



# **LD CO<sub>2</sub> STANDARDS: THE WAY FORWARD**

Possible steps for further improvement? | Dr. Richard T.M. Smokers

**TNO** innovation  
for life

**"Post 2020 CO<sub>2</sub> emission targets for cars and vans: the right level of ambition?"**  
workshop organised for the European Parliament ENVI Committee  
Tuesday 27 March 2018, Brussels

# MAIN ISSUES WITH THE CURRENT PROPOSAL

## › Target level

- › The proposed targets do not utilise the full potential for CO<sub>2</sub> emission reduction in cars and vans that is technically feasible and cost effective by 2025 and 2030 from an end-user and societal perspective.
- › The level of ambition is inconsistent with the 1.5 °C goal of Paris agreement.

## › Stimulating ZEVs

- › The proposed method for stimulating ZEVs contains serious flaws.

## › Target definition

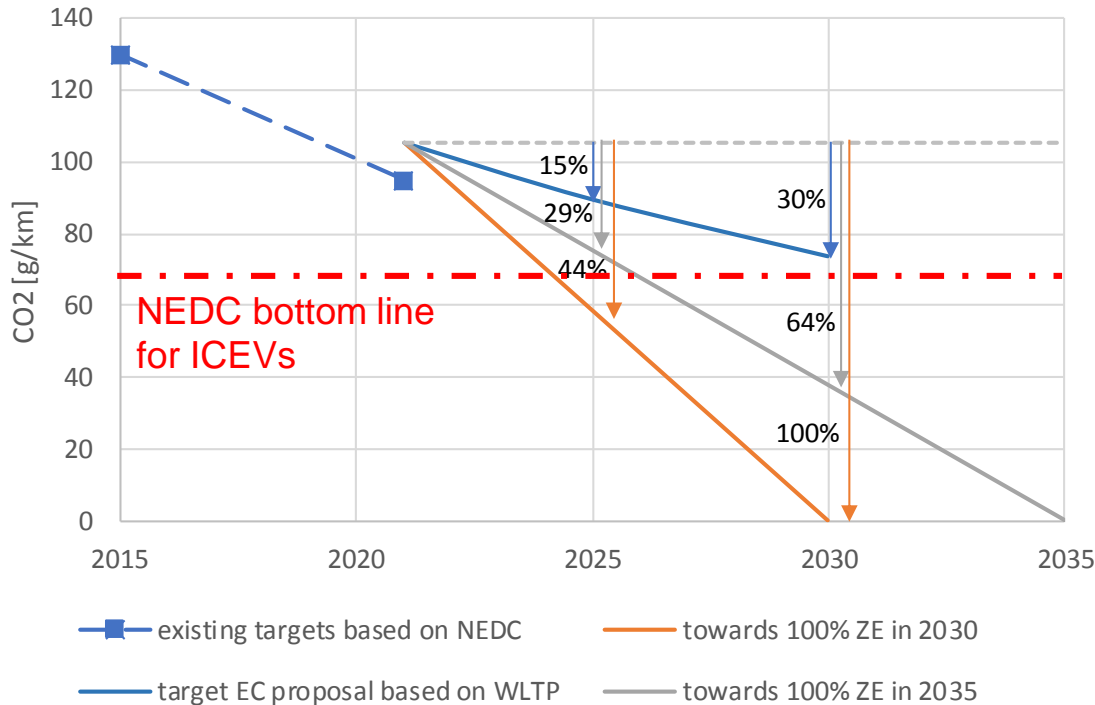
- › The choice for relative reductions compared to the 2021 WLTP-based average creates an incentive for OEMs to “inflate” the WLTP-based CO<sub>2</sub> value of cars sold up to 2021.

## AMBITION LEVEL IS TOO LOW

- › **Targets are consistent with what is possible with ICEVs**
  - › Based on potentials as assessed in [Ricardo 2017]
- › **Targets are inconsistent with what is possible including ZEVs**
  - › >43% achievable by 2030 at negative societal costs ( $\Delta\text{TCO} \leq 0$ )
    - › Based on impact assessments in [CE/TNO 2017]
- › **Targets are inconsistent with what is needed**
  - › 30% in 2030 is at the upper end of the bandwidth for meeting the 60% reduction target for transport in 2050 and the 30% by 2030 target for non-ETS sectors (see [CE/TNO 2017]).
  - › Striving for 1.5°C max. (Paris COP21) requires an overall reduction of 95% in 2050 for EU. To increase certainty of meeting the target all sectors should strive for 100% reduction by 2050.

See slides 10-13 in Annex for more details

## AMBITIONS OF MEMBER STATES



› In working out their **Integrated National Energy and Climate Plans** for 2030 various Member States realise they need 100% ZEV sales by 2030/35...

### › Options for solving this:

- › More stringent overall targets for 2025 and 2030, requiring full potential of ICEVs + significant share of ZEVs
- › Combining a dedicated target for ICEVs with a ZEV mandate

## CURRENT COMBINATION OF CO<sub>2</sub> AND ZEV TARGET LEVELS IS INEFFECTIVE

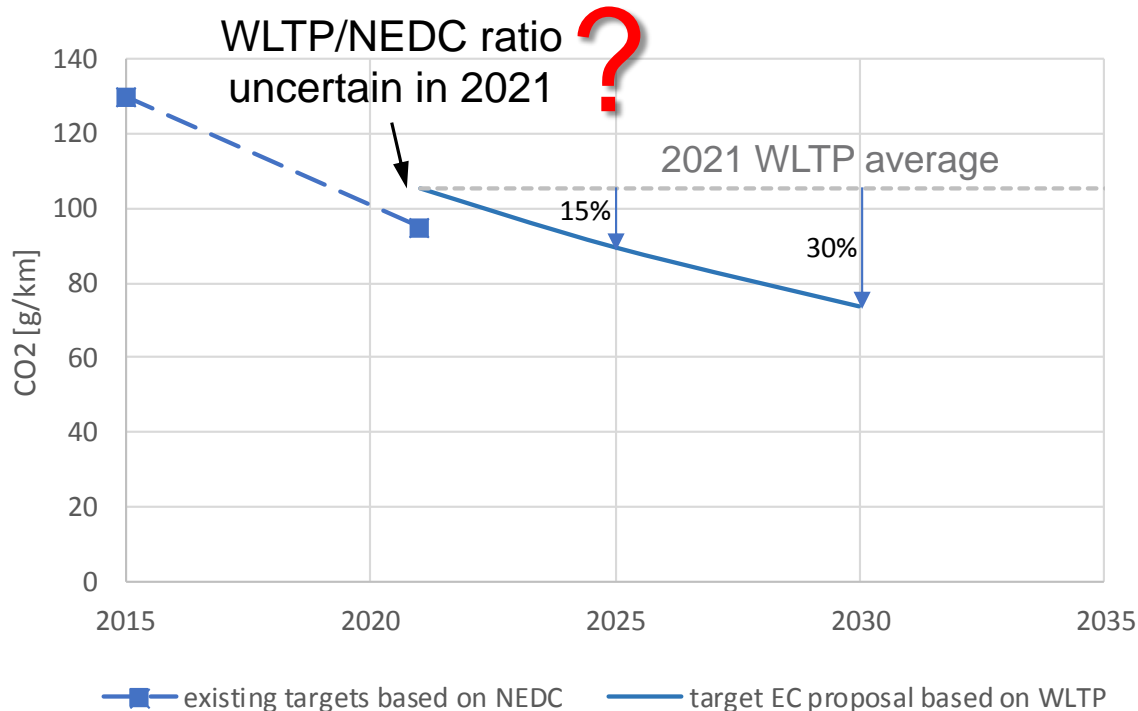
- › If OEM meets ZEV target (15% / 30% in 2025 / 2030), no CO<sub>2</sub> reduction is needed in the remaining 85% / 70% ICEV sales.
- › If an OEM exceeds the ZEV target, the remaining ICEVs are allowed to emit up to 5% (ZLEV factor) more than in 2021.
- › If ZEV targets are not met, the cost-effective potential of ZEVs is not utilised.

The cost-effective reduction potential of ICEVs will not be (fully) utilised.

### › Options for solving this:

- › Add a malus to the existing ZEV proposal
- › Set CO<sub>2</sub> reduction target to a level that requires application of the full potential of ICEVs + a significant share of ZEVs

## TARGET DEFINITION



- › **Relative target definition** creates incentive for OEMs to “inflate” the WLTP-based CO<sub>2</sub> value of cars sold up to 2021.
- › This is facilitated by:
  - › WLTP test flexibilities
  - › technology choices
  - › CO<sub>2</sub>MPAS tool

### › Options for solving this:

- › Set relative 2030 target as indicative only, and determine absolute target later when WLTP/NEDC correlation is better understood.
- › Independent testing and validation to monitor WLTP/NEDC ratio.

A close-up, blue-tinted photograph of two microscope lenses. The lenses are circular and positioned horizontally, with a white horizontal line passing through the center of the image. The background is dark and out of focus.

**THANK YOU FOR YOUR ATTENTION**

Take a look:  
**TIME.TNO.NL**

**TNO** innovation  
for life



# STUDIES

## Potential & costs of technologies

[Ricardo 2016] *Improving understanding of technology and costs for CO<sub>2</sub> reductions from cars and LCVs in the period to 2030 and development of cost curves*, Ricardo Energy & Environment, 2016



[https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv\\_co2\\_technologies\\_and\\_costs\\_to\\_2030\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv_co2_technologies_and_costs_to_2030_en.pdf)

## Modalities & overall impacts

[CE/TNO 2017] *Assessment of the Modalities for LDV CO<sub>2</sub> Regulations beyond 2020*, CE Delft and TNO, 2017



[https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv\\_co2\\_modalities\\_for\\_regulations\\_beyond\\_2020\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv_co2_modalities_for_regulations_beyond_2020_en.pdf)

[Ricardo 2018] *Assessing the impacts of selected options for regulating CO<sub>2</sub> emissions from new passenger cars and vans after 2020*, Ricardo Energy & Environment, 2016



[https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv\\_post\\_2020\\_co2\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv_post_2020_co2_en.pdf)



**ANNEX**

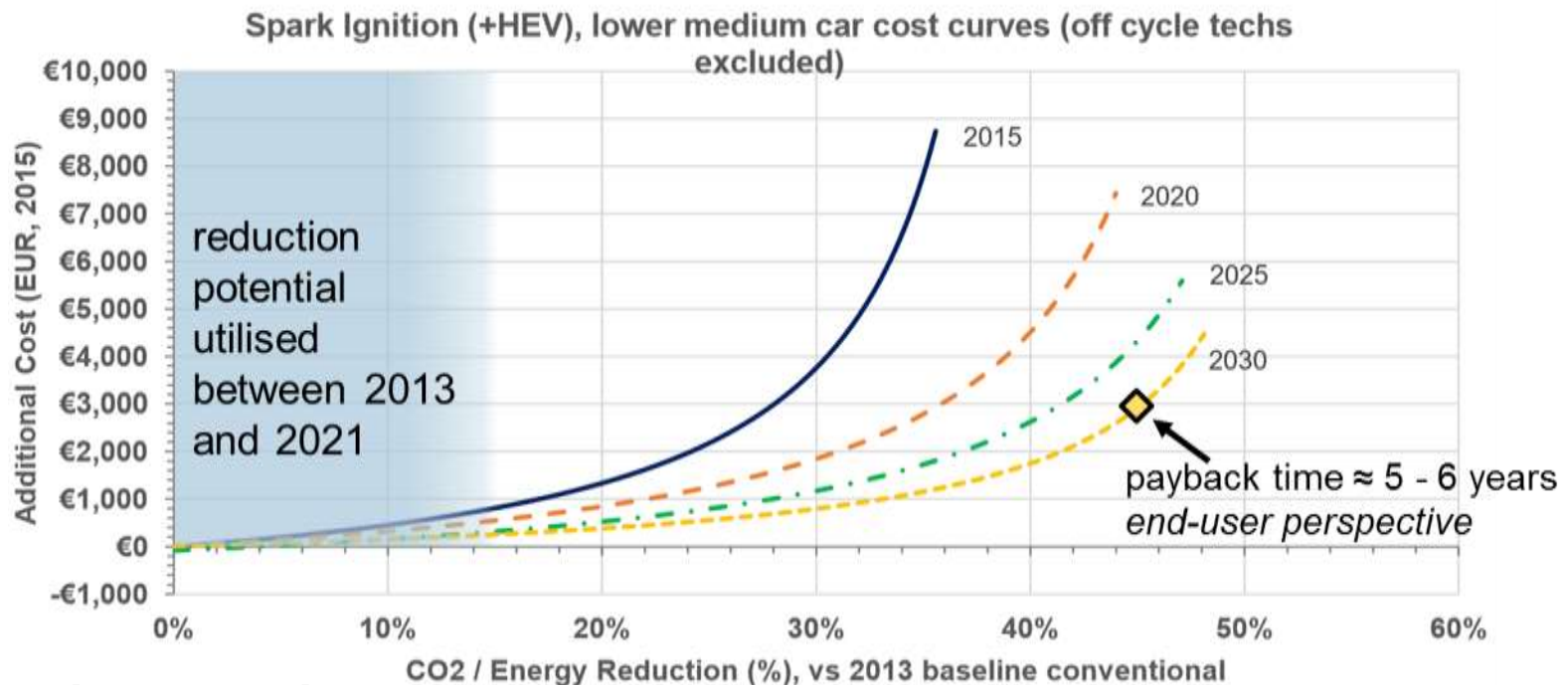
**ADDITIONAL SLIDES**

**CONSIDERATIONS ON THE TARGET LEVEL**

# TARGET LEVEL

## CONSISTENT WITH POTENTIAL OF ICEVs

- › Type approval CO<sub>2</sub> emissions of new cars will have gone down by 25% between 2013 and 2021, but only **less than half** of this is achieved by applying CO<sub>2</sub> reducing technologies from the cost curves.
- › Deduced from increasing gap between real-world and type approval



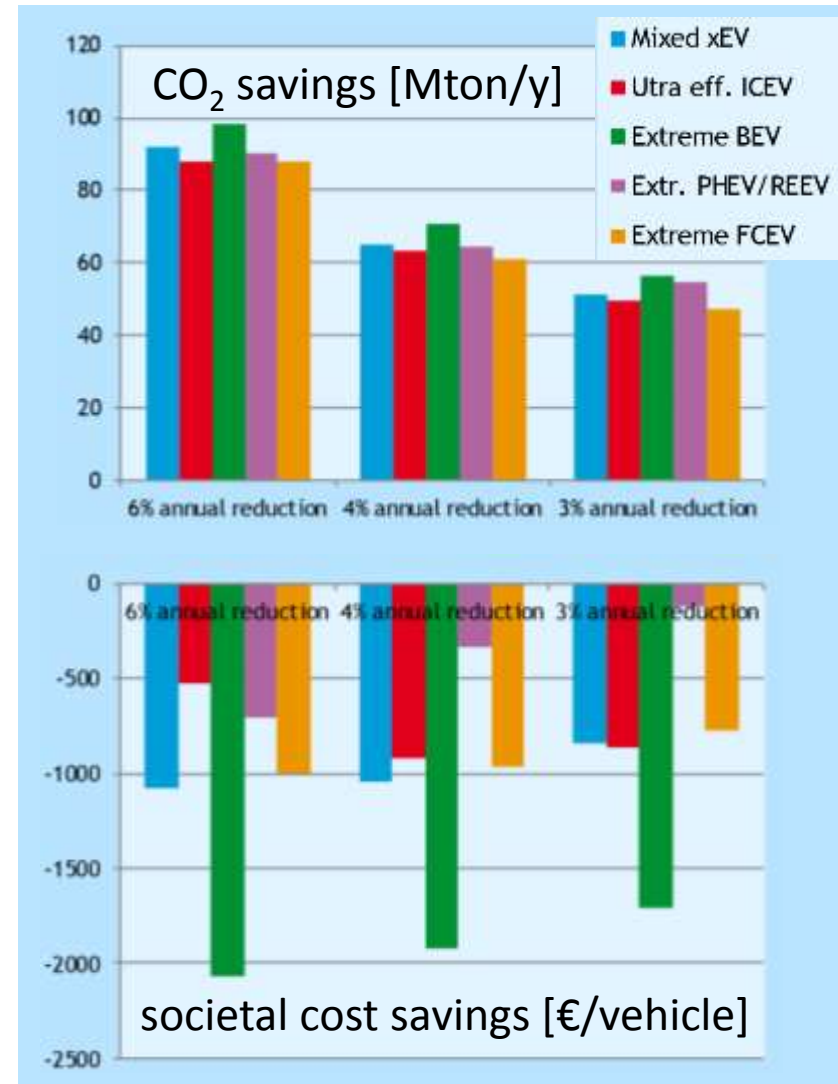
Source: [Ricardo 2016]

# TARGET LEVEL

## INCONSISTENT WITH WHAT IS POSSIBLE INCLUDING ZEVs

- › Three scenarios assessed for the EC:
  - › 3% p.a. = 24% by 2030
  - › 4% p.a. = 31% by 2030
  - › 6% p.a. = 43% by 2030
- › > 43% by 2030 achievable at negative societal costs ( $\Delta\text{TCO} \leq 0$ ) due to
  - › cost effective reduction potential in ICEVs, and
  - › cost competitiveness of BEVs by 2030

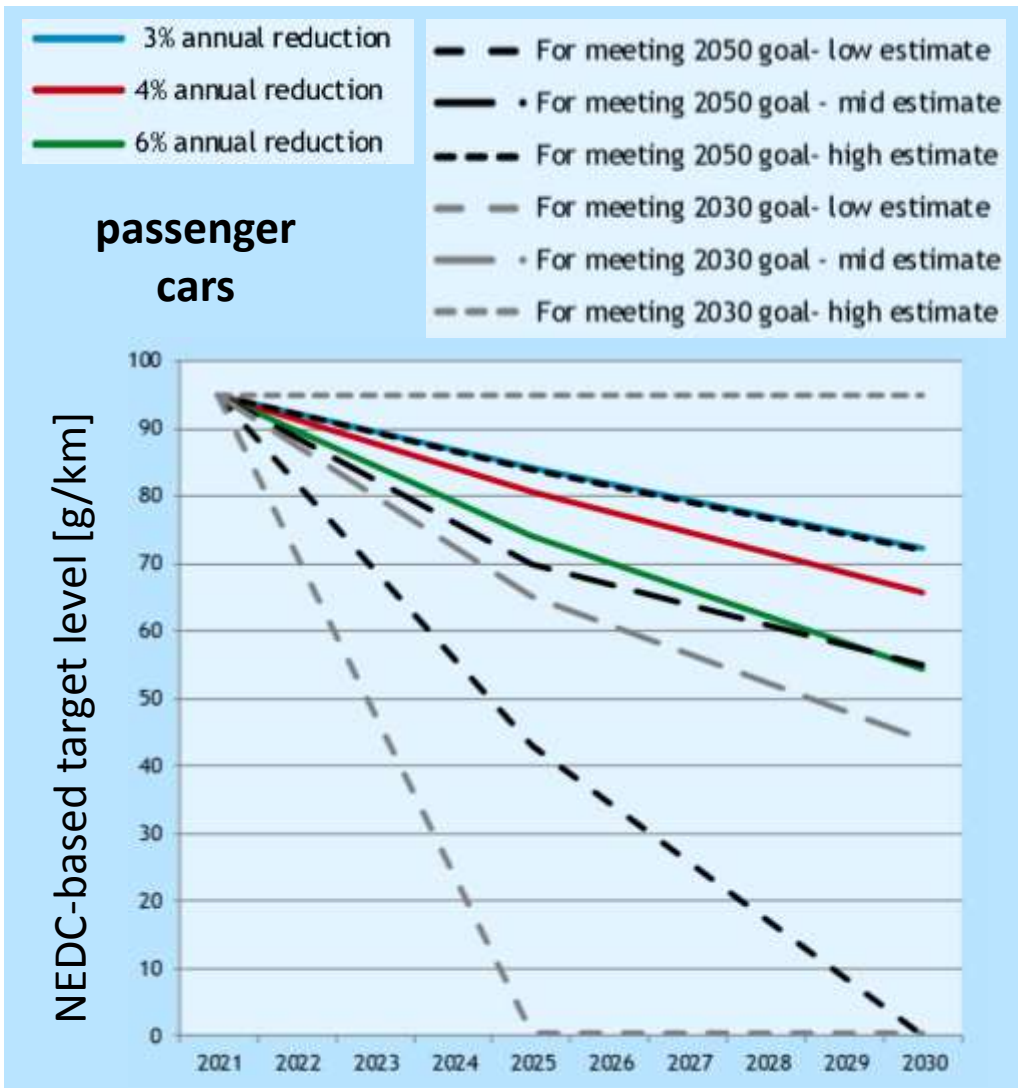
Source: [CE/TNO 2017] based on technology cost assessment from [Ricardo 2016]





# TARGET LEVEL



## WHAT IS NEEDED?



- › Required targets for cars and vans in 2025 / 2030 for meeting long term climate goals depends on:
  - › growth in transport volume (kms);
  - › share of sustainable (bio-)fuels.
  
- › 4% p.a. scenario is at the upper end of the bandwidth for meeting:
  - › 60% reduction target for transport in 2050; 
  - › 30% by 2030 target for non-ETS sectors. 

Source: [CE/TNO 2017]

# TARGET LEVEL

## INCONSISTENT WITH WHAT IS NEEDED

- › **Before COP21 Paris agreement**
  - › Limiting global temperature increase to 2°C by 2100 means an 80% overall target for the EU in 2050, which allows a 60% target for transport (EU whitepaper) if other sectors reduce by more than 80%.
- › **After COP21 Paris agreement**
  - › Striving for 1.5°C max. requires an overall reduction of 95% in 2050 for EU. This leaves a much smaller bandwidth for dividing the burden over sectors.
  - › To increase certainty of meeting the target all sectors should strive for 100% reduction by 2050.

**The 1.5 °C goal from the COP21 Paris agreement leaves little room for giving the transport sector a more lenient GHG reduction goal for 2050 than other sectors.**

