VDA | Verband der Automobilindustrie

Position

More climate protection through a better and more comprehensive post-2020 CO_2 Regulation for passenger cars and light commercial vehicles

Berlin, March 2018

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I. Core elements of the CO_2 Regulation

On November 8, 2017, the European Commission presented its second mobility package, which contains the proposal for the CO_2 Regulation on emissions from passenger cars and light commercial vehicles (N1) in the period after 2021.

The most important points are:

- **Basic concept** of the Regulation (mass-based approach, tank-to-wheel metric) remains unchanged for passenger cars and light commercial vehicles until 2030.
- Instead of fleet limit values, there are binding **percentage reduction targets** (with penalties for non-compliance) for 2025 (15%) and 2030 (30%), which are identical for passenger cars and light commercial vehicles.
- **Incentive system** for encouraging the uptake of zero and low emission vehicles (ZLEVs), applicable to passenger cars and light commercial vehicles from 2025:
  - LEVs are defined as vehicles below 50 g CO_2/km under WLTP.
  - OEMs whose share of ZLEVs exceeds 15% in 2025, or exceeds 30% in 2030, will receive a bonus of max. 5%, i.e. an OEM can have its individual CO_2 target relaxed by a maximum of 5%.
  - Vehicles will be counted differently depending on their CO_2 output: vehicles with 0 g CO_2/km will be counted in full (factor 1), whereas vehicles with 50 g CO_2/km will not be counted (factor 0) (see table).
- **Eco-innovations** remain in the calculation and from 2025 onward their cap and applicability are to be adjusted in a comitology procedure. Air-conditioning systems will be included as of 2025.
- **CO_2 monitoring** will continue to be carried out by the Member States. This will additionally include preparations both for real world/on board consumption monitoring and for market surveillance (in-service conformity).
- **Exceptions** for niche manufacturers and pooling remain in the proposal.
- A **review** is scheduled for 2024 with the option of adjusting the Regulation's 2030 target.

One positive aspect is that the major principles underlying the system of regulation are retained. In view of the switch from NEDC to WLTP, the proposed **percentage reduction logic is welcome**. Given the differing market opportunities for electric mobility in the individual states, it is also consistent to forego a binding quota for e-vehicles in Europe.

Yet the proposal contains some key critical points that should be improved:

- An unrealistic **target for 2025** owing to insufficient lead time
- A **target for 2030** that is too strict unless conditions apply
- An **incentive system** that fails to give appropriate consideration to plug-in hybrid electric vehicles (PHEVs)
- The total absence of **differentiation between passenger cars and light commercial vehicles**, so the special features of commercial vehicles which are different from passenger cars are not taken into account at all.

In addition, the European Commission's proposal does not give any consideration at all to major potentials, such as synthetic fuels, with a proven capacity to contribute to CO_2 reduction. The Commission's proposal should therefore be **improved** and relevant potentials should be **added**.

II. Improve: adapting the Commission's proposal

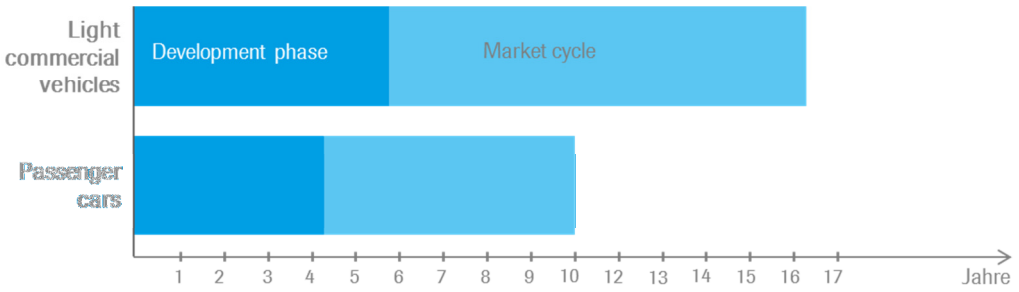
a) No unrealistic targets for 2025

A **binding target for 2025 with penalties for non-compliance** will be unworkable for passenger cars and light commercial vehicles owing to insufficient lead time.

Given the long lead times in the automotive industry, a binding target only four years after the 2021 target cannot be reached for technical and cost-efficiency reasons:

- An indicative, manufacturer-specific target for passenger cars and light commercial vehicles will not be set until the **fall of 2022** due to the switch to WLTP and calculation of the **starting point**, and the binding target formula will not be determined until the end of 2024.
- The **product and development cycles** are not given sufficient consideration. The final development of vehicles for 2025 will already take place in 2022.
- The **special features of light commercial vehicles** are still not taken into account at all in the 2025 target. Here the product and development cycles are even longer than those for passenger cars (see figure).

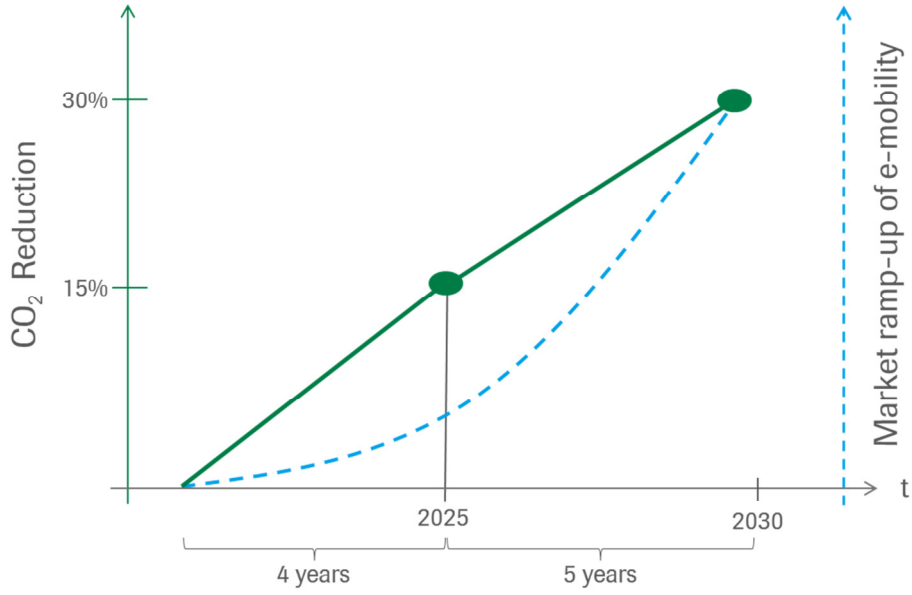
Lifecycles of light commercial vehicles vs. passenger cars



Source: VDA

Furthermore, all the scenarios for the market ramp-up of alternative powertrains envisage **gradual progress over time** (less at the beginning and more later on). The reduction potentials expected before 2025 are therefore lower than those after 2025. So it is all the more incomprehensible that the European Commission proposes a reduction of 15% by 2025 in only four years, whereas five years are proposed for the next 15% (see figure).

Required CO_2 reduction vs. market ramp-up of e-mobility



Source: VDA

Moreover, at present it is not possible to make a serious estimate of how the market for electric vehicles will actually develop, as the ramp-up will depend crucially on the **charging infrastructure**, the tax systems of the Member States, changes in the oil price and other factors, and these exogenous factors are uncertain. However, a review of the 2025 target is not envisaged.

Additional pressure results from the current **shrinking diesel share of the market**. This leads to increased fleet emissions from vehicles with purely conventional powertrains, because diesels emit approx. 15% less CO_2 than gasoline vehicles with comparable performance.

And finally, all calculations show that **elimination of a 2025 target** and establishment of a natural, gradual ramp-up of alternative powertrains will result in only minor changes in absolute output in tonnes of CO_2 in the period up to 2030.

The decisive aspect is that the **reduction targets** should be achieved in 2030 **under the terms of the Paris Agreement**. The flexibility gained through the proposed 2030 target for the individual manufacturers' product plans is counteracted by the European Commission's binding target in 2025. A post-2021 regulation, and all other EU climate regulations, should therefore focus on the year 2030.

Recommendation: modify the proposed 2025 target and focus on 2030

b) Conditionality for target achievement in 2030

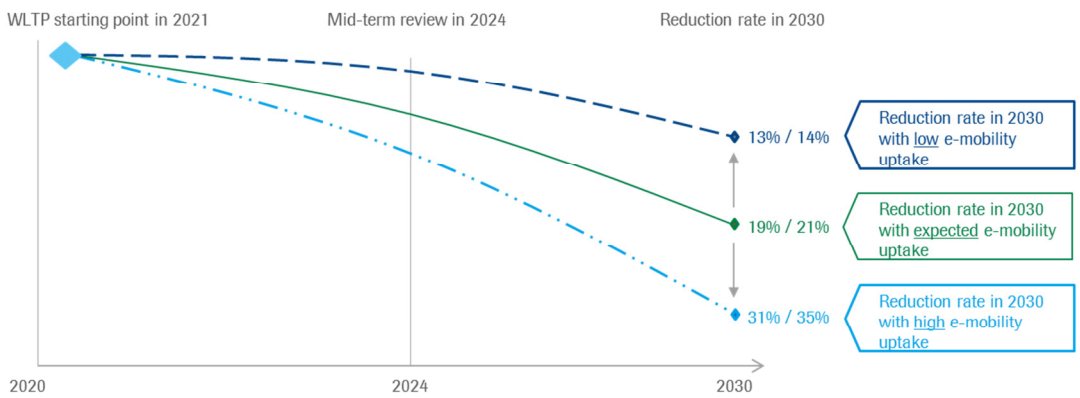
Unlike the CO_2 reductions achieved so far, the penetration of the passenger car and light commercial vehicle market by alternative powertrains will depend primarily on the political and regulatory conditions in the Member States, including the charging infrastructure, taxation, incentive policies and public procurement. This means that the reduction potentials for 2030, which are fundamentally linked to the **rate of alternative powertrain uptake**, cannot be realized solely through the efforts of the automotive industry, but also depend crucially on activities by public institutions that are responsible for the infrastructure, and by other stakeholders.

Therefore a reduction rate of 30% (with penalties for non-compliance) cannot be made the sole responsibility of the automotive industry. Policymakers and industry must both contribute, and not

least customer acceptance of electric vehicles will be essential for achieving further reductions. The **clause stipulating a review in 2024** is therefore welcome. However, this must not have an alibi function, but instead must specify unequivocal, defined consequences.

Since the market success of alternative powertrains cannot be forecast at present, in 2018 only a conditional overall reduction rate for 2030 should be formulated, as an **if-then statement**: if the exogenous factors develop in a certain way, then an overall reduction of 30% is possible in 2030 (see figure).

Conditional reduction rates depending on ramp-up of alternative powertrains



Source: VDA

For this reason, the reduction steps achieved must be subject to a **transparent examination** in the 2024 mid-term review. The CO_2 reduction required by 2030 can then be adjusted upward or downward, based on the progress in market uptake of alternative powertrains and expansion of the infrastructure and other exogenous parameters. A 30 percent reduction rate can only be justified if such unequivocal conditions are specified.

Without a fixed and guaranteed **conditionality logic** in the mid-term review, the European automotive industry regards a reduction rate (with penalties for non-compliance) of **approx. 20 percent** as feasible.

However, passenger cars and light commercial vehicles must be differentiated because these two groups of vehicles are very different, both physically and technically and in terms of demand and market. To satisfy the COP21 targets, the European Commission itself set a reduction target of 21% for passenger cars and 19% for light commercial vehicles (European Commission Communication on low-emission-mobility, July 2016). In addition, the Commission's own Impact Assessment shows that a reduction rate of 20% instead of 30% will only marginally reduce the absolute output of CO_2 (in tonnes) by 2030.

Recommendation: set clear conditions in the review clause, or reduce the 2030 target to 20% for passenger cars and to less than 20% for light commercial vehicles

c) Improve the incentive system (ZLEV benchmark)

An incentive system promoting the ramp-up of zero and low emission vehicles (ZLEVs), as desired by politicians, society and the industry, is the right approach. However, the incentive system proposed by the Commission will not achieve all of its intended effects.

First, a **15% benchmark** in 2025 is unrealistically high. The market share taken by electrified passenger cars in the EU is currently 2%, i.e. very low, and there are significant differences between the individual Member States. The proportion of electric vehicles among light commercial vehicles is even smaller. Given that the market success of ZLEVs depends crucially on external

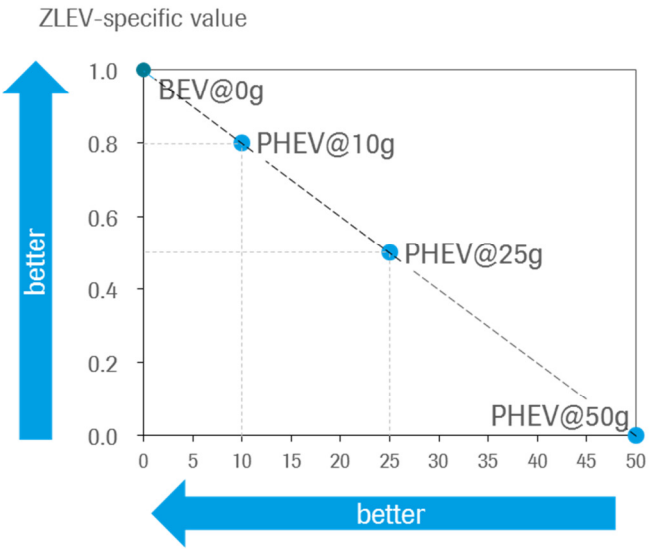
factors, a benchmark of 10% for passenger cars and 5% for light commercial vehicles would be a better reflection of reality and offer a genuine incentive to promote e-mobility.

Second, the European Commission's proposal pays too little attention to plug-in hybrid electric vehicles (PHEVs) in comparison with battery electric vehicles (BEVs), and thus neglects an important technology in promotion. This is the case because the **ZLEV factor** in the formula for achieving the benchmark is too low. A vehicle with 50 g in the WLTP will not qualify for credit (ZLEV factor = 0; see figure), while a vehicle with 25 g in the WLTP will be given a ZLEV factor of only 0.5). So it is impossible to speak of a technology-neutral incentive system.

The following figure shows not only the ZLEV factors as dependent on CO_2 output but also specimen calculations of the market shares of electric vehicles that are necessary for achieving the benchmark.

ZLEV values and example calculations for achieving the benchmark

ZLEV values for alternative drive trains depending on CO_2 value



Market shares needed to reach benchmark (specimen calculations)

2025: Benchmark 15%

Scenarios with market share needed to reach benchmark					
	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
BEV	15%	7%	10%	1%	0
PHEV@10g	0	10%	0	5%	0
PHEV@25g	0	0	10%	20%	0
PHEV@40g	0	0	0	0	75%

2030: Benchmark 30%

Scenarios with market share needed to reach benchmark					
	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
BEV	30%	14%	20%	2%	0
PHEV@10g	0	20%	0	10%	0
PHEV@25g	0	0	20%	40%	0
PHEV@40g	0	0	0	0	impossible

Source: VDA

The situation is even more serious for **light commercial vehicles**, because it is not possible to represent PHEVs on the N1 market below 50 g CO_2/km in a technically appropriate way. The benchmark (50 g) for light commercial vehicles should therefore be increased. In addition, no consideration is given to the fact that market ramp-up of battery electric light commercial vehicles will take place more slowly and has to be viewed separately for each class of vehicles (I/II/III)[1].

It will be expedient to give more weighting to PHEVs because of their relevance both to climate policy and to industrial policy, in order to create a smooth transition to new types of propulsion and to limit **labor-market policy distortions**.

Recommendation:
All vehicles below the benchmark of 50 g CO_2/km should be treated equally, i.e. their ZLEV factor should be 1. In addition, light commercial vehicles should have a higher benchmark than that for passenger cars.

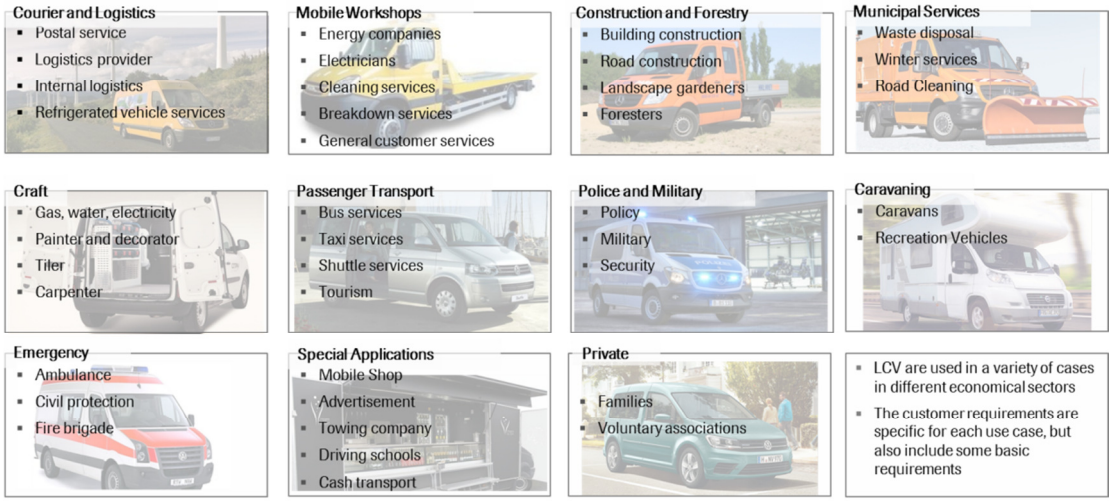
2025 benchmarks of 10% for passenger cars and 5% for light commercial vehicles.

d) Differentiate between passenger cars and light commercial vehicles

The Commission plans the same reduction rates for light commercial vehicles as for passenger cars. However, this approach completely ignores the conditions on the market for light commercial vehicles: as a rule they are **investment goods** in the transport sector and are heavier and larger, and more variable!

The market for light commercial vehicles is very fragmented and meets completely different technical needs depending on the **customer group and the uses to which the vehicles are put** (see examples in the figure below). Vehicles come in different sizes and weights depending on the segment. In addition, around-the-clock availability in the "police and military" and "emergency services" segments requires different technologies (diesel) than those found in "couriers and logistics services" (electrification). These differing physical/technical modalities demand different reduction targets from those applicable to passenger cars.

Types of customer of light commercial vehicles



Source: VDA

[1] Class I vehicles have the same technical base as passenger cars; Class II vehicles also have the same technical base as passenger cars, but in some cases have very different uses and customer requirements from Class I; Class III vehicles (heavy N1) are constructed as commercial vehicles weighing 3.5 t and capable of towing 3.5 t. The chassis of this class serve as the basis for multistage vehicles.

It is true that CO_2-reducing technologies for light commercial vehicles are usually taken from passenger cars and adapted to the needs of light commercial vehicles. However, light commercial vehicles are generally **technology followers**: the passenger cars must first pave the way so that costs can be reduced.

As a rule, applying such technologies brings an absolute CO_2 saving in light commercial vehicles, which is similar to that in passenger cars (in g CO_2/km). As the 2020 limit value for **light commercial vehicles is 147 g/km**, and that for passenger cars is 95 g/km, the mathematics dictates that a percentage reduction target for N1 vehicles has to be much smaller than the one for passenger cars!

Furthermore, the **transmission will be electrified later** rather than sooner, and will therefore also contribute to reduction later. The reason for this is purely and simply that the weight of the battery restricts the cargo that a light commercial vehicle can carry. In selected areas, e.g. the "last mile" as a subsegment in "courier and logistics services," electrification could technically be realized quickly, but that would cover only a portion of light commercial vehicles. Other use cases are certainly conceivable, but there range requirements, additional weights, additional costs, etc., make it much more difficult to tap into market potentials in a business setting, especially where large vehicles are concerned. So the frequently heard argument that the light commercial vehicle market can be electrified quicker than the passenger car market does not hold up.

Moreover, the way the light commercial vehicle market operates is based on factors other than those applying to passenger cars. Customers buying light commercial vehicles focus exclusively on the **cost-benefit relationship**. This means that more expensive technologies will be used here only if they promise to deliver a cost advantage.

Recommendation: a regulation adapted to the features of light commercial vehicles.

III. Integrate: adding more potentials to the Commission's proposal

a) Credits for alternative fuels, additional eco-innovations and other reduction potentials

Alongside the CO_2 reduction potentials that can be measured directly in test cycles, there are many other measures for bringing emissions down effectively. As these do not affect the official CO_2 value certified in the WLTP cycle, manufacturers should receive credits if their chosen measures are shown to reduce CO_2 emissions on the roads. It should not matter which measure or which CO_2 reduction potential is considered: ultimately a regulatory framework is needed that does not exclude any effective measures if their reductions are backed up by reliable evidence. The automotive industry therefore appeals for pragmatic approaches.

Synthetic fuels

- Alongside the electrification of powertrains, the CO_2 output from vehicles with combustion engines must be reduced further – including the use of renewable fuels. They are effective not only in new vehicles, but also in vehicles already on the roads. Here the **improvement in the existing fleet** of 1 g – for example resulting from a lower CO_2 fuel – is just as effective, with rapid impact, as an improvement of 20 g in the new vehicle fleet!
- The fleet regulation for passenger cars and light commercial vehicles offers a unique opportunity for long-term stimulation of the ramp-up and more widespread use of renewable fuels. The manufacturer should receive a **CO_2 credit for the vehicle fleet supplied with these fuels** if it can show that it has introduced synthetic fuels in a proven quantity and with a proven sustainable GHG reduction. It should then be possible to credit the proven reduced emission values directly to the emission value of the new vehicle fleet of the respective manufacturer. This will be on condition that these fuels are not used for satisfying the GHG reduction quota of the petroleum producers.
- This type of credit could be very simple, if for example today's regulation of the "*Specific emissions target for alternative-fuel vehicles"* (Article 6 of Regulation 443/2009, the "E85 article") were to be slightly modified.

Expanding eco-innovations to include the off-cycle concept

- Eco-innovations already exist. They are technologies that reduce a vehicle's CO_2 emissions but cannot be reflected in the official type testing procedure. It is welcome that such CO_2 technologies should also be recognized in the future.
- However, for a follow-on Regulation post-2021 the conditions for eco-innovations should be made much more **pragmatic**, so that all technologies and measures outside of the cycle, which make an unequivocal contribution to the climate protection targets, are also credited. Following the suggestion of the European Commission, the existing **cap of 7 grams** should be greatly expanded or, even better, should be abolished.
- This includes **technologies that depend on driver behavior**, such as eco-mode and measures in the context of digitization (Cooperative Intelligent Transportation Systems, C-ITS, e.g. car-to-car information exchange; intelligent searching for a parking space, etc.), along with "soft" measures for CO_2 reduction. For instance, if a manufacturer declares its willingness to offer every purchaser of a new car a free training course in efficient driving, that should earn the manufacturer credits. This would require an independent institution to determine statistically the average long-term CO_2 savings that can be achieved through driver training. These credits could also be included under eco-innovations.
- The inclusion of **air-conditioning systems** as eco-innovations, as announced by the European Commission, is another welcome move. However, an additional incentive would be created if these systems were included before 2025, and if heating and ventilation systems were also considered.

Car sharing

- New mobility concepts also play an important role in reducing CO_2 emissions. Consequently, manufacturers should receive an **incentive in the form of credits** for their commitment to driving forward such offers. These credits, too, could be used for offsetting emissions under eco-innovations.
- Car sharing is one way of reducing the number of vehicles on the roads because vehicles can be used more efficiently within a multimodal transport offering. In comparison with the existing fleet, car sharing reduces fuel consumption and CO_2 emissions because new, lower-emission vehicles replace end-of-life vehicles.

Recommendation: open the Regulation up for all measures that effectively reduce CO_2. Accelerate the ramp-up of e-fuels by anchoring them in the legislation on vehicle fleets.

b) Specific modalities for light commercial vehicles

The Commission indeed envisages identical reduction rates for passenger cars and light commercial vehicles for 2030, but ignores the different starting situations. Whereas for passenger cars a phasing-in period exists for 2020 and supercredits apply up to and including 2022, they do not exist for light commercial vehicles.

Recommendation: the different starting situation demands specific modalities for light commercial vehicles.

c) Credit transfer between passenger cars and light commercial vehicles

Another useful modality for achieving targets would be a credit-transfer mechanism. This should allow the transfer of CO_2 credits between manufacturers independent of allocation to M1 (passenger cars) or N1 (light commercial vehicles). Accordingly, a manufacturer that fails to reach its target could acquire CO_2 credits from a manufacturer that has exceeded its targets. Credit transfer mechanisms of this type have proven useful, for example in Chinese and US legislation, as important instruments for meeting the targets in a cost-efficient manner for the national economy.

Recommendation: enable credit transfers between passenger cars and light commercial vehicles, and between manufacturers.

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