

What the stringency of the European Union's vehicle CO₂ standards means for the European Green Deal

The European Green Deal calls for net-zero economy-wide emissions and a 90% reduction in transport emissions by 2050. To achieve the net-zero target by 2050, the European Commission has proposed strengthening the current 2030 greenhouse gas reduction target from at least 40% to at least 55% compared to 1990 levels. The Commission is now revisiting its sectoral plans and policies to achieve these targets, including the post-2021 CO₂ standards for cars and vans in mid-2021 and for trucks and buses in 2022. A new ICCT paper identifies several possible levels of stringency for the revised post-2021 CO₂ standards and compares these emissions pathways to the EU's climate and transport decarbonization goals.

KEY FINDINGS

The analysis evaluates tailpipe CO₂ emissions from light-duty and heavy-duty vehicles in the EU from 2020 to 2050 under currently adopted policies and three new policy scenarios: lower ambition, moderate ambition, and higher ambition.

Key findings include:

- » A lower-ambition scenario that achieves a 50% reduction in light-duty type-approval targets from 2021 to 2030 and a 100% zero-emission light-duty vehicle sales target by 2040 would reduce 2030 CO₂ emissions by 27% compared to 2020 (see Figure). In contrast, the adopted policies scenario would reduce 2030 CO₂ emissions by 24% from 2020. By 2050, a 90% reduction would be achieved by the lower-ambition scenario, compared to only 53% under adopted policies.
- » A moderate-ambition scenario that achieves a 70% reduction in light-duty type-approval targets from 2021 to 2030 and a 100% zero-emission vehicle sales target by 2035 would reduce 2030 CO₂ emission by 31% compared to 2020, and by 95% in 2050.
- » In a higher-ambition scenario, where 100% zero-emission light-duty vehicle sales are achieved by 2030, CO₂ emissions would be reduced by 35% in 2030 and by 97% in 2050. This policy scenario would avoid emitting roughly five times more CO₂ emissions than the lower-ambition scenario relative to the adopted policies scenario in 2030.

- » For heavy-duty vehicles, CO₂ emissions remain relatively flat in the adopted policies scenario, decreasing only 9% by 2030 and 19% by 2050 relative to 2020. Under a higher-ambition policy scenario, in which a zero-emission sales target is achieved in 2040 and efficiency improves by 8.4% for medium-duty trucks and buses and 7.2% for heavy-duty trucks annually until 2030, CO₂ emissions are reduced by 15% in 2030 and 91% by 2050.
- » Compared to 1990 emission levels, light- and heavy-duty vehicles combined would achieve CO₂ emissions reductions of 2% in the lower-ambition scenario to 11% in the higher-ambition scenario in 2030. This would fall short of achieving the 55% economy-wide reduction target in the road transport sector by approximately 260–330 million tonnes CO₂.
- » Tailpipe CO₂ emissions from road transport in the lower-ambition scenario would exceed the total transport sector 2050 target set by the Green Deal, even before factoring in aviation and marine shipping emissions. The higher ambition scenario would substantially close the gap but still fail to achieve the targeted 90% reduction in total transport sector tailpipe CO₂ emissions by 2050, indicating the need for more ambitious policies among all transport subsectors.

RECOMMENDATIONS

In the Commission's review of the post-2021 vehicle CO₂ standards, the following policy actions should be considered:

- » Set the overall stringency of the 2030 fleet-average type-approval targets for light-duty vehicles as close to 0 g CO₂/km as feasible.
- » Consider a fleet-average maximum for CO₂ emissions from remaining internal combustion engine vehicles. If zero- and low-emission vehicle benchmarks are exceeded by 5 percentage points, current fleet-average type-approval targets would not require improvements. An emissions cap on internal combustion engine vehicles and more stringent 2025 type-approval targets could prevent backsliding and further shrink the 2030 gap between road transport emissions and the proposed 2030 economy-wide greenhouse gas emissions reduction target.
- » Closely monitor real-world CO₂ performance and expedite the adjustment of manufacturers' average CO₂ emissions. Due to the transition from the NEDC type-approval test cycle to WLTP, close monitoring of emissions data is important to prevent manufacturers from inflating the WLTP-NEDC conversion ratio and decreasing the stringency of adopted targets. To prevent growth in the gap between type-approval and real-world CO₂ emissions, the Commission should expedite the timeline for using real-world fuel consumption data to adjust manufacturers' average CO₂ emissions to their real-world performance.
- » Adjust policies to account for the real-world usage of plug-in hybrid electric vehicles and incentivize CO₂ emissions reductions. In real-world conditions, plug-in hybrid electric vehicles emit two to four times the type-approval CO₂ value due to the amount of time driven on the combustion engine. If plug-in hybrid electric vehicles are part of a decarbonization strategy for road transport, member states should only incentivize models capable of rapid charging and with limited combustion engine power.

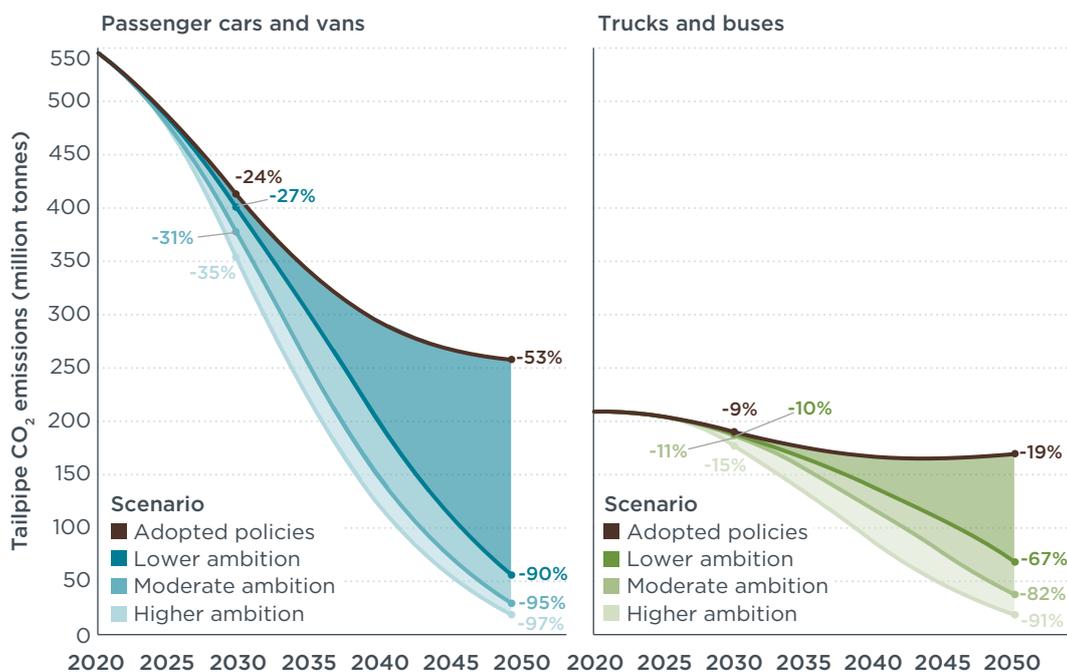


Figure. Light- and heavy-duty vehicle tailpipe CO₂ emissions under each policy scenario. Data labels show percent reductions in annual CO₂ emissions in each policy scenario in 2030 and 2050 relative to 2020.

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