

# Global Powertrain Outlook

An exploration of future electrical technologies

Electrical Steel summit

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05.05.2026





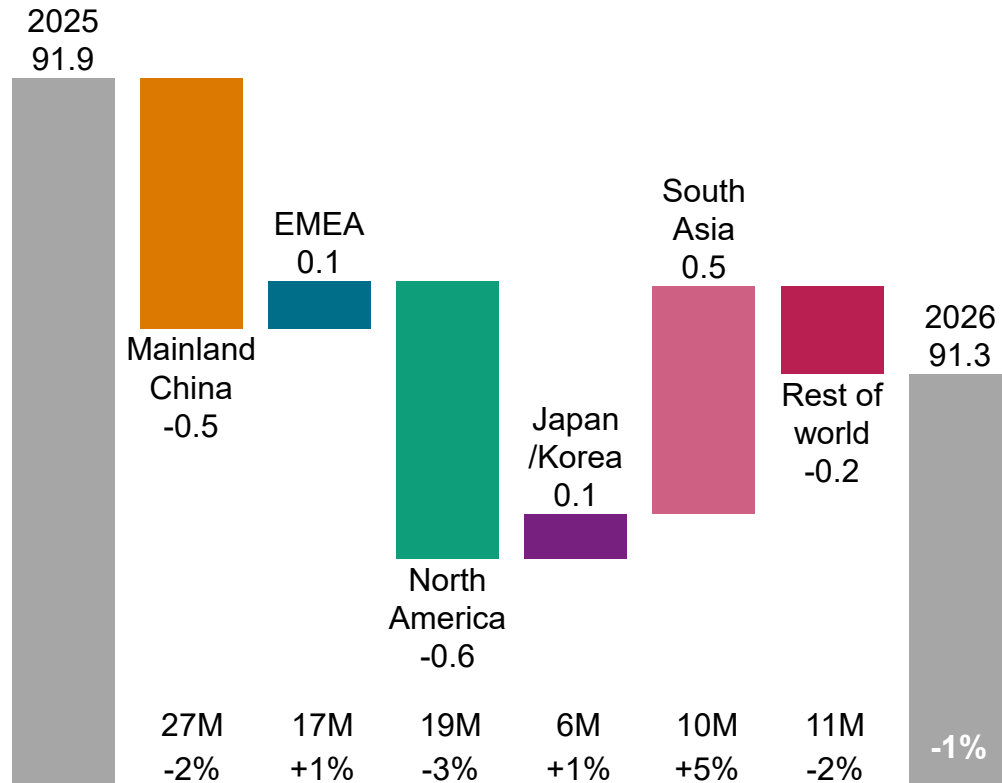
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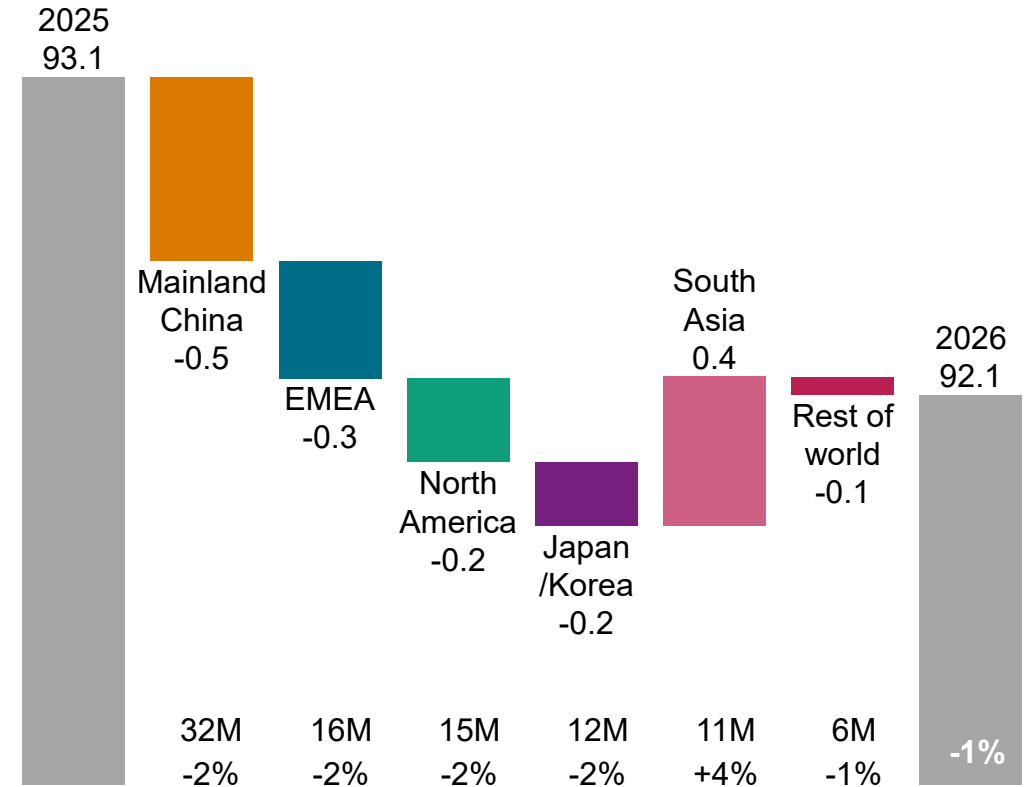
# 2026 forecast: Regional dynamics

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

## Sales



## Production



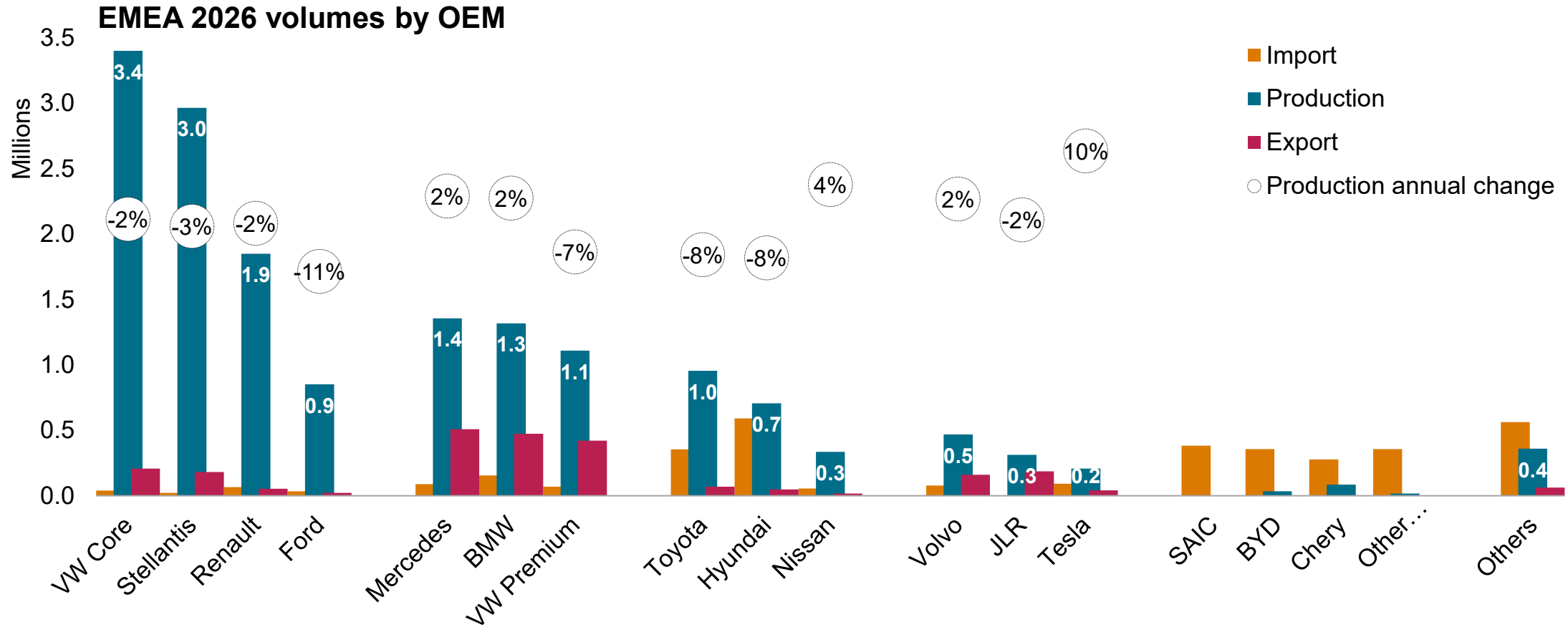
Data compiled March 2026.

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

Source: S&P Global Mobility.

# EMEA: 2026 OEM review

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

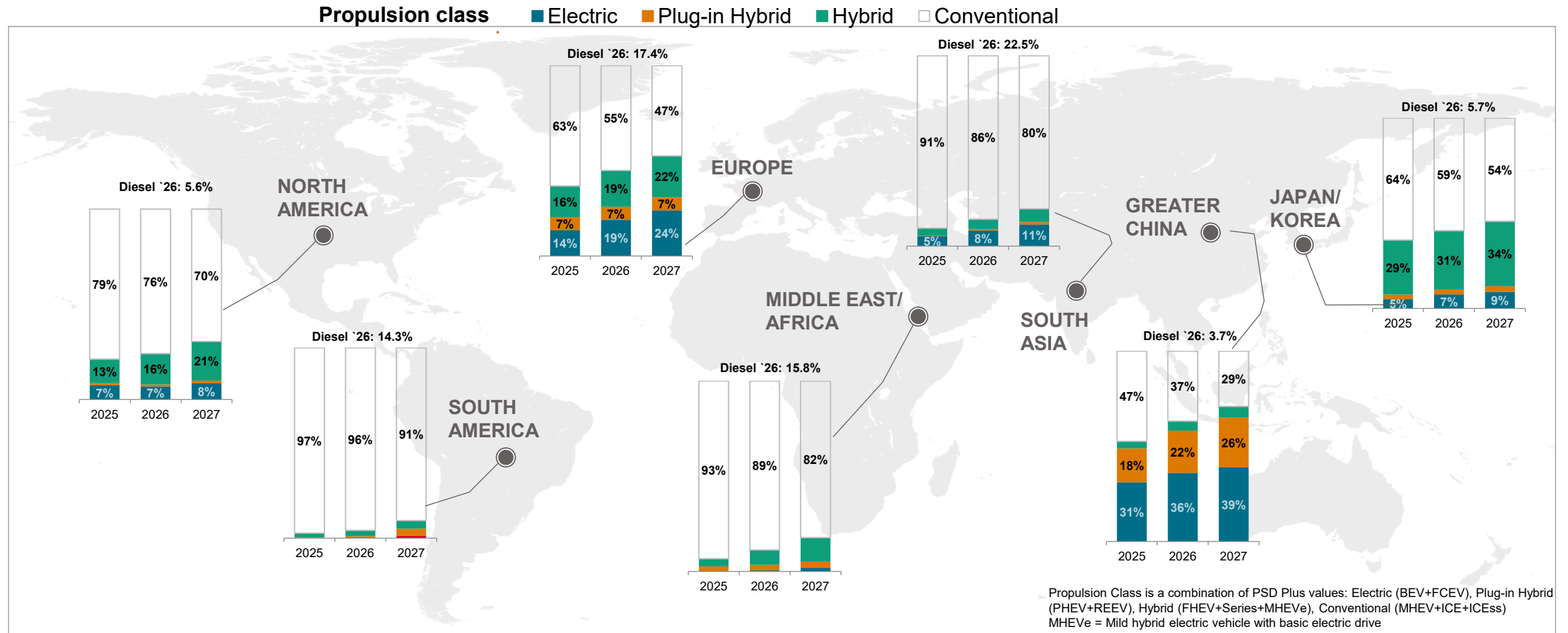


Data compiled March 2026.

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

Source: S&P Global Mobility.

# Short-term global electrification outlook



Date compiled March 2026.

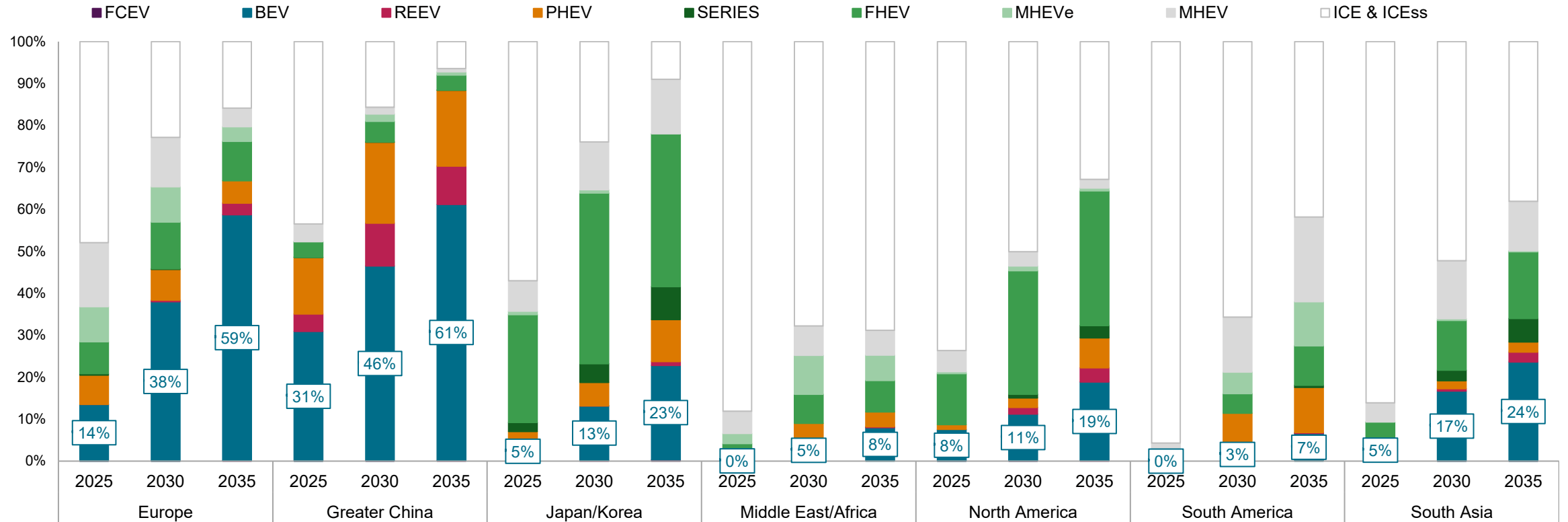
Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2026

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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, MHEVe = mild hybrid electric vehicle, MHEV = mild hybrid electric vehicle, ICE = internal combustion engine, S/S = start/stop

Date compiled March 2026.

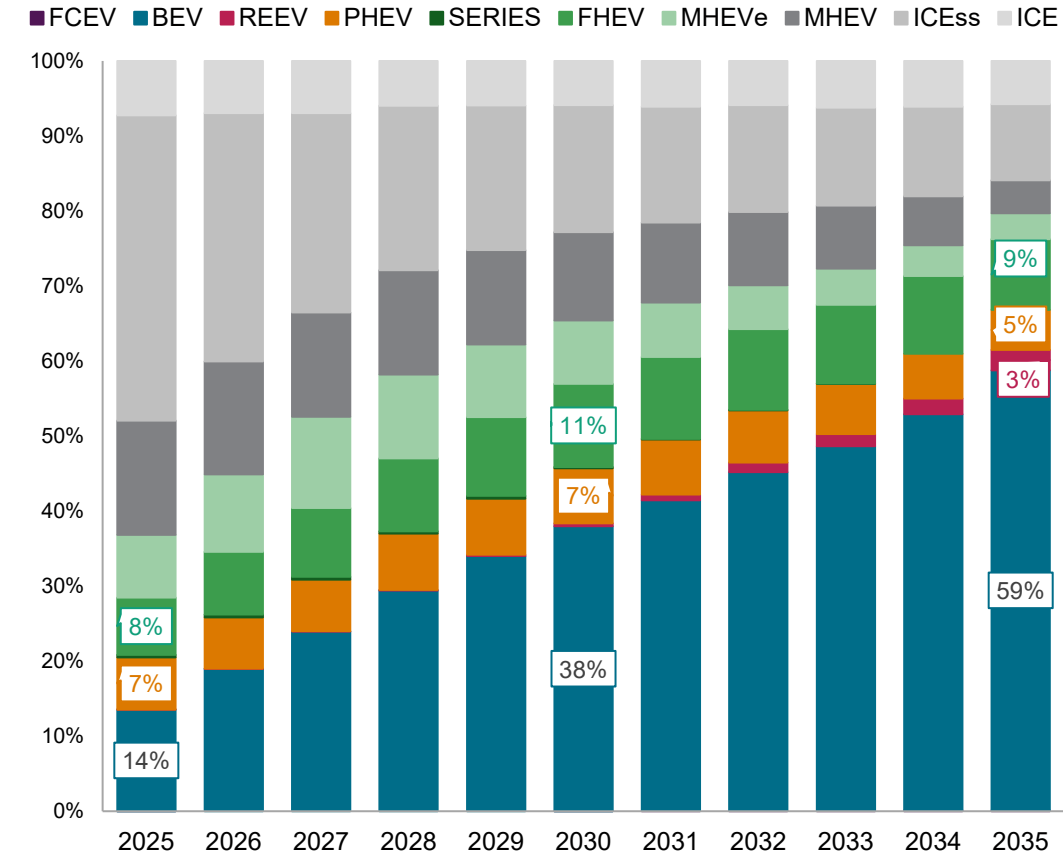
Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2026

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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



- **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<sub>2</sub> emissions.
- **ICE S/S** programs extension due to a relaxed Euro 7.

As of February 2025.

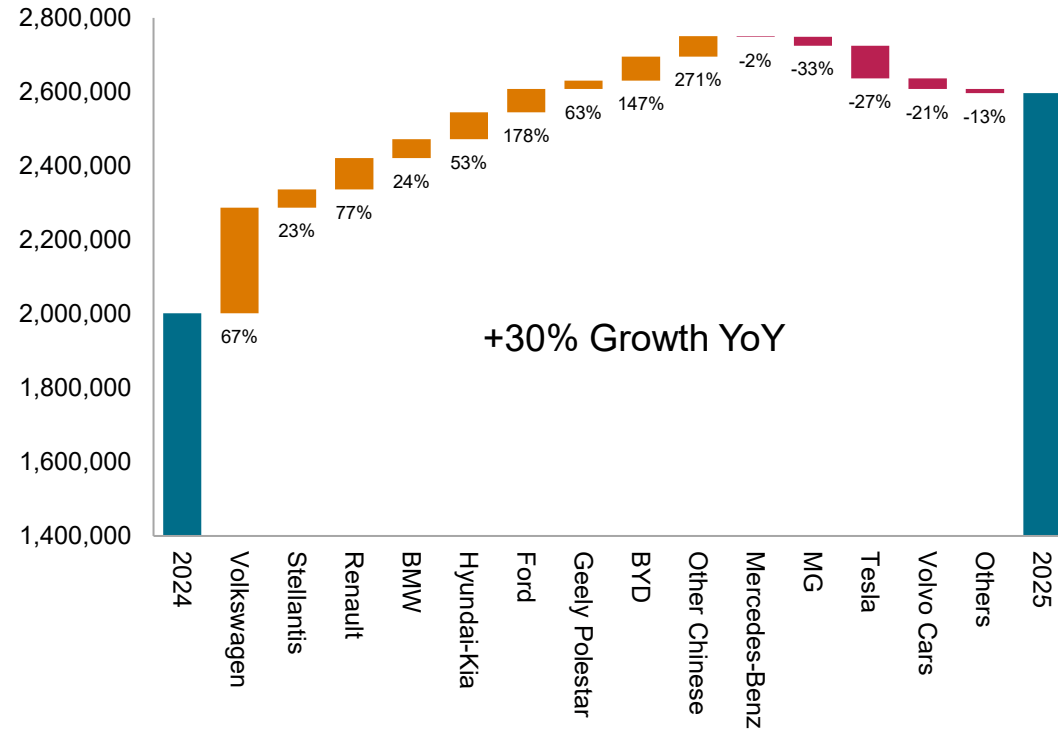
Light Vehicle Powertrain Production Forecast, February 2026.

Source: S&P Global Mobility.

# 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%
<b>Total EU market</b>	<b>15.4%</b>	<b>19.4%</b>

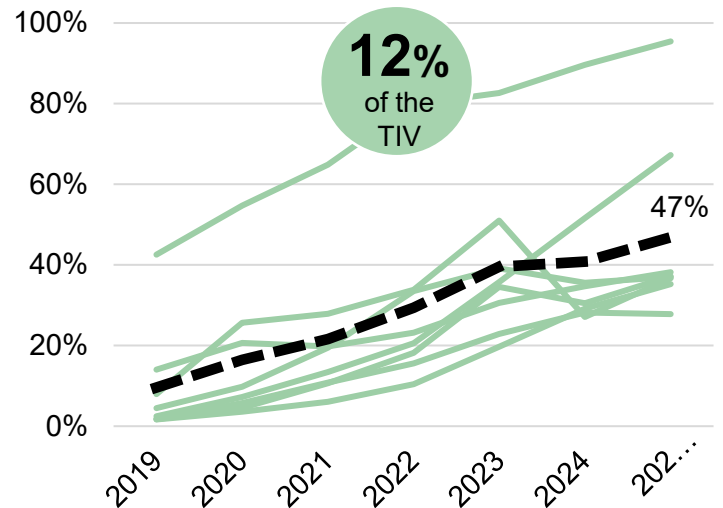
EU including UK, Norway, Iceland and Switzerland

# 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

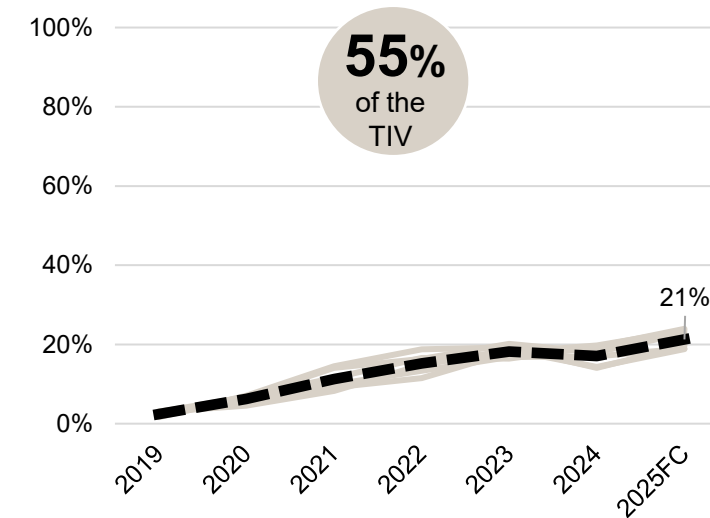


Included countries: Norway, Denmark, Netherl., Finland, Sweden, Iceland, Belgium, Luxemb.

Average — — —

## Market cluster 2: BEV balanced

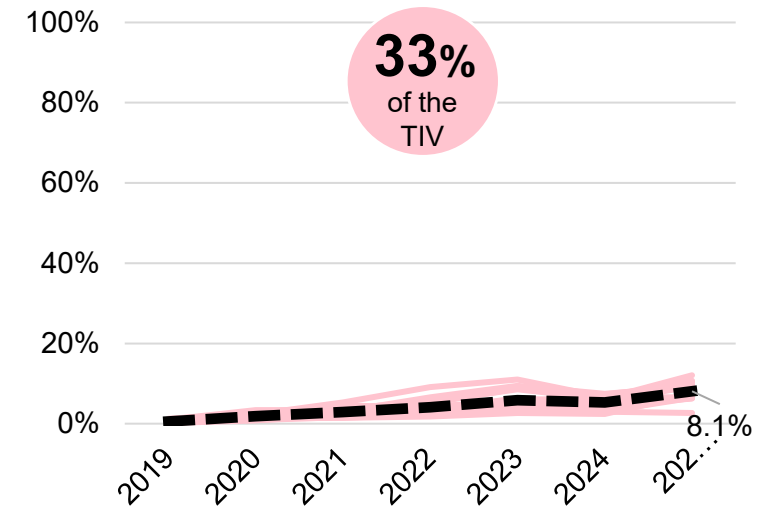
18%-25% BEV sales share



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

## Market cluster 3: BEV laggards

3%-11% BEV sales share

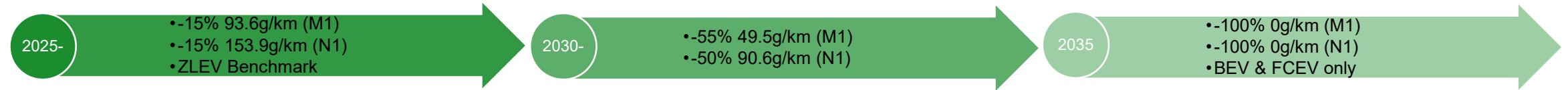


Included countries: Slovenia, Estonia, Bulgaria, Hungary, Lithuania, Spain, Latvia, Slovakia, Romania, Poland, Greece, CzechRp, Italy, Croatia

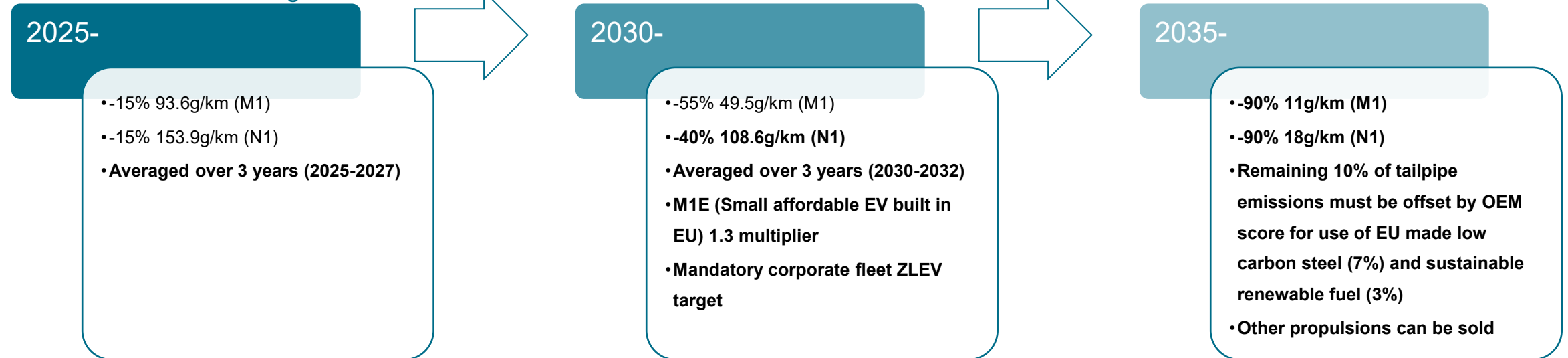
Market definition: Passenger cars, excluding vans.  
 TIV = total industry volume.  
 Europe: EU27, including Norway and Iceland.  
 2025FC: 2025 full-year forecast.  
 Source: S&P Global Mobility Sales-based Powertrain Forecast, Dec 2025.

# EC Automotive Package proposes major amendment to 'Fit for 55' / Green Deal

## Green Deal

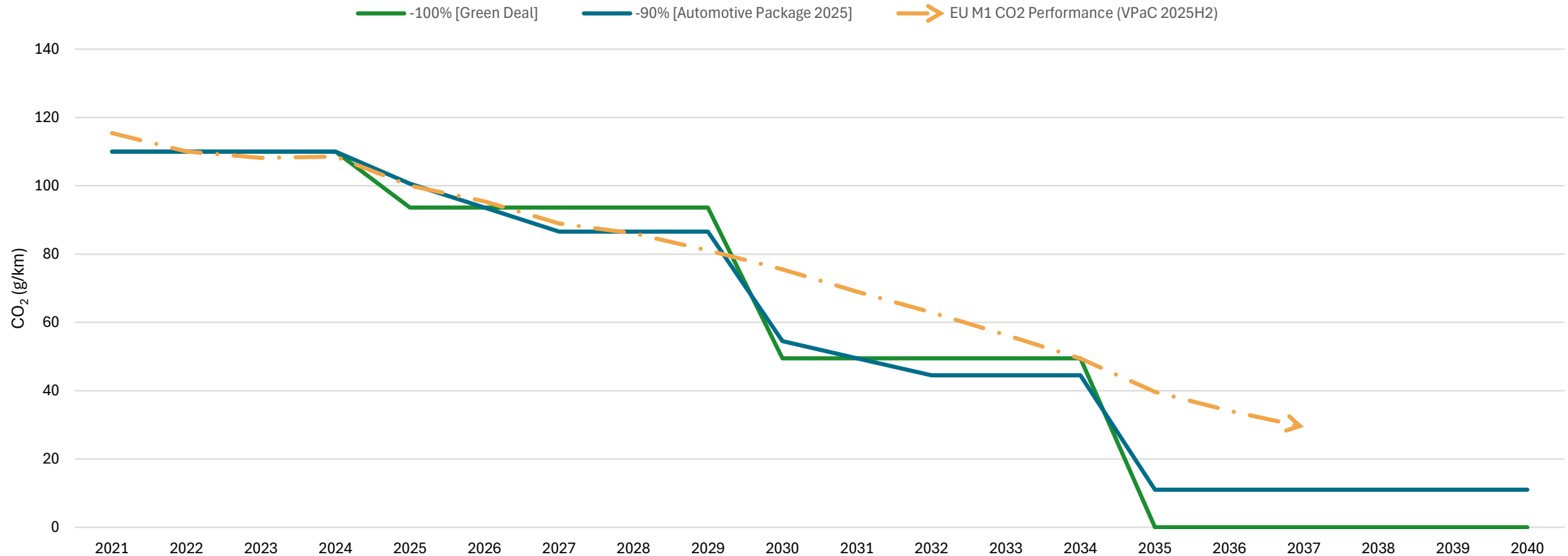


## -90% Automotive Package



# How far has the regulator eased the compliance challenge?

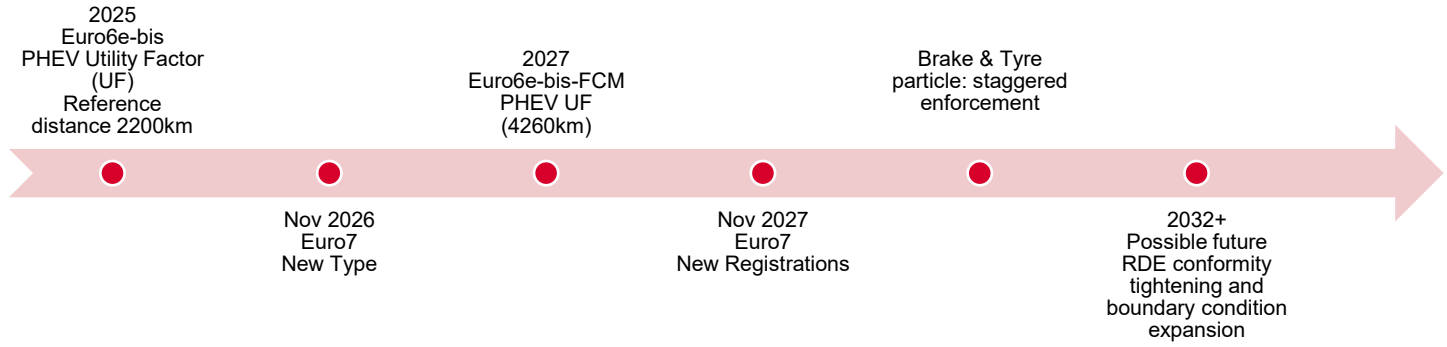
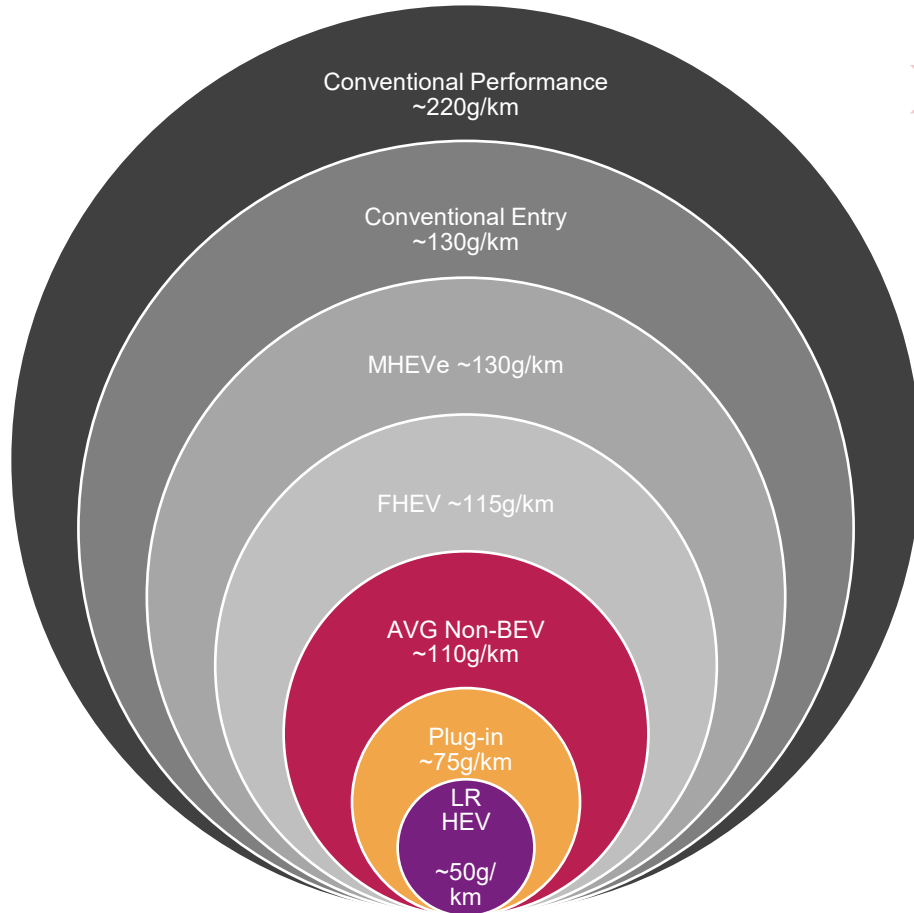
## CO2 targets, actual performance and role of existing propulsion technologies



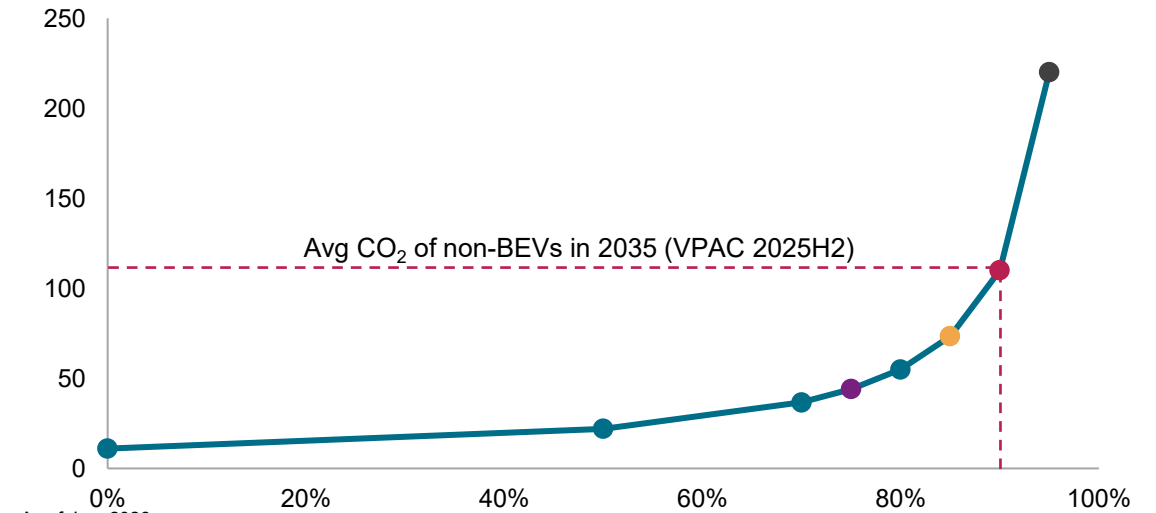
Date compiled January 2026.

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?



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

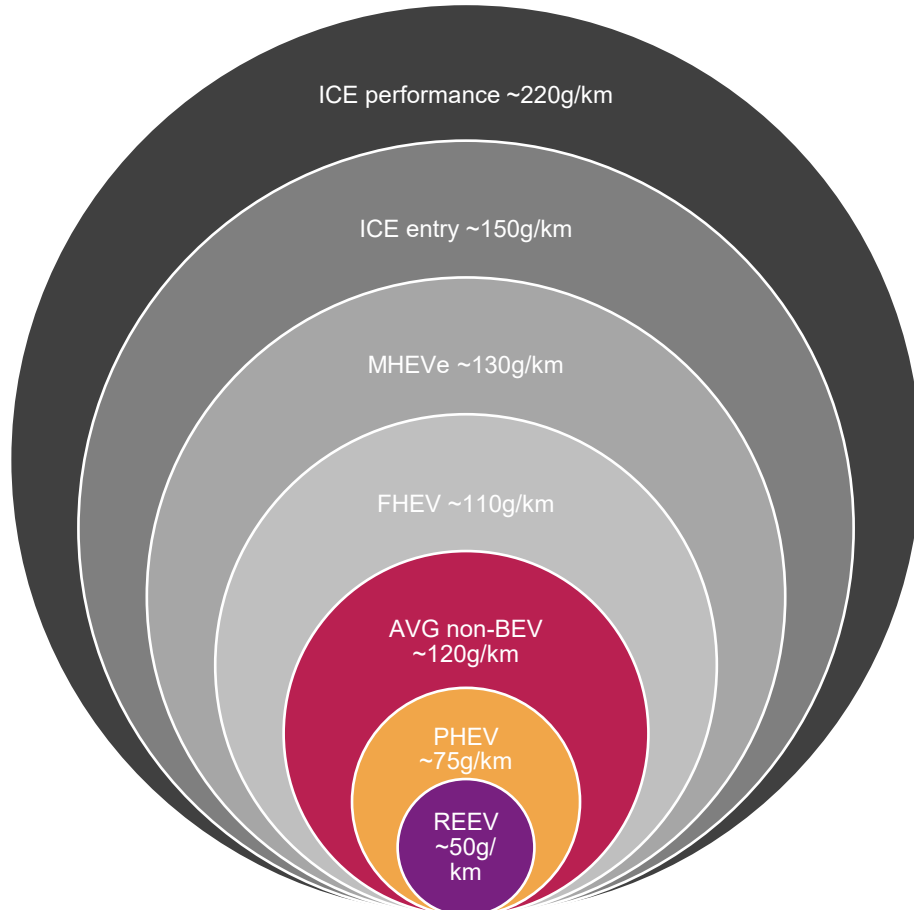


As of Jan, 2026.  
Source: S&P Global Mobility.  
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Date compiled January 2026.

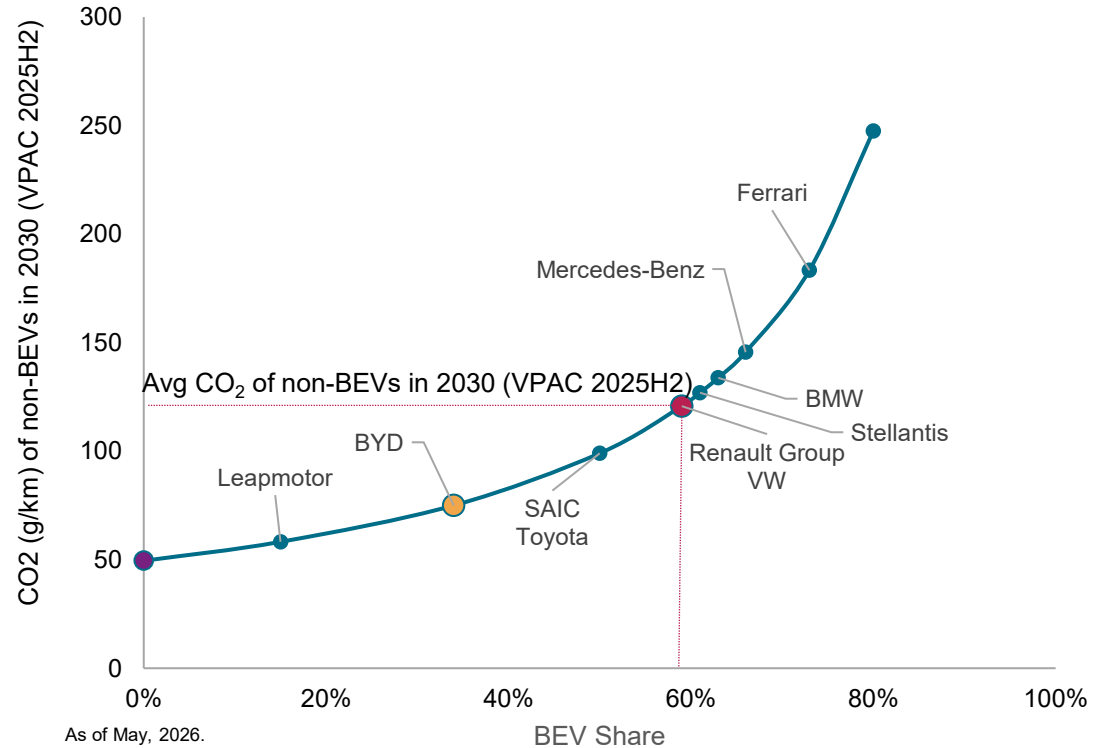
Source: S&P Global Mobility, Vehicle Performance and Compliance, October 2025  
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# In 2030, powertrain strategies and optimization are key to reach compliance



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  
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Average CO<sub>2</sub> of non-BEVs required to comply to 49.5g/km target in 2030, as a function of BEV Share

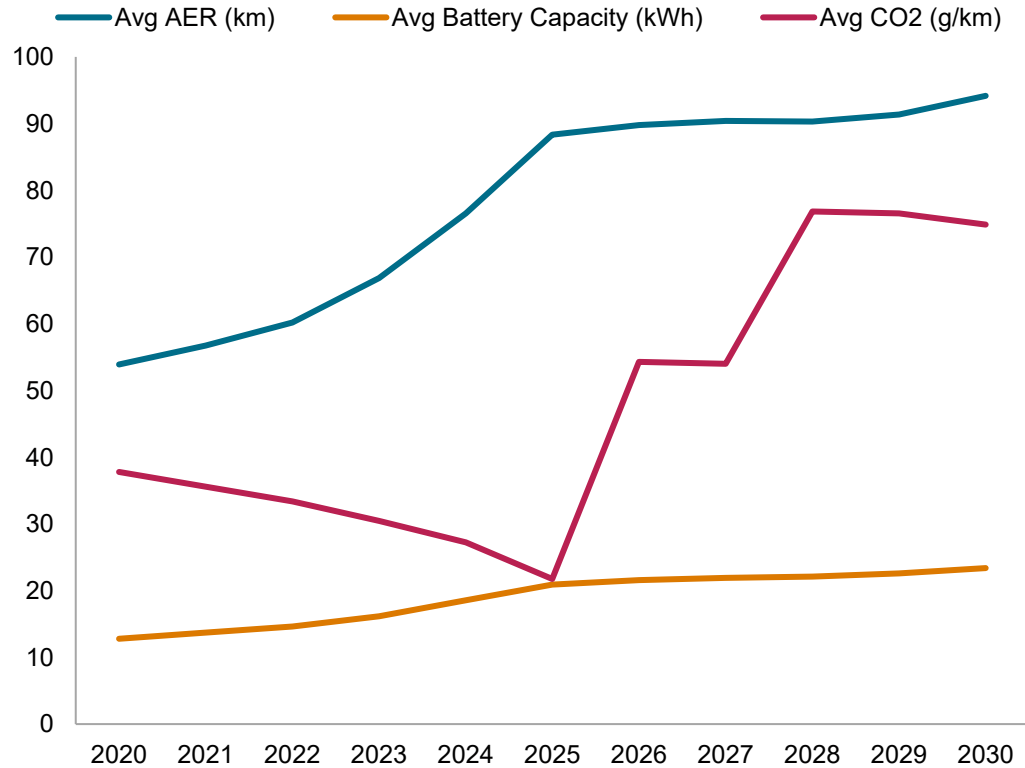


As of May, 2026.  
 Source: S&P Global Mobility.  
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# In 2028, OVC-HEV utility factor will have a major effect on OEM strategies

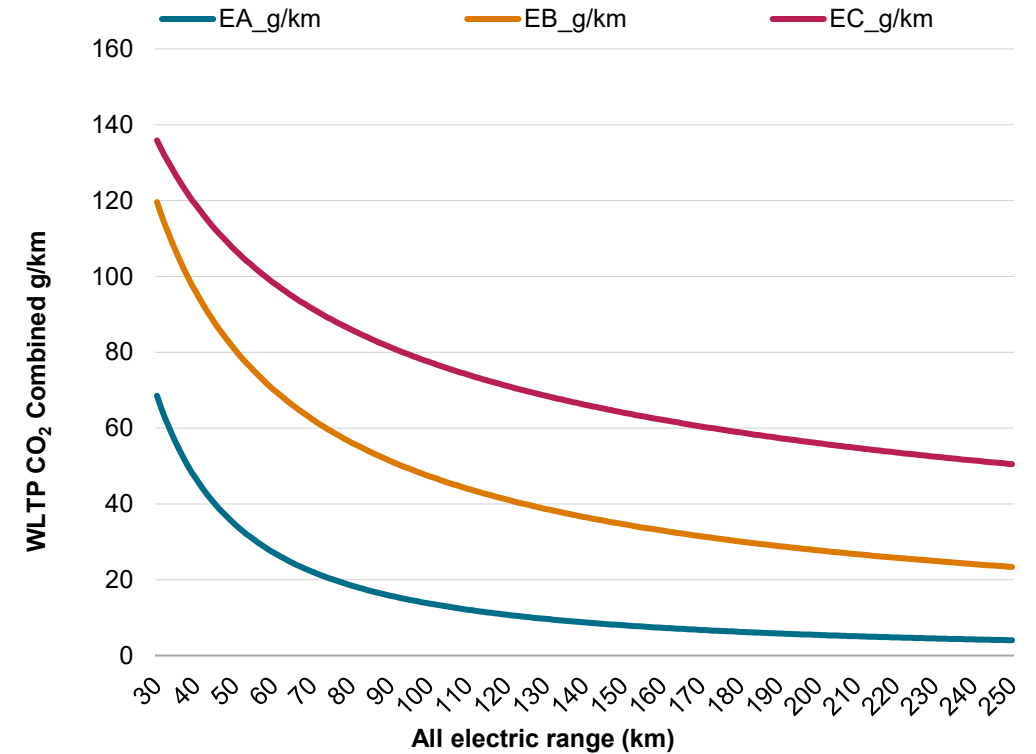
Battery capacity inflation in Europe to compensate the UF effect

## How to mitigate the Utility Factor effect



As of May, 2026.  
 Source: S&P Global Mobility, Vehicle Performance and Compliance, H2 2025.  
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## OVC-HEV\* CO2 highly impacted by Euro6-x regulations



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

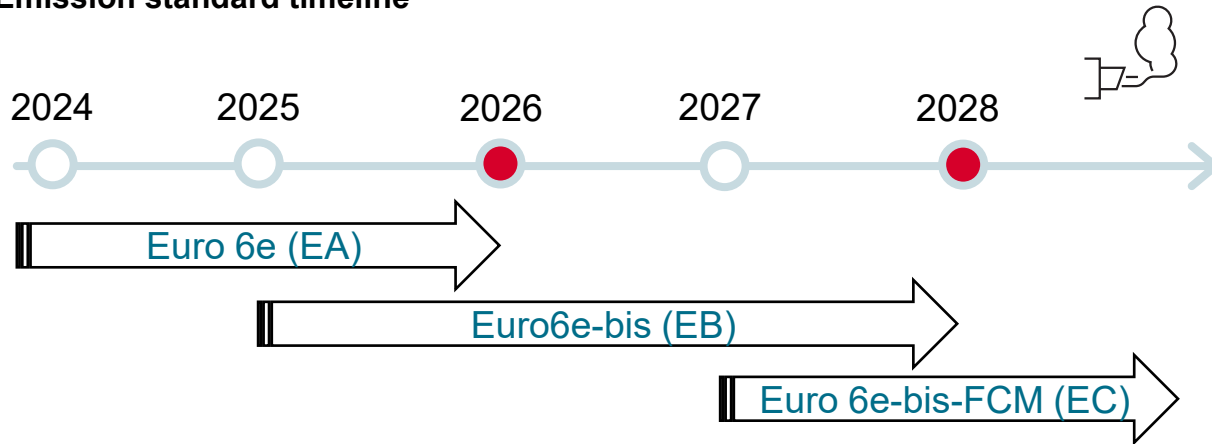
OVC-HEV = Off-vehicle charging hybrid electric vehicle (PHEV/REEV).  
 $M_{CD}$  = Charge depleting  $CO_2$   
 $M_{CS}$  = Charge sustaining  $CO_2$

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

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

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

## Emission standard timeline



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

	$d_n$ (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

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

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

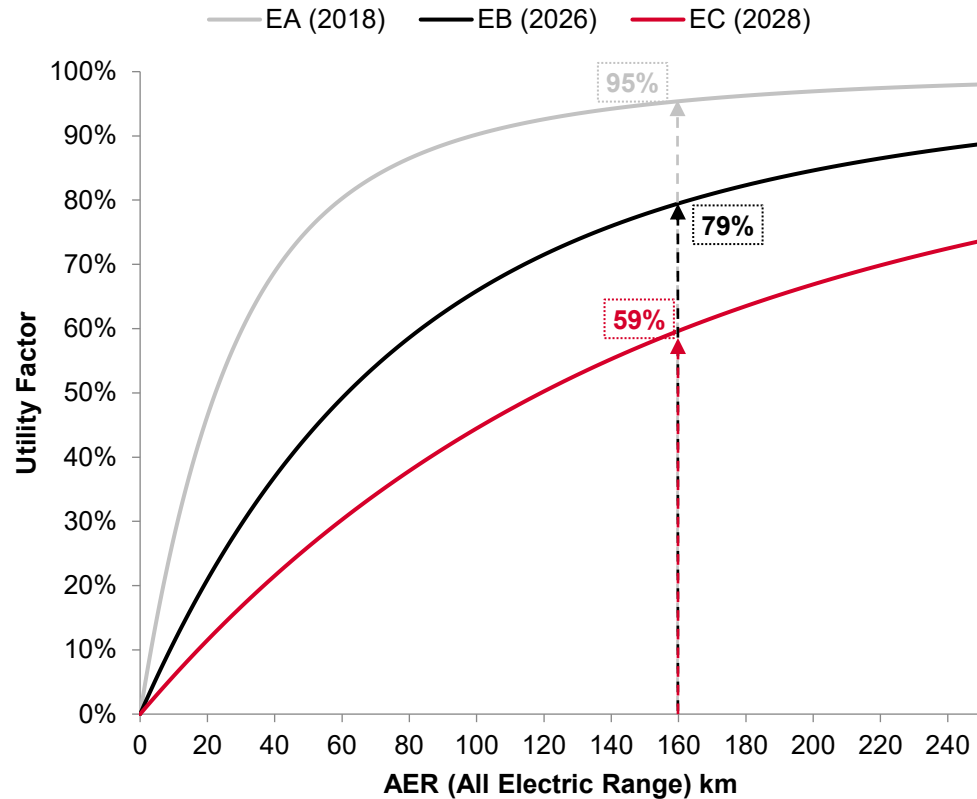
$M_{CS} = \text{Charge sustaining } CO_2$

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

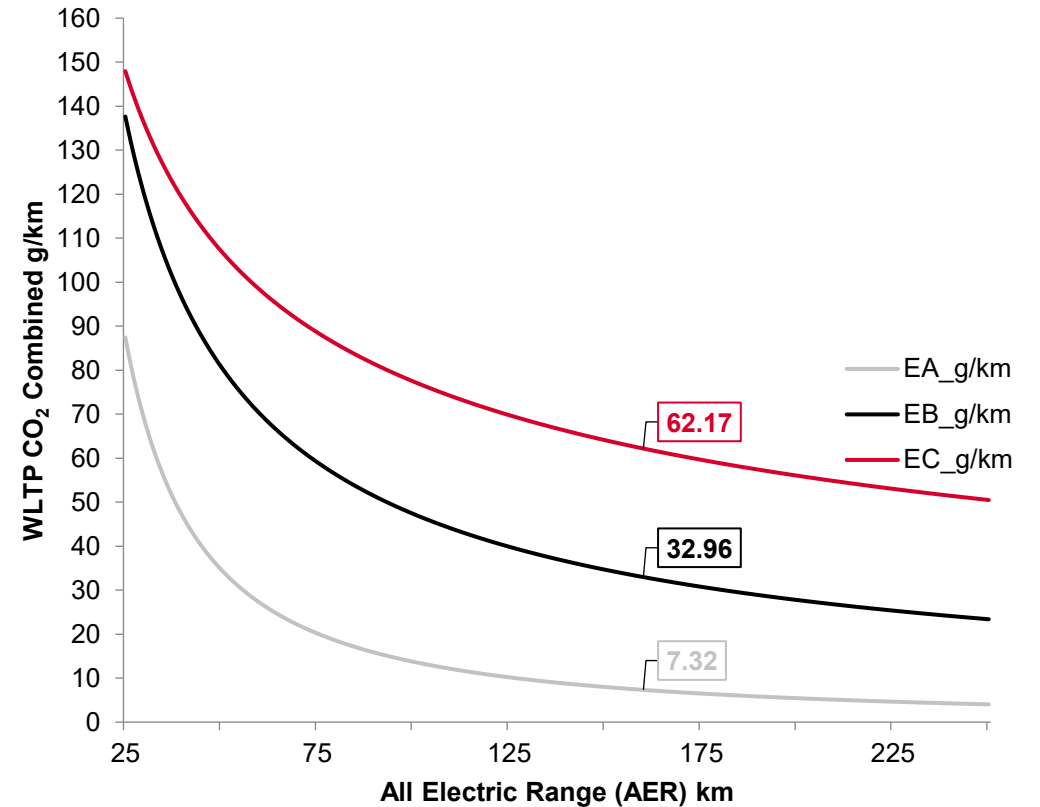
# Utility Factor revision: a step too far – or a necessary correction?

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

Utility Factor curve



CO<sub>2</sub> for OVC-HEV\* too high for viable BEV alternative?



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

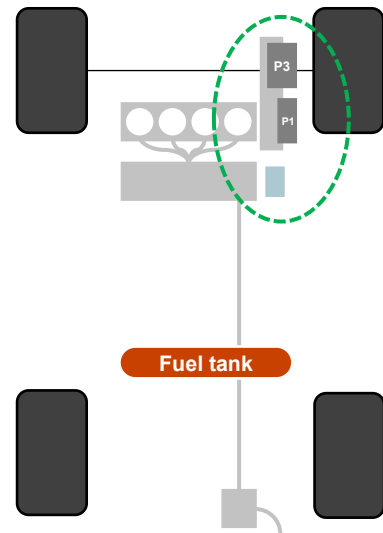
Date compiled March 2026.  
Source: S&P Global Mobility, Vehicle Performance and Compliance  
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$$CO_2 \text{ combined} = UF \times M_{CD} + (1 - UF) \times M_{CS}$$

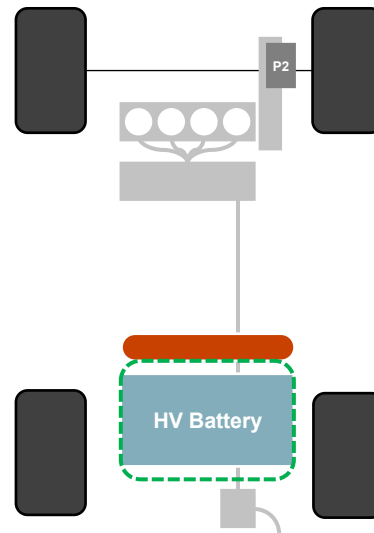
# Powertrain strategies to mitigate CO2 emissions increase

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

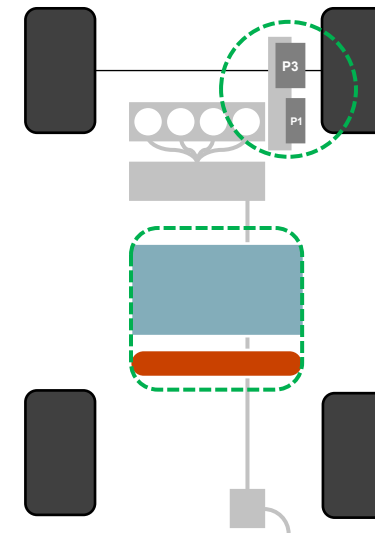
	FHEV P1+P3 Yaris Cross	PHEV P2 Peugeot 308	PHEV P1+P3 BYD Atto 2 DM-i	REEV P1+P4 Leapmotor B10 e-hybrid
CO2 WLTP (g/km)	101	50	<b>41</b>	55
Battery capacity (kWh)	<1	17.2	18	18.8
AER (km)	-	85	90	86
CO2 emissions	↘ (No UF)	↘↘	↘↘↘	↘↘
Cost	↗	↗↗↗	↗ ↗	↗ ↗
Powertrain compacity	→	↘↘↘	↘	↘↘
Vehicle length (mm)	<b>4172</b>	4367	4330	4530



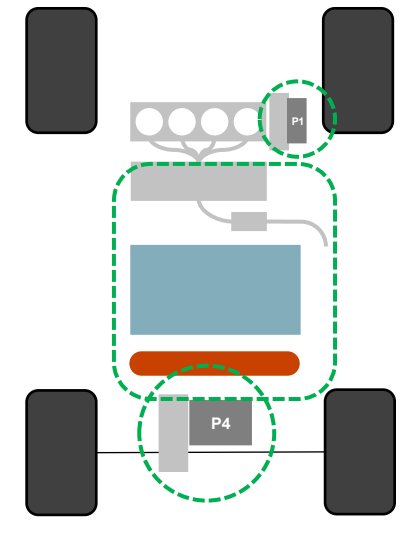
FHEV only, keeping total sys. cost low  
Focus mostly on transmission efficiency



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

## Strategic rationale

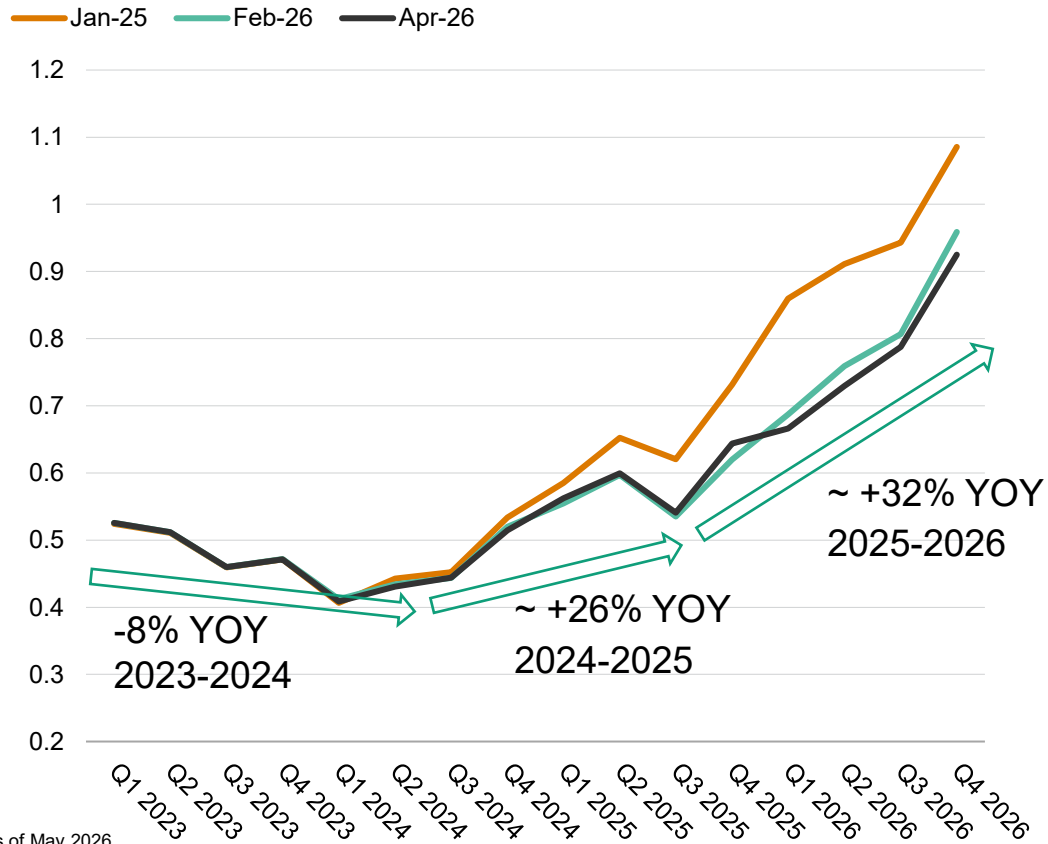
Key evolutions in green

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# High growth in BEV volumes expected in 2026

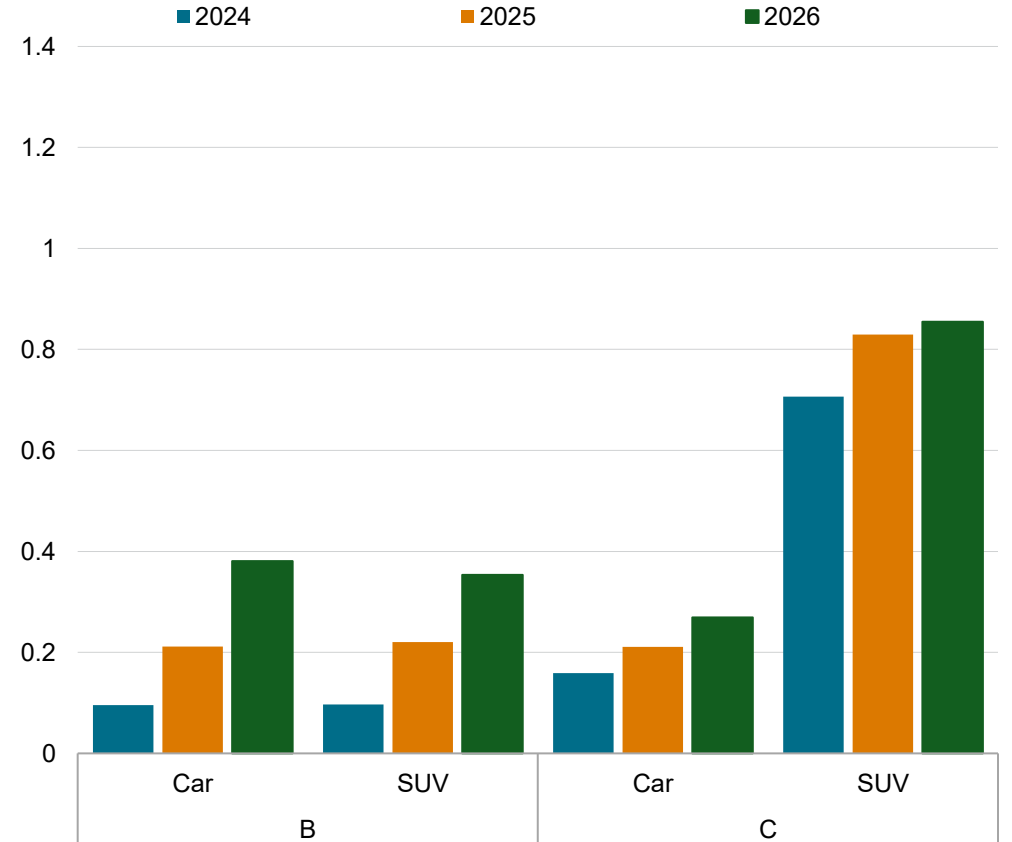
The CO<sub>2</sub> regulation framework design creates an inevitable stop-and-go momentum on the EV market

Quarterly short-term BEV production in Europe (millions)



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

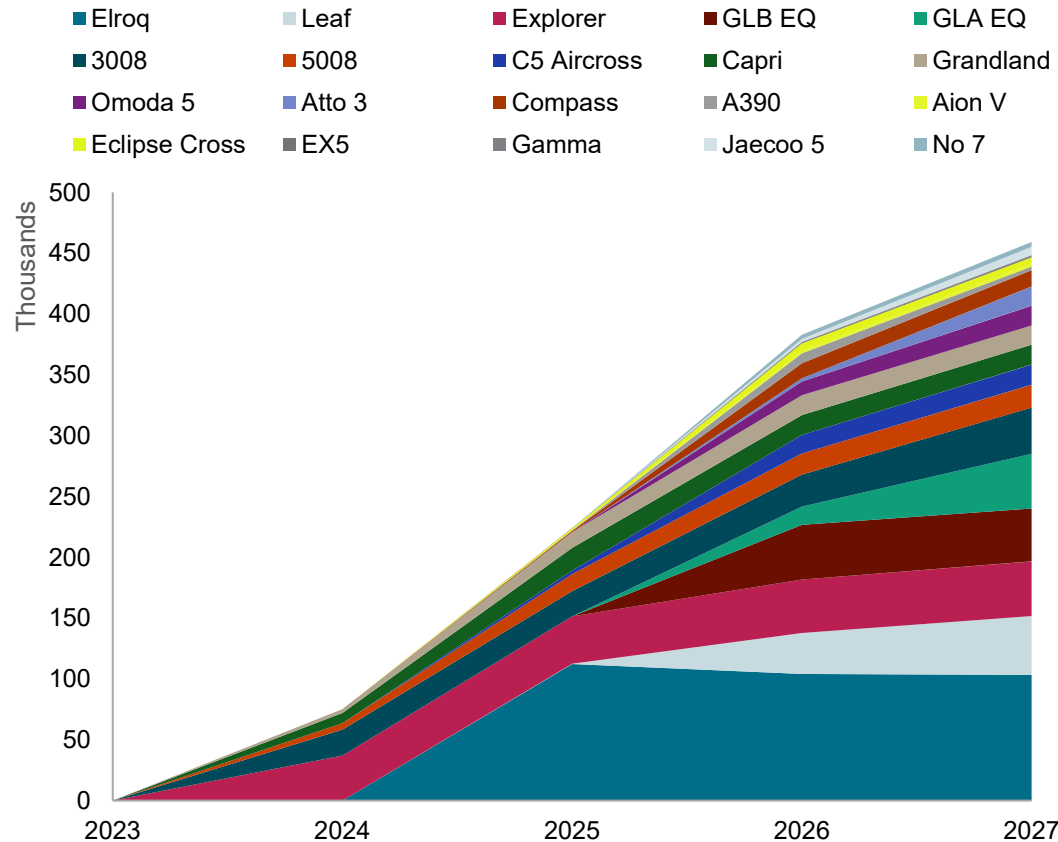
Strongest BEV growth in high potential volumes segments (millions)



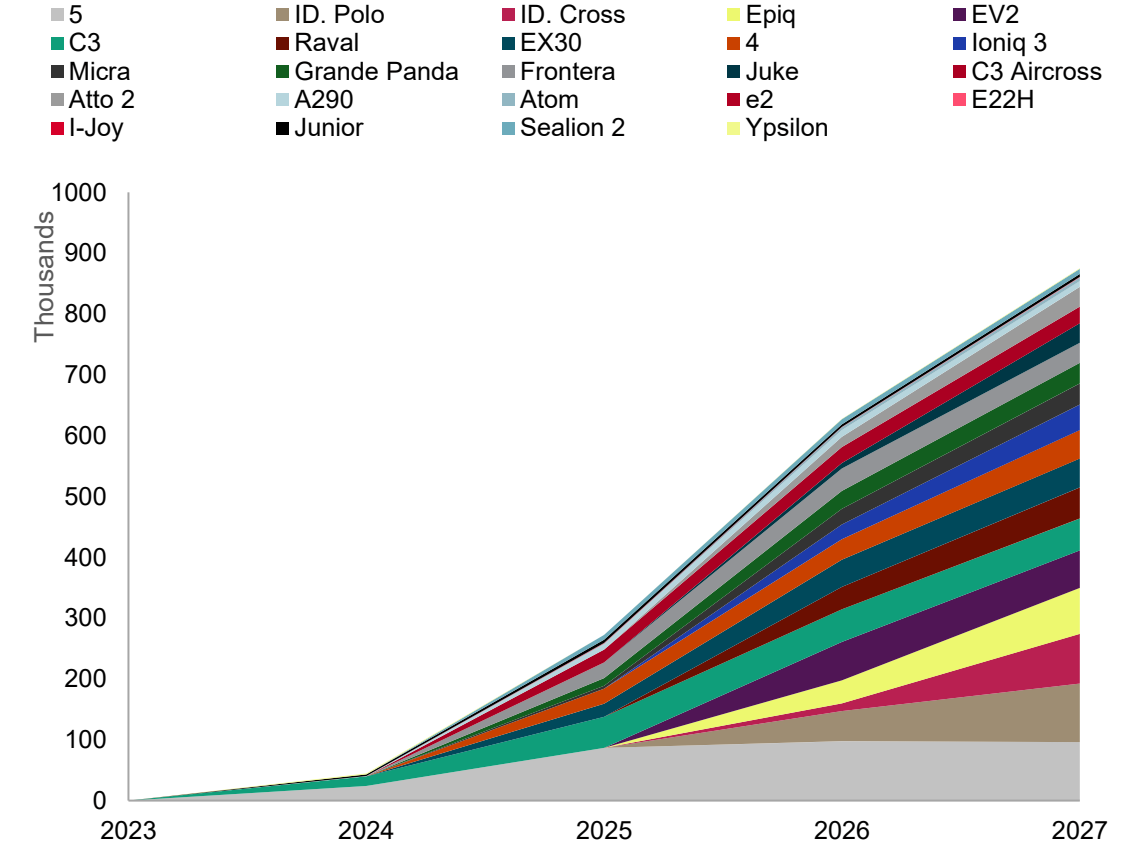
# High growth in BEV volumes was expected in 2025 but postponed to 2026–27

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**



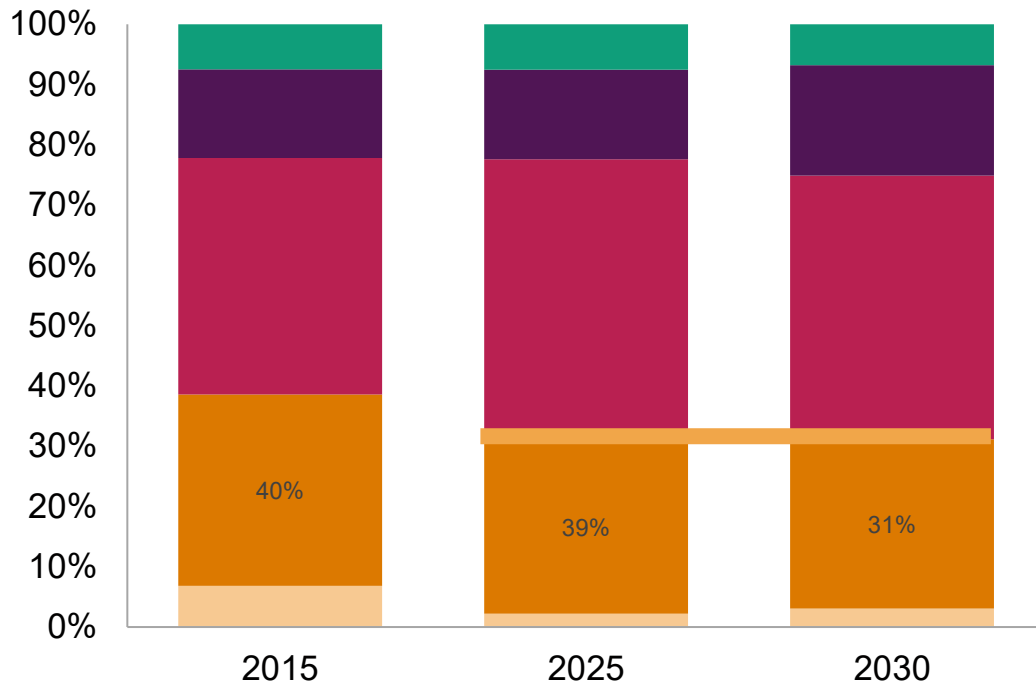
As of March 2026.  
 Light Vehicle Powertrain Production Forecast, February 2025.  
 Source: S&P Global Mobility.

# 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**

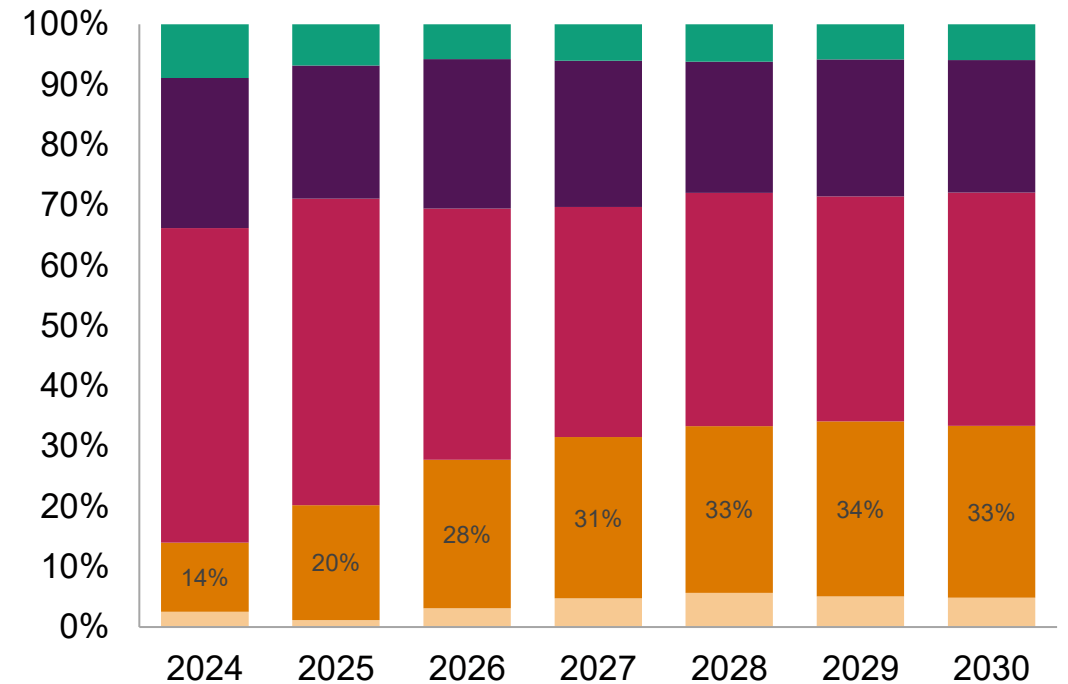
■ A-Segment ■ B-Segment ■ C-Segment ■ D-Segment ■ E-Segment



As of March, 2026.  
Source: S&P Global Mobility, Powertrain Production Forecast, February 2026.  
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**Share of each Segment in European BEV production**

■ A-Segment ■ B-Segment ■ C-Segment ■ D-Segment ■ E-Segment

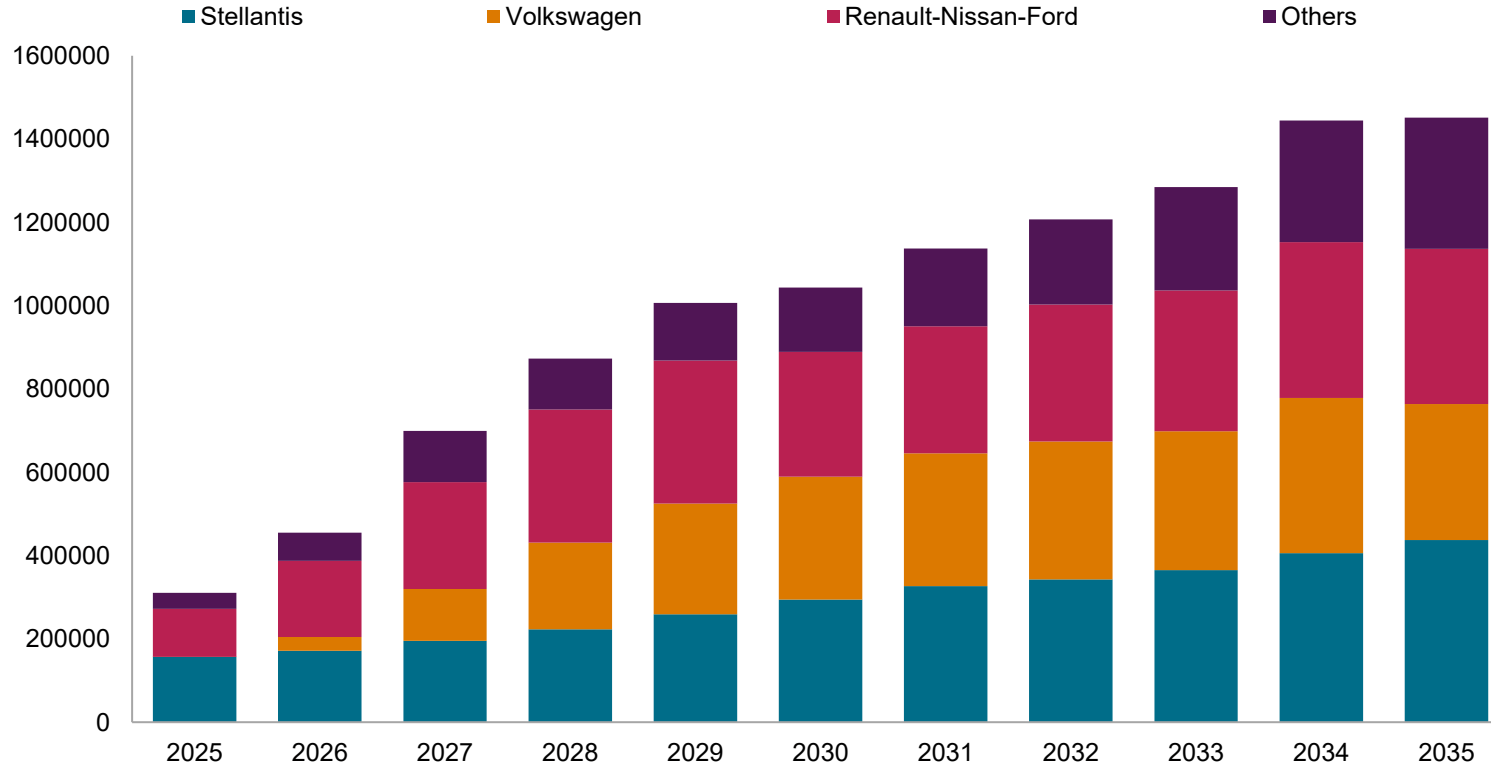


As of March, 2026.  
Source: S&P Global Mobility, Powertrain Production Forecast, February 2026.  
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# M1E Category - Market Sizing and Preliminary Assessment

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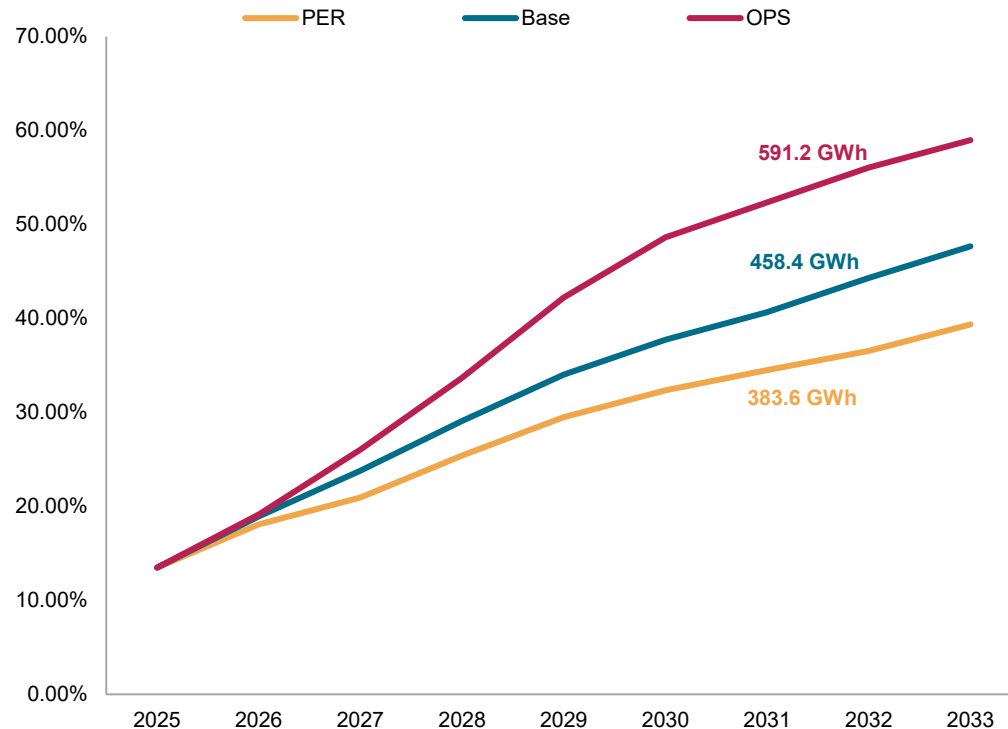
- Sourcing from FTA or customs-aligned countries (such as India, South Korea, Morocco) could scale output to ~2M vehicles by 2030.
- Final IAA framework could influence OEMs decision on industrial footprint.
- The 1.3 multiplier on M1E would shift EU BEV share in 2030 by ~2 to 4% which would remain far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

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

# 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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