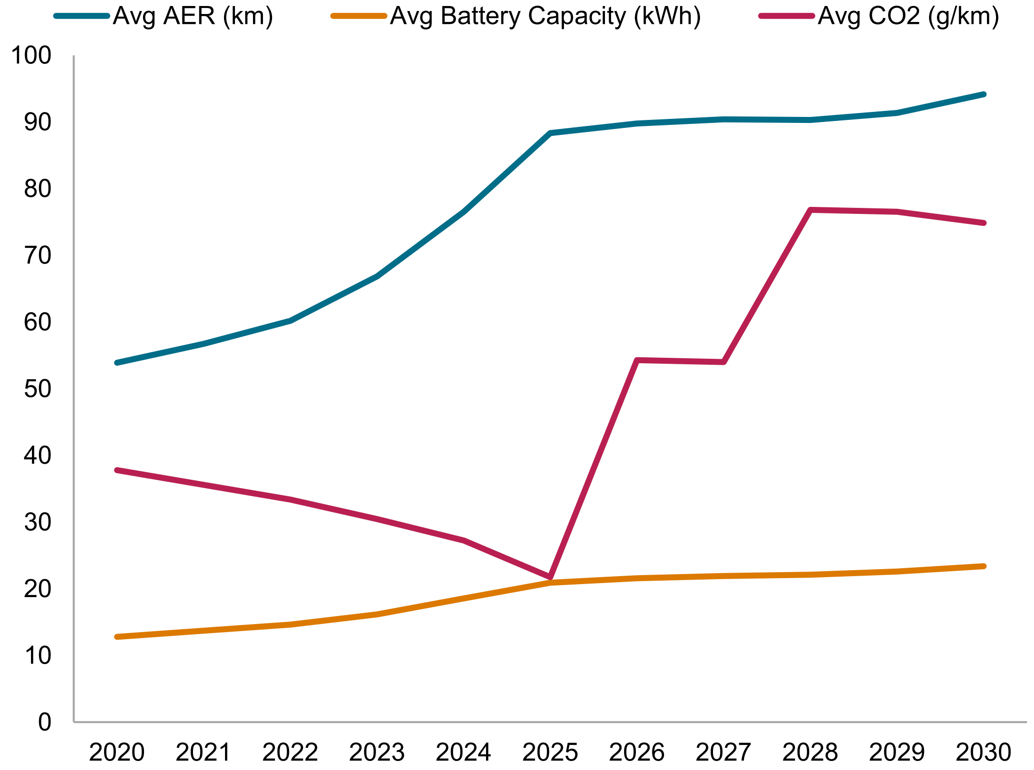
In 2028, OVC-HEV utility factor will have a major effect on OEM strategies

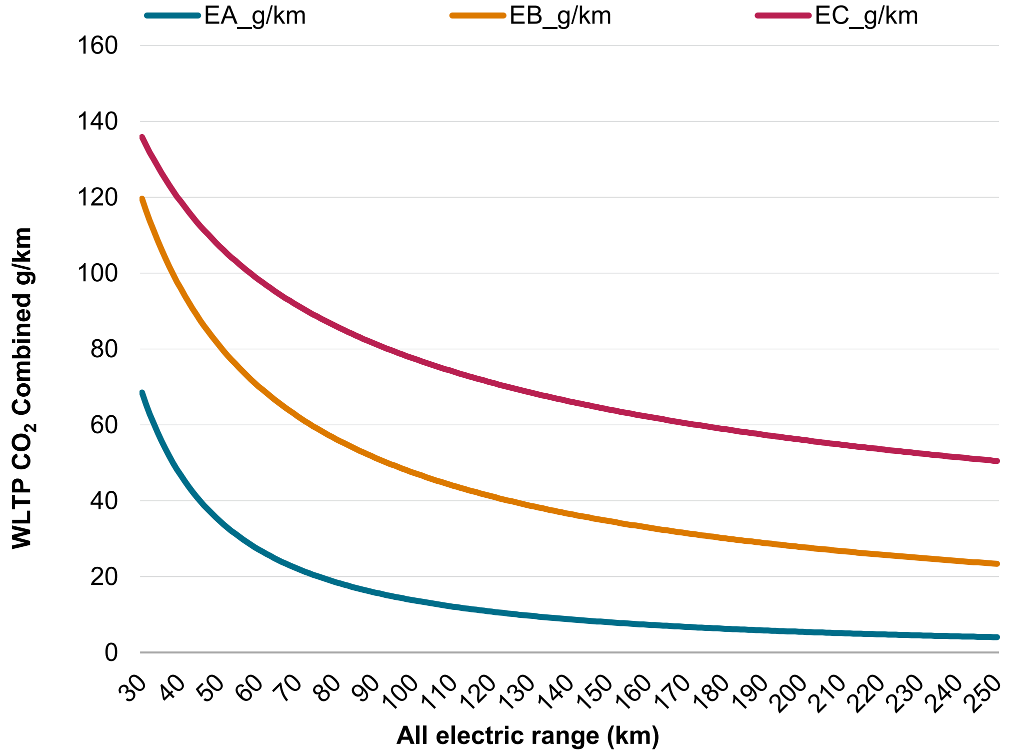
Battery capacity inflation in Europe to compensate the UF effect

How to mitigate the Utility Factor effect



As of May, 2026.
Source: S&P Global Mobility, Vehicle Performance and Compliance, H2 2025.

OVC-HEV* CO2 highly impacted by Euro6-x regulations



As of May, 2026.
Source: S&P Global Mobility, Vehicle Performance and Compliance, H2 2025.

OVC-HEV = Off-vehicle charging hybrid electric vehicle (PHEV/REEV).
$M_{CD} = Charge\ depleting\ CO_2$
$M_{CS} = Charge\ sustaining\ CO_2$

$$CO_2\ combined = UF \times M_{CD} + (1 - UF) \times M_{CS}$$

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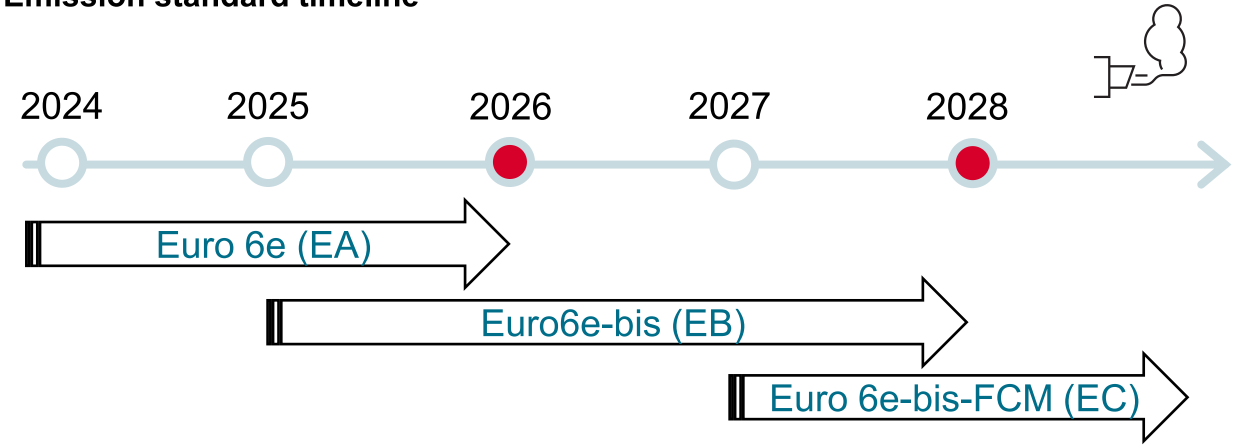
PHEV Utility Factor (UF) – WLTP adjusts to better fit reality

Real world data from OBFCM suggests a revised UF is required.

Emission standard timeline



$$CO_2\,(combined)\,g/km = \cancel{UF \times M_{CD}} + (1 - UF) \times M_{CS}$$

$M_{CD} = Charge\ depleting\ CO_2$

Usually near to 0g/km for high all electric range

$M_{CS} = Charge\ sustaining\ CO_2$

$$UF = 1 - \exp\left\{-\sum_{i=1}^{10} c_i \left(\frac{x}{d_n}\right)^i\right\}$$

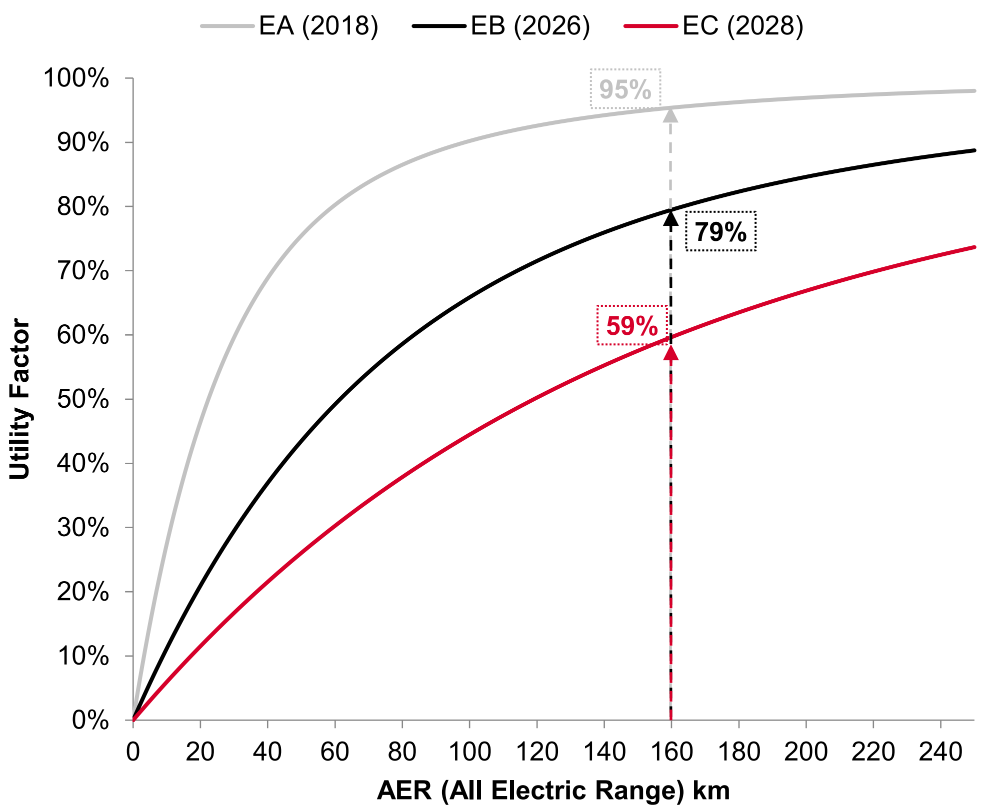
	d_n (km)
Euro 6e (EA)	800
Euro 6e-bis (EB)	2200
Euro 6e-bis-FCM (EC)	4260

10 coefficients, used to determine the ratio of electric distance (x) vs total distance travelled, remain the same but reference distance (d_n) increases

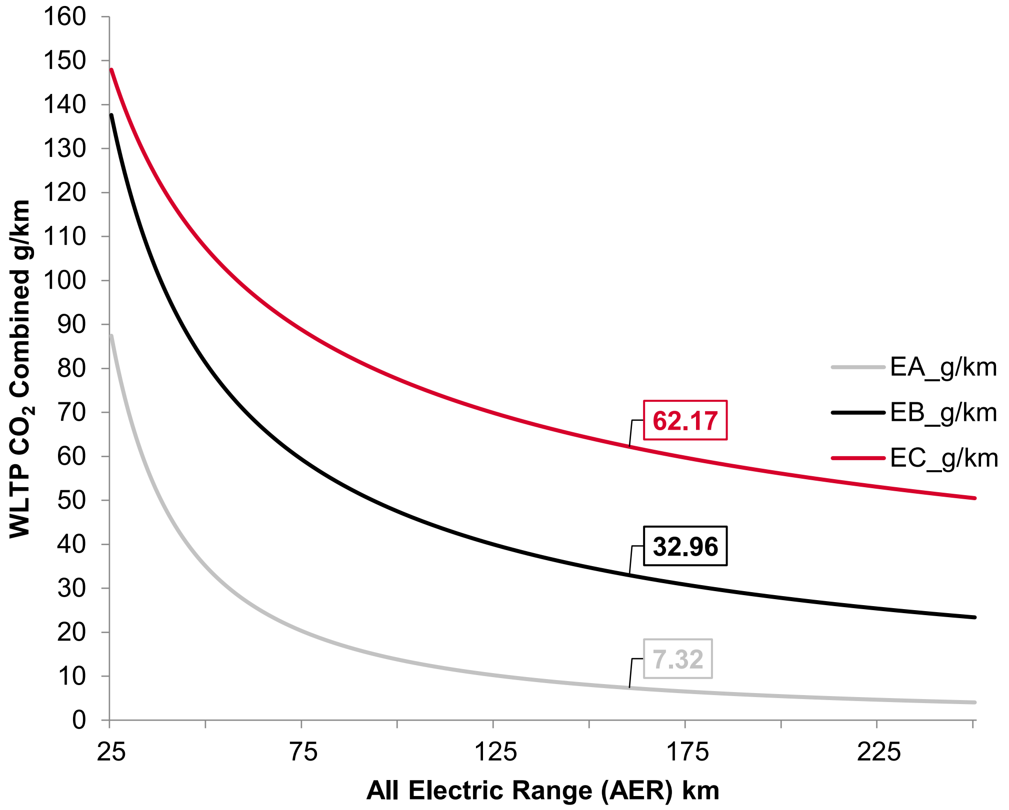
Utility Factor revision: a step too far – or a necessary correction?

OVC-HEV* CO2 increases significantly with EC - ZLEV threshold (<50g/km) becomes trivial

Utility Factor curve



CO_2 for OVC-HEV* too high for viable BEV alternative?



$$CO_2\,combined = UF \times M_{CD} + (1 - UF) \times M_{CS}$$

****OVC-HEV = Off vehicle charging – hybrid electric vehicle = PHEV or REEV***

Date compiled March 2026.
Source: S&P Global Mobility, Vehicle Performance and Compliance

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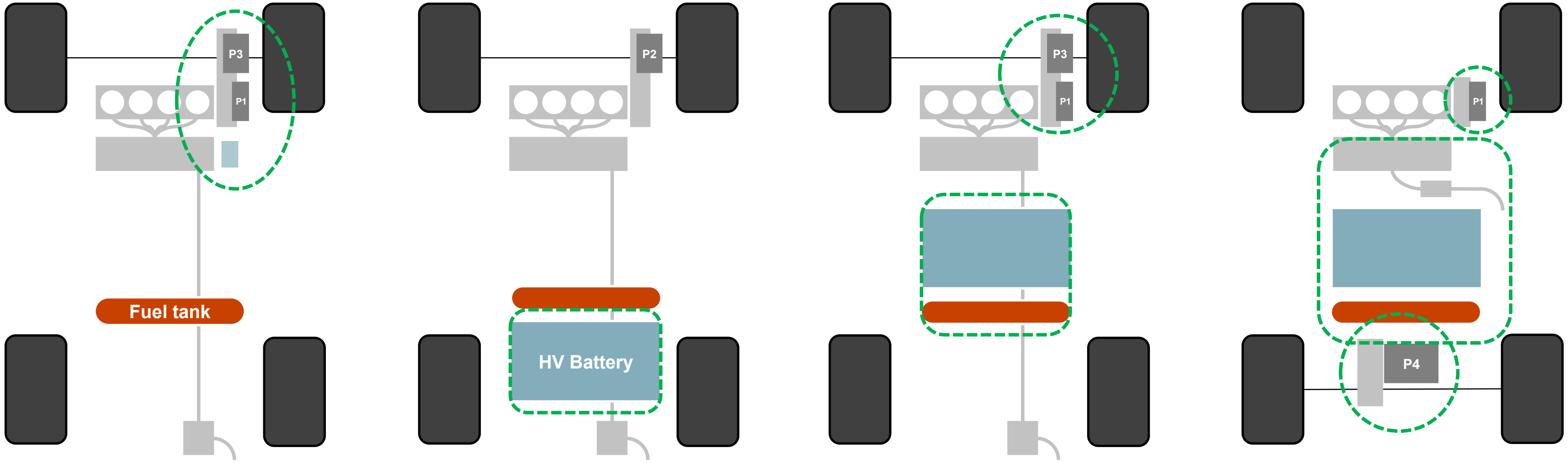
Powertrain strategies to mitigate CO2 emissions increase

From UF trajectories to technology relevance : implications for future propulsions investments

	FHEV P1+P3 Yaris Cross	PHEV P2 Peugeot 308	PHEV P1+P3 BYD Atto 2 DM-i	REEV P1+P4 Leapmotor B10 e-hybrid
CO_2 WLTP (g/km)	101	50	**41**	55
Battery capacity (kWh)	<1	17.2	18	18.8
AER (km)	-	85	90	86
CO_2 emissions	↘ (No UF)	↘↘	↘↘↘	↘↘
Cost	↗	↗↗↗	↗↗	↗↗
Powertrain compacity	→	↘↘↘	↘	↘↘
Vehicle length (mm)	**4172**	4367	4330	4530



Strategic rationale *Key evolutions in green*	FHEV only, keeping total sys. cost low Focus mostly on transmission efficiency	Leveraging existing driveline, existing ICE platforms Focus on AER increase	Transmission efficiency + Skateboard platform to accommodate large battery	Leveraging BEV skateboard platform, containing bat. cap. with REx

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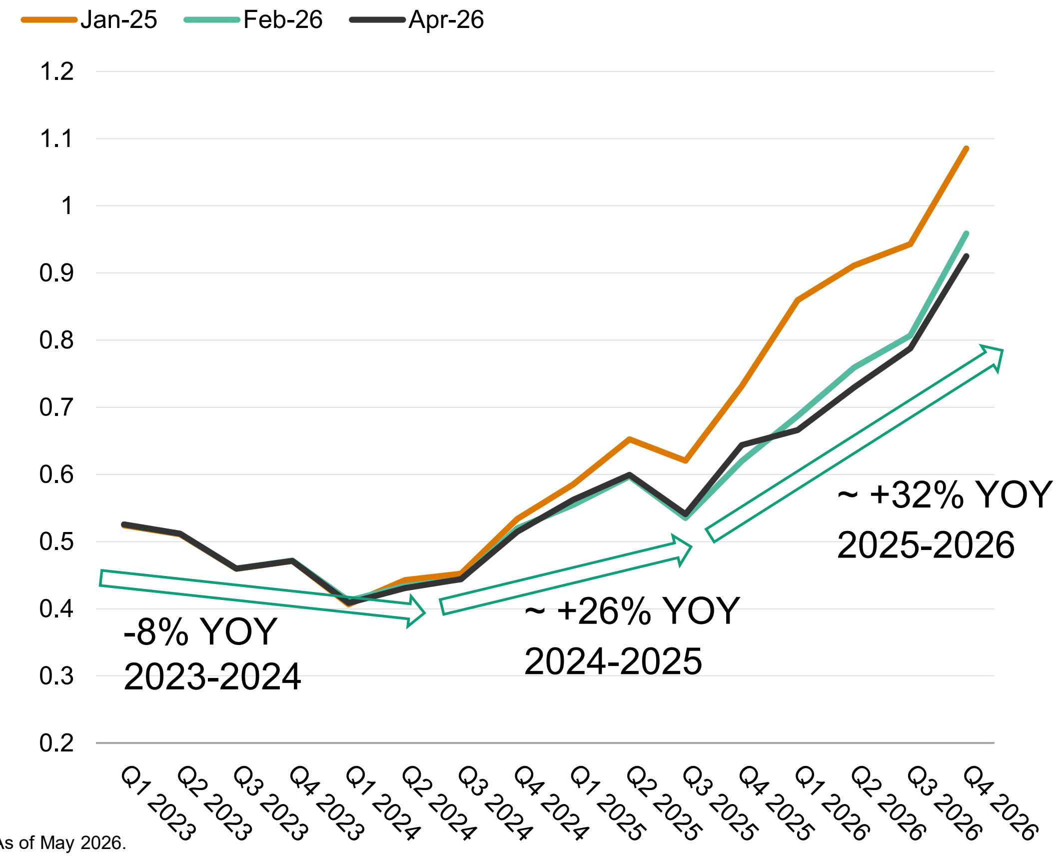
High growth in BEV volumes expected in 2026

The CO_2 regulation framework design creates an inevitable stop-and-go momentum on the EV market

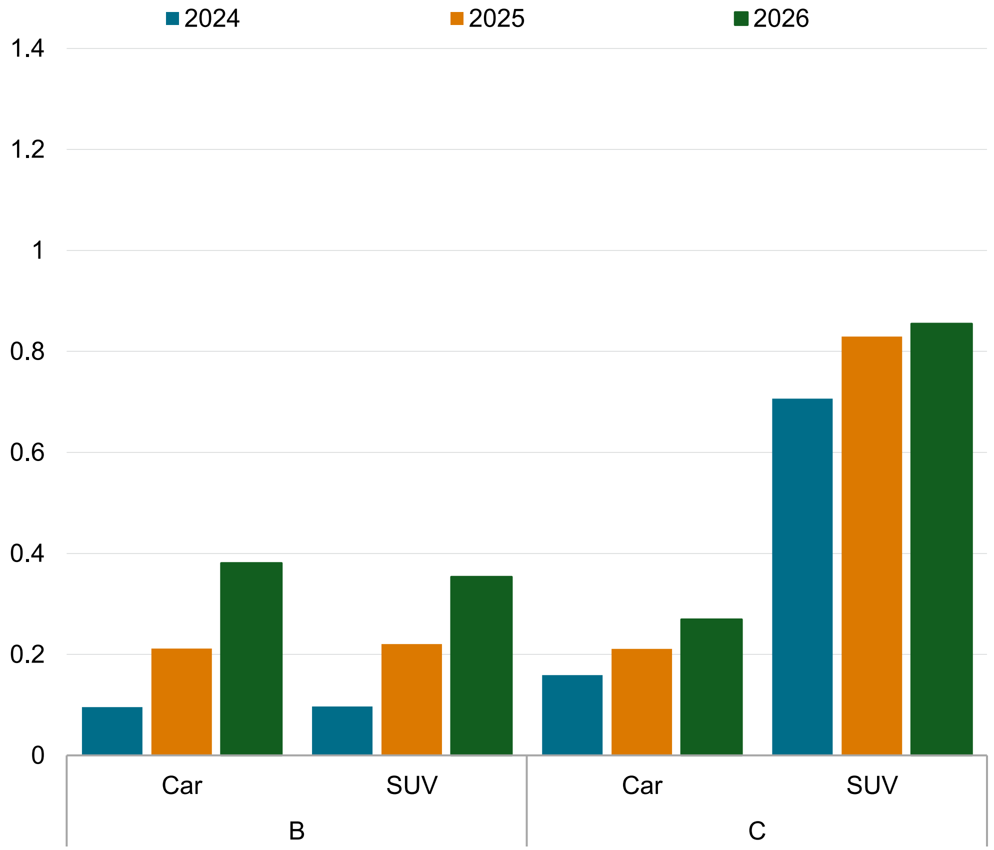
Quarterly short-term BEV production in Europe (millions)



As of May 2026.

Light Vehicle Powertrain Production Forecast, April 2026.
Source: S&P Global Mobility.

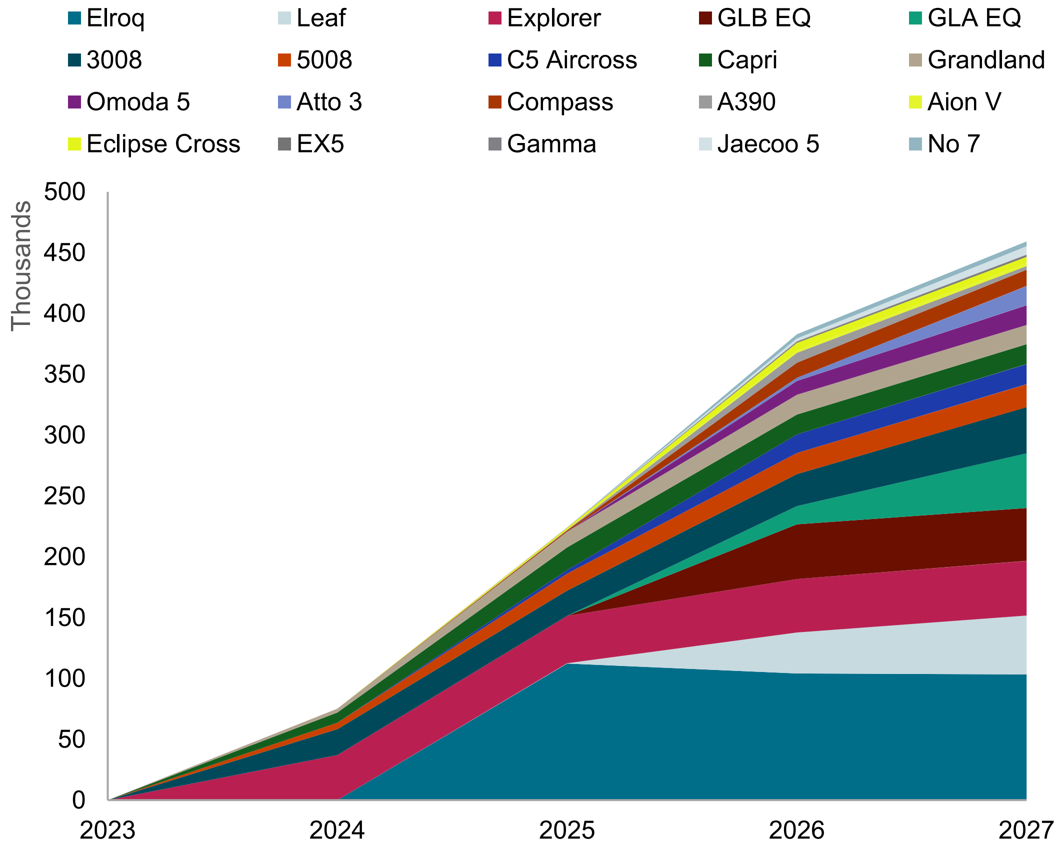
Strongest BEV growth in high potential volumes segments (millions)



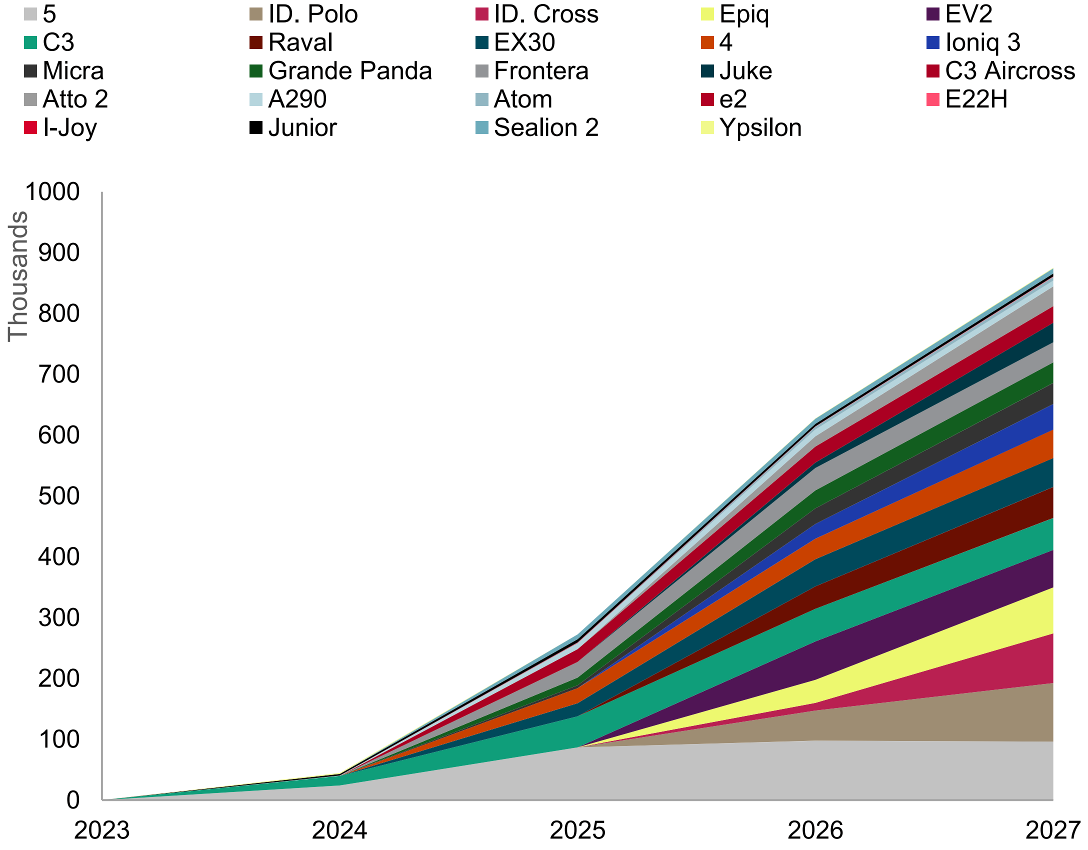
High growth in BEV volumes was expected in 2025 but postponed to 2026–27

BEV growth is supported by extensive product activity for most brands

New launches 2024–25-26 C-SUVs BEVs produced in Europe



New launches 2024–25-26 B-segment BEVs produced in Europe



As of March 2026.

Light Vehicle Powertrain Production Forecast, February 2025.
Source: S&P Global Mobility.

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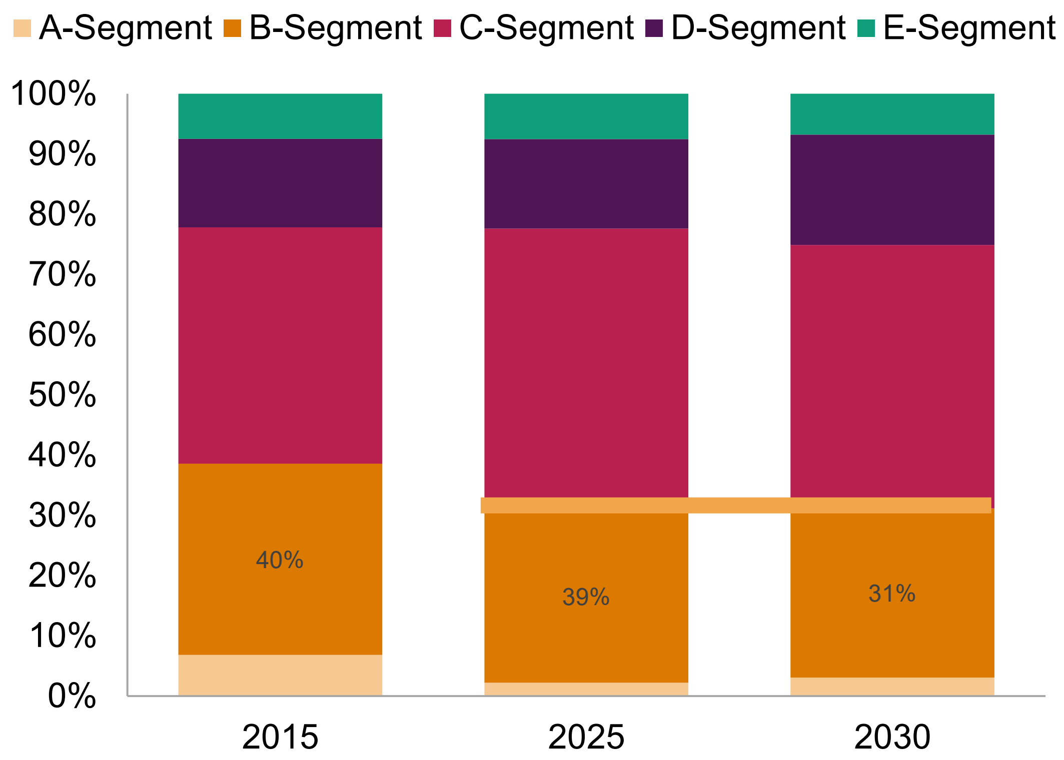
Small affordable cars to be pushed further by regulation to reach market reality

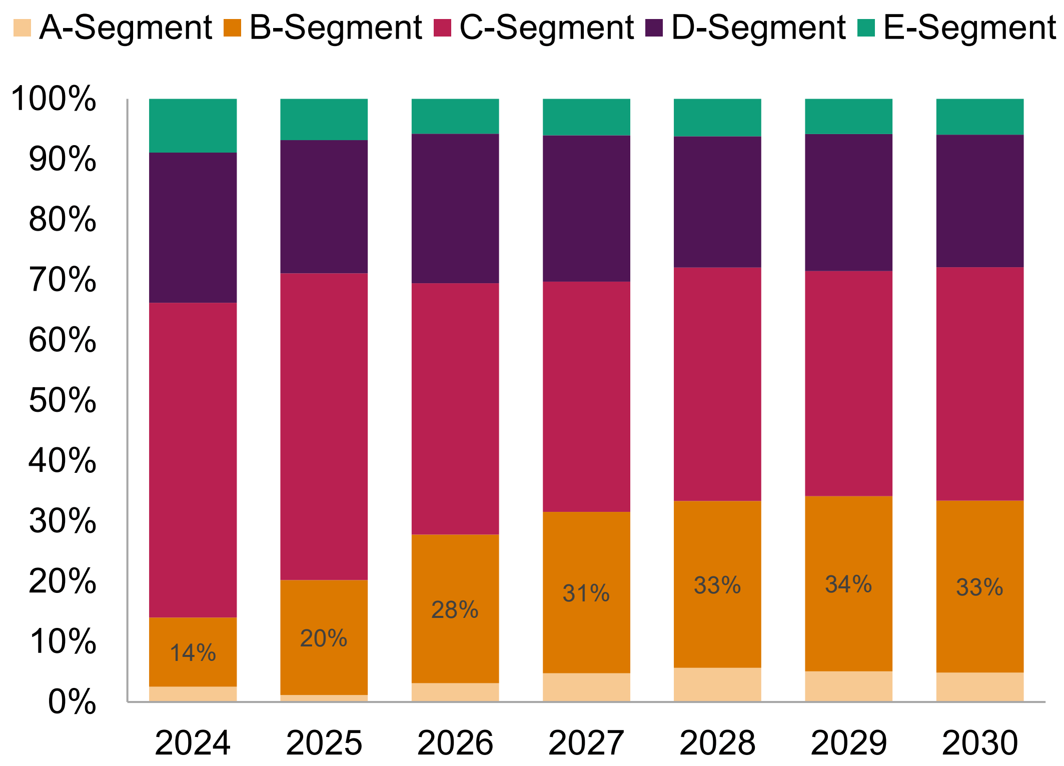
A and B-segment shares in the BEV market are still below demand in our forecast

Segment mix in European production evolution in 10 years



As of March. 2026.
Source: S&P Global Mobility, Powertrain Production Forecast, February 2026.

Share of each Segment in European BEV production



As of March. 2026.
Source: S&P Global Mobility, Powertrain Production Forecast, February 2026.

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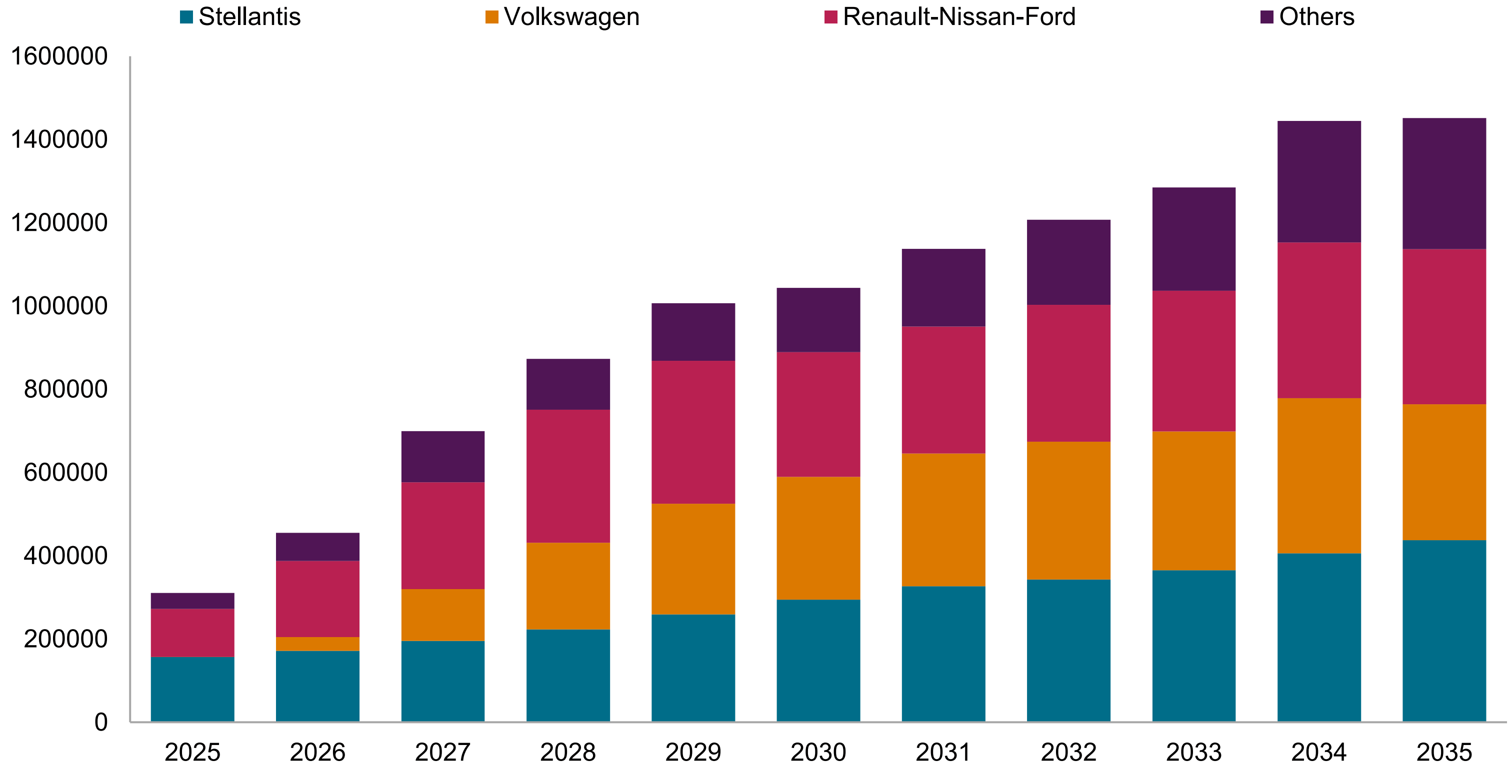
M1E Category - Market Sizing and Preliminary Assessment

M1E to benefit mainstream OEMs but not sufficient to close the gap to compliance

Legacy Mainstream OEMs to represent more than 80% of the potential market



As of March, 2026.
Source: S&P Global Mobility.

- Sourcing from FTA or customs-aligned countries (such as India, South Korea, Morocco) could scale output to ~2M vehicles by 2030.
- Final IAA framework could influence OEMs decision on industrial footprint.
- The 1.3 multiplier on M1E would shift EU BEV share in 2030 by ~2 to 4% which would remain far from compliance. M1E multiplier to be stopped in 2034
- Dec-25 draft sketch two possible pathways—CO_2 pooling or M1E. S&P Mobility expects CN OEMs to favor pooling revenues, while EU generalists rely on M1E for fleet CO_2.

This chart represents a preliminary assessment of the M1E potential market. Assumptions are the following : Offtype = PV, Sales Countries = EU27 + Norway + Iceland + UK, Propulsion System Design = BEV, Vehicle Length < 4300 (to include potential vehicle length adjustment), Production Countries = EU27 + Turkey + UK

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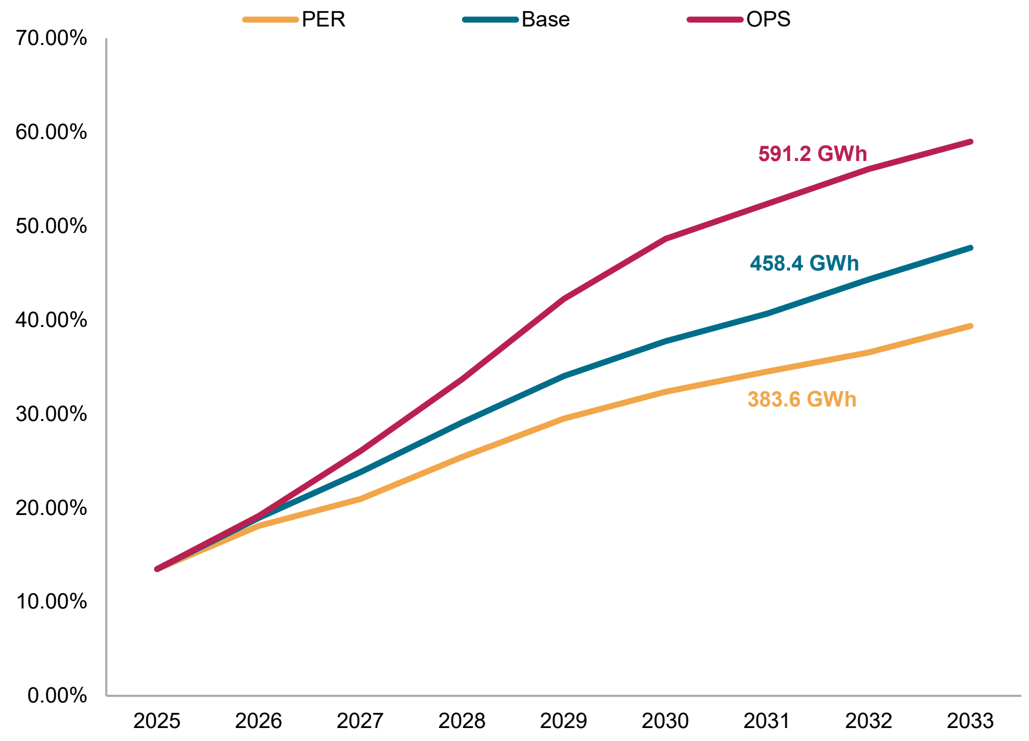
Navigating uncertainty - Powertrain Scenarios: All data fields available

OPS: Optimistic TIV + Stricter CO2 | PER: Pessimistic TIV + Relaxed CO2

Europe BEV Share & GWh demand by scenario



- Powertrain mix adjusted according to regulatory and economic/geopolitical scenario
- BEV growth is dependent on numerous variables – as such scenario planning enables suitable contingency provision to be accounted for
- Scenario forecast has all the fields our light vehicle powertrain subscribers are familiar with.
  - Involved in a particular eAxle program? Plan with bandwidth based on regulatory likelihood.
  - Demonstrate the viability of longer life ICE programs or the opposite

Date compiled March 2026.
Source: S&P Global Mobility, Global Light Vehicle Production Powertrain Scenario Forecast, January 2026

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