

# Decarbonising surface transport and the 2030 targets: What the European Commission should do

April 2016

A briefing by



## Summary

Early in summer 2016 the European Commission will present a proposal on the 2030 effort sharing decision (ESD) and a communication listing the key initiatives the EU will take to reduce road transport GHG emissions through EU measures. EU Transport and Environment Ministers are meeting in Amsterdam on 14 and 15 April to discuss smart and green transport and provide input for the Commission's plans. This briefing summarises Transport & Environment's key recommendations on surface transport for ministers ahead of this Informal Council meeting.

### **Efficiency first: squeezing more out of each barrel of oil**

#### **For cars and vans the EU should:**

1. Introduce CO<sub>2</sub> standards aimed at achieving 90 g CO<sub>2</sub>/km *real-world* CO<sub>2</sub> emissions by 2025, achieved by a 80 g/km standard as measured on the new WLTP test complemented by new real-world (RDE) tests for fuel consumption and CO<sub>2</sub> emissions with a not-to-exceed limit of 115% of the WLTP
2. Introduce a flexible mandate to accelerate the uptake of ultra-low carbon (<25 g CO<sub>2</sub>/km) vehicles to a 10-20% market share by 2025
3. Accompany these proposals with a matching proposal updating car CO<sub>2</sub> labelling and consumer information

#### **For trucks and buses the EU should:**

1. Introduce 2025 CO<sub>2</sub> standards for trucks and trailers to kickstart truck fuel efficiency after 20 years of no progress
2. Reform the Eurovignette directive to enable CO<sub>2</sub> toll discounts for fuel efficient and zero-carbon trucks and trailers
3. Develop EU-wide aftermarket technology verification tests to increase transparency and enable fiscal incentives, subsidies and toll discounts for fuel saving technologies

### **Cleaner transport energy**

For a shift towards more sustainable energy in transport the following actions should be taken:

1. Introduce an all-encompassing strategy to establish a fully functional, barrier-free internal market for all forms of electromobility – cars, passenger trains, freight - by 2025;
2. Ensure that as of 2020 food-based biofuels are phased out and not counted towards renewable energy or climate objectives any more by lowering the EU 7% cap to zero. Only if this has been committed to, consider new policies to stimulate advanced biofuels notably

from waste and residues. Ensure clean fuel policy encourages non-bio forms of low-carbon liquid fuels notably power-to-gas and power-to-liquid made from excess renewable electricity;

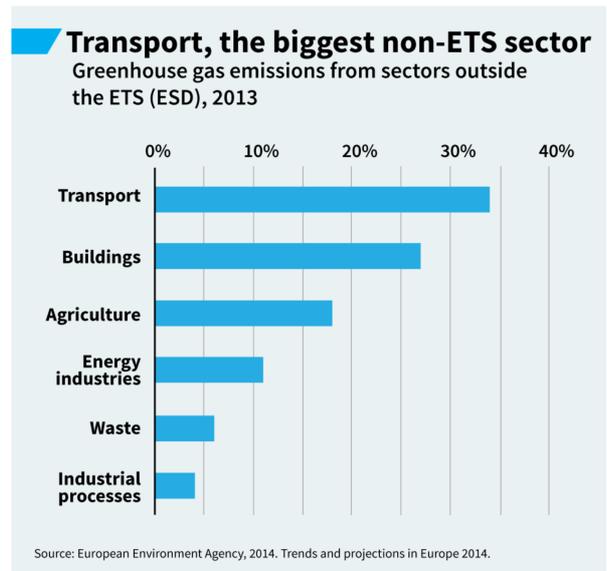
3. Ensure petrol, diesel and natural gas are taxed comparably and until that is the case, avoid further support for vehicles using undertaxed fossil fuels, for example, diesel and natural gas.

## 1. Context

### 1.1. Why road transport needs to be decarbonised

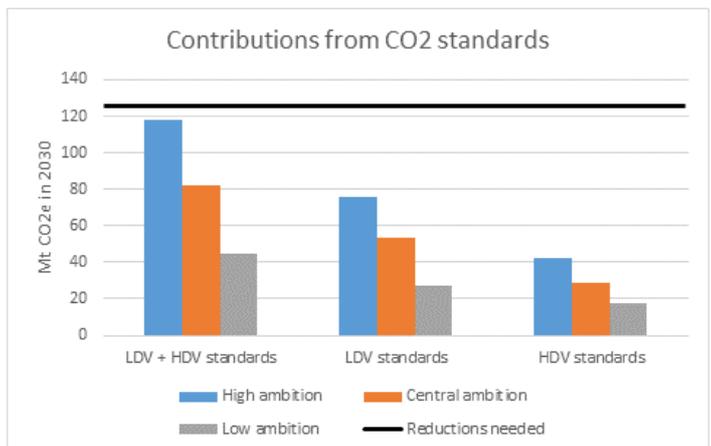
In October 2014 the EU heads of state agreed that by 2030 Europe will reduce its CO<sub>2</sub> emissions by 40% compared to 1990. Sectors outside the ETS, covered by the so-called 'Effort Sharing Decision' (ESD or non-ETS) need to reduce GHG by 30% from 2005 levels. The recent Paris climate agreement commits the EU to much more ambitious emission cuts by 2050.

As shown by figure 1, transport emissions represent a major challenge. Neither the short-term 2030 nor the long-term 2050 targets are realistic without significant transport emissions cuts. This means Europe urgently needs to start driving the technology and fuel transition that will be required to decarbonise the light-duty vehicle fleet and significantly reduce heavy-duty vehicle emissions by 2050.



### 1.2 Why EU measures are necessary

Transport emission reductions must be achieved through a range of measures at the EU, national and local levels. However, no sustainable transport policy can be successful without cleaner vehicles and fuels. A [2015 T&E report](#) estimates that vehicle efficiency improvements for cars, vans and trucks could account for 30-60% of the transport emission reductions member states are required to make in the 2021-2030 period. More recently, [Ricardo Energy](#) estimated that vehicle efficiency could deliver up to 36-93% of the required 2030 emission cuts.[ii] Both vehicle efficiency and fuel quality are core EU competencies. This means member states are highly dependent on EU action to meet their 2030 ESD targets.



Ricardo Energy 2016 – based on updated/more realistic reference scenario

## 1.3 What the Commission is planning

The European Commission has acknowledged its responsibility to help member states achieve their 2030 ESD and transport targets.<sup>1</sup> It has announced that the 2030 ESD proposal will be accompanied by a decarbonisation of transport communication. The strategy should announce the key initiatives and policies the EU will be undertaking in the next years. This would provide planning certainty to member states as they prepare to meet their 2021-2030 ESD obligations. This briefing summarises Transport & Environment's key recommendations for the EU decarbonisation of transport strategy.

## 2. Fuel economy standards for cars

In 2008 and 2013 the EU agreed regulations that require new car emissions to be reduced to 130g/km in 2015 and 95g/km in 2021. The car CO<sub>2</sub> regulation was initially successful in accelerating new car fuel economy and investments in clean technology. The standards also have numerous [co-benefits](#) for motorists/hauliers, the economy, employment and energy security.

However, the regulation is being undermined by carmakers' exploitation of loopholes in the NEDC test procedure. Real-world fuel economy improvements stopped in 2012 and the average gap between real-world and NEDC fuel consumption increased to 40%. Europe is becoming a diesel island in a world of gasoline, hybrid and electric cars and losing its technological, industrial and regulatory leadership to other regions such as Japan, Korea and the US. New vehicle efficiency legislation post-2020 is essential to reclaim the EU's lost technological leadership.

### 2.1. 2025 car CO<sub>2</sub> standards

The Commission should propose new car CO<sub>2</sub> standards for 2025:

1. Because **2025 standards ensure European vehicle legislation contributes maximally** to member states' objectives to reduce transport emissions between 2021 and 2030. Waiting with new targets for new vehicles until 2030 means that they will hardly contribute to achieving the required 2030 emissions reductions;
2. **2025 strikes a good balance** between the need to provide carmakers planning certainty and lead time and the certainty to predict technology costs and potentials.
3. **WLTP-based 2025 targets** will ensure carmakers work towards a meaningful 2025 target rather than have the discredited NEDC-based 2021 targets continuing to guide carmakers' planning and investments until the end of the 2020s. Although WLTP will be introduced, targets will still be based on the NEDC approach with its flexibilities.
4. Decarbonising the passenger car sector by the middle of the century will require all new cars to be virtually zero-emitting by 2035-2040. The shift towards zero-emission vehicles must therefore commence well before 2030. A sufficiently ambitious 2025 target combined with a flexible ultra low carbon vehicle (ULCV) mandate (see below) would oblige carmakers to ramp up investments in zero-emission vehicles and would **reposition the EU as a technology leader in the automotive sector** and compete with US and Chinese investments.

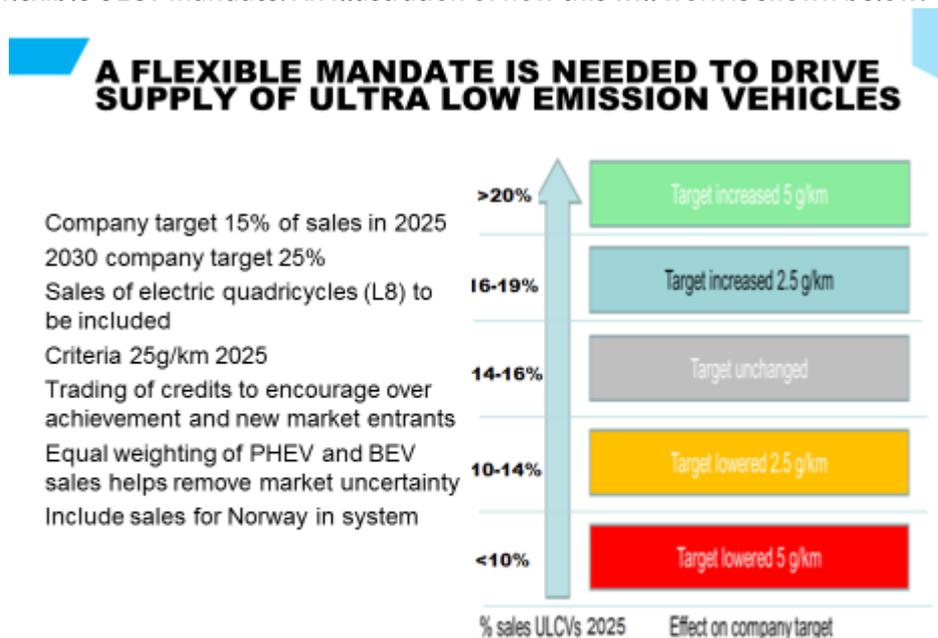
### 2.2. A flexible ultra-low carbon vehicle (ULCV) mandate

Although CO<sub>2</sub> standards are an effective way to achieve emission reductions, they have been better at driving incremental efficiency improvements (for example, start-stop and downsized gasoline direct injection engines) than at stimulating supply of the advanced technologies (such as electric cars) that are required in the medium-term. This is because the targets which have been set are far too low for advanced technologies to be needed. It creates a risk that investment is overly focused on short-term solutions and insufficiently on breakthrough technology (for example, battery electric and/or hydrogen vehicles).

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<sup>1</sup> Commissioner Canete's speech during the June 2015 transport decarbonisation conference

Supercredits in the current car CO<sub>2</sub> regulation have proved ineffective in driving supply and weaken the required efficiency improvements. Therefore the Commission should include a new element in the 2025 legislation: a flexible ULCV mandate. An illustration of how this will work is shown below.



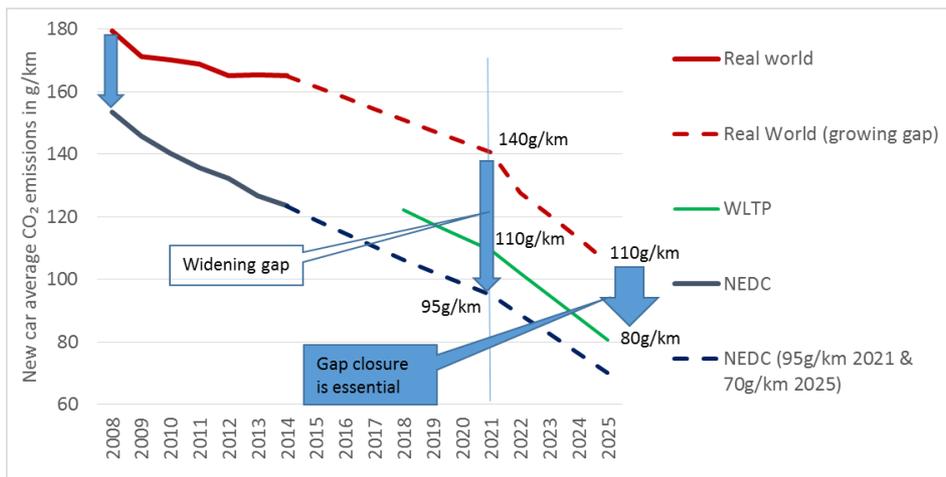
The flexible mandate is explained in more detail in [this](#) paper but the main principle is that:

1. All carmakers need to achieve a certain percentage (of the order of 10-20%) of ULCV sales by 2025 in addition to their fleet CO<sub>2</sub> target (similar to the Californian ZEV mandate)
2. Flexibility is provided in three ways:
  - i. Carmakers may choose to over or underachieve their ULCV mandate. If they underachieve they would need to achieve a more challenging CO<sub>2</sub> target; if they'd overachieve they would receive a more lenient CO<sub>2</sub> target;
  - ii. Carmakers may trade their ULCV obligations/credits encouraging new entrants into the market;
  - iii. Carmakers can choose which technologies to use – plug-in hybrid, battery electric or hydrogen vehicles; or to supply electric quadricycles. Plug-in electric vehicles should be credited if their real-world emissions reductions are adequate with CO<sub>2</sub> emissions below around 25g/km.

### 2.3. Real-driving emissions tests for fuel consumption/CO<sub>2</sub>

Ambitious emissions legislation is only as strong as the test procedures that underpin it. The Volkswagen affair and the increasing gap between NEDC and real-world CO<sub>2</sub> amply demonstrate the limits of laboratory testing. The new WLTP test is a partial solution, but there will still be a large gap (around 20%) between test and real-world performance that will again grow to over 30% by 2025.<sup>2</sup> For NO<sub>x</sub> emissions the EU has successfully introduced real-world tests for heavy-duty vehicles and from 2017 similar road tests for light-duty vehicles. As part of its post-2020 proposals for cars, vans and trucks, the EU should also introduce RDE tests for fuel consumption too.

<sup>2</sup> <https://www.theccc.org.uk/publication/impact-of-real-world-driving-emissions/>



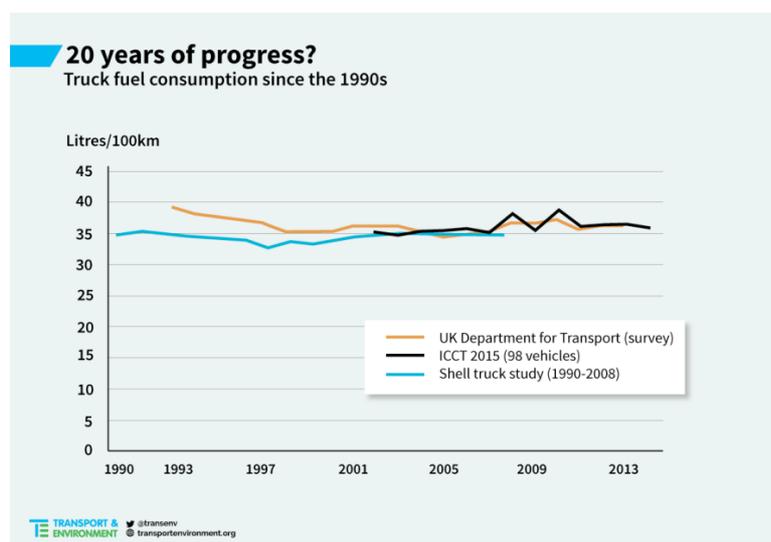
The regulation would be based upon the WLTP test result but with a requirement that the real-world test result is no more than 115% higher than the WLTP value. Such a not-to-exceed limit would prevent laboratory tests being manipulated to artificially lower test results and encourage manufacturers to fit technology that delivers emissions reductions on the road not just in the laboratory. T&E is working with Peugeot Citroën to produce a robust, representative and reproducible real-world test for cars and vans. Real-world testing is also essential to validate and give credibility to the VECTO model estimating CO<sub>2</sub> emissions for trucks and buses. Such an approach could also be used to regain the trust of vehicle buyers while providing a solid basis for consumer information as well as 2025 standards.

### 3. Beyond the irrelevant 2020 target for vans

Over the last decades the share of vans in the total vehicle fleet has steadily increased. This growth is linked to a number of regulatory benefits vans enjoy (no driving license, tachograph, speed limiter or road charges). The growth of the e-commerce, express and delivery market means the coming years will likely see continued growth in the van segment. In 2010, the EU adopted CO<sub>2</sub> standards for vans. The regulation requires the CO<sub>2</sub> new vans emit to be no more than 175g/km in 2017 and 147g/km in 2020. The van CO<sub>2</sub> legislation suffers from the same NEDC-related flaws as discussed above but is made worse by the fact that the [2017 and 2020 targets are weak and unambitious](#). Without a significantly more ambitious 2025 target, investments in more fuel efficient vans – let alone (plug-in) hybrid or electric vans – will not happen and efforts by cities to shift towards zero-emission city logistics will be severely undermined.

### 4. Time for truck fuel economy standards

Emissions from heavy-duty vehicles (HDV), which include trucks and buses, increased by 36% between 1990 and 2010 and will continue to grow. One of the key reasons for this emissions growth is that truck fuel economy has not improved in recent decades (see [ICCT 2015](#)). HDV emissions currently represent around 30% of all road transport CO<sub>2</sub> emissions and 5% of all EU CO<sub>2</sub> emissions. Unless additional measures are taken HDV emissions could increase to 40% of road transport emissions by 2030 and account



for 15% of 'effort sharing' or non-ETS emissions.

The EU [has spent 10 years](#) discussing and developing a truck CO<sub>2</sub> test procedure (VECTO) that will be adopted in 2016. It is now time for the EU to finally commit to introducing 2025 fuel efficiency standards for trucks. Fuel efficiency standards will help overcome market barriers and put an end to 20 years of no progress on truck fuel efficiency. Since fuel consumption represents around 20% of haulage costs, the haulage and logistics sector would [greatly benefit](#) from legislation that improves vehicle efficiency and reduces the cost of fuel saving technology as well as the total cost of ownership.

In addition to truck fuel economy standards, the Commission should:

1. Develop a technology certification procedure for aftermarket technologies. VECTO only covers new vehicles but many fuel saving technologies such as tires and aerodynamic devices are sold on the aftermarket. Providing clarity on the effectiveness of these technologies could accelerate their uptake but would also enable member states to incentivise the purchase of proven/certified technologies through tax breaks, subsidies and, most importantly, toll discounts
2. Reform the Eurovignette directive to enable CO<sub>2</sub> tolls discounts for efficient trucks and trailers. The finalisation of VECTO (and possible development of a technology certification procedure) enable member states to use fiscal policy to incentivise more efficient trucks. Road charges or tolls are levied in most central European countries and toll discounts can play a key role in accelerating the uptake of cleaner vehicles. More detail on our proposal can be found [here](#).

## 5. Cleaner Transport Energy

Europe needs an urgent shift in the direction of its energy policy in transport. It should shift its biofuel policy away from quantity towards quality, and create a seamless internal market for all forms of electromobility.

### 5.1. Stop counting food-based biofuels towards renewable and climate targets

Doubts surrounding the climate performance of biofuels were strengthened by the key [Globiom report](#) that the European Commission released on 10 March.

A key finding is that just land-use change emissions from biodiesel – representing 70% of the biofuel market in 2020 – are already some 30% higher than the full lifecycle emissions of fossil diesel. After adding in direct emissions – from tractors, fertilisers and the like – lifecycle emissions from biodiesel are some 80% higher than those of fossil diesel.

The conclusion is reinforced that Europe's biofuel policy increases, not reduces, greenhouse gas emissions and the picture will not change until 2020. Notwithstanding this, all biofuels are still artificially counted as having zero emissions.

It is also true that biofuels made from waste and residues can be very beneficial for the climate; but they are not likely to be deployed in any significant volumes under current policy.

Europe needs to ensure that after 2020 food-based biofuel are no longer counted towards renewable energy or climate objectives by lowering the EU 7% cap to zero. Only if this has been committed to, Europe should consider new policies to stimulate the uptake of advanced biofuels notably those based on waste and residues. Policy should stimulate possible low-carbon and renewable liquid fuels from non-biological origins such as power-to-gas and power-to-liquid made from excess renewable electricity.

Europe should become more technology-neutral in the way it taxes its transport fuels; compared with petrol, diesel, natural gas and LPG are strongly undertaxed. Diesel fuel for cars receives a tax [break](#) of €0.14 per litre or €27 billion per year; LPG and natural gas are taxed even lower. Until taxes are aligned according the energy and carbon content of fuels, no additional policies to stimulate low-tax fuels should be implemented any more.

## 5.2. Create an internal market for electromobility

By far the most important change in the energy, climate and transport landscape since the adoption (2007-9) of Europe's first climate and energy package has been the precipitous drop in prices of solar and wind power and the cost of batteries. The price of solar and wind electricity dropped by some 85% and 60% in the past seven years respectively; as a result solar and wind now dominate newly installed electricity generation capacity.

The price of batteries has [dropped](#) by two-thirds since 2010 and is forecast to reach a level to compete with conventional vehicles by 2020-30. There is more and more agreement that electricity will be the clean and affordable energy source of the future, and transport should capitalise on it. This will not only reduce the total costs of transportation but deliver clean, low carbon, quiet mobility, reduce energy insecurity and provide synergies with smart, renewable electricity generation and grids. It could also relaunch the European automotive industry that is losing global market share.

In the forthcoming Communication the Commission should prioritise the creation of a seamless internal market for all forms of electric transport. Electromobility can also be delivered via e-bikes, scooters and quadricycles; electric trains, trams and buses, while hybrid electric trucks are a promising development.

But in Europe progress is patchy. In Norway the share of EVs in new car sales approaches 25%; in Bulgaria one EV was sold in the last quarter of 2015; showing that policy matters enormously and there is no EU single market. To stimulate the supply of electric cars and electric quadricycles, the ULCV Mandate should be introduced into the car and van CO<sub>2</sub> regulation.

To encourage demand there must be greater investment in recharging infrastructure particularly fast charging sites to facilitate inter-urban journeys. Creating this requires further work on international standardisation of plugs and payment systems to make public recharging networks accessible to all drivers on a pay-as-you-go basis. It has to be facilitated by on-board metering of electricity consumption to ensure electricity used in transport can be accounted for.

As for rail, it should become much easier to buy a rail ticket for a trip that covers more than one company, through mandating sharing of the necessary data within the industry and with third parties. This should at least apply to railway undertakings that receive public money for their services – most of which do. All rail should be electrified and use of diesel as fuel for rail should be discouraged.

## Further information

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