ACEA

ACEA answer to Commission consultation on CO_2/cars Communication

Final, 13 July 2007

Table of contents

1) Introduction

ACEA supports further reductions in CO_2 emissions from passenger cars. Specifically, ACEA supports reaching the Community target of 120g/km and acknowledges that car technologies will play an important role in this task. Despite significant increases in size and weight of cars and adverse market movements, ACEA members have achieved an unbroken CO_2 reduction trend since 1995, resulting in important changes in new fleet composition towards CO_2 efficiency (slides 1, 2, 3, 4). Having, at the same time, dramatically improved (active and passive) safety, exhaust emissions and recycling of cars, the European automotive industry is ready to realise further significant CO_2 reductions over the coming years. Given the major investments required and long development and production cycles in our industry, adequate lead-times for this major task are required. Moreover, as stated by ACEA during the 2003 potential reduction review under the CO_2 Commitment, as recommended in 2005 by the multistakeholder group CARS 21, and as adopted in the 2006 Commission's Energy Efficiency Action Plan, an Integrated Approach involving all relevant stakeholders is required to reach the Community target of 120g/km. Notwithstanding the fact that the automotive industry is unrivalled in its R&D spending, which has translated into a large number of CO_2 saving technologies being brought to market over the last decade (slides 5, 6), technical and financial limits exist to relying on technologies alone for realizing further CO_2 reductions. This is due to the fact that the internal combustion engine has been optimised over the last century; a process that has been accelerated by high taxation on fuels and strong competition in the automotive sector. Unfortunately, this is not sufficiently reflected in the Commission impact assessment accompanying the CO_2/cars Communication, which also shows major discrepancies to the findings of the European Climate Change Programme (ECCP). The Commission's ECCP consultant had clearly concluded that engine technology was a high-cost measure to reduce CO_2 emissions. Adopting cost-effective solutions is not only an imperative for safeguarding the future of EU car manufacturing; it is a basic principle that allows society to reach environmental targets at lowest costs.

To conclude: ACEA therefore urges policy-makers to agree on a comprehensive approach involving all relevant stakeholders to reach the Community target of 120g/km – including important reductions via car technologies.

2) Lead-time

ACEA asks for adequate lead-time for implementing the car technology target. The development and product cycles in the automotive industry run over many years (slide 7). Following the advanced engineering phase, during which new technologies are developed, a 5-year development phase to design a new model takes place. It can be divided into an initial concept phase and a subsequent execution phase, both lasting about 2.5 years. During this development phase, changes to a model are limited to implementation-ready new technologies, within the technical and economic constraints imposed by the concept. Obviously, the possibilities for changes are reduced over time and are even more limited in the execution phase. It is only after this phase that the production of a model begins. Typically, so as to recover high investment costs and given the capital-intensity of car production, a 7-year product cycle is required during which changes to a car are limited to relatively minor modifications. During this period, more fundamental changes that would further reduce CO_2 emissions would involve disruption of production and require major investments that cannot be recovered. This is because CO_2 emissions are linked to the fundamentals of a model (e.g. engine, aerodynamics, transmission, etc.). In fact, development and production cycles for the basic engine design tend to be even longer than those described here for car models. Moreover, no add-on solution for CO_2 in the form of filtration or chemical reaction in an after-treatment system is available.

The development and production cycles described above mean that most of the cars sold on the market in 2012 are already defined today (slide 8). For these cars, only limited potential for further changes exist. In addition, no clarity exists today on what the legislative requirements for individual models will be. Those that state that the car industry “had enough time as they knew they had to further reduce” reveal a clear lack of understanding about the complexity of car production as well as the critical need for certainty over how CO_2 legislation will be formulated. In fact, depending on how a certain political target for the EU fleet average is implemented, targets for individual models will differ significantly (slide 9). Moreover, as the Commission has publicly stated that a legislative proposal can be expected by the beginning of 2008, industry will hardly have legislative certainty before 2010. Policy-makers should not force industry to invest billions of Euros into products based on rough estimates of what a future legislative system could look like.

2015 is therefore the earliest possible date to implement the car technology target of the CO_2 legislation. This date also makes sense when looking at other legislative requirements coming into force. Notably the entry into force of Euro 6 requirements for all new cars will in any case require engine modifications that year, thus avoiding duplication. Moreover, 2015 is also the year in which the new Japanese limit values will be applied. In the context of discussions on the 2015 target, one must note that product cycles in the automotive industry imply that compliance with an EU fleet average target in 2015 requires substantial modifications to cars coming to market in the years before.

To conclude: The proposed 2012 date is unrealistic given industrial processes in the automotive industry and the lack of planning certainty in the absence of a legislative framework. ACEA urgently asks for the lead-time of CO_2 legislation to be extended until 2015 at the earliest. At the same time, ACEA is ready to discuss the introduction of complementary car technologies via a clearly defined implementation plan prior to 2015 (see section 3).

3) How to reach the Community target of 120g/km

ACEA supports reaching the Community target of 120g/km. ACEA moreover acknowledges that car technologies will play a major role in this task. As stated by ACEA during the 2003 potential reduction review under the CO_2 Commitment, as recommended in 2005 by the multistakeholder group CARS 21, and as adopted in the 2006 Commission's Energy Efficiency Action Plan, an Integrated Approach involving all relevant stakeholders is required to reach the Community target of 120g/km. Unfortunately, the Commission proposes a narrow focus on vehicle technology that neither does justice to the potential of an Integrated Approach nor reflects the costs of reducing CO_2 emissions via car technologies. As concluded by the Commission's consultant (TNO) within the European Climate Change Programme (ECCP), car/engine technology is a high cost route to reducing CO_2 emissions (slide 10). The same conclusion has been drawn by the authors of the Stern Review in the UK (slide 11). By contrast, TNO estimates that other measures such as eco-driving are highly cost-effective, and such measures would help reach the Community target without jeopardizing the affordability of the diverse product range offered in the EU. Regrettably, the Commission has excluded such measures from the strategy to meet 120g/km.

ACEA urges policy-makers to amend the Commission's approach to reaching 120g/km, while ensuring that the Community target will be reached (slide 12, 13). 135g/km should be the target for car/engine technology. A reduction equivalent to 15g/km should be achieved through complementary measures, biofuels, eco-driving and infrastructure measures. Note that such an approach could in fact deliver more than 15g/km (and significantly more in the long-term through a full Integrated Approach). Also, ACEA's proposal would still require car technology to contribute the largest share of the reduction from today's level towards the Community target of 120g/km (having already delivered 100% of the reductions from 1995 until today despite the original idea of the EU's three-pillar strategy involving taxation and labelling besides vehicle technology).

As explained below, the complementary car technologies should count for about 10g/km instead of the 5g/km foreseen in the Commission proposal. Even if only 5g/km were allocated to the contribution of biofuels, as is the case in the Commission proposal, the 120g/km can therefore be achieved. In fact, 5g/km for biofuels is only a fraction of the impact from biofuels, and limits their contribution to the 120g/km target to a 1% penetration according to ECCP figures. In fact, the CO_2 saving potential from biofuels is very large and it must be discussed within the CO_2/cars strategy given the obvious interdependences between engines and fuels used therein. To be certain about achieving the 120g/km target, additional measures should be taken in the area of eco-driving and infrastructure measures. The monitorability of eco-driving benefits is tested in the EU-sponsored "ECODRIVEN"-project, which runs out in 2008 and which a large number of stakeholders (including government agencies, NGOs, fleet operators, car manufacturers) would like to continue post-2008. DG TREN has estimated a reduction potential of up to 50Mt from eco-driving. Rather than simply disregarding this potential due to administrative difficulties, the Commission should support a multistakeholder action that delivers real environmental benefits – and then count these benefits in a conservative way. Similarly, infrastructure measures also provide the potential for significant, cost-effective and measurable savings. For example, they account for CO_2 savings of 28Mt under the Japanese Kyoto implementation plan. The Commission has not included any proposal to realise CO_2 savings possible in this area. ACEA urges decision-makers to amend the Commission proposal accordingly.

With regard to proposed complementary car technologies, ACEA notes that the Commission's ECCP consultant assessed the reduction potential of the complementary technologies. It was concluded that the cumulated potential of MAC, GSI, TPMS and LRRT was 6.9Mt, thus corresponding to about 10g/km (slide 14). However, the Commission has only translated this impact into 5g/km equivalent (with the other 5g/km coming from biofuels). In addition, the impact of GSI is underestimated due to conservative assumptions used by TNO.

In other words, while ACEA supports measurable and monitorable action on complementary technologies, their impact should again be assessed and the full CO_2-reductions achieved through these measures should be counted for reaching the 120g/km target. Based on ECCP figures, their impact is about 10g/km. In addition, other Integrated Approach measures should of course also be taken as part of the strategy to reach 120g/km.

Actions on N1 vehicles, which are proposed by the Commission, should be excluded from the complementary measures (slides 15, 16). On the one hand, no European data on average CO_2 emissions from N1 vehicles are available. Any target set by the Commission would therefore be arbitrary. Moreover, N1 vehicles are fundamentally different from M1 vehicles, notably as regards use and ownership. Professional ownership means that a strong business case is already built-in that works as an incentive for maximum CO_2 efficiency. The fact that N1 vehicles' average annual mileage is higher than that of M1 vehicles further strengthens this incentive. Businesses that buy an N1 vehicle will seek maximum transport volume and/or payload at lowest CO_2 emissions, which also means that the scope for aerodynamic improvements are limited. Given high diesel shares, the scope for technological improvements at engine level are also likely to be more limited than for M1 vehicles. These factors were not sufficiently taken into account in the ECCP report, leading to an underestimation of costs of action on N1 vehicles.

To conclude: ACEA supports reaching the Community target of 120g/km by a reduction to 135g/km via car/engine technology and a reduction of 15g/km via other measures. Besides complementary car technology action, these other measures should include biofuels, eco-driving and infrastructure measures. Such an approach offers certainty that 120g/km are achieved and delivers the same environmental result at lower costs to society. The largest share of the contribution to reaching the Community target of 120g/km would come from car technologies. ACEA moreover supports action on complementary technologies so as to reach the Community target of 120g/km. ACEA is ready to engage into a constructive discussion with policy-makers on introduction of complementary car measures via a clearly defined implementation plan. The CO_2 reductions achieved through the complementary measures should be fully reflected for reaching the Community target of 120g/km. N1 vehicles should be excluded from the proposed measures.

4) Legislative approach & choice of parameter

ACEA considers weight to be the most suitable parameter according to which CO_2 limits for different car models would be differentiated. ACEA's support for weight is based on a number of considerations. Regarding the international dimension, weight is the parameter used for CO_2/fuel consumption regulation in Japan and China. Regarding simplicity of the system, weight is a parameter that is clearly defined and certified. Regarding the impact on different manufacturers, several of the other parameters studied would have a more unequal impact on different manufacturers (advantaging some and disadvantaging others). Regarding customer requirements, weight is a good proxy for utility.
Note that forces for weight reductions will continue to be in place with this parameter (driveability, lower fuel consumption, etc.).

Regarding the shape/slope of the regulatory curve, consensus exists within ACEA that any system must safeguard both diversity and social equity. This is in line with the Commission Communication, which states that *"the legislative framework implementing the average new car fleet target will be designed so as to ensure competitively neutral and socially equitable and sustainable reduction targets which are equitable to the diversity of the European automobile manufacturers and avoid any unjustified distortion of competition between automobile manufacturers".*

ACEA understands diversity to mean, among other things, that any legislative system must safeguard the diversity of our industry, as represented by ACEA, its members and their product portfolio. We understand social equity to mean, among other things, that the EU strategy and any legislative system must respect the economic constraints of our customers. In addition, the social impact of any legislative system in terms of its impact on employment in Europe and its regions must be fully considered.

ACEA moreover supports the express intention of the Commission to define the CO_2 targets in a technologically-neutral way.

ACEA opposes a top-runner approach as niche models should not set standards for the whole EU market, which is the most heterogeneous market in the world.

To conclude: ACEA considers weight to be the most suitable parameter according to which CO_2 limits for different car models would be defined. Any system must respect both diversity and social equity.

5) Flexibilities and implementation issues

ACEA believes that flexibilities should be given to allow manufacturers to meet targets in the most cost-effective manner. These flexibilities play an important role in avoiding excessive disruption to the automotive industry and manufacturers' product plans, as well as maintaining product diversity. They help avoid or limit negative impacts that could otherwise make obsolete past investment decisions in product technologies and vehicle models. In this context, it must be stated again that these flexibilities alone will not allow reaching a target that is set without due consideration to technological and economic constraints of the automotive industry.

Flexibilities that ACEA supports include group averaging, banking, credits for certain vehicles and/or actions, consideration of regulatory impact, and limited derogations (slide 17):

"Averaging" means that companies have the possibility to put on the market cars that have emission levels above their car-specific CO_2 target if they are compensated by other vehicles of that company that are below their car-specific target. In other words, bans of specific vehicles must be avoided. This would not reduce in any way the environmental effectiveness of the scheme but provide a way for industry and society to meet the targets at lower costs.

"Banking" means that compliance with legislation is verified over a "rolling" time-period, and that manufacturers can carry forward credits or debits. This would smooth out impacts arising from the renewal of the model portfolio, thus avoiding excessive disruption.

"Credits for certain vehicles and/or actions" include giving consideration for the CO_2 impact of vehicles that are compatible with higher biofuel blending according to well-to-wheel emissions.

"Consideration of regulatory impact" should be given so as to avoid that the goal-post is moved due to regulatory requirements that have an impact on CO_2 emissions.

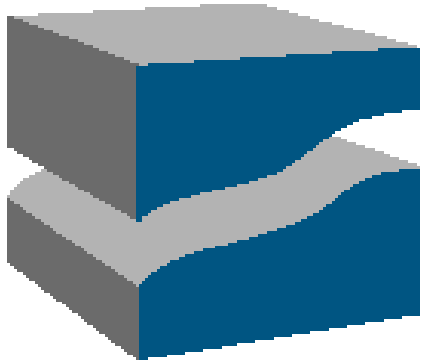
"Derogations" should be given to small series and to M1 vehicles derived from N1 vehicles.

Another key principle for implementation of CO_2 legislation is that it must be based on article 95 so as to ensure that the EU's single market is safeguarded.

ACEA strongly rejects any proposals to create a closed emissions trading system for CO_2 from cars. Given the stringency of reduction targets, no trading would take place in practice. However, ACEA is of the opinion that the open EU emissions trading scheme deserves further analysis.

To conclude: A number of flexibilities are required to avoid excessive disruption to processes and diversity in the automotive industry and safeguard its competitiveness.

* * *

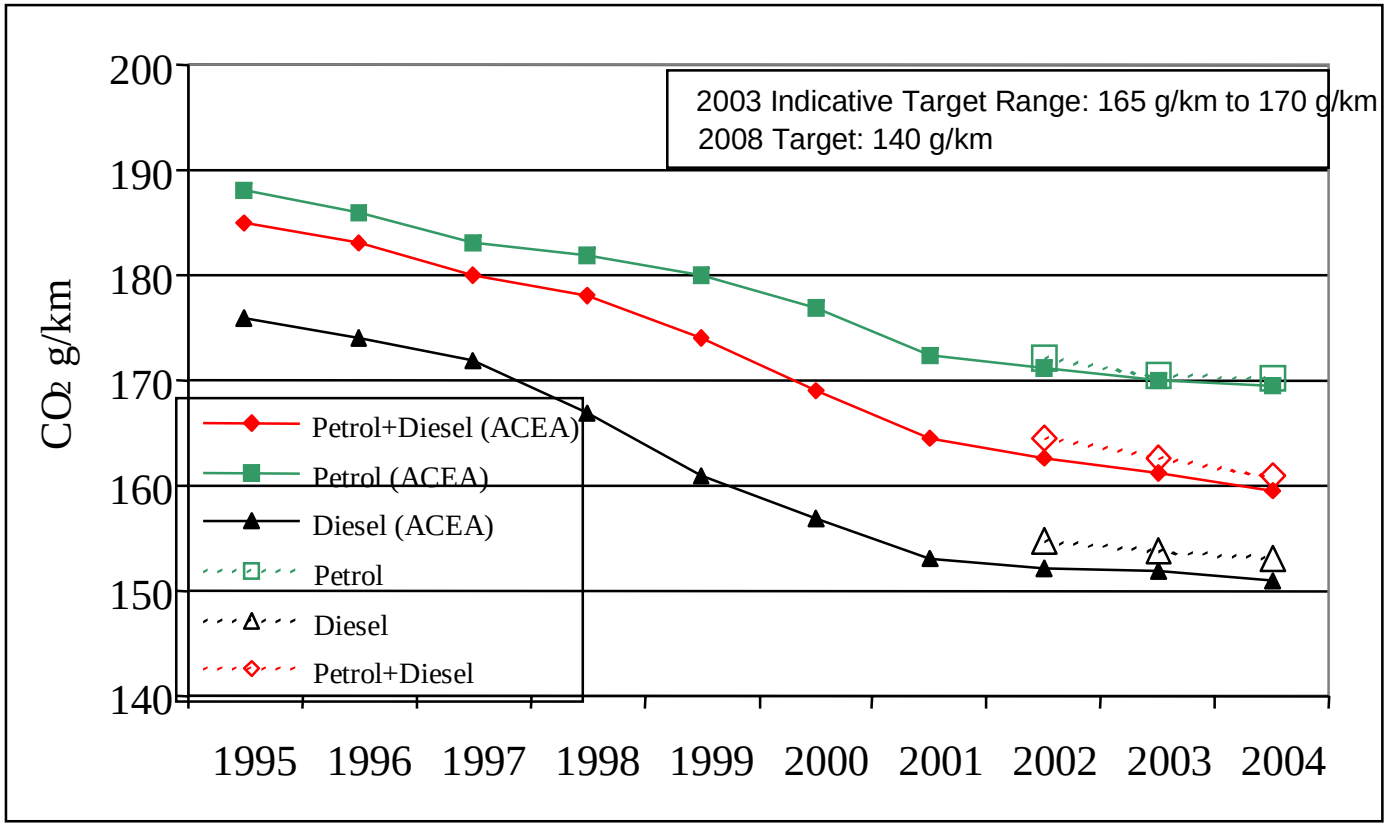


Attachment

ACEA answer to internet consultation on CO2/cars

Unbroken reduction trend

- Intermediate target achieved ahead of time
- 13% CO_2 emission reduction by 2004

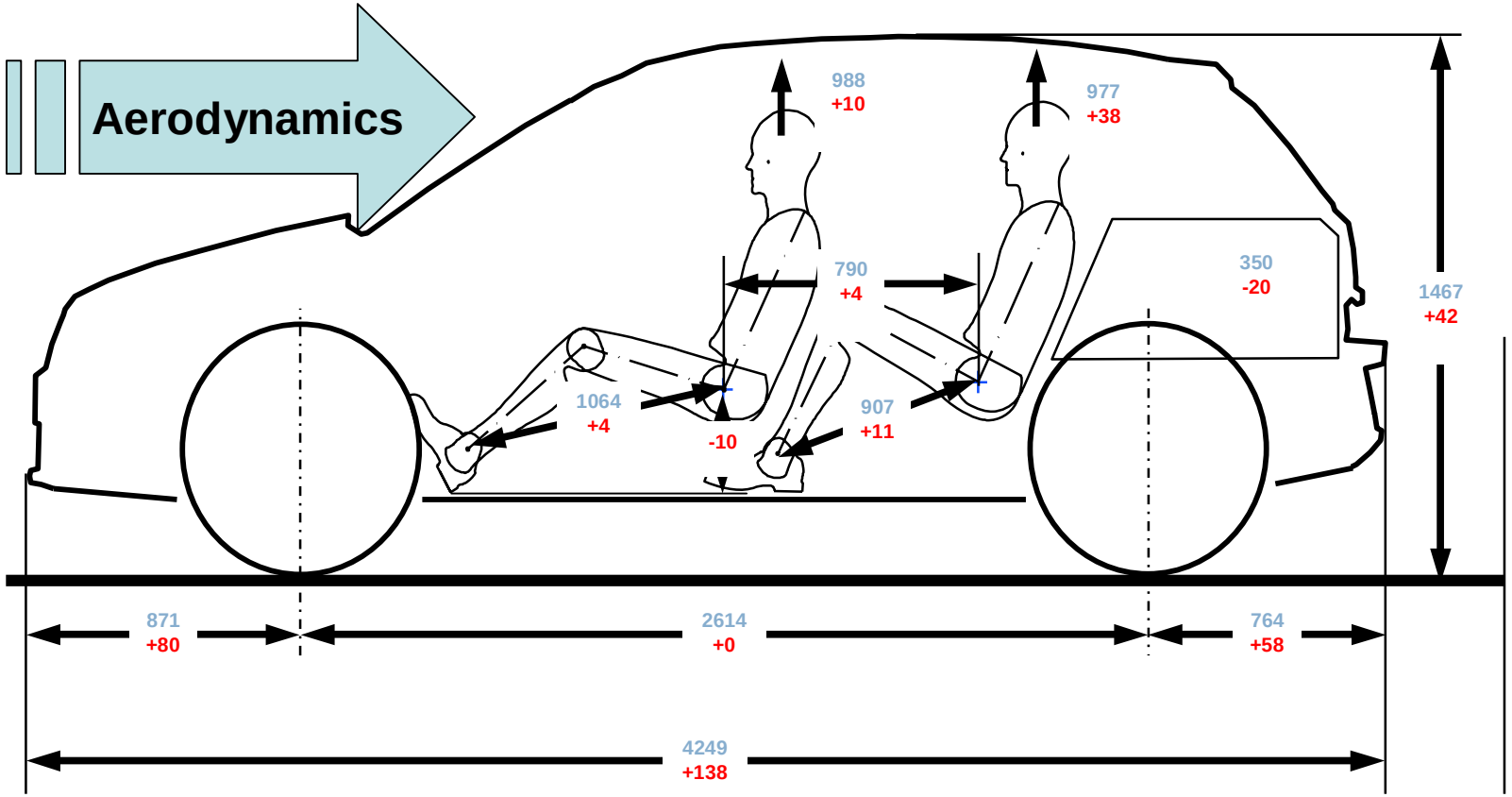


Change in fleet composition

Joint Commission/ACEA Monitoring Report

Size increase

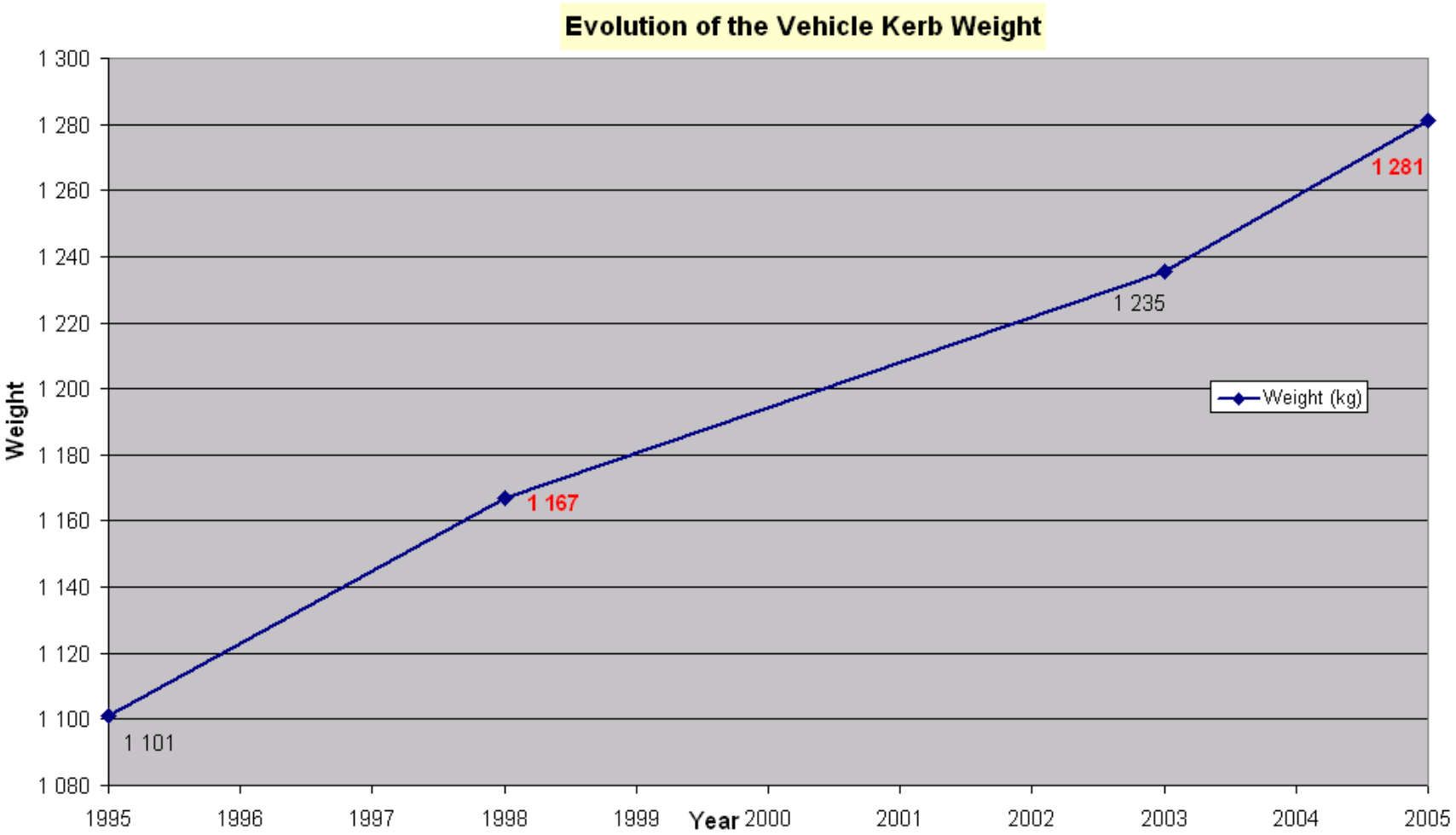
- Population gets taller (and larger)
- Population gets older (-> higher seat position)
- Population commutes longer (-> comfort sought)



Example of typical compact car

Weight increase

- 16.3% or 180kg (1995 – 2005)
- Comfort, size, crash safety, airbags, DPFs, etc.



Car industry takes responsibility seriously

- Very large number of new technologies introduced

Introduction Year	New CO_2 Efficient Technology
• 1995-1996	• Direct-injection diesel engines
• 1997-2000	• New generation of advanced diesels, notably incorporating common rail technology • Automated Manual Transmission • Gasoline direct injection (GDI) engine models launched
• 2001	• Two-step variable valve timing • Valve train with roller finger followers (lower friction) • Fully variable valve lift & timing • Variable length Intake Manifold • 2nd generation diesel common rail injection (high pressure) • Exhaust gas turbochargers with variable nozzle geometry turbine • Application of advanced diesel technology to smaller engines, and consequently to small cars • 6-speed automatic gearbox • New generation of bio-fuelled vehicles
• 2002	• Fully variable valve lift & timing technology combined with GDI • Variable length intake manifold on small gasoline engines • Fast warm-up cooling system • Torque converter lock-up for 1st gear on automatic transmissions • Low-viscosity/friction oil across model-range • Friction optimised rear-axle differential • Engine covering/under body panelling for vehicle aerodynamic improvement

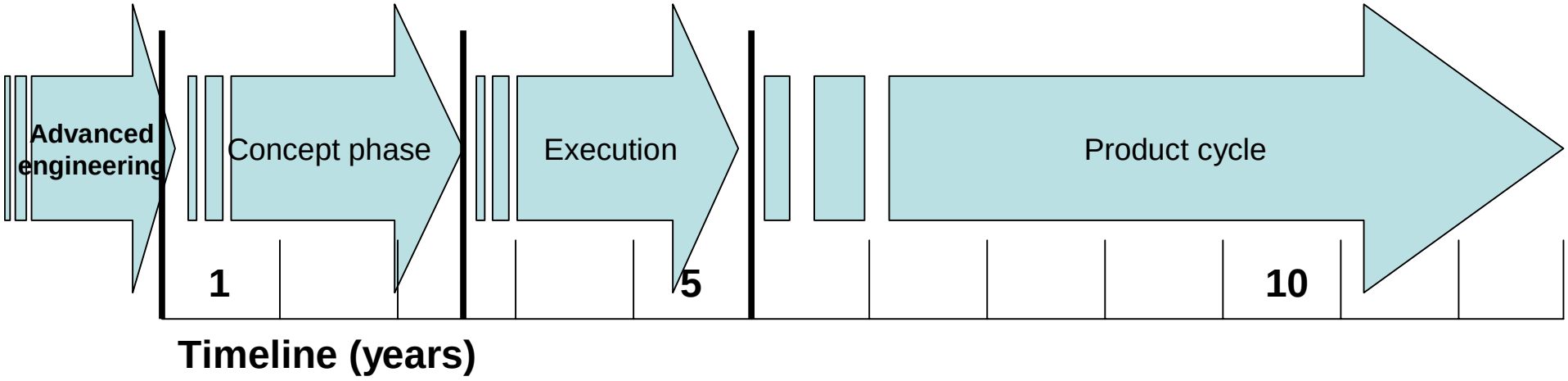
Car industry takes responsibility seriously (2)

- Very large number of new technologies introduced (continued)

• 2003	• Double clutch/Direct Shifting gearbox • 7-speed fuel-economy optimised automatic transmissions • Common rail injection system with 1600 bar • Unit injector of 2050 bar • Energy management control systems, including load levelling, to reduce engine idle speed • Electro-hydraulic power assisted steering system • Fully electric power assisted steering
• 2004	• New generation turbocharged small displacement diesel engines introduced • Variable Twin Turbo technology on diesel engines • Piezo-injection systems on diesel engines • Stop-start with regenerative braking • 2nd generation friction optimised rear-axle gearbox • Torque converter lock-up for 1st gear on automatic transmissions across model-range • High efficiency alternator • Regulated electrical fuel pump
• 2005	• 2nd generation Valvetronic (fully variable valve lift & timing system) • Twin-charger technology for gasoline vehicle combined with downsizing of combustion engine • Roll-out of LED technology for high volume segments with benefits concerning electric energy consumption • Hydro-high-pressure forming for high strength structures with weight advantages • Advanced cooling system with electric water pump • Electronically controlled oil pump • 3rd generation common rail injection system

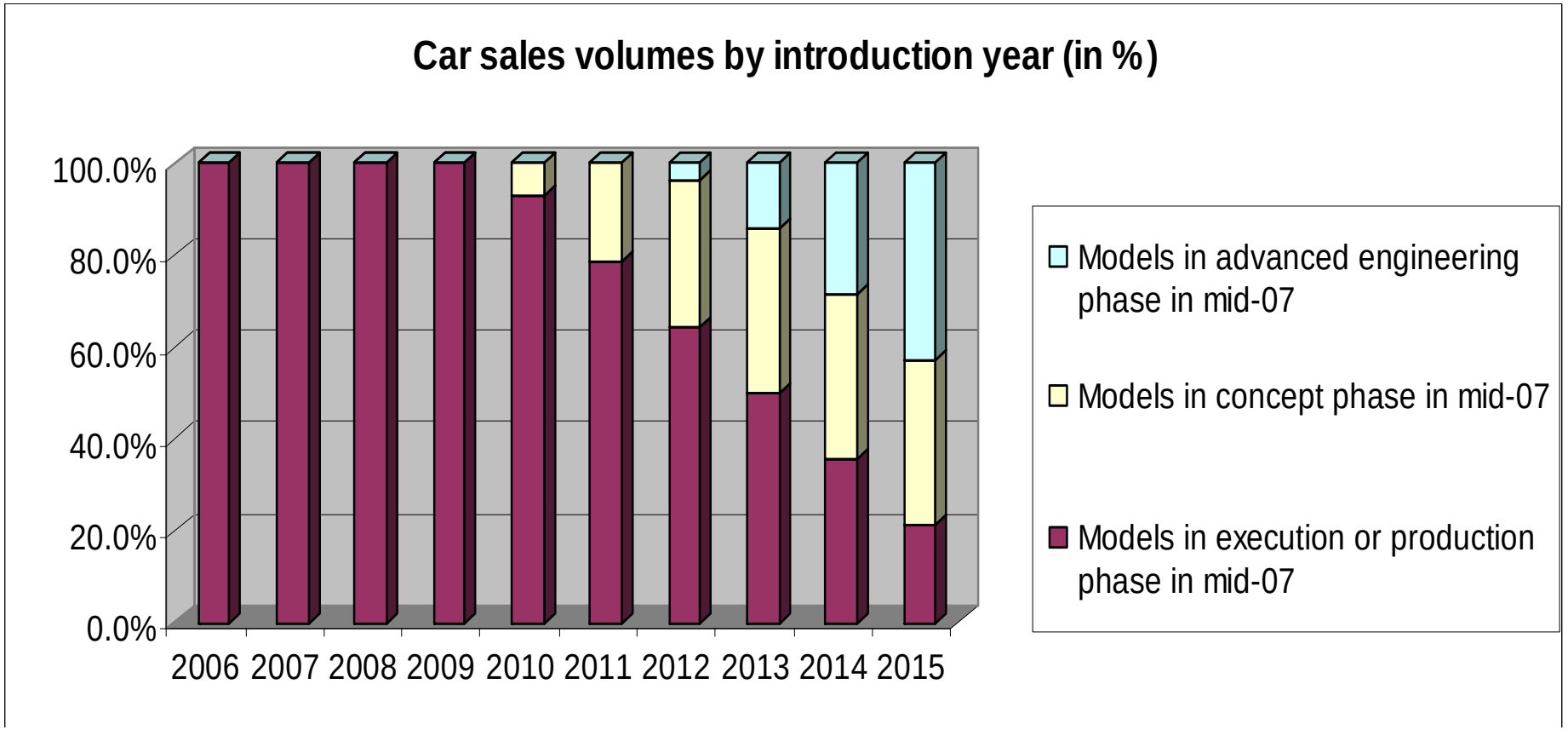
Lead-time: illustration

- **Advanced engineering phase**: length indeterminate
  -> Development of new technologies (e.g. new combustion process)
- **Concept phase**: ~2.5 years
  -> Limited changes to car possible with implementation-ready new technologies within concept and economic constraints (e.g. light-weight hang-on parts such as bumpers, doors, etc.)
- **Execution phase**: ~2.5 years
  -> Very limited changes possible (e.g. low rolling resistance tyres, software)
- **Production phase**: ~7 years
  -> Basically no changes possible (limited exceptions, e.g. some software)



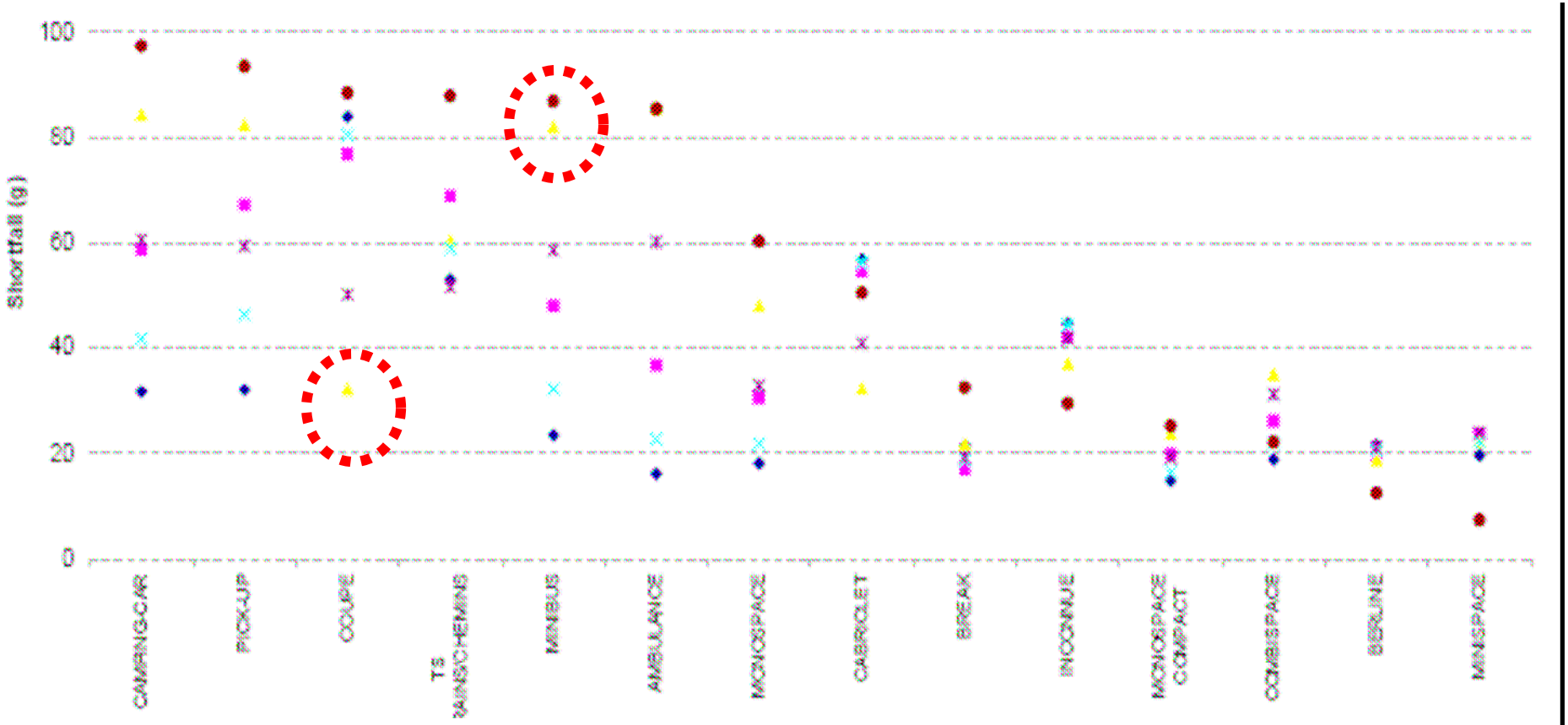
Lead-time: illustration (2)

- **Of new cars sold in 2012**
  - Nearly 2/3 are already in execution or production phase
  - About 1/3 are already in concept phase
  - A small fraction are still in concept or advanced engineering phase
- **In addition: no clarity on limit values today!**



Slide 9

Impact of different legislative systems on different car types

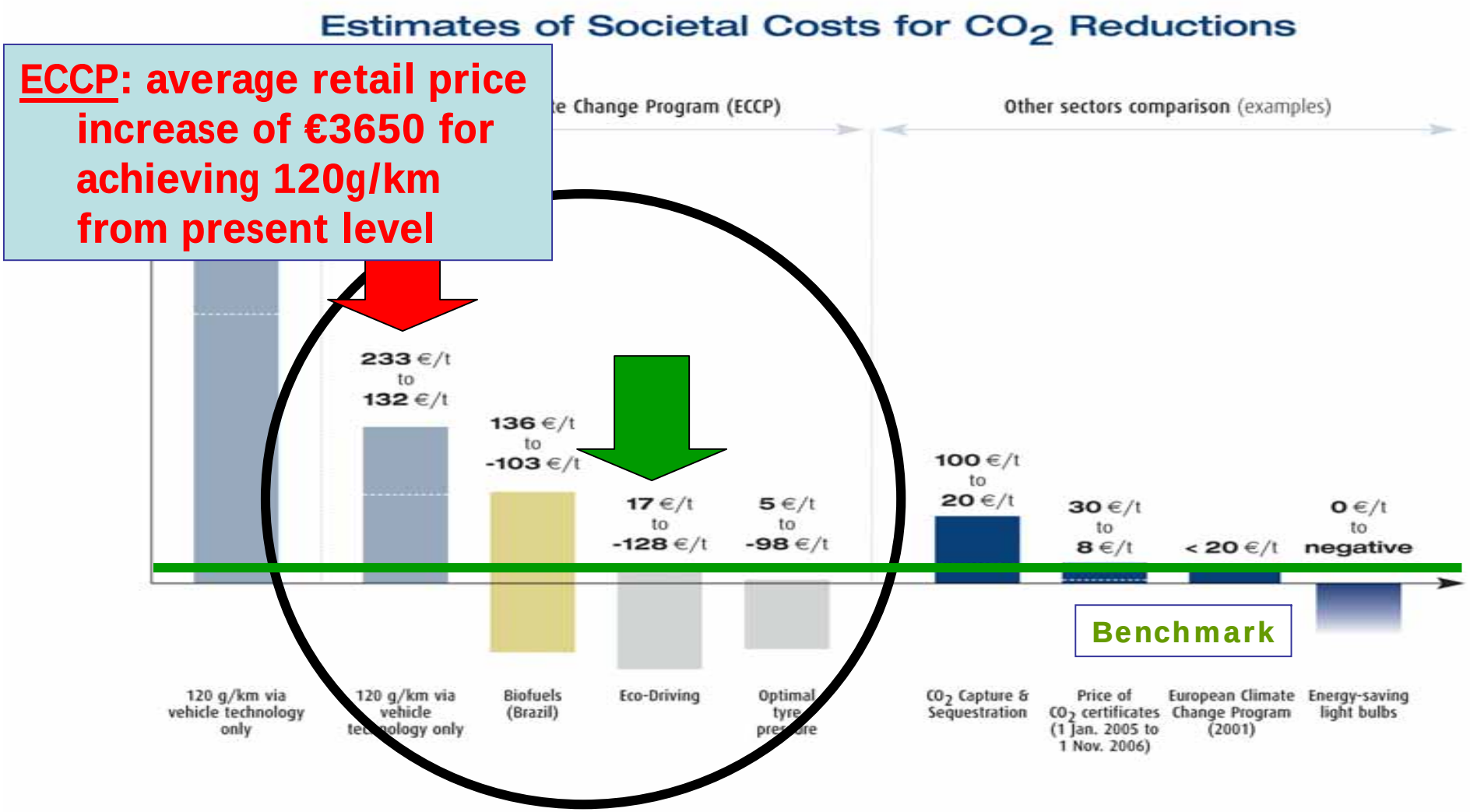


Purely illustrative example of how different systems could impact different car types. Chart shows average shorfall to target in g/km for different systems. Each colour represents different system.

Cost-effectiveness

- Independent ECCP2 consultant for Commission (TNO)

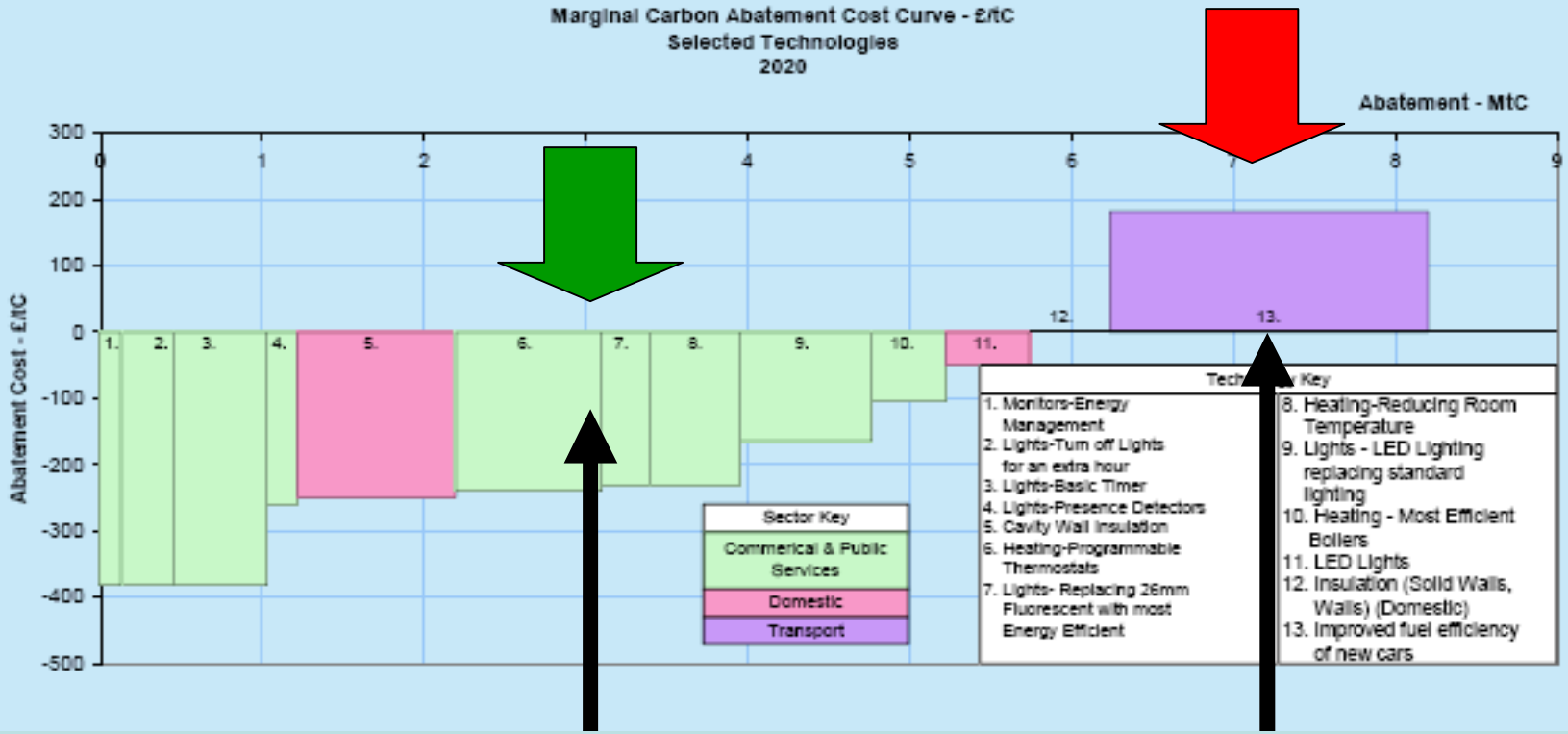
ECCP: average retail price increase of €3650 for achieving 120g/km from present level



Cost-effectiveness (2)

- Stern Review confirms high vehicle technology costs

Figure 9.2 Aggregate carbon abatement cost curve for the UK – annual carbon savings by 2020[28]

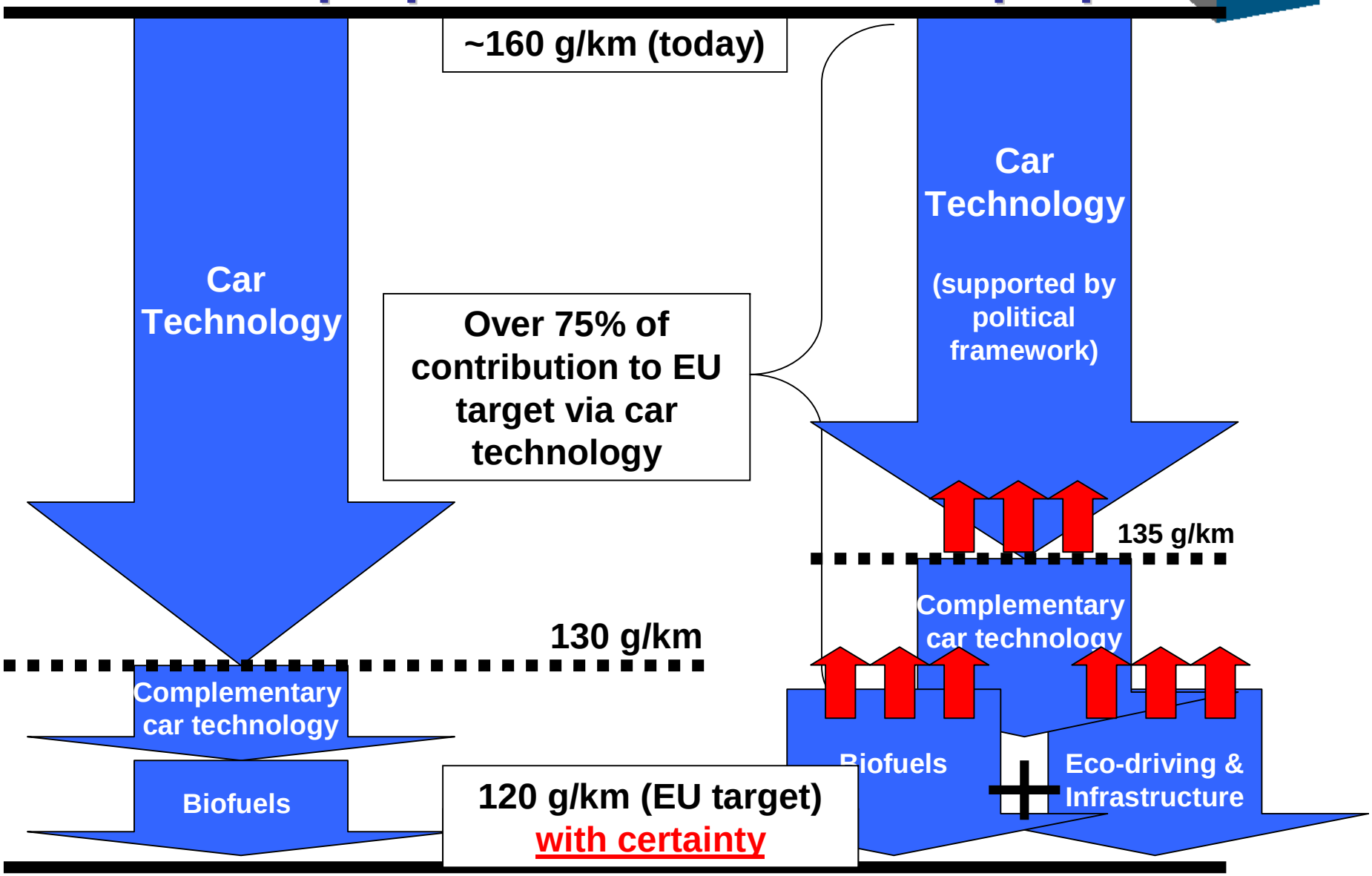


Other measures **New car fuel efficiency**

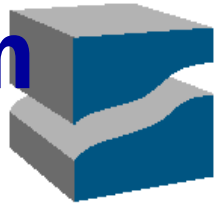
Reaching target in a smarter way

Commission proposal

ACEA proposal



ACEA's proposal delivers 120g/km



- **Maintains focus on car technology**
  - 75% of overall reduction… although ECCP data shows that car technology measures are not cost-effective

- **Commission underestimates impact of other measures**
  - **Complementary car technology measures:** rather 10g/km than 5g/km (see next chart)
  - **Biofuels:** impact corresponds to only 1% increase in blending
  - **Eco-driving:** high potential (up to 10% in long-term) at low cost
  - **Infrastructure measures:** will deliver nearly half of Japan's CO2 reduction in transport sector

- **Ensures measurable achievement of 120g/km target**
  - EU-sponsored ECODRIVEN project measures CO2 savings
  - Japan quantifies CO2 reductions from infrastructure measures under Kyoto implementation plan

Certainty to reach 120g/km

figures based on official ECCP data

- **Significantly more than 5g/km via other car measures,** even without N1 vehicles
  - ECCP calculated the following CO_2 reductions (in 2012):
    - MAC: 1.0Mt
    - GSI: 1.5Mt (*)
    - TPMS: 2.0Mt
    - LRRT: 2.4Mt

    6.9Mt → **This corresponds to about 10g/km**

    (*) Underestimation according to ACEA: should be closer to 3Mt

- **5g/km via biofuels corresponds to only 1% penetration**
  - ECCP shows that already an increase in biofuels penetration by 1% (energy content) corresponds to 3-4Mt CO2 in 2012 -> about 5g/km

- **Additional measures should be taken**
  - in the area of **eco-driving, infrastructure measures, or other** (e.g. on low-viscosity lubricants) so as to leave no doubt whatsoever that the EU target of 120g/km is reached

N1 measures to be excluded

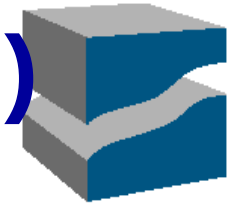
- **N1 measures should be excluded from the EU strategy on CO2/cars because**
  - 1) No data on average emissions and costs are available
  - 2) N1 vehicles are fundamentally different from passenger cars

1) No data on average emissions and costs available

- EU-wide data on average CO2 emissions will not be available before 2009 at the earliest
- Commission impact assessment relied on questionable and simplified assumptions (as acknowledged in TNO report, p.183)

-> Proper data and analysis are precondition for action

N1 measures to be excluded (2)



2) Light-commercial vehicles **different** from passenger cars

- **Professional ownership**
  - -> business incentive built-in for fuel savings
- **Utility requirements**
  - -> owners seek maximum volume/payload at given CO2 emissions
  - –> lower scope for aerodynamic improvements (transport volume)
- **Higher mileage**
  - -> strengthens built-in business incentive for fuel savings
  - –> robustness requirements lower scope for introducing unproven technologies
- **Higher diesel share**
  - -> limits scope for further technological improvements
- **Product cycles**
  - -> longer product cycles (>10 years) require longer lead-time
- **Scope for Integrated Approach measures**
  - -> higher potential for eco-driving because of professional drivers
  - -> fleet operators allow dedicated alternative fuels infrastructure

Necessary flexibilities

- **Group averaging**
  - Cars “above” regulatory curve can be compensated by cars “below” regulatory curve within the same group
- **Banking**
  - Credits / shortfalls can be carried forward to next years to smooth out fluctuations due to product launches
- **Credits**
  - E.g. credits (well-to-wheel) for renewable fuels vehicles ensures that real environmental impact is taken into account
- **Regulatory impact**
  - Adjustment for impact of future regulation (from date of CO2/cars Communication onwards) ensures that goalpost is not moved
- **Derogations**
  - M1 derived from N1
  - Small series