

Widening
Prospects



October 2011

Evolutionary vs. Revolutionary Trends in the Commercial-Vehicle Industry

Is the CO₂ Discussion Leading to Structural Change?

Foreword

The study is based on interviews with representatives and decision-makers from prominent European commercial-vehicle and body manufacturers. Proceeding from market analyses and an evaluation of potential approaches, the study reveals fields of action and possible options. The following three questions play a crucial part:

- **Which technological developments are necessary and how promising are they?**
- **What can a future commercial-vehicle line-up look like if it is to be a success?**
- **What potentials are there for commercial-vehicle and body manufacturers to cooperate?**

In recent years, all of the world's prominent markets have defined long-term CO₂ targets for passenger cars and light commercial vehicles up to 3.5 t. It was only a question of time before legislators worldwide also began to look at regulating the consumption of class N3 heavy commercial vehicles.

Regulated CO₂ emissions and a shift in market priorities will in future pose a major challenge to the commercial-vehicle industry. Against the backdrop of this scenario, Consulting4Drive and Forschungsgesellschaft Kraftfahrwesen mbH Aachen (fka) have conducted a joint study with the aim of providing an industry-wide view on potential impacts and approaches.

The following slides will give you a general picture. If you are interested in the entire study, please e-mail us and we will send you the document with the results.

Executive Summary

Motivation and aims

- In addition to legislation on pollutant emissions, tighter CO₂ standards with bonus / penalty systems must be expected by 2020 in the Heavy Commercial Vehicle (HCV) segment.
 - Varying client demands on technology, durability and price in the world's markets are preventing manufacturers from developing a homogeneous commercial vehicle at world level.
 - The study aims to reveal decision-making fields and levers for securing the path to future success for Europe's commercial-vehicle industry also against the backdrop of a changed general framework.
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Methodology

- Beside findings from long-standing project work and market analyses, the study is also based on interviews with experts and decision-makers from the development and sales departments of leading European commercial-vehicle manufacturers.
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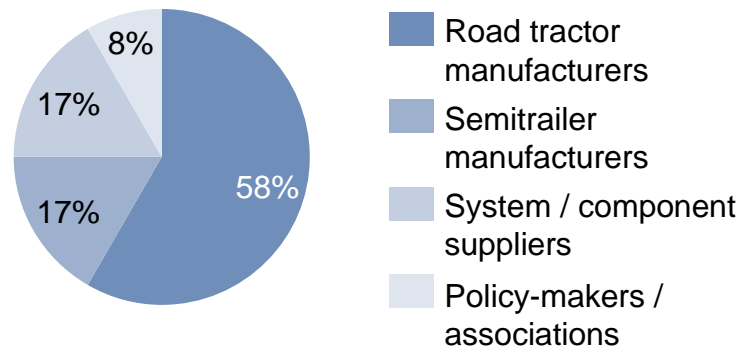
Results

- Opportunities from regulating CO₂:
 - Faster progress in CO₂ technologies as a result of pressure to innovate
 - Greater potential for manufacturers to stand apart
- Risks from CO₂ regulation:
 - Higher development costs resulting from questionable technology decisions
 - Technological divergence in the various markets through differing legislation
 - Rising pressure of competition from higher development costs and certification effort
- Recommended actions for company and product decision-makers

Make-up of Study Participants

The results were obtained from in-depth expert interviews with top decision-makers representative of the entire commercial-vehicle industry

Participant make-up by background



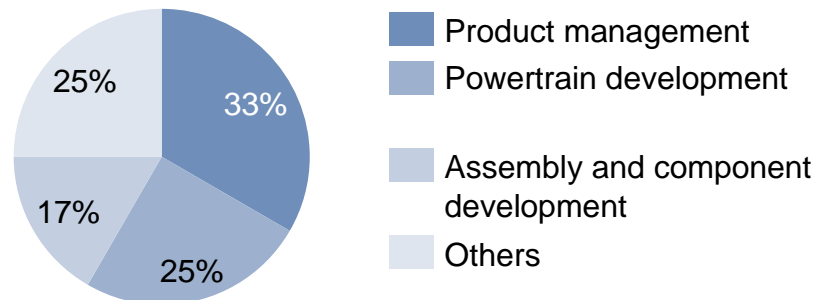
Some of the companies taking part



others...

The selection of interviewees taking part reflects a representative cross-section of the commercial-vehicle industry.

Participant make-up by responsibility



Starting Point – Trends and Drivers in the Commercial-Vehicle Industry

Forthcoming CO₂ legislation is pressurizing the whole of the commercial-vehicle industry to act

Mega-trends



Environmental protection



Haulage volume



Peak oil

Drivers



Legislation



Consumer / market



Economic pressure

Solutions



Drive unit



Powertrain concept

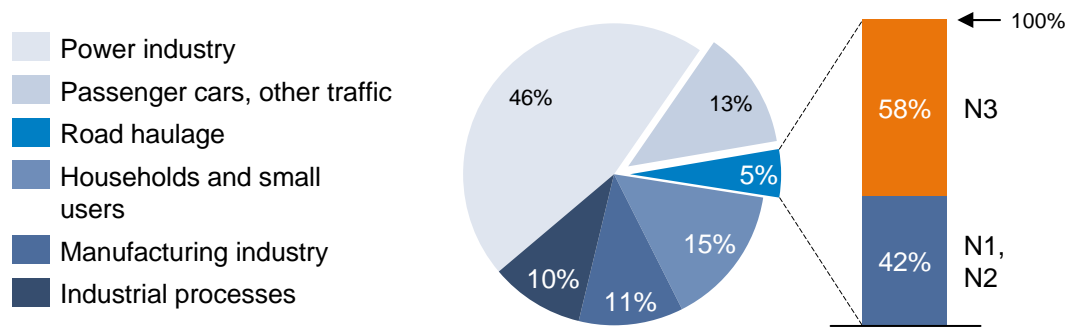


Vehicle concept

Starting Point – Trend in Global Haulage Volume

The increase in haulage volume is putting pressure on the commercial-vehicle industry to reduce its CO₂ emission

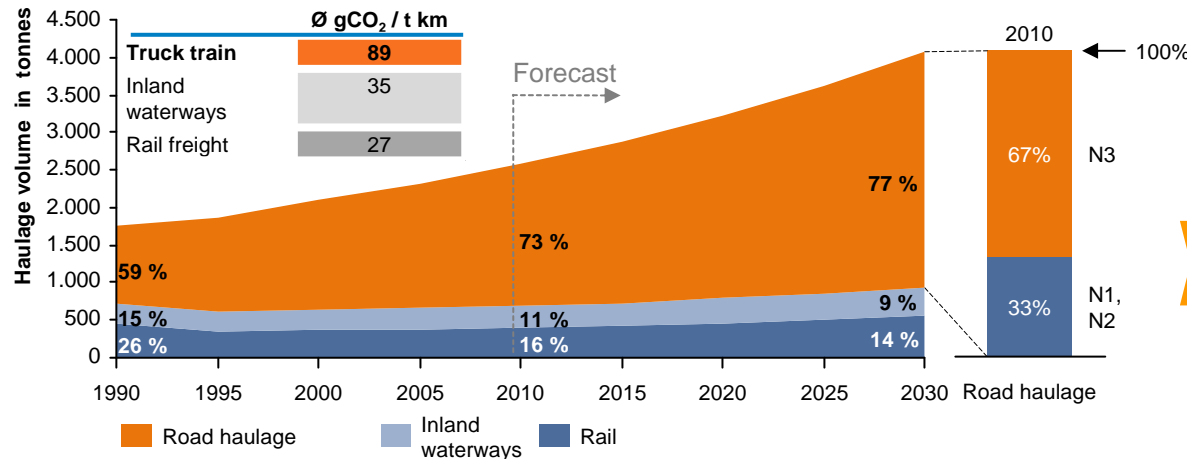
Breakdown of CO₂ emissions (2010)



CO₂ targets

- ACEA pledge:**
 By 2020 CO₂ emissions from commercial vehicles are to be reduced by 20% over 2005 levels
- EU vision:**
 “Roadmap for Moving a Low Carbon Economy in 2050” – total carbon emissions in 2030 are to be less than 1990 levels

Haulage trend (EU-15) in millions of tonnes



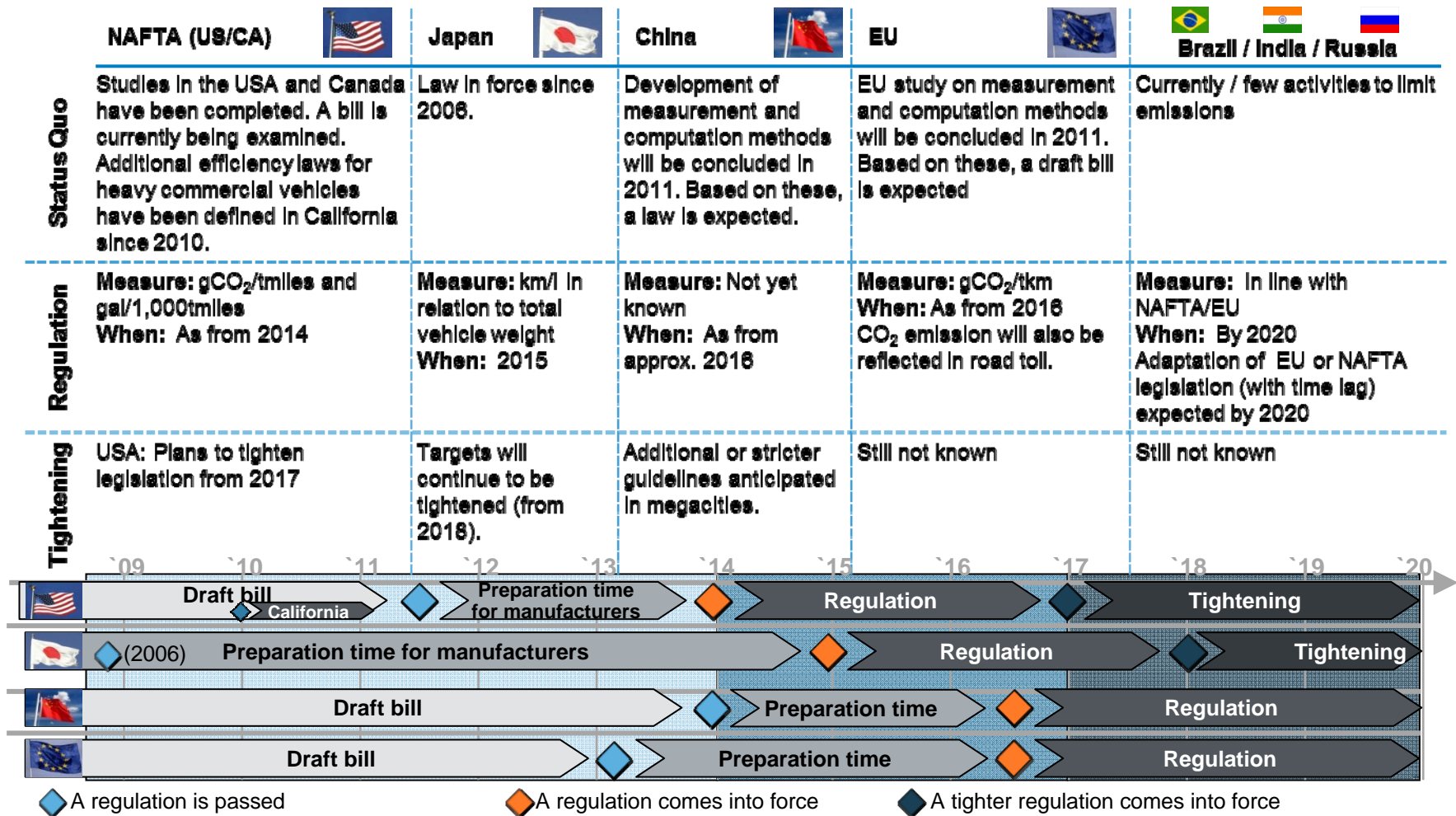
Haulage trend

- As a result of rising haulage capacities and mileages of heavy commercial vehicles, CO₂ emissions will continue to grow in future despite current measures to reduce them

Source: BMWI (German Ministry of Economics), Eurostat, KBA

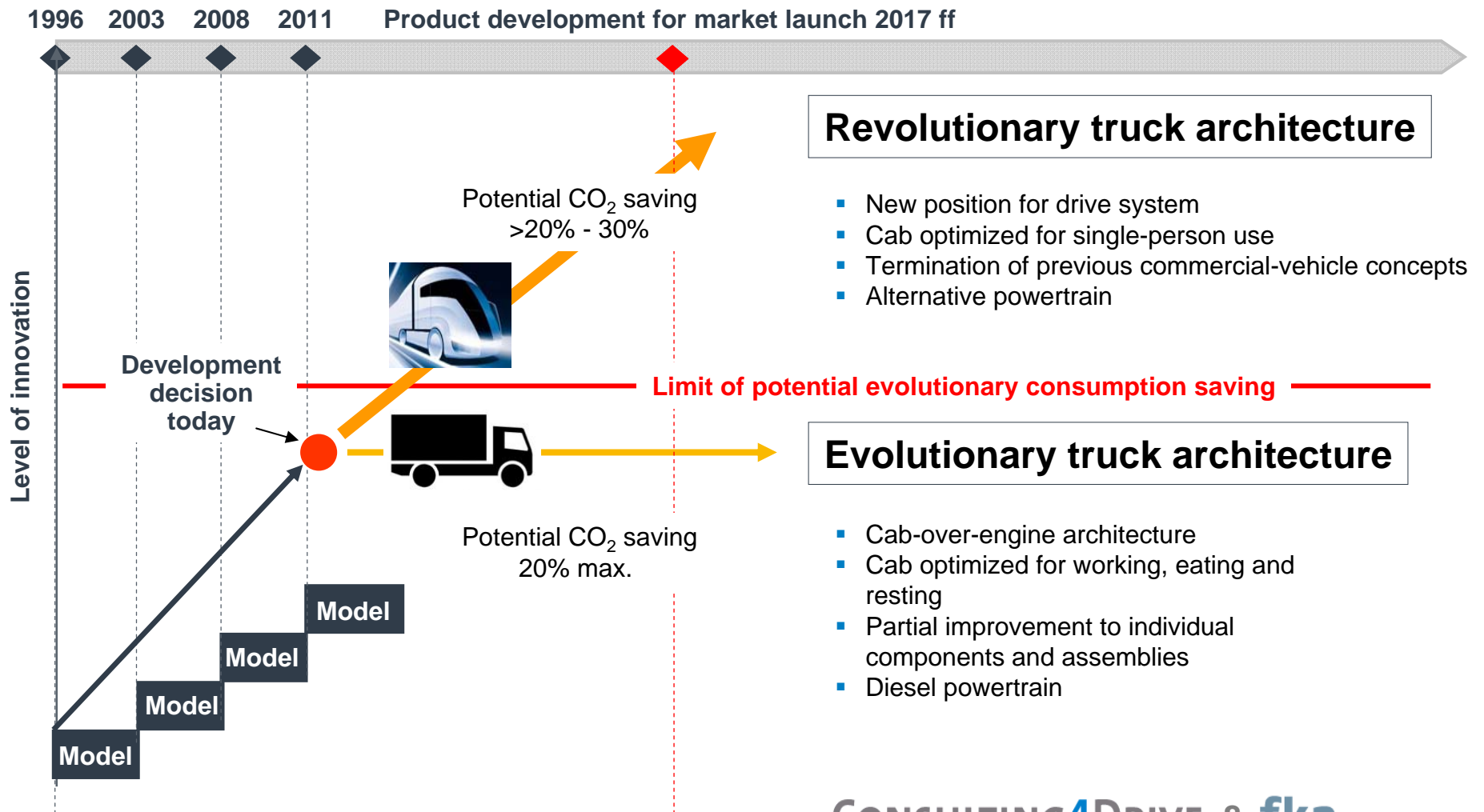
Situation Analysis – CO₂ Legislation Roadmap

ICO₂ emissions are likely to be regulated for commercial vehicles in all key markets by 2020



Technological Potential – Challenge in Level of Technology

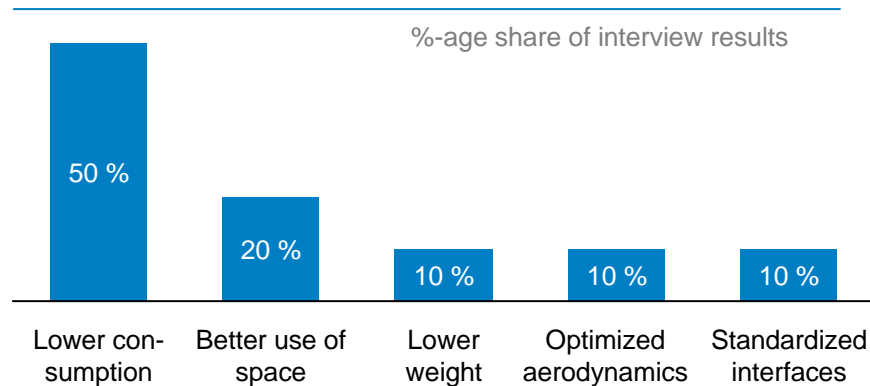
For all OEM representatives interviewed, the current challenge lies in deciding on which future technology path to take



New Overall Vehicle Concepts – Benefits and Drawbacks

Revolutionary overall vehicle concepts (e.g. MAN Concept S) can help to cut CO₂ emissions

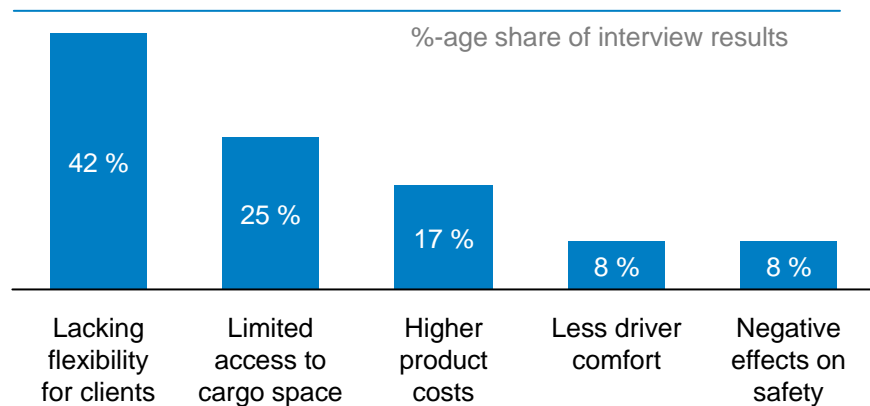
Main benefits



- The focus is on cutting consumption, supported by answers to reducing weight and optimizing aerodynamics:

➤ **High suitability of such concepts to cut CO₂**

Main drawbacks



- Insufficient flexibility for the client poses the greatest challenge, resulting from the consideration of lacking standardization:

➤ **Clear call to OEMs and body manufacturers to agree**

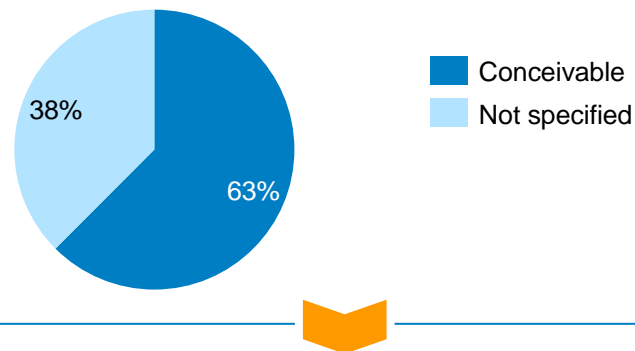
➤ **The legislator must regulate carbon emissions with the market in mind**

Application Segments – Approach to Low-Sales Sectors

Formation of strategic cooperation agreements so as not to abandon any application

Serve low-sales segments differently

%-age share of interview results



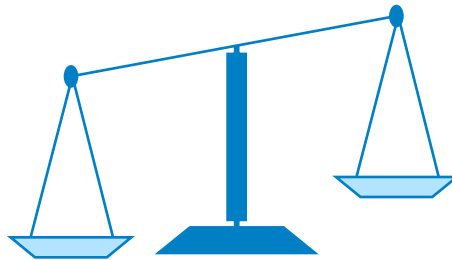
- **Cooperation agreements between OEMs** were stated by everyone interviewed as a possible or currently practiced or **unavoidable option for serving low-sales segments**
 - **CO₂ legislation** and associated higher development costs will **increase the pressure to cooperate in future**
- Other options, such as **complete abandonment, spinning off into joint ventures** or **cooperation agreements with body manufacturers**, play **no part**

Cooperation fields

- Components
 - **Isolated cooperation agreements** exist at component level, e.g. transmissions, axles, cabs
 - **Long-term, the focus will remain on components**
- Engines
 - **Strategic partnerships** already exist, e.g. **with gaseous-fuel engines**
 - Altogether, the number of **cooperation agreements entered in the field of gaseous-engines will tend to be small because** engines are particularly important as a **mark of distinction**
- Overall vehicle
 - **Cooperation agreements in the sense of “badge engineering”** (e.g. VW Crafter and MB Sprinter) and **cooperation agreements between OEMs and body manufacturers** do not yet seem to have any significance for market participants

Upshot – For and Against CO₂ Legislation

CO₂ legislation will provide new ways of standing apart technologically and create possibilities for tapping new market potentials



+ For

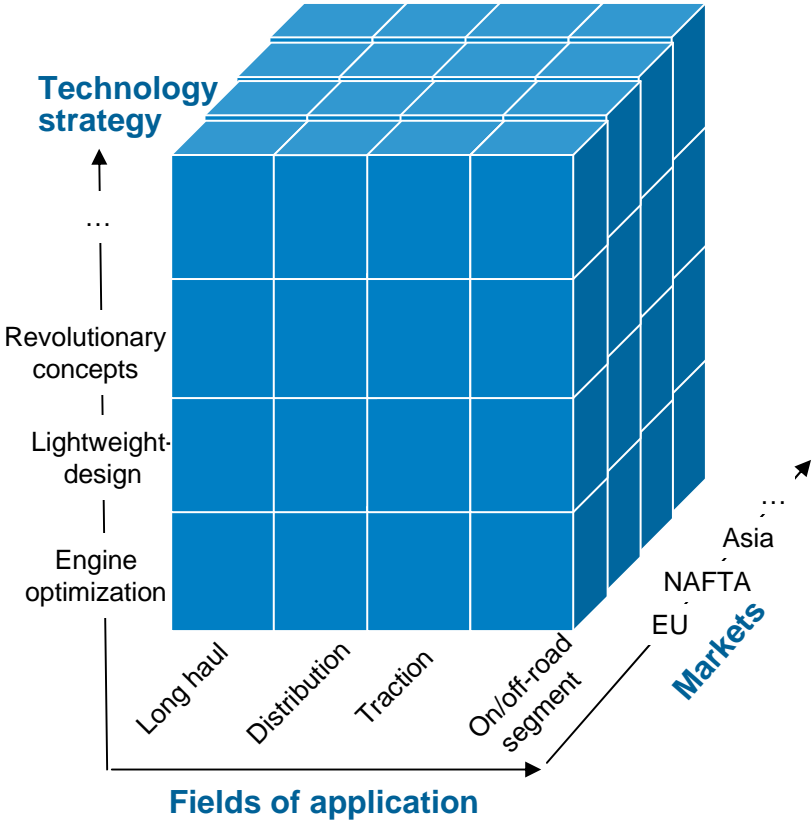
- Rapid progress in CO₂ technologies from pressure to innovate
- Potential for vehicle manufacturers to stand apart
- Overall consideration of vehicle combination
- High cost / benefit contribution for end-user from fuel saving
- Statutory limits help forwarders to reach economic / rational decisions
- Creation of a market-entry barrier for new competitors (e.g. Asia) / squeezing out suppliers without leading technologies
- Leading European technologies exported to other markets – Gaining market shares in the premium segment

— Against

- Optimizing technologies is time-consuming
- Technological divergence in different markets from different legislation
- Pressure of competition increases as a result of higher development costs and certification effort
- Technologies introduced too early without being robust
- Statutory pressure disproportionate to technologies that make economic sense
- High-quality fuels are hard to obtain in Asia

Upshot – Strategic Implications

The following questions must be answered for the global success of a commercial-vehicle manufacturer:



Technology strategy

- Does your technology strategy employ the right measures and dimensions to meet global CO₂ limit values?

Markets

- Will today's product portfolio also secure the company's global success tomorrow?
- Do your products fit the future growth markets and what will set you apart?

Fields of application

- Will you serve all heavy commercial-vehicle applications in future?
- Will the company's success be ensured in future by cooperation agreements or strategic partnerships?

We will be pleased to discuss these and other issues with you.

Yours Contacts



Karsten Löwenberg
Senior Consultant

Consulting4Drive GmbH
Carnotstr. 7
10587 Berlin
GERMANY

Phone: +49 30 399 78 - 8002
Cell +49 172 1699946
k.loewenberg@consulting4drive.com



Hermann Riesen
Senior Consultant

Consulting4Drive GmbH
Carnotstr. 7
10587 Berlin
GERMANY

Phone: +49 30 399 78 - 8002
Cell +49 172 1581356
h.riesen@consulting4drive.com