

## Context

In 2009, the EU set legally-binding targets for new cars to emit 130 grams of carbon dioxide (CO<sub>2</sub>) per kilometer (g/km) by 2015 and 95g/km in 2020.<sup>1</sup> The Commission recently proposed a review of the way the 2020 target should be met.<sup>2</sup> This confirmed the 95g/km value but reintroduced supercredits (additional rewards for sales of ultralow carbon vehicles) that weaken the target. This paper outlines why and how the market for ultralow carbon cars should be supported without reducing the wider benefits of improving the efficiency of conventional cars

### What does the regulation say and how will it change?

Article 5 of the original Regulation stipulates that each new passenger car with specific emissions of CO<sub>2</sub> of less than 50g CO<sub>2</sub>/km should be counted as 3,5 cars in 2012; 3,5 cars in 2013; 2,5 cars in 2014; and 1,5 cars in 2015. This system of supercredits was to be phased out from 2015 but the Commission's new proposal aims to reintroduce the system; vehicles with emissions below 35g CO<sub>2</sub>/km should be counted as 1,3 cars from 2020 until 2023. The Commission is seeking to cap the total number of allowed 'credits' to be set at 20 000 new cars per manufacturer.

### Is it necessary to sell ultralow carbon cars in order to meet the 95g target?

No, to meet the proposed fleet average target for new cars of 95g (CO<sub>2</sub>) /km for cars in 2020 carmakers can simply improve the efficiency of conventional vehicles burning fossil fuels in internal combustion engines. Some makers of large vehicles will also use hybrid technology that capture and reuse energy in braking.

### It is not necessary for carmakers to sell electric or other ultralow carbon cars to meet the 95g/km target

Achieving more ambitious targets such as 60g/km in 2025 would require sales of ultralow carbon vehicles and meeting long-term climate goals will require a shift to these technologies. This is because there will be limits as to how far it is possible to improve the efficiency of current conventional vehicles.

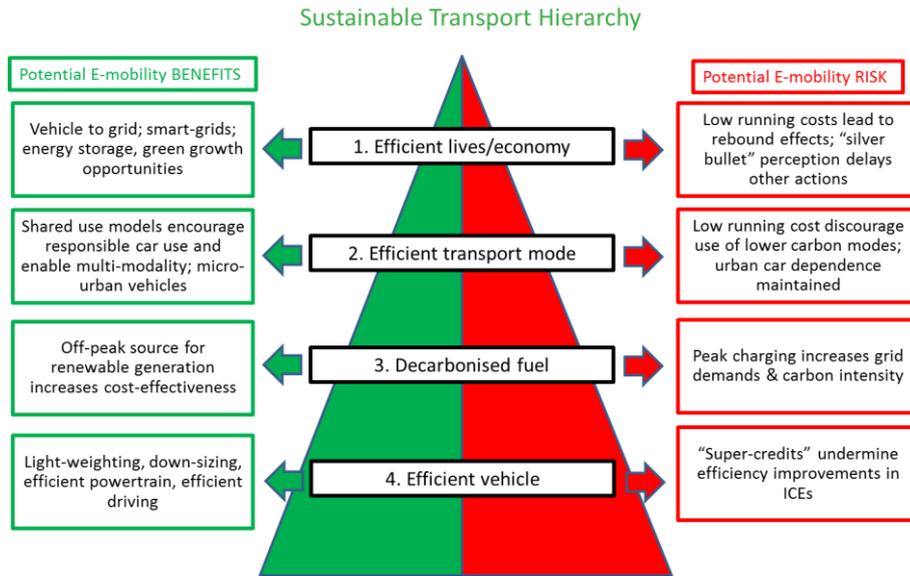
### Does T&E support a shift to electric and/or hydrogen fuel cell vehicles?

T&E does not advocate for any particular technology or favour one alternative over another. We support the shift to ultralow carbon cars that are needed to achieve the required emission reductions from road transport and that it is therefore essential to begin to develop the market for a range of ultralow carbon alternatives. However, the way in which the market for ultralow carbon vehicles develops will profoundly affect how sustainable the solution becomes, as illustrated in Figure 1.

<sup>1</sup> Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 ....

<sup>2</sup> European Commission Climate Action 2012, COM/2012/393, Proposal for a Regulation to define the modalities for reaching the 2020 target for reducing CO<sub>2</sub> emissions from new passenger car

E-mobility could make a major contribution to sustainable mobility- but its impacts will depend upon how the market develops



**Figure 1: Opportunities and risks from e-mobility**

Where and how ultralow carbon vehicles are driven; how the "fuel" is produced or generated; and when the vehicle is charged will all profoundly affect whether e-mobility is a sustainable transport solution. E-mobility could make a sizable contribution towards more sustainable mobility; however it is not a panacea. We support lower vehicle purchase and circulation taxes for lower carbon vehicles, but do not believe that public funds should be used to subsidise their purchase through grants.

## Supercredits: the wrong way to encourage ultralow carbon vehicles

### What are supercredits?

The regulation requires on average cars sold in 2020 to achieve emissions of 95g/km and sets individual carmakers a target based upon the average size (mass) of the cars sold. Supercredits earn manufacturers additional emissions credits for every ultralow carbon vehicle (with emissions below 35g/km) they sell. In effect supercredits raise the carmakers fleet average target providing a licence for them to continue to sell high emitting vehicles whilst enabling them to still achieve their the target.

Figure 2 illustrates that by selling one battery electric vehicle (0 g/km) the carmaker is also able to sell 1 gas-guzzler (190 g/km) and still, on average, achieve a 95g/km target. Battery electric vehicles are considered as zero-emission vehicles (0 g/km) because they have no tailpipe emissions. This over-rewards electric vehicles as in reality emissions are produced in generating the electricity. These emissions can be significant, although are generally lower than emissions from similar cars with internal combustion engines.<sup>3</sup>

Supercredits are designed to help manufacturers supply ultralow carbon vehicles by allowing them to sell more highly profitable gas-guzzlers and by weakening the carmakers target so they do not need to deploy so much efficient technology saving them money. In effect money saved by not improving conventional vehicles is used to subsidise sales of ultralow carbon

<sup>3</sup> ICCT 2012, Calculating electric drive vehicle GHG emissions

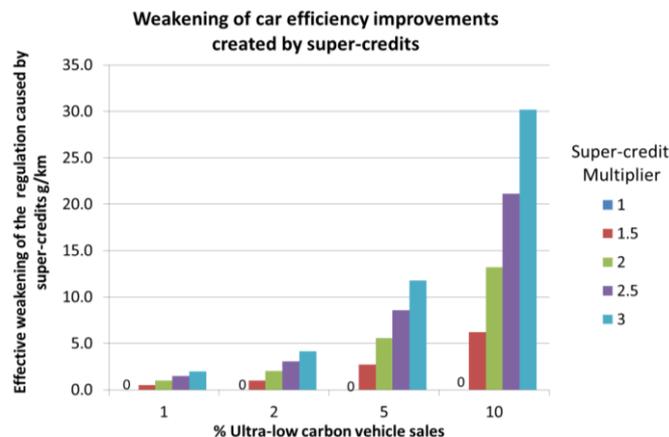
vehicles. However, by reducing the need to improve the efficiency of conventional vehicles supercredits also have a very negative effect on the overall ambition of the Regulation and its wider benefits: for jobs; for the economy; for drivers; for energy security and for the environment.



**Figure 2: How supercredits work**

### How much do supercredits weaken the 95g target?

Supercredits provide an additional reward for selling an electric car by applying a multiplier that, in effect creates an additional, imaginary sale of an ultralow carbon vehicles. In Figure 2 a supercredit multiplier of 2 means that for every electric car actually sold the regulation assumes a second car has been sold allowing the carmaker to sell two gas guzzlers and still achieve an average of 95g/km. Supercredits weaken the carmakers target enabling them to sell more, high value gas-guzzlers and reduce the costs of meeting the regulation. The extent to which the target is weakened is shown in Figure 3. This illustrates the degree to which supercredit multipliers weaken the 95g/km target depends upon how many vehicles are sold (or qualify) and what multiplier is used.



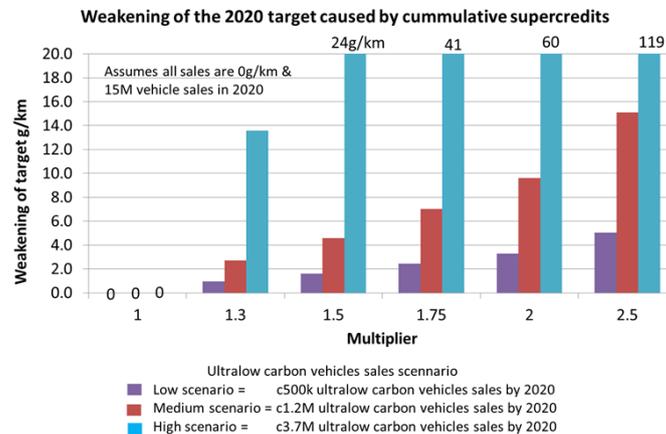
**Figure 3: Weakening of the target through supercredit multipliers**

Figure 3 illustrates that 10% sales of ultralow carbon vehicles with a multiplier of 2 weakens the target by 13g/km. the 95g/km target in effect becomes 108g/km. Figure 3 also shows that the higher the sales of ultralow carbon vehicles and higher the multiplier the more the target is weakened.

### What are cumulative (aggregated) supercredits?

Some carmakers, want the system of supercredits to be FURTHER expanded by allowing sales from previous years to count towards the 2020 target. For example; all the sales of

qualifying cars from 2015 to 2020 could be added together and the total amount have a multiplier applied and used later to achieve the 2020 target. Extra emission allowances obtained through supercredits in a specific year are transferred to 2020 weakening the target. This 'banking' is simply intended to increase the number of vehicles that qualify for supercredits and further weaken the 95g target. Figure 4 illustrates the effect aggregated supercredits.



**Figure 4: The effect of aggregated supercredits**

Figure 4 shows 3 scenarios for sales of qualifying vehicles and different levels of multipliers. With a multiplier of 2 in the Medium scenario (cumulative sales of 1.2 million battery electric vehicles) the target is weakened by 9g/km. In effect the 95g/km target is increased to 104g/km. The graph illustrates very clearly that for **any system of supercredits there must be a cap on the total number of vehicles that qualify and the multiplier must be low (1.3)** to avoid significantly weakening the target.

### Why do some carmakers want to increase the threshold for vehicles to receive supercredits?

Some carmakers want to allow more vehicles to qualify for supercredits by increasing the threshold proposed by the Commission from 35g/km to 50g/km. This is simply designed to increase the number of vehicles that receive supercredits and therefore weaken the targets still further.

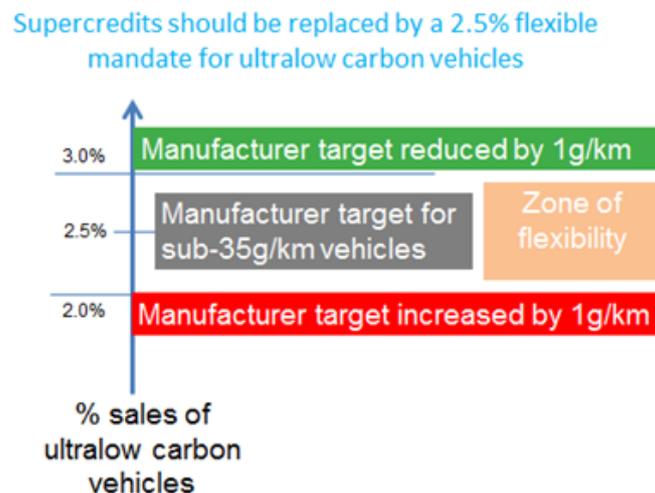
The current systems for measuring the CO<sub>2</sub> emissions from vehicles are not fit for purpose. There is a wide and growing discrepancy between the test results and performance of the vehicle in the real world. Current test procedures are inadequate for conventional cars with engines, but they are hopeless for measuring emissions from plug-in hybrid or range extended vehicles. This is since the emissions will depend upon how and how far the vehicle is driven, whether the heater or air conditioning is used etc. The current test procedure significantly under-estimates the real-world performance of plug-in hybrid and range extended vehicles.<sup>4</sup> By raising the threshold for supercredits to 50g/km there is a risk that these cars will qualify for supercredits even though their real world performance is little or no better than those of conventional vehicles. The risk that super credits could substantially weaken the target also increases.

### What is a flexible mandate?

T&E recognizes the need to encourage an early market for ultralow carbon cars but believe supercredits are the wrong system as it reduces the wider benefits of the regulation. As a

<sup>4</sup> VTT 2012, CO<sub>2</sub> emissions of 10 cars; Tekniikan Maailma 15/2012

solution we propose a flexible mandate. A flexible mandate requires all carmakers to supply some ultralow carbon vehicles potentially increasing the number and range of models being supplied. It also rewards those manufacturers that perform well (by raising their overall fleet average target for 2020). Manufacturers that choose not to supply ultralow carbon models would be expected to achieve bigger improvements in the efficiency of conventional technologies (by increasing their target). Figure 6 summarises how a flexible mandate would operate.



**Figure 6: Flexible Mandate**

T&E advocate that every manufacturer is obliged to supply 2.5% of their vehicles below 35g/km by 2020. This will ensure the market starts to change and also requires all manufacturers to invest in low carbon cars. Flexibility is provided:

- Those achieving >3% sales in 2020 are rewarded with a 1g reduction in their target
- Those achieving <2% sales in 2020 are penalized with a 1g addition to their target
- Those achieving 2-3% sales in 2020 are unaffected with no change to the target and ultralow carbon vehicles counting towards the target – but without a multiplier.

In summary, a flexible mandate designed like this provides an incentive similar to the supercredits, but without the hot air (weakening of the regulation) supercredits bring.

## A flexible mandate: the right way to encourage ultralow carbon vehicles

### How else can ultralow carbon vehicles be encouraged?

The most effective way to stimulate investment in ultralow carbon technologies is to set targets that require their adoption. A target of 80g/km in 2020 and more importantly 60g/km in 2025 would achieve this. The EU should also support the shift to ultralow carbon by encouraging investment in recharging infrastructure. Tax incentives (but not subsidies) for ultralow carbon vehicles could also encourage takeup, particularly where these contrast with purchase taxes for higher emitting vehicles.

[www.transportenvironment.org/cars-and-co2](http://www.transportenvironment.org/cars-and-co2)

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