

# Setting the Scene: Technology Potential to Reduce CO<sub>2</sub> Emissions from Cars

Moving to a Low Carbon Road Sector  
Effective Solutions to “Lighten the Load” (EAA lunch debate)

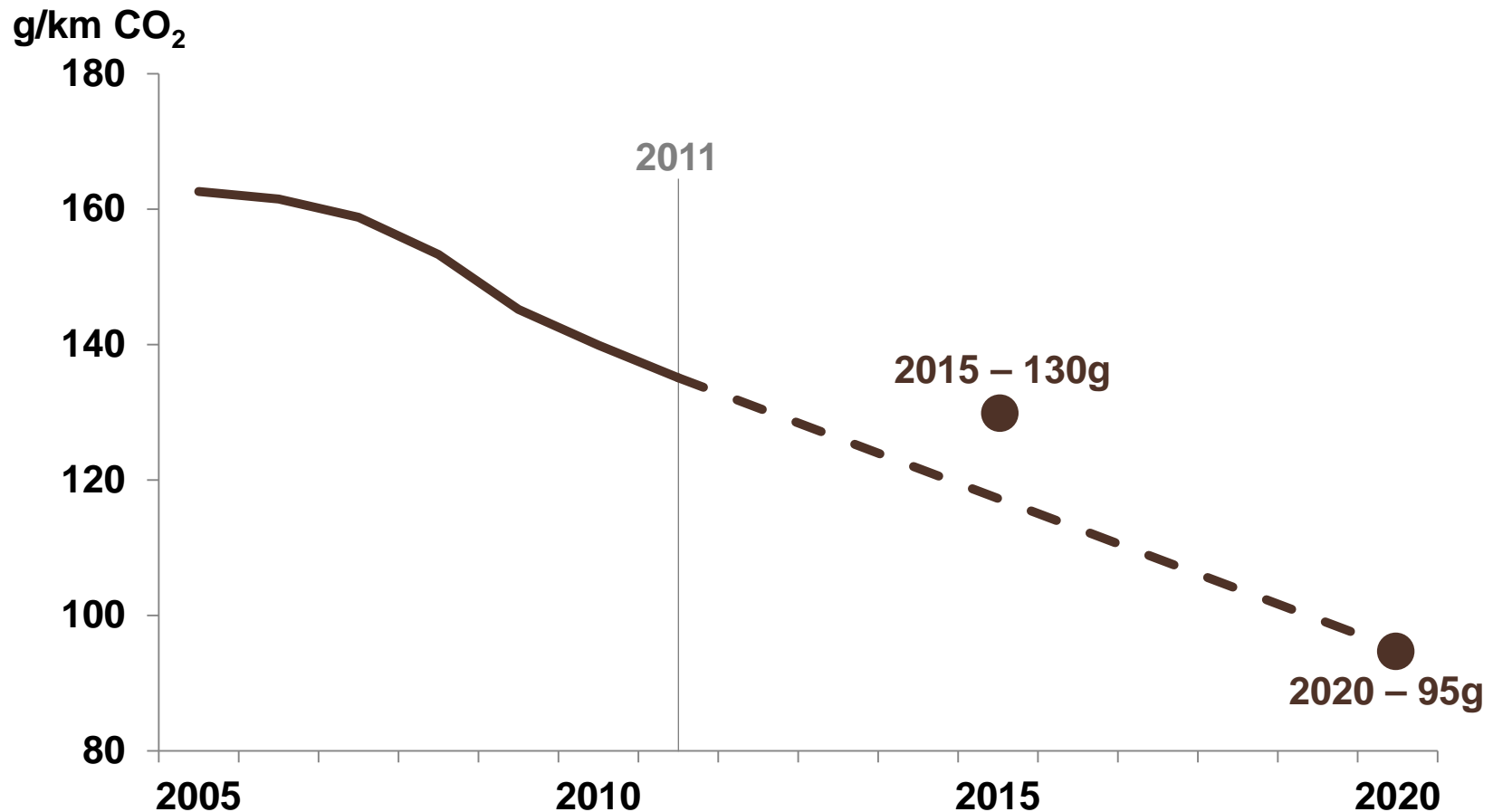
*Dr. Peter Mock*

*November 7, 2012*

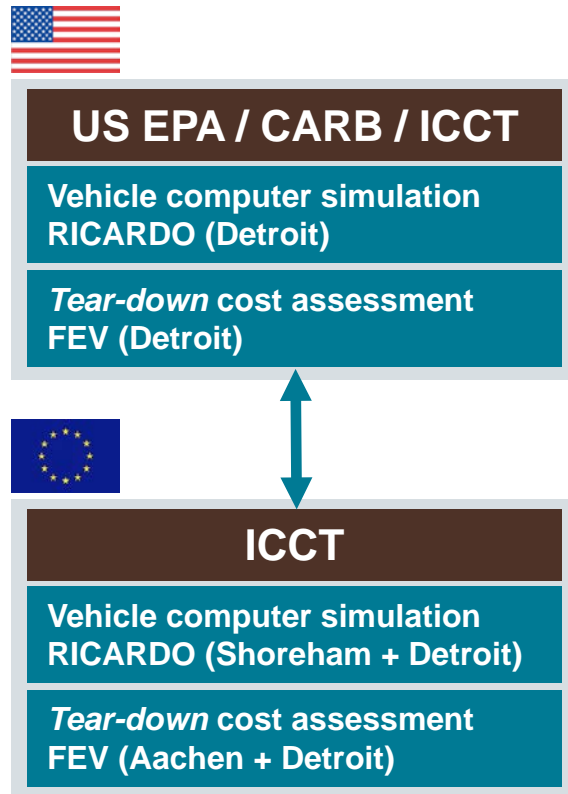
*Brussels*



# CO<sub>2</sub> regulation shows effect: 2015 target will be exceeded; we are on a good way to 2020.



# Significantly improved method to assess CO<sub>2</sub> reduction potential and costs of technologies.



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**US EPA / CARB / ICCT**

Vehicle computer simulation  
RICARDO (Detroit)

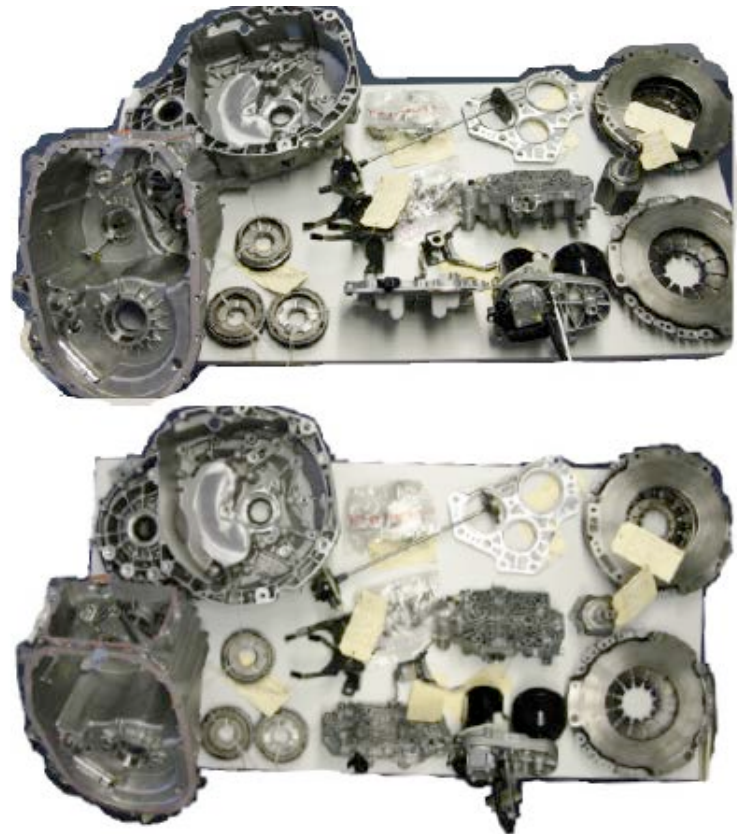
*Tear-down* cost assessment  
FEV (Detroit)



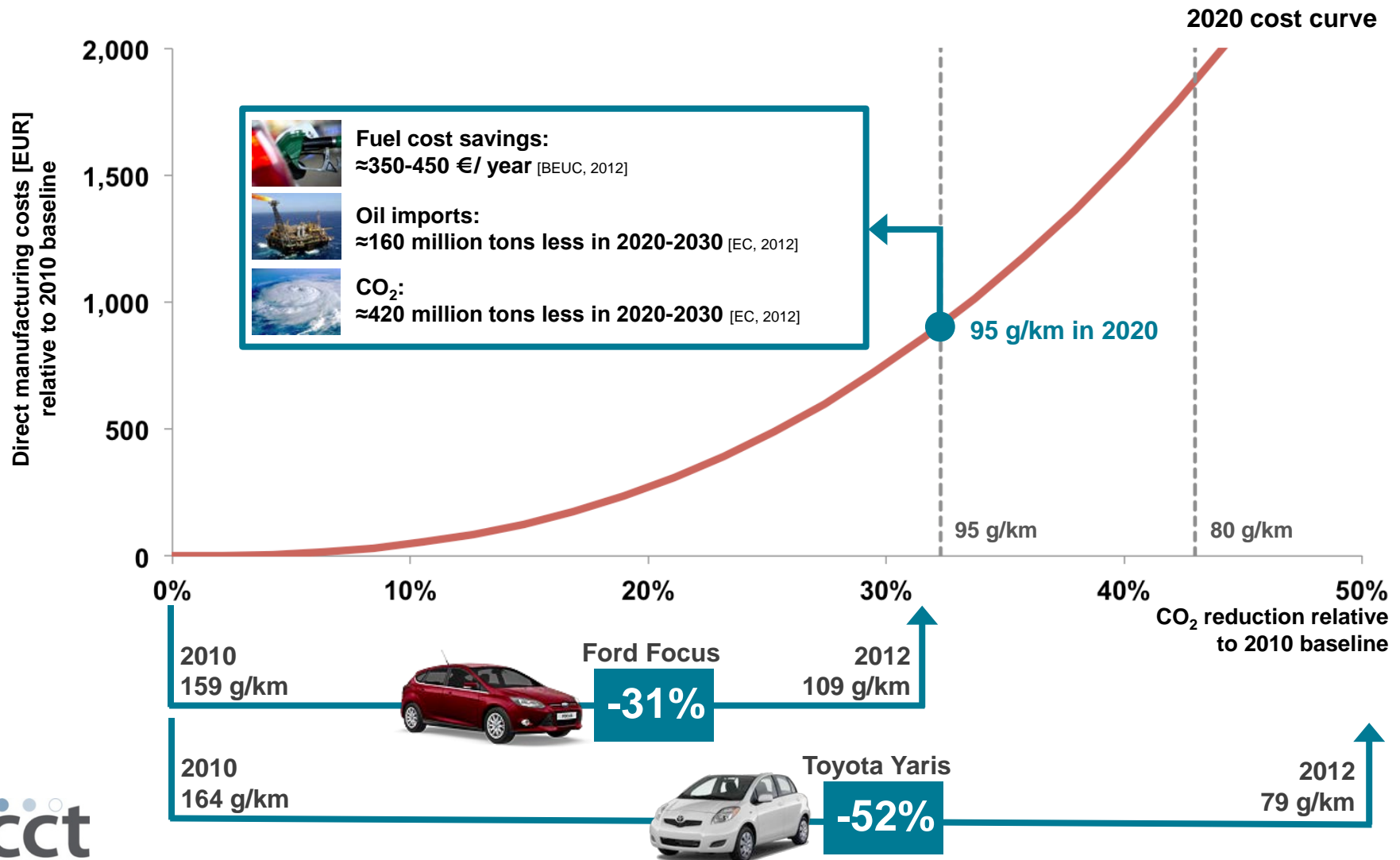
**ICCT**

Vehicle computer simulation  
RICARDO (Shoreham, Detroit)

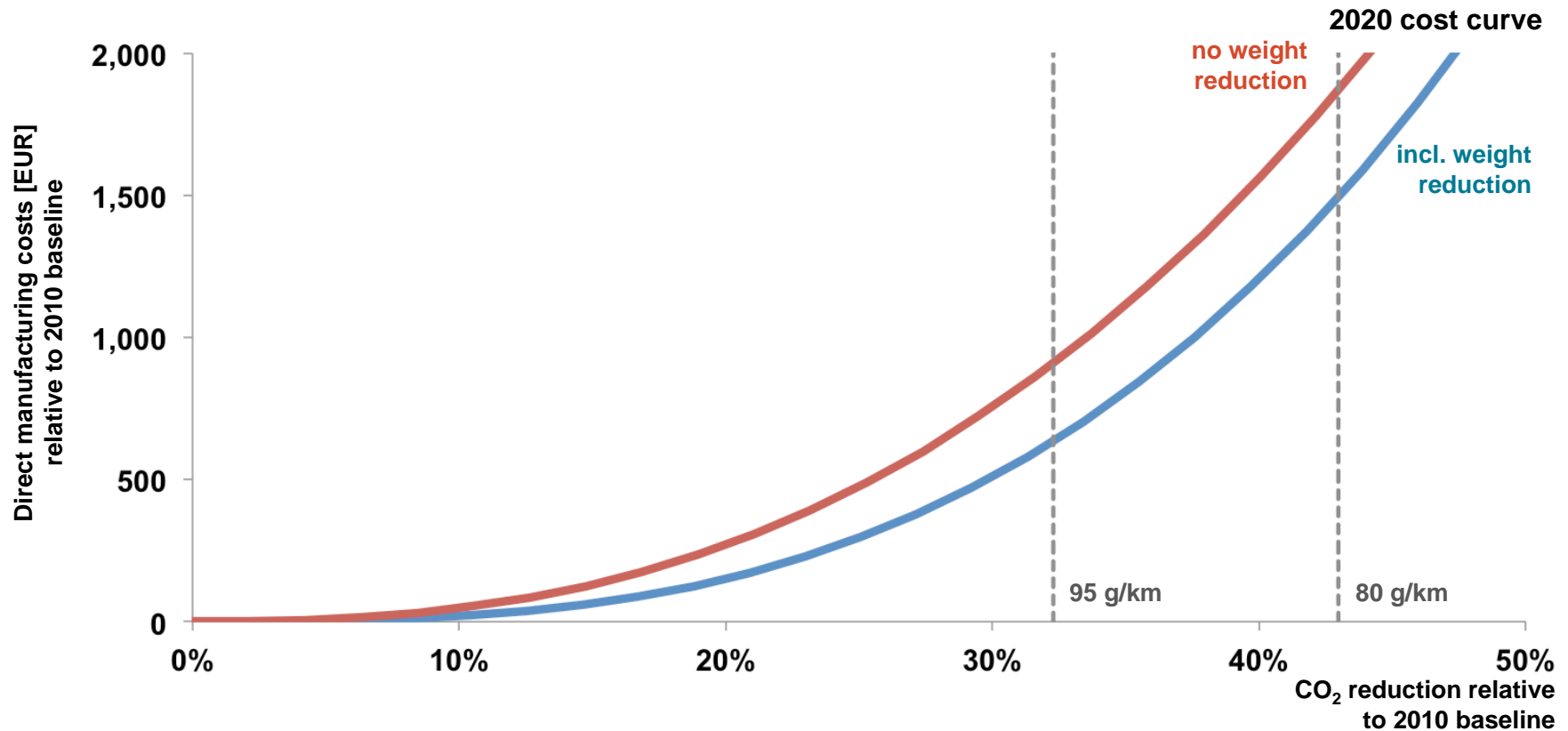
*Tear-down* cost assessment  
FEV (Aachen, Detroit)



# 30% CO<sub>2</sub> reduction without hybrid vehicles. About 2 year amortisation period.

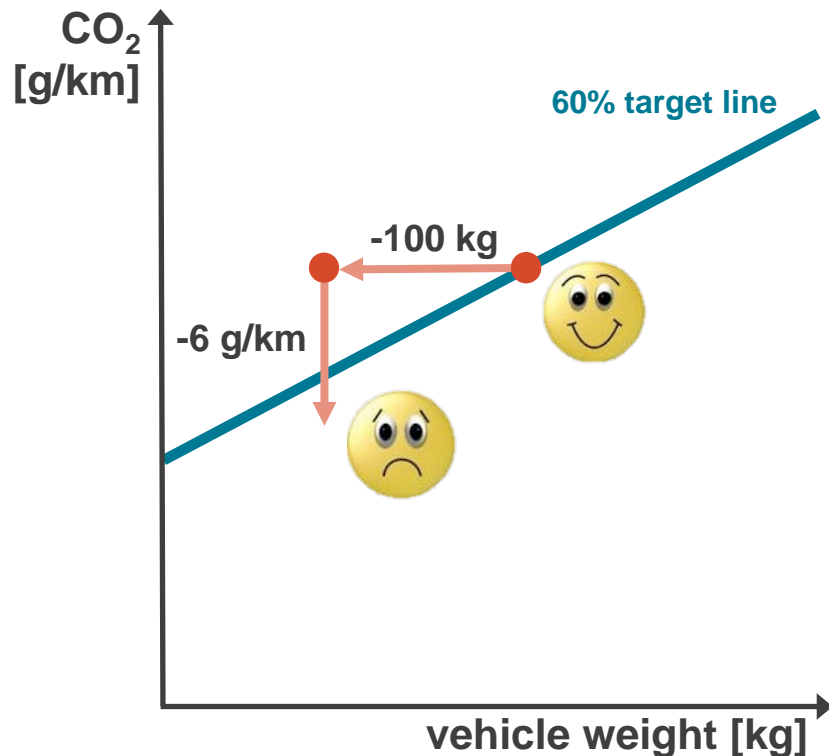


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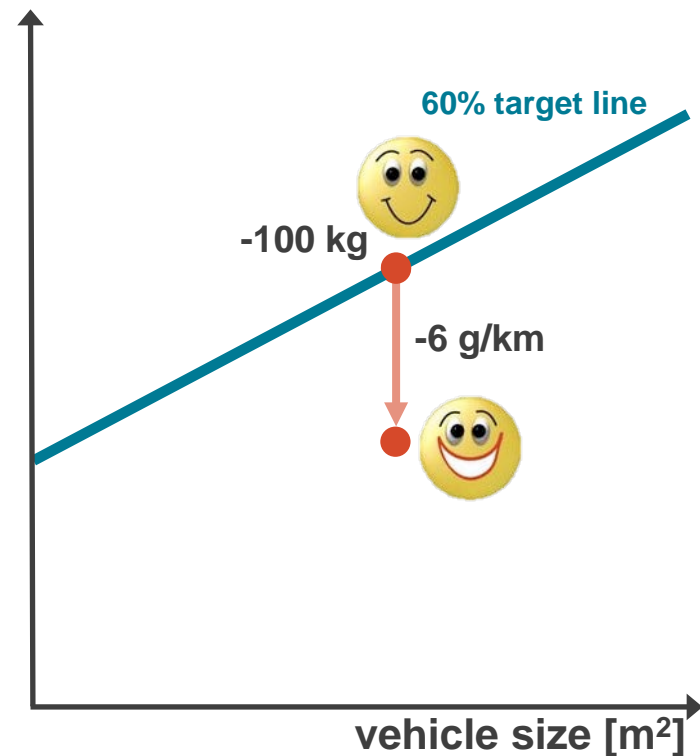


# Weight-based system strongly reduces weight reduction incentive; not technology neutral.

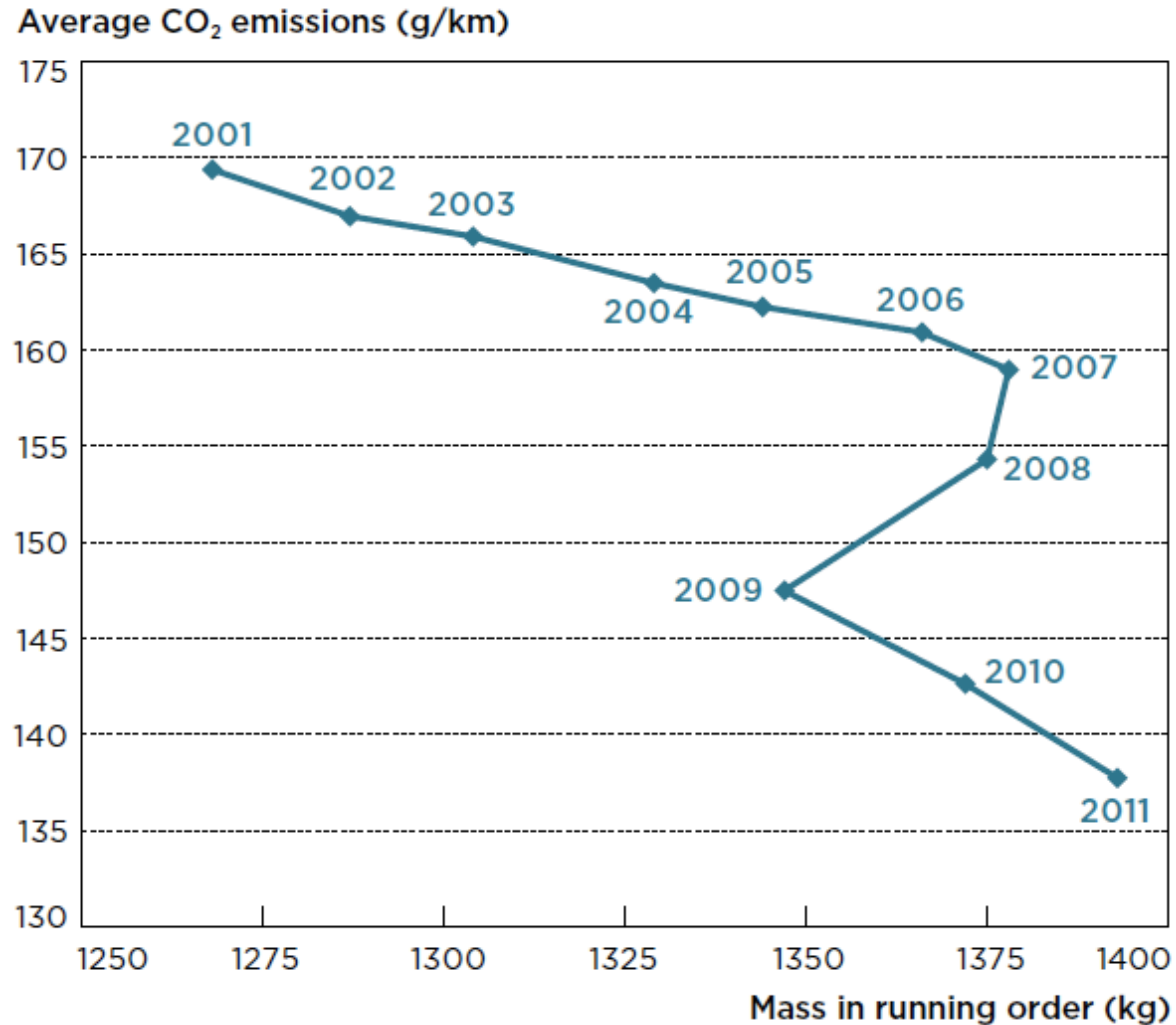
## Weight-based target system



## Footprint-based target system

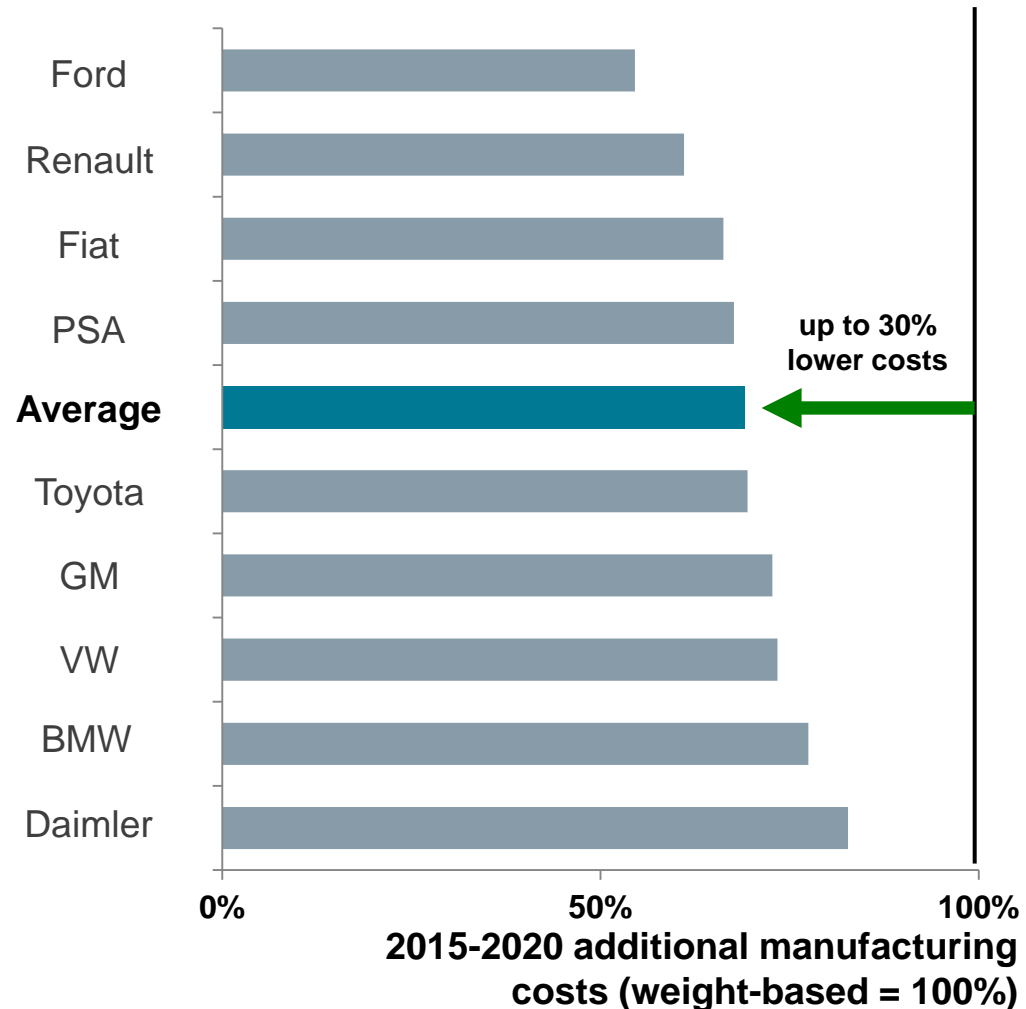
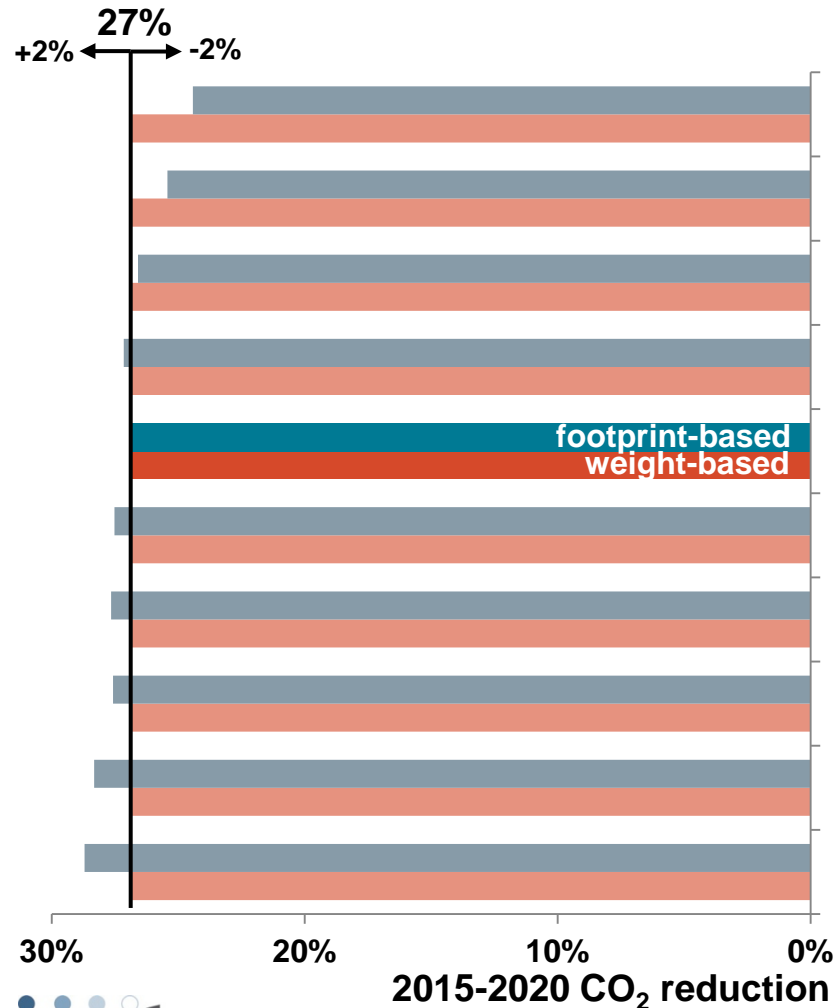


# Strong trend to increase vehicle weight: +10% in 10 years.





# Lower compliance costs in a footprint-based system: savings for manufacturers and society.



# Lower compliance costs in a footprint-based system: savings for manufacturers and society.

- **Data on footprint today readily available.**
- **Manufacturers need lead time to align product plans with target system.**
- **In the US, footprint-based system was introduced for 2008 regulation.**

# Lower compliance costs in a footprint-based system: savings for manufacturers and society.

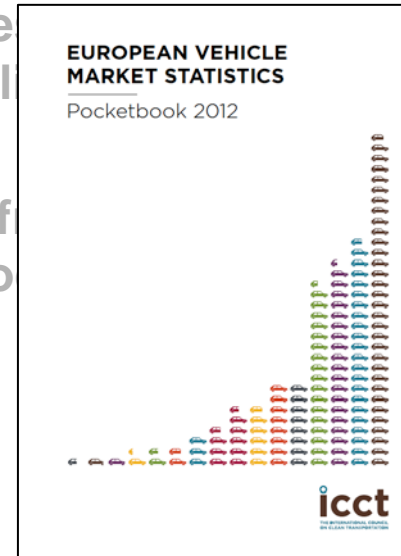
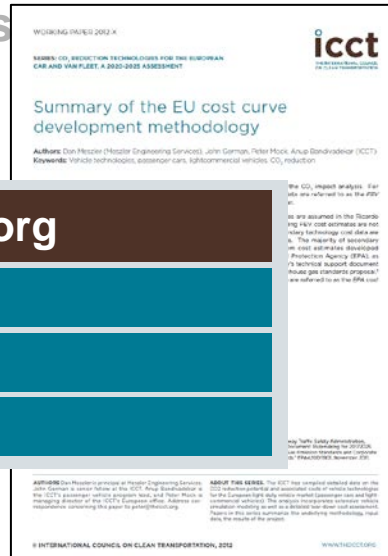
- **2015 target almost met already today; on a good way to 95 g/km in 2020**
- **Technologies to meet 95 g/km in 2020 readily available; additional costs lower than 1,000 €/vehicle; amortisation period  $\approx$  2 years**
- **Weight-based target system discourages weight reduction  
→ continuous weight increase → compliance costs higher than necessary**
- **Society and manufacturers will benefit from switch to a footprint-based system; but need lead-time to adapt product plans**

# Lower compliance costs in a footprint-based system: savings for manufacturers and society.

- 2015 target almost met already today; on a good way to 95 g/km in 2020
- Technologies to meet 95 g/km in 2020 readily available; additional costs lower than 1,000 €/vehicle; amortisation period  $\approx$  2 years
- Weight-based target system  $\rightarrow$  continuous weight increase rather than necessary footprint-based

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