# Counting transport emissions properly

## More difficult than it seems …..

Jos Dings, Stockholm, 11 October 2011

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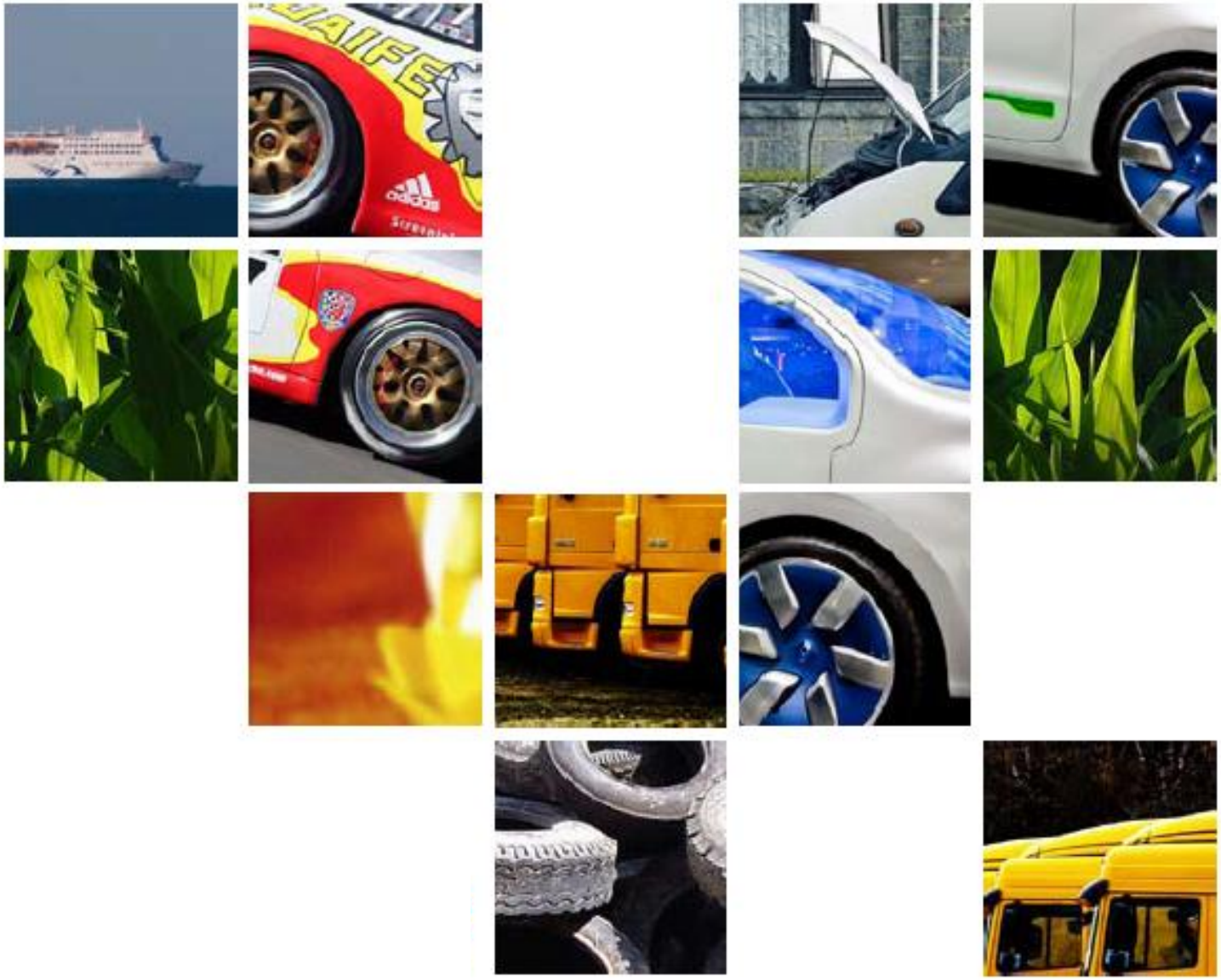

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1948: 7.5 litres/100km
2008: 7.5 litres/100km
60 years of progress?
MEPs – It's time to shift fuel efficiency up a gear.
Vote for 120g $CO_2$/km by 2012 and 80g $CO_2$/km by 2020.
www.ForLessPollutingCars.com
OAZ-542

# Contents

- Cost and cost effectiveness
- Standards and real emissions from cars
- Carbon footprint of biofuels

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# Costs and cost effectiveness

-

# Is reducing CO2 in transport expensive ?

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# What is often forgotten, 1

- That transport has no costs of ‘carbon leakage’
- You cannot replace a journey London-Berlin with Shanghai – Beijing
- Likewise for buildings and households (‘sheltered’ sectors)

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# Recommendation

count costs of CO2 abatement

PLUS costs of CO2 leakage

In sheltered sectors:

Leakage costs are lower

So abatement costs can be higher

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# What is often forgotten, 2

Technical measures to reduce CO2:

costs come from car industry

(contrary to wind power, buildings insulation, solar cells, biomass, ….. where you can observe market prices)

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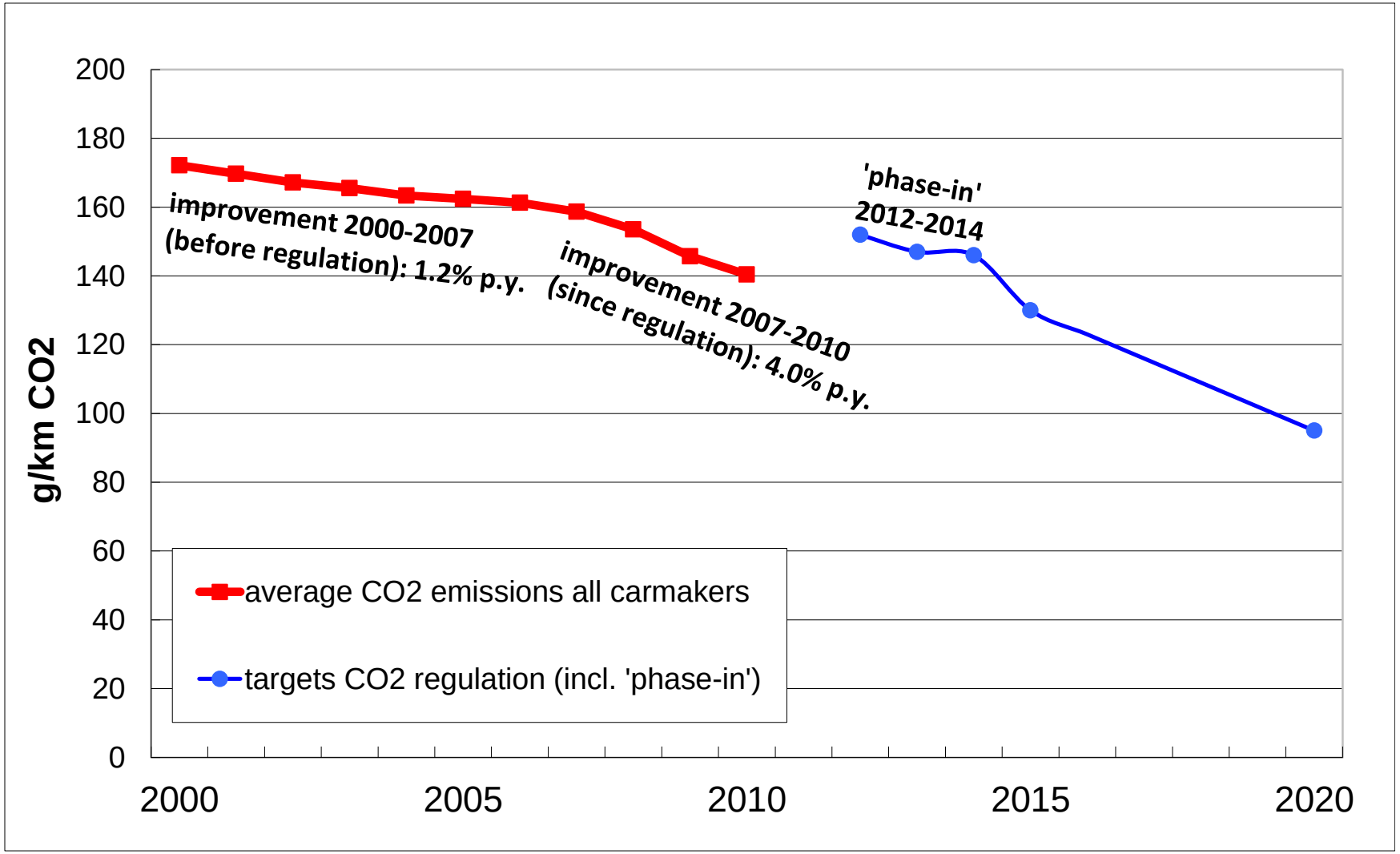
# How the car industry has reduced CO2

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# Past estimates of costs to reach 140 g/km

2001, AEA et al:

€2,400 per car (25% cut from 1995 baseline)

2006, TNO et al,

€1,200 per car (16% cut from 2002 baseline)

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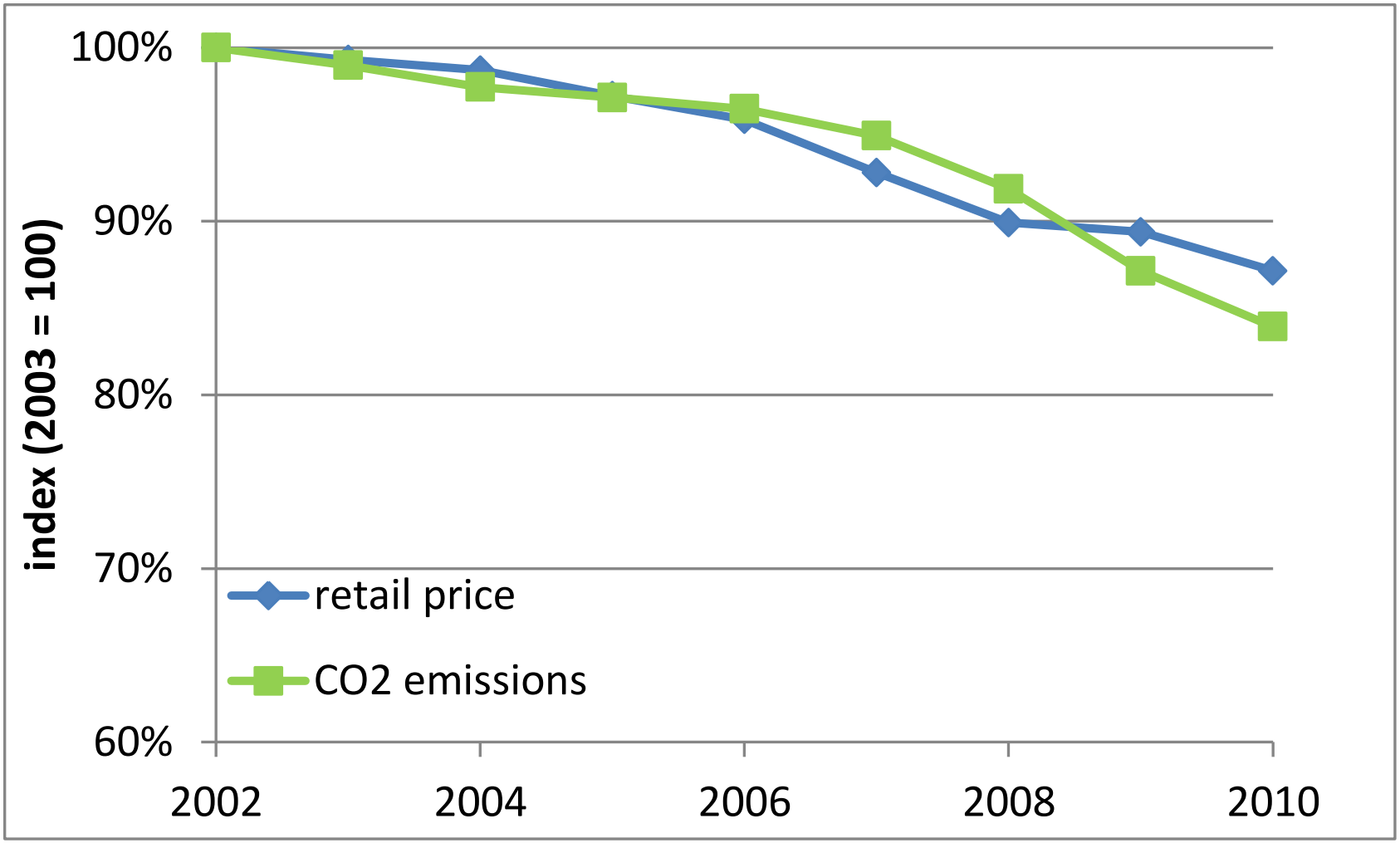
# And what REALLY happened to car prices




Source: *'How clean are Europe's cars?'*, T&E, Sept 2011

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# Another example: costs of catalytic

Cost estimates at introduction: €1,000 per car

Current costs: below €100

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# Recommendation

Don’t believe that tough emission standards will make cars unaffordable

Correct costs for

- Innovation
- strategic bias

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# Car emission standards
# how effective are they in reality ?

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# Case study 1:

# ‘Euro’ standards for air pollution emissions from new cars

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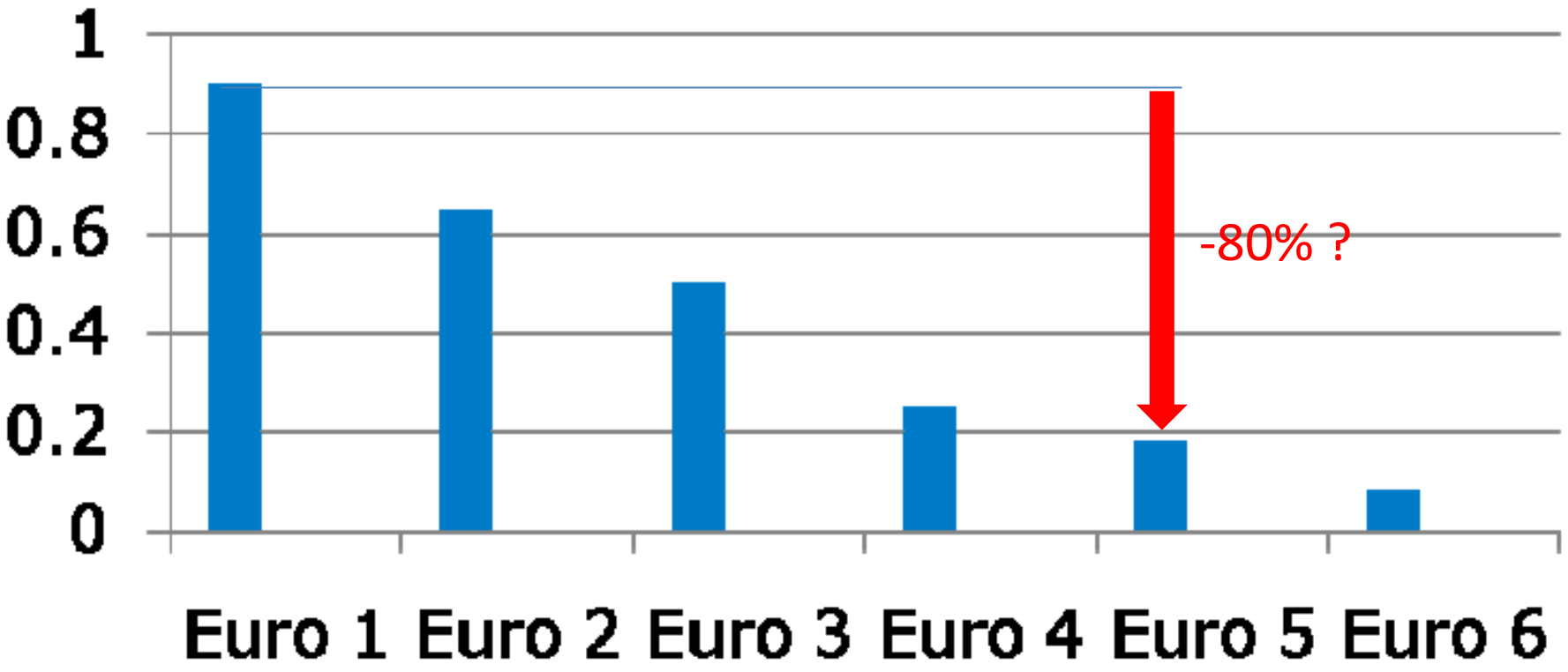
# Euro 1-6 NOx emission standards for diesel cars (g/km)




Euro 5 NOx 80% below Euro 1 ?

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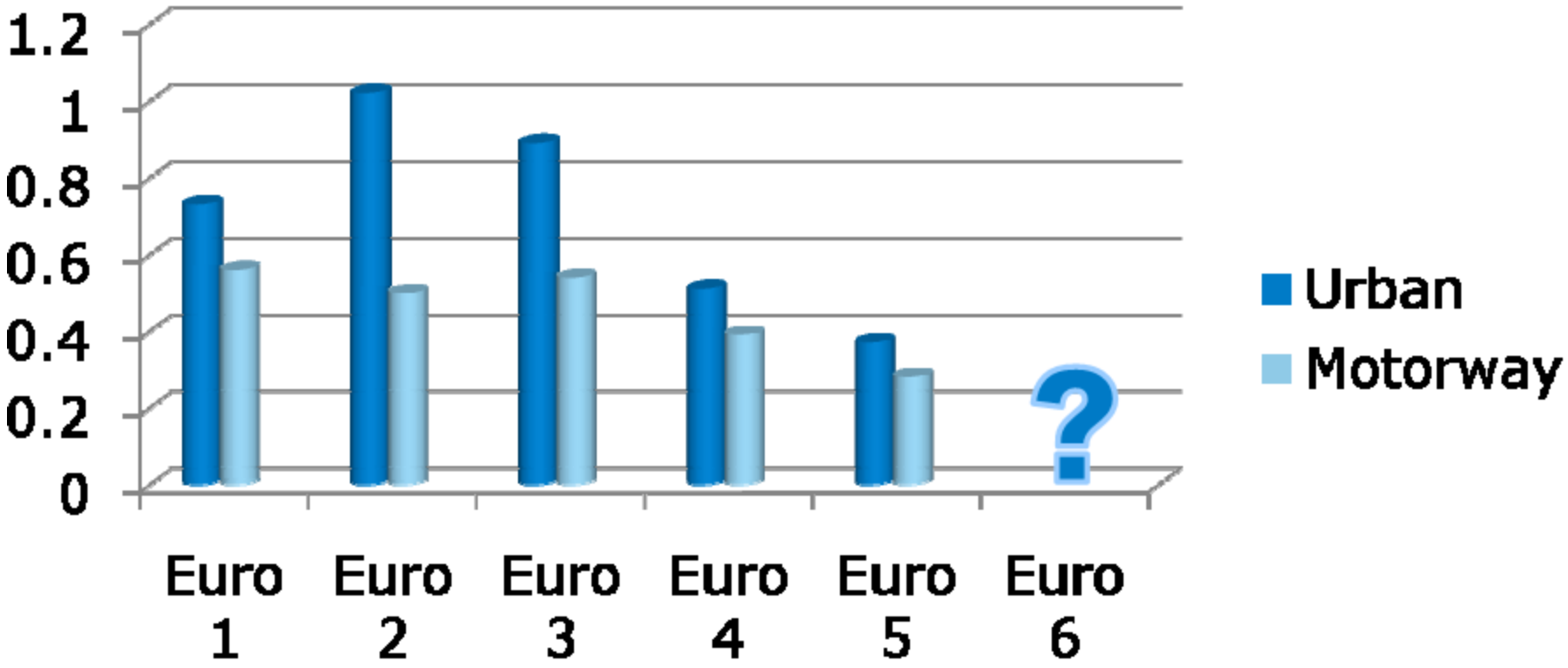
# Real world NOx emissions from diesel cars (g/km)




not 80 but rather 50% reduction of NOx from Euro 1-5

Source: Dutch Ministry for Infrastructure and Environment, April 2011

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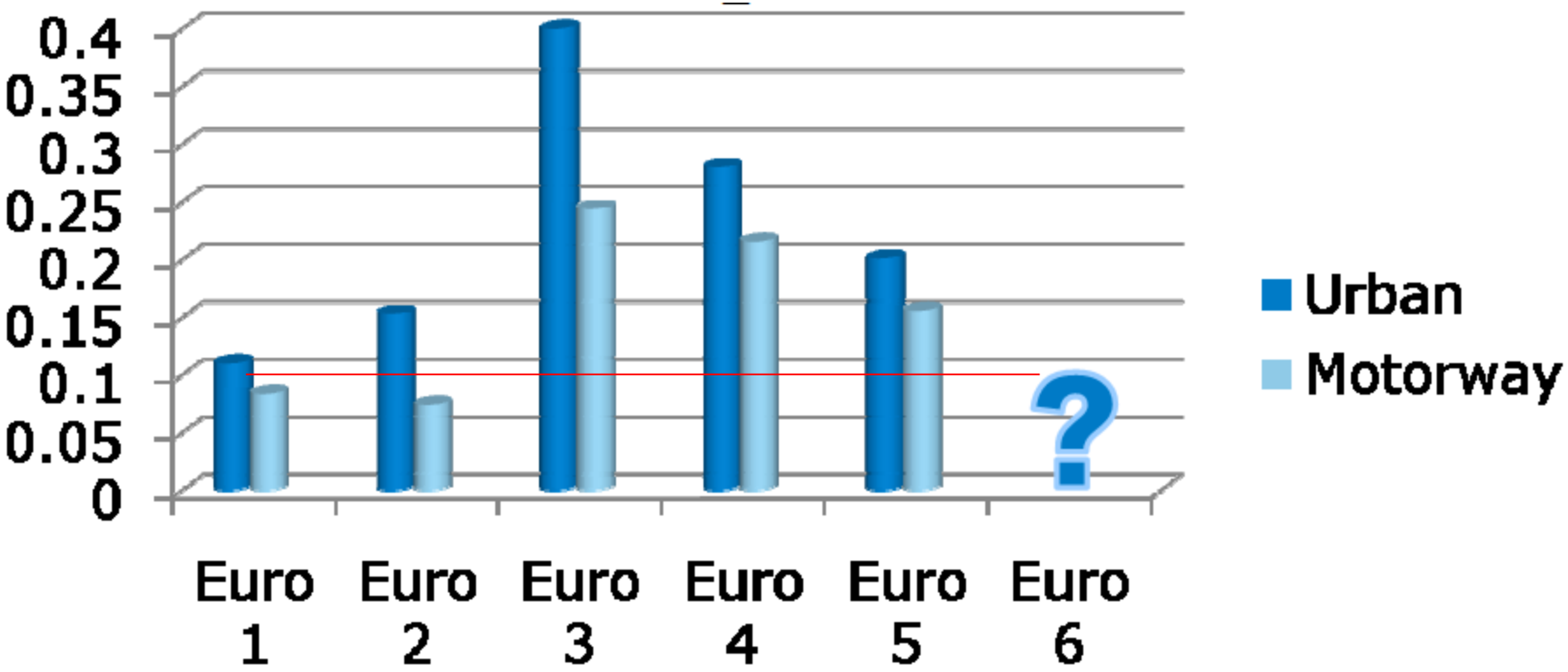
# Real world NO2 emissions from Euro 1-5 diesel cars (g/km)




NO2 emissions from Euro 5 cars are higher than from Euro 1 cars

Source Dutch Ministry for Infrastructure and Environment, April 2011

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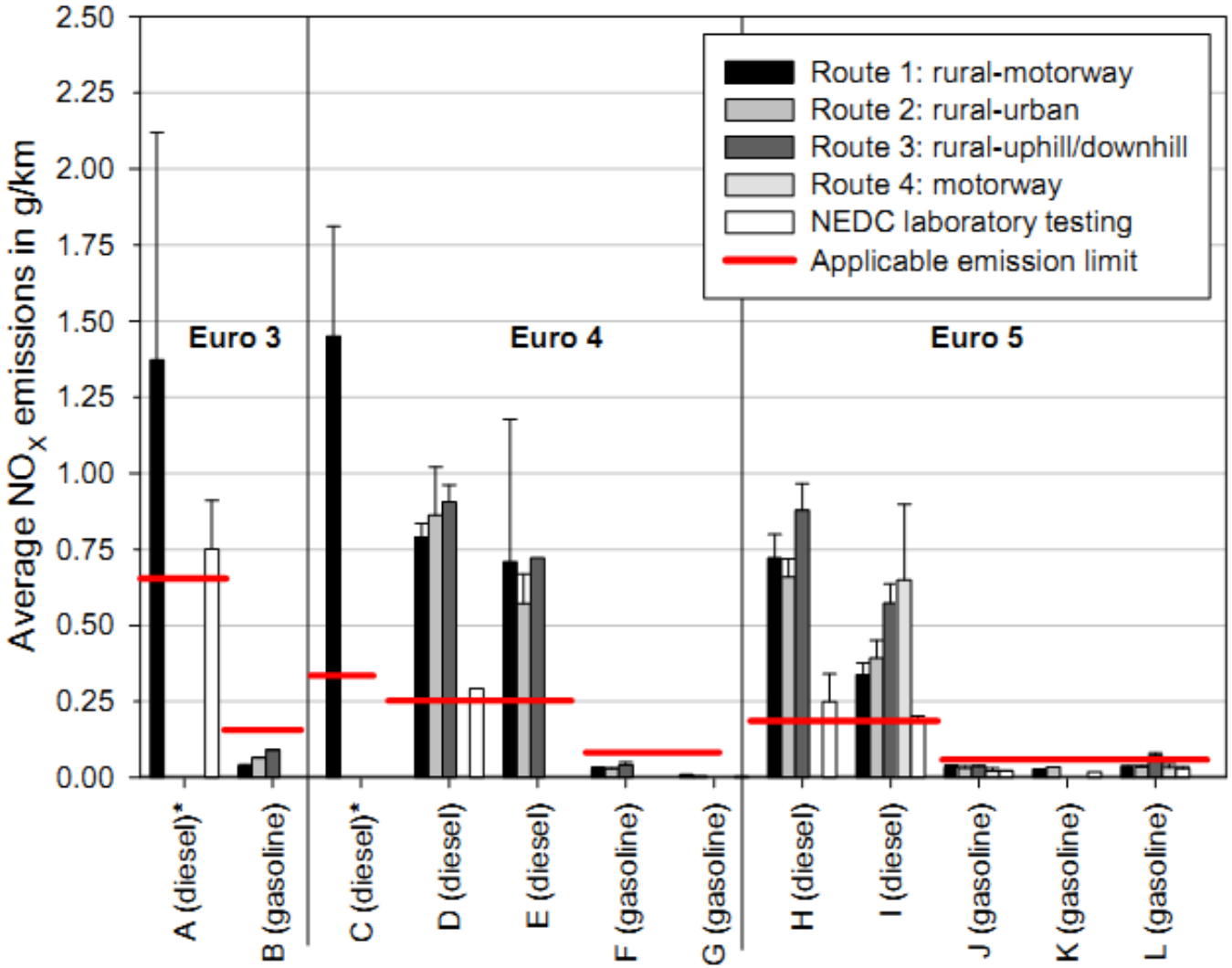
# Another source:
# NOx from diesel cars is the problem




Source JRC Ispra August 2011

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# Case study 2:

# 95 g/km average CO2 for new cars in 2020

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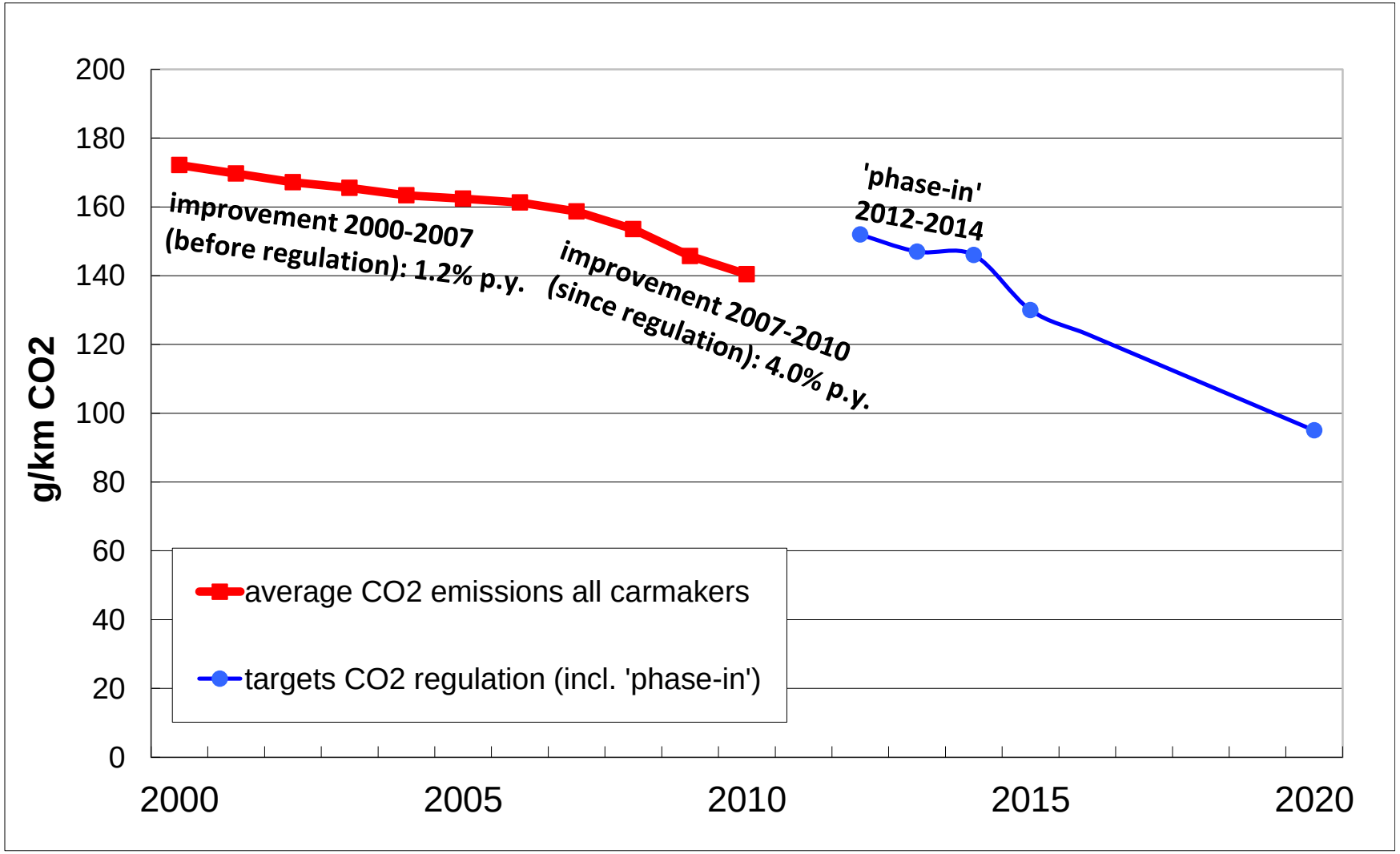
# How the car industry has reduced official CO2 emisssions

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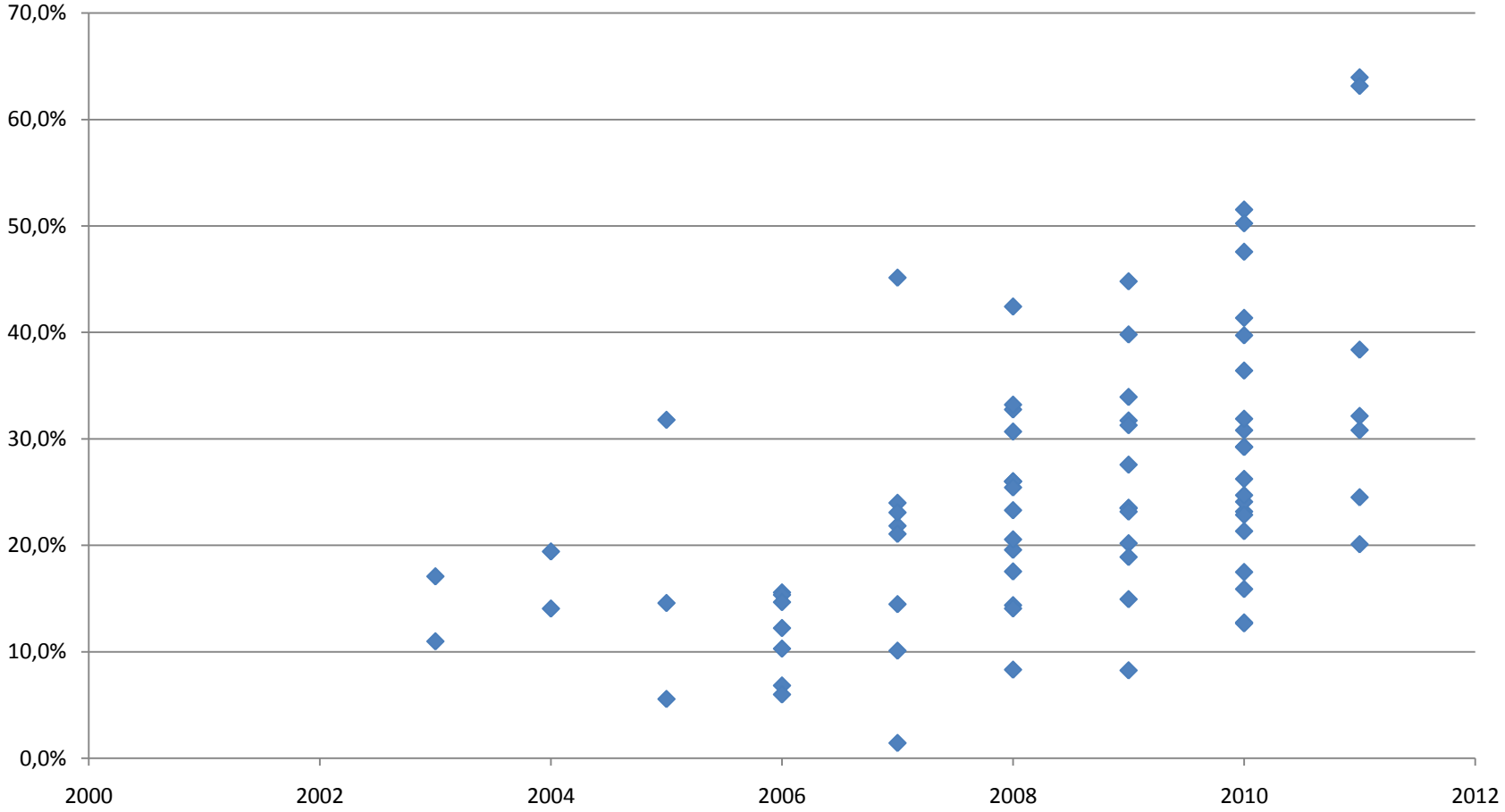
# But same story: gap between official and real-world CO2 is increasing …..




Difference between official and real world $CO_2$, random selection of models
Source for real world CO2: www.spritmonitor.de

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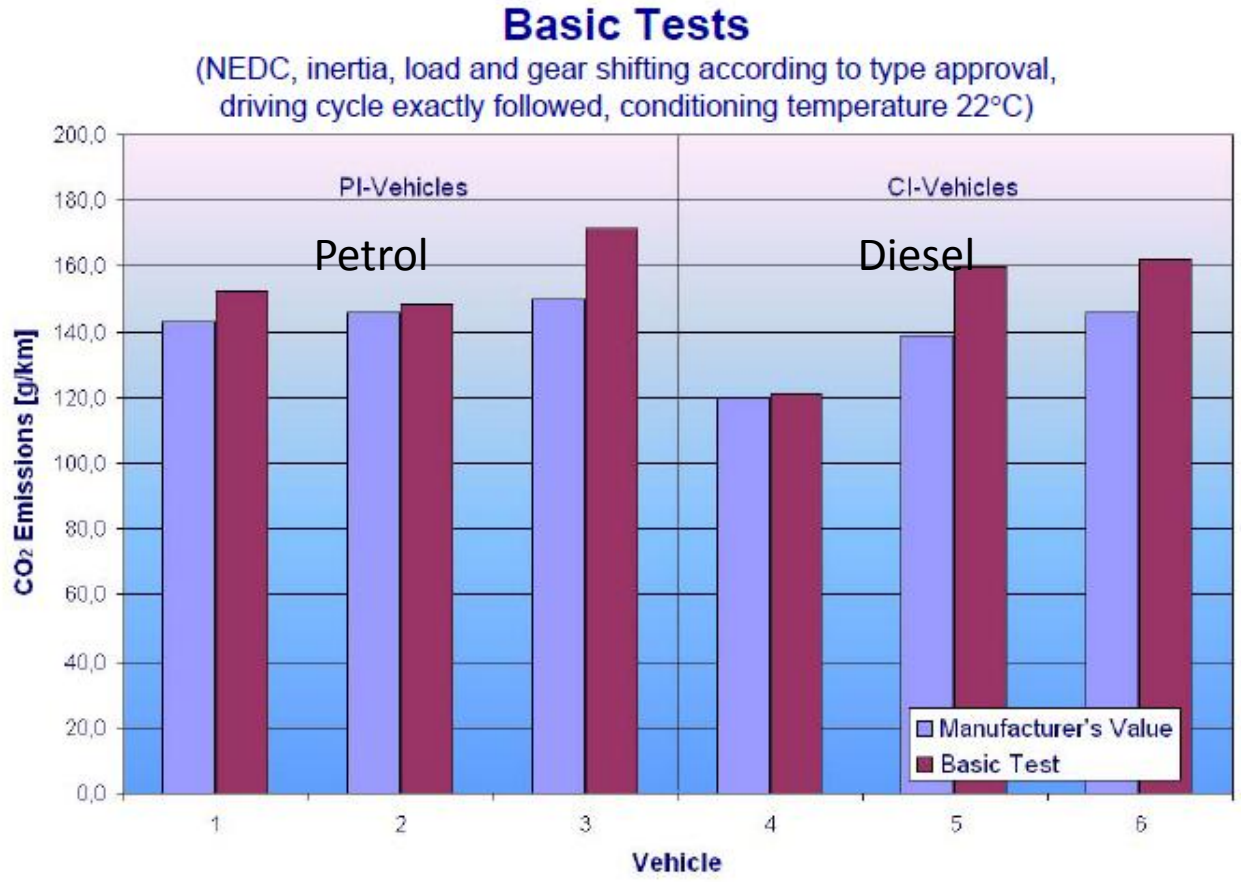
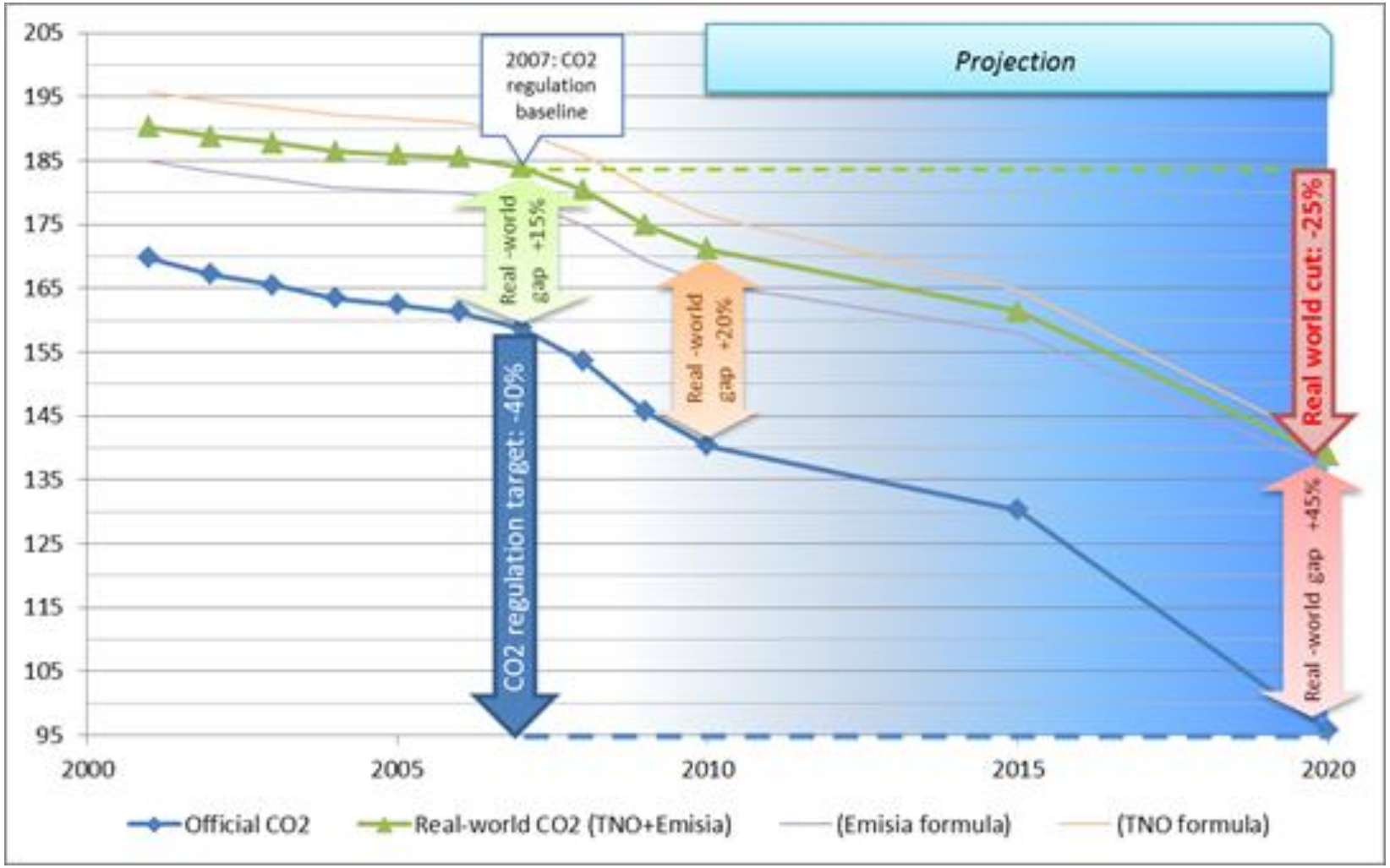
# Even when replicating lab tests… official $CO_2$ often impossible to reproduce



# In theory: 40% CO2 reduction compared with 2007
# In reality: 25% CO2 reduction by 2020 more likely

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# Recommendation

EU emission standards are important but don’t solve the problems all by themselves

National-level action more necessary than often thought

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# Counting the carbon of biofuels

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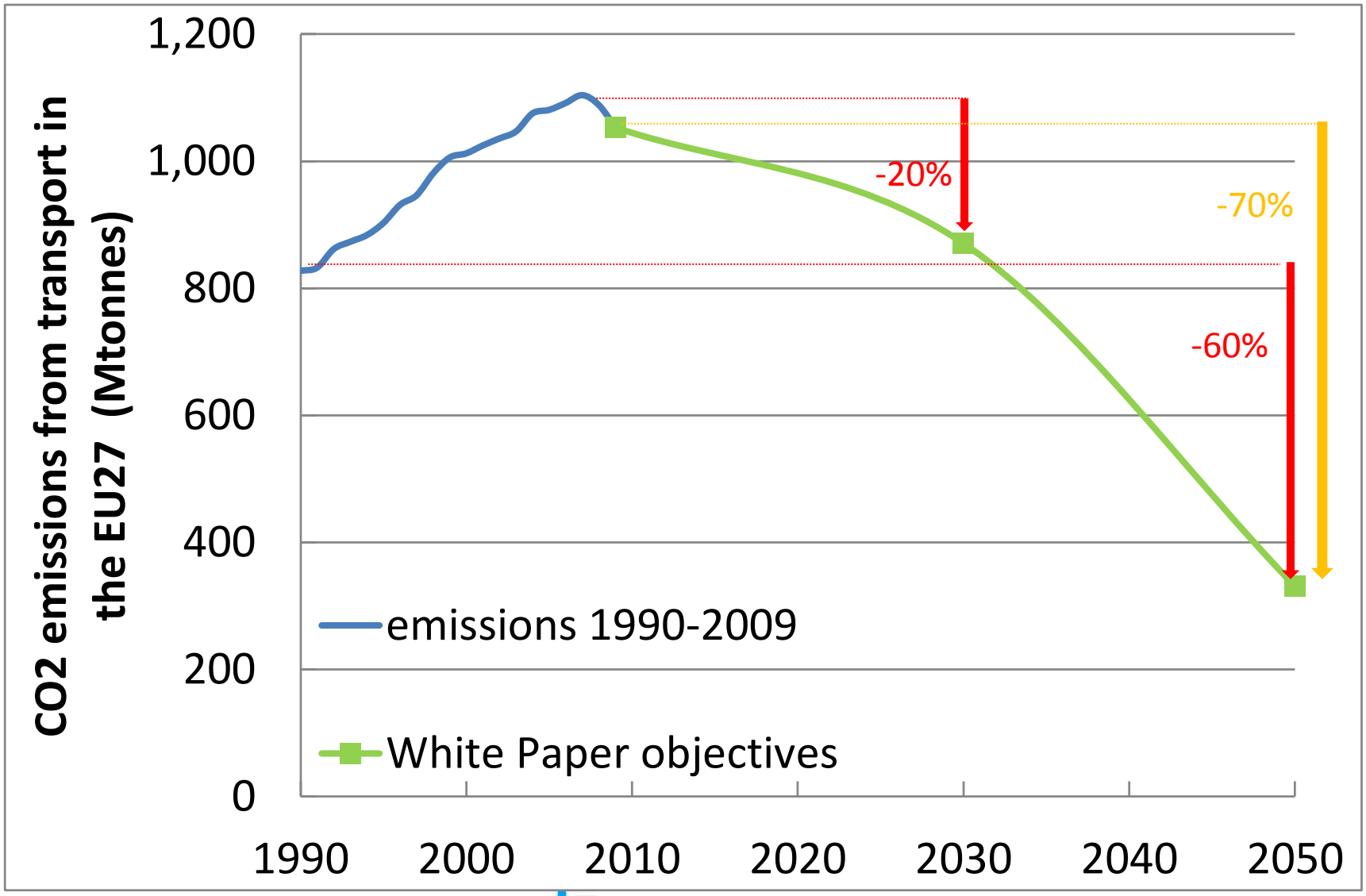
# Historic GHG emissions from transport in the EU27, and targets for 2050



In theory you could do that with blending in 70% biofuels

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# In practice that would not work

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# Indirect Land Use Change: the biggest forgotten problem

- If you start using agricultural land for bio-energy, you lose production of food
- food prices go up
- that leads to
  - land being converted for food production
  - more carbon emitted in the process

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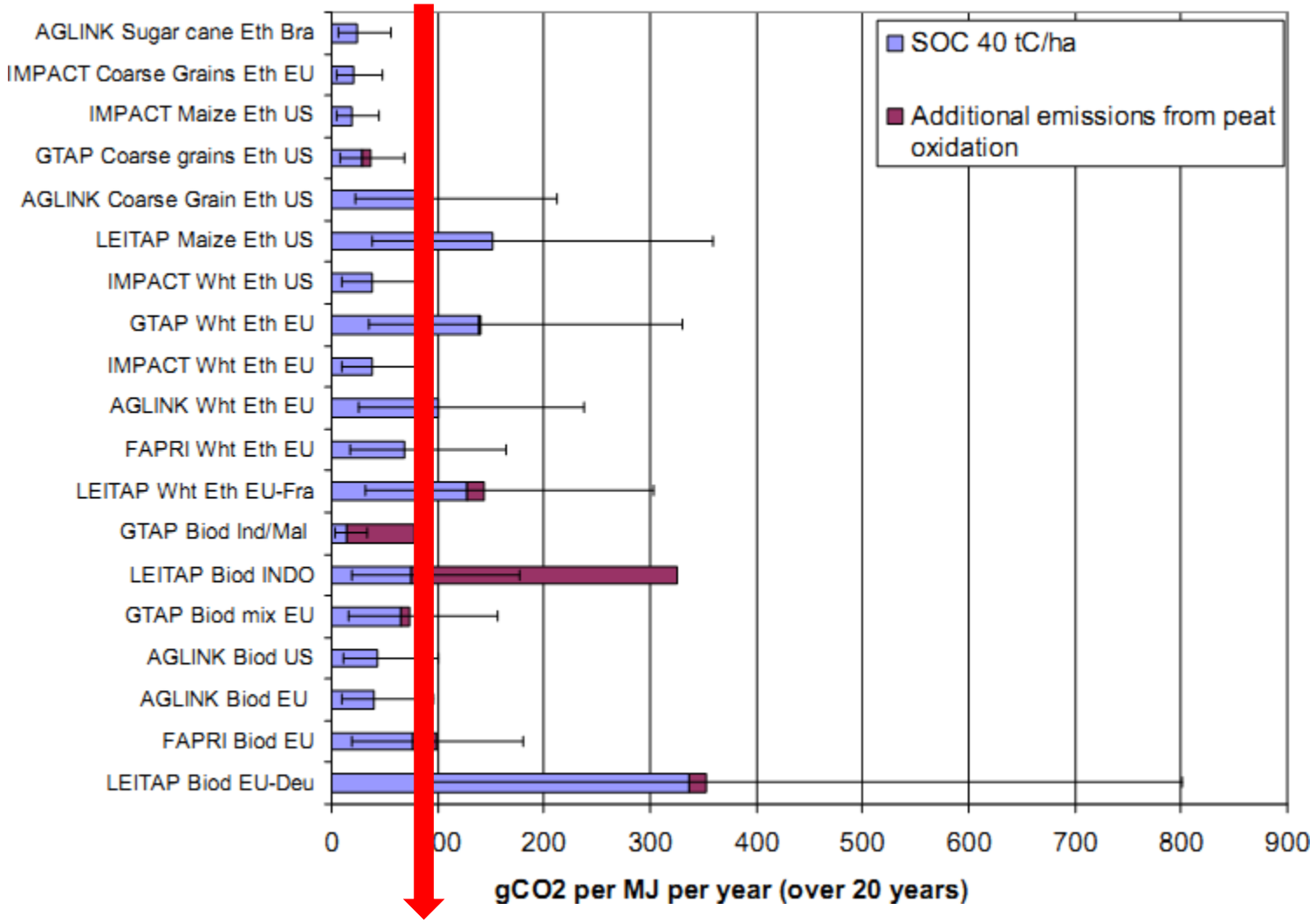
# How huge GHG emissions from ONLY indirect land use change are




Total emissions oil (84 g CO2/MJ)

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# Biofuels in Kyoto

- 0-counting of bioenergy CO2 when burnt ….
- .. And account for CO2 through land use change (LUC) accounting and agriculture
- Two problems with this:
  - tropics fall out of LUC accounting ….
  - wrong incentives for transport policy

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# Recommendation

- As global accounting framework is incomplete, individual bioenergy policies must be sound
- emissions from indirect land use change must be included
- And biofuels should be regulated and taxes on basis of outcome
- Lifecycle emissions should be included in transport GHG overviews

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# Conclusions 1

- In sheltered sectors (transport, households, buildings) higher CO2 abatement costs are justified
- Measures to reduce emissions from cars are much cheaper than estimated before
- But they have been less effective in fighting CO2 and NOx than hoped: additional action needed

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# Conclusions 2

- Greatest transport emissions accounting error is in (bio)fuels
- Gives false impression of transport emissions decline
- Biofuels carbon accounting urgent area for audit institutions

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