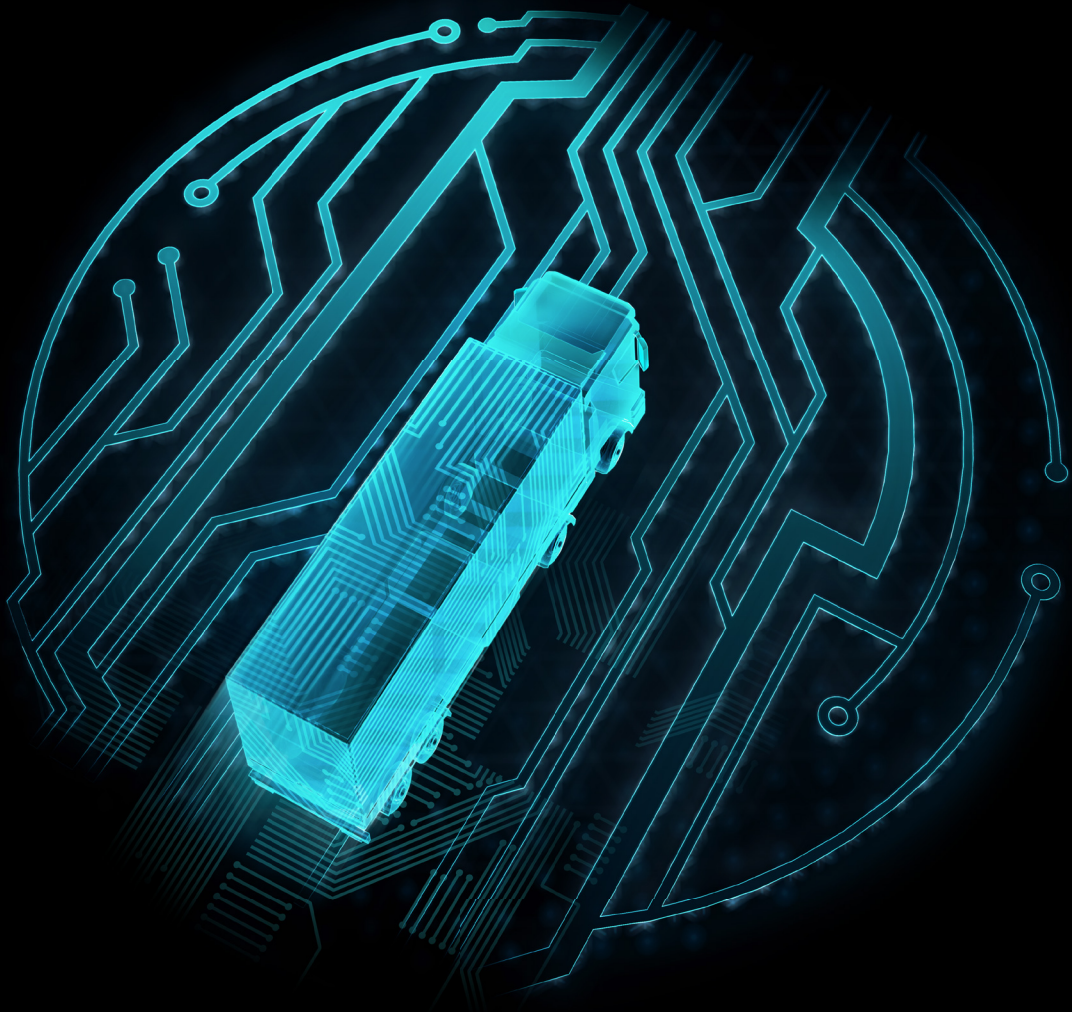


**Deloitte.**



**Global Truck Study 2016**  
The truck industry in transition

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# Summary

## Digitalization and weaker growth prospects: stagnation in the commercial vehicle market

### **Commercial vehicle manufacturers must supplement their hardware business with digital services**

The traditional idea that economic growth means increasing sales of trucks is breaking down. Commercial vehicle manufacturers are expected to sell barely any more heavy (HCVs) and medium commercial (MCVs) vehicles in 2026 than they do today. In short, sales are likely to stagnate over the next ten years.

Although slightly higher volumes are still anticipated in the BRIC countries, this growth will be balanced against declining truck sales in the Triad. Telematics and digitalization will lead to gains in efficiency and declining demand in these highly developed markets.

This study predicts a compound annual growth rate of only 0.6% (CAGR<sup>1</sup>) for the global heavy and medium commercial vehicle markets until 2026. The weak growth prospects for the truck market are only partially offset by subdued expectations for global economic growth (OECD +3.3% per year until 2026).

Particularly in the highly developed commercial markets of the Triad<sup>2</sup>, telematics and digitalization in transport will enable further increases in efficiency, meaning that fewer commercial vehicles will be required to transport the same or even a greater number of goods. Thus, the Triad markets are expected to shrink slightly at an annual rate of -0.9% from 2016 to 2021. After that, the decline is expected to accelerate to -1.4% per year until 2026.

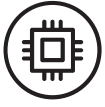
Despite all the current difficulties in the BRIC countries, the truck markets in these regions are likely to offer many opportunities and a CAGR of +1.6% until 2026. Their share in the global market will increase from 47% in 2016 to 52% in 2026. However, digitalization will also reduce growth in the long term.

Manufacturers must also prepare themselves for consolidation within the logistics sector, which will be dominated by an ever-smaller number of customers with ever-greater purchasing power. Alternative drive systems will also play an important role in the future. New supply concepts for urban areas will also lead to many medium commercial vehicles being replaced by light commercial vehicles.

The study closely examines four global trends that will have a lasting effect on the commercial vehicle market. These trends will fundamentally transform global truck markets. Established commercial vehicle manufacturers will have the opportunity to actively shape this process, but to do so, they must successfully occupy new areas of business and go beyond being simply manufacturers of products to become hardware manufacturers with a wide range of digital services.

<sup>1</sup> Compound Annual Growth Rate

<sup>2</sup> North America, 28 European countries, developed countries in Asia



### Trend 1, telematics services:

**Digitalization** will be the biggest driver of change in the truck market. Telematics systems in trucks will become standard in the Triad markets. IT and software solutions will closely integrate transporters into the systems of the Industry 4.0 value chain. Connected devices allow dynamic route optimization and ensure better capacity utilization. Systems for monitoring an individual's driving style and wear on components save fuel, protect materials, and increase a truck's useful life. The resulting telematics sales will more than triple over the next ten years with 16% annual growth, and therefore grow much more strongly than sales in the vehicle business. OEMs must tap into telematics and IT services business to stay profitable in the face of declining sales volumes.



### Trend 2, urban logistics concepts:

Increasing **urbanization**<sup>3</sup> is leading to fundamental changes in supply concepts for major urban areas. Experts believe that light commercial vehicles will be increasingly used for last mile distribution in ten years' time – also to avoid access restrictions in urban centers. At the same time, better-controlled networks will bring distribution centers and therefore also heavy commercial vehicles closer and closer to metropolitan areas. The result will be that medium-sized trucks will lose a significant share (-2% CAGR by 2026) of freight transport in the Triad to light and heavy commercial trucks. Globally speaking, the medium-sized segment will be stagnant by 2026, while MCVs will continue to be in demand, especially in structurally weak regions of the RoW and in China. At present, approximately 60% of all MCVs are used in the transport segment. The remaining 40% special-purpose vehicles such as fire trucks, concrete mixers, or sewer cleaner trucks are excluded from these trends.



### Trend 3, larger fleets and sharing concepts:

Rising cost pressure is leading to increased consolidation within the logistics sector. The **trend towards larger fleets** with more than 100 vehicles will continue to increase until 2026. The number of customers is shrinking, while their purchasing power is growing. OEMs need to respond to this, for example by expanding their range of products and services for large customers and strengthen their direct sales channels. OEMs must adapt their dealer network accordingly.



### Trend 4, alternative drive systems:

Tighter exhaust gas regulations and access restrictions for diesel vehicles, especially in large cities, demand major investment in **alternative drive systems**<sup>4</sup>, while simultaneously opening up new sales opportunities. A market model developed by Deloitte shows that about 13% of new vehicles (MCV + HCV) in the key German market will already have an alternative drive system by 2026. In MCVs, there is a trend toward plug-in hybrids (67% vehicles will have alternative drive systems vehicles by 2026). On long distances, nearly 80% of HCVs with alternative drive systems will be running on natural gas (LNG + CNG).

<sup>3</sup> UN Analysis: nearly 60% of the global population will live in cities in 2026

<sup>4</sup> The study evaluates the following alternative drives: PHEV: Plug-in-Hybrid Electric Vehicle, BEV: Battery Electric Vehicle, LNG/CNG: Liquid/Compressed Natural Gas

# How will digitalization and new logistics concepts shape the future of the truck industry?

The very foundations of the way in which goods are transported in the future is set to change. Let us imagine a world in which trucks are connected and driving semi-autonomous. New logistics concepts will transform the world of transport. Demand for fuel is falling and costs per trip are declining. Sophisticated safety systems now allow the vehicles themselves to eliminate most causes of accidents.

The commercial vehicle industry is already discussing the opportunities and risks that these new developments open up for the sector. OEMs and suppliers are evaluating the possible direction a future shift in their business and the structure of the market will take.

The new developments not only affect the design and function of the truck as a product but also require greater integration of the truck into the entire goods transportation ecosystem. This demands a strategic reorientation of the industry.

This study focuses on the main logistics trends and the implications for the commercial vehicle markets and manufacturers who supply them.

This study addresses the following questions:

- Which trends will influence truck sales figures, if it will be possible to transport more goods on fewer trucks in the future?
- What new skills will OEMs need to be able to compete in the commercial vehicle market of the future?
- What role will alternative drive systems play for heavy and medium commercial vehicles ten years from now?

The topic of autonomous driving was deliberately omitted from this study. The reason for this is that it must be assumed that driverless trucks are not expected to be widely used within the next ten years. It is true that new assistance systems are likely to relieve drivers of individual tasks or the entire task of driving on some sections of the road, but completely doing without a driver is not anticipated within the time-frame of this market study.

# Weak economic momentum and new technologies limit the growth of the global commercial vehicle markets

The manufacturers of commercial vehicles will be operating in dramatically different markets within the next ten years. Where global sales performance was once closely tied to economic development and the growth of the global economy, this connection is rapidly disintegrating<sup>5</sup>.

Growth in the global economy is also expected to slow down (GDP +3.3% CAGR according to the OECD) through to 2026, and even weaker growth is projected for the Triad markets. Conversely, other regions and the BRIC countries are projected to grow at an above-average rate<sup>6</sup>.

The global economy appears to be suffering from increasing exporting fatigue: the global trading volume has fallen at a rate of 2.5% CAGR over the past five years. Further, a sharp drop was recorded (12.5%) between 2014 and 2015. Should this trend continue, it is likely to put negative pressure on the demand for transport services and consequently demand for commercial vehicles.

The commercial vehicle market will pass through two phases over the next ten years, each with its own dynamics. Annual growth of 1.3% is expected over the next five years, largely driven by continued

economic growth. Increases in efficiency resulting from innovative supply concepts will begin taking effect from 2021 onwards, and demand for commercial vehicles will decline. Deloitte expects negative growth of 0.1% CAGR between 2021 and 2026. This translates to annual increase of 0.6% over the entire ten-year period.

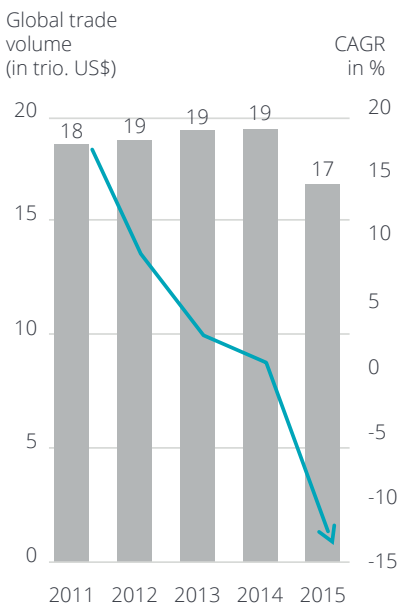


Figure 1: Global CV markets will be braked out by decreasing trade volumes  
Source: IMF, macrobond

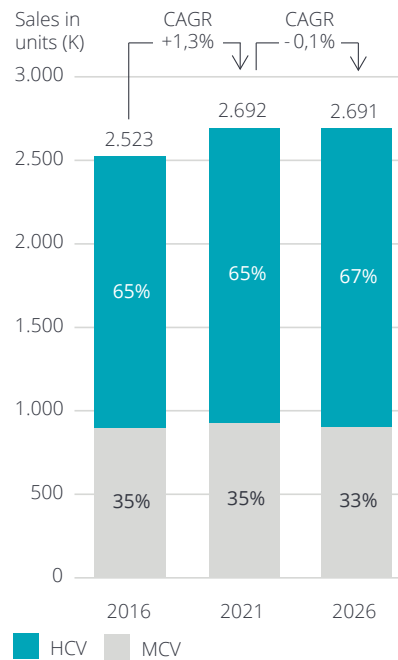


Figure 2: Global sales of MCV and HCV segments in 5-year periods (in K units)  
Source: IHS, Deloitte Analysis

<sup>5</sup> CV sales figures: IHS, Deloitte Analysis; GDP growth: OECD long-term forecast

<sup>6</sup> GDP ranking 2015 to 2030: Brazil from place 7 to 6, Russia from 6 to 7, India stays on 3, China stays on 1, Indonesia from 9 to 5, Turkey from 17 to 14; Source: IMF

However, there are strong regional differences: in the Triad markets, the weak economy and efficiency gains in logistics are shrinking the market ( 1.1% CAGR). By contrast, BRIC (+1.6% CAGR) and RoW (+1.5% CAGR) are performing significantly better. Advancing industrialization can however to be expected to drive similar improvements in efficiency to those experienced in highly developed economies in eight to ten years. BRIC will dominate the world of truck sales in 2026. At this time these four countries, with their combined market share of 52%, will encompass more than half the global market volume. Only a third of the number of units sold will be attributable to the Triad markets.

OEMs are therefore facing weaker growth over the next ten years. The markets in the BRIC and RoW regions are indeed growing slightly, but sales figures are falling in the Triad and competitive pressure is on the rise.

The impact of GDP growth and the four key trends on commercial vehicle sales is shown in Figure 4: under otherwise unchanged conditions, economic growth would lead to a plus of 650,000 units sold by 2026. This is offset by the reduction in demand due to telematics (330,000 units), urban logistics concepts (minus 90,000 units) and larger fleets and sharing concepts (minus 60,000 units). Ultimately, this leaves a sales increase of only 170,000

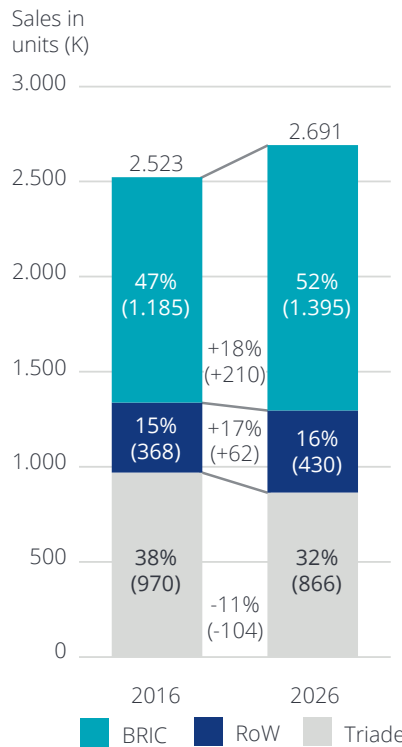


Figure 3: Development of regional sales market shares  
Source: IHS, Deloitte Analysis

units by 2026, which corresponds to a bare seven per cent across ten years. The key trends will have an earlier and stronger effect in the highly developed Triad markets, although their influence will also increase in the BRIC markets from 2021 onwards.

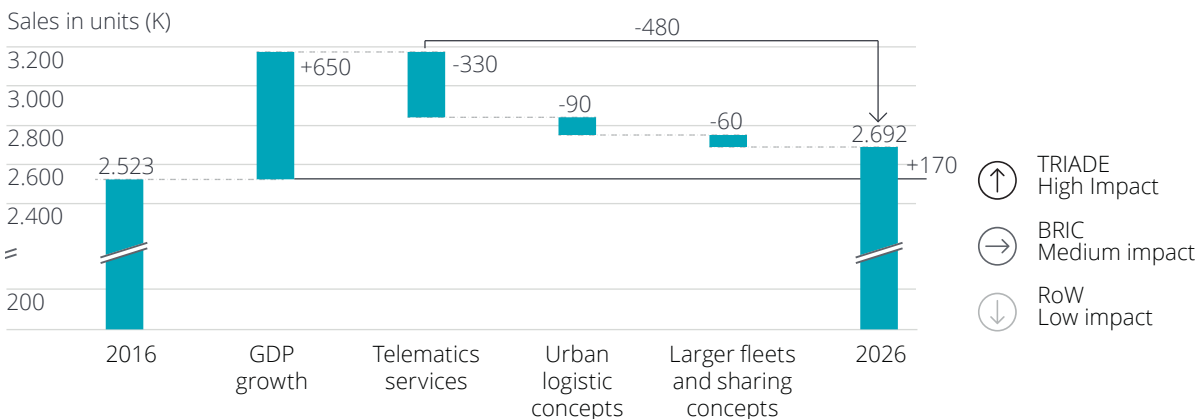





Figure 4: Impact of GDP growth and the four key trends on commercial vehicle sales (in K units)  
Source: IHS, Deloitte Analysis

**Major trends and their consequences at a glance**

	 <b>Telematics services</b>	 <b>Urban logistics concepts</b>	 <b>Larger fleets and sharing concepts</b>
<b>Change</b>	<ul style="list-style-type: none"> <li>Real-time information about the condition of the vehicle, traffic, loading capacity, condition of cargo, etc. are used for optimization.</li> <li>The modern truck is integrated into the value chain.</li> <li>The total cost of ownership is further improved through telematics solutions: routes are dynamically optimized, empty journeys avoided, truck uptime and productivity is increased. The number of accidents drops dramatically.</li> </ul>	<ul style="list-style-type: none"> <li>Industry, commerce and end users demand increasingly more specific transport solutions.</li> <li>More sophisticated ordering behavior and rising numbers of packages demand new logistics concepts.</li> <li>Increasing urbanization force logistics companies' to relocate their distribution centers closer to urban areas.</li> <li>Distribution centers rely on HCVs for long haul transport and LCVs for last mile delivery to the end customer.</li> </ul>	<ul style="list-style-type: none"> <li>The transport logistics sector continues to consolidate, resulting in increasingly large fleets.</li> <li>Increasingly efficient networks thanks to optimized routes, less unutilized capacity and pooled transport volumes increase total capacity.</li> <li>Truck sharing concepts increase and meet peak needs more intelligently than existing rental models. Sharing models increase the overall efficiency of the transport network.</li> </ul>
<b>Effects</b>	<ul style="list-style-type: none"> <li>The application of telematics solutions requires a highly developed infrastructure and a premium product; which is why demand is concentrated in the Triad markets.</li> <li>Telematics solutions will become standard in mature markets within the next ten years.</li> <li>The telematics market will grow by a factor of three in the next ten years.</li> <li>It is not just OEMs investing in telematics -- IT companies are also investing in the development of new telematics services to capture market shares. There will be strong competition</li> </ul>	<ul style="list-style-type: none"> <li>MCVs will lose transport market shares to HCVs and LCVs in the Triad markets and shrink at 1.8% CAGR until 2026.</li> <li>In countries with a lack of infrastructure, some regions will continue to rely on the MCV segment (BRIC: +1.5% and RoW: +0.5% CAGR).</li> <li>Global sales of MCVs will stagnate.</li> </ul>	<ul style="list-style-type: none"> <li>Owner-driver <sup>7</sup> concepts will not survive the competition.</li> <li>Continued trend towards consolidation and larger fleets.</li> <li>Rental and sharing concepts are also an interesting market for non-OEMs.</li> <li>Percentage of peak needs covered by new sharing and rental concepts will increase in the short term and improve efficiency.</li> </ul>
<b>Expected effect on demand</b>	- 10% truck demand (approx. 330,000 units)	- 3% truck demand (approx. 90,000 units)	- 2% truck demand (approx. 60,000 units)

**Overall effect** These factors will together reduce the growth in the truck market by 15% (approx. 480,000 units, 2016 to 2026)

Figure 5: Impacts of key trends on market development



Alternative drive systems will also gain significance in the commercial vehicle industry over the next ten years and seize market shares from diesel. Even though this does not have any overall impact on sales figures, a projection of future market shares can be found in Chapter 4 of this study.

<sup>7</sup> Owner-drivers are commercial vehicle owners who are also drivers themselves



The trends  
in detail

# Trend 1: Telematics services

Digitalization means major improvements in efficiency - software and apps for commercial vehicles are becoming a billion-dollar market

Increasing competitive pressure is forcing fleet operators to intensify their search for means to increase efficiency and reduce costs. Even today, many are using more than 90 performance indicators to monitor their vehicles, drivers and freight and optimize their processes. They are gaining further momentum from Industry 4.0 concepts that integrate the modern truck much deeper into the value chain – also on an information technology level. New telematics solutions are enabling this connectivity within the transport chain and production landscape. Consequently, fewer trucks are needed to handle the same or even greater transport volume.

The use and functionality of telematics services can be split into three categories:

- Category 1 services monitor the entire vehicle.
- Category 2 services focus on the driver and safety.
- Category 3 services include fleet management functions and supply chain integration.

The survey of experts conducted as part of this study shows the greatest market demand is for services in the category of fleet management and integrated supply chain. Eighty-eight percent of those interviewed perceive a great benefit in the services in this area, while the lowest level of interest was recorded in the vehicle monitoring category.

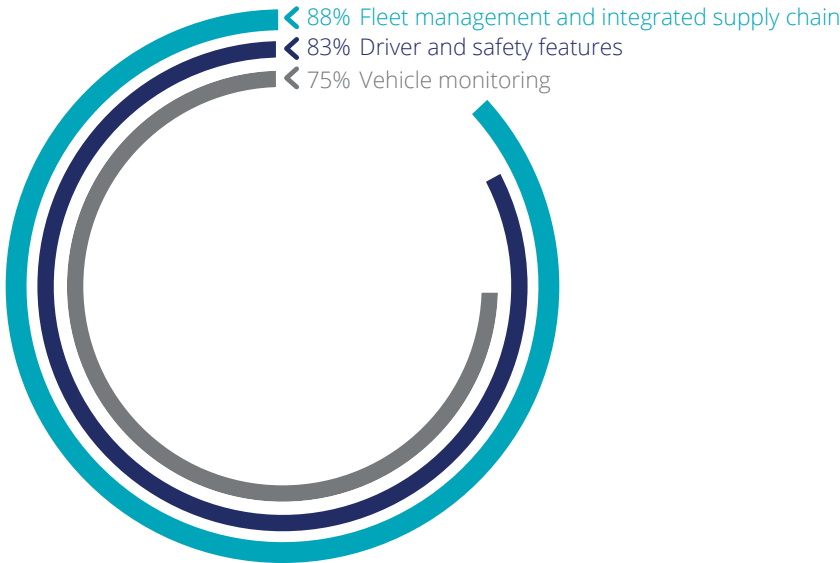


Figure 6: Interest in application areas  
Source: Deloitte expert survey

	 <b>Vehicle monitoring</b> Original functionalities for the vehicle	 <b>Driver and safety</b> Advanced functionalities for the driver and their safety	 <b>Fleet management and integrated supply chain</b> Functionalities for freight, capacity, ERP operations systems, etc.
Benefit	<ul style="list-style-type: none"> <li>• Less wear on the vehicle</li> <li>• Longer lifetime</li> <li>• Shorter standby times</li> <li>• Increased productivity</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring vital status of the driver</li> <li>• Takes administrative work over</li> <li>• Fewer accidents</li> <li>• Attractive workplace</li> </ul>	<ul style="list-style-type: none"> <li>• Integration into production systems</li> <li>• Increases capacity utilization</li> <li>• Optimized routing</li> <li>• More efficient fleet use</li> </ul>
Functions with market maturity in <5 years	<ul style="list-style-type: none"> <li>• Consumption, wear and running performance</li> <li>• Real time info on fuel consumption and suggestions for improvement</li> <li>• Preventive maintenance message</li> <li>• Sending error codes to the repair workshop</li> <li>• Repair workshop finder</li> <li>• Surrounding conditions</li> <li>• Road map updates</li> <li>• Traffic gridlock assistant</li> <li>• Forward-looking traffic information</li> <li>• Remote control functions (air-conditioning, key, horn, warning light)</li> <li>• Tracker for stolen vehicle</li> <li>• In-truck ecosystem for apps + web access</li> </ul>	<ul style="list-style-type: none"> <li>• Driving times</li> <li>• Speed</li> <li>• Working hours</li> <li>• Live warnings for inappropriate driving style</li> <li>• Automatic braking and acceleration</li> <li>• Warning of collision</li> <li>• Vital status of the driver</li> <li>• Accident reports</li> <li>• Load description in case of accident</li> <li>• Automatic accident report / emergency call</li> </ul>	<ul style="list-style-type: none"> <li>• Customized OEM solutions</li> <li>• Route optimization integrated into the production system</li> <li>• Track and Trace</li> <li>• Transfer of last mile information to mobile phones</li> <li>• Performance reports for fleet owner</li> <li>• Load monitoring (real-time freight data for temperature, location etc.)</li> <li>• Electronic toll payment</li> <li>• Platform for new insurance models based on driving behavior and usage</li> </ul>
Market maturity in > 5 years	<ul style="list-style-type: none"> <li>• Augmented reality with wind-shield display of routing info</li> <li>• Tracking of several trucks so as to drive in convoy / platooning</li> <li>• Automatic obstacle detection</li> <li>• Fuel theft protection</li> <li>• Remote truck control and parking</li> <li>• Access to native apps and smart-phone-integrated apps</li> </ul>	<ul style="list-style-type: none"> <li>• Optimized traffic light timing and traffic flow (communication with infrastructure to avoid traffic jams)</li> <li>• Extended help on emergency call</li> </ul>	<ul style="list-style-type: none"> <li>• Direct mobile payment</li> <li>• Environment and roadway monitoring</li> </ul>

Figure 7: Overview of application areas and preference of Telematics services

### Vehicle monitoring

In vehicle monitoring, fleet operators consider preventive maintenance messages and integrated repair services to be by far the most important improvements. If fleet managers are informed of impending technical problems in the vehicle, they can plan maintenance ahead of time and thus prevent an unexpected breakdown. Integrated repair services are an optimal complement to these forward-thinking messages: error code messages can be sent directly to a workshop ready for maintenance, for example, so that all the necessary spare parts are available when the vehicle arrives for maintenance.



Expert view on customer value of the category vehicle monitoring

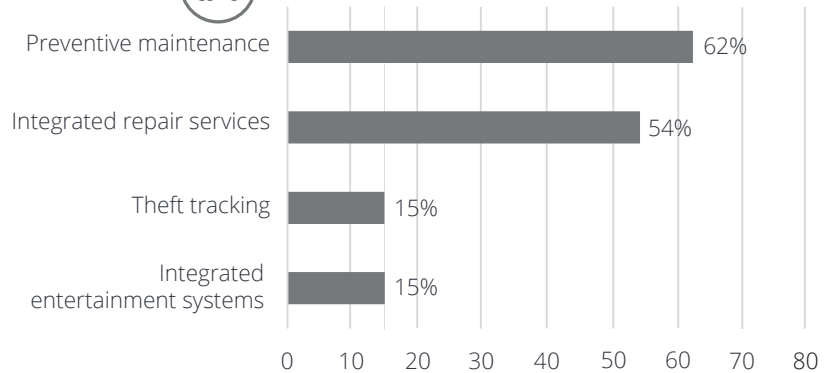


Figure 8

### Driver and safety features

In the drivers and safety category, the focus lies clearly on monitoring driving behavior. Combined with information about the route, it can be seen whether the driver has taken advantage of all fuel-saving opportunities and driven the truck with sufficient care. Both points directly affect profitability. If deviation in driving behavior are detected, these can be addressed with targeted trainings.



Expert view on customer value of the category driver and safety features

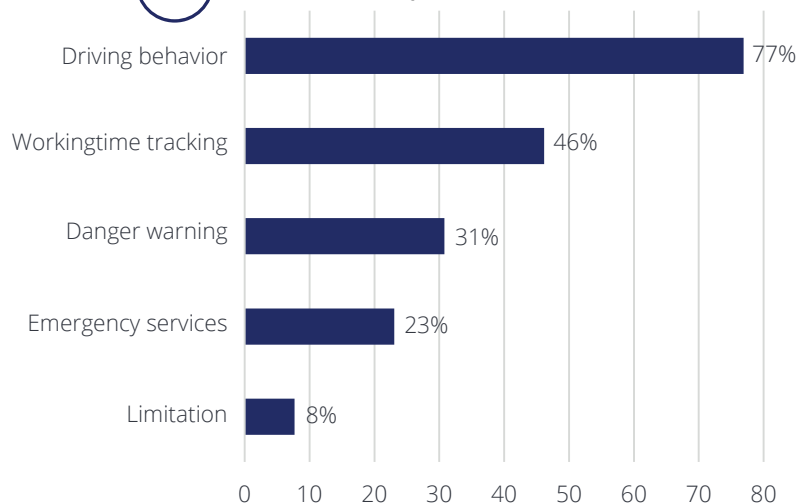


Figure 9

### Fleet management services and integrated supply chain

Customers here are particularly interested in further improvements to route optimization. Depending on the specific task, it is worth hard cash to fleet managers, if their vehicles bring their cargoes to their destination in the shortest, the fastest, or the most energy-saving way. Particularly in the case of distribution services using medium commercial vehicles, there is also the possibility of dynamically adapting the order of destinations depending on the current traffic situation. Customers attach significantly lower, but still high importance (38%) to track-and-trace functions, which permit real-time localization of the vehicle and its cargo.



Expert view on customer value of the category fleet management services

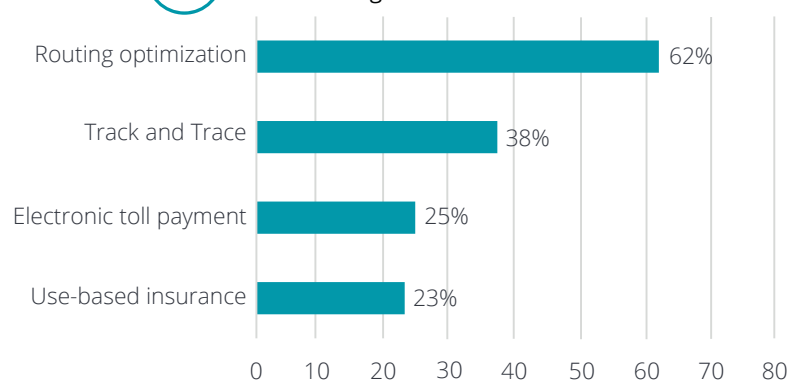




Figure 10

Source: Deloitte Expert Survey

The following table shows what is possible with telematics solutions today, and which applications will be possible in ten years' time.

	Use case – Today	Use case – in 10 years
 <p><b>Vehicle monitoring</b></p>	<p>Repairing a truck before it breaks down: the driver gets a message as soon as a defective part needs to be replaced and is directed to the nearest workshop, which already has the part and installs it immediately. Predictive maintenance is already reducing maintenance costs, downtime, and repairs on the vehicle.</p> <p>By optimizing the timing of maintenance, it is possible to reduce costs by 30% and breakdowns by 75%<sup>8</sup>. Truck utilization has improved by 3% per year in recent years.<sup>9</sup></p>	<p>Vehicle-to-vehicle (V2V) communication will be so advanced that platooning can be used more intensively, wherever the regulatory framework permits. Platooning links at least two trucks driving very close to one another in line. This will be a familiar sight on motorways in ten years' time.</p> <p>Platooning achieves fuel savings of up to 10% because trucks drive very closely behind each other, at a consistent speed, and with synchronized braking and acceleration.</p> <p>90% of accidents are attributable to human errors, which this can reduce to a minimum.<sup>10</sup></p>
 <p><b>Driver and safety features</b></p>	<p>Today's assistance systems support drivers - but they do not replace them. These include active lane change assistant, automatic braking and acceleration, or collision warnings.</p> <p>In tests, crash rates were reduced by 20% and speeding on long-haul routes by 42%.<sup>11</sup></p>	<p>From a technical perspective, fully autonomous vehicles will be close to being ready for market in the next five years. From a legal perspective, autonomous driving at high speed without a driver on motorways may not be permitted before 2025.</p> <p>Development will be faster in the long-haul commercial vehicle market, as efficiencies can be realized more quickly here. Much remains unclear from both the technical and the legal point of view in regards to complex situations such as urban traffic.</p> <p>Autonomous trucks will be greener, safer, and cheaper: they have great potential for reducing operating costs in terms of fuel, maintenance, drivers, and insurance.<sup>12</sup></p>

<sup>8</sup> World Economic Forum: White Paper "Digital Transformation of Industries"

<sup>9</sup> Deloitte expert Interview: "In recent years utilization increased by 3% year-on-year"

<sup>10</sup> Auto.de: Article "Tiredness and inattention cause most truck accidents"

<sup>11</sup> Federal Motor Carrier Administration: "Study of the Impact of a Telematics System"

<sup>12</sup> World Economic Forum: White Paper "Digital Transformation of Industries"


	Use case – Today	Use case – in 10 years
 <p><b>Fleet management services and integrated supply chain</b></p>	<p>GPS and dynamic routing can be used to avoid detours and empty journeys, and optimize the utilization of fleets.</p> <p>Optimized routes can save 5% on fuel costs<sup>13</sup>:</p> <p>For example, a company with a fleet of more than 1,000 vehicles was able to quickly identify free trucks with the help of idle alerts and optimally adapt the routes of all vehicles accordingly. This reduced the fuel consumption by 75 liters/per vehicle/month, resulting in a saving of EUR 100,000/ month across the entire fleet.</p>	<p>New solutions for logistics companies with capacity bottlenecks:</p> <p>Ride sharing lets companies share vehicle capacity when they have small loads and similar routes. Truck sharing can be used for short or longer truck rental periods. The advantage is that fleet operators are no longer forced to buy their own trucks, but can hire them from an operator for short-term capacity peaks.</p> <p>Truck and ride sharing help fleet operators save the cost of an additional truck as the fee includes the cost of repairs, insurance and administration. The renting party only has to pay fuel and driver costs.</p> <p>Approximately 15% of the truck market will be using these sharing platforms by 2026.<sup>14</sup></p>

Figure 11: Present and future possibilities of telematics services

<sup>13/14</sup> World Economic Forum: White Paper "Digital Transformation of Industries"

# Telematics solutions achieve their full effect only in developed markets – software offers enormous growth potential

The global market volume for telematics solutions in commercial vehicles is currently around EUR 2.2 billion. Of this, 95% is attributable to hardware. In the future, this ratio will almost reverse, as hardware is stagnating at around EUR 2 billion due to falling costs. Meanwhile, software revenues are steadily increasing due to higher volumes. Software will reach an 80% share of the EUR 10 billion<sup>15</sup> telematics market in 2026. Telematics currently account for 2% of the purchase price of a truck and will expand to 8% by 2026.

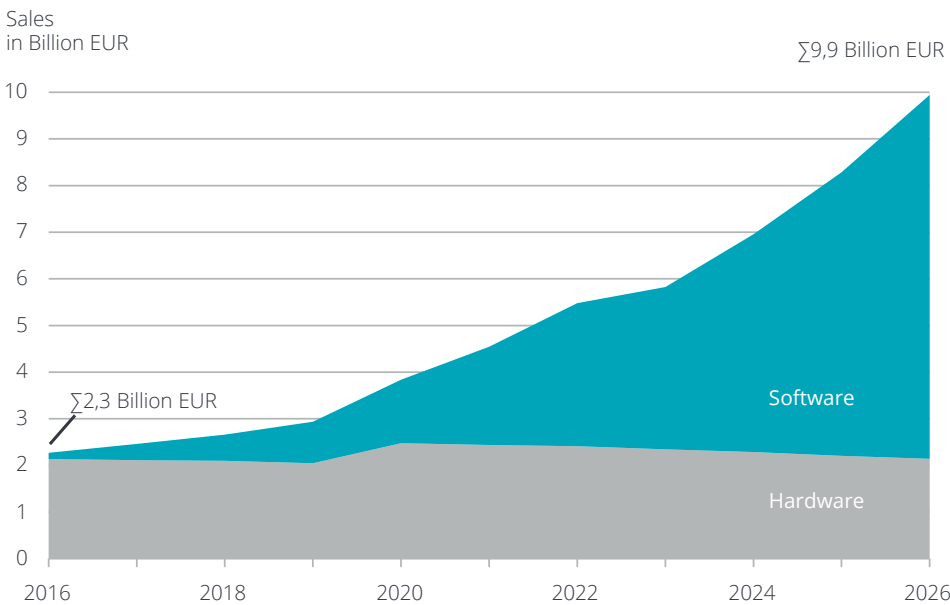


Figure 12: Global revenue forecast of Telematic services between 2016 – 2026 (Hard- and software)

<sup>15</sup> Deloitte Analysis

In the Triad markets, telematics hardware is currently installed in every second truck, but software is not widely used at only around 5%. Over the next few years, telematics will become standard equipment in HCV trucks in the Triad, meaning that nearly every new truck will be equipped with telematics by 2026. The market for retrofitting is disappearing. Penetration will be less pronounced outside the Triad and reach only 80% in the MCV area by 2026, as there are fewer applications in this segment.

Despite continued improvements in performance, the cost of built-in hardware and software will decline due to the effects of economies of scale and technological advancements. However, overall sales will increase significantly as a result of increased distribution.

Software services are becoming increasingly wide-ranging and powerful, meaning that a new generation of services about every five years. One of the new possibilities might be the monitoring of the driver's vital signs. This could enable the vehicle to safely come to a stop in the event of health problems, while also sending immediate medical assistance to the driver.

Telematics services place heavy demands on mobile data networks, which are usually only met in highly developed infrastructures. Consequently, Deloitte estimates that the Triad markets will generate about 60% of telematics revenues in 2026. The fact that large fleets in particular profit from the advantages of telematics is another factor behind this distribution. These are mainly found in mature markets.



Hardware	2016		2026
Market penetration	50%	+50% pts. 	100%
Hardware price	1.400 EUR	-30% 	1.000 EUR
<b>Software</b>			
Market penetration	5%	+90% pts. 	95%
Software price	500 EUR	+200% 	1.500 EUR

Figure 13: Market penetration and price forecast of Telematic services (per vehicle in Triads)  
Source: Deloitte Analysis



# Telematics solutions will become an integral part of commercial vehicles – the truck as a platform

Currently, telematics are more likely to be retrofitted than purchased ex-factory. But OEMs are well-positioned and have the chance to gain the lion's share of this market. At present, all commercial vehicle manufacturers are expanding their telematics offerings. The focus is on obtaining vehicle-related data (e.g., operating hours, tank level) and supplying this to the driver.

The telematics solutions currently being offered by OEMs are based on proprietary and therefore closed systems. There are standardized interfaces, but these cover only basic information and fleet management services functions. More comprehensive interfaces and data are required to integrate logistics systems and expand the currently limited connectivity.

The idea of ecosystems is therefore of central importance:

Monitoring the system environment (also referred to as an ecosystem<sup>16</sup>) is a major cornerstone for growth and securing revenue potential. OEMs can position themselves as system providers or as followers:

- System providers actively create their own platform and are therefore closer to the market of the future. Open ecosystems which offer a broad range of manufacturer-independent telematics services will play a major role in the future commercial vehicle industry. The challenge lies in establishing ecosystems that offer sufficient functional diversity to be able to assert themselves against IT

companies. That is why OEMs opening up their own systems plays an important role, as then the information gained can be used for other purposes and applications.

- Followers offer only the interfaces, not their own ecosystem, since this is not one of their core competences.

„Ninety percent of experts think that the range of telematics services will be a decisive purchase criterion in 2026“<sup>17</sup>

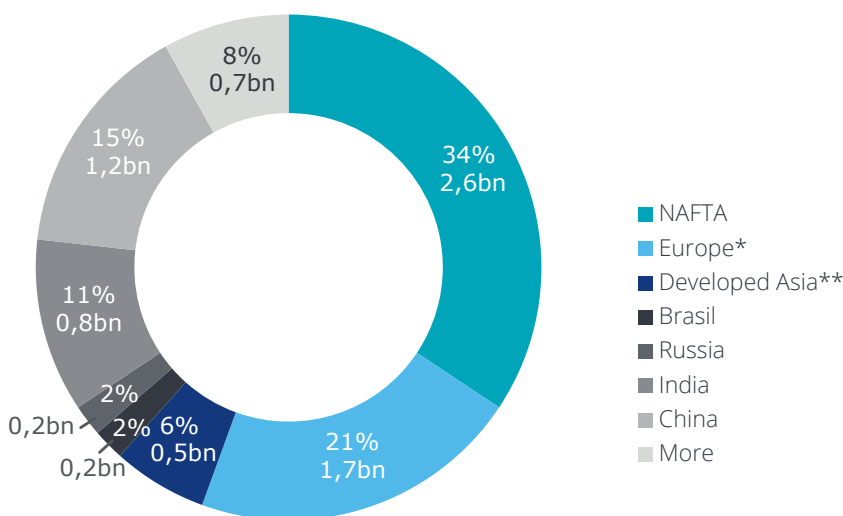


Figure 14: Expected revenue shares of Telematics services per region / country in 2026

Source: Deloitte Analysis

\*Europe: European Union as well as Norway, Switzerland, Great Britain

\*\* Developed Asia: Hong Kong, Singapur, Japan, Taiwan, South Korea

<sup>16</sup> An ecosystem consists of a platform for securing the connection to the truck and applications (also called "apps") which ultimately generate the functions and the added value for the customer

<sup>17</sup> Deloitte Global Truck Survey

The challenge in the first option lies in decoupling new business from the typical product lifecycle of three or more years which currently dominates the industry. Evolving into a software provider requires more agile and dynamic behavior.

„Experts think the customer’s data sovereignty will be an essential differentiating feature“<sup>18</sup>

OEMs should seek dialogue with the fleet operators in order to gain a competitive advantage with their own telematics systems. It is necessary to win their trust and to meet their requirements. The question of who can use the data obtained

through telematics and who controls them is still a big hurdle. Customers will be more willing to surrender their data if they can identify additional value and see benefits for themselves, for example cheaper insurance policies<sup>19</sup>.

Companies in the IT sector have also recognized the potential for telematics sales and are already active in this market today, offering a variety of solutions. They have thus become competitors of truck manufacturers and offer extensive fleet and logistics systems which have direct access to the truck’s software via their own interfaces.

It is to be expected that independent vendors will also bring cross-vendor telematics services to the market. These offer brand-independent preparation of truck

status information and combine this with logistics processes. This combination integrates the truck even more deeply into operational production and logistics systems.

Manufacturers must engage more strongly, build up corresponding capacities in development and, in the next three to four years, bring solutions that offer a complete ecosystem to the market with a truck-as-a-platform approach.

„Their focus on hardware and limited IT capabilities for developing telematics services are the biggest hurdles for OEMs“<sup>18</sup>

	<b>OEM as "System supplier"</b>	<b>OEM as "Follower"</b>	<b>Third party suppliers</b>
Scope	<ul style="list-style-type: none"> <li>• Own eco-system (OEM as owner of the platform) as integrator</li> <li>• Open Source with quality control for apps</li> <li>• OEM apps + third-party apps</li> <li>• Possible revenue approaches: user account / app commission / free</li> </ul>	<ul style="list-style-type: none"> <li>• No own eco-system</li> <li>• Ensures data transfer to third-party / OEM eco-systems and compatibility</li> <li>• Revenue model e.g., via data transfer possible</li> </ul>	<ul style="list-style-type: none"> <li>• Provides OEM-independent eco-system (also with own hardware)</li> <li>• Ensures compatibility with OEMs and app suppliers</li> <li>• Revenue model via eco-system / app commission</li> <li>• Customer installs own hardware in truck (e.g., DHL)</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>• CAN Bus (focus on own brand)</li> <li>• FMS+ (manufacturer-independent)</li> </ul>	<ul style="list-style-type: none"> <li>• FMS+ (manufacturer-independent)</li> </ul>	<ul style="list-style-type: none"> <li>• CAN Bus (limited)</li> <li>• FMS+</li> </ul>

Figure 15: Overview of telematics services suppliers<sup>20</sup>  
Source: Deloitte Analysis

<sup>18</sup> Deloitte Global Truck Survey

<sup>19</sup> More than 30 % of respondents in the Deloitte study "European study on car insurance - digital car insurance and its importance for insurers" would willingly pass on their data to their insurer; more than 20 % to the car manufacturer.

<sup>20</sup> Apps (applications) are programs with specific functions; for example the monitoring of fleets; CAN-Bus: Controller Area Network Bus; bus for the networking of control devices in automobiles.

# Trend 2: Urban logistics concepts

## New concepts require fewer medium commercial vehicles

Increasing urbanization is fundamentally transforming existing concepts for supplying urban areas. Distribution centers are being moved ever closer to urban areas. Meanwhile, the growth in online retail has generated double-digit growth rates for parcel service providers in recent years. This trend will continue and lead to new logistics solutions for urban areas as customer demand for faster and more flexible deliveries increases.

An unsurprising consequence is that transport logistics are changing. Ever larger hubs are emerging and these are moving closer to the growing conurbations. Long-distance transport between hubs and spokes will be handled almost exclusively by HCVs in future, because HCVs always have lower operating costs than MCVs due to lower personnel costs per ton-kilometer. In urban areas, delivery to the end-customer (the last mile) will be handled by the more agile LCVs. LCVs also have the advantage that they are not affected by the increasingly stringent exhaust gas regulations<sup>21</sup> and restrictions on access to inner cities<sup>22</sup> for the last-mile delivery. Alternative delivery concepts such as packing stations, in-car delivery, set time

slots, and delivery drones, will continue to spread. The dominance of HCVs and the decline of MCVs has been observed worldwide since the early 2000s. If there were an even 50/50 percent split between HCVs and MCVs back then, heavy trucks would now already account for 65%. This will increase to 67% by 2026. A contrasting development is emerging in China. Supply to large cities in China is increasingly being managed using MCVs, both now and in the future, because HCVs are not allowed to enter metropolitan areas during the day.

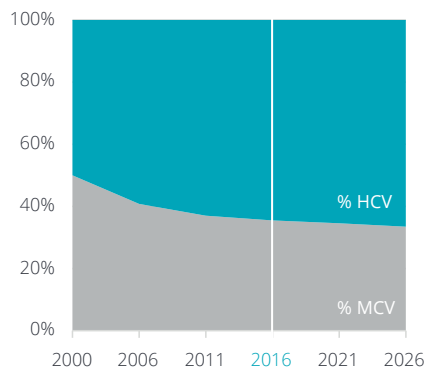


Figure 16: Global commercial vehicles segment shares: Decline of MCV share to 33%. Source: Deloitte analysis

The sub-segment of MCVs equipped with equipment for special applications (sewer cleaning, garbage disposal, concrete mixers, etc.) is excluded from the aforementioned trends. Deloitte currently estimates that this market accounts for 40% of the MCV segment.

In general terms, the European transport market is also likely to see increased use of rail networks, which will change the intermodal split to the detriment of the truck. The more favorable environmental balance of the railroad is drawing much volume away from the truck to the train. For example, the Gotthard Base Tunnel was opened in 2016 to increase freight capacity on the Rotterdam-Basel-Genoa corridor, and to shift freight from the road to the rail due to increasing environmental pollution. Intercontinental train connections are also increasing in appeal. In this case, the frequency of connections along the nearly 10,000 km long route from China to Germany is currently being increased. At 16 days<sup>23</sup>, it is significantly faster than any sea-going vessel. The European market is regarded as a pioneer in terms of commercial vehicle sector trends.

<sup>21</sup> On exhaust gas regulation: see green sticker in Germany

<sup>22</sup> On access restrictions: see in China and Europe (London) in general; planned in many other metropolitan regions

<sup>23</sup> ThyssenKrupp press release: "Test freight train from China arrived in Germany"

# Trend 3: Larger fleets and sharing concepts

Increasing numbers of major customers demand new sales models

Despite increasing demand for transport services, fleet operators must protect their margins if they wish to continue to be successful. One-man operations cannot compete with large fleets in the face of brutal competition, even with the highest levels of personal commitment. Greater expectations of freight forwarders in terms of availability, capacity, and the frequency of route operation can rarely be met by small companies, while large fleet operators can exploit their advantages under these market conditions.

This is the reason for increasing concentration in the freight forwarding and logistics industry worldwide. Over the past ten years, an annual average of about 50 take-overs have been observed in the transport sector<sup>24</sup>. This trend will continue due to

sustained pressure on margins. In Germany, the largest logistics market in Europe, 25% of fleet operators now have more than 100 vehicles. This proportion will increase to 35% and take large market shares from small and micro-enterprises.

„Concentration and rising fleet sizes are expected in the next 10 years, especially for long-distance haulage“<sup>25</sup>

Share of customer segment in total sales [%]

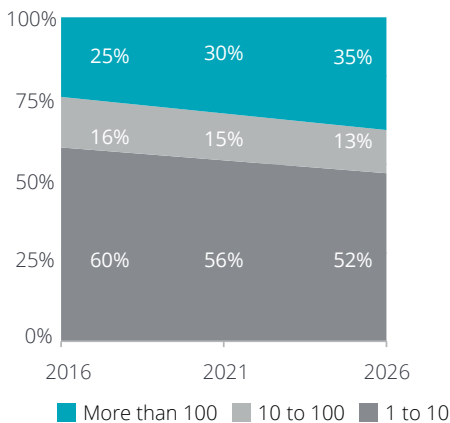


Figure 17: Analysis of fleet customer structure in the German commercial vehicle market, by operator fleet size (Source: Deloitte analysis)

<sup>24</sup> Dealogic and Deloitte Analysis, as well as article in Centumcapital "Transport and Logistics Industry Consolidates"

<sup>25</sup> Deloitte Global Truck Survey

## Respond to customers' greater market power with new sales structures

It might appear at first that larger customers are gaining negotiating power over OEMs. But the trend also brings new possibilities with it:

OEMs must switch their focus toward providing direct support to major customers and integrated multichannel management in order to deal with the changes in customer structure. This, of course, has an impact on the dealers, who tend to only take care of service where major customers are concerned. OEMs must adapt incentive systems for dealers accordingly.

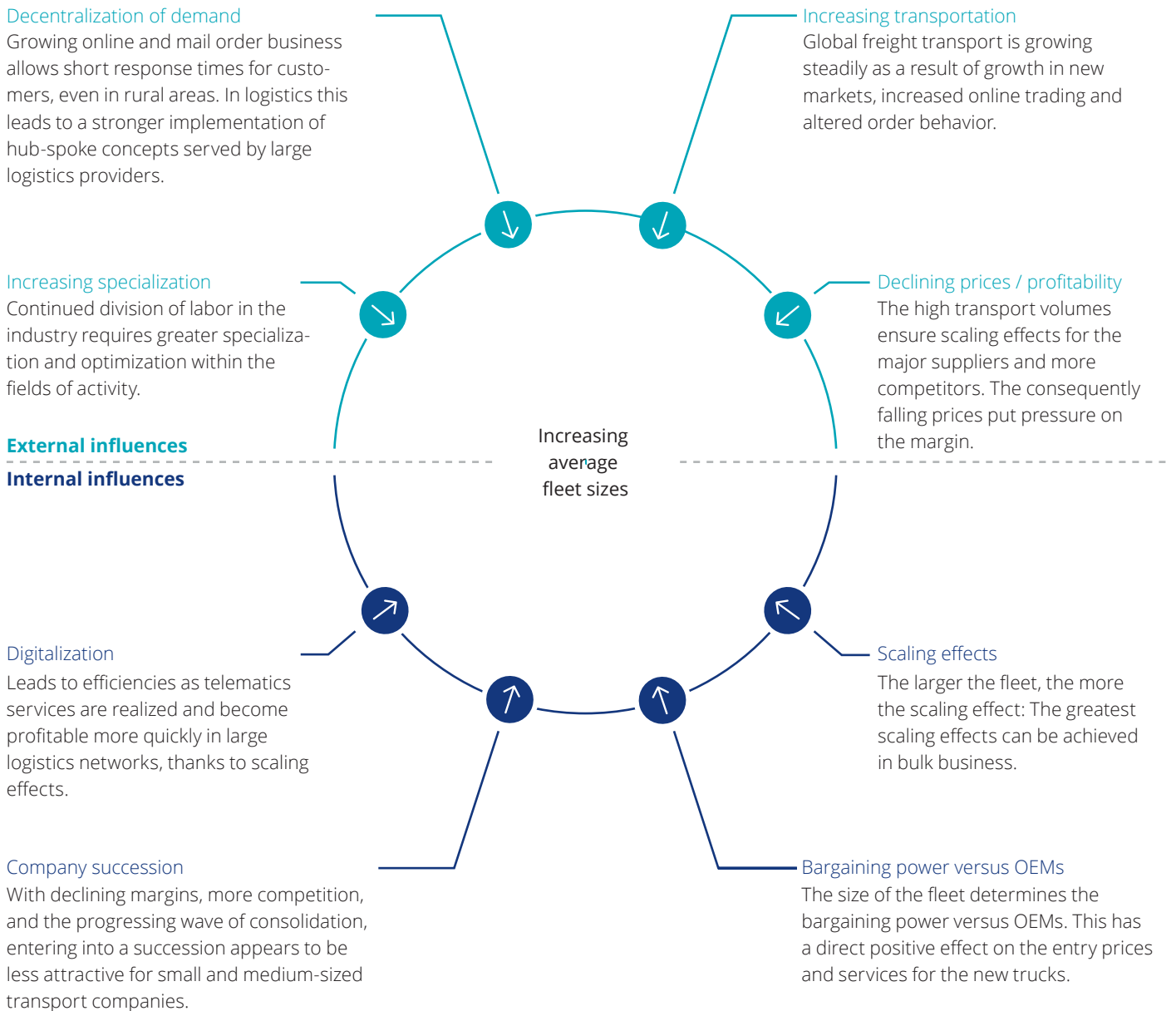
Alongside changes in distribution structure and adaptation of dealer networks, the popularity of the sharing economy will not leave the transport industry untouched. Indeed, it will offer new opportunities. Rental and sharing models, which help logistics companies avoid unutilized capacities, will initially reduce the number of trucks sold. However, if OEMs have the right business models to enable them to offer their own

trucks to rent or share, they, too, stand to benefit from this emerging market. They could easily offer such capacities. New technologies will simplify the billing process and minimize transaction costs for the completion of such a rental transaction. Manufacturers could also include the glut of used commercial vehicles in such offers.

Flexible rental models expand OEMs' service portfolios. "Pay-per-minute" or "book guaranteed capacity" offerings are a step in the direction of service-focused suppliers of capacity solutions for OEMs.

„In the opinion of experts, the breakthrough of pay-per-use rental models in the distribution transport market can be expected within the next six years"<sup>26</sup>

<sup>26</sup> Deloitte Global Truck Survey



# Trend 4: Alternative drive systems

Savings in operating cost increase the appeal of alternative drive systems for certain applications

Electromobility is on the rise in the automotive industry. In just the same way, the commercial vehicle industry is gaining its first experience with alternative drive systems. But how far are alternative drive systems from a breakthrough? An important distinction to the passenger car market in this context is that in the logistics market, purchasing decisions are almost exclusively

rational and based solely on economic considerations. Germany, as the largest European truck market, can be regarded as representative in respect of the penetration of alternative drive systems. Around 32,500 trucks (roughly 1%) with alternative drive systems were registered in Germany as of January 2016.

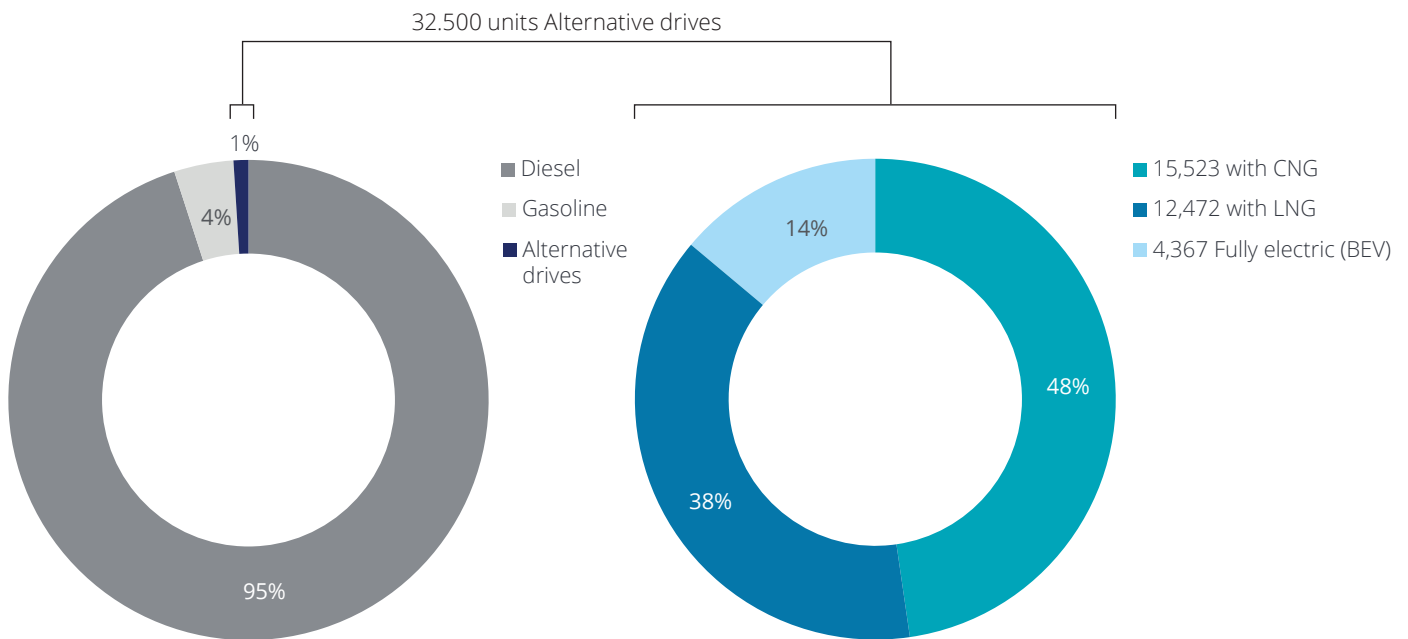


Figure 18: Number of trucks registered in Germany as of January 1, 2016: total and proportion of alternative drive systems  
Source: Deloitte Analysis

Although the transport industry has traditionally drawn a very tight line with its budget calculations, investment in alternative drive systems can yield significant economic benefits. This is in addition to the environmental benefits, should fleet operators demand sustainable, green logistics. Alternative drive systems are also becoming increasingly efficient and

can reduce the overall cost of the transport economy with the help of cheaper fuels. Offering alternative drive systems could become an attractive business area.

Which type of drive will have the greatest potential in ten years' time? To answer this question for this study, Deloitte researched and assessed the most important factors:

battery technology, operating and acquisition costs. The results for medium and heavy trucks are considered separately due to the vastly different range of applications. Figure 19 depicts our hypotheses.

eMobility model	2016		Changes until 2026	
	MCV	HCV	MCV	HCV
Acquisition cost (Additional costs compared to diesel-powered vehicles)				
BEV	60 kEUR	130 kEUR	-20%	
PHEV	16 kEUR	24 kEUR	-90%	
LNG	23 kEUR	33 kEUR	-61%	
CNG	14 kEUR	25 kEUR	-61%	
Operating costs				
Fuel price (Diesel)	1.05 EUR/l		+30%	
Electricity price	0.15 EUR/kWh		+13%	
CNG price	0.84 EUR/kg		+14%	
LNG price	1,26 EUR/kg		+6%	
Battery cost and capacity				
Battery costs	220 EUR/kWh		-53%	
BEV capacity	227 kWh	321 kWh	+70%	+28%

Figure 19: The Deloitte eMobility model's assumptions:

PHEV: Plug-in-Hybrid Electric Vehicle

BEV: Battery Electric Vehicle

LNG/CNG: Liquid/Compressed Natural Gas

ICE: Internal Combustion Engine

Source: Deloitte Analysis



# Medium-sized commercial vehicles: One fifth of new vehicles will be powered by hybrid or fully electric drives by 2026

Between 2016 and 2026, the proportion of alternative drive systems among annual sales in the MCV segment will increase from about 1% in 2016 to just over 20% in 2026. Cumulatively, around 14,500 MCVs with alternative drives will be sold between 2016 and 2026.

Hybrid vehicles will gain greater appeal and will expand their market share from today's 1% to just under 14% by 2026. The PHEV (plug-in hybrid) generates the greatest savings potential in distribution, because energy recovery when braking can play a particularly significant role here, where there is a greater share of stop-and-go usage scenarios than in long-distance transport.

The costs of batteries for fully electric trucks will be halved by 2026. This corresponds to a reduction from about 220 euros/kWh at present to 104 euros/kWh

in 2026. At the same time, the capacity of batteries in relation to their weight will improve by 70% over the same period. Factors driving the sale of fully electric and hybrid vehicles include more strictly regulated emission and noise limits in urban areas and advancements in battery technology (better capacity, lower weight, lower production costs).

BEVs (battery electric vehicles) will only assume a 5% market share by 2026, because storage capacities (per kilogram of battery weight) are still too low and the additional price is too high. Low consumption cannot compensate for this. Compared with other European countries, electricity prices in Germany are relatively high, which reduces the advantage of using BEVs.

## Total market in 2026

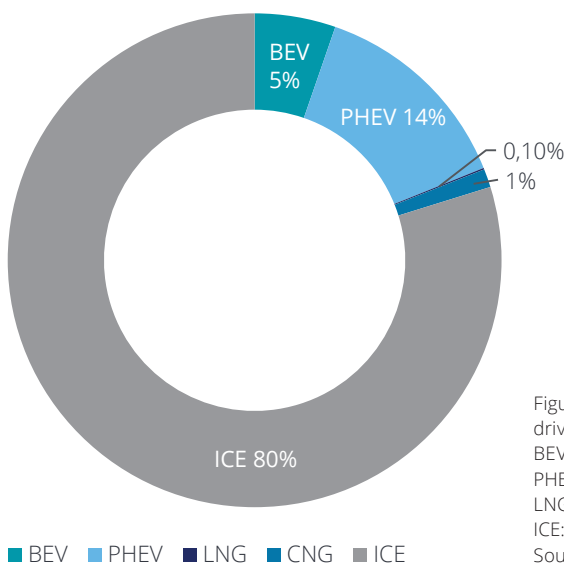


Figure 20: Development of alternate drivetrain shares at MCV sales in 2026  
 BEV: Battery Electric Vehicle  
 PHEV: Plug-in-Hybrid Electric Vehicle  
 LNG & CNG: Liquid & Compressed Natural Gas  
 ICE: Internal Combustion Engine  
 Source: Deloitte Analysis

Natural gas-powered commercial vehicles will continue to be of no great relevance to the MCV segment. Additional purchase or conversion costs cannot be amortized, or only after a very long time, due to the lower annual mileage compared to HCVs. The price of natural gas also plays a significant role as an uncertainty factor in business case analyses, which is why the market share will settle at less than 2% by 2026.

alternative drive systems. This is because 40% of vehicles have special functions, for example they are garbage trucks, crane trucks, concrete mixers, or fire trucks, all of which require power to operate the superstructures in quantities that cannot yet be provided by alternative drive systems. If the quota were to be adjusted to exclude such vehicles, the proportion of alternative drive systems would be 30%.

In examining the reported market shares, it must be considered that only around 60% of the MCV market is eligible for

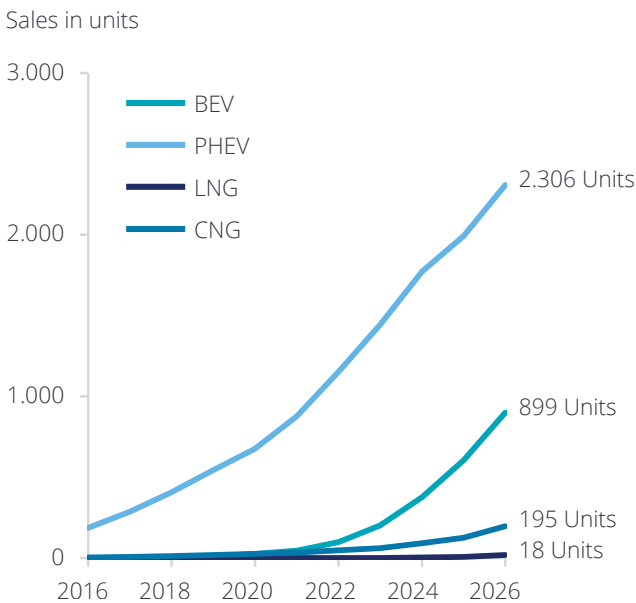


Figure 21: MCV sales with alternative drivetrains per year  
 BEV: Battery Electric Vehicle  
 PHEV: Plugin-Hybrid Electric Vehicle  
 LNG & CNG: Liquid & Compressed Natural Gas  
 ICE: Internal Combustion Engine  
 Quelle: Deloitte Analysis

# HCVs: only natural gas drives offer potential until 2026

In the HCV segment, only around 10% of new vehicles will have alternative drive systems by 2026. The charging infrastructure and battery capacities will not have developed sufficiently for use on long-distant routes – where HCVs are typically used – over the next ten years, either.

Given the high proportion of fuel costs in the total cost of ownership, consumption advantages are decisive for HCVs. Natural gas-powered vehicles, which cost around 30,000 euros more to purchase, pay for themselves much faster thanks to their high mileage in long-distance transport and consumption advantages of up to 40% compared to diesel engines.

A distinction must be drawn between CNG (Compressed Natural Gas) and LNG (Liquefied Natural Gas). This is because the energy storage density of LNG is higher than CNG by a factor of three. CNG drives are therefore often used in short-distance/medium-distance traffic to avoid the range limitations CNG otherwise poses.

LNG clearly has the advantage in long-distance transport. A tankful of CNG will take a truck 450 km. By contrast, a tankful of LNG<sup>27</sup> will usually achieve a range of 700-750 km. LNG containers are also faster to refuel. However, the use of LNG is limited by the lack of a nationwide network of filling stations. At present, these are mainly found in existing liquefied petroleum gas infrastructures such as ports or refineries.

## Total market in 2026

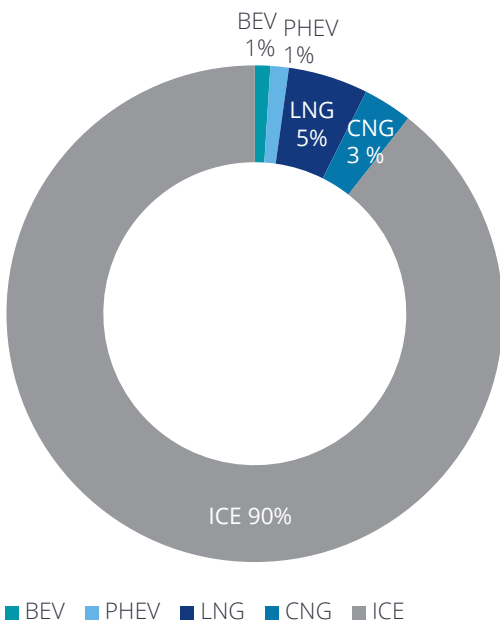


Figure 22: Development of alternate drivetrain shares at HCV sales in 2026  
 BEV: Battery Electric Vehicle  
 PHEV: Plugin-Hybrid Electric Vehicle  
 Source: Deloitte Analysis

<sup>27</sup> On CNG: Overview commercial vehicles - trucks and buses with CNG and LNG (pdf from [www.bdew.de](http://www.bdew.de))  
 On LNG: Documentation to expert workshop on LNG and CNG trucks (pdf from [www.bmvi.de](http://www.bmvi.de))

The continued success of natural gas technology critically depends on the expansion of the supply network, sustained energy tax reductions, and on further advancements in efficiency, performance, and range. Provided conditions remain favorable, gas-powered vehicles can be expected to account for almost 80% of alternative-drive heavy commercial vehicles in Germany by 2026.

Hybrid vehicles are an interesting option and can generate significant fuel savings by supporting an electric motor under

peak load, although this support is taken advantage of too infrequently in long-distance transport to justify the additional fixed costs of the second drive train. With such disadvantages, the market potential remains very low until 2026.

Battery-only electric commercial vehicles are not economical in long-distance transport, even with advanced battery technology. Manufacturers have presented prototypes, but the batteries used greatly limit the charging capacity and long charging cycles restrict continuous operation of the HCV.

Sales in units

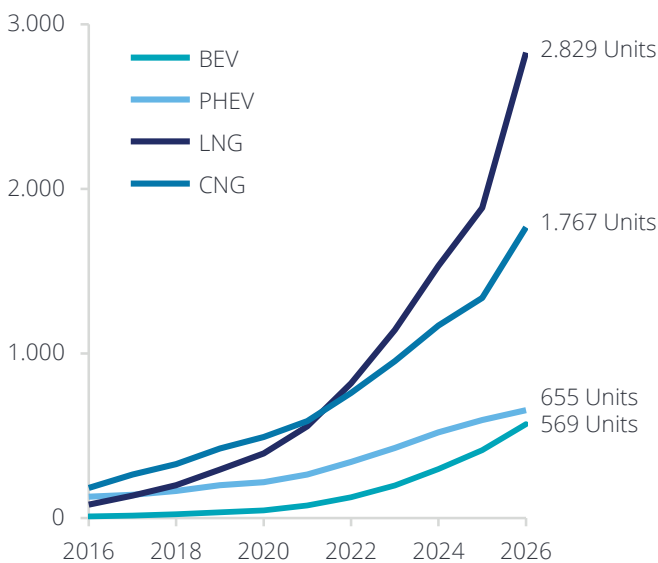


Figure 23: HCV sales with alternative drivetrains per year  
 BEV: Battery Electric Vehicle  
 PHEV: Plug-in-Hybrid Electric Vehicle  
 LNG & CNG: Liquid & Compressed Natural Gas  
 Source: Deloitte Analysis

# Market outlook:

## Growth in BRIC countries – stagnation in the Triad markets

The impact of the trends described in this study strongly depends on the specific market structures in the respective regions. A differentiated analysis of the Triad markets and BRIC countries therefore offers useful insights.

The BRIC countries will develop very differently in the period from 2016 to 2026.

Strong 11% is projected for the Russian truck market, although this is subject to political and economic conditions. Consistent growth is anticipated in Brazil, mainly in the HCV segment. By contrast, India's growth rates will be much weaker than in the past few years. The Chinese market is expected to stagnate as overall market saturation has been reached.

2016-2026 growth in % (CAGR)

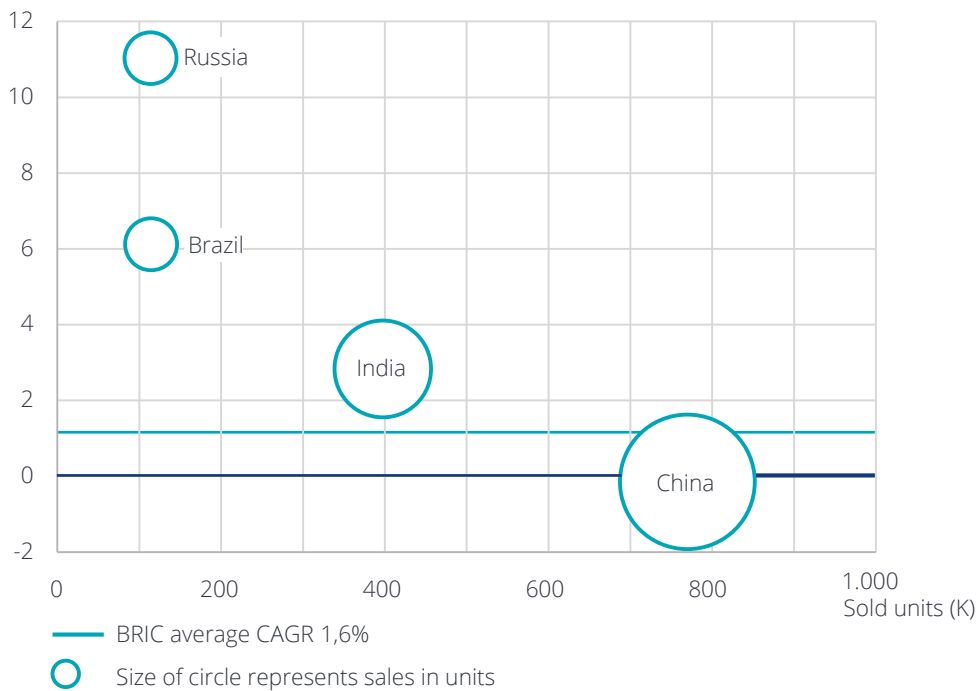


Figure 24: Development CAGR (between 2016-2026) and sales in 2026 at BRIC countries  
Source: IHS, Deloitte Analysis

## Brazil: an end to volatility, and low growth rates at a stable level

Brazil is expected to achieve relatively stable growth of 6.1 % per annum in the commercial vehicle market over the next ten years, with an emphasis on the heavy truck segment.<sup>28</sup>

The economic uncertainty of the past few years and the political crisis that accompanied high inflation led to investors turning to real assets, including trucks. The demand for trucks in Brazil is largely determined by large transport companies, whose purchasing power strongly correlates to overall economic performance. Most commercial vehicles are sold to small and micro enterprises after an average service life of six years, who then go on to use the vehicles for another ten years.

The stabilization of the overall demand is mainly attributable to a new and long-term-focused economic policy which will be confirmed at the next elections. At this point, the first packages of measures have been launched, which include tax relief and purchase incentives for trucks. The intensification of MERCOSUR trade relations, in particular with Argentina, is also planned.

Infrastructure measures such as investment in the expansion of the expressway system will increase demand for heavy trucks, since the absence of an extensive railroad system means the bulk of Brazilian freight traffic is handled by trucks. Annual growth of 7.6% is projected for the heavy truck segment until 2026, while growth of 2.5% per annum is expected in the MCV segment.

The introduction of an equivalent to the Euro 6 standard<sup>29</sup> is planned for 2023. Anticipatory effects are therefore expected across all segments in the preceding years, followed by a sales slump in 2023. However, sales will quickly recover thereafter.

Growth risks result from great sensitivity to changes in raw materials prices and dependence on exports, especially in relation to South America and China. The rapid introduction of alternative drive technologies is largely impeded by extensive state diesel subsidies. Environmental protection programs involving the use of ethanol or hydrogen-based drives are being promoted in urban centers, although these are limited to buses and public transport.

<sup>28</sup> IHS, Deloitte Analysis

<sup>29</sup> European exhaust gas standard

## Russia: catch-up effects result in double-digit growth – uncertainty due to political risks

Only a few years ago, Russia seemed to be on its way to becoming Europe’s largest truck market. Instead, political crises and the decline in the price of oil, on which Russia heavily depends, led to a slump.

The Russian market is expected to experience an economic recovery and growing demand for trucks, with annual growth rates of 11%, between 2016 - 2026. Catch-up effects after years in which sanctions and low oil prices led to low economic growth will ensure significantly stronger growth in the period from 2017 to 2020.

The heavy truck segment, which is more dependent on cyclical effects, is expected to experience growth of +12.2% p.a. until 2026, significantly higher compared to the medium segment at +8.3% p.a.<sup>30</sup>

Russian manufacturers are still strongly dependent on domestic demand, which is dampened by the economic consequences of the Ukraine conflict. At the same time, lower oil prices, and Russia’s dependence on them, mean that the sales figures of 2011 will only be achieved again after 2025.

Russian commercial vehicle manufacturers, who have so far struggled to meet Western emission standards, are responding to this with increased export efforts in regions with low emission standards<sup>31</sup> (North Africa, Middle East, Asia, or South America).

At the same time, they are also striving to maintain competitiveness in the global commercial vehicle market. The Euro 5 was introduced back in 2016, while the introduction of Euro 6 is planned for 2018. That will lead to anticipatory effects in 2017 and a slump in demand in 2018.

The Russian market is expected to become more attractive for Asian and European manufacturers in the future, and it will also see greater competition. European manufacturers are concentrating on offering semi-trailer tractor units. However, protectionist measures are planned with the intent of protecting domestic manufacturers.

Nevertheless, it is expected that Chinese manufacturers, for example, will increase their market share from one to five percent.

No stimulus is expected in the area of alternative drive systems. At present, there are no plans for measures modernize of infrastructure that could make it easier to capitalize on the great potential for natural gas drives in Russia (vast distances, high proportion of HCVs, and easy access to natural gas).

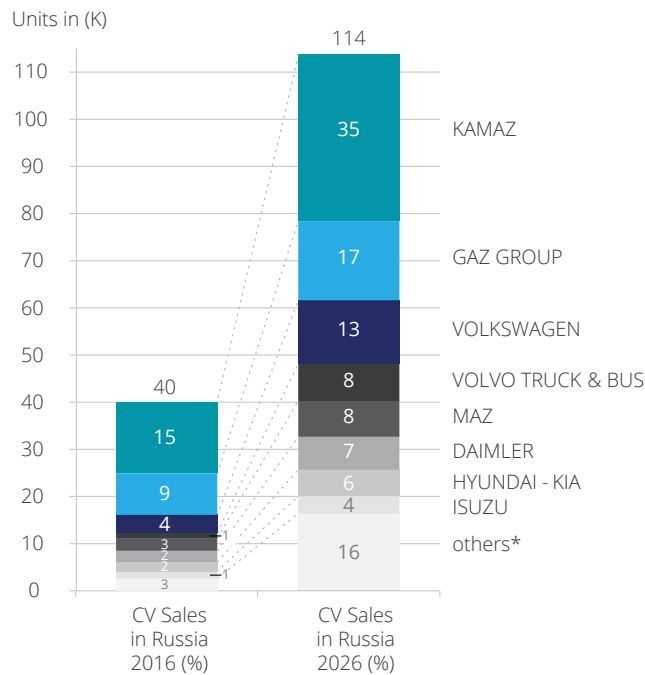


Figure 25: Russian sales of OEMs;  
 \*others = PACCAR, WEICHAI POWER, TOYOTA, CNH INDUSTRIAL, TATA, FORD, CNHTC, BAIC, FAW, DONGFENG, AVTOKRAZ, CAMC, TATRA, RUCKS, BEIBEN TRUCK, JAC, TONAR, NAVISTAR  
 Source: IHS, Deloitte Analysis

<sup>30</sup> IHS, Deloitte Analysis  
<sup>31</sup> Euro 3- and 4- compliant trucks

## India: low growth rates combined with export opportunities

Significantly lower growth rates have been predicted for the Indian truck market compared to past figures. Annual growth of 3.7% is expected between 2016 and 2021, while diminished growth expected in the period up to 2026 (2.0% CAGR).<sup>32</sup>

The Indian market for heavy and medium commercial vehicles is mostly consolidated. The three largest manufacturers dominated more than 85% of total sales in 2016. However, the high level of consolidation and chances of sufficient profitability offer opportunities to new manufacturers. For this reason, new entrants to the market are anticipated – first with rental business models, and more competition expected across the board in the long run.<sup>33</sup>

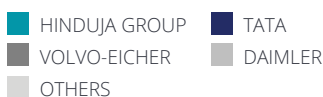
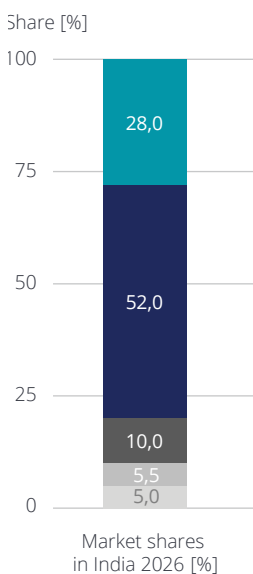


Figure 26: OEM market shares in Indian market  
Source: IHS, Deloitte Analysis

The transport infrastructure is insufficiently developed in comparison to other markets. Rugged, simple trucks dominate the road. However, the accumulation of freight via on-line portals will pick up speed and improve transport efficiency. On the other hand, there is hesitation in the growth of telematics services in the Indian truck market. The high number of very small transport companies is ideally suited to the structure of the manufacturing industry, which supplies small quantities to many recipients. Telematics services will therefore not be an issue in the next ten years.

The state also plays an important role in the Indian commercial vehicle market. The state-run “Make in India” program, launched in 2014, is designed to support commercial vehicle sales and offers companies incentives to produce in India. The aim is to develop rural areas and improve infrastructure, which is expected to lead to increased transport needs.

Growth will also be positively influenced by planned state regulations in the areas of safety, emissions, and fuel efficiency. In line with this, the Indian equivalent to the Euro 4 standard is planned for introduction in April 2017. This will lead to earlier replacement

of aging fleets and anticipatory effects. The Bharat Stage VI emission standard is planned for 2020, which will lead to a rise in truck prices and shrink the market to a low in 2023. After 2024, however, vehicles bought in the middle of the 2010s will require replacement.<sup>34</sup> However, implementation may be delayed if it proves impossible to guarantee the required high quality of diesel across the country.

Further, the countrywide introduction of a new system of uniform indirect taxation<sup>35</sup> to replace existing taxation at the borders of the federal states is imminent. That will significantly reduce domestic barriers, distinctly increase the competitiveness of fleet operators compared to rail transport, and lead to stronger growth in long-distance transport.

Looking at prospects for the Indian market, it can be concluded that premium manufacturers are unlikely to lose their niche position, owing to the comparatively underdeveloped infrastructure. Low labor costs and relatively well-trained employees will see India’s status as an exporter grow in the years to come. The country could also be interesting as a production location for truck manufacturers.

<sup>32</sup> IHS, Deloitte Analysis

<sup>33/34</sup> Deloitte expert interview

<sup>35</sup> Combining a large part of existing taxes



## China: transition to a developed commercial vehicle market translates to low growth

The Chinese commercial vehicle market will become saturated in the next few years and stagnate by 2026 ( 0.2% p.a.). Slight growth is expected up to 2021, which will turn into a market decline by 2026. This anticipated decline is the result of a reduction in globalization and world trade.<sup>36</sup>

The Chinese commercial vehicle market will become saturated in the next few years and stagnate by 2026 ( 0.2% p.a.). Slight growth is expected up to 2021, which will turn into a market decline by 2026. This anticipated decline is the result of a reduction in globalization and world 2026.<sup>37</sup> The planned introduction of a new exhaust gas regulation, scheduled for mid-2018, will lead to anti-

patory effects in the short term, and thereafter lead to negative sales performance until 2026.

Aside from the saturation of the market, the performance of the truck market in China is also affected by economic policy measures. The long-term aim is to transform the industry so it is less export-driven and more determined by domestic demand. This will be reflected in reduced economic activity and a corresponding fall in demand for trucks.

At the same time, the Chinese transport market is currently dominated by micro-enterprises and characterized by low efficiency and capacity utilization. A consolidation of the market and a condensation to form larger fleets is expected in the longer term. This in turn leads to greater efficiency and capacity utilization, resulting in lower demand for commercial vehicles.

On the other hand, there are already significant overcapacities in Chinese truck production. A reduction in these capacities is not to be expected. It is possible that many vehicles will be placed on the domestic market at low prices, or exported.

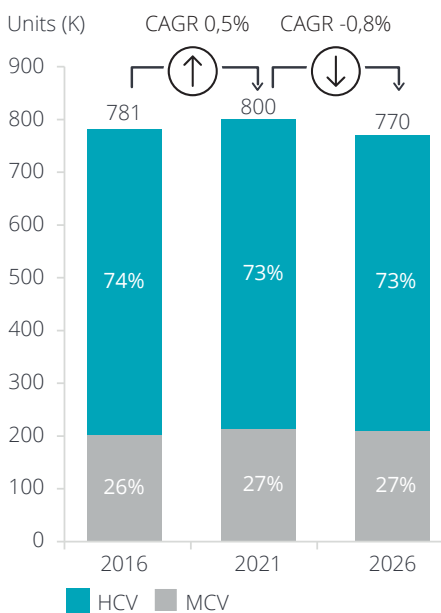


Figure 27: Development of commercial vehicles segments in the Chinese market  
Source: IHS, Deloitte Analysis

<sup>36</sup> Deloitte report "State of the Economy"

<sup>37</sup> IHS, Deloitte Analysis

## TRIAD: sophisticated markets must adapt to lower sales figures

Most of the Triad markets are dominated by high competitive pressure, a high proportion of large truck fleets, and good road and cellphone infrastructure. This means that on the one hand there is a need for efficiency improvements and on the other also hand the opportunity to achieve these with telematics solutions. This will lead to declining demand for commercial vehicles in most markets.

The largest market in the Triad, the United States, is projected to experience an annual decline in sales of 2.1% over the next ten years. Simultaneously, the United States offers the most diverse range of possible telematics applications. Contributory factors include the regulatory framework and the many large fleet networks. Despite robust GDP growth, this will lead to a drop in sales (1.5% CAGR) for the NAFTA<sup>38</sup> region. The Canadian market is capable of maintaining its current volume. Meanwhile, Mexico is gaining transport volume through the relocation of production facilities into the country and requires greater transport capacities.

A moderate decline in demand for commercial vehicles is also expected in European markets, averaging 0.2% per annum until 2026. France owes its stable sales volume to the great number of large fleets and long transport distances (large fleet hub). At the same time, significant growth is expected in the economies strongly affected by the

economic crisis, such as Spain, Italy, Ireland, and Greece, thanks to catch-up effects. Developments across Eastern Europe are heavily dependent on Russia's performance. Should the political situation stabilize, these markets stand to benefit from the expected growth.

„Seventy percent of the experts surveyed expect a decline in growth rates in the triad markets up to 2026“<sup>39</sup>

In the Asian Triad markets, only Taiwan can benefit from China's future growth. Japan on the other hand will experience the strongest market decline (30%) across the Triad is impending, and sales figures will shrink by 3.5% per year.

Overall economic stagnation, weak consumer behavior, and a declining propensity to invest due to the aging population will have a significant impact on the commercial vehicle market. This will lead to a market decline of about 28,500 units in highly developed countries in Asia until 2026.<sup>40</sup>

<sup>38</sup> North American Free Trade Agreement

<sup>39</sup> Deloitte Expert Survey

<sup>40</sup> IHS, Deloitte Analysis

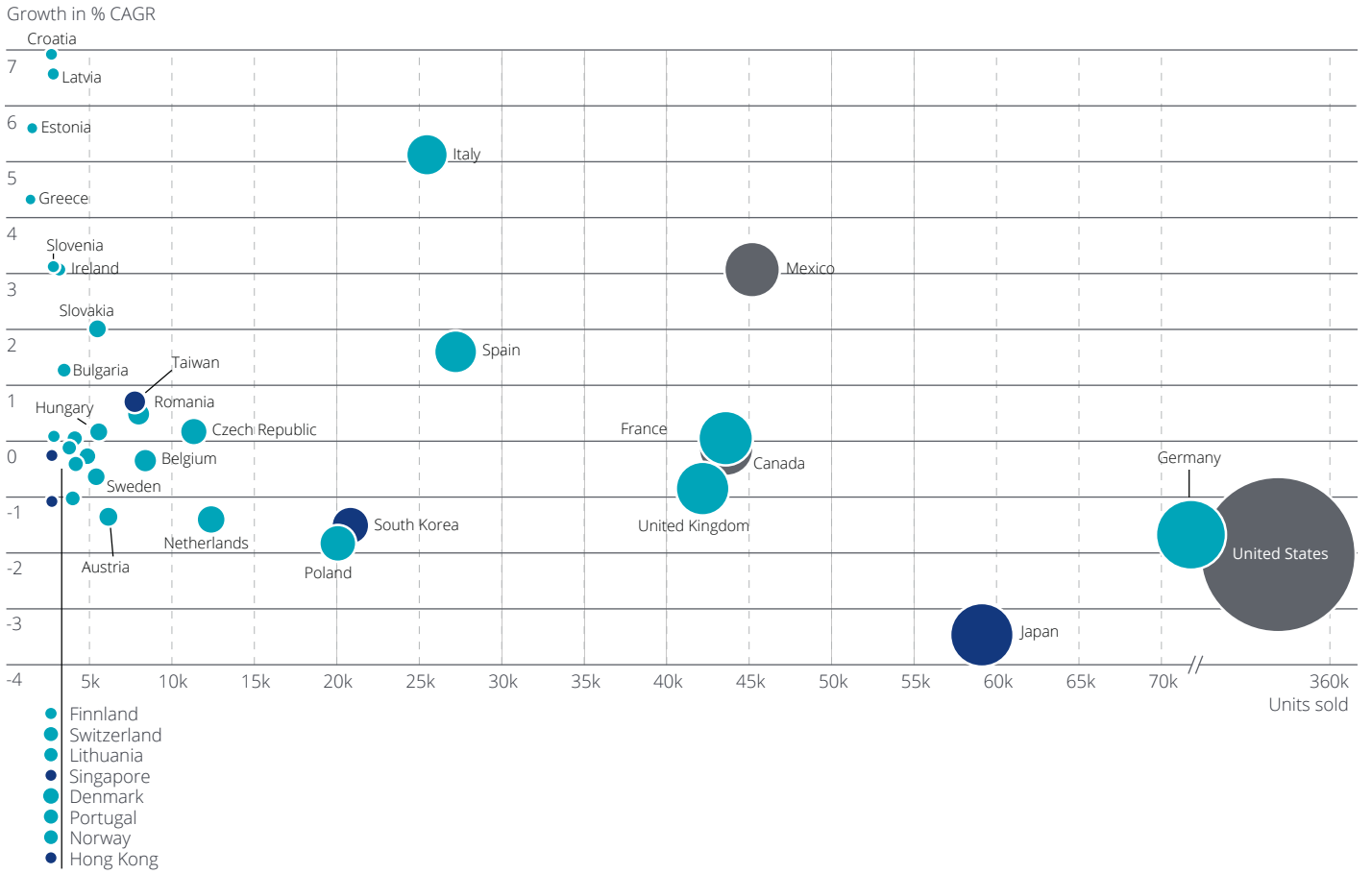


Figure 28: Development of commercial vehicles segments in the Chinese market  
 Source: IHS, Deloitte Analysis

Conclusion and  
recommendations

# Sales stagnating

Innovative service offerings and software solutions offer new potential

The trends described will transform the truck market and will have different effects in the world's different economies. The high-volume Triad markets have reached high saturation. Combined with increases in efficiency as a result of telematics services, this will lead to a decline in sales in these markets. In the BRIC countries, the progressive modernization of road networks and infrastructure will open new sales potential through additional telematics services. This will supplement commercial vehicle sales, as is already the case in the Triad.

To secure and expand their success in this environment, commercial vehicle manufacturers should take action across four areas.

As commercial vehicles go digital and become connected, growth will slow down and sales figures may even decline. Yet these also open up new revenue streams if the manufacturers themselves become active in these fields and expand their classic hardware business into telematics solutions.

For a 'basic' level of this new positioning, it may be sufficient for an OEM to simply integrate telematics systems into the vehicles and provide interfaces to the outside. The integration of ecosystems and telematics services into one's own product portfolio is

not an absolute must, but compatibility with market-leading systems must be ensured. However, the market for telematics hardware is expected to stagnate at around two billion euros as systems become increasingly cost-effective. On the other hand, sales of software in the truck market will multiply to around 8 billion Euros. To succeed in this field, manufacturers must quickly build up considerable additional software competence. If they do not bring new offerings to the market in the next two to three years, new suppliers could deeper penetrate this market for truck digitalization.

Vehicle manufacturers' **customer structure** is shifting towards larger customers with correspondingly increased bargaining power. The owner-driver model will increasingly disappear, at least in the developed markets. However, large customers will increasingly demand direct sales. Manufacturers must speak to this need and adapt their dealer networks accordingly. Dealers will only take care of services instead of sales for large customers in future, for which OEMs will need to develop suitable incentive models.

**Sharing concepts** are also likely to become an established part of the logistics industry, in order to make better use of capacity. Here, too, increased efficiency

will have a negative impact on truck sales. To compensate for this, OEMs can expand their rental business and profit from the new market. Manufacturers could also include the glut of used commercial vehicles in such offers. Such models could also be used to underline their position as a service provider.

The significance of **alternative drive systems** will also increase. Emission, noise, and access regulations in developed markets will accelerate and promote this trend. The expansion of the OEM product portfolio to include alternative drive systems offers sales opportunities, provided they take account of the application scenarios relevant to distribution and long-distance transport.

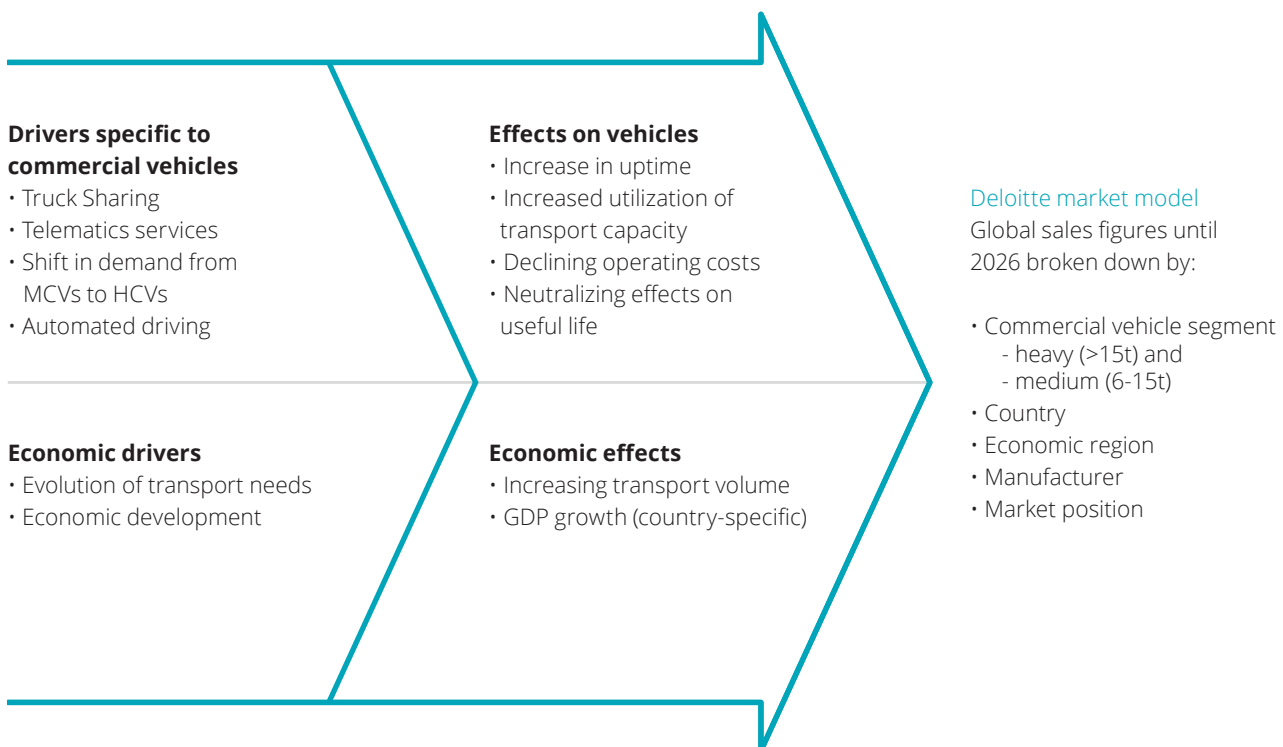
# Appendix

A Methodology  
B Country Overview

## A Methodology

The Deloitte Truck Study 2016 offers a perspective on future developments in the global commercial vehicle markets and explores the trends and technologies which will influence them over the next ten years.

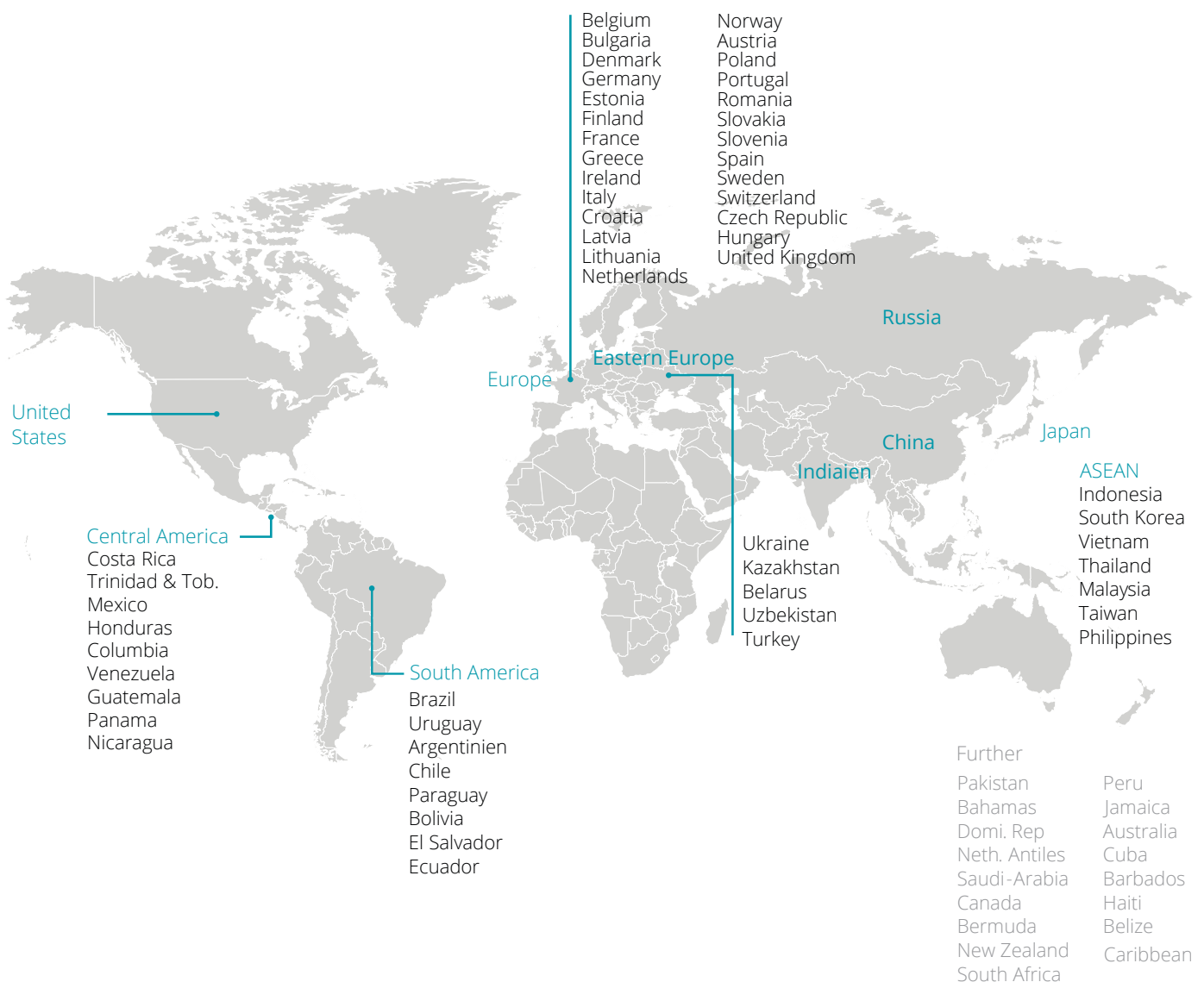
The Deloitte market model aggregates economic trends and trends specific to the commercial vehicle sector into a prediction of future changes in market volume. This model maps the impact of telematics services, urban logistics concepts and larger fleets and sharing concepts on the demand for commercial vehicles.



The results of this model provided the basis for discussion in expert interviews and subsequent analyses.

As part of this study, interviews were conducted with 50 sector and industry experts, as well as market analysts from the various regions. The study results were also supplemented by an expert survey (online).

## B Country overview



**Triade:**

NAFTA (USA, Canada, Mexico)

EU (European Union)

\*\* Developed Asia: Hong Kong, Singapore, Japan, Taiwan, South Korea



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