



European
Automobile
Manufacturers
Association

Reducing CO₂ emissions from cars and vans

Backgrounder

SUMMARY

- a. The automobile industry in Europe has invested heavily in innovations designed to bring down significantly the CO₂ emissions from each kilometre cars are driven. Advances to vehicle engine technology have been supplemented with efforts to reduce the weight of vehicles. As a result, the average new car coming on to the road in 2021 will produce 42% less CO₂ per kilometre than the new car bought in 2005.
- b. However, for now, CO₂ emissions from road transport have not decreased as hoped. There are limits to how much more change can be brought to the internal combustion engine and how much further cars can be refined. Therefore, if we are to combat CO₂ emissions from road transport, we need a fundamental rethink about how we approach this challenge.
- c. It is vital we maintain the mobility that is essential to our economic prosperity – including the crucial contribution of the automobile industry to jobs and growth – as we seek to mitigate harmful climate change. This means a new comprehensive approach to CO₂ emissions reduction which adds a broader conception of how we reduce CO₂ emissions per kilometre and takes into account how we also reduce unnecessary kilometres driven (through ITS and infrastructure design), alongside continuing innovations in vehicle technology.
- d. Adopting alternative lower carbon fuels and powertrains will be key. Any commitment to reduce CO₂ emissions per kilometre further from the 2020 target of 95g of CO₂ per kilometre can only be met through a rise in the market share of alternative powertrain cars. In addition, because of its relative efficiency, any efforts to replace diesel with petrol-driven cars will only make the CO₂ emissions situation worse. New, cleaner car models will contribute to lowering the fleet's CO₂ emissions, so encouraging swifter fleet renewal is also vital.
- e. The testing procedure for cars – which includes the measurement of CO₂ emissions – is also going to be changed, moving from the current NEDC testing procedure to the much more relevant WLTP, which will better reflect real driving conditions. Even if we insist on further reductions from vehicle operation alone, any new post-2020

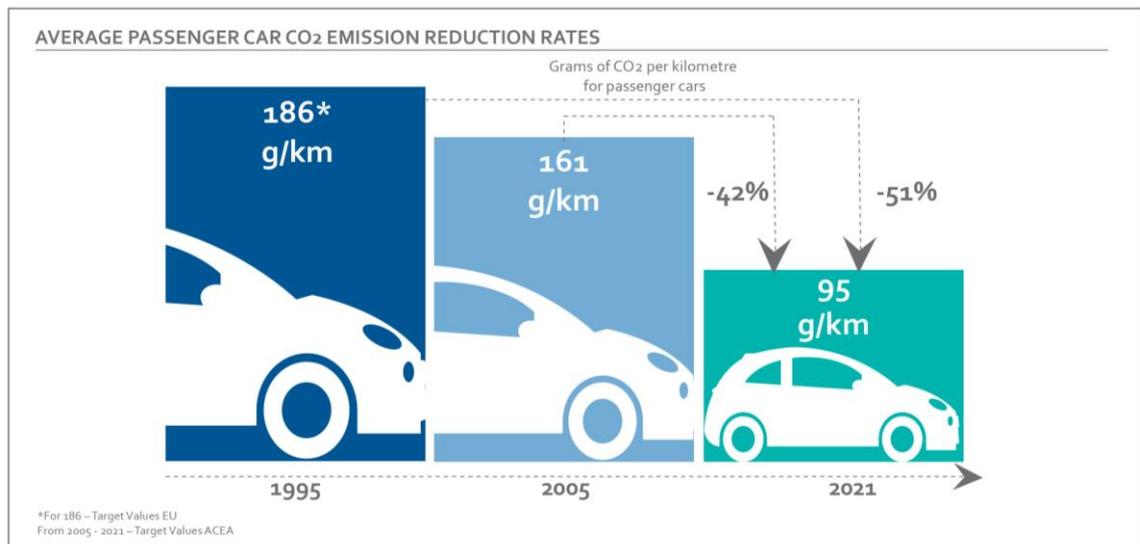
CO₂ emissions targets should be based on the fully implemented WLTP testing procedure.

- f. We must also ensure that in seeking new approaches for reducing CO₂ emissions, we do not create a conflict between Europe's ambitious climate change policies and the need to protect jobs and growth in Europe. 12.1 million people – more than 1 in 20 of the entire EU population in a job – are directly or indirectly employed by the automobile industry. It is also Europe's leading R&D industry with €41.5bn invested annually. Given the range of factors that contribute to the level of CO₂ emissions from each individual vehicle, it makes no sense for the full burden of reducing CO₂ emissions to be borne by the automobile industry alone – especially in the context of a highly competitive global market in vehicle manufacture and industrial production.

AN HISTORIC TRANSFORMATION

To achieve the EU's 2050 objective to reduce overall CO₂ emissions by 80-95% (compared to 1990 levels), the Commission White Paper on Transport (2011) suggests a CO₂ emissions reduction target for transport of 60% by 2050 (compared to 1990 levels). This implicitly means that by 2050 the CO₂ emissions of passenger cars and light commercial vehicles would need to be drastically reduced.

The EU has set the most challenging targets for reducing vehicle CO₂ emissions in the world. By 2021 manufacturers in Europe will have to reduce emissions to 95g of CO₂ per kilometre for passenger cars and 147g for vans – down from 186g of CO₂ per kilometre for passenger cars in 1995, and 181g for vans in 2010.

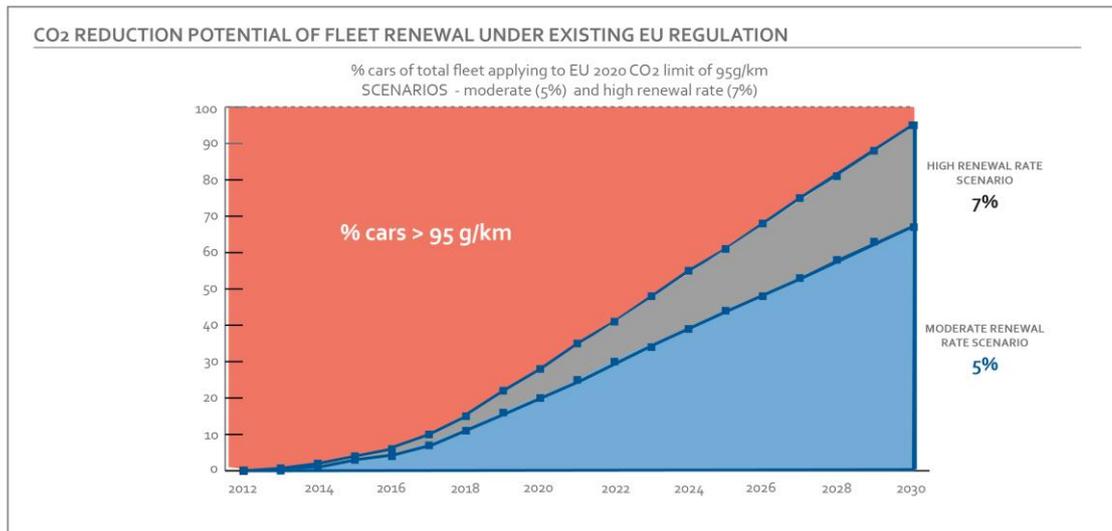


Car manufacturers have invested heavily in both vehicle engine technology and in innovative methods to reduce the weight of car components, from bumpers to seats. Significant steps forward have been made in car technology, such as variable valve timing, turbocharging, stop-start systems and direct injection technology. Each of these technologies improves fuel efficiency and offers cumulatively significant CO₂ emissions reduction.

Hastening fleet renewal

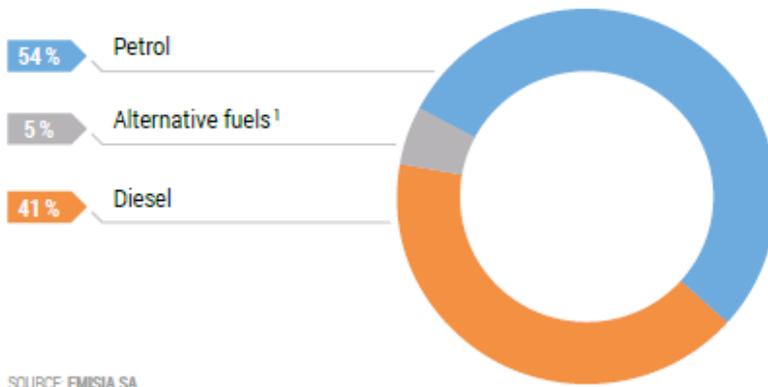
The outcome of this investment has been that new cars coming on to the road today emit significantly less CO₂ than the older cars they replace. Delivering against these tough EU targets, innovation by car manufacturers will ensure that by 2021, CO₂ emissions from new cars coming on to the roads will be 42% less than the CO₂ emitted by new cars in 2005. This is actually ahead of the general reduction targets implied within the EU 2030 targets. The benefits

of these advances in technology are being realised every time a new car comes on to the road and replaces one taken off the road – so-called ‘fleet renewal’. New, cleaner models contribute to lowering the fleet’s CO₂ emissions.



Considering that Europe’s fleet of approximately 242.2 million cars is unlikely to rise much further in the coming years, encouraging swifter fleet renewal will help to deliver an absolute fall in CO₂ emissions.

EU passenger car fleet by type of fuel



The contribution of diesel

Diesel-fuelled vehicles in Europe have also made a very significant contribution. Compared to other continents and driven by policy makers, Europe’s fleet is more

heavily skewed toward diesel, with 41%¹ (2014) of the fleet and over 50% of new cars using this fuel. Because of the relative efficiency of diesel compared to petrol, emissions of CO₂ per kilometre are up to 20% less from a diesel car than from a petrol one. New technology means

¹ ACEA Pocket Guide forthcoming 2015 edition

that diesel cars are helping to reduce CO₂ emissions whilst also meeting the most stringent ultra-fine particle standards in the world.

CO₂ emissions – what next?

Despite the CO₂ reductions delivered by manufacturers for new vehicles, progress in reducing the overall road transport emissions has been slow. It is clear that going further in terms of CO₂ emissions from individual vehicles presents car manufacturers with a real challenge. There are limits to the extent to which the internal combustion engine can be further refined whilst keeping cars affordable. Significant innovations in vehicle technology have been delivered, which have involved considerable investment in time and resources. Further changes still will be even more difficult. Moreover, making cars continually lighter is also challenging when car-buyers want the best possible security, GPS systems, entertainment and related equipment.

The car – AND the way it is used

It is not only the car itself that determines the CO₂ emissions it produces. It is common-sense to think that other factors play a major part too: the fuel or power it uses, the roads it drives on and the way the driver uses the vehicle.

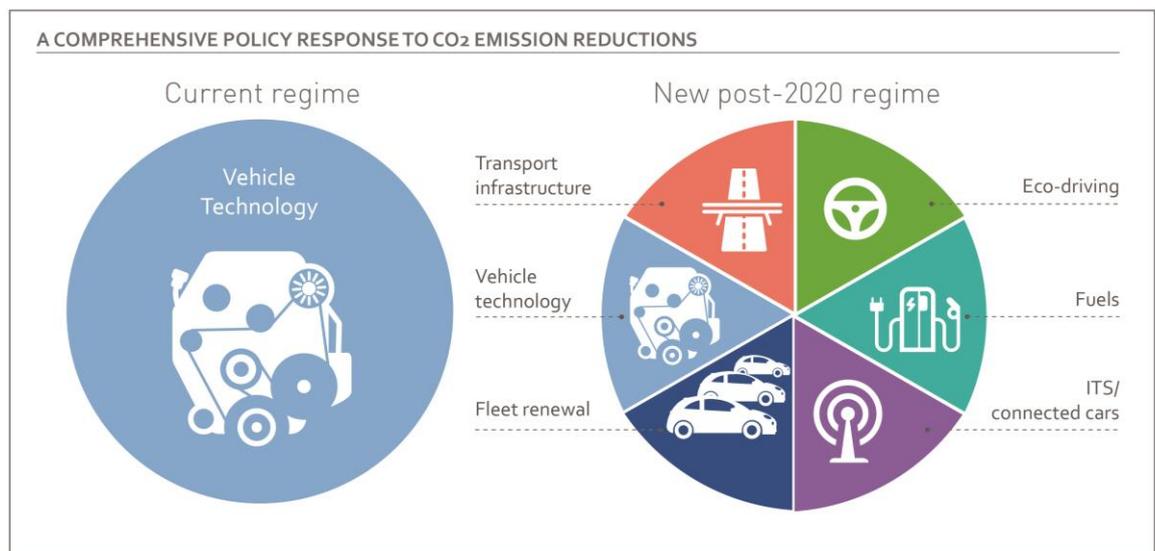
All of these things complement improvements in vehicle technology. **Car manufacturers can reduce the amount of CO₂ emissions from each kilometre driven, but they cannot influence how those kilometres are driven, nor how many kilometres are driven.**

THE COMPREHENSIVE APPROACH

Therefore, **if we want to drive transport CO₂ emissions down further and faster, we need to adopt a more comprehensive approach.** This means any post-2020 framework for reducing the CO₂ emissions of passenger cars and light commercial vehicles should not focus on vehicle technology alone, but also on:

- Getting the latest vehicle technology on to the roads as quickly as possible – by hastening the renewal of our car fleet. Through ongoing fleet renewal alone the whole car fleet in 2030 will emit more than one third less CO₂ than it did in 2005, and will surpass the EU's CO₂ emissions target of 30% foreseen for non-ETS (EU Emissions Trading Scheme) sectors.
- Ensuring the more rapid adoption of alternative power sources for cars, such as electric cars and hybrids.

- Finding ways to better grasp the opportunities offered by connecting cars to each other and the world around them through ITS. This can help drivers find parking spaces, avoid congested areas, and so on, thereby reducing unnecessary kilometres driven.
- Improving transport infrastructure so as to reduce unnecessary kilometres driven – including urban design and traffic management schemes.
- Helping drivers do their bit by driving in a more 'eco-friendly' way. Employing the best eco-driving techniques can help a driver to cut emissions by 5-15%², as well as ensuring that they keep their cars well-serviced. A poorly-maintained vehicle can consume up to 50%³ more fuel than one that is well taken care of.



All of these things can contribute to reducing road transport emissions, but the power we choose to use in cars is the most important. Reducing the 'carbon intensity' of road transport is essential if we wish to reduce vehicle transport emissions. We need to investigate the full basket of options to do this, including electric, hybrid, fuel-cell and natural gas-powered vehicles.

Although technological neutrality must remain the key principle, electrified cars are likely to play an important role in the short-term. Take up of electrically chargeable vehicles in Europe has, however, been disappointing. Although fast growing, it is coming from a very low base.

² <http://www.ecodrive.org/en/home/home.htm>

³ <http://www.fueleconomy.gov/feg/maintain.jsp>

Registrations of electrically chargeable vehicles increased by 36.6% in Europe in 2014⁴, but still accounted for only 0.6% of all vehicle sales last year, which means that only a tiny fraction of Europe's car fleet is electric or hybrid. Governments across Europe will need to increase their support if we are to see a significant increase in sales, both in terms of helping to build the charging infrastructure necessary and to influence consumer choices.

Testing real driving behaviour

The industry is completely in agreement that the NEDC (New European Driving Cycle) test is outdated and needs to better reflect real driving behaviour. We need to have an approach to measurement of emissions that is robust, as realistic as possible and creates confidence among the general public. If testing is too far away from 'real life', it cannot do that.

This is why we are actively contributing to the development the new WLTP (World Light Vehicle Test Procedure) test which will better reflect real driving conditions, including higher speeds, more dynamic and representative accelerations and decelerations, and stricter vehicle set-up and measurement conditions.

The shift from the NEDC to WLTP is a major undertaking and the Commission's target of implementing the new system by 2017 is overly ambitious. We also believe any post-2020 CO₂ emissions target for vehicles should be based on well-established and proven testing conditions of the fully implemented WLTP.

A balanced approach

We must not forget the potential for conflict between Europe's ambitious climate change policies and the need to protect jobs and growth in Europe. 12.1 million people – more than 1 in 20 of the entire EU population in a job – are directly or indirectly employed by the automobile industry, and affordable mobility and transportation are vital to the health of the broader economy. It is also Europe's leading R&D industry with €41.5 billion invested annually.

Given the range of factors that contribute to the level of CO₂ emissions from each individual vehicle, and the fact that further investments by the automobile industry will come at a growing cost, it makes no sense for the full burden of reducing CO₂ emissions to be borne by the automobile industry alone – especially in the context of a highly competitive global market in vehicle manufacture.

Pursuing a 'whole of society' approach where we use all the levers at our disposal is the best

⁴ <http://www.acea.be/statistics/tag/category/electric-and-alternative-vehicle-registrations>



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option available if we want to maintain the economic and societal benefits of road transportation whilst enabling further significant reductions in CO₂ emissions.



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ABOUT ACEA

ACEA's members are BMW Group, DAF Trucks, Daimler, Fiat Chrysler Automobiles, Ford of Europe, Hyundai Motor Europe, Iveco, Jaguar Land Rover, Opel Group, PSA Peugeot Citroën, Renault Group, Toyota Motor Europe, Volkswagen Group, Volvo Cars, Volvo Group. More information can be found on www.acea.be.

ABOUT THE EU AUTOMOBILE INDUSTRY

- Some 12.1 million people - or 5.6% of the EU employed population - work in the sector.
- The 3.1 million jobs in automotive manufacturing represent 10.4% of EU's manufacturing employment.
- Motor vehicles account for €396 billion in tax contribution in the EU15.
- The sector is also a key driver of knowledge and innovation, representing Europe's largest private contributor to R&D, with €41.5 billion invested annually.

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