

Reduce EMISSIONS and CO2

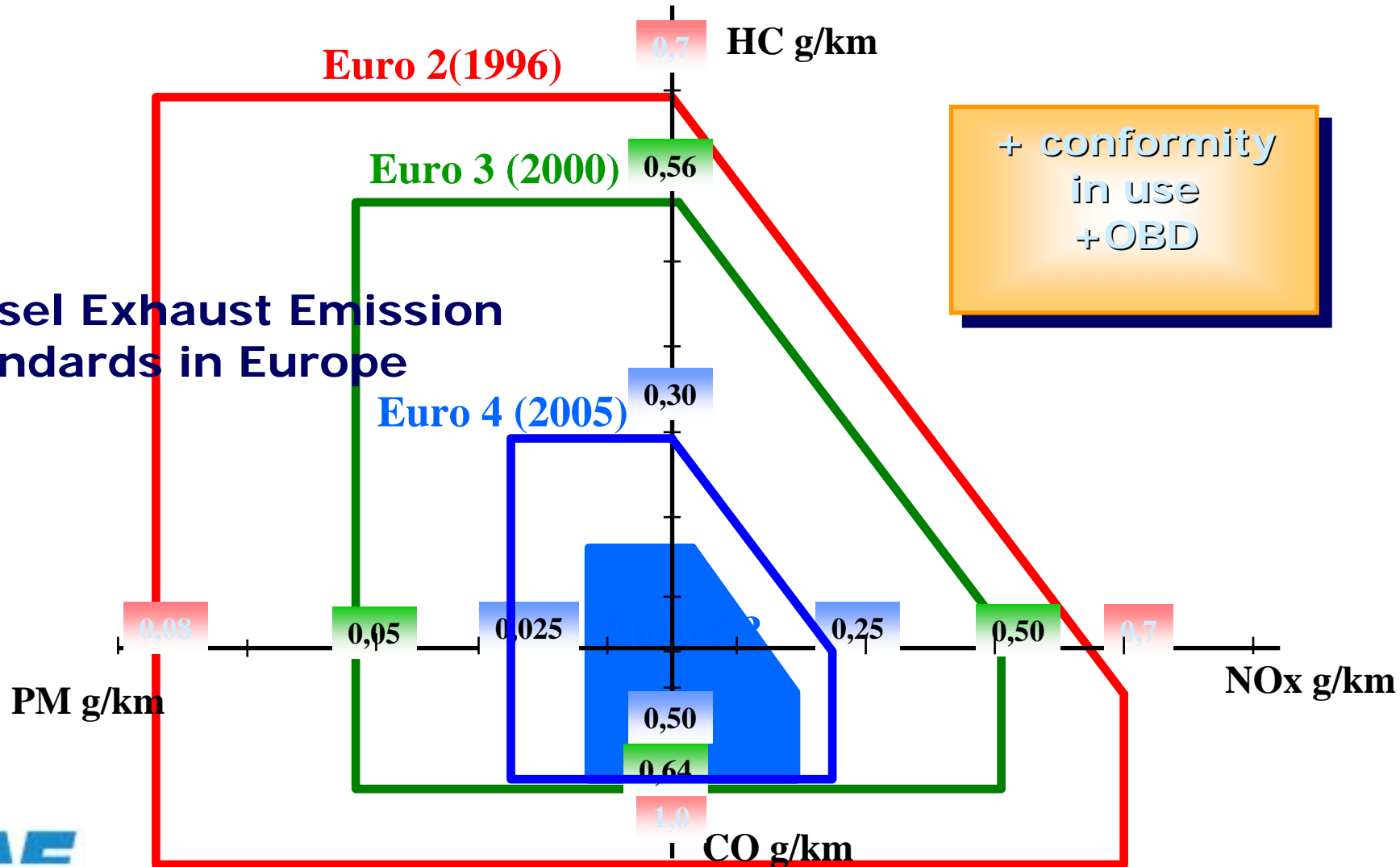
Claude Delarue, RENAULT

Toulouse
June 2004

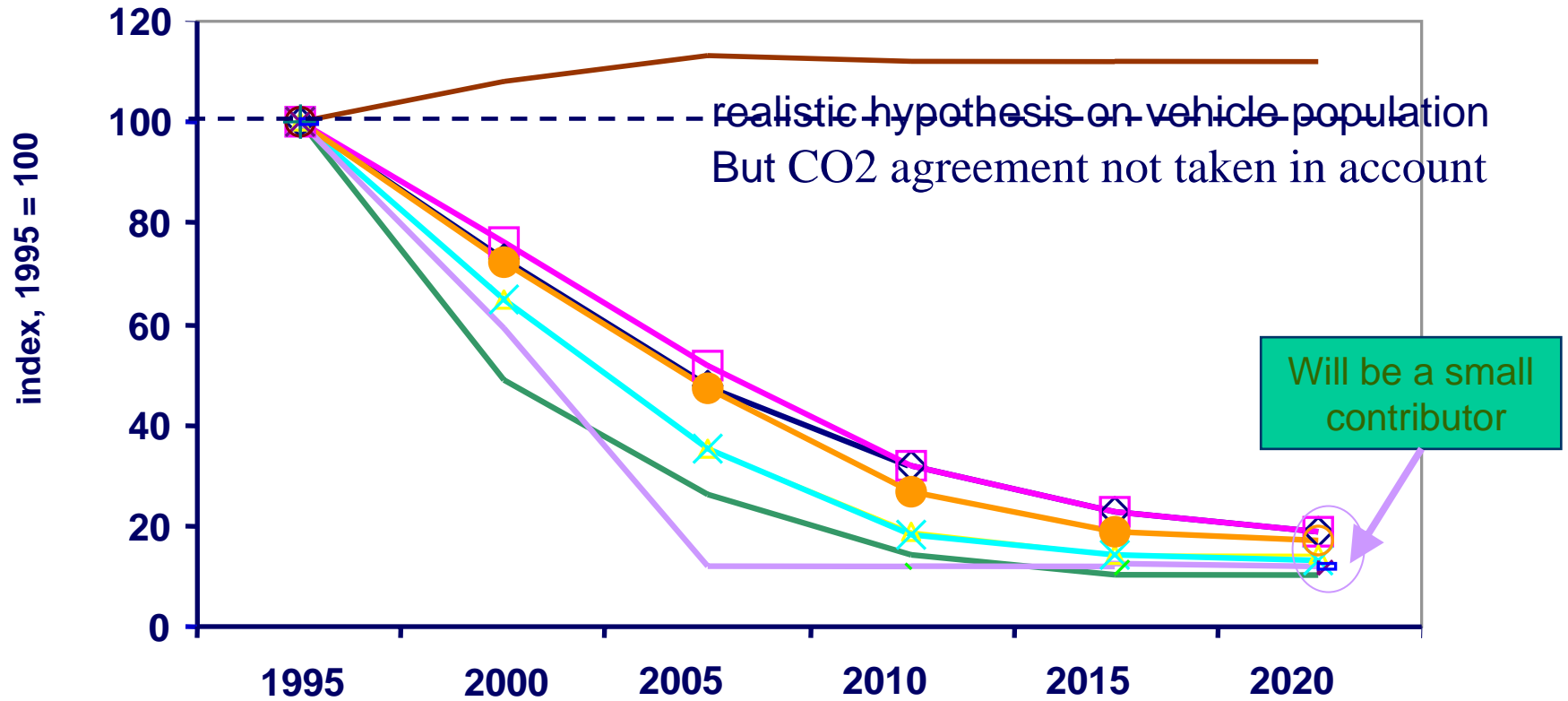


EMISSIONS REGULATIONS CONTINUOUSLY MORE SEVERE but CO2 becoming MAIN DRIVER...in EUROPE

Diesel Exhaust Emission Standards in Europe

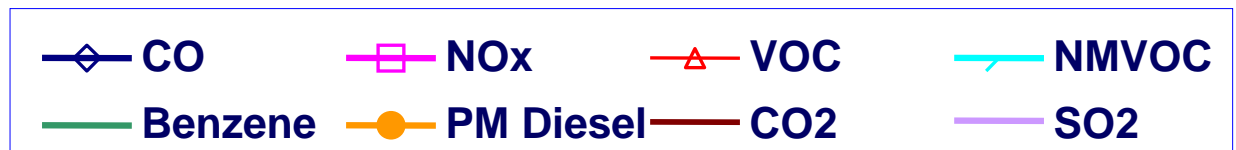


With already decided regulations, problem of toxic emissions from road transport almost solved in the EU



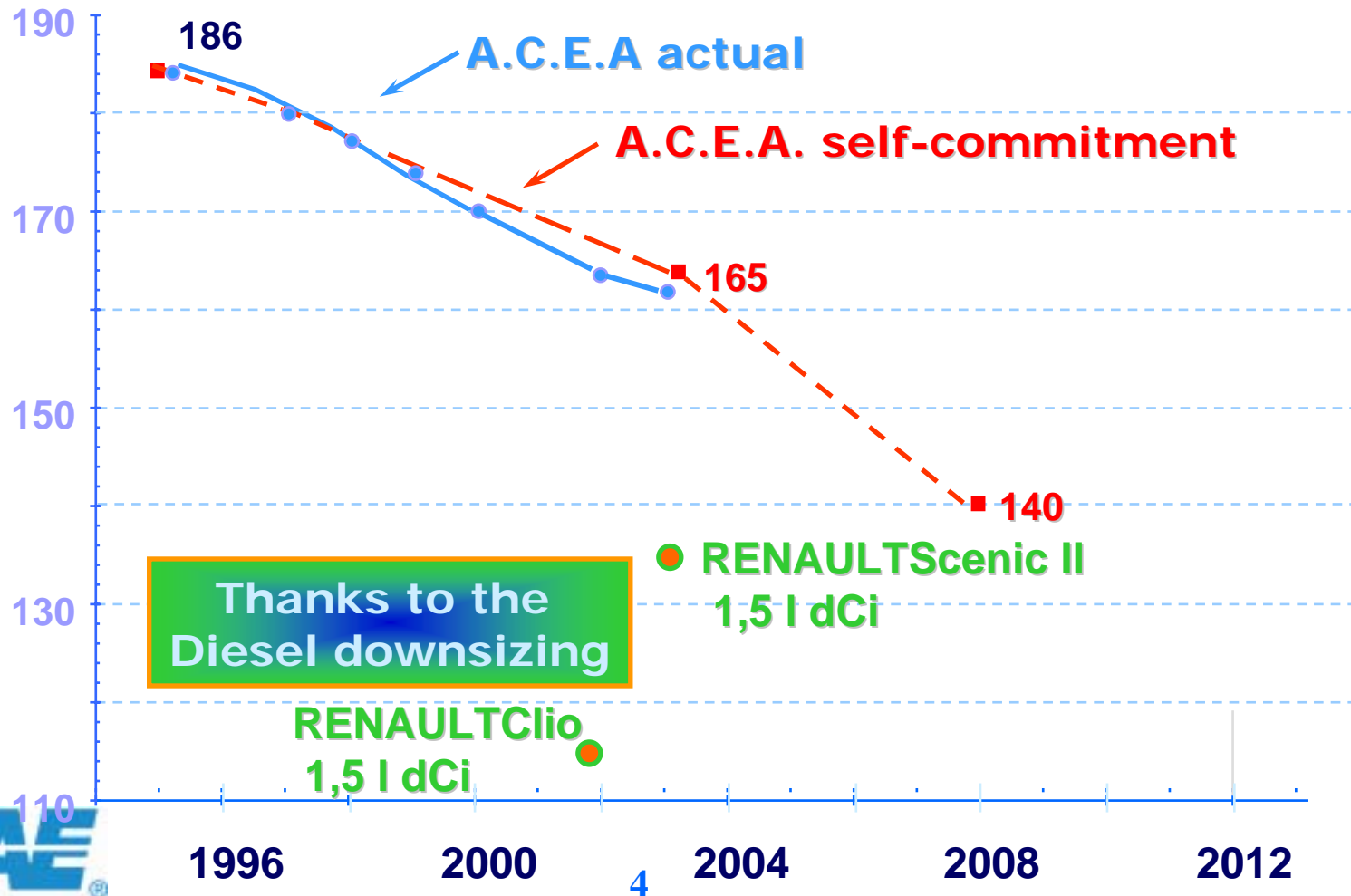
Source : Auto Oil II

From the EU Commission



CO2 : ACEA self-commitment

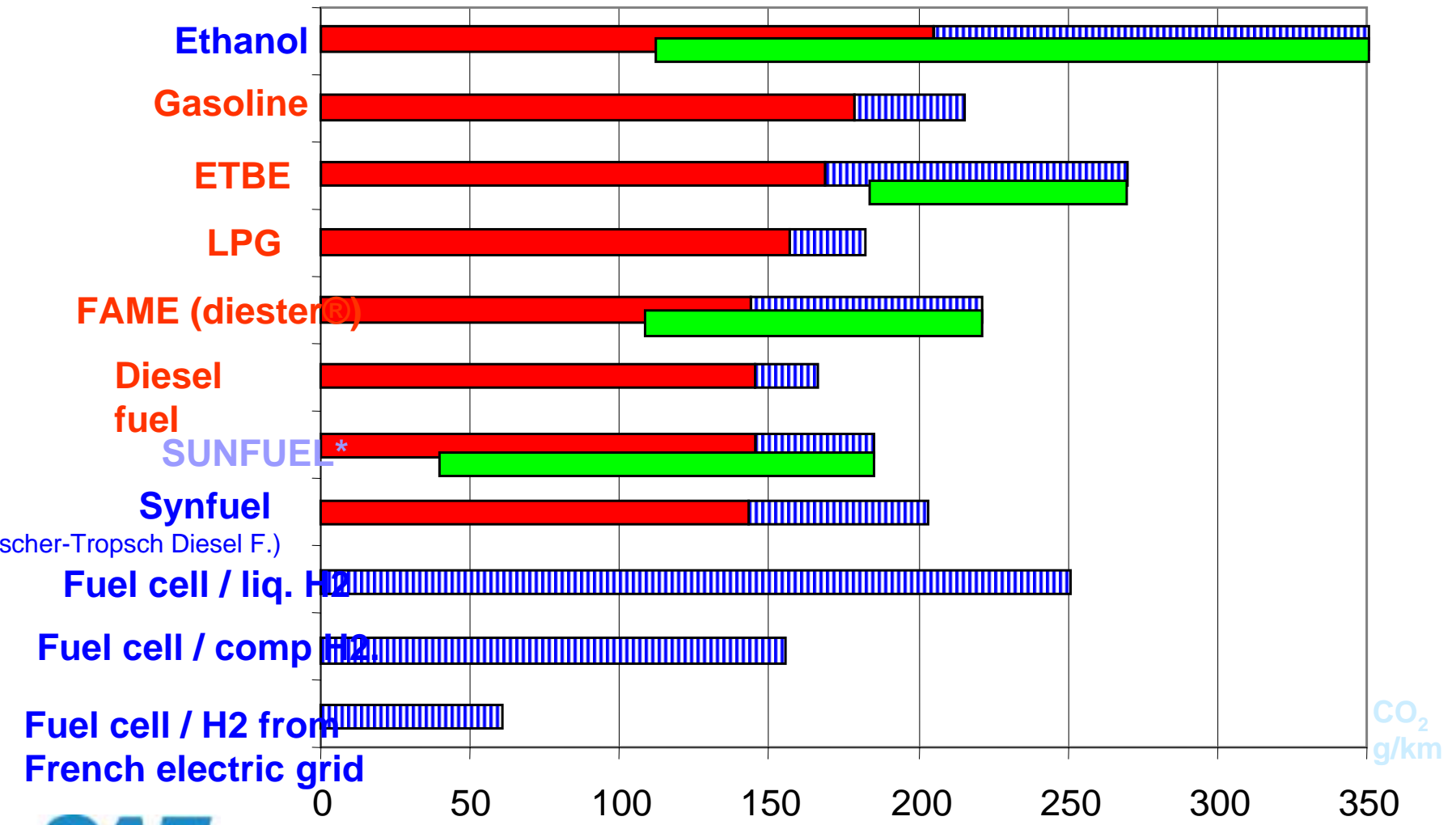
CO2 (g/km)



Take in account analysis from Well to Wheels

ex: CO2 Emissions *Present and alternative Energies*

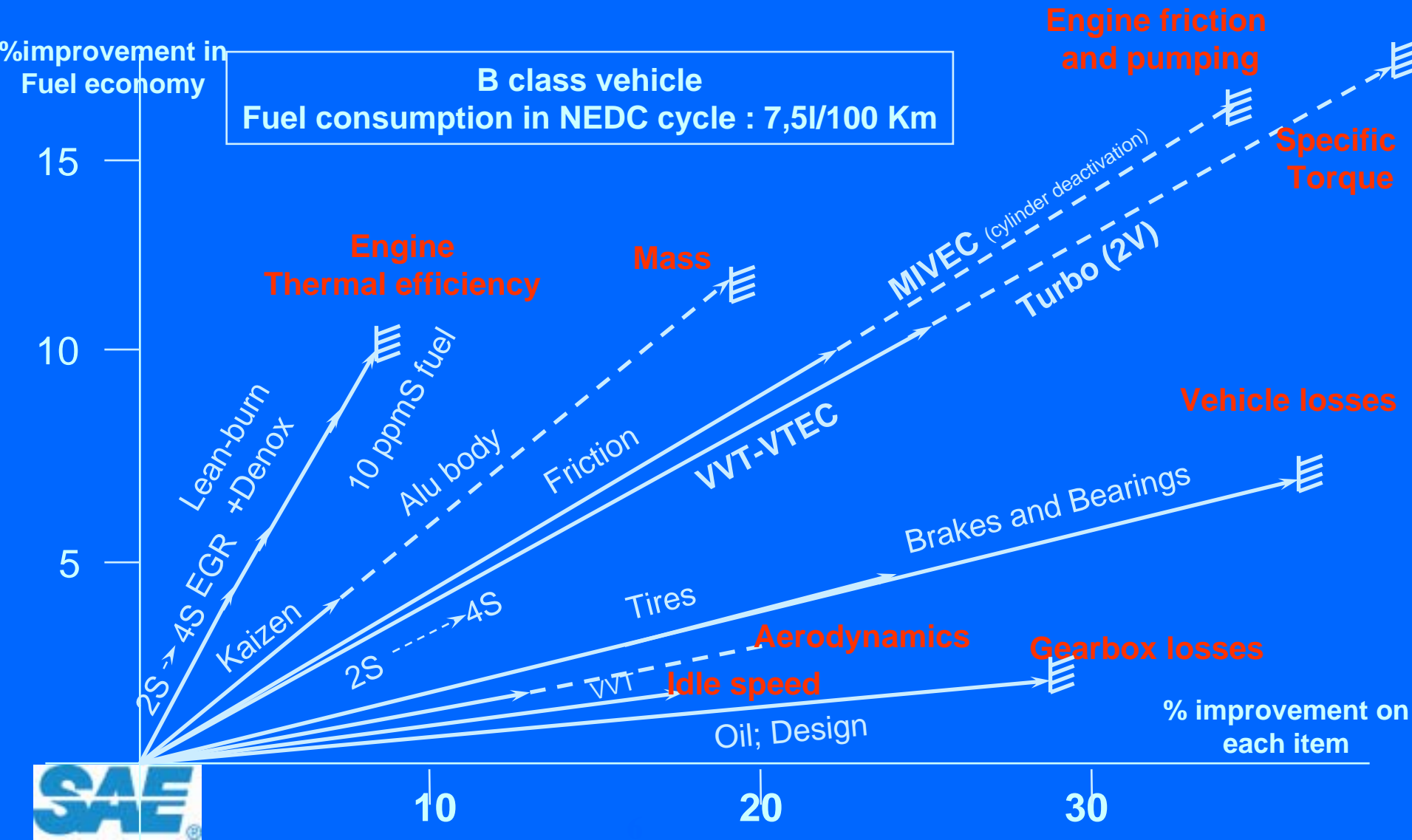
Production Combustion Photosynthesis



CO₂ g/km

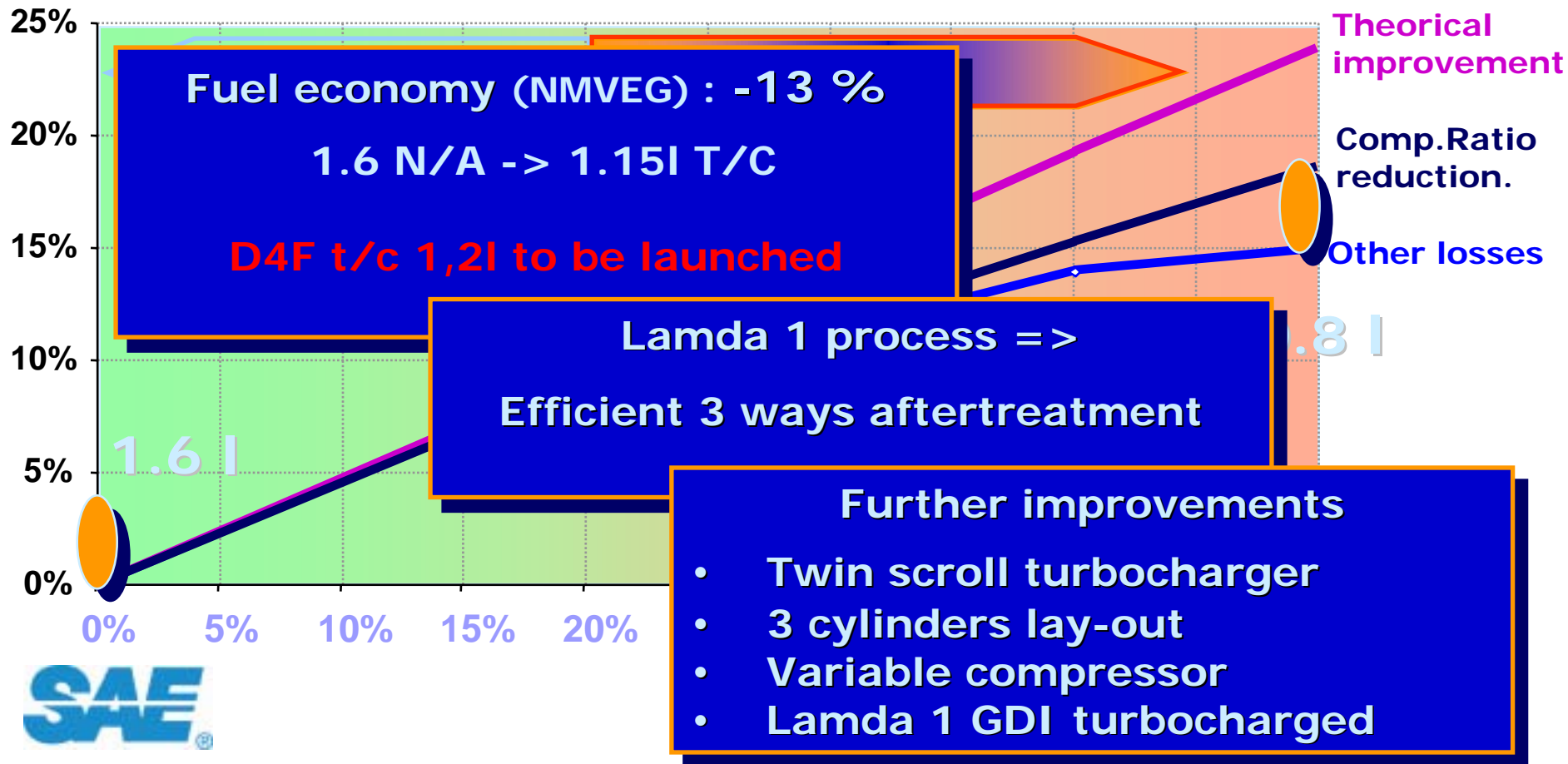


GLOBAL EFFICIENCY of VARIOUS SOLUTIONS

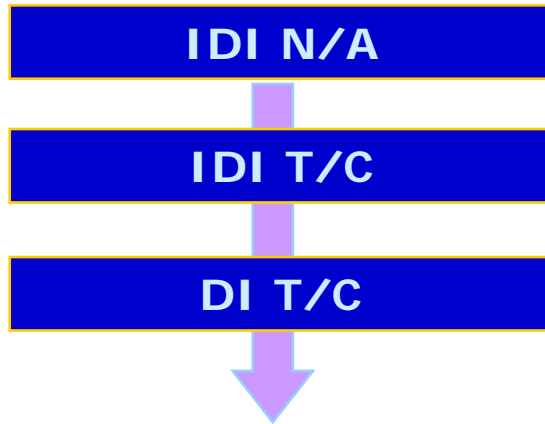


GASOLINE DOWNSIZING AND TURBOCHARGING

NEDC Fuel Economy benefits (%)



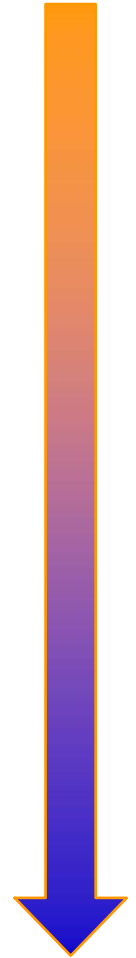
CO2 Reduction of Diesel Engines



Today

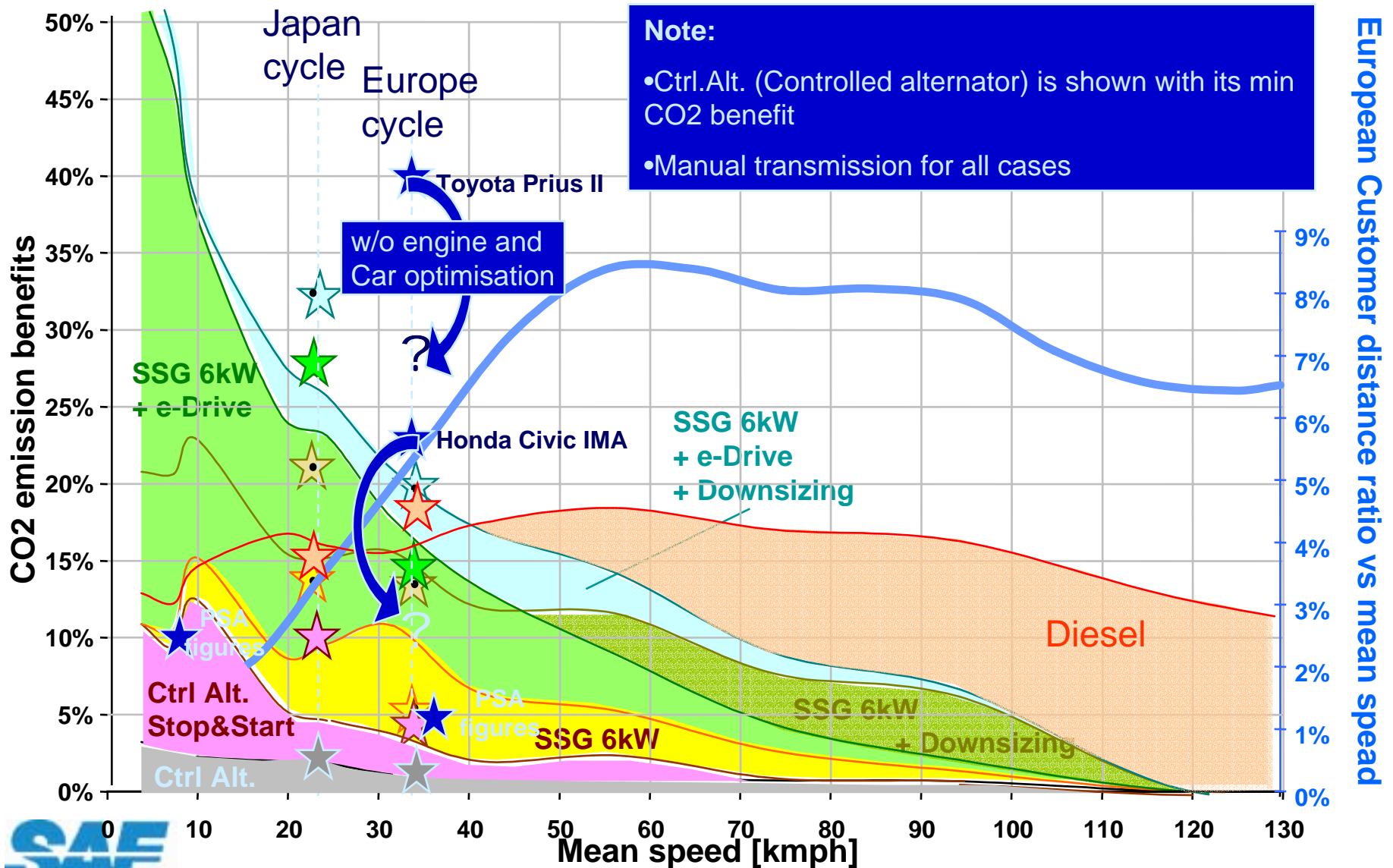
DI T/C downsized

- Higher injection & in-cylinder pressure
- Low Compression Ratio
- Multi injection
- Limitation of fuel consumption degradation from regenerative exhaust aftertreatment
- Downsizing (higher turbocharging)
- HCCI combustion



Time

Hybrid Gasoline / Diesel Engine comparison



The Regulator must take in account:

- Real world and needs
- Overall impacts, for instance:
 - CO2 from well to wheels
 - impact on various industries/activities
 - impact on society
- Cost-effectiveness, including the affordability for customers
- Global investment capacity from industries and countries
- Existing UN-ECE regulation frame to avoid a fruitless proliferation of regulations