REDUCING CO2 EMISSIONS FROM PASSENGER CARS AND LIGHT COMMERCIAL VEHICLES POST-2020
The European automotive industry remains committed to continuing to lower greenhouse gas emissions, through the development of more fuel-efficient technologies (e.g., variable valve timing, turbocharging, stop-start systems and direct injection technology) and ongoing investments into alternative powertrains.

The EU has set the most challenging targets for reducing CO2 emissions from cars in the world. By 2021, CO2 emissions from new cars coming on to the roads will be 42% less than the new cars in 2005. This is ahead of the targets set by the EU under the 2030 energy and climate package.

This comes on top of the significant CO2 reductions already delivered by car makers. In 2015 average new car emissions were 119.6 g CO2/km compared to 186 g CO2/km in 1995 – a 35.7% decrease in just two decades.

These CO2 savings have been achieved in conjunction with decreases in pollutants such as NOx and PM through the introduction of the Euro standards – despite these initiatives requiring conflicting measures.

1. WHAT PROGRESS HAS BEEN MADE IN REDUCING CO2 EMISSIONS FROM VEHICLES?

The EU’s automobile industry has made great strides in reducing CO2 emissions from vehicles.

The European automotive industry is the continent’s number one investor in R&D, spending €44.7 billion on innovation each year.
2. WHAT IS THE BEST WAY TO MEET THE CLIMATE CHANGE CHALLENGE IN THE FUTURE?

Identifying the best possible response to the climate change challenge is a major priority for Europe. It is a key focus of the European Union’s ongoing policy development in the context of the 2030 Climate and Energy Framework, and is also important in relation to the international climate change negotiations.

Under the 2030 climate and energy package, EU regulators propose ambitious political targets for reducing CO2 emissions.

The automobile industry welcomes the European Commission’s decarbonisation initiative across all transport modes in Europe, and has already made significant improvements to new vehicle CO2 performance with an ongoing commitment to do more.

Passenger cars and vans account for 13% of greenhouse gas emissions in the EU

However, manufacturers have little influence over how cars, vans and trucks are used. For this reason, Europe should consider a ‘whole of society’ approach that adopts an integrated strategy to tackling road transport emissions. This means not only reducing emissions from the vehicle itself, but also looking at all factors influencing CO2 emissions during the lifetime of the vehicle.

Such a holistic approach will reduce CO2 emissions more effectively by drawing on a full spectrum of solutions, whether this relates to the vehicle itself, alternative powertrains, faster fleet renewal, intelligent transport systems (ITS), improving infrastructure or altering driver behaviour. Combined with the industry’s continuous improvements to vehicle technology, these measures have the potential to combat CO2 emission more successfully.
Alternative powertrains include propulsion systems that are not based exclusively on the internal combustion engine. This may include hybrids, full battery electrics, hydrogen fuel cells, compressed natural gas and many other types.

In 2015, more than half a million alternative fuel cars were registered in the EU by 2014, of total passenger car registrations.

But while market acceptance of alternative-fuel vehicles is rising, they still represent a very small share of vehicle sales in Europe. Promoting greater market uptake of alternative powertrains is therefore key to ensuring further reductions in average CO2 emissions.

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 necessary charging infrastructure (by swiftly implementing the Directive on Alternative Fuel Infrastructure) and in influencing consumer choices (by harmonising customer incentives across EU member states).

In the meantime, improving traditional technologies, such as the internal combustion engine, will remain an important contributor to CO2 reduction.

STAKEHOLDER DATA: According to EURELECTRIC and other stakeholders, on a tail-pipe emission basis, electrically-chargeable vehicles (electric cars and fuel cell electric vehicles) could bring CO2 emissions reductions of up to 15% by 2030 compared to 2015. However, this will depend on how quickly some of the immediate challenges are addressed, such as the provision of electric vehicle infrastructure and support by utility providers and governments. If these challenges can be overcome, consumer acceptance of these new vehicle types could accelerate their wider adoption.1

STAKEHOLDER DATA: Based on assumptions by the European Biodiesel Board (EBB) and other stakeholders, advanced biodiesel could also produce CO2 emissions reductions of up to 15% across the car fleet by 2030. Bioethanol could cut CO2 emissions by a further 10% if E20 fuel were to be developed commercially, according to estimates based on ePURE figures. Methane, meanwhile, could produce 7% of CO2 reductions by 2030.1

It is also important to encourage the development of low carbon-intensive fuels fuels (via the Renewable Energy Directive).

With regards to the range of alternative powertrains, the principle of ‘technology neutrality’ must be kept, as there is no one-size-fits-all solution covering all possible consumer choices and business needs. This is particularly clear when comparing cars, vans and trucks: solutions for small city cars for instance do not work for trucks.

1 In order to better understand how the technologies and approaches available can deliver the greatest impact, ACEA brought over 50 stakeholders together to learn from their expertise and knowledge, and to capture their views in a report entitled ‘Joining forces to tackle the road transport CO2 challenge’. The report is based on a consultation exercise involving businesses, trade associations, NGOs, research bodies and think tanks. Its purpose is to identify the technologies and approaches that, according to the various stakeholders, can have the greatest impact on reducing CO2 emissions from cars and light commercial vehicles. It also aims to map out key policy changes necessary for such technologies or approaches to deliver their fullest CO2 emissions reduction potential.
Intelligent transport systems (ITS) in general and more specifically connected car technologies, are instrumental in empowering drivers to make optimal decisions with regards to driving: real-time information that helps drivers make better decisions about routes to take, where to park and other driving decisions that are based on data provided by public and private providers. ITS and connected car technology can help lower fuel consumption, reduce costs, improve traffic flow and lower CO2 emissions.

**STAKEHOLDER DATA:** According to research by ERTICO - ITS Europe, in-vehicle eco-navigation systems (dynamic navigation tools that use real-time data to reduce fuel) have a 5-10% emissions reduction potential. Eco-driving systems – which recognise driving behaviour and provide the driver with on-trip advice and post-trip feedback – can bring down emissions by 5-20%.

Regarding infrastructure, the two highest-potential measures are traffic signal coordination and parking guidance. Giving drivers real-time advice on traffic signals and guidance to find a parking space could produce a further 10% savings in CO2 emissions for equipped vehicles in the areas where these systems are deployed.

**Eco-driving** is a set of techniques and behaviours that drivers can use to prepare their vehicle, plan their journey and drive in a more ecologically-friendly way to lower fuel use. These methods include car maintenance, planning trips to avoid congestion, reducing engine idling and driving at more appropriate and stable speeds.

Eco-driving can be promoted using two pathways: driver training or ADAS (advanced driver assistance systems). Both aim to encourage fuel-efficient vehicle operation, either through a change in intrinsic behaviour (training), or by providing instantaneous in-vehicle feedback and guidance (ADAS).

**STAKEHOLDER DATA:** While both methods can have an impact individually, their combined effect is an approximate 15% reduction by 2030. These benefits are mainly seen in urban environments and at lower speeds, where accelerations and decelerations occur more frequently. On motorways, some benefits can come from free coasting as well. Improving transport infrastructure to reduce unnecessary kilometres driven - including urban design and traffic management schemes - is also key.
The automobile industry has succeeded in transforming both engines and components to increase fuel efficiency and reduce emissions from new vehicles. However, new vehicles only make up 5% of Europe’s car fleet, resulting in a slow uptake of more efficient vehicles. For this reason, the automobile industry’s investments in more efficient vehicles will not come to full fruition as long as the potential of fleet renewal is not supported. Besides the fact that fleet renewal is the quickest way to reduce emissions, it also stimulates private and business consumption in Europe, which is one of the key drivers of GDP growth.

The average age of cars in the European Union is currently close to 10 years and is rising year-on-year. As a result, emissions targets which exclusively focus on new vehicles fail to address the bulk of vehicles already on the road.

STAKEHOLDER DATA:
A recent TML study estimated a 37% reduction in CO2 emissions by 2030 through fleet renewal, with of course declining effects after 2030.

Fleet renewal

Improved infrastructure

While multiple methods exist, the biggest effect can probably be generated by ensuring that roads are well maintained, thereby keeping parameters such as macrotexture and roughness close to the optimal level.

STAKEHOLDER DATA:
Improvement potential of 1-2% by 2030.

---

2 ITS for reducing CO2 emission of passenger cars, ERTICO – ITS Europe, September 2015
3 Integrated approach to reducing CO2 emissions of passenger cars, Transport & Mobility Leuven, July 2015
3. IN SUMMARY: WHY DO WE NEED A MORE EFFECTIVE APPROACH TO REDUCING CO2 EMISSIONS?

More effective

The current system has limited environmental benefits, as it focuses on new vehicle technology alone. A more effective approach will look at the full fleet and how it is used. In other words, we need to adopt an integrated approach to tackling road transport emissions. This means focusing not only on reducing emissions from new vehicles, but also on factors influencing emissions throughout the lifetime of the vehicle.

More balanced

New measures should be more effective and balanced, whilst safeguarding industry competitiveness.

STUDY SHOWS: By 2020, average emissions of new passenger cars will need to be reduced by 39% compared to their 2005 level. And while the automobile industry is dedicated to achieving this goal, it should be noted that this compares to a 10% reduction expected from other non-ETS sectors (including buildings, agriculture and waste) and a 21% reduction expected from ETS sectors (such as power stations and combustion plants) during the same timeframe.4

Looking ahead, efforts to reduce carbon emissions must be similar and proportionate across all sectors. CO2 reductions should be balanced between ETS and non-ETS sectors, across transport modes, and in Europe versus the rest of the world.

4 Regulation and Competitiveness of the EU Automotive Industry, FTI, May 2016
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.

The automotive industry is one of the most regulated sectors in Europe – subject to around 80 EU Directives and over 70 international UNECE regulatory agreements. Regulations relating to safety, the environment, type approval of vehicles and taxation have already added significantly to the industry’s costs.

**STUDY SHOWS:** McKinsey estimates that between 1998-2011, regulatory requirements and other improvements such as ESP, airbags, fuel efficiency improvement and weight reduction increased production costs by 3-4% per year. More recent regulations, such as the new noise limit, eCall, the 2020 CO2 target and Euro 6 with the Real Driving Emissions (RDE) test, are expected to add a further 24% to the manufacturing costs of a car by 2020.

**STUDY SHOWS:** The 2020 CO2 target is estimated to impose an additional €1,000–€2,000 per car, which, when fleet-wide, amounts to €13 billion. Car prices have, over the same period, increased only in line with inflation. From being the most profitable region in 2007, generating €15 billion profits, the European region became the least profitable, with aggregated losses of €1 billion in 2012.

Effectively joining forces to reduce CO2 emissions will allow us to drive down total road transport emissions, but will also ensure that Europe’s strategic automotive industry retains its competitiveness in the decades to come.

Therefore, policymakers should assure that comparable efforts are made by all sectors.

ReducingCO2Together.eu

Copyright © 2017 ACEA | All Rights Reserved
Avenue des Nerviens 85 | B-1040 Brussels | Belgium | T +32 2 732 55 50 | F +32 2 738 73 10 | www.acea.be
Designed by ACW, London, UK