

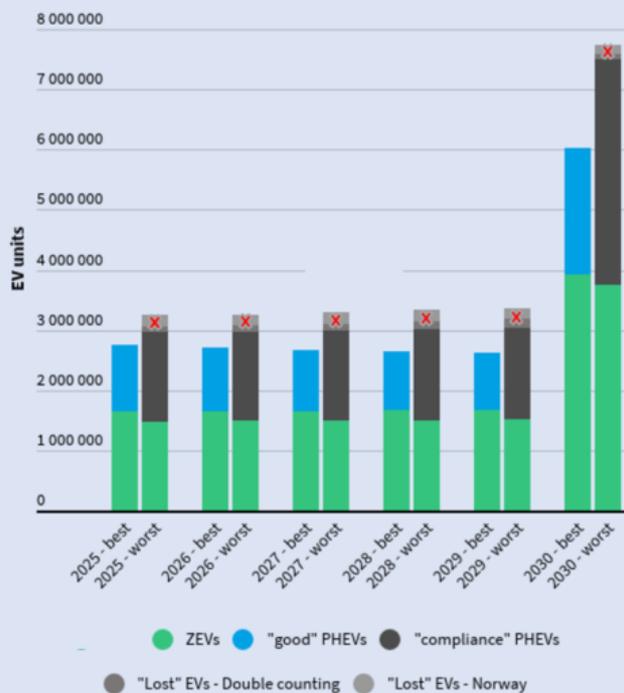
# New car CO2 standards: Is the job of securing electric cars in Europe done?

March 2019

## Summary

Following almost a year and a half of intense discussions, the new car CO2 standards are about to be set in stone with the formal approval of the European Parliament and national governments. These standards will require carmakers to reduce CO2 emissions from all new cars by 15% from 2025 and 37.5% from 2030. Alongside, the regulation incentivises carmakers to sell 15% of zero and low emission vehicles (ZLEV)<sup>1</sup> from 2025, and 35% from 2030 onwards – offering a very generous reduction of up to 5% on their overall CO2 targets if they overshoot these sales benchmarks. As plug-in hybrid cars are counted less than 1, in reality higher shares of actual electric car sales are required to hit the benchmarks, e.g. around 17-22% in 2025.

### Cost of bad implementation: Almost 2M EVs lost and 11M 'fake' EVs if carmakers game new CO2 standards



While the job of guaranteeing the fast transition to electric cars in Europe appears to be done, in reality what matters is how the new regulation will be implemented by the car industry. Notably, this analysis shows that the final rules agreed on how zero and low-emission cars are counted towards the regulation – i.e. the multiplier for plug-in hybrids, double-counting in some markets as well as the potential inclusion of Norway – leave much room for gaming and loopholes.

To show what difference implementation can make, the paper models the best case and worst case scenarios of how carmakers can use the three loopholes. The best case scenario will indeed bring up to 18% of well performing electric cars to Europe in 2025; this share will grow to 40% in 2030. The worst case, on the other hand, results in **almost two million fewer electric cars being sold between 2025 and 2030. What's more, half of all the electric car sales in the worst case – or over 11 million cars between 2025 and 2030 – are 'compliance' plug-in hybrids, often large SUVs with very**

<sup>1</sup> Defined as cars emitting less than 50 g CO2/km, which on today's technology includes battery electric, hydrogen fuel cell, plug-in hybrid and range-extender models

limited electric range and high on-road CO2 emissions.

Firstly, the largest weakening by far comes from the higher multiplier agreed for plug-in hybrid cars which allows carmakers to easily hit and overshoot the ZLEV benchmarks by selling compliance cars, i.e. poorly performing models with CO2 emissions just below the 50g threshold. The worst case implementation would result in **half of all the EVs needed to reach compliance – or 11% in 2025 and 26% in 2030 – being pure compliance cars**. This would mean almost 1.7 million cars being sold annually from 2025, and almost 4 million in 2030, to achieve compliance at the minimum cost rather than drive real-world emissions down via improving plug-in vehicles. These often have CO2 emissions above 100g/km [on the road](#) and were not initially supposed to count towards the benchmarks, but were included at the behest of car manufacturing member states during the final negotiations.

Secondly, double-counting electric cars sold in 14 EU countries where the market is still nascent is another loophole to game the system: carmakers can register EVs in these markets to benefit from higher credits, only to resell the same cars in more mature EV markets shortly afterwards. For example, carmakers could game the system by double-counting an extra 100,000 EVs a year (that they intend to sell in more developed EV markets), resulting in around **160,000 fewer EVs sold each year between 2025-2026**, reducing to around 100,000 fewer sales annually in 2029/2030 as fewer countries become eligible for double-counting.

Finally, the potential inclusion of Norway in the car CO2 regulation – where all new cars are expected to be zero emission after 2025 – would weaken the regulation even further. Since carmakers have to achieve EU-wide compliance, selling 150,000 electric cars in Norway (the size of its market) without effort would mean fewer EVs are sold elsewhere in Europe. Compared to best case, this is estimated to **reduce by 186,000 the EU-wide sales annually between 2025 and 2029**, and around 142,000 fewer EVs in 2030.

While ZLEV benchmarks are voluntary, in reality they are key to compliance with the CO2 standards – overachieving them allows carmakers to reduce their overall CO2 targets by up to 5%, and most carmakers are expected to hit the CO2 targets by overachieving the benchmarks. Therefore the inflation of the benchmarks with fake or compliance cars will lead to a weaker regulation overall. In the worst-case scenario modelled by T&E, carmakers will be able to reduce their 15% CO2 reduction target down to 12.2% in 2025; while the 37.5% target is reduced by the maximum, or down to 34.4% in 2030. This reduces the already [inadequate](#) contribution of the car sector to the 2030 national climate goals. Coupled with uncertainty over the starting point for percentage reductions as carmakers manipulate the WLTP test results, this risks seriously undermining the contribution of the new cars regulation to meeting national climate targets.

What this shows is that a speedy roll-out of electric cars is not yet a given and there remain risks that the industry will continue to game the regulation and see electric cars as a necessary evil needed for compliance. However, with some like [Volkswagen](#) and Renault-Nissan clearly serious about the successful transition to mobility, it is crucial that the new European Commission and national governments do not loosen their guard and ensure robust implementation of the new car CO2 standards.

As a minimum, the incoming European Commission, supported by the new Parliament and national governments, should **do the following**:

- National governments should put in place targeted support and tax schemes that incentivise zero-emission vehicles (battery electric or fuel cell), and limit support for PHEVs to longer range (min 50km) and lower CO2 plug-in hybrids, as well as link PHEV purchase support to minimum e-charging availability;
- European and national vehicle authorities should annually monitor electric car registrations across the EU, and cancel the EV sales credits where gaming of the double-counting provisions is found, e.g. by reselling large numbers of EVs shortly after their first registration; governments should also put in place targeted support schemes to dis-incentivise imminent reselling;
- Sales of electric cars in countries where their share is significantly above the EU average (e.g. 50% in 2025) should not be counted towards the EU ZLEV benchmarks (with the detailed rules agreed during

the 2023 review); in the absence of provisions on this Norway should not be allowed to join the post-2020 CO2 targets;

- The Commission should use its new testing powers to independently test and monitor the emissions of new cars on the WLTP test, and ensure the gap between laboratory and real-world emissions remains constant after 2021. In coordination with climate and industry departments, it should launch an independent JRC-led testing authority, and provide it with adequate resources to test sufficient numbers of vehicles. The authority should issue guidance to both industry and type approval authorities, and take robust action, including fines and CO2 target adjustment, against carmakers found manipulating CO2 values.

## 1. New Car CO2 standards & Zero and Low Emission Vehicles (ZLEV) amendments

The CO2 standards for new cars (and vans) for 2025 and 2030 were agreed late last year, set to be confirmed by the Parliament in its plenary vote and by the Council afterwards. Following almost a year and a half of intense discussions, the final regulation requires carmakers to reduce their fleet-average CO2 emissions from new cars by 15% from 2021 levels in 2025, and 37.5% in 2030. Alongside the fleet-wide CO2 reduction targets, the so called sales benchmark for Zero and Low Emission Vehicles (ZLEV), defined as cars with tailpipe emissions below 50g/km, was introduced. The final regulation requires sales of 15% ZLEVs in 2025 and 35% in 2030, and crucially is coupled with a bonus for carmakers that over-achieve the sales of EVs by reducing their fleet-wide CO2 targets by up to 5%.

Because over-achieving the ZLEV benchmarks allows carmakers to relax their overall CO2 targets, the ZLEV accounting rules matter: three key provisions are analysed below.

Zero and low emission cars get ZLEV credits in accordance with their CO2 performance based on the below formula:

$$ZLEV_{specific} = 1 - \left( \frac{specific\ emissions \cdot 0,7}{50} \right)$$

This means that today's 50g/km plug-in hybrid vehicle (PHEV, a car with a small battery and limited electric range, most current models driving electrically for about [40km](#)) would get 0.3 credits, whereas a zero emission car running on a battery (BEV) or a hydrogen fuel cell (FCEV) would get 1 credit. In Commission's and Parliament's proposals a 50g PHEV would get zero credits, so the addition of the 0.7 multiplier increases rewards to plug-in hybrid cars by just under a third<sup>2</sup>; it and was inserted by the member states to make it easier for carmakers that invested in the technology to reach compliance. The final accounting provisions make it easier for carmakers to sell higher emitting models while still hitting the sales thresholds, or more importantly - to overachieve the thresholds and therefore get weaker overall CO2 targets.

Additionally, double-counting of ZLEVs sold in the member states where their sales share is below 60% of EU-average in 2017 (and less than 1,000 units) was introduced according to the below formula. Each ZLEV is counted 1.85 times more than it would've be in the original proposals:

$$ZLEV_{specific} = \left( 1 - \left( \frac{specific\ emissions \cdot 0,7}{50} \right) \right) \cdot 1,85$$

The list of 14 countries where this applies in 2025 includes: **Ireland, Greece, Poland, Slovenia, Croatia**, the **Czech Republic, Slovakia, Bulgaria, Romania, Estonia, Latvia, Lithuania, Cyprus** and **Malta**. The provision lasts until 2030, and expires earlier if national EV sales reach 5% share in any year between 2025 and 2030. What this double-counting amendment means in practice is that a 50g/km PHEV sold in Poland brings 0.56 credits, while a battery or a fuel cell car – 1.85 credits. As previously [highlighted](#) by T&E, including in a letter to the Commission, this amendment

<sup>2</sup> E.g. without the 0.7 multiplier, a plug-in hybrid with a rating of 25g/km of CO2 would get 0.5 credits, whereas the multiplier turns this into to 0.65 credits for the same technology

is a major loophole carmakers and will almost certainly be exploited. Given the EU single market and free movement of goods across the member states there are no restrictions where cars are first registered. It is therefore entirely possible to register a ZLEV in a country, e.g. with the OEMs local dealer, where it is double counted (multiplied by 1.85) and then resell it in a country with a more developed ZLEV market shortly afterwards. This abuse is already being used by some carmakers in the run up to the 95g/km target in 2020/21, notably by Kia<sup>3</sup> in Germany.

Additionally, it is very likely that Norway - which is not one of the EU member states agreeing the cars regulation - will formally join the framework so that it also applies to cars sold on its territory. While not yet agreed, Norway has recently joined the current 2021 regulation stipulating 95g/km target - so it seems likely that it will do the same with the post-2020 regulations.

On paper at least the new 2025 and 2030 EU CO2 standards appear to be the [most ambitious](#) regime in the world, and this briefing analyses what they mean for the uptake of electric cars in Europe and whether or not the job of securing mobility transition is done.

## 2. What's under the hood: the impact of ZLEV accounting loopholes on electric car sales

T&E has modelled how many electric cars – PHEV, BEV & FCEV – will be needed to be sold across the EU to meet the final ZLEV provisions in the best and worst case scenarios. While ZLEV benchmarks are voluntary, they nonetheless impact the overall stringency of the regulation since over-achieving the ZLEV thresholds would allow carmakers reduce their fleet-wide CO2 targets by up to 5%.

### 2.1 Best case compliance

The electrification revolution is certainly under way, and large mainstream carmakers are embracing the change. For example, the recent [announcement](#) of VW to make 22 million electric cars in the next decade, or the cooperation just [announced](#) by the largest German carmakers that agree that future is battery electric cars point to a change in carmakers' attitudes.

T&E has therefore analysed how many electric cars the 2025 and 2030 ZLEV provisions would bring EU-wide if carmakers complied with the regulations seriously and in good faith, and stopped treating EVs as compliance cars only.

To do this, the following assumptions were made:

1. The new passenger car market size in all member states (notably those qualifying for double-counting) remains static at 2017 levels up to 2030
2. Carmakers achieve the 15% ZLEV sales benchmark in 2025 and 35% in 2030;
3. Governments are assumed to have put in place smart tax support schemes that incentivise zero emission cars (battery and fuel cell hydrogen) over plug-in hybrids so that the current 50/50 ZEV/PHEV share goes up to 60% ZEV/40% PHEV in 2025, and gradually to 65% BEV/35% PHEV in 2030;
4. Similarly, governments have put in place incentives to improve the range and CO2 emissions of plug-in cars, so that the CO2/km emissions of PHEV go down from 35g/km in 2025 gradually to 25g/km in 2030 (despite the 50g threshold in the regulation);
5. The sales of electric cars in Norway are not counted towards the ZLEV benchmarks of carmakers given that it is a mature market already;
6. Carmakers do not abuse the double-counting provisions, but sell electric cars in less developed markets in line with the market development there (so that less and less countries qualify as their EV sales grow and pass the 5% threshold).

---

<sup>3</sup> When the following data is compared: EEA, [Monitoring of CO2 emissions from passenger cars – Regulation \(EC\) No 443/2009](#), April 2018 & 2018 registrations from the Norwegian Road Traffic Advisory Council (OFV AS)

Year	Actual EV share (%)
2025	18.2%
2026	17.9%
2027	17.6%
2028	17.5%
2029	17.3%
2030	39.9%

The table on the left summarises what the best case compliance with the EV provisions of the car regulations would be, i.e.:

- Sales of electric cars reach 17-18% annually between 2025-2029
- In 2030, the sales reach almost 40% of all new car sales

The ZLEV share needed to meet the benchmarks decreases between 2025 and 2029 because 1) more battery electric cars are sold which get higher credits so less is needed; and 2) the CO2 emissions of PHEV improve which again gains higher credits to carmakers. Crucially, the electric cars that are sold are well performing models that are driven in zero emission mode most of the time on the road, and are driven in the member states where they are registered.

## 2.2 Worst case: using loopholes to achieve minimum compliance

Below the worst case compliance with the ZLEV benchmarks is analysed, i.e. where carmakers abuse the accounting provisions and sell compliance ZLEVs.

The following assumptions were made for the worst case analysis:

1. The new passenger car market size in all member states (notably those qualifying for double-counting) remains static at 2017 levels up to 2030
2. Carmakers are assumed to reach the ZLEV sales benchmarks of 15% in 2025 and 35% in 2030;
3. The PHEV is assumed to have 45g/km CO2 emissions on the WLTP test cycle (close to the new models carmakers are launching today), as it is assumed the 0.7 multiplier will result in carmakers producing 'compliance cars' close to the 50g/km threshold;
4. The split between PHEV and ZEV (BEV & FCEV) is assumed to remain at current level: 50% to 50% in 2025 up to 2030.

### Effect of 0.7 multiplier on ZLEV shares & actual sales in 2025 & 2030

As previously [shown](#) by T&E, the biggest impact on the sales of electric cars required to meet the ZLEV benchmarks in 2025-2030 comes from the multiplier given to plug-in hybrid cars. By inflating credits given to plug-in cars, the 0.7 multiplier makes it easier for carmakers to achieve the ZLEV benchmarks by selling less cars and with higher CO2 emissions, i.e. poorly performant models with CO2 emissions just below the 50g threshold.

The table below summarises what this means in terms of real-world EV sales in 2025-2030. While the 22% share is higher than in the scenario above, the problem is that only half of this, or 11% in 2025 and 26% in 2030, are zero emission models. The rest - or almost 1.7 million cars in 2025 and almost 4 million in 2030 - are pure "compliance cars" just below the 50g threshold, supplied to achieve compliance at the minimum cost rather than drive real-world emissions down via improved plug-in technology.

Year	Actual BEV <sup>4</sup> sales	Actual PHEV sales	BEV share (%)	'Compliance' PHEV share (%)	Overall EV share (%)
2025	1,657,000	1,657,000	11%	11%	22%
2026	1,657,000	1,657,000	11%	11%	22%
2027	1,657,000	1,657,000	11%	11%	22%
2028	1,657,000	1,657,000	11%	11%	22%
2029	1,657,000	1,657,000	11%	11%	22%
2030	3,867,000	3,867,000	26%	26%	51%

Data available shows that most PHEVs today have relatively high average emissions of around [120g/km](#) when measured on the road, despite complying with the 50g threshold in a laboratory. However, as the electric range of a PHEV increases, [evidence](#) suggests it is driven much more using the battery and the real world emissions fall sharply. The best way to ensure the weakening through the PHEV multiplier is minimised is by focusing national incentive schemes to promote only zero emission vehicles (battery and fuel cell electric), or to place performance (range, CO2, charging) requirements for PHEV to qualify.

### Effect of double-counting & potential abuse

Given the EU single market rules and the difficulty to enact controls on where and when a new car goes after it has first been registered, carmakers will be able to manipulate the double-counting provision by registering a EV in one of the 14 countries eligible for double-counting (thus benefiting from 1.85 times higher credits), and re-selling it in a more mature EV market (e.g. Germany, France or the UK) shortly afterwards. There is evidence such fraud is already happening: e.g. while 2,933 brand new Kia Soul EVs were registered in Germany in 2017<sup>5</sup> (and counted towards Hyundai-Kia's CO2 target compliance), a suspiciously similar number of 2,986 "used" Kia Soul EVs were imported to Norway in the same year (according to the Norwegian Road Traffic Advisory Council (OFV AS)).

To show the potential effect of such an abuse on EV sales in 2025-2030, T&E has modelled the following *example* scenario:

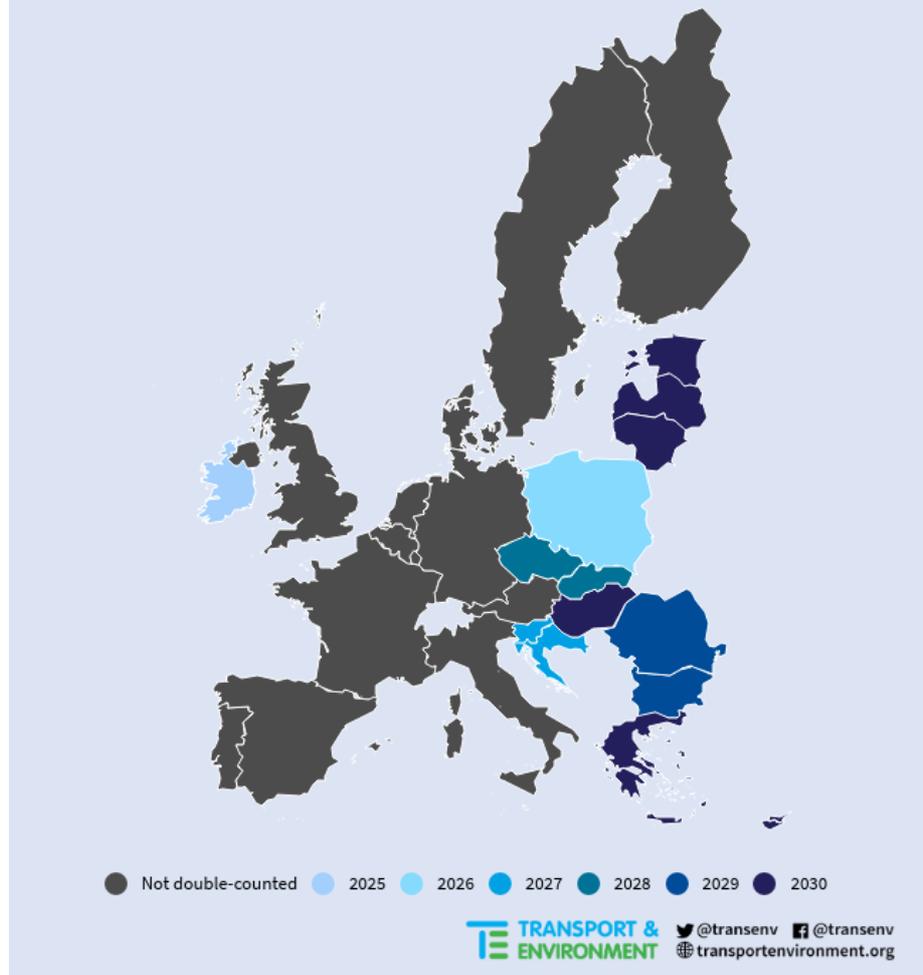
- Carmakers collude to exploit the loophole: they sell an extra 100 thousand ZLEVs in the same one or two of the double-counted member states every year between 2025-2030, while keeping the sales in the rest of the qualifying countries at 4.5% (to make sure not to surpass the 5% threshold).
- When the country(ies) no longer qualify as they surpass the 5% sales threshold year after year, carmakers move the 100 thousand ZLEV sales to the next country until all 14 member states have been exploited by 2030.
- The figure below shows an example of such an abuse, where carmakers first shift extra sales to Ireland in 2025, then move the sales to Poland in 2026 once Ireland has reached the threshold and no longer qualifies, then Croatia and Slovenia in 2027 and so forth until 2030 when all of the countries have been "exploited".

<sup>4</sup> Or FCEV – both qualify here

<sup>5</sup> From EEA, Monitoring of CO2 emissions from passenger cars – Regulation (EC) No 443/2009, April 2018

## Example how carmakers can game double-counting by pushing EV registrations in different countries between 2025-2030

Once carmakers surpass the EV sales threshold in a country, they can focus on another eligible country in the following year



The abuse in this particular case would result in around 160 thousand less EVs sold each year between 2025-2026, reducing to around 100 thousand less sales annually in 2029/2030 as less countries become eligible for double-counting. This has a smaller impact on EV sales than the PHEV multiplier, but is nonetheless an important weakening of the regulation as it makes it easier to achieve the ZLEV benchmarks and results in parts of national support to EV sales wasted.

The impact would of course grow if more 'fake' ZLEVs were sold each year in double-counted markets, e.g. 200 thousand instead of 100 thousand in this example. Importantly, this requires purposeful collusion by carmakers to agree the sales strategy for the double-counted countries, which is possible given a number of high profile cartel cases and investigations on emissions technology in recent years.

### Effect of Norway inclusion

Norway is a mature electric car market already, reaching 49% EV sales share in 2018 already, so carmakers would sell zero emission cars there even in the absence of EU CO2 standards. Last year Norway formally joined the 2020/21 CO2

regulations meaning that their EV sales will count towards the EU-wide fleet target of 95g/km. It is therefore likely to assume that carmakers will push Norway to also be part of the 2025/30 regulations in the future.

Importantly, Norway plans to have all car sales zero emission [from 2025](#), meaning that its whole passenger car market will qualify as ZLEV for the purposes of the 2025/30 compliance. Because the compliance with EU car CO2 standards and EV sales benchmarks are averaged per carmaker EU-wide, selling more EVs in one country means a carmaker can sell less in other markets - a waterbed effect previously observed in the ETS. So the country's inclusion into the EU regulation means OEMs will be able to sell less EVs elsewhere while still reaching the ZLEV benchmarks.

To estimate the effect of Norway's inclusion, T&E assumed the Norwegian car market to be 150 thousand units annually (averaged between the 2016-2018 registration data from ACEA). Selling 150 thousand zero emission cars in Norway would allow carmakers to gain extra ZLEV credits. Applying the ZLEV accounting rules, this results in an EU-wide "loss" of 186 thousand EV sales (50/50 BEV/PHEV split) annually between 2025 and 2029, and around 142 thousand less EVs sold in the EU in 2030.

### Combined worst-case effect

The table below summarises the worst-case impact of the three ZLEV loopholes - PHEV multiplier, double-counting in some markets and the inclusion of Norway - on the share of EV sales in 2025-2030. The biggest weakening by far comes from the inflated credits for PHEV; the abuse of double-counting and the inclusion of Norway are of smaller and equal magnitude. Overall, the loopholes risk weakening the ZLEV sales benchmark by up to a fifth, or 19%, compared to the best-case scenario. Cumulatively this results in **1.8 million less EVs sold between 2025 and 2030** as less EVs are needed in the real-world to reach compliance.

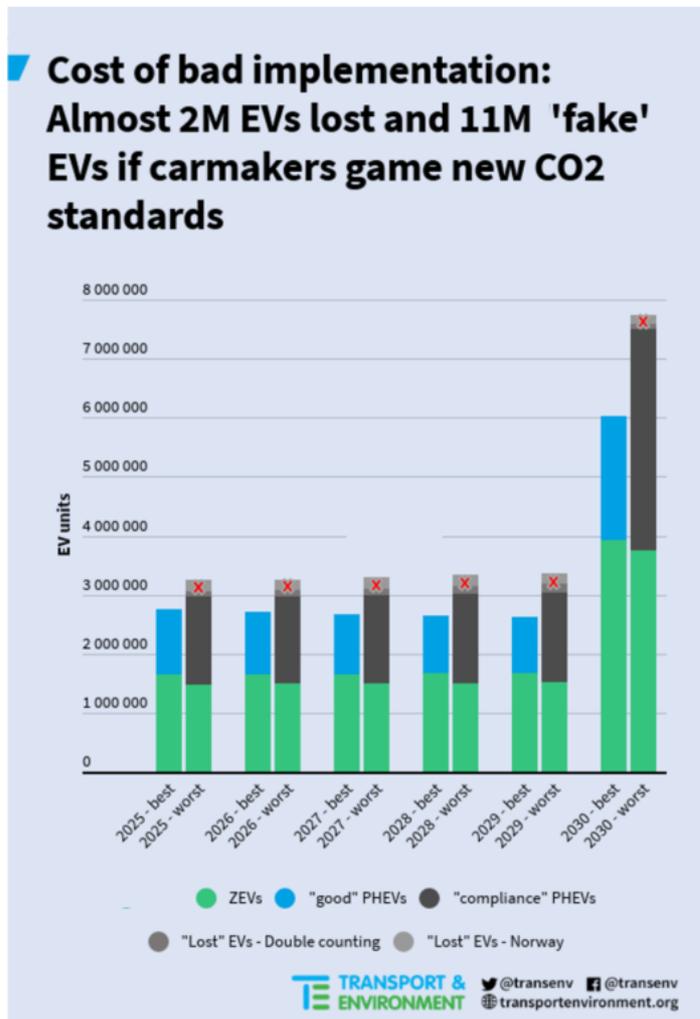
Year	Worst-case scenario			Best-case scenario			Comparison: worst vs. best	
	Actual EV share	Number of ZEVs	Number of 'compliance' PHEVs	Actual EV Share	Number of ZEVs	Number of 'good' PHEVs	'Lost' EVs from including Norway	'Lost' EVs from double-counting
2025	19.6%	1,482,000	1,482,000	18.2%	1,654,000	1,103,000	186,000	92,000
2026	19.6%	1,486,000	1,486,000	17.9%	1,653,000	1,057,000	186,000	100,000
2027	19.8%	1,500,000	1,500,000	17.6%	1,649,000	1,011,000	186,000	101,000
2028	19.9%	1,503,000	1,503,000	17.5%	1,672,000	982,000	186,000	144,000
2029	20.0%	1,513,000	1,513,000	17.3%	1,676,000	943,000	186,000	154,000
2030	49.5%	3,749,000	3,749,000	39.9%	3,922,000	2,112,000	142,000	91,000
<b>Total</b>		<b>11,233,000</b>	<b>11,233,000</b>		<b>12,226,000</b>	<b>7,208,000</b>	<b>1,073,000</b>	<b>682,000</b>
							<b>1,755,000</b>	

Crucially, given that half of the sales in the worst case scenario are 'compliance' PHEVs, **cumulatively 11.2 million of these poorly performant cars with limited electric range are sold between 2025-2030**. This allows carmakers to hit the ZLEV benchmarks but does little to reduce car CO2 emissions in the real world.

### 3. Impact on overall climate targets

#### Effects of CO2 bonus

In addition to reducing the actual number of electric cars sold to achieve the regulatory compliance, the ZLEV loopholes would also have a major impact on the climate stringency of the overall regulation. Since benchmarks are coupled with a generous CO2 bonus, inflated ZLEV credits mean most carmakers will find it easy to comply with the CO2 standards by hitting the benchmarks and earning the bonuses. The bonus for overachieving the ZLEV sales thresholds allows the overall fleet-wide CO2 target to be reduced by up to 5% - a major potential weakening.



The table below shows what the proper implementation with the ZLEV benchmarks (best case) would be under worst case scenario in 2025-2030 given the loopholes and inflated ZLEV credits. It can be seen that what would be needed to reach the benchmarks in the best-case scenario, would allow carmakers to secure generous CO2 bonuses in the worst case scenario: **the carmaker overall CO2 targets can be reduced by up to 4% between 2025-2029, and the maximum reduction of 5% in 2030.**

Year	ZLEV benchmark in the best-case scenario	Equivalent ZLEV share in worst-case scenario	Reward bonus
2025	15%	18.3%	3.3%
2026	15%	18.5%	3.5%
2027	15%	18.5%	3.5%
2028	15%	18.9%	3.9%
2029	15%	19.0%	4.0%
2030	35%	42.3%	5.0% <sup>b</sup>

Overall, this represents a serious weakening of the overall cars regulation. If carmakers reach the maximum CO2 bonus over their targets, the fleet-average 15% CO2 reduction target becomes 12.2%; while the 37.5% target is

<sup>b</sup> Maximum bonus reached

reduced to 34.4% in 2030. This would jeopardize meeting 2030 national climate targets and require other sectors to do more effort as the car sector is not contributing its full share.

### **Inflation of WLTP baseline**

The ZLEV accounting loopholes are not the only potential weakening of the future cars CO<sub>2</sub> regulation. A huge concern remains around the 2021 starting point, or the baseline from which the % reductions are calculated for both 2025 and 2030. This is due to the switch to the new WLTP test from 2018, which is a modest improvement over the NEDC, the old test it replaces. Previously researchers [estimated](#) that the gap between WLTP and real world emissions will still be about 23% in 2020, while the gap between the new WLTP and the old NEDC test should be around 10-15%.

However, recent [analyses](#) by T&E and the European Commission [Joint Research Centre](#) have highlighted that the first WLTP test results available were being purposefully inflated, so that the NEDC-WLTP gap was on average 36% instead of 15% expected. Carmakers do this to deliberately: elevating the starting point in 2021 would result in less stringent CO<sub>2</sub> reduction targets for 2025 and 2030. Ironically, the baseline inflation results in more realistic fuel consumption or CO<sub>2</sub> performance values. However, once the starting point is set, carmakers could revert to more optimised and creative testing and again “deflate” the emissions values of their vehicles so that they meet the lab-based targets, while the gap with the real-world performance would grow again.

Following the allegations, the Commission has earlier this year [amended](#) the WLTP regulation in order to close some of the loopholes carmakers use to inflate WLTP, notably:

- measured (rather than declared) WLTP CO<sub>2</sub> values have to be used to stop carmakers declaring higher values;
- all technology fitted on vehicles to reduce CO<sub>2</sub> should be switched on in tests (again, it was reported it was switched off before to inflate the results)
- same driver-selectable modes used in NEDC and WLTP tests

These amendments apply to new models approved after February 2019, however, it remains to be seen if they will help avoid the baseline cheating. Notably, it remains possible to optimise the so-called ‘road load’ which captures the aerodynamic and rolling resistance impact on a vehicle and is one of the most important factors in determining the CO<sub>2</sub> performance of cars. For example, carmakers can use smooth road surfaces to determine road load on the old NEDC test, while using less favourable road surface for new WLTP tests: this allows them to continue inflating the CO<sub>2</sub> gap between the two tests. The Commission and national regulations must monitor how WLTP testing is done, including independently re-test some new model, to ensure deliberate inflation is eliminated. The gap between the lab and real-world emissions of new models sold after 2021 should be controlled to ensure carmakers are not gaming the system and achieving compliance by lab manipulation only.

Crucially, the WLTP starting point remains one of the most serious uncertainties on the stringency of the cars regulation, and therefore its overall climate benefits. T&E earlier [estimated](#) that raising the WLTP lab results by 10g/km would more than half the CO<sub>2</sub> reduction benefit of the regulation to 2025. This would also translate in much fewer electric cars being sold, since the ZLEV sales benchmarks are voluntary. E.g. is the 15% CO<sub>2</sub> target in 2025 becomes a de facto 7.5% reduction, considerably less electric cars are needed to be sold. In the case of battery electric, only 7.5% would be needed in 2025 (assuming no progress in CO<sub>2</sub> emissions from combustion-engined cars).

## **4. What’s next?**

This analysis highlights that the 2025/30 CO<sub>2</sub> standards on their own are not a guarantee that a sizeable electric car market develops in Europe. In fact the recent [evidence](#) suggests that most carmakers still see EVs as compliance cars needed to meet the regulations, while they protect the diesel market where they make profits. This results in limited EV model choice and supply, poor marketing and high prices.

This paper has analysed a possible best case and worst case implementation of the provisions on how electric cars sales are credited in the new regulation. It shows that the difference is enormous: **at stake are up to 6 million EV sales cumulatively between 2025 and 2030, coupled with over 12 million “fake” plug-in hybrids if carmakers are allowed to exploit the accounting loopholes.**

The new Commission and national governments across Europe should put in place measures and safeguards to limit the loopholes in the car CO2 regulation, and ensure carmakers roll-out better zero emission cars and faster than what the minimum and gamed compliance would require. Notably:

- **PHEV multiplier:** Evidence from the Netherlands and the UK suggests that demand for plug-in cars is extremely sensitive to financial incentives, e.g. company car taxation or purchase grants. To ensure the future CO2 standards are not met by 'compliance' 45g-50g PHEV, governments should put in place smart tax schemes that 1) give more support to zero emission cars vs low emission models; 2) incentivise longer range and lower CO2 PHEV over less performing models; and 3) link PHEV support to minimum e-charging requirements.
- **Double-counting:** The Commission, the European Environmental Agency and national vehicle authorities should effectively monitor and report the annual EV sales on their territory. When suspicious behaviour is discovered (e.g. EV registrations in one member state sky-rocket in a given year with suspiciously similar numbers of EVs registered in a neighbouring country shortly afterwards), action should be taken, including cancelling some of the ZLEV credits. National governments can also help by designing smart EV incentive schemes: e.g. giving part of the EV tax bonus during purchase and the remainder after the car has been in circulation in that member state for at least one year.
- **Norway:** given the maturity of the Norwegian EV market, their EV sales should be excluded from the ZLEV benchmarks in the Car CO2 regulations. In addition - as more countries enact national diesel and petrol phase-out plans - the review of the CO2 standards in 2023 should include a provision to cancel the ZLEV credits earned in the markets where EV shares are significantly above the EU average (e.g. over 50% in 2025).
- **WLTP inflation:** Robust monitoring of each carmakers 2021 baseline to ensure they don't manipulate and inflate the CO2 values is crucial. The Commission should collect the data on how WLTP tests are done, and use its new testing powers under the type approval framework to re-test some WLTP-approved models independently and compare with carmaker results. Similarly, the gap between laboratory and real-world CO2 emissions of new cars should be controlled using fuel consumption meters and not allowed to grow after 2021 - to ensure emission reductions are achieved on the road and not via test gaming. When inflation or manipulation is found, the type approval authorities should be required to investigate the models concerned and revise downwards their official CO2 emissions (or adjust the CO2 targets for the manufacturer(s) concerned accordingly).

Whether the EU will become a successful and self-sustaining market for electric cars is far from a given, and this analysis shows how the new CO2 standards can still be manipulated and gamed to keep EV sales marginal and to a bare minimum. The incoming European Commission, supported by the new Parliament and national governments, should carefully monitor how carmakers implement the new regulations and ensure fast and effective uptake of electric cars. Emobility should be the industrial and climate priority is EU industry is to reap the benefits of the electric revolution.

## Further information

Julia Poliscanova  
Clean Vehicles & Emobility Manager  
[julia.poliscanova@transportenvironment.org](mailto:julia.poliscanova@transportenvironment.org)  
Tel: +32 (0)2 581 02 18

*Technical analysis:*  
Lucien Mathieu  
Transport & Emobility Analyst  
[lucien.mathieu@transportenvironment.org](mailto:lucien.mathieu@transportenvironment.org)  
Tel: +32 483 08 48 91

## Annex: supporting graphs

### Worst-case effects of 0.7 multiplier on ZLEV sales

Year	Extra ZLEV credits	"Missing" ZLEVs (units)	Equivalent ZLEV benchmark level
2025 - 2029	557,000	814,000	12.0%
From 2030 onwards	1,300,000	1,899,000	28.1%

### Worst-case impact of Double-counting manipulation on ZLEV benchmark and sales

Year	Extra ZLEV credits	"Missing" ZLEVs (units) with PHEV multiplier	"Missing" ZLEVs (units) with EC counting	Equivalent benchmark level
2025	112,000	164,000	204,000	14.3%
2026	107,000	157,000	195,000	14.3%
2027	89,000	130,000	161,000	14.4%
2028	84,000	123,000	154,000	14.4%
2029	70,000	103,000	128,000	14.5%
2030	65,000	95,000	118,000	34.6%

### Worst-case impact of Norway inclusion on ZLEV benchmark and sales

Year	Extra ZLEV credits	"Missing" ZLEVs (units) with PHEV multiplier	"Missing" ZLEVs (units) with EC counting	Equivalent benchmark level
2025	127,500	186,000	232,000	14.2%
2026	127,500	186,000	232,000	14.2%
2027	127,500	186,000	232,000	14.2%
2028	127,500	186,000	232,000	14.2%
2029	127,500	186,000	232,000	14.2%
2030	97,500	142,000	177,000	34.4%

## Combined worst-case effect of three flexibilities

Year	Bad-case scenario				Good-case scena			
	BEV/PHEV split	Share EV (%)	Equivalent benchmark	"Missing" EVs (%)	BEV/PHEV split	Share EV (%)	Equivalent benchmark	"Missing" EVs (%)
2025	50/50	19.58%	10.77%	7.7%	60/40	18.2%	13.1%	2.6%
2026	50/50	19.63%	10.80%	7.6%	61/39	17.9%	13.3%	2.3%
2027	50/50	19.81%	10.90%	7.5%	62/38	17.6%	13.4%	2.0%
2028	50/50	19.85%	10.92%	7.4%	63/37	17.5%	13.8%	1.6%
2029	50/50	19.99%	10.99%	7.3%	64/36	17.3%	13.9%	1.3%
2030	50/50	49.53%	27.24%	14.1%	65/35	39.9%	32.9%	2.6%