



## How the 3-year average flexibility weakens the 2025 car CO<sub>2</sub> target and delays BEVs

### Summary

In this paper, T&E has analysed the impact of various flexibilities for compliance with the EU's 2025 car CO<sub>2</sub> target. The analysis covers the flexibilities [proposed](#) by ACEA: the 90% phase-in and the 5-year averaging of the compliance period 2025-2029, as well as the 3-year average flexibility option (announced by the European Commission in the Automotive plan) as well as other alternatives like the 2-year averaging and banking and borrowing.

The analysis shows that both flexibilities proposed by ACEA (5-year averaging and 90% phase-in) have by far the biggest impact on the reduction of the ambition level of the 2025 target as it allows carmakers to keep EV sales at a similar level to 2024, resulting in further EV market stagnation, loss of competitiveness longer term and depriving drivers of more affordable EV models. These options are covered in more depth in a previous analysis<sup>1</sup>.

The European Commission's plan to set up a 3-year averaging will weaken the 2025 CO<sub>2</sub> targets as it allows the car industry to sell less electric cars in 2025. This would delay the scale up of EV production in Europe and remove pressure on the industry to roll out cheaper EV models in 2025.

T&E calculates that it would lead European carmakers to sell up to 880,000 fewer electric cars between 2025-2027 than under the current target and would remove pressure on the industry to roll out more affordable EV models. Each electric car not sold would be replaced by an additional combustion car which will consume altogether a total of around 21 billion liters of oil during their lifetime and lead to additional emissions of 50 Mt, equivalent to the annual emissions of Norway. In 2025 alone, T&E expects around 600,000 fewer electric cars sold. A significant share of these missing EVs would be affordable, mass-market models, as they typically yield lower profits and are therefore the first to be scaled back in favor of more profitable combustion vehicles.

This change in the regulation rewards industry laggards and does little for Europe's car industry except to leave it further behind China on electric vehicles. The EU risks creating very damaging uncertainty by changing the framework of the regulation during a compliance year. To restore confidence and put Europe and its industry on track in the EV transition, the EU should firmly commit and confirm the 2035 100% zero emission car target.

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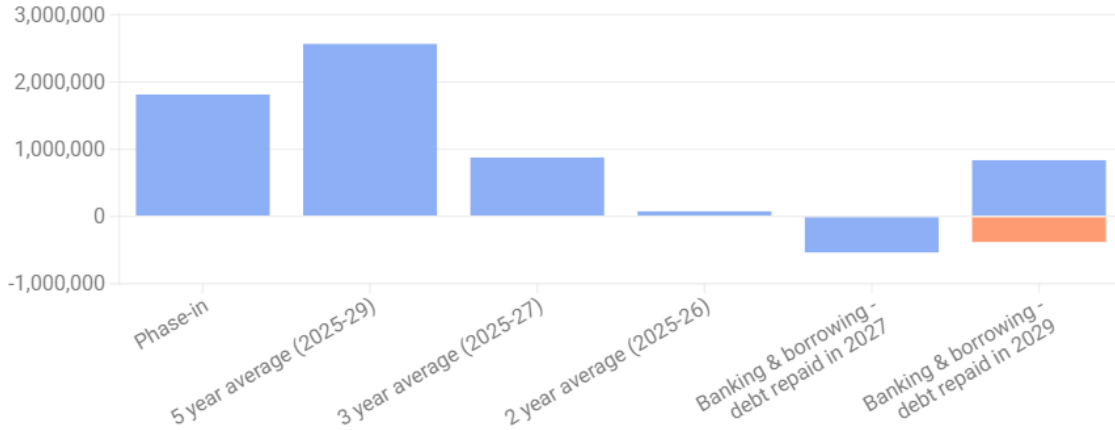
<sup>1</sup> T&E (2025). How carmakers' 'relief measures' could kill the 2025 car CO<sub>2</sub> target [Link](#)

## Most flexibilities could result in significant BEV sales losses in 2025-2027

The 2 year average flexibility would minimise the impact on the ambition of the targets

■ BEV sales change over 2025-27 ■ BEV sales exceeding the maximum BEV potential over 2028-29

Maximum BEV sales lost over 2025-27 (units)



Source: T&E analysis - BEV sales between the flexibility scenario and the maximum BEV potential scenario. In the flexibility scenario, we assume that carmakers do the minimum to comply. Negative values are additional BEVs placed on the market compared to the maximum BEV potential scenario.

Results	European carmakers				Whole market
	Total BEV lost in 2025	Total BEV lost over 2025-27	Affordable BEV lost over 2025-27	Lifetime CO2 from additional ICE sold over 2025-27 (MtCO2)	Additional lifetime CO2 over 2025-29 (MtCO2)
90% phase-in	430,000	1,8 million	260,000	60	75
5 year average (2025-29)	600,000	2,6 million	520,000	85	185
3 year average (2025-27)	600,000	880,000	190,000	29	50
2 year average (2025-26)	170,000	75,000	-	2	20



<b>Banking and borrowing (debt repaid in 2027)</b>	290,000	-540,000	- 270,000	-18	-35
<b>Banking and borrowing (debt repaid in 2029)</b>	290,000	840,000 (-380,00 in 2029)	140,000	28	5

### 1. Phase-in (90% in 2025 and 95% in 2026)

The 90% phase-in of the target in 2025 allows carmakers to exclude 10% of the most polluting vehicles from the emissions average. Because these vehicles are simply not counted towards reaching the target, this flexibility reduces the ambition of the 2025 target and can result in a significant increase in CO2 emissions.

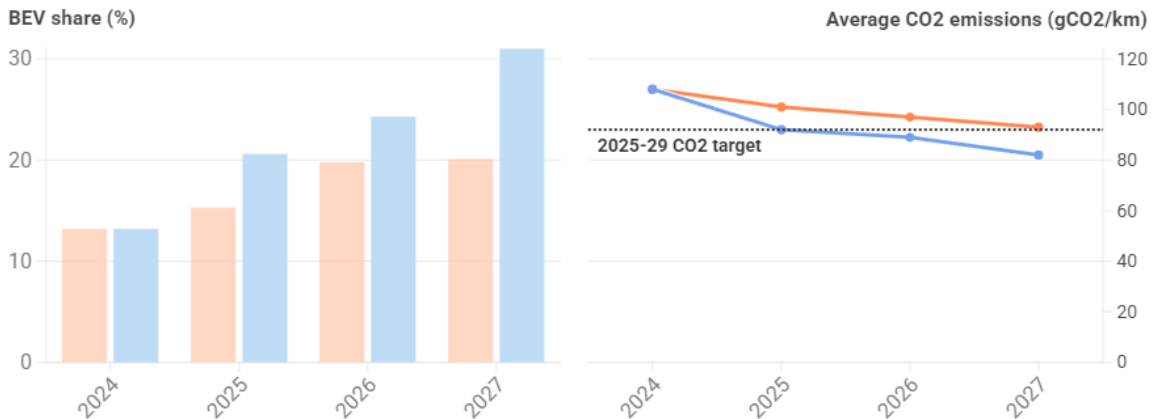
T&E analysis shows that with a 90% phase-in, carmakers would be able to comply with the 2025 target by selling only 2 percentage point more EVs compared to 2024. As a result, sales of EVs would stagnate.

A 90% phase-in would save around 8 gCO2/km per carmaker, equivalent to a 9% bonus on the 2025 target. Introducing this flexibility would effectively reduce the emissions reduction target from 15% to just 7%. Looking at the major European carmakers, the phase-in could reduce their BEV sales by a third compared to a scenario where all carmakers meet their 2025 targets (maximum BEV potential scenario). With the phase-in, EU carmakers could therefore meet their 2025 targets by increasing their BEV sales by only 2 percentage points (%p) compared to 2024 while focusing on selling 19%p more hybrids. Carmakers could therefore limit BEV sales to 15% instead of increasing sales to reach the maximum potential of 21% if all European carmakers meet their 2025 CO2 target without pooling. In 2026, a 95% phase-in would allow European carmakers to cap BEV sales at 20% instead of 22% if they do the minimum to meet the regulation without phase-in, or 25% in the maximum potential scenario, based on a market forecast purchased by T&E.

## 90% phase-in leads to lower BEV sales and higher carbon pollution

This could lead to the loss of up to 1.8 million BEVs over 2025-2027

■ CO2 in the phase-in scenario 
 ■ CO2 in the maximum BEV potential scenario 
 ■ BEV share in the phase-in scenario 
 ■ BEV share in the maximum BEV potential scenario



Source: T&E analysis · Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Phase-in scenario where all carmakers sell the minimum BEV to meet their target when a 90% phase-in is applied in 2025, and a 95% phase-in in 2026. Scope: European carmakers sales in the EU and Norway.

Overall, we estimate that the introduction of the phase-in could result in a cumulative loss of up to 1.8 million BEV sales in 2025-2027 compared to the maximum BEV potential scenario<sup>2</sup> with a loss of 430,000 BEV sales in 2025 alone. The additional ICEs sold in 2025-2027 by European carmakers would emit 60 MtCO<sub>2</sub> over their lifetime, close to the annual emissions of Ireland. Looking at the total market (including non-European carmakers), the phase-in scenario results in 75 MtCO<sub>2</sub> from the lifetime emissions of vehicles sold in 2025-29, equivalent to the annual emissions of Denmark. Sales of affordable models (under €25k) and mass-market models (segment A-C, excluding premium) would also be delayed as a result of the phase-in, with 260,000 affordable models and 850,000 mass-market models (from the six main European carmakers) missing from the market in 2025-2027.

Allowing highly polluting models to be sold within the excluded 10% of sales in 2025 and 5% in 2026 could also lead to further additional CO<sub>2</sub> emissions as carmakers are likely to increase sales of the most polluting and profitable SUVs. This would benefit sales of ICE variants that can reach more than 300 gCO<sub>2</sub>/km, such as the Audi SQ8, BMW X5 and Mercedes G500 and may lead to additional production of these models.

In the period after 2027, there is a lot of uncertainty about carmakers' strategies. In theory, they could follow a minimum BEV scenario by limiting BEV sales to the minimum required to meet

<sup>2</sup> 1 million BEVs sold by European carmakers in 2024. In the maximum BEV potential scenario, BEV sales would increase up to 2.7 million in 2027.



the 2027 target by 2029. This scenario would lead to a significant gap between the CO2 emissions achieved in 2029 and the 2030 target.

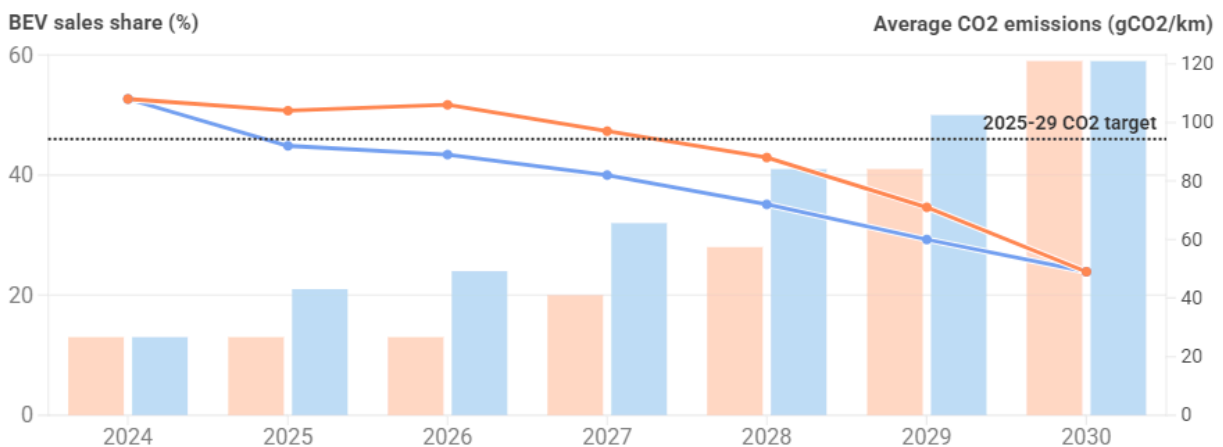
## 2. Averaging compliance for 2025-2029 (5 years)

The multi-year compliance allows carmakers to average the CO2 emissions over the whole period 2025-2029 and compare it with the target over the same period. This flexibility allows carmakers to keep their BEV sales stagnant at 2024 levels until 2026, and only start to increase their sales from 2027.

### BEV sales could stagnate for 2 more years if multi-year compliance is used

This could lead to the loss of up to 2.6 million BEV sales over 2025-2027

■ CO2 in the maximum BEV potential scenario ■ CO2 in the multi-year compliance scenario  
■ BEV share in the multi-year compliance scenario ■ BEV share in the maximum BEV potential scenario



Source: T&E analysis - Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Multi-year compliance scenario where carmakers sell the minimum BEV to comply when emissions are averaged over 2025-2029. Scope: European carmakers sales in the EU and Norway.



This would lead to slower EV adoption during 2025-2029: the 2-year delay in the BEV ramp-up could result in the loss of up to 2.6 million European BEV sales over the 2025-2027 period compared to the maximum BEV potential scenario (based on market forecast), with a loss of 600,000 BEV sales in 2025 alone. The additional ICEs sold over 2025-2027 by European carmakers would emit 85 MtCO2 over their lifetime, equivalent to the annual combined emissions of Hungary and Lithuania. Looking at the total market, this scenario results in 185 MtCO2 from the lifetime emissions of all vehicles sold in 2025-29, equivalent to the annual emissions from Belgium and Austria combined. As a result of the stagnation in 2025-2026, carmakers could keep the same sales mix as 2024, so 520,000 affordable models and 1.1



million mass-market models (from the six main European carmakers) would be missing in 2025-2027.

### **Why overcompliance in 2028-9 may have little to no effect**

Contrarily to the phase-in flexibility, the multi-year compliance pushes carmakers to overcomply with the -15% target during the period 2025-2029 if they aim to compensate for higher emissions during the years 2025-2027. As the 2030 target requires more than 50% BEV sales, carmakers are expected to ramp up BEV production in the years before. They would therefore voluntarily overachieve the targets in 2028-9, even in a scenario without multi-year average compliance. Indeed, carmakers would continue to bring more affordable models towards the end of the decade, e.g. Renault Twingo at €20k in 2026 and VW ID.1 at 20k€ in 2027. As a result, the additionality of the overcompliance in 2028-9 is very uncertain. For this reason we choose to focus our analysis on the short-medium term impact as these flexibilities would have little to no impact on the years 2028-29.

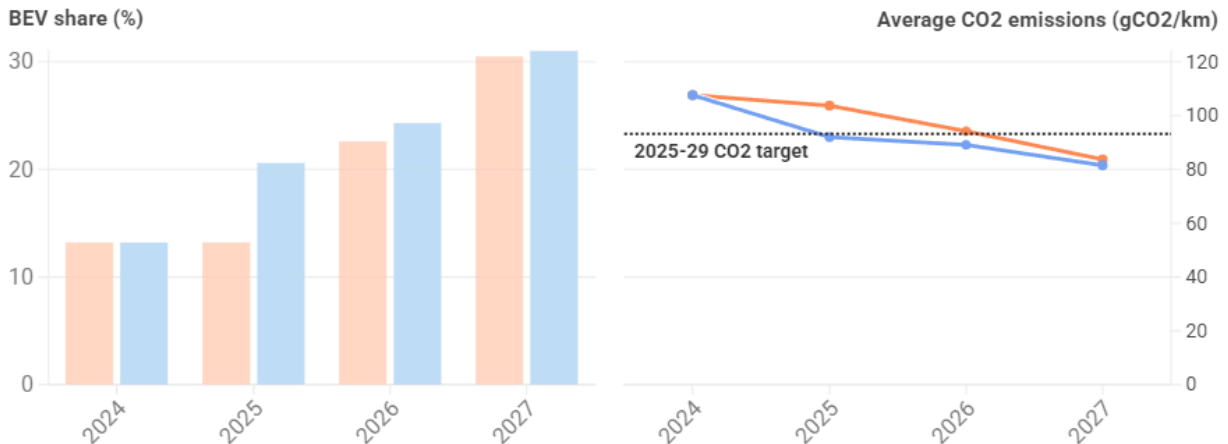
### **3. Averaging compliance for 2025-2027 (3 years)**

Limiting the averaging mechanism to the 2025-2027 period (3 years) would limit the number of BEV lost compared to the 5-year averaging option as carmakers would only stagnate BEV sales until 2025 and would then need to start increasing BEV sales in 2026 to overcomply in 2027. However, this option would still lead to a loss of up to 880,000 BEV sales from European carmakers over 2025-27 compared to the maximum BEV potential scenario, with a loss of 600,000 BEV sales in 2025 alone. The additional ICEs sold by European carmakers instead of the BEV lost would emit 29 MtCO<sub>2</sub> in their lifetime, close to the annual emissions of Lithuania and Luxembourg combined. Looking at the total market, the 3-year average scenario results in 50 MtCO<sub>2</sub> from the lifetime emissions of all vehicles sold in 2025-29, equivalent to the annual emissions of Norway. In total over 2025-27, up to 190,000 affordable models and 490,000 mass-market models would be missing from the six main European carmakers' sales.

## BEV sales could stagnate in 2025 if a 3-year compliance is used

This could lead to the loss of up to 880,000 BEVs over 2025-2027

■ CO2 in the 2025-27 average scenario   
 ■ CO2 in the maximum BEV potential scenario  
■ BEV share in the 2025-27 average scenario   
 ■ BEV share in the maximum BEV potential scenario



Source: T&E analysis · Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Multi-year compliance scenario where carmakers sell the minimum BEV to comply when emissions are averaged over 2025-2027. Scope: European carmakers sales in the EU and Norway.

### 4. Averaging compliance for 2025-2026 (2 years)

The 2-year averaging flexibility would require carmakers to increase BEVs sales in 2025 compared to 2024 -albeit to a lower level than in the full compliance scenario- and then lead to slight overcompliance in 2026. Carmakers could limit the BEV sales share in 2025 to 19% (instead of the 21% required without the averaging mechanism), but would have to increase BEV sales to 25% in 2026.

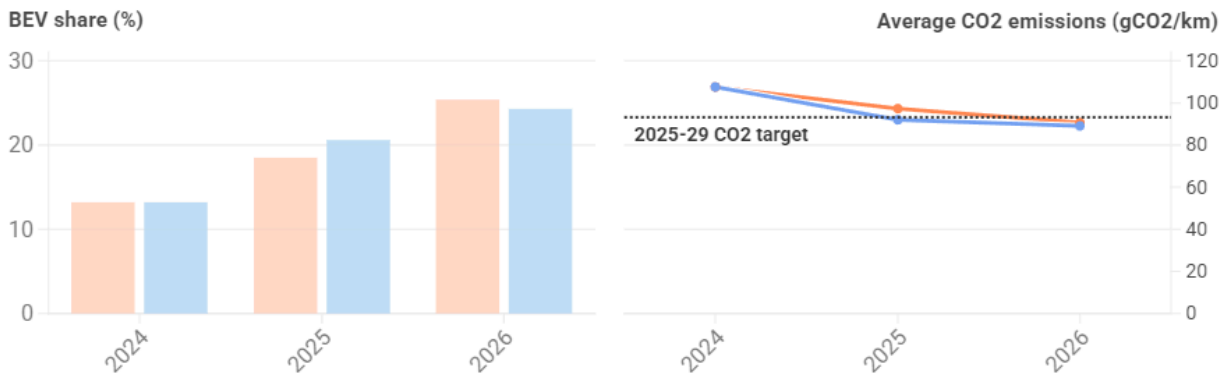
For this flexibility, we focus the results on the period 2025-2026 given the EV sales and CO2 emissions in 2026 would catch up with the market forecast trajectory. The 2025-2026 average would thus have no impact on sales in 2027.

The 2-year flexibility would have minimal weakening of the regulation. In our modelled scenario, BEV sales are reduced by 75,000 units over 2025-2026 compared to the market forecast scenario, with a loss of 170,000 BEV sales in 2025 alone. The additional ICEs sold by European carmakers instead of the BEVs would emit 2 MtCO2 in their lifetime, or equivalent to the annual emissions of Malta. Looking at the total market, this scenario results in 20 MtCO2 from the lifetime emissions of all vehicles sold in 2025-29.

## The BEV share would have to reach 25% in 2026 if a 2-year compliance is used

This would limit the maximum loss to 75,000 BEVs over 2025-2026 compared to a maximum BEV potential scenario

■ CO2 in the 2025-26 average scenario   
 ■ CO2 in the maximum BEV potential scenario  
■ BEV share in the 2025-26 average scenario   
 ■ BEV share in the maximum BEV potential scenario



Source: T&E analysis - Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Multi-year compliance scenario where carmakers sell the minimum BEV to comply when emissions are averaged over 2025-2026. Scope: European carmakers sales in the EU and Norway.

## 5. Banking and borrowing

Another option would be to implement a banking and borrowing system similar to the heavy duty CO2 regulation. The banking and borrowing system we model here has the same safeguards as in the heavy duty CO2 regulation: 5% limit on the debt, linear trajectory for credits, and cut off periods where debt has to be cleared. In addition we model a 5% interest rate on the CO2 credits borrowed. For more on these safeguard conditions, see infobox below.

To quantify the impact of the flexibility, we have modelled the two most likely scenarios, which differ for the year in which the 2025 debt (under-compliance) is compensated with credits by overcomplying beyond the linear trajectory line: either 2027 or 2029. The rationale for compensating in 2027 is that carmakers are planning to launch new affordable models, such as the VW ID.1, or to ramp up production of 2026 models, such as the Renault Twingo. While 2026 would probably be too early for carmakers to repay their 2025 debt, 2027 seems to be the earliest realistic date. In the other scenario, carmakers continue to sell the minimum number of BEVs for as long as possible and wait until 2029 to compensate for the debts. Market forecasts show that overcompliance beyond the trajectory line is most likely in 2029 as carmakers will aim to close the gap with the approaching 2030 target.





- Debt compensated in 2027: European carmakers could increase BEV sales in 2027 to achieve CO2 emissions 5% below the credit limit which is defined as a linear trajectory between the 2025 and 2030 targets. In this scenario, we estimate that European carmakers would achieve a 17% BEV share in 2025 before increasing sales up to 40% in 2027. This option could increase BEV sales above our maximum BEV potential scenario which is aligned with a market forecast (32% BEV share in 2027). This scenario would add 540,000 BEV sales over 2025-2027, and a loss of 290,000 BEV sales in 2025 alone. The additional ICEs that would have been sold by European carmakers instead would have emit 18 MtCO2 in their lifetime, so this scenario would save 18 MtCO2, or more than the annual emissions of Slovenia. Looking at the total market, this scenario results in a saving of 35 MtCO2 from the lifetime emissions of all vehicles sold in 2025-29. This scenario would lead to the additional sales of 270,000 affordable BEVs and 320,000 mass-market models. However, in this scenario, EV sales could stagnate in the period 2027-29, thus possibly reducing the benefits highlighted above.
- Debt compensated in 2029: European carmakers could wait until 2029 to compensate their debt in 2029 by increasing the BEV share up to 55%. This option could increase BEV sales in 2029 above our maximum BEV potential scenario (50% in 2029) but the BEV share would stay lower than the maximum BEV potential over 2025 to 2028. This scenario would lead to the loss of up to 840,000 BEVs over 2025-2027, but it implies a loss of 290,000 BEV sales in 2025 alone. This would be partly compensated by a positive impact (versus the maximum BEV potential) in the 2028-29 period with 380,000 additional BEVs sold in 2029. The additional ICEs sold by European carmakers instead of the BEV lost during 2025-27 would emit 28 MtCO2 in their lifetime, or close to the annual emissions of Lithuania and Luxembourg combined. Looking at the total market, this scenario results in 5 MtCO2 from the lifetime emissions of all vehicles sold in 2025-29. In total over 2025-27, about 140,000 affordable models and 470,000 mass-market models would be missing from European carmakers sales compared to our maximum BEV potential scenario.

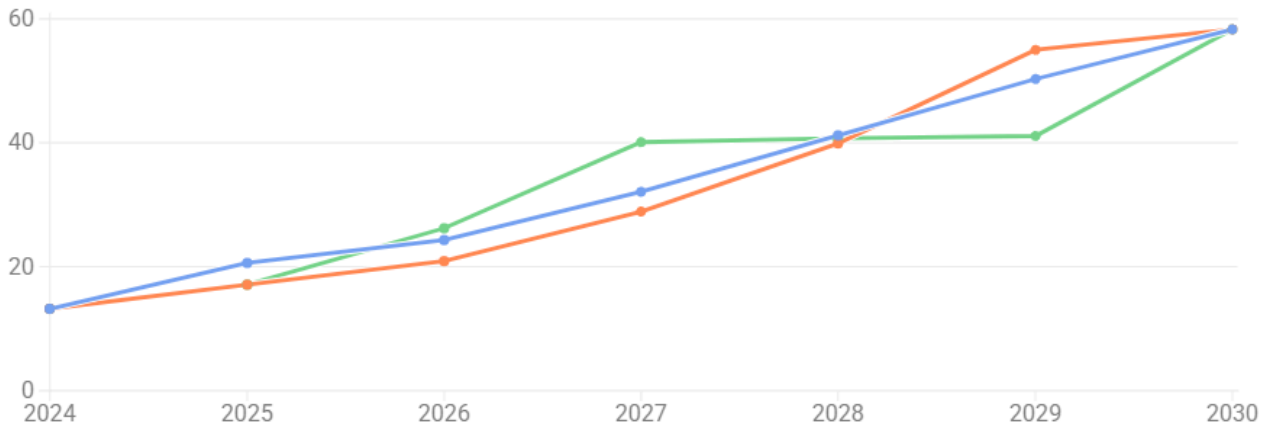
The scenario with credits earned in 2029 appears more likely than the one with credits earned in 2027 as carmakers are more likely to wait until the last year of the compliance period to increase their BEV sales. The difference between the BEV share in the over-compliance year and the maximum BEV potential is indeed lower in 2029 (5%p) compared to 2027 (8%p). However, carmakers may have different individual strategies, leading to very different outcomes and higher uncertainty on the overall impact of banking and borrowing.

## Banking & borrowing impact on BEV sales uncertain

Carmakers would still have the option of waiting until 2029 to offset 2025 weakening

- BEV share with the debt repaid in 2027
- BEV share with the debt repaid in 2029
- BEV share in the maximum BEV potential scenario

BEV share (%)



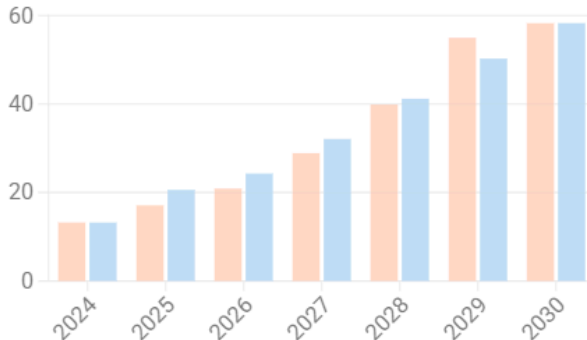
Source: T&E analysis • Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Banking & borrowing scenario where carmakers sell the minimum BEV to comply when the CO2 debt contracted in 2025 is repaid in 2027 and 2029. Scope: European carmakers sales in the EU and Norway.

## Carmakers risk waiting until 2029 to sell additional BEVs to offset 2025 CO2 weakening

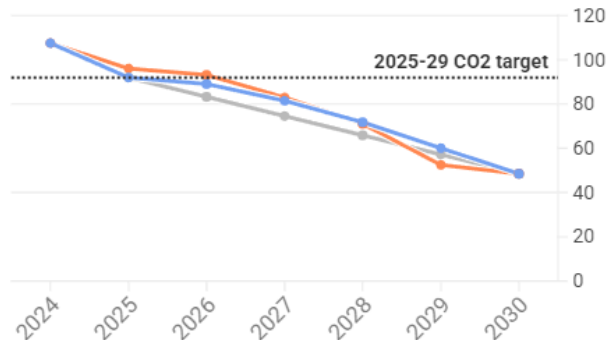
This could lead to the loss of up to 840,000 BEVs over 2025-2027

- Credit limit
- CO2 in the banking & borrowing scenario (debt repaid in 2029)
- CO2 in the maximum BEV potential scenario
- BEV share in the banking & borrowing scenario (debt repaid in 2029)
- BEV share in the maximum BEV potential scenario

BEV share (%)



Average CO2 emissions (gCO2/km)



Source: T&E analysis • Maximum BEV potential scenario where all carmakers meet their target in 2025 and then follow a market forecast from 2026. Banking & borrowing scenario where carmakers sell the minimum BEV to comply when the CO2 debt contracted in 2025 is repaid in 2029. Scope: European carmakers sales in the EU and Norway.

**Strong safeguards are needed in the implementation of the banking and borrowing system**

- Linear trajectory for banking: Credits are earned when the CO2 performance surpasses the linear trajectory between the 2025 -15% target and the 2030 -55% target. The linear trajectory is a critical safeguard to keep in place in the case of a banking & borrowing scheme. In the absence of the credit linear trajectory line, banking and borrowing is similar to a 5-year period average which means much higher weakening as shown in this analysis.
- Limit to total borrowing of 5%: If a carmaker missed the target by more than 5%, the excess has to be paid as a penalty. This avoids excess borrowing which can lead to situations where penalties accumulate over the year.
- Cut off periods where all debts have to be cleared: At the moment of the cut off period the borrowing (debts) should either be cleared by credits (banking) or by paying the associated penalty. These periods should be 2025-(end of)2027, and 2030- (end of) 2032. Credits should also expire after a set number of years.
- Interest rate at 5%: As done in the UK banking and borrowing, an EU banking and borrowing should introduce a 5% interest rate to discourage the excessive use of this flexibility. In other words, if a carmaker borrows 100, it has to compensate (or pay as penalty) a debt of 105 the following year. Without this interest rate, there is an incentive to pay the penalty at the end of the cut off period (in 2030) and not to repay their CO2 debt since the value of the penalty would have decreased due to inflation.

## Methodology and assumptions

### A. General assumptions

- Geographical scope: EU27 and Norway
- “European carmakers” are defined by the largest carmakers headquartered in Europe: BMW, Mercedes-Benz, Renault-Nissan-Mitsubishi pool (assumed to be European as Renault Group has the largest share in the pool), Stellantis, Volvo Cars and Volkswagen.
- Cumulative emissions up to 2040 are calculated based on an average vehicle mileage of 225,000 km spread over 15 years. We assume a 19% difference between WLTP emissions and real-world emissions based on [OBFCM data](#). Average WLTP emissions of ICEs in each year are based on our baseline CO2 model (see section C for details) including a sales mix of all non-BEV powertrains.
- When looking at the additional emissions in the total market between 2025 and 2029, we considered the emissions trajectories of both European and non-European carmakers. We carried out a comprehensive analysis of the European carmaker group in the scenarios detailed below. Where flexibilities are applied for a limited number of years, we have assumed that carmakers will catch up with the maximum BEV potential scenario when the averaging flexibilities expire, while the phase-in scenario is assumed to catch-up in 2028. The emissions of the group of non-European car manufacturers are not modelled by a comprehensive analysis due to uncertainties regarding the sales of Tesla and Chinese car manufacturers. Instead, we have estimated the emissions of the non-European carmakers based on the average between 2 scenarios:
  - A minimum emissions scenario is based on T&E's modelling of the 2025 CO2 target and a market forecast for non-European carmakers from 2026. This is an optimistic scenario as some non-European carmakers such as Toyota are expected to use the flexibility to reduce BEV sales compared to the market trend.
  - The maximum emissions scenario assumes that the non-European group has the same emissions as European carmakers. This is a pessimistic scenario as Tesla and some Chinese carmakers are expected to improve the emissions average of this group compared to European carmakers.

### B. 90% phase-in analysis

- The 90% phase-in was first modelled using 2023 sales data from the [European Environmental Agency](#) (EEA). We derived the CO2 savings from the phase-in and we applied the same CO2 bonus to 2025 within our CO2 modelling described in a previous ‘Drive to 2025’ [report](#) to define the 90% phase-in scenario. The 95% phase-in in 2026 is estimated by applying half of the 90% phase-in savings.
- Compared to the assumptions in our previous report, the maximum BEV potential scenario in 2025 (T&E central scenario in the previous report) has been updated to include new CO2 trends from the full year 2024 and the target calculation has been adjusted based on the updated TM0 parameter announced in the latest [Commission](#)

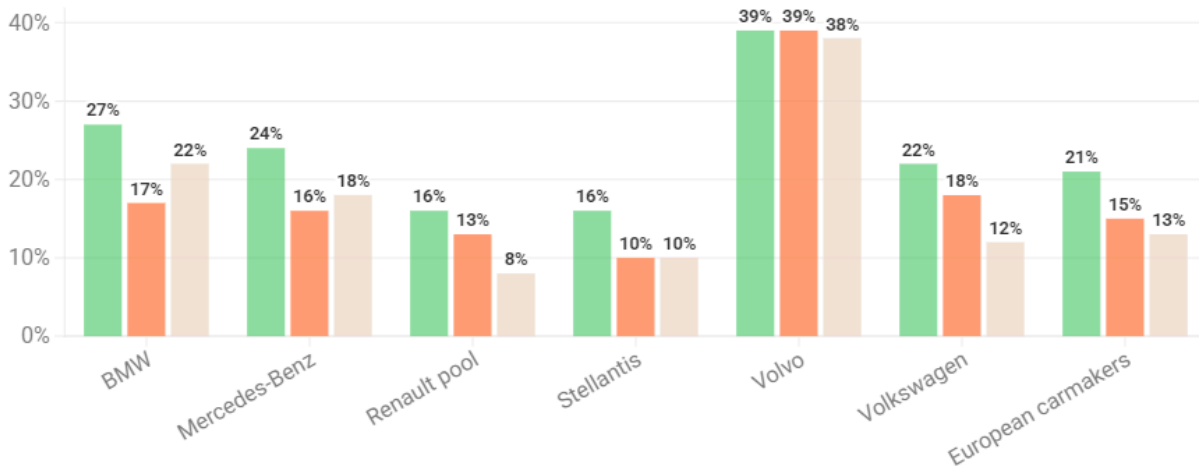
[Delegated Regulation](#). The maximum BEV scenario in 2025 implies both an increase in BEV sales, but also a significant increase in hybrid vehicle sales and improvements in engine efficiency for some carmakers. This scenario is based on the minimum BEV share required to meet the 2025 target and is built using a market forecast purchased by T&E. We therefore assume that the BEV share is the maximum between the market forecast and the minimum to meet the regulation. Carmakers such as Volvo, BMW and Stellantis overcomply by 38g CO<sub>2</sub>/km, 4 gCO<sub>2</sub>/km and 2gCO<sub>2</sub>/km respectively when using the market forecast data.

- The phase-in scenario assumes that each carmaker sells the minimum number of BEVs required to comply in each year between 2025 and 2027, while continuing to focus on increasing hybrid sales and improving engine efficiency. In this scenario, some carmakers such as BMW and Mercedes could reduce their BEV sales in 2025 compared to 2024, while Volkswagen would still need to increase its BEV sales.
- The impact of a 90% phase-in in 2025 for each European carmaker compared to the maximum BEV potential scenario is shown in the figure below:

### A 90% phase-in would cut a third of European carmaker BEV sales in 2025

■ 2025 - Maximum BEV potential scenario ■ 2025 - 90% phase-in scenario ■ 2024 sales

Share of the car market



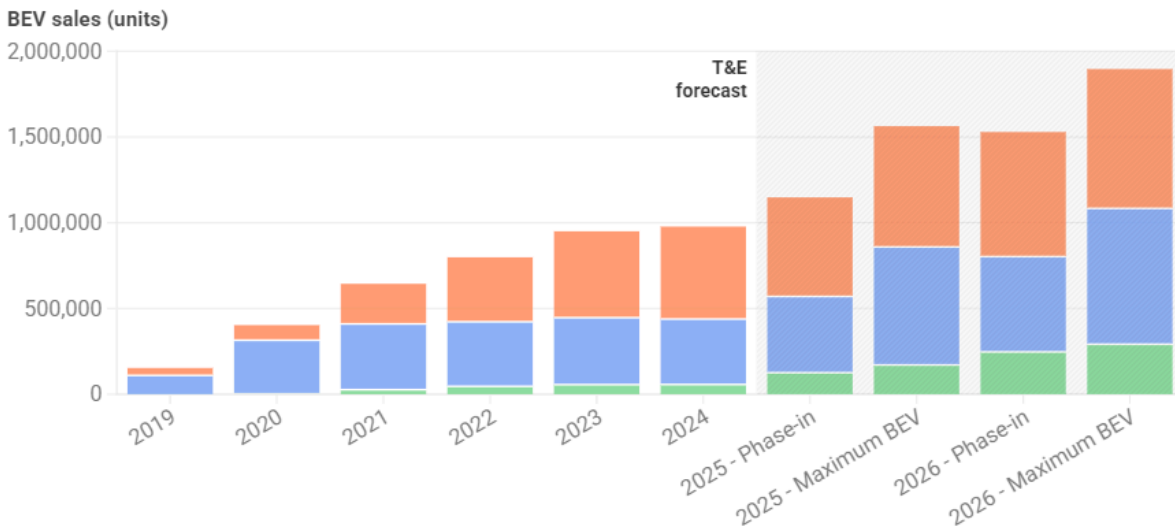
Source: T&E analysis - Maximum BEV potential scenario based on a market forecast where all carmakers meet their target in 2025 (Volvo, BMW and Stellantis would overcomply). Phase-in scenario where all carmakers sell the minimum BEV to meet their target when a 90% phase-in is applied in 2025. Scope: European carmakers sales in the EU and Norway.

- From 2026, the maximum BEV potential scenario is based on a market forecast purchased by T&E and previously used in the 'Drive to 2025' report.
- The following definitions were used to classify BEV models:
  - Each car brand was categorised as non-premium or premium based on a market forecast purchased by T&E and used in our previous 'Drive to 2025' report.

- Affordable models are those with a starting price below €25,000 in 2025, as identified by T&E from public sources.
- Mass-market models are BEV models in segments A to C from non-premium carmakers, excluding affordable models.
- Premium and large models are BEV models from premium brands and large models (segment D and above) from non-premium carmakers.
- As our CO2 modelling is broken down by carmaker, we identified the number of BEV sales lost per carmaker in the phase-in scenario and identified the affordability type of BEV models from each European carmaker. The impact on the combined sales of European carmakers sales in 2025-2027 is shown below:

### Mass-market BEV sales would be delayed if a phase-in is introduced

● Affordable models ● Mass-market models ● Premium and large models



Source: T&E analysis - Affordable models with a variant starting below €25,000. Mass-market models defined based on mass-market brands in segment A-C. Scope: European carmakers sales in the EU and Norway. Passenger vans/MPV excluded.

### C. 5-year average (2025-2029) analysis

- First, we created a baseline scenario for the European carmakers (assuming a single group with no breakdown per carmaker in this section), powertrain sales and CO2 emissions. Powertrain sales were aligned with a market forecast acquired by T&E and emissions per powertrain were adjusted based on 2024 data from Dataforce. PHEV emissions are adjusted based on the changes in [utility factor](#) that will be applied to all PHEV models in 2026 and 2028. The change in powertrain share therefore drives the reduction in emissions in this baseline scenario.

- From this baseline, we defined a full compliance scenario where the 2025 powertrain share is aligned with our CO2 modelling where all carmakers meet their 2025 target. The BEV shares from 2026 onwards were aligned to the baseline scenario (market forecast).
- From the baseline scenario, we estimated the average CO2 emissions, average targets and average flexibilities over the 2025-2029 period. An optimisation tool was then used to adjust each annual BEV sales share to derive the minimum BEV sales that would be sufficient to meet the average target over the whole period (multi-year compliance scenario). This methodology shows that carmakers can maintain the same sales mix in 2025 and 2026 as in 2024, before starting to ramp up BEV sales from 2027.
- The difference between the total BEV sales in the 2025-29 period between the maximum BEV potential scenario and the multi-year compliance therefore represents the potential BEV sales lost if European carmakers do the minimum to meet the average target for 2025-29.

#### **D. 3-year average (2025-2027) analysis**

- The methodology is similar to section C, but emissions are averaged over 3 years. In this case, if European carmakers keep BEV sales constant at 2024 levels, they would have to start increasing BEV sales in 2026 to meet the target and then overcomply in 2027.
- The trend after 2027 is not modelled due to uncertainties: carmakers could keep BEV sales stagnant until 2027 or start ramping up earlier to prepare for the 2030 target.

#### **E. 2-year average (2025-2026) analysis**

- The methodology is similar to section C, but emissions are averaged over 2 years. In this case, carmakers have to compensate for their lost BEV sales in 2025 with higher BEV sales in 2026. A scenario where carmakers keep 2025 sales at 2024 levels seems unrealistic in this scenario, as carmakers would have to increase their BEV sales too much above our maximum BEV scenario. We have therefore balanced this scenario by assuming that BEV sales growth starts in 2025 and does not exceed the market forecast in 2026 by more than 1%p (maximum BEV potential scenario).
- The trend after 2026 is not modelled due to uncertainties: in 2027, carmakers could keep EV sales at the minimum or could continue to follow the market forecast trajectory.

#### **F. Banking & borrowing analysis**

- The banking & borrowing principle is inspired by the heavy duty [regulation](#) with additional safeguards on the debt interest rate (see info box in section 5).
- In 2025, debt is assumed to be capped at 5% above target, as carmakers would seek to avoid paying fines. We have developed two illustrative scenarios where the debt is repaid in 2027 and 2029. In each of these scenarios, the debt is repaid by exceeding a credit limit defined by a linear trajectory between the 2025 and 2030 targets. The corresponding BEV share is calculated based on the CO2 target taking into account this credit.



- In the scenario where the debt is repaid in 2027, the BEV share in 2026 is calculated based on a compound growth rate between the BEV share levels in 2025 and 2027. In this case, the BEV share would exceed our maximum BEV scenario in both 2026 and 2027. After 2027, there is more uncertainty, as carmakers could keep BEV sales stagnant until 2029 or ramp up BEV sales earlier in preparation for the 2030 target.
- In the 2029 debt repayment scenario, the 2026 BEV share is calculated as the minimum to meet the CO2 target, to avoid adding additional debt. The BEV share in both 2027 and 2028 is based on a compound growth rate between the BEV share levels in 2026 and 2029. In this case, the BEV share would exceed our maximum BEV scenario in 2029. This is the only scenario that guarantees exceeding the maximum BEV scenario in 2028-29.