

CO2 emissions from vans: time to put them back on track

T&E position paper on the post-2020 CO2 standards for vans

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Summary

Light commercial vehicles, or vans, are a neglected area of EU road transport policy as they are often exempt from safety and environmental policy such as driving regulations or tolls, compared to their direct competitors, trucks. This enhances their attractiveness and in part explains why their use and emissions are growing. CO2 standards for van makers are much weaker than for cars, as a result van makers do not deploy the same efficient and innovative technologies to vans to lower their emissions.

A CE Delft analysis for T&E looks at current market as well as emission technologies and their costs in the light commercial vehicles sector. Amidst the rapidly decreasing battery costs, CE Delft shows that electric vans in the smaller segment have already reached cost parity with diesel models in 2018. This means that at least 800,000 small electric vans have the potential to be driven across Europe but the key barrier remains a lack of appropriate supply.

A number of legislative proposals currently on the table can put vans back on track. Ambitious 2025 and 2030 van CO2 standards, complemented by an effective zero emission crediting and debiting system, are needed but the latest Commission clean mobility package proposals are weak and inadequate. The Eurovignette directive should extend the current road charging rules to also cover large vans¹ to create level playing field for cross-border freight transport.

The CE Delft report² is published alongside this briefing.

1. Vans: dirty and inefficient

Vans, (light commercial vehicles - LCVs), represent over 10% of all EU road vehicles³ and their use has been on the rise since the mid-2000s. For example, in the UK the number of van kms have increased by 23%⁴ and in Belgium by 17% since 2006⁵. Vans are currently responsible for **9% of GHG emissions coming from EU transport** due to their rising numbers, poor efficiency and lax CO2 standards. In the absence of tough new CO2 standards for 2025 emissions are expected to continue to rise.

The CE Delft graph below demonstrates that after 2009, following the economic crisis, the growth large vans under 3.5 tonnes was much faster than the small lorry sector (starting with 3.5 tonnes), its direct competitor for freight operations.

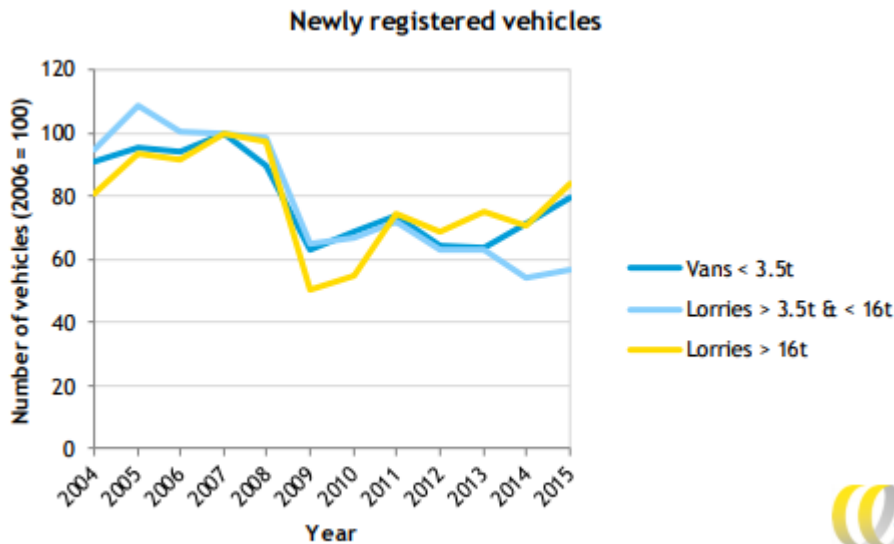
¹ <https://www.transportenvironment.org/sites/te/files/publications/2018%2002%2013%20VANS%20a%20social%20problem.pdf>

² https://www.transportenvironment.org/sites/te/files/publications/CE_Delft_4L06_Van_use_in_Europe_def.pdf

³ CE Delft, 2017

⁴ [DfT, 2017](#).

⁵ https://mobiliteit.belgium.be/nl/mobiliteit/mobiliteit_cijfers/kilometers_door_belgische_woertuigen



1.1. Distortions between vans and trucks

An independent report⁶ by CE Delft on the structure, emissions and technological opportunities in the LCV sector across Europe, is published alongside this briefing. It has found that compared to trucks, vans usually have either less strict safety, environmental and other regulations or in other cases are completely exempt from EU rules. For example, vans are exempt from tachograph requirements and driver rest time rules, giving them a major economic advantage over trucks (HDVs). Similarly, the possibility to drive a van with a regular B driver license is seen as an important bias, as well as no special speed limit for vans on European roads. In addition, road charging schemes that are in place in many Member States only apply to HDVs making it cheaper to use vans for freight and other commercial activities, especially in cross-border operations.

The European legislation on road charging, or the Eurovignette Directive, is currently being revised and can address some of the distortions identified by CE Delft. The Commission has proposed to extend road charging systems to all road vehicles, with vans being included across Europe from 2028. This is a step in the right direction to stop the use of vans as a means to bypass social, climate, and economic regulation that is in place for trucks. However, in order to ensure that vans are not used as a means to avoid toll payments, the Eurovignette Directive should ensure that all countries that apply tolls for trucks starting from 3.5 tonnes should extend them to the heaviest class of vans, which can weigh up to 2.8 tonnes when empty.

A short addendum published alongside this paper provides T&E position on the other legislative changes needed to eliminate the current distortions.

1.2. Lax CO2 standards

Vans are used across all economy sectors from freight operations; mobile workshops in construction to urban deliveries and online commerce. Against the backdrop of their growing kms, today's CO2 standards set for 2020 are dismally unambitious and much easier to achieve than the equivalent cars standards. Van manufacturers have to reduce the emissions of their new vans to a fleet-average of 147g CO2/km by 2020 whereas a target of equivalent stringency – from the point of view of marginal costs – would be around 114g CO2/km⁷ according to CE Delft. As a result, vans have to reduce their emissions by a mere 16% by

⁶ CE Delft, 2017

⁷ CE Delft, 2017

2020, much less than is cost-effective for users. As a result improvements in fuel efficiency are minimal increasing operational costs.

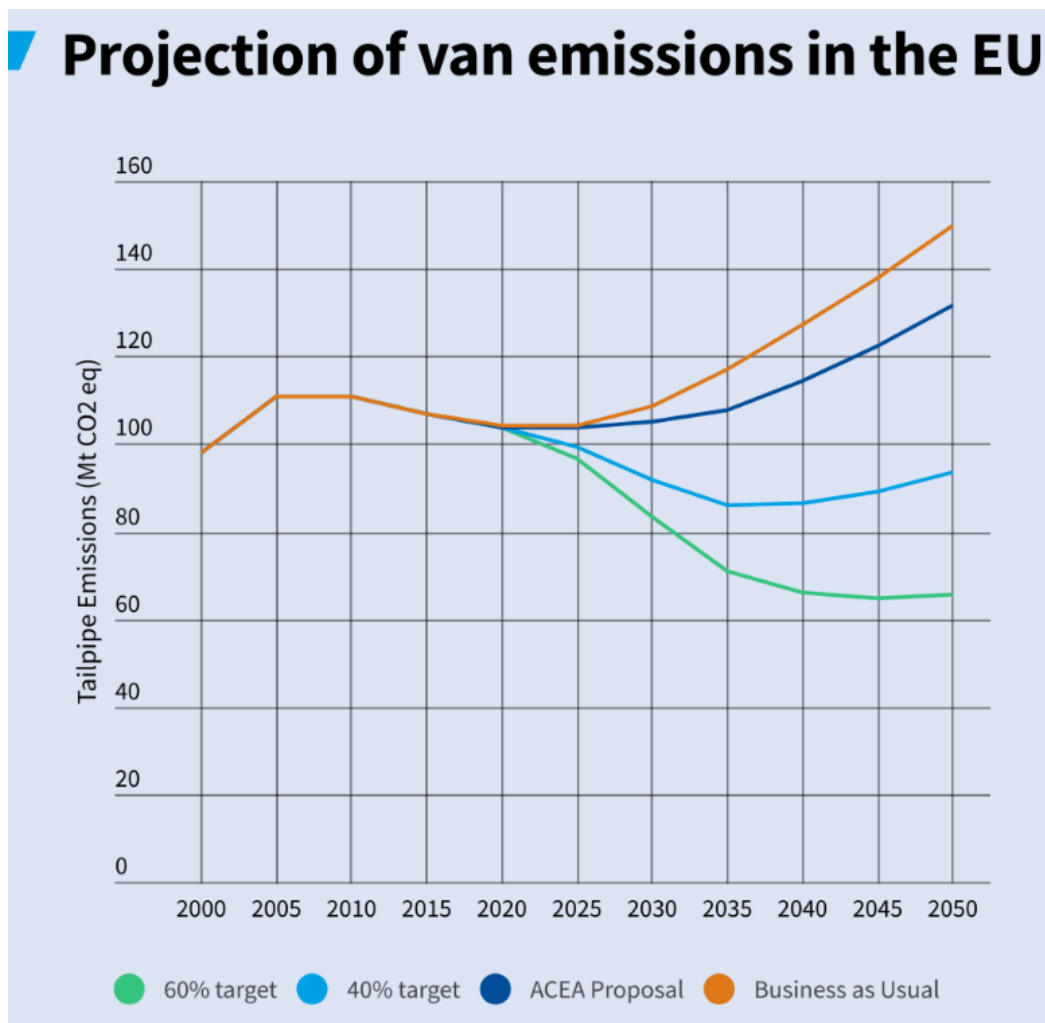
Behind the unambitious 2020 target is the flawed baseline analysis constructed by the Commission.⁸ Average emissions of vans in 2010 were estimated in the impact assessment to be 203 g/km – in reality they were just 181 g/km. The 2017, 175g CO₂/km target was therefore virtually met before it had even been agreed. Furthermore, cost data supplied by the industry suggested that improving fuel economy to 147gCO₂/km would cost between €2,000 and €8,800. The most recent estimates put the retail price increase for achieving 147g/km at just €605, 3-15 times lower than originally foreseen.

Not only are the CO₂ standards inadequately low, but part of the improvement in emissions has been delivered through test flexibilities and vehicle optimisation rather than in the real world. The data available points to a gap of around 30%⁹ (in 2015), meaning that vans emit more CO₂ emissions on the road than the test results (or labels) claim, while businesses pay substantially more for their fuels.

1.3. Post-2020 regime

On 8 November 2017 the Commission released its new proposals for the post-2020 CO₂ standards for new cars and vans. Vans are included in the same regulation and largely mirror the proposals for cars, notably:

- A binding 2025 target equivalent to a 15% fleet-average reduction in CO₂ emissions from 2020 levels
- A binding 2030 CO₂ target for a 30% reduction fleet-wide, (reduced from a 40% target



⁸ <https://www.transportenvironment.org/sites/te/files/publications/Vans%20Position%20Paper.pdf>

⁹ CE Delft, 2017

recommended in Commission's own impact assessment)

- A Zero and Low Emission Vehicles (ZLEV) crediting system meant to incentivize the supply of electric, fuel cell and plug-in hybrid vans. The levels proposed are 15% of all sales in 2015 and 30% in 2030, with an up to 5% bonus against the manufacturers' fleet-wide CO2 targets if they overachieve the sales objectives (instead of the two-way adjustment or the "malus" recommended in the impact assessment)
- Monitoring of vans CO2 emissions using fuel consumption meters and additional in-service checks on vans that are already on the market

The numbers of vans and their km's are on the rise across the EU, mainly due to the overall GDP growth. This results in CO2 emissions from the overall van fleet growing by 2% by 2030¹⁰ even if the current target of 147g/km is achieved in 2020. Given this projected demand, the CO2 improvement from new vans coming to the market has to be accelerated. The graph above summarises different scenarios¹¹ and shows that the 13% improvement that ACEA is calling for would fail to reduce vans emissions by 2030. Compared to 2005 levels, a 40% reduction would reduce the overall vans emissions by 17% by 2030, while a **60% target would result in a 25% reduction in emissions by 2030, which is more in line with the 30% EU target from non-ETS sectors in 2030 and the Paris Agreement.**

The Commission proposal is weak, inconsistent with its own impact assessment, and there is a suspicion that it was weakened in last minute discussions due to pressure from the German car industry.¹² The impact assessment states "the highest net savings over 15 years and 5 years and for the second user occur in the case of the 40% reduction target."¹³ By adopting a 30% target the Commission is in effect requiring van owners to pay an additional EUR 150 for a less efficient vehicle.¹⁴

But the Commission analysis also includes grossly inflated cost estimates for improving the efficiency of vans. Cost curves developed by the independent ICCT¹⁵ (that originally discovered the dieselgate scandal) show a **40% efficiency improvement in 2030** would add around EUR 1,250 to the cost of a van. Based on a 25,000 annual mileage this would **save an average driver almost EUR 800 a year, with a payback time of less than 2 years** for the first user. It would require around 30% of LCVs to be electric which is in line with most conservative market estimates for 2030. A more ambitious **target of 60% CO2 improvement**, which is in line with EU 2030 climate goals, would increase the manufacturers' compliance cost by around EUR 2,170 but would also **save drivers over EUR 1,100 a year and result in a similar 2 year payback** time within the first use. Such a target would require half of vans sales to be zero emission in 2030.

A key difference between cars and vans is that the latter are mainly owned by businesses and do many more kilometers over their lifetime, i.e. 25,000 to 35,000 per year compared to 15,000 to 20,000 for an average car. This makes improving efficiency much more cost-effective in the LCV sector and results in much shorter payback times. Commission's decision to propose a low 30% target despite its own analysis shows it has not learnt from its past mistakes and is content with vans continuing to be inefficient and dirty (almost all vans are diesels).

¹⁰ T&E emissions model, EUTRM.

¹¹ Based on EUTRM model ; ACEA's 13% scenario is for 2030 target only, while 40% and 60% scenarios include a mid-way standard in 2025 as in EC proposal.

¹² T&E, <https://www.transportenvironment.org/press/juncker%E2%80%99s-early-christmas-present-car-industry-undermines-climate-goals>

¹³ EC IA, https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/swd_2017_650_p1_en.pdf

¹⁴ Ibid.

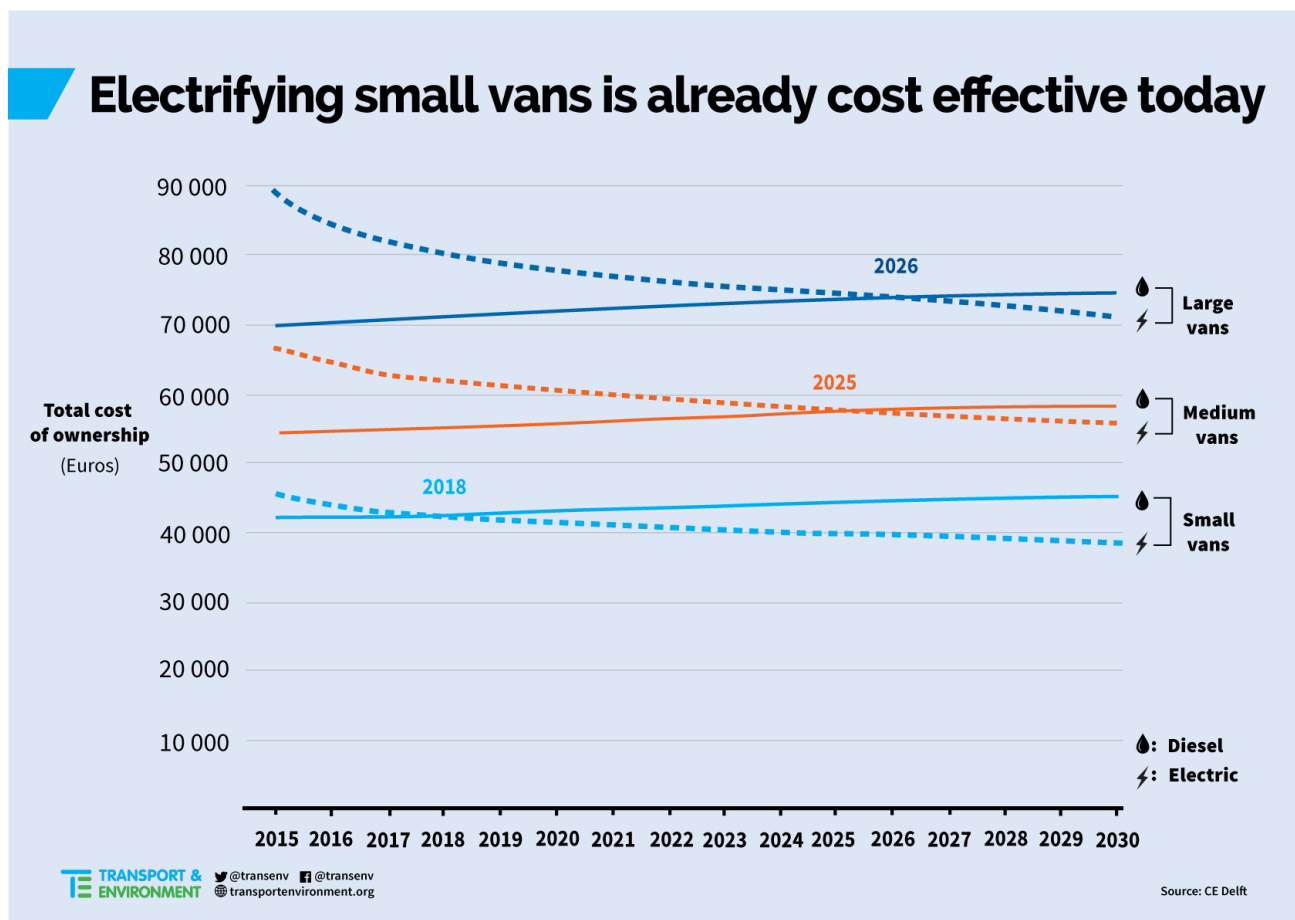
¹⁵ [ICCT](#).

2. Electric & vans: couple made in heaven

A major weakness of the Commission proposal is the lack of any effective penalty (or “malus”) for not achieving the ZLEV sales objectives in 2025 and 2030, making the target voluntary and ineffective. The Commission proposal is little more than a disguised supercredit, a voluntary scheme with a bonus (reduction of the fleet-average CO2 target) if the goals are over-complied with (but no penalty if they are not). This is not sufficient to secure timely investments and ramp up of EV technology to develop an EU supply chain.

Instead the EU is relinquishing leadership on EVs to China that is the world’s biggest market and has set a quota for electric vehicles starting with 2019. The EU runs the risks carmakers will opt to invest in China and import EVs back into Europe with devastating impacts on jobs. VW for example has already announced more than EUR 10billion¹⁶ investment into development of electric vehicles in China. Volvo through its new Polestar brand plans to import EVs from the China. The EU needs to propose regulations that drive a significant market for EVs in order that these are made here and creating jobs in manufacturing both EVs and batteries.

Vans are a particularly attractive option for electrification as they are predominantly used by businesses that are focused on the total costs of ownership more than the purchase price. They are also often used for urban delivery where air pollution is worse and range less of an issue. Or, on fixed routes where recharging can be built into the schedule. The CE Delft study looks at the total costs of ownership (TCO) for electric vans compared to conventional diesel equivalents for small, medium and large vans. The TCO takes into account the higher purchase price as well as insurance, fuel and maintenance over 6 years of van’s use, equivalent to a standard lease contract.



¹⁶ <https://www.bloomberg.com/news/articles/2017-11-16/volkswagen-to-invest-10-billion-euros-on-china-new-energy-cars>

The key finding of the TCO analysis is that **small vans**, largely used in urban areas, **will already reach cost parity with diesel vans in 2018**. One of the central assumptions leading to this outcome is the rapid reduction in the costs of batteries that in 2017 declined by 24%¹⁷. Bloomberg predicts the price of a lithium-ion battery pack will decline down to as low as EUR 65 per kWh in 2030.

The CE Delft study took more conservative mid-range cost assumptions (from EUR 275/kWh down to EUR 150/kWh in 2030) resulting in costs of a 40kWh battery dropping significantly from EUR 11,000 today to below 6,000 in the coming decade. Coupled with decreasing cost, improved battery densities and capacity are expected to significantly increase the range issue while keeping the cost in check.

Small vans account for over 40% of all van registrations in the EU¹⁸, representing a huge potential for electrification given the TCO results. This amounts to around 800,000 vehicles sold in 2016 alone. But **the main barrier to their uptake is a lack of supply**, with manufacturers failing to offer almost any availability. At present there are around 10 electric (BEV) van models on the market in Europe – against over 200 diesel models - it hardly comes as a surprise that the current registration rates are less than 1%. Because of the supply problem, DHL was forced to start manufacturing its own electric vans to be used in company operations as no van maker was able to supply them. Its StreetScooter brand is now sold beyond DHL and is a popular van model¹⁹. Daimler recently tried to secretly loan a "StreetScooter" electric vehicle from Deutsche Post through a fake company for internal test purposes. The scam was discovered and the vehicles tracked by GPS to the manufacturing centre in Stuttgart.²⁰ This is yet more evidence of the “blurring of moral standards in German carmakers” that Dieselgate, cartels and the recent Monkey Business sadly reveal.²¹

The key solution that is needed to solve the supply issue is a mandate for zero emission vehicle sales for each van maker, as is the case in around a third of US states (e.g. California) and China already. The current proposals for post-2020 targets for light commercial vehicles should include such a measure - via a two-way adjustment mechanism – requiring manufacturers to sell 20% of zero emission vans in 2025 and at least 40% in 2030.

3. Conclusion and recommendations

Vans have been the neglected big brother of passenger cars for too long. But their growing use is driving higher emissions that now represent 12% of those from EU road transport. The European Commission needs to put in place ambitious CO2 standards, in line with its own technical analysis, to drive efficiency gains and stimulate uptake of electric vans.

The post-2020 framework for vans put forward by the Commission therefore needs to be modified to include:

1. An ambitious and binding **2025 CO2 standard of 25%** reduction from 2020 levels, to catch up with the lost decade of efficiency improvements and drive technological innovation.
2. An ambitious **range for a CO2 standard in 2030 of at least 40-60%** that is in line with the cost-benefit analysis and would reduce the CO2 emissions from vans in the line with the EU 2030 climate goals and the Paris Agreement.

¹⁷ BNEF, <https://www.bloomberg.com/news/articles/2017-12-05/latest-bull-case-for-electric-cars-the-cheapest-batteries-ever>

¹⁸ Element Energy, <http://www.element-energy.co.uk/wordpress/wp-content/uploads/2017/03/20161024---Towards-a-European-Market-for-Electro-Mobility-FINAL.pdf>

¹⁹ <https://www.streetscooter.eu/>

²⁰ <https://www.automobilwoche.de/article/20170828/NACHRICHTEN/170829906/spionage-vorwurf-daimler-hat-streetscooter-der-post-getestet>

²¹ https://www.transportenvironment.org/newsroom/blog/monkey-business?utm_source=T%26E+bulletin&utm_campaign=2c282c3d72-EMAIL_CAMPAIGN_2018_02_07&utm_medium=email&utm_term=0_c36f52390d-2c282c3d72-118648925

3. An effective **ZEV two-way adjustment system** that includes penalties for non-compliance, to drive the supply of electric van models and secure investments in Europe. Van makers should be required to **sell 25% of ZEVs in 2025** and **40-60% in 2030**, to reflect the EV market uptake and be in line with vans' cost-effective potential given their usage patterns.
4. Improved enforcement regime is needed to reduce the gap between type approval and the road. A **real-world CO2 test to complement the new laboratory test** framework for 2025 and 2030 targets, to ensure vans are designed to operate efficiently on the road and deliver the full CO2 reductions promised by the regulation. The proposed FCM provisions should also be strengthened with an enforcement mechanism that **fixes the real-world gap for different van types**.

Similarly, as regards the new Eurovignette directive:

5. **Extend the EU road charging directive (Eurovignette) to also cover light commercial vehicles**, notably their CO2 and air pollutant emissions, to ensure level playing field across the freight sector. Tolls that apply to small trucks from 3.5 tonnes should also apply to largest vans (from 2.6 tonnes) in order to avoid undesirable modal shift from trucks to vans.

If Europe wants to decarbonise its road transport effectively, vans have to be part of the solution. It is time to get progress in this sector back on track.

Further information

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