

Road to 2030: how EU vehicle efficiency standards help member states meet climate targets

Transport emissions reductions in the context of the 2030 Effort Sharing Decision

June 2015

A briefing by **TRANSPORT & ENVIRONMENT**

Summary

This paper attempts to quantify the challenge for EU member states in reducing transport emissions under the expected 2030 'effort sharing decision' and the extent to which CO₂ standards for cars, vans and trucks can help achieve those targets.

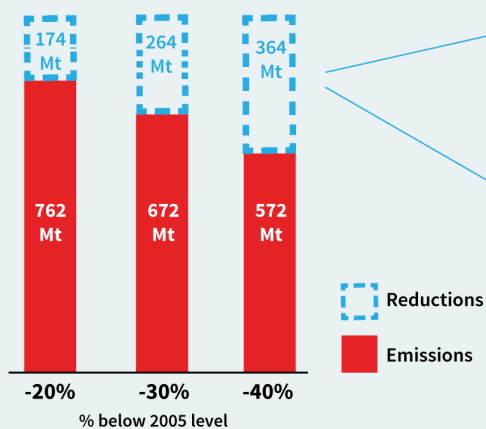
In October 2014 EU heads of state decided on new targets for the reduction of greenhouse gas emissions by 2030. Emissions under the EU emissions trading system (ETS) will have to fall by 43% from 2005 levels, and emissions outside the ETS – mainly transport, buildings and agriculture – by 30%. The latter target will be made legally binding on member states through a new so-called 'effort sharing decision' or ESD, for which the Commission will make a proposal in 2016.

Transport is currently the biggest ESD sector (34%) and the Commission assumes¹ that without additional action, transport emissions will roughly remain constant until 2030. The ESD proposal provides a unique opportunity to align EU transport policies with climate goals. Combining the setting of emissions reduction targets – under the ESD – with actual measures to reduce emissions can increase support for both.

We defined three possible 2030 targets for GHG emissions from the transport sector: -20, -30 and -40% compared with 2005 levels. We then calculated to what extent improved vehicle efficiency could help meet these three targets, both at EU and at national level. This assessment rests on a number of assumptions, explained in the methodology section, and is not an exact calculation. It does, however, make it very clear what the impacts are of mandating, or not, improved vehicle efficiency.

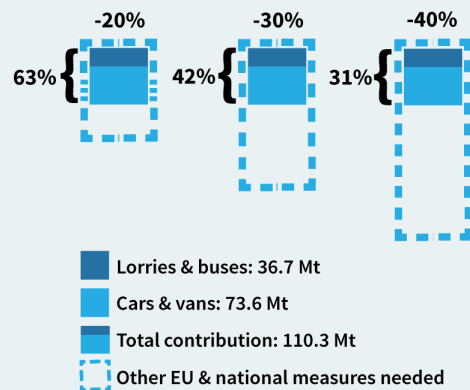
What the EU can do for you

Transport emissions reduction scenarios for 2030



Source: T&E in-house analysis
Mt = Megatonnes of CO₂ equivalent

Contribution of CO₂ standards for all vehicles (2025 & 2030) to reduce transport emissions



Lorries & buses: 36.7 Mt
Cars & vans: 73.6 Mt
Total contribution: 110.3 Mt
Other EU & national measures needed

The study's key outcomes²

- 1) **CO₂ standards for new cars, vans and trucks are essential** to meet the 2030 targets; depending on assumptions, they can close around half of the gap between targets and 'business as usual' trends.
- 2) Apart from the stringency of the standards, the year in which they are introduced is key: **the earlier the better**. It takes time for better new vehicles to make an impact on total fleet emissions. Standards need to be introduced in 2025 at the latest; introduction by 2030 renders them much less effective for meeting 2030 ESD targets.
- 3) **Heavy-duty vehicle emissions need to be tackled** – inaction on trucks would mean truck emissions would further increase (or at best remain stable) by 2030.

What the EU should do

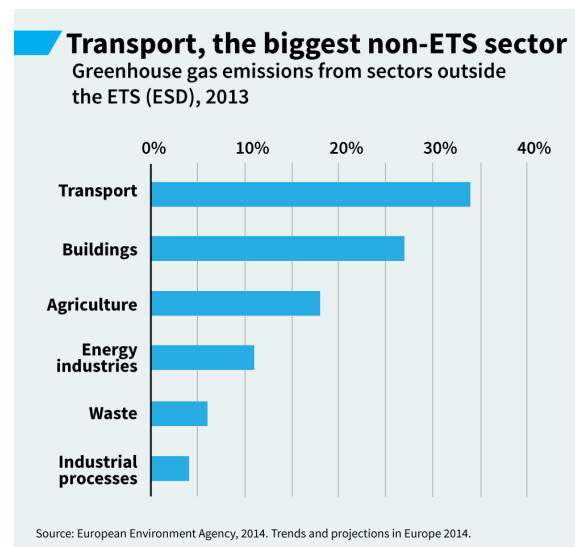
The Commission's 2016 proposals should not just define targets for member states but also, in parallel, propose measures that actually reduce emissions, which should include 2025 CO₂ standards for cars, vans and trucks, road charging, and e-mobility. This bundling would increase member states' support for a robust implementation of ESD targets as well as emission reduction measures. Measures described in this paper would not only help meet the 2030 targets but would also create jobs and deliver big economic and energy security benefits.

1. EU climate policy and the 2030 framework

In October 2014 the EU heads of state agreed that by 2030 Europe will reduce its CO₂ emissions by 40% compared to 1990.³ This target is split in two. Sectors covered by the emissions trading system (ETS) will have to lower emissions by 43% from 2005 levels. Sectors outside the ETS, covered by the so-called 'Effort Sharing Decision' (ESD), which currently constitute 55% of total EU emissions, need to reduce them by 30% from 2005 levels. The ESD target must be achieved 'domestically', ie. without external offsets, and will require substantial progress to be made in transport (34%), housing (27%), and agriculture (18%) in particular, as they are the biggest contributors to the ESD.

Responsibility for meeting the 2030 non-ETS target is 'distributed' between member states based upon GDP/capita and cost-effectiveness. It will be agreed as part of the ESD foreseen for the first half of 2016. Some countries will be required to reduce emissions by significantly more than 30%. The non-ETS sectors are often referred to as the ESD

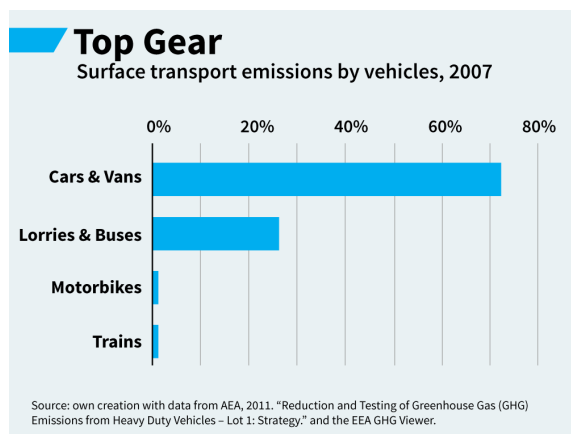
sectors so in this briefing we will use both acronyms.



EU transport and climate policy

The EU has no legally binding sectorial targets for transport but the Commission announced its ambition to reduce transport emissions by 20% by 2030 in the 2011 transport white paper. The 20% target is significantly below

the overall 2030 ambition level for the ESD. That means it assumes other ESD sectors will compensate for this. But it is also not in line with the Commission 2050 transport target of -60%, or its ambitions to decarbonise road transport. In fact, our analysis shows that meeting the 60% target would ideally require reductions of around 40% for 2030. This is because otherwise a lot of the necessary effort is postponed until after 2030 which will require much steeper reduction trajectories between 2030-2050.⁴ In our study we have analysed these three different scenarios, i.e. -20%, -30% and -40%, and assessed how EU measures and standards in particular could contribute to meeting them.



1.1. Transport emission cuts are not costly – they save money

Car, van and truck buyers tend to discount future fuel savings when they purchase new vehicles – ie. they focus much more on the initial investment cost than on the savings in making their initial purchase choice. Economic theory reflects this in a high discount rate. Progressive vehicle tax policies are the most effective way of addressing this unwillingness to pay *at national level*.

At EU level, new vehicle CO₂ standards are used to overcome such market barriers. Since the cost of low-carbon technologies quickly pays back through lower fuel costs, it saves drivers money. CO₂ standards deliver emission cuts at a negative cost for both consumers and society.

This starkly contrasts with the picture painted by some EU modelling tools that use high, private discount rates (as discussed above). The effect of these high discount rates is to present transport CO₂ reductions as expensive. The fundamental problem with this is that it is wrong to use a ‘private’ discount rate for an analysis of the costs of a public policy. Indeed, both fuel taxation and CO₂ standards overcome the market failures that make transport CO₂ cuts seem expensive or difficult.

1.2. Standards are good for the economy

Standards force carmakers to fit low-carbon technologies to new vehicles. These technologies need to be developed or purchased from suppliers. But because of the large fuel savings, the additional cost of these technologies pays back relatively quickly and improves the purchasing power of car drivers.

On a macro-economic level the effect of the standards is to shift spending away from imported oil, to technology (and, progressively, electricity) produced in Europe. The latter is more labour intensive and far more innovative. According to a 2013 study by Cambridge Econometrics “between 500,000 and 1 million net additional jobs could be generated by 2030”⁵ through vehicle regulation and a shift to electric drivetrains in particular. All of this could be achieved without government subsidies or fiscal measures.

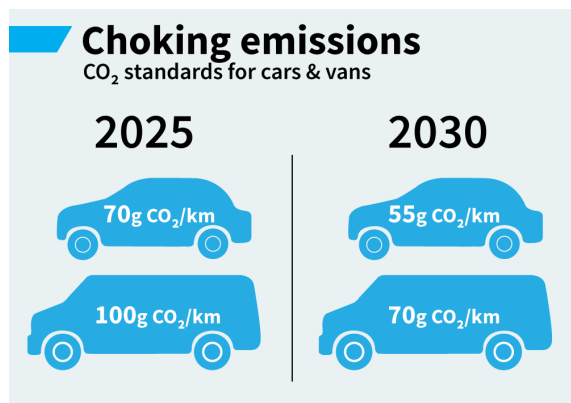
2. The role of vehicle CO₂ standards in the ESD

In this chapter we describe the research we have undertaken, the methodology used as well as its key outcomes.

2.1. Methodology and key assumptions

T&E analysed the contribution CO₂ standards for cars, vans and trucks could make in meeting the -30% ESD target for 2030. We assessed three scenarios:

1. EU transport emissions are reduced by **20%** compared to 2005: the interim target in the 2011 Transport White Paper
2. EU transport emissions are reduced by **30%** compared to 2005: transport has the same reduction target as other ESD sectors
3. EU transport emissions are reduced by **40%** compared to 2005: the 2030 target is consistent with the White Paper 2050 target of -60% reductions compared with 1990 levels.



The complete methodology of the research is explained in detail in the full report but its key assumptions are:

1. The level of transport emissions in 2030 without additional action is based on the Commission's 2013 reference scenario⁶.
2. The effort sharing criteria used in the paper is based on the October 2014 European Council as well as a UK non-paper on the subject.⁷
3. We assumed new car CO₂/km emissions would fall to 70g in 2025 and 55g in 2030. For vans we assumed a 2025 level of 100g and a 2030 average of 70g. For trucks and buses we have no exact figures so we used the -35% improvement potential the

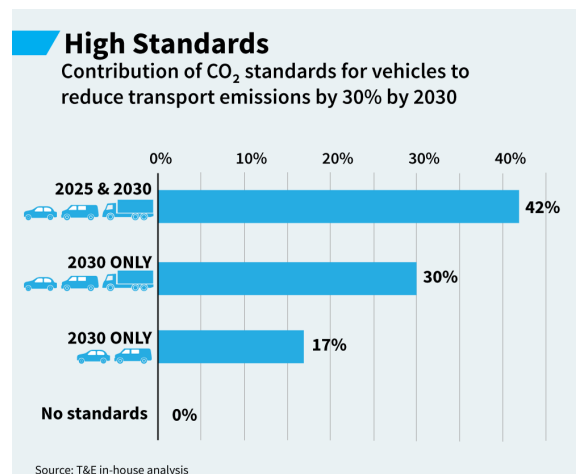
Commission used in its 2014 heavy duty vehicles' strategy.

4. Vehicles are assumed to achieve emission limits in real-world conditions.
5. Pre-crisis and crisis averages for new registrations were used to reflect for changes in both periods. It is a conservative approach, because the Commission considers that the light duty vehicles fleet is going to continue to increase in the medium term.
6. Commission data was used regarding annual mileage by vehicle at different stages of vehicle lifetime. It has important implications, because all vehicle types travel a significant part of their lifetime mileage in their first three years; for vans it is 45% for example. Therefore, standards for new vehicles can cut fleet emissions quite quickly.

2.2. Key findings

The key findings are summarised below.

- The 2005 baseline level of GHG emissions of transport is 952 million tonnes of CO₂ equivalents (Mt). The 2030 level in reference scenario, without additional action, is almost the same, at 935Mt.
- Additional car and van standards could reduce 2030 emissions by 74Mt. Truck standards would add another 37Mt. Combined this adds up to 111Mt.



2.2.1. Improved vehicle efficiency is essential to meet the 2030 targets

-20% transport CO₂ scenario

The 2030 target is around 760Mt. In this scenario the gap between the reference scenario (so without additional action) and the target is 176Mt at EU level. The 111Mt of reduction hence is around 60% of the required effort in the transport sector in this scenario. The need for additional measures in the transport sector would be below 40% although the -20% scenario also implies much steeper CO₂ reductions in the agriculture and housing sectors.

-30% transport CO₂ scenario

The 2030 target is 671 megatons. This means the required effort amounts to lowering transport emissions by 264 megatons by 2030. The 111Mt of reduction through standards is around 40% of the required effort. The need for additional measures in the transport sector would be larger. But since transport would contribute 'proportionally' to the ESD targets it would not require steeper CO₂ cuts in the agriculture and housing sectors.

-40% transport CO₂ scenario

The most ambitious scenario of -40% requires transport emissions to fall to 570 megatons in 2030. The gap between the reference scenario and a -40% level would be 364 megatons. In this case standards would only cover around 30% of the required effort and significant additional action would be required in the transport sector. But the effect of this would also be to reduce the efforts that are needed in other sectors.

2.2.2. 2025 targets are needed to achieve the 2030 ESD targets

Whether to set 2025 targets or not is currently subject to intense discussions. The Commission has committed to reviewing a 68-78g/km range for 2025 but the car industry argues for no new standards before 2030. The difference between setting a 70g target for

2025, for 2030, or none at all is very substantial.

For example, achieving 70g for cars and 100g for vans in 2030 rather than in 2025 halves the contribution car and van standards make. Not setting new targets until after 2030, as European carmakers advocate, means virtually all transport emission cuts need to be achieved through national measures. For countries like Germany (standards deliver 55% of transport effort), France (57%) or Belgium (43%) this means meeting even the least ambitious scenario of -20% will become extremely challenging.

Annual targets increase predictability and environmental integrity. In contrast to, for example, the US the EU has set standards for 2015 and 2020 without demanding intermediary emission cuts. This gives complete freedom to manufacturers as to how and at what pace they wish to meet the targets. But it also means the annual reduction trajectory will be different from the Commission's policy. To increase predictability for member states the EU could consider introducing annual targets, together with a system of banking, borrowing and trading of emission credits to provide flexibility for manufacturers.

2.2.3. We cannot afford inaction on trucks

In our analysis we have assumed new truck emissions are reduced by around 35% compared to 2015. According to an analysis performed by the Commission in 2014 this could lead to emissions cuts of 37 megatons by 2030. Our analysis clearly shows member states cannot afford EU inaction on HDV standards. However, the EU still hasn't decided how it plans to tackle CO₂ emissions from trucks.

Indeed, according to studies performed for the Commission, heavy-duty vehicle emissions could *increase* by 15%⁸ without additional action. Even the most positive interpretations (eg. the Commission's 2014

impact assessment⁹) of future HDV emissions assume they will not decrease without the introduction of standards. The net effect of inaction on trucks is roughly as big as postponing car and van standards from 2025 to 2030.

3. Other EU measures

Of course, CO₂ standards are not the only instrument the EU has at its disposal to reduce CO₂ emissions. There are a number of other transport CO₂-related policies that require or would benefit from EU coordination. The EU defines the framework for lorry road charging and has announced it will come up with a proposal to also cover cars in 2016. The EU also sets minimum fuel tax levels, which greatly influence the ability of member states to increase fuel taxes nationally. The EU also defines the framework for biofuels. It has just finished a difficult review of the biofuels legislation until 2020. Post-2020 rules on fuel quality could play a meaningful role in promoting non-land-based biofuels. Finally the EU has recognised¹⁰ it needs a strategy for electrification of road transport. A smart cross-modal, cross-vehicle strategy to promote multi-modality, lighter and smaller vehicles and harmonised EU technical standards is an essential component of a 2030 transport package.

4. Flexibilities/loopholes risk undermining the -30% target

Currently the discussions around the ESD revolve mostly around ‘flexibilities’ that will be given to member states.¹¹ The main reason why member states want these is because they are uncertain they can meet the 2030 targets in a cost-effective manner.

As such, flexibility can be a good way to enable more cost-effective emission cuts. For example, trading of emission allowances between member states (facilitated by the establishment of a clearing house) would reduce costs for certain member states while

providing necessary investment capacity for other member states.

But other flexibilities are, in reality, loopholes – they weaken ESD targets or even completely undermine them. This is the case with the inclusion of the land-use sector (LULUCF) in the ESD¹², trading between the ETS and the non-ETS or the wholesale inclusion of non-ETS sectors in the ETS ([see our 2014 briefing on transport in the ETS](#)). Even a mooted possibility to carry over excess credits – often earned through international offsets of doubtful quality – from the pre-2020 period would completely undermine the 2030 targets.

One way to contain damage from flexibilities is to make them conditional on whether a country has taken adequate national emission reduction measures. For example, a country with very low diesel taxes will attract a lot of trucks filling up and hence have high transport emissions. Such a country should not be allowed to use ETS allowances to meet ESD obligations as long as it has not taken its tax levels closer to the EU average.

But our main recommendation is that the EU should deliver credible policy proposals that reduce the effort member states need to undertake at EU level. This paper has shown that CO₂ standards are the key instrument but other EU measures would help too.

Conclusions and policy recommendations

Meeting the 2030 ESD targets will require significant efforts in the transport sector. This paper shows that regardless of what level of reductions the EU and its member states would opt for (-20%, -30%, -40%) standards play a key role in helping member states to achieve the targets in a cost-effective manner; they can close roughly half the gap between ‘business as usual’ and 2030 targets.

Our analysis also shows that standards need to be introduced in 2025 to have a meaningful impact in 2030. Postponing standards until 2030 halves their effectiveness, postponing standards until after 2030 means member states will need to achieve the lion's share of the cuts nationally. The analysis also shows that truck standards are needed too. The effect of not introducing truck standards would be almost as big as postponing the 2025 targets until 2030.

The Commission's 2016 ESD proposals should set national targets, but also help member states to achieve them. The Commission should bundle its existing transport plans into a transport package built around 2025 CO2 standards for cars, vans and trucks, as well as road charging and e-mobility. Such a package could cover a large chunk of the reductions that are needed in the transport sector. This could increase member state acceptance of the ESD targets, reduce the pressure for loopholes and create support for EU measures to cut emissions all at the same time. The measures would not only help meet the 2030 targets but would also create jobs and deliver big economic and energy security benefits.

Further information

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Endnotes

¹ The Commission's reference scenario assumes, for instance, strong continued growth of transport volumes rests on sometimes doubtful assumptions (e.g. a lot of transport growth) but for reasons of comparability and consistency with other ESD analysis we used it as a basis.

² The analysis is based on a modelling approach and uses the best available information, where possible from the European Commission. It rests on a number of assumptions, explained in the methodology section, and is therefore not an exact prediction of the future. It is, however, a good way of showing the impact of (not) introducing certain measures.

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http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145356.pdf

⁴

<http://www.transportenvironment.org/news/white-paper-postpones-serious-transport-co2-cuts-until-2030>

⁵

<http://europeanclimate.org/documents/Fuelling%20Europe's%20Future%20website%20file.pdf>

⁶

<http://ec.europa.eu/transport/media/publications/doc/trends-to-2050-update-2013.pdf>

⁷

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/331161/Non-paper_on_burden_sharing_options_to_2030_with_costs_-_10_7_2014.pdf

⁸

http://ec.europa.eu/clima/policies/transport/vehicles/docs/ec_hdv_ghg_strategy_en.pdf

⁹

http://ec.europa.eu/clima/policies/transport/vehicles/heavy/docs/swd_2014_160_en.pdf

¹⁰ October 2014 European Council and Energy Union Strategy: As part of the 2030 framework the heads of state agreed that “the availability

and use of existing flexibility instruments within the non-ETS sectors will be significantly enhanced”.

¹¹ Ibidem 2.

¹² “...the impact of including LULUCF accounting on reductions of industrial greenhouse gas emissions could be in the range of 1–4%, of 1990 emissions, depending on the exact accounting rules applied.” If included in the ESD the impact on the ESD would likely be around double (2-8%). Given the existing 2020 commitments and adopted policies, LULUCF could end up completely undermining the ESD target.

http://climateactiontracker.org/assets/publications/briefing_papers/CAT_EU_INDC_FINAL_March.pdf