

Next Generation Mobility -



WEDNESDAY



AADJVXU1

A20

22/09/2021

#146

COMPANIES HOUSE

Annual Report 2020

These financial statements of the parent
ZF AG need to be attached to the
financial statements of:

LucasVarity

Company No 03257774

The disclosure under section 479c Page 169

Reference to LucasVarity Page 164



€32,511 million
Sales



76%
Cars and light
commercial vehicles <6t



€2,516 million
Expenditure on research
and development



15%
Commercial vehicles >6t



153,522
Employees



9%
Construction and agricultural
machinery, marine craft,
aircraft and wind power

Key Figures

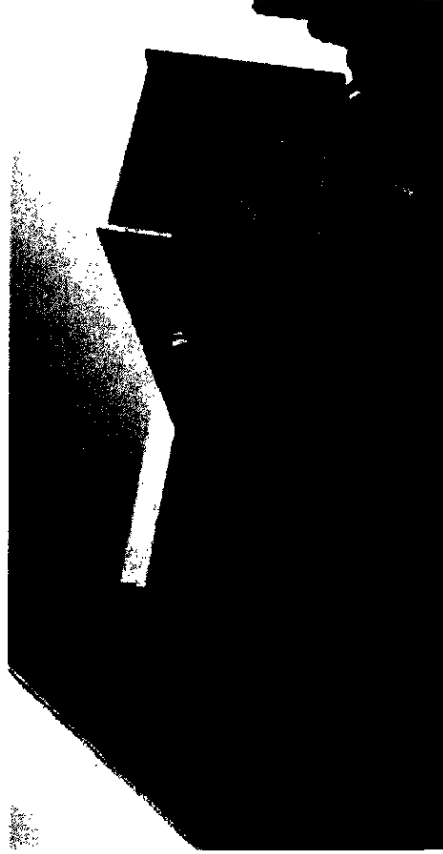
	2020	2019
Sales	€32,511 million	€36,518 million
Adjusted EBIT Adjusted EBIT margin	€1,047 million 3.2%	€1,503 million 4.1%
Net profit or loss before tax in % of sales	€-745 million -2.3%	€540 million 1.5%
Net profit or loss after tax	€-741 million	€400 million
Adjusted free cash flow ¹⁾	€994 million	€803 million
Investment in property, plant and equipment	€1,441 million	€1,879 million
Equity ratio (Dec. 31)	12.1%	22.0%
Employees ²⁾	153,522	147,797

¹⁾ Cash flow from operating activities less cash flow from investing activities, adjusted for M&A activities and securities.
²⁾ Direct and indirect employees without temporary workers, apprentices and vacation workers (as of Dec. 31)

Sales Development by Region

46%	Europe
26%	North America
25%	Asia-Pacific incl. India
2%	South America
1%	Africa





Digitalization is crucial to transformation



Company Profile

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. With its comprehensive technology portfolio, the company offers integrated solutions for established vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. ZF continually enhances its systems in the areas of digital connectivity and automation in order to allow vehicles to see, think and act.

The company has a global workforce of 153,500 with 271 locations in 42 countries. In 2020, ZF achieved sales of €32.6 billion. Founded in 1915, ZF has evolved from a supplier specializing in

aviation technology to a global mobility technology company. With the acquisition of WABCO, the company significantly increased its competence, especially in the technology field for heavy commercial vehicles, buses and trailers. Last year, ZF spent more than seven percent of its sales on research and development.

With its innovative portfolio, ZF is focusing on the "Next Generation Mobility" for passenger cars, commercial vehicles and industrial applications. Group shareholders include the Zeppelin Foundation, administered by the City of Friedrichshafen, holding 93.8 percent of shares, and the Dr. Jürgen and Irmgard Ulderup Foundation, Lemförde, with 6.2 percent.

Contents

02	Key Figures	83	Opportunities and Risks	
03	Company Profile	93	Forecast Report	
04	Contents			
05	Magazine for Fiscal Year	96	Consolidated Financial Statements	
05	2020: Next Generation Mobility – Accelerating the Transformation. Spotlight: The Perfect Match	97	Consolidated Statement of Profit or Loss	
11	Transformation: Technology. Hands on.	98	Consolidated Statement of Comprehensive Income	
15	Spotlight: Software 4 ZF	99	Consolidated Statement of Financial Position	
32	Transformation: Sustainability.	100	Consolidated Statement of Cash Flows	
36	Responsibility.	101	Consolidated Statement of Changes in Equity	
42	Transformation: Work. Agility.	102	Notes to the Consolidated Financial Statements	
50	Management	171	Further Information	
51	Board of Management Letter	172	Independent Auditor's Report	
55	Management Bodies	175	Imprint	
57	Our Strategy			
60	Report of the Supervisory Board			
63	Group Management Report			
64	Basic Principles of the ZF Group			
74	Economic Report			

Discover additional content and further practical functions – use the following function fields in this Annual Report to do so.



Acceleration

Transformation

Video

Click on the respective headline to access a chapter. If you click on the house icon, you will get back to the content page.

2020: Next Generation Mobility the Transformation



“Staying on Course in Difficult Times”

CEO Wolf-Henning Scheider explains in an interview why ZF believes that the strategy has been confirmed in challenging times.

Mr. Scheider, “Next Generation Mobility – Accelerating the Transformation” is the guiding principle of this Annual Report. From your point of view, which aspects of the transformation have been accelerated in this extraordinary year 2020?

We have anticipated the transformation we experience now and have prepared ourselves well for it with our Next Generation Mobility strategy. However, the pandemic has increased the speed. Many countries around the world are renouncing vehicles with combustion engines and implementing regulations that are already influencing the market today. In the aftermath, 2020 will be considered the year of the breakthrough for electromobility, at least in Europe. This has immediate consequences for ZF because we need to accelerate the



“As a company, we have benefited from the fact that we have been continuously promoting digitalization for years.”



ACCELERATION

The Data Venture Accelerator symbolizes acceleration by ZF.

[Link to the online article](#)

additional investments in e-mobility technologies, prioritize them even more and also change our structures.

A second aspect, however, is just as important: the change in the world of work and processes due to digitalization. Ten years ago, lockdowns would have had a completely different effect and the consequences would have been far more serious.

As a company, we have benefited from the fact that we have been continuously promoting digitalization for years. For this reason, ZF was able to react quickly and flexibly to the pandemic and establish new ways of virtual cooperation – from a technological as well as a human perspective. This indicates our

ability to adapt and the commitment of each individual.

No one could have foreseen a development like COVID-19. Has the pandemic forced you to change plans – or even the direction?

The future viability of our Next Generation Mobility strategy has never been questioned by the pandemic. On the contrary, we believe it has been confirmed by the social and economic impacts and we are now accelerating even more its implementation.

The guiding principle of the Annual Report is therefore “Accelerating the Transformation.” Our goal remains clean, safe, comfortable and affordable mobility for everyone and everywhere.

The transformation in order to achieve this goal is in full swing and has picked up pace in 2020. Since we made the right decisions early on, we are on course today despite all the challenges.

2020 will be considered as the crisis year for the automotive supplier industry. To what extent does this apply to ZF?

ZF also faced unprecedented challenges this year, but we reacted quickly, adapted working methods or made existing processes more efficient thanks to digitalization. In terms of leadership, team spirit, structure, processes or cost optimization, the entire company has learned a lot in a short period of time. The top priority has always been protecting our employees and reliably supplying our customers. ZF's diversification was helpful in this situation. We are active in construction and agricultural machinery, industrial as well as marine applications and one of the world's leading companies for wind turbine components.

The localization of technologies and production in important markets, such as China, has also paid off. The pandemic initially had the hardest effect there, but China was quickly able to control the

crisis in terms of society and economy. We have benefited from the continued economic upturn in this market since then.

Nevertheless, ZF also had to react adequately to the economic effects. What did the austerity measures look like?

Against the backdrop of the drastic sales decline in the first half of the year, we consistently questioned all expenditures and stopped them wherever possible. Investments were prioritized even more and only made if they paid off for ZF's future or improved the revenue situation.

We have also used all available tools worldwide to make working hours more flexible. In Germany, we were able to conclude the "Transformation Collective Agreement" with employee representatives and the trade unions and draw on the offer of short-time work. If market developments continue to be inconsistent, we will be able to adjust working time even without short-time work and remain flexible in the future. Compensation and pre-retirement programs

negotiated with the works councils were also successful and help us adjust the costs to the weaker demand.

Your R&D figures, however, do not speak for a strict austerity program.

This is true and applies to developments in our four strategic technology fields in particular. In this difficult situation, we continued to drive these fields with strong commitment and only slightly reduced investments. We are thus driving forward the transformation of the company and safeguarding ZF's long-term future.

For ZF, 2020 was characterized by another development: the acquisition and subsequent integration of WABCO as of May. How great was this challenge?

With the acquisition of WABCO, we were able to close a major strategic gap. We are now well prepared for the market requirements with new products for e-mobility and assistance systems. Moreover, the new division has already contributed positively to our result this year. We call WABCO and ZF a perfect match. As a very successful supplier



In order to safeguard the future, ZF has barely reduced R&D investments despite the difficult situation, explains Wolf-Henning Scheider.

ZF - WABCO has been part of the Group as a perfect match since 2020.



TRANSFORMATION

Since we made the right decisions early on, we are well positioned today despite all the challenges

[Link to the online article](#)

for trucks, buses and semitrailers, WABCO – or rather the new ZF division – has access to technologies that ZF did not have in its portfolio due to its history. The complementary product ranges and the different customer segments create added value to ZF and its customers.

For the commercial vehicle market as well as for the passenger car business,

the increasing networking in the vehicle leads to a change from being a component suppliers to becoming a systems supplier. The acquisition represents a leap forward for ZF's commercial vehicle business.

ZF sees itself as a driver for clean and affordable mobility. What developments should be highlighted in this area for 2020?

First of all, of course, the fast-moving electrification of the transport sector. We now have a wide range of solutions for this. And as we observe large growth rates in plug-in hybrids, we believe that our early focus on this technology is thus justified.

At the same time, the new business with our all-electric drives developed very positively last year. ZF will also be among the first suppliers to electrify trucks and buses, as we already have corresponding orders.

But electromobility does not only pay off for ZF with regard to drives: With our regenerative braking systems, we significantly increase energy recuperation

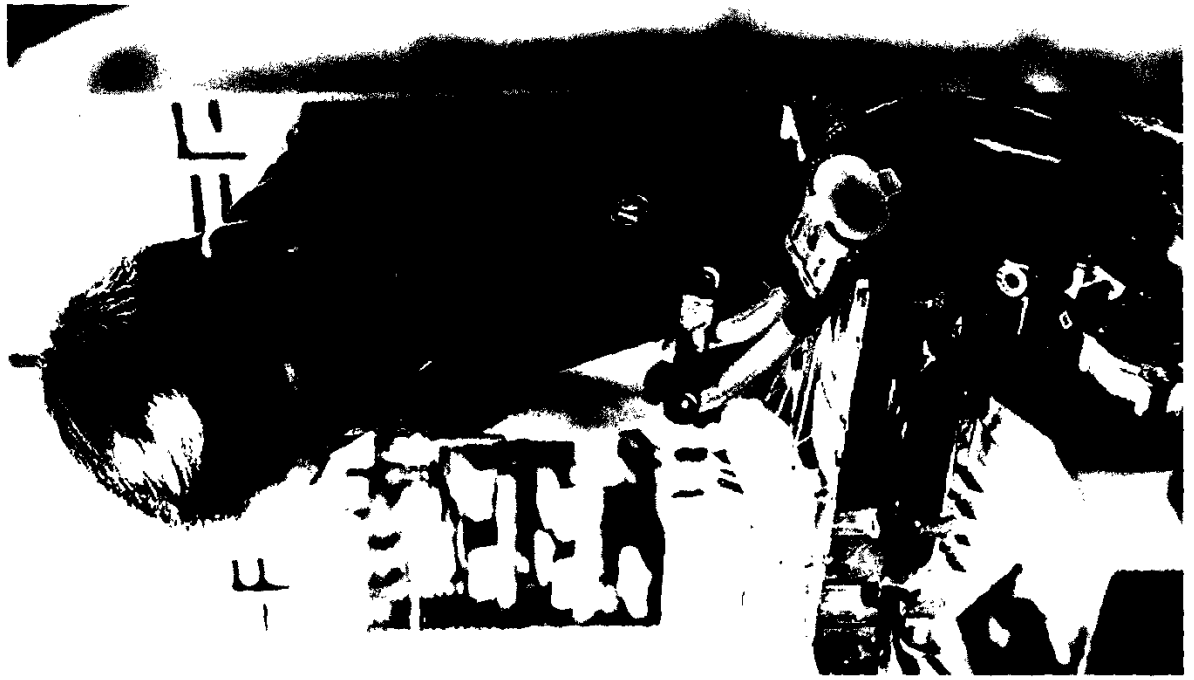
so that energy for up to 150 kilometers is achieved by the braking system alone.

In addition to the drive, we also supply electric vehicles with innovative solutions for all technology fields that make modern passenger cars attractive: integrated safety concepts, systems for dynamic vehicle control and assistants for automated driving.

Has automated driving rather taken a back seat?

We have made good progress in this technology field as well. Our shuttle systems are used in public transportation via our subsidiary Zgethere, for example in Rotterdam. Further international assignments and two cities in Baden-Württemberg as of 2022 will also make the new technology tangible for many people for the first time – with ZF products.

We are delighted that we were able to win attractive orders for advanced driver assistance systems and semi-automated driving functions. It is particularly noteworthy that the ZF ProAI supercomputer is sought after by manufacturers of



commercial vehicles and passenger cars for many millions of vehicles. ZF will be one of the leading providers of central computers in vehicles.

Ultimately, driving dynamics regulation is also about networking. How well is ZF positioned in this area in which software plays a central role?

Networked chassis systems are critical for the autonomous mobility of the future. Our software platform cubiX masters this networking. In order to make the driving experience in autonomous vehicles a pleasant one, the longitudinal and transverse dynamics of the vehicle must first be optimally coordinated. Jolting steering, braking or acceleration processes undermine our confidence in the capabilities of the autonomous driver. cubiX integrates numerous chassis systems such as steering, dampers, brakes and drives and ensures a comfortable driving experience.

Our customers should perceive us as the first contact for such comprehensive system solutions. cubiX is a good example of how we will offer software-based platforms in all technology fields. Together with our customers, we are working on the software-defined vehicle of the future.

In the coming years, numerous automotive manufacturers will strive for carbon-neutral production and will also demand this from their suppliers. How does ZF respond to this task?

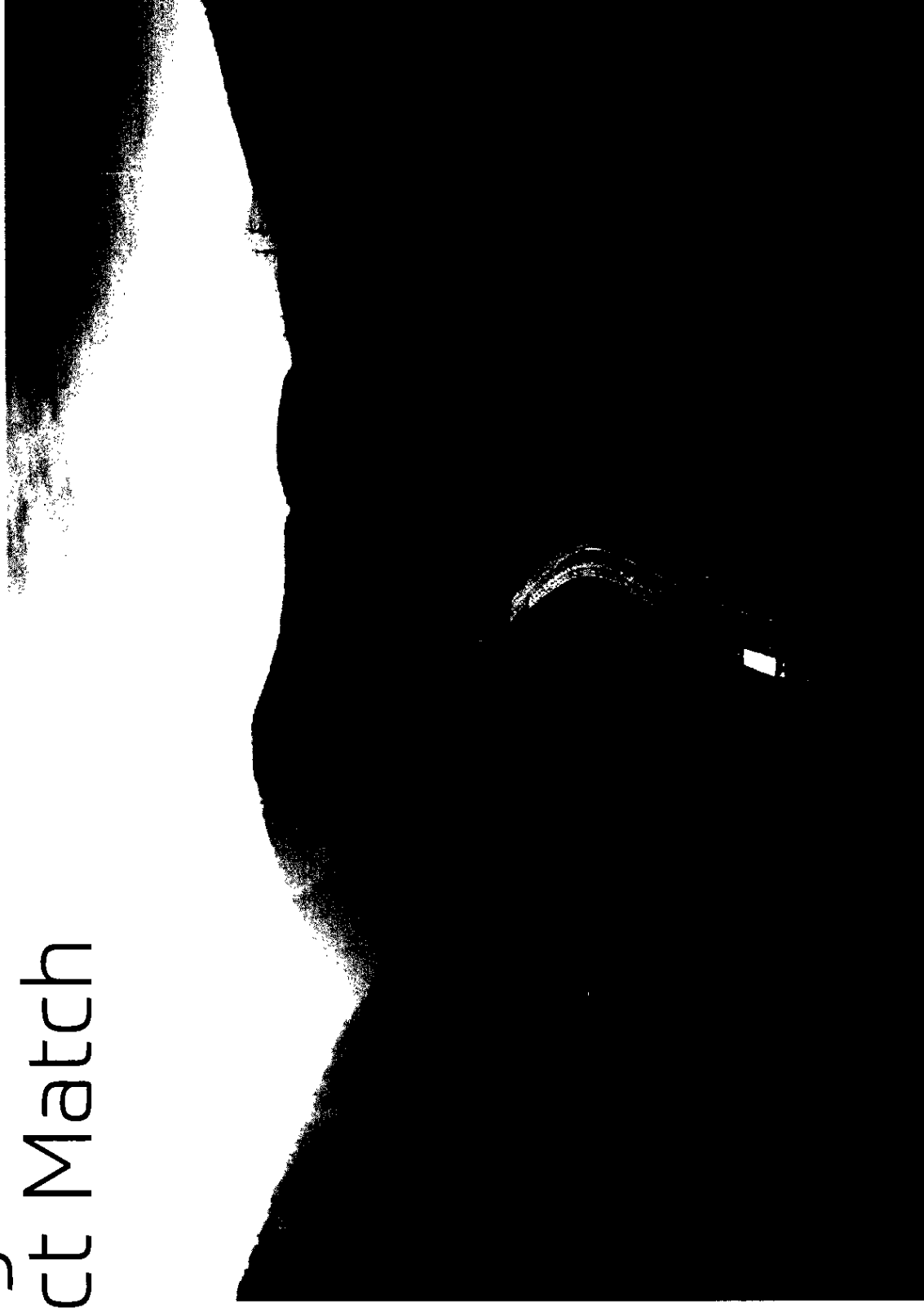
We stand behind these goals and the 17 Sustainable Development Goals: ZF is a member of the UN Global Compact and I am a member of the "Alliance of CEO Climate Leaders," which was initiated as part of the World Economic Forum.

As a company, we aim to be climate-neutral by 2040 – with regard to all four fields of action: direct emissions, indirect emissions, emissions from upstream suppliers and emissions from products. In a first step, we created a corporate carbon footprint that also covers commuting of employees or the use of ZF products, for instance.

What prospects does ZF have? How do you look into the future?

We have many reasons to be confident. I see good opportunities to grow above average with our orders and new products. Above all, however, we have an excellent, very committed team with a great sense of solidarity that has proven its willingness, courage and ability to change and implement new ideas more than ever. We can build on this.

Spotlight: The Perfect Match



WABCO is now Part of ZF

ZF has successfully completed the acquisition of WABCO. The result: being the leading global systems supplier for commercial vehicle technology.

With the integration of WABCO as of May 2020, ZF was able to significantly expand its product portfolio. With the new constellation, the company is the world's largest supplier of commercial vehicle technology and made a step forward toward its goal of further increasing safety standards, efficiency, connectivity and intelligence as well as the automation of commercial vehicles. Wilhelm Rehm explains why the integration is a perfect match.

Mr. Rehm, hardly anything caused such a stir in the commercial vehicle industry last year as the acquisition of WABCO by ZF. How do things stand at present?

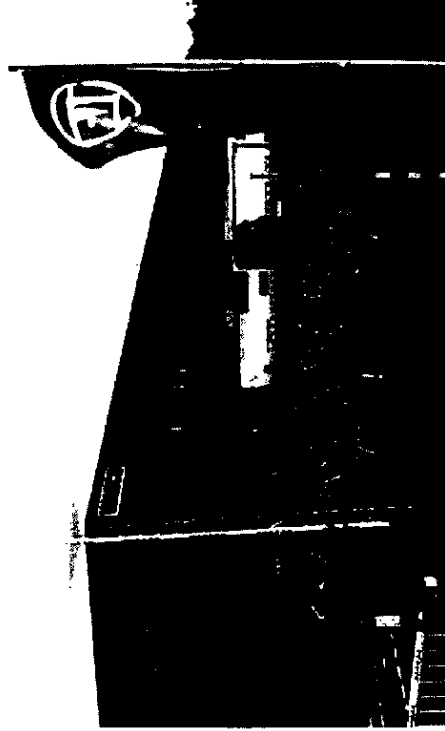
We initially integrated WABCO into the ZF Group as a new division. For this reason, we currently have two divisions that serve the commercial vehicle market: the Commercial Vehicle Control

The portfolios complement each other perfectly and an innovative spirit shapes the culture of both companies as well as the pursuit of a joint vision.





Wilhelm Rehm, Member of the Board of Management of ZF Friedrichshafen AG.



Welcome to the family: Together, ZF and WABCO are the perfect match

Systems Division for commercial vehicles – formerly WABCO – and T Division for ZF's commercial vehicle technology. Our goal is to merge these two divisions into a new one by 2022: "Systems for Commercial Vehicles."

Why was the acquisition of WABCO strategically so important in order to achieve ZF's corporate objectives?

Our Next Generation Mobility strategy describes what drives us. We are currently experiencing a transformation in all mobility areas: electrification, automated driving and digitalization provide the impetus and we endeavor to play a leading role here. Clean, safe, comfortable and affordable mobility for everyone and everywhere: We are also pursuing this goal in logistics to make it profitable – from inner-city delivery traffic to public transportation and long-distance traffic.

So what can ZF offer today that it did not have before the acquisition?

ZF already has abundant expertise in driveline and chassis technology for commercial vehicles, including sensors or system integration. However, we did not have direct access to compressed air technology, for instance. Compressed air systems control brakes and suspension elements for trailers, heavy trucks and buses.

The portfolios of both companies complement each other perfectly. But not only complementary elements have spoken for the acquisition: What connects us is the innovative spirit that shapes the culture in both companies as well as the pursuit of a joint vision. At WABCO, the strategic alignment was defined by the following three terms: automated, networked and electrified.

This is in line with our path to Vision Zero – commercial traffic in which accidents and CO₂ emissions are reduced as much as possible. With the acquisition, we are now able to implement our strategic objectives even more consistently.

Which means not only quantitative but above all qualitative growth?

We want to actively shape the future of goods and passenger transport by offering worldwide unique system solutions and services for manufacturers and fleets. In doing so, we enable our customers to meet the challenges of the industry, such as emission limit values, cost pressure in the transport sector or the shortage of drivers – while simultaneously increasing transport volumes. We can fulfill customer wishes even better and create significant added value: as an integrated systems supplier for trucks and buses, which combines

intelligent components, system solutions as well as services and digitalizes all logistics elements. That's why we are talking about the perfect match.

In addition to qualitative growth, there is also a new dimension when two companies of this size come together.

The figures are indeed very impressive. We have approximately 153,500 employees worldwide. Around 25,000 of them work in the commercial vehicle business – at 61 locations in 28 countries. Our global, interconnected R&D network is distributed over 18 main development locations in eight countries, and ZF alone filed 1,264 patents in 2019 and invested 7.7 percent of its sales in R&D.

Which customers will most likely benefit from the integration?

ZF pursues the philosophy of introducing technologies in all market segments. A good example of this is our “see, think, act.” approach where sensors, the necessary intelligence and the control of the respective actuators are developed. Our commercial vehicle customers benefit from the technology transfer within the ZF Group. As we are a supplier across all market segments, we have a clear advantage over many competitors.

Does this apply to all technology fields?

We divide our technologies for Next Generation Mobility into four fields, in which we want to offer system solutions. With these solutions, we aim to assume technological leadership in the market.

Integrated safety includes the development of active and passive systems that can lead to fewer accidents. Electromobility is the second area for which we can offer zero-emission, efficient and thus economical drives in all vehicle segments, from cargo bicycles to heavy trucks. One example of this is the electrically driven semitrailer, which can reduce the fuel consumption of a semitrailer truck by approximately 16 percent.

In the third area – automated driving – we develop systems for various levels of automation through to autonomous driving: from camera and intelligent driver assists to functions such as autonomous coupling of a trailer. Finally, Vehicle Motion Control comprises all technologies for controlling vehicle movements in longitudinal, transverse and vertical directions. We see digitalization as a connecting element in all four main areas.

“As a supplier across all market segments, we have a clear advantage over competitors.”

The commercial vehicle market is not only about technology, but also service, for example. The presence on site plays a decisive role here. How well is ZF, now with WABCO, set up for this?

We focus on all aspects that are important for OEMs or fleet operators in the commercial vehicle sector.

Being close to the market is a strength of our company and was also a strength of WABCO. We are pursuing a consistent lifecycle approach for our systems. This means that we not only align ourselves very closely with the requirements of

our customers during the development process, but also support them with service and updates to enable them to work efficiently every day.

Lifecycle management means being a competent contact in every phase of our products' life cycle. With the increased number of our locations, we have also further expanded our worldwide on-site support and service. For service and aftermarket solutions, we are always close to the customer – no matter where! Furthermore, fleet management with corresponding solutions is definitely one of our strengths.

Transformation: Technology. Hands on.

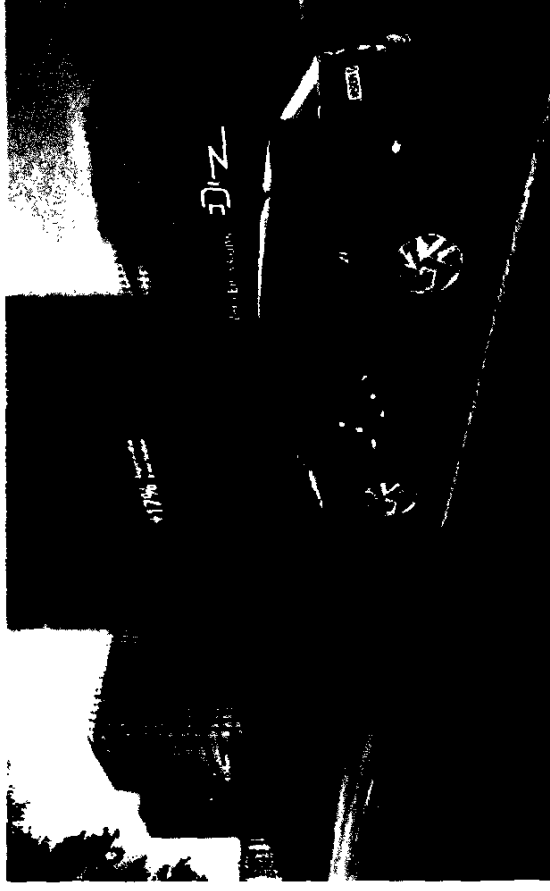


ZF Remains on Course

Clean, safe
and affordable
mobility – with
production-
ready
technology.

Two years ago, ZF presented its Next Generation Mobility corporate strategy, with the objective of offering clean, safe, comfortable and affordable mobility to everyone and everywhere.

The rollout now takes place with production-ready solutions in the four technology fields: electromobility, automated driving, vehicle motion control and integrated safety. Digitalization is the overarching theme and the common enabler. ZF is also accelerating transformation as a developer and provider of software. As a system's supplier, the company is a pacemaker in all core areas of mobility. This is also beneficial for ZF's non-automotive products – for instance, thanks to strong market growth in the wind power sector outside Europe.



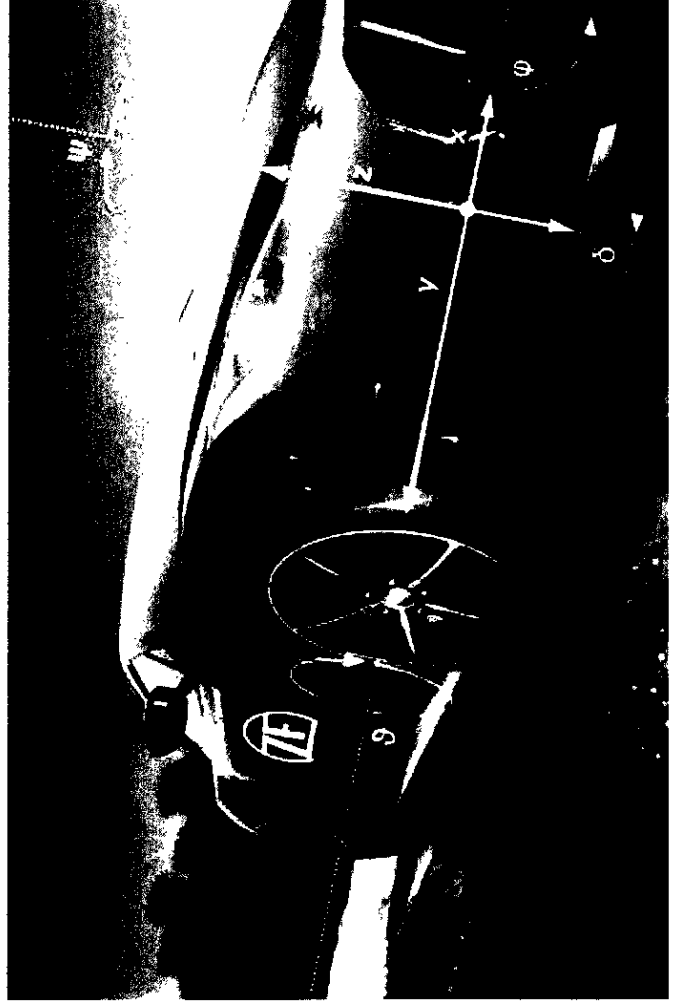
Electromobility (above) plays a crucial role in today's and future mobility – especially in the context of automated and autonomous driving of cars and other vehicles (below).



Integrated safety systems (left): They help prevent road traffic accidents or at least reduce their severity.



Digitalization and software (top): Artificial intelligence is being integrated into more and more products that are networked and given the capacity to learn.



Vehicle Motion Control (left): The chassis plays a major role in ensuring safety, comfort and efficiency of a vehicle.

Efficiency Across the Board

Be it in Formula E racing cars, passenger cars or commercial vehicles: Electric drives for a wide variety of vehicles benefit from ZF's technologies.

ZF is in the thick of electromobility. ZF has many years of experience in volume production of drives for battery electric passenger cars and commercial vehicles. What's more: ZF also offers electric drives in industrial applications, such as construction and agricultural machinery or ships, in order to improve efficiency. The highlights for the audience and development are the Formula E races that demand everything from the electric drive.

Stephan von Schuckmann, member of the Board of Management of ZF and head of the new Electrified Powertrain Technology Division, is certain: "The

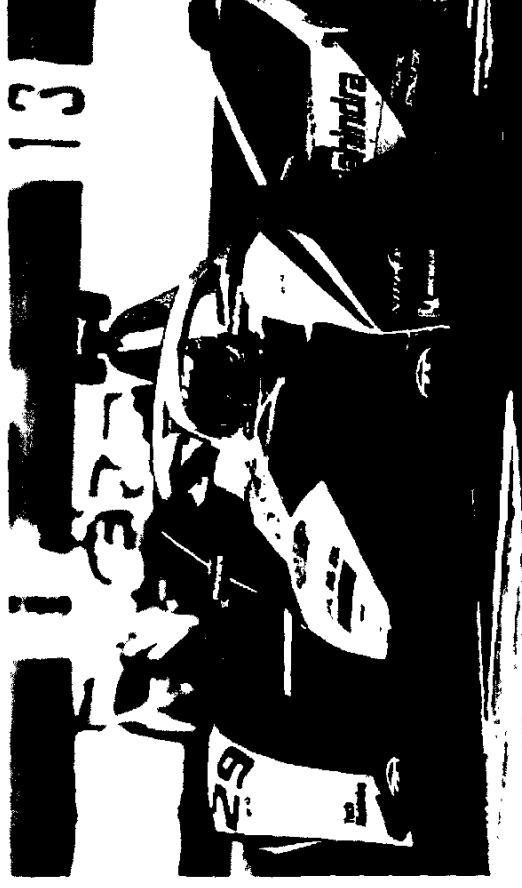
technology transfer from motorsports to volume production has never been as evident as in Formula E." In 2020, ZF was active in the increasingly popular electric racing series already for the sixth year – last season for the first time with Mahindra Racing and a technology package which will also be launched in a similar form for commercial vehicles and as a standalone solution for passenger cars.

We are talking about power electronics with silicon carbide-based semiconductor chips which, in contrast to today's standard silicon technology, increase the efficiency and thus the range of electric vehicles. Particularly in conjunction with 800-volts vehicle supply voltage, considerable progress can be made. As early as 2022, a new electric driveline will be available for a volume production application with these characteristics.

Boom in electric drives expected in this decade

By 2030, ZF expects a significant market shift due to electrification. Within a

ZF puts its experience from six years of Formula E to use for its expertise in electric drives.



decade, the share of conventional drives will decrease from 90 to below 50 percent. Battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV) will make up the rest. ZF supplies both driveline technologies.

The development of the next generation of purely electric vehicles represents a paradigm shift: Power and torque – of which current electric vehicles feature quite a bit – are no more top priority

in the requirements specification – but rather efficiency. And because efficiency is measured by range, all the stops of the electric vehicle system are pulled out.

ZF technicians expect an overall efficiency improvement of up to 13 percent by combining all the measures available. Dr. Otmar Scharrer, Senior Vice President R&D E-Mobility at ZF: "An essential part of the technology package for the

next generation of electric vehicles can already be found in Mahindra Racing's Formula E vehicle for the 2020/2021 season, for which the complete driveline is developed at ZF. The technical regulations stipulate standard batteries and limit motor power, which makes top efficiency in power transmission more important in order to gain the decisive competitive advantage."

Reduce emissions pragmatically – with ZF PHEV technologies

Plug-in hybrid electric vehicles (PHEV) are a promising solution for combining the best of two worlds: practically unlimited range and local zero-emission driving. With the EVplus, ZF presented a design study of an everyday PHEV of the latest generation already in 2019. Just one year later, more and more vehicle manufacturers can offer wider electric ranges and thus are approaching the goal of making a relevant contribution to the CO₂ reduction with a practice-oriented range of considerably more than 100 kilometers in electric operation.

In 2020, politics also realized that reasonable ranges in electric operation, as offered with the ZF EVplus, are the key to broad acceptance of e-mobility. The corresponding incentive programs

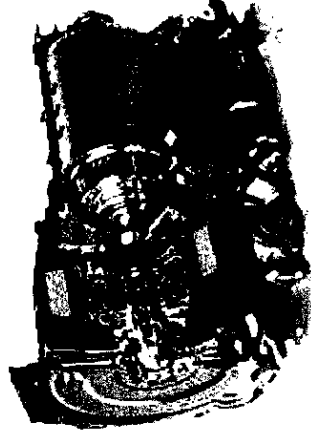
have shown overwhelming success (see information on the left).

Traveling smart thanks to innovative ZF assistance systems

In order to reduce emissions, it is necessary to operate in electric mode as frequently as possible, especially in inner-city areas. To this end, ZF has developed innovative digital assistance system: As soon as a vehicle equipped with the "ZF Zero Emission Zone Manager" enters a zero-emission area or an urban low-emission zone, the assistance system automatically switches to electric driving mode. The system recognizes these zones by means of so-called geofencing. GPS coordinates are used to virtually cover a specific traffic area. The navigation display shows these defined low-emission zones to the driver when they are on their route. The driver is informed that the vehicle will only be driving in purely electric mode within this zone. In order to achieve this, the intelligent energy management of the hybrid drive, in conjunction with route planning, ensures that the battery charge is correspondingly high before driving through zero-emission zones.

The "ZF eDriver Trainer" motivates PHEV drivers to drive mainly electrically. The

function's core: full transparency over the driver's own driving and charging behavior. Thanks to comprehensive information on electric driving operation and individual recommendations, every PHEV driver can travel with the lowest possible CO₂ emissions and as locally emission-free as possible. In order to positively influence driving behavior, the ZF eDriver Trainer can also be linked to bonus programs.



With an integrated electric power of up to 160 kilowatts, the 8-speed automatic transmission by ZF is well suited for plug-in hybrids (PHEV)

Plug-in hybrids recently achieved the highest growth rates in Europe. According to Statista, a total of 856,407 vehicles with an externally chargeable battery (PHEV and BEV) were registered in the five largest European markets in 2020. The increase in purely battery-powered vehicles was 181 percent compared to the prior year.

Second-Generation Bestseller



The higher actuating force of eleven kilonewtons and the larger steering angle of up to ten degrees are decisive improvements of AKC in the second generation.

As of 2013, the AKC (Active Kinematics Control) rear axle steering primarily provided luxury vehicles as well as numerous sports vehicles with greater tracking stability at high speeds and, at the same time, a smaller turning circle in city traffic. So far, more than 600,000 units have been installed in numerous vehicles of international automotive manufacturers.

The second generation of the AKC excels with specific technical improvements. A larger steering angle of up to ten degrees gives both full-size high-end luxury cars and off-road vehicles the maneuverability of significantly smaller vehicles. Battery-powered vehicles with long wheelbases can also benefit from this. The higher actuating force

of eleven kilonewtons instead of eight kilonewtons enables the installation in vehicles weighing up to 3.5 tons.

The second generation of the AKC works very impressively on an offroad vehicle presented in 2020: Both axles can turn the wheels in the same direction at low speeds, so that it is also possible to move diagonally. Until now, typical customers only knew this optionally available function from specialized agricultural machinery. The practical advantage is soil protection because the weight is distributed over two offset tracks. In an off-road vehicle, this driving mode minimizes the risk of sinking into soft ground. "Steer-by-wire" also simplifies integration into automated driving functions.

Driving Autonomously From the Surrounding Area to the City



Electric and autonomous vehicles are shaping the mobility of the future in unprecedented ways. Integrated into the normal traffic flow, they transport passengers comfortably from A to B – without long waiting times and in specific cycles. In doing so, they do not drive according to schedule but rather to demand.

Self-driving people movers are to make future inner-city traffic safer and more efficient. “RABus” started as a trendsetting project in September 2020. One of the key players: ZF and its subsidiary Zgetthere.

Searching for parking spaces, parking fees and potential bumps in parking areas are a thing of the past for people changing from private transport. In addition, there are further advantages for society as a whole: Cities can redistribute obsolete parking areas. There is more space for pedestrians and cyclists and newly designed green spaces create a higher quality of life.

The “real-life laboratory for automated bus operation in local public transport in cities and the countryside” (RABus) is a measure of Baden-Württemberg’s strategic targets for automated and networked mobility. The Research Institute of Automotive Engineering and Vehicle Engines Stuttgart (FKFS), the Karlsruhe Institute of Technology (KIT), the Rhine-Neckar-Verkehr GmbH, the Stadtverkehr Friedrichshafen GmbH with the DB ZugBus Regionalverkehr Alb-Bodensee GmbH as well as ZF are participating.

The objective is to increase acceptance

Currently, automated vehicles in public road transport are only driving at low

ZF subsidiary Zgetthere provides the autonomous shuttle buses used in the RABus project



VIDEO

The autonomous shuttles of the ZF subsidiary Zgetthere are already being used in numerous projects, such as the RABus project.

[Link to the video](#)



The ParkShuttle system in the Rotterdam district of Rivium is unique worldwide because the autonomous 2getthere people movers are operated without stewards.

speeds. This leads to longer driving times and thus to less acceptance and willingness to use them.

The RABus research project wants to change this: Mannheim and Friedrichshafen, supported by the respective transport associations, act as real-life laboratories. By the end of 2023, a mostly economical public transport operation with electrified and automated vehicles is to be established in both cities. In Mannheim, the focus lies on automated operation in mixed traffic in a new urban district. In Friedrichshafen, however, the activities focus on automated suburban operation.

Thanks to safe driving characteristics adapted to the respective environment, the vehicles should be able to flow with the regular traffic at acceptable speeds – both in town and out of town. For this purpose, shuttles from the ZF subsidiary 2getthere are used which have already proven their worth in the Rotterdam Rivium shuttle project. They offer space for up to 22 people and are perfectly integrated into inner-city traffic

with their compact length of almost six meters.

Robot bus drivers learn continuously

"Our autonomous shuttles feature an electric drive, state-of-the-art sensors and mainframe computers with artificial intelligence," explains Torsten Gollewski, Executive Vice President Autonomous Mobility Systems at ZF. "Using connectivity services specially designed for Level 4 systems, they can also communicate with the infrastructure and keep learning continuously." Gollewski continues. With RABus, the shuttles are operated for the first time in Germany. Since connecting rural areas to city centers is very important for future urban mobility, this approach represents a real milestone. This approach is further advanced in Mannheim by on-demand shuttles from a residential area on the outskirts towards the city center.

Science is also intensely involved in the project thanks to accompanying research on acceptance, cost-effectiveness and technical solution approaches.

Attentive on Board

Every accident is one too many, especially when weaker road users encounter heavy commercial vehicles.

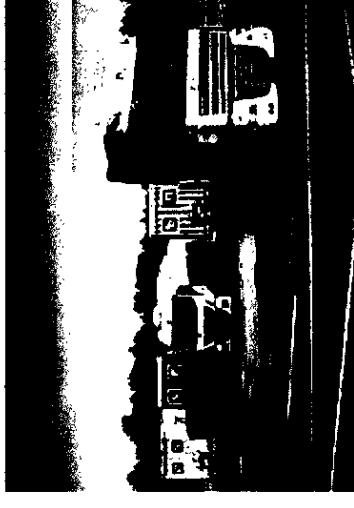
Integrated systems make roads and depots safer. This means that they also increase the social acceptance of commercial passenger and freight transport. This acceptance is urgently required in view of increasing transport volumes in order to maintain supply chains and infrastructure in the future.

One thing is certain: More safety can only be achieved with a plus in automated systems. Based on the "see, think, act" strategy, ZF can offer a comprehensive portfolio of assistance systems and automated functions for all vehicles. In this context, the company has been supplying the necessary sensors, the intelligent control unit and the actuators – since 2020 also for air supply systems. "With the WABCO acquisition, we have completed our portfolio and can now offer ADAS systems for all vehicle categories," explains Wilhelm Rehm.

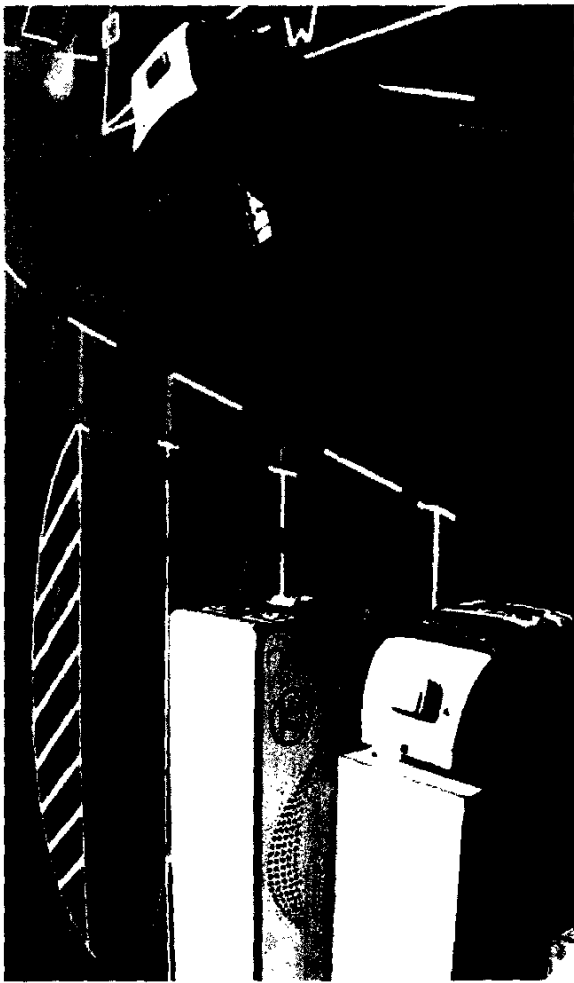
In 2020, ZF combined additional safety with efficiency gains with two world innovations: The Advanced Reversing Assist is an innovative ADAS system that supports truck drivers when maneuvering with trailers.

It features a rear-mounted camera and an innovative articulation sensor that covers the blind spot behind the truck-trailer combination.

An intelligent HD image processing algorithm enables the periphery to be monitored without additional sensors – another breakthrough in the industry. The information from the camera and sensor shows the driver the trajectories of the reverse movement on the display. This assistant helps avoid collisions with obstacles, pedestrians and other vehicles, which increases safety, efficiency and comfort.

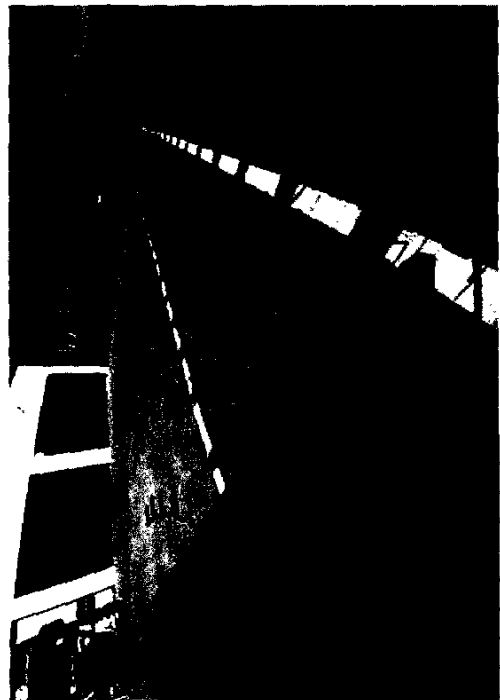


Integrated systems make roads and depots safer. ZF is developing solutions in this context.



World premiere no. 1: The Automated Coupling Assist (top) is the first fully automatic assistance system that enables trucks to detect and connect semitrailers

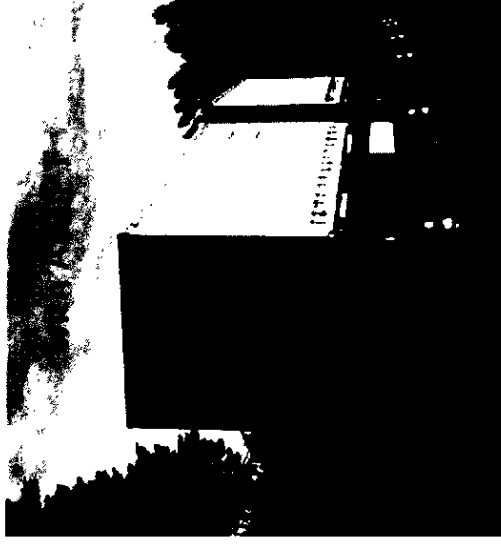
World premiere no. 2: The Advanced Reversing Assist (right) is an innovative ADAS system that helps prevent collisions with obstacles, pedestrians and other vehicles when reversing.



The Automated Coupling Assist is the industry's first fully automatic assistance system that enables a truck to detect and connect a particular semitrailer. The system controls the tractor in longitudinal, transverse and vertical direction for an optimized coupling maneuver. This means more safety, efficiency and comfort for the driver and the employees in the depot. The coupling time can be reduced by up to 50 percent.

In order to implement the Automated Coupling Assist, competencies are required for both tractor and trailer systems. An overall competence that only ZF offers.

Safely on Track with ADOPT



ADOPT is designed to keep self-driving trucks (SAE Level 4) better on track in demanding situations, for example on slippery roads or when changing lanes.



without ADOPT

ADOPT brings together ZF's expertise in autonomous driving and the artificial intelligence in the commercial vehicle world. This simplifies and accelerates applications for automated and autonomous driving.

ADOPT (Autonomous Driving Open Platform Technology) is a software platform for commercial vehicles. It connects all sensors and actuators in the vehicle and leads to intelligent driving dynamics control in longitudinal, transverse and vertical directions.

Self-driving commercial vehicles (SAE Level 4) can be better kept on track in challenging situations – for example on slippery roads or when changing lanes. Virtual drivers (Autonomous Driving Artificial Intelligence) no longer have to be trained on "real" vehicle movements as before. The special software

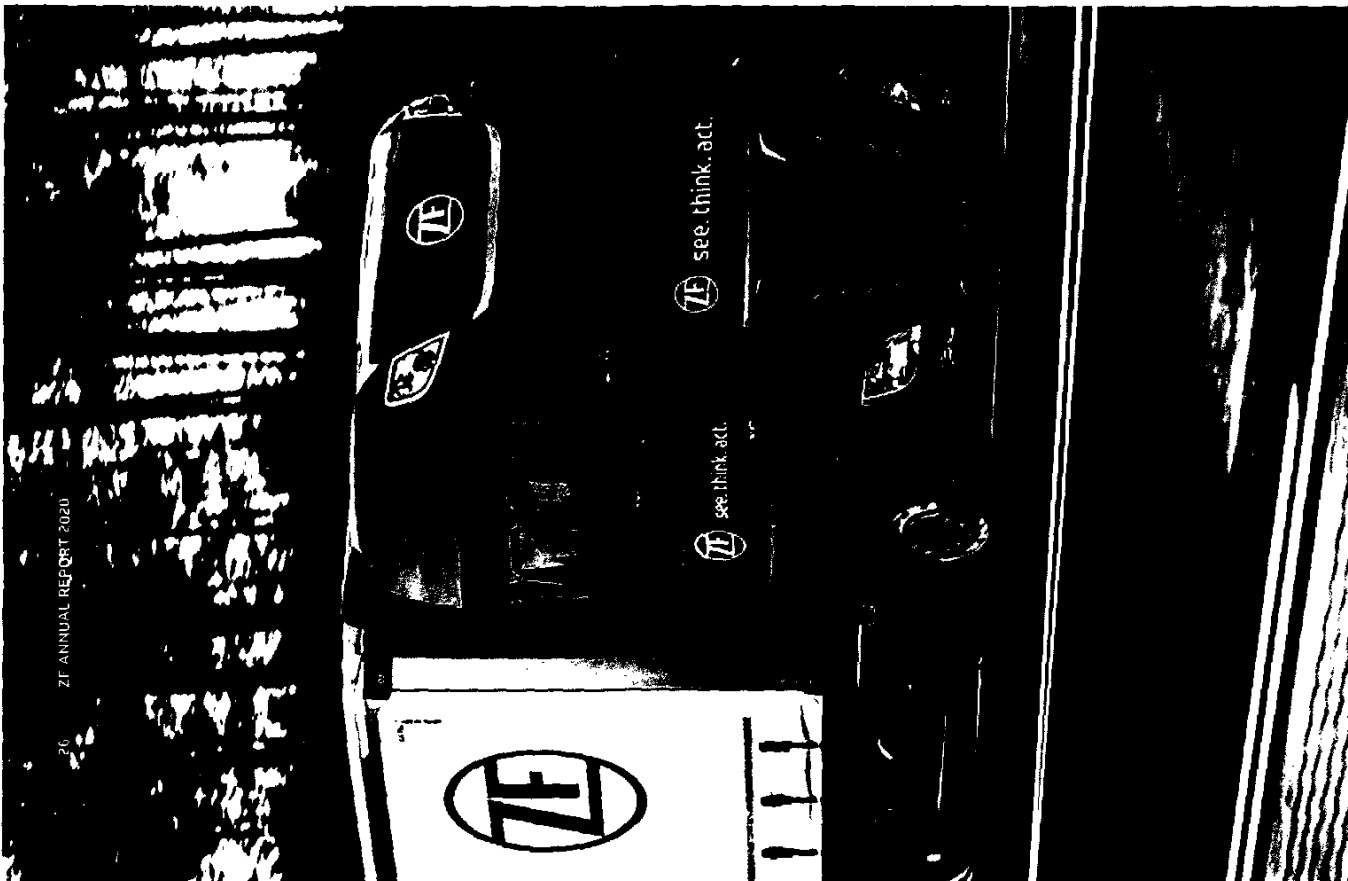
provides this "digital knowledge" based on AI-based data and uses it to calculate direct and precise instructions for the actuators.

ADOPT increases safety, efficiency and productivity for automated vehicle operation. It brings together ZF's expertise in autonomous driving and the artificial intelligence in the commercial vehicle world. This can simplify and speed up the development of applications for automated and autonomous driving. ADOPT is a comprehensive "see, think, act." solution for automated operation with intelligent control software.

Heavy Trucks and Buses: Less CO₂

Leading truck manufacturers want to phase out the combustion engine by 2040. Until then, the main objective is to reduce CO₂ emissions from commercial vehicles.

ZF has access to all commercial vehicle segments – including heavy trucks, buses and trailers – and can therefore make a valuable contribution.



The commercial vehicle industry is facing enormous challenges. From 1991 to 2017, road haulage increased by 100 percent in Germany alone. An end to this trend is not yet in sight, but at the same time CO₂ emissions and local pollution levels must be further reduced. The consequence: By 2040, the largest truck manufacturers want to phase out conventional combustion engines and focus on hydrogen fuel cells, battery technology and fuels from renewable resources.

There is a particular need for action in buses and coaches: In its Clean Vehicle Directive, the EU Commission stipulates a binding quota for urban transport authorities as of August 2021 if they procure vehicles: At least 45 percent, which is almost half of the new fleet vehicles, are to feature low-emission drives.

Battery-powered buses are a good solution for reducing local pollutant and noise emissions and further increasing the acceptance of local public transport,

especially in city-center line operation. China has been a pioneer in this field for years – with more than 400,000 electric buses already in 2019, representing around 99 percent of all electric buses worldwide. For three years, only electric buses have been running in the metropolitan area of Shenzhen, South China.

Europe: electric buses close to a breakthrough

The era of electric buses has also begun in Europe. In 2019 alone, their registration figures increased by 170.5 percent compared to the prior year. With 770 vehicles, the share of zero-emission buses in the Netherlands already accounts for 15 percent of the entire fleet. In 2020, orders from many German municipal bus companies showed that the environmentally friendly buses also made it from the pilot phase to volume production in Europe, too. In the upcoming years, the electrically powered bus will become a standard in the EU.

A development that benefits ZF. For example, the 31 battery-powered

double-decker buses from the British manufacturer Optare, which have been operating the North Finchley – Tottenham Court Road route in London since 2019, are equipped with ZF's AxTrax AVE electric portal axle, which is already being used in more than 2,200 electric buses from various manufacturers worldwide. The CeTrax electric central drive can be easily integrated into vehicle concepts with a conventional driveline layout and is suitable for a wide range of applications in special vehicles.

All-electric: from light commercial vehicles up to heavy trucks
ZF's portfolio covers the entire range of electrification: from hybridized vehicles to all-electric solutions – from electric light CVs to electrified trucks. From 2023 onwards, the portfolio will include electric drives for weight classes up to 44 tons.

Electrification also includes the trailer sector. With the technology of ZF's e-trailer drive, an electrically driven semitrailer can turn a conventional truck



SUSTAINABILITY



to which it is coupled into a hybrid vehicle, which can save up to 16 per cent fuel.

Promising potential: CO₂ reduction for conventional drives

Not only electromobility, but also lightweight and aerodynamic concepts contribute significantly to more efficiency – especially in heavy trucks. The Lightweight Future Truck with OptiFlow™ provides convincing evidence: Targeted aerodynamic measures and lightweight design concepts realize significant savings potential compared to conventional concepts. Aerodynamic improvements in the rear and side areas save 7 percent fuel and cut costs. The electronically controlled OptiLevel™ air suspension automatically regulates the trailer's ride height in order to reduce fuel

consumption. Lightweight design alone reduces the weight of the tractor truck by up to 150 kilograms. Savings that can be added directly to the payload, which enhances cost-effectiveness.

This is also an advantage in electrically driven trucks, as it can compensate for part of the battery weight.

CO₂ emissions can also be reduced with software solutions. ZF has developed innovative offers in this field: The TX-FUELBOT™ is a unique, innovative and predictive fuel management tool. It is based on big data & analytics and was specifically developed to reduce the fuel costs of commercial vehicle fleets.

The TX-FUELBOT™ is suitable for all fleet sizes and addresses one of their biggest cost factors: the fuel bill.



With CeTrax and AxTrax AVL, ZF's electric bus drives are already established on the market

ZF Wind Turbine Gearboxes Boost the Energy Revolution

Electromobility: one of the cornerstones of “Next Generation Mobility.” For transformation to be a success, we must enhance and accelerate renewable energy generation.

One in four wind turbines worldwide is equipped with a ZF Wind Power gearbox. With two new milestones in 2020, the company is giving wind power a new boost. After all, ZF Wind Power and wind turbine manufacturer Vestas have pooled their forces and launched a drivetrain on the market that reduces power generation costs. ZF has also expanded its SHIFT gearbox platform for wind turbines. Currently, wind energy accounts for roughly 25 percent of renewable energy worldwide. According to the International Renewable Energy



“At the end of 2020, wind turbines featuring our gearboxes reached an installed capacity of 150 gigawatts.”



Dr. Martin Knops

Vice President Technology R&D,
Wind Power Technology

Agency (IRENA), renewable energies are expected to account for 85 percent of electricity generation by 2050. The share of wind power will remain at around 25 percent. As a result, the share of wind energy in total power generation increases from currently seven to more than 20 percent.

A development, in which ZF already has a significant share today: “By the end of 2020, wind turbines featuring our gearboxes reached an installed capacity of 150 gigawatts,” says Dr. Martin Knops, vice president at ZF Wind Power. The number of wind turbine gearboxes currently produced at ZF would be sufficient for enough wind turbines to convert one million households to source renewable energies every month.

Vestas and ZF jointly reduce power generation costs

In order to further boost this development, ZF Wind Power and the world's largest wind turbine manufacturer, Vestas Wind Systems A/S from Denmark, developed the EnVentus drivetrain to the production stage. Its unique platform design reduces energy generation costs (levelized cost of energy) and is the result of intensive teamwork, especially in the areas of engineering and innovation. Common goal: the production of reliable and low-cost turbine technology for the rapidly growing wind power market.

“Meanwhile, wind farms are increasingly competing with conventional power plants – without receiving subsidies,” explains Knops. “We are proud to

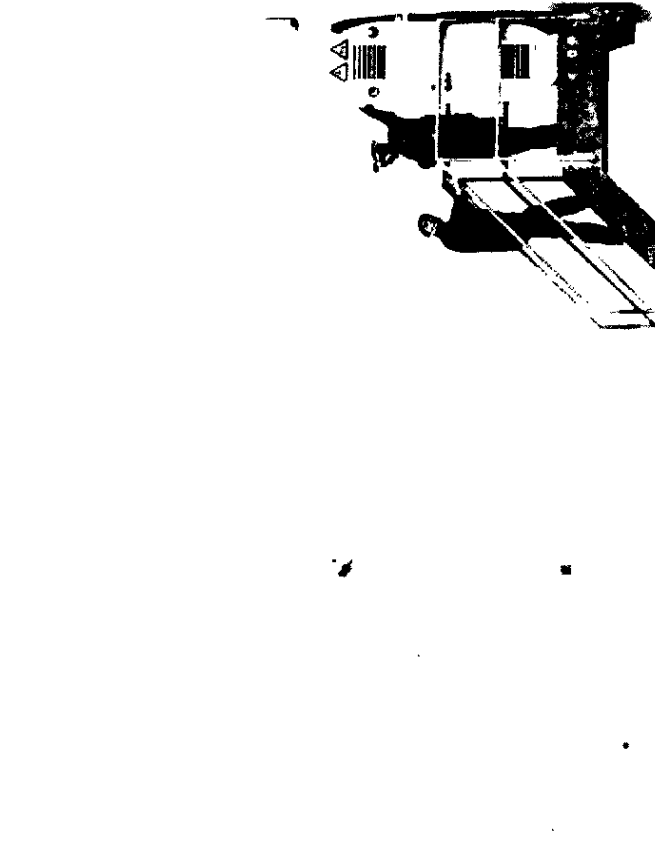
contribute to this development together with Vestas.”

The integrated and modular drivetrain design comprises the main shaft, the main bearing housing, the two-stage planetary gearset and the permanent magnet generator. The EnVentus drivetrain guarantees up to 6 megawatts (MW) power and is developed and tested in the facilities of ZF Wind Power in Lommel, Belgium. It features a modular platform design, so customers around the world can benefit from more flexible solutions and a broad range of customer-specific turbine variants.

Flying high – with best-in-line torque density

Another milestone was achieved in 2020: With the modular gearbox

*One in four wind turbines worldwide
now features a ZF transmission.*



VIDEO

The first standard ZF EnVentus drivetrain was delivered in November.

[Link to the video](#)

platform SHIFT 7k, ZF Wind Power exceeded the torque density limit of 200 newton meters per kilogram for the first time. High torque density means that less material is required to master the torque. This value is top-score in the industry, and it allows for light platform gearboxes to master a wide range of high torques.

Compact and light gearbox designs are increasingly sought after because they reduce the nacelle weight – a decisive argument in view of the constantly growing tower heights of the turbines. The expert committee of the “Wind Power Monthly” trade journal presented the gold medal in the category “Drivetrain of the Year.”

At the same time, ZF’s SHIFT modular gearbox platform range was extended at the lower end of the torque scale with the new SHIFT 3k. Now the SHIFT platform family enables cost-efficient

turbine designs at any wind location and with any wind power.

ZF uses expertise from the automotive industry for the new platform approach in the wind turbine gearbox market. Standardized modules offer wind turbine manufacturers maximum flexibility. They enable them to quickly adapt new turbine models and reduce the market launch time.

In addition, the modular platform approach offers further optimization potential for gearbox configurations per wind location, which reduces the total investment and development costs.

ZF is now in the unique position to simultaneously offer solutions for “Next Generation Mobility” and the energy turnaround – two sides of a coin designed for transforming the transport, industrial and energy markets into a sustainable future.

Spotlight: Softw



It's all About Software!

Networking and digitalization are indispensable in our everyday lives. With the vast amount of information available everywhere and in real time, new functions and business models are possible that were still unthinkable a few years ago.

ZF presented the open middleware software platform and set up a Global Software Center to develop individual approaches for customer-oriented software solutions. Dr. Dirk Walliser, Senior Vice President Research & Development, Innovation & Technology, and Dr. Nico Hartmann, Vice President, Software

Solutions & Global Software Center, explain the new approach.

Dr. Walliser, vehicles are primarily seen as products that are differentiated by their hardware. Is that changing?

Dirk Walliser: Without intelligent software that can be imported at any time, it will hardly be possible to further increase safety and efficiency. Software expertise is increasingly becoming a key factor for innovations and an indispensable feature of technology leaders.

This also applies to mobility and industrial applications: The prerequisite for successful products is the ability to network individual components to comprehensive systems that act and learn independently thanks to artificial intelligence and deep learning algorithms. In this respect, we are actually talking about a "software-defined vehicle."



Dr. Dirk Walliser (top) and Dr. Nico Hartmann (bottom) talking about networking and digitalization.



TRANSFORMATION

Software expertise is increasingly becoming a key factor for innovations and a characteristic of technology leaders.

[Link to the online article](#)

So cars are turning into the much-quoted smartphones on wheels?

Dirk Walliser: No, even if operating a vehicle is becoming somewhat like using a smartphone, the difference lies primarily in the type and number of hardware systems that a software platform – like ZF's middleware – has to interconnect intelligently in order to transport people or goods comfortably and safely.

Is this software platform a new offer from ZF?

Dirk Walliser: Yes, it is. Middleware is ZF's new open software platform that acts as an intermediary between the operating system of a vehicle computer and its software applications. As of 2024, ZF middleware will be available in volume production vehicles and control the abstraction of computer hardware from software applications and the communication between these applications.

How does this benefit your customers?

Dirk Walliser: Decisive advantages are accelerated development processes and reduced complexity. Today, vehicles can have around 100 different control units, each with its own software. In the future, software functions will run on a central system with few domain

control units – for example for automated driving functions. This shortens the development time. All these software applications will benefit from the seamlessly integrated middleware that ensures system integration. In addition, function-related updates, extensions or additional options can be offered throughout the vehicle's service life.

Dr. Hartmann, the ZF middleware is being developed in the new Global Software Center. What's new about it?

Nico Hartmann: Our approach aims at creating a fresh and different view of software. We do not want to centralize software development, but rather provide complementary support for the expertise of experienced teams for software and hardware components.

In other words, you are creating the ideal framework?

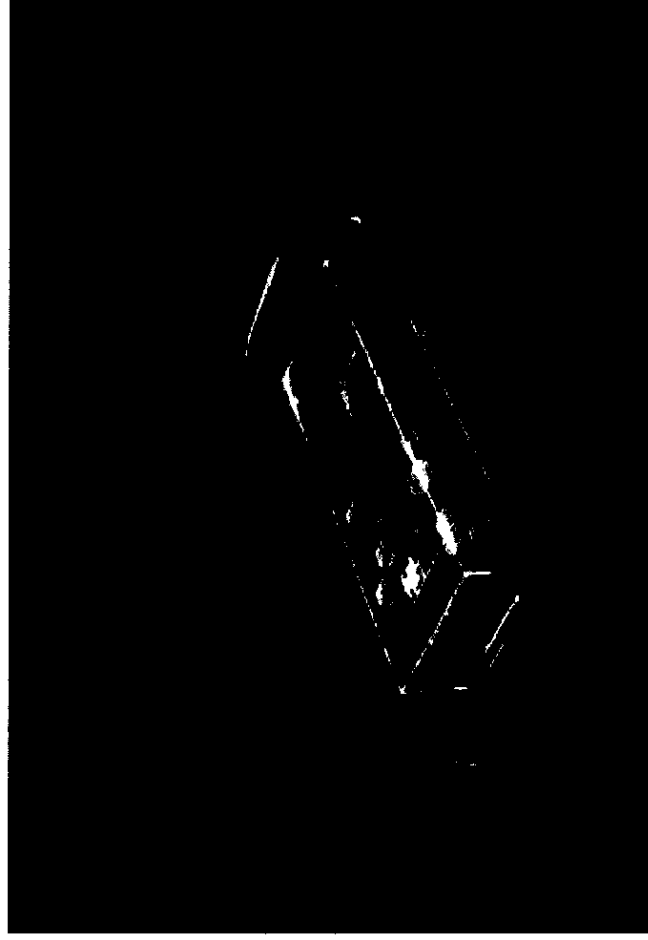
Nico Hartmann: Precisely, our experienced expert teams will then always be able to use the latest resources of the Global Software Center. This gives them more capacity to concentrate on their core tasks. And of course, pure software products, such as ZF middleware, are created centrally in the Global Software Center and then made available to all departments for further use.



ACCELERATION

ZF software solutions enable a faster and improved development process between ZF, the vehicle manufacturers and other partners – for the entire service life of the vehicle.

[Link to the online article](#)



The new open software platform /1 middleware acts as an intermediary between the operating system of a vehicle computer and its software applications.

How will this change development?

Nico Hartmann: In the medium term, we will have uniform structures and a uniform development environment throughout the ZF Group. The integrated cooperation with customers and partners will lead to greater speed and more flexible adaptation to individual needs. As a result, we can better meet the requirements of software-defined vehicles. Simultaneous and interlinked hardware and software development processes will enable us to create innovative, integrated and industry-leading solutions.

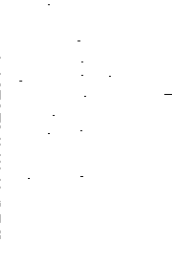
We have created the prerequisites for this in the past few years. Thanks to our own scalable ZF ProAI supercomputing platform for next-generation vehicles, we are able to offer traditional and new automotive customers comprehensive systems consisting of software, computing and sensor hardware, as well as connected actuators. With this, we make an essential contribution to transformation: for more safety and efficiency.

Dr. Walliser, which role do these developments play in the transformation to Next Generation Mobility?

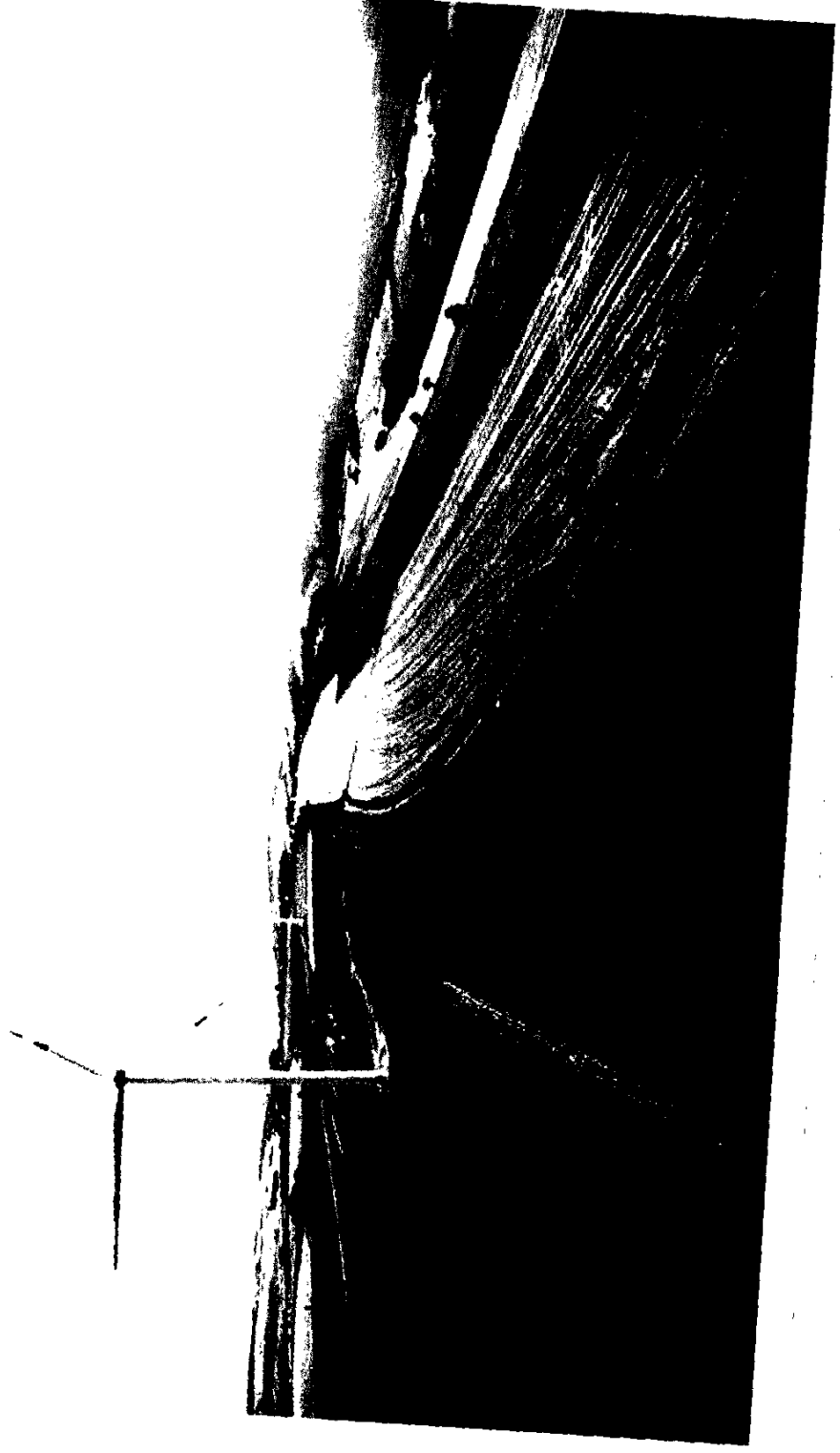
Dirk Walliser: The foundation of the Global Software Center and ZF middleware underscore our claim to be one of the world's leading systems suppliers for software-defined cars. The development is closely linked to that of application software for technology fields such as automated driving, integrated safety, vehicle motion control and electromobility.



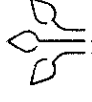
SUSTAINABILITY



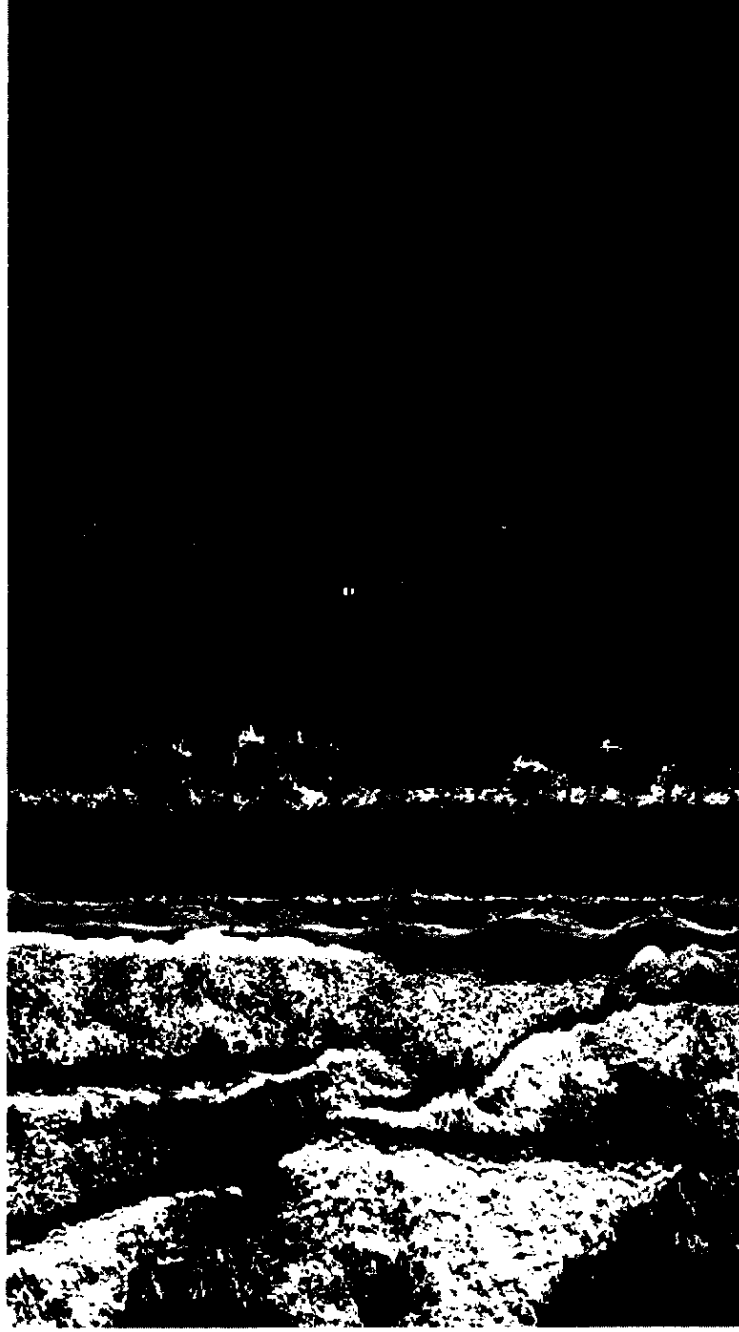
Transformation: Sustainability. Responsibility.



Committed to Environmental Protection



SUSTAINABILITY

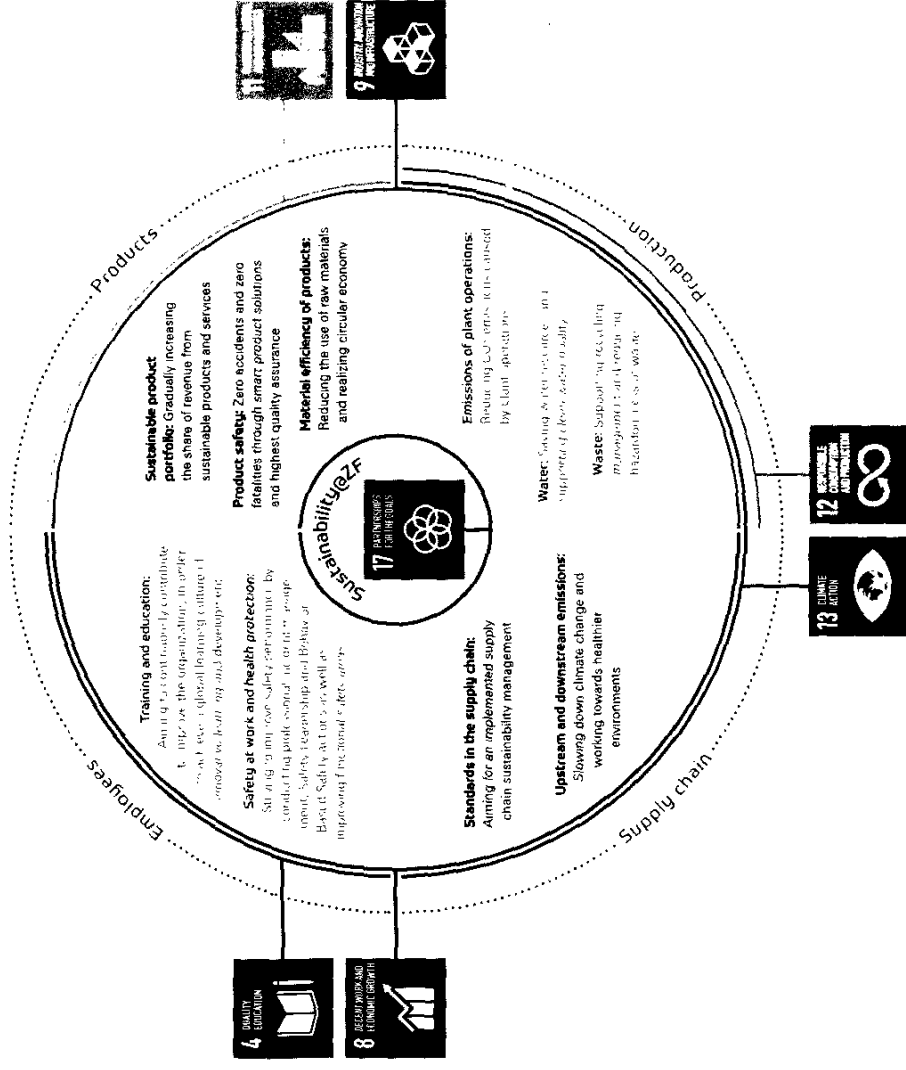


*ZF is aligned with the objectives of the Paris climate change agreement
The company itself pursues even higher ambitions.*

At the end of 2019, ZF decided to pursue an ambitious climate strategy. The aim is to become climate-neutral across all emission categories no later than by 2040. As early as 2030, we intend to exclusively use green energy at our locations, thus reducing Scope 1 and Scope 2 emissions by 80 percent compared to 2018. At the same time, we are working on neutralizing emissions throughout the entire supply chain, also known as Scope 3 emissions, with a focus on supplied materials by 2040. Here, the aim is to neutralize our product carbon footprint to a great extent by 2040. This means that, ten years earlier already, ZF is actively contributing to meet the objectives of the Paris Climate Agreement: to limit global warming to clearly below 2°C and to pursue efforts to limit it to 1.5°C, where possible. At the same time, ZF contributes to implementing the European Green Deal. It aims at making Europe a leader in sustainable technologies and becoming the world's first continent to become climate-neutral by 2050.

ZF Sustainability Strategy

ZF plans to become climate-neutral by 2040. In its sustainability efforts, the company focuses on the four areas of products, production, employees and supply chain.



SUSTAINABILITY

REPORT 2020

Sustainability as a Top Priority

To underline its commitment, ZF has joined the World Economic Forum's "Alliance of CEO Climate Leaders."

Questions of sustainable corporate management are firmly anchored in ZF's Corporate Principles. They are not only part of individual behavior, but also a central aspect of entrepreneurial action in daily decision-making processes. Sustainability cannot just be ordered top down, though – it must be embraced throughout the organization. Today, ZF has global EHS management at all locations.

The entire industry still has a long way to go to master the many ecological and social challenges on the way to sustainable development. These challenges are so complex that they cannot be solved alone, only in cooperation and partnership. The "Alliance of CEO Climate Leaders" holds the position that the private sector is responsible for actively participating in efforts to reduce greenhouse gas emissions worldwide and

In addition, the alliance advises to follow the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) for the disclosure of climate-related data and the effective management of climate risks.

shape the global transition to a climate-resistant economy, generating only low carbon emissions. ZF will work on this consistently and with a clear focus.

The members of the "Alliance of CEO Climate Leaders" want to:

- publicly define a net zero target for 2050 at the latest.
- join the "Business Ambition 1.5°C" campaign of the Science Based Targets Initiative (SBTi) and the UN Global Compact.
- define interim emission reduction targets and paths that are in line with the 1.5°C scenario of the Paris Agreement.
- transparently report on emission reduction progress, e.g. via the Carbon Disclosure Project (CDP).



Commitment of CEO Scheider: Since 2020, ZF has been a member of the "Alliance of CEO Climate Leaders."



SUSTAINABILITY

5 Questions to Sabine Jaskula

Sustainability is not about appeal or social acceptance. It will be a decisive parameter for the existence of companies.



*Member of the Board of Management of ZF Friedrichshafen AG,
responsible for sustainability.*



SUSTAINABILITY

TRANSFORMATION
SUSTAINABILITY
RESPONSIBILITY

2

How does the defined sustainability strategy benefit your customers?

Many of our customers pursue targets similar to ours and are therefore just as demanding in terms of their sustainability orientation. Further, not only are we committing ourselves to meeting the highest sustainability standards, but also our partners in the supply chain. ZF, for example, set essential targets in the supply chain already at an early stage. The selection of our suppliers also increasingly depends on whether they meet CO₂ targets and attribute the necessary attention to other aspects of sustainability as well.

1

How is the objective of sustainability anchored in the company?

Sustainability is essential for our future competitiveness and, consequently, for the success of our company. We no longer see sustainability as a "soft skill" but as a core competency. This is why in 2020, we visibly included climate neutrality as a key performance indicator in our corporate management and strategy. With this, we clearly underline our commitment to achieve these ambitious goals and follow up on the progress at any time.

SUSTAINABILITY

Our sustainability strategy is based on the following pillars:

3

Why are ZF's sustainability targets also important for investors?

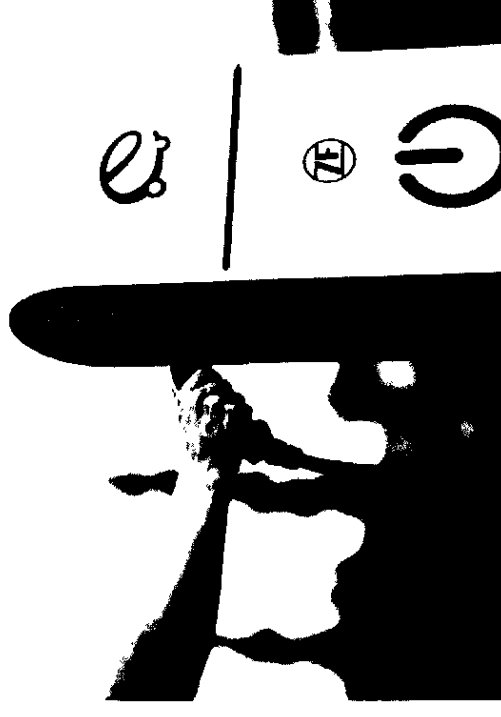
Investors are also increasingly focusing on sustainability KPIs. Meeting these criteria is also a prerequisite for receiving optimal refinancing conditions. Just like our customers, investors are also demanding more and more information and details about sustainability performance. Based on this information, portfolios in the markets are restructured and conditions are defined. This makes sustainability a key success factor for our financial independence. That's another reason why we attribute great importance to extensive reporting on our standards, measures and targets in the context of sustainability.

4

What are the specific targets on greenhouse gas emissions for 2030 and 2040?

We have defined a stringent roadmap. On the one hand, our approach to reducing direct CO₂ emissions is to increase the efficiency of our locations by two percent every year. Further, we will source more power from renewable sources or generate them at our locations, with the aim to source 100 percent renewable energies at ZF by 2030. In sum, we want to reduce our Scope 1 and Scope 2 emissions – i.e. the direct emissions from our own production including purchased energy – by 80 percent compared to 2018.

By 2040, ZF is to become fully climate-neutral, i.e. including Scope 3 emissions that occur in the upstream supply chain and in the utilization phase. We have no direct influence on these sectors, which is why achieving complete climate neutrality is an enormous challenge. It depends on the cooperation with our supply chain partners as well as on technological paradigm changes, such as CO₂-neutral steel and aluminum production.



Sustainability is an essential factor for ZF's future competitiveness.

5

What do the ZF targets mean for competitiveness?

Low-emission products give a clear competitive edge. Achieving the sustainability targets will be a decisive parameter for the existence of a company.

Transformation: Work. Agility.



The photos were taken before
the coronavirus pandemic



The in-house production of face masks was one of the measures in crisis management.

2020 demanded a great deal from people worldwide. Suddenly, employees and executive managers at ZF were also confronted with situations and resulting measures they had never expected. The global pandemic determined almost all developments and activities.

In retrospect, the impact of the crisis on ZF can be described using selected aspects:

- In the second quarter of 2020, markets slumped globally.
- 150 ZF plants had to close at least to some extent.

COVID-19: A Year like no Other

- 50,000 ZF employees worked short-time.

- The quick provision of a sound IT infrastructure and flexible regulations quickly enabled more than 60,000 ZF employees to work from home.

- The company benefited from the experience of its Chinese colleagues when implementing hygiene concepts and setting up its own mask production.

- Approximately 4,800 ZF employees contracted the coronavirus. Due to the extensive protective measures, the infection most likely only occurred within the company in exceptional cases.

- 30 ZF employees* lost their lives as a result of the coronavirus.

The consequences of the ongoing pandemic will remain noticeable far beyond 2021.

Transformation in the working world has gained speed. ZF has worked on its structure, strategy and processes. Assuming this and in view of the "new normal," how must the company be positioned in the future?

*Status at the beginning of January 2021.

Europe



Ralf Hunke, Plant Manager, ZF Eitorf Production Facility

"Thanks to close coordination with C Division Management and clear provisions at Group level, we quickly prepared a hazard assessment, introduced the distance and hygiene control measures required, and instructed all employees."

Nevertheless, the number of infections at our plant in November was so high that we agreed an emergency plan with the responsible authorities. In this phase, everyone made an extraordinary contribution to maintaining company operations – despite strict individual requirements and restrictions, the focus was placed on personal commitment to the company."

Hit by the second wave. November lockdown at the Eitorf plant



USA



Thomas Joos, Plant Manager ZF Gray Court, South Carolina

"For us, the lockdown came on March 23. Right from the start, we identified items that we can produce internally, first hygiene wipes and hand sanitizers. We also contacted our ZF colleagues in China who had just started producing masks. We benefited from this experience and are currently producing masks for all ZF locations in North America – 25,000 units per shift."

Right from the beginning, we knew that our ability to find innovative and unconventional paths would be the key. These efforts continue until today."

Masks for all US locations: The ZF plant in South Carolina



China



Hongwei Zhang, Plant Manager, ZF Automotive Systems, Wuhan

"Already on January 2, the Health & Safety Team reported 'suspicious SARS cases' in Wuhan. We immediately provided face masks, disinfection and fever thermometers for our employees. The news of the lockdown reached us on January 23 – the second day of the New Year vacation. We networked from home and organized the measures."

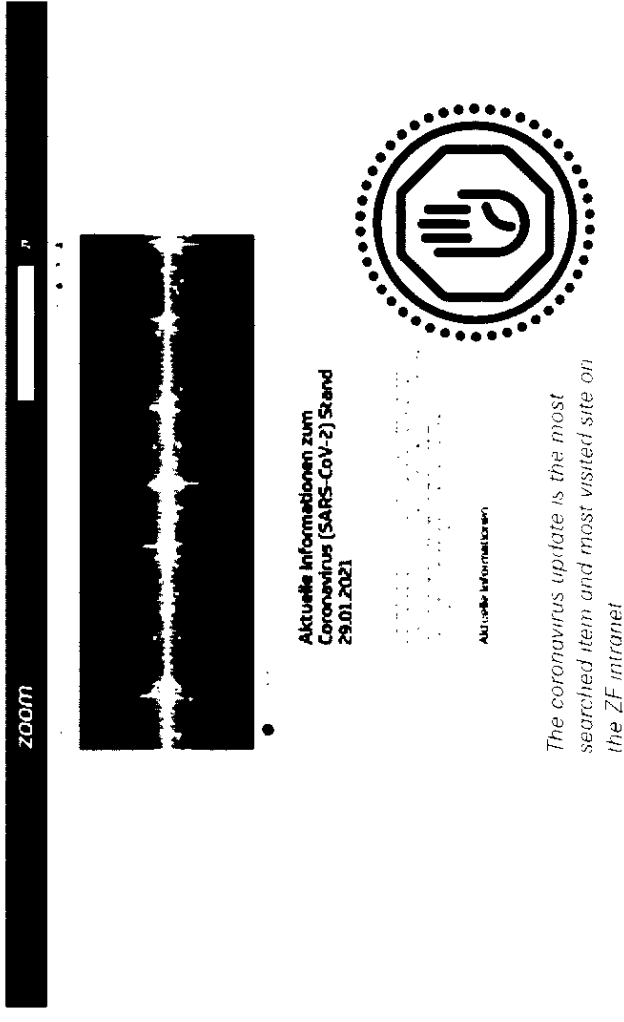
Many employees waived their vacation to work day and night on coping with the crisis. Thanks to good pandemic prevention, we fulfilled our deliveries one hundred percent, there were no quality complaints and no COVID-19 cases."

Lockdown on the second day of the New Year vacation ZF plant in Wuhan



Under the Sign of the Pandemic

Already in January 2020 – due to the developments in China – ZF responded to the upcoming pandemic and took initial measures. Crisis management became a long-term challenge going beyond 2020.



2020

January

Employee safety has determined ZF's actions in 2020 – accompanied by efforts to keep up production and supply chains. The chronology of measures.

- Monitoring and continuous travel update
- Establishment of global task force
- COVID-19 information on ZF Zoom (intranet)
- Crisis meeting of the health committee
- Travel ban from and to China
- Release of EHS guidelines for COVID-19

February

- Conference call with expats (briefing for evacuation)
- Extension of travel ban
- Regular meetings of the health committee on COVID-19
- "Effective virus protection" campaign in several languages
- Establishment of European Crisis Management Team

March

- Establishment of COVID-19 task force in the US
- Mask production at ZF in China
- First confirmed COVID-19 case at ZF
- "Restart of Production" task force
- Task force India
- Pandemic prevention plan 4.2



Social distancing



Masks

Washing hands
and disinfection

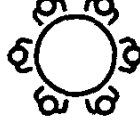
Aerosol guideline



Entry control



Home office

Limited staff
in meetingsChecklists for hygiene
measuresRegular
communication

Space concept

Protection of all employees and verification of hygiene measures

Keep up production and operation

2021 >

April	May/June	July/August	September–December
- Online format "Learning Journey for Leaders" - Online format "Ready for ramp-up" "Risk assessment" checklist - Delivery of masks from China to the US and Europe - Mask production in Mexico - Checklist "Restart in non-producing office areas"	- Reopening of employee restaurants in Germany - Manager manual on how to handle COVID-19 - Regular report on implementation status of all measures at all locations - Two additional webinars "Restart of production"	- Mask production in Germany - Relocation of eight expats to China - Extensive obligation to wear masks at all locations - Poster on obligation to wear masks	- COVID-19 refresher campaign ("Remain alert.") - Rollout of new travel guidelines - Shutdown at ZF's Eitorf location - US and Europe task forces meet twice a week "COVID-19 test directive 2020"

Crisis Intervention by ZF: Webinars and Tools

Learning journey for leaders

As of March 2020, weekly online learning modules were available for all ZF executive managers with the "Learning Journey for Leaders" over a period of six weeks. Superordinate objective of the multi-layered program: Leadership in the crisis. The one-hour on-demand videos focused on contents such as remote working, virtual cooperation with Office 365, virtual communication, change management, virtual leadership, and coping with difficult situations. All webinars were well-received: 4,900 accesses were tracked by the end of 2020.

With "Ready for ramp-up," a second, supplementary format was developed for the production areas. In moderated discussions, the participants were able to exchange information about best practices. In addition, the company provided tools and training on the topic of "Safety Leadership Culture." This enables executive managers and employees to learn how to pay long-term attention to safety at work and at home.

Remote working

In order to avoid traveling and to minimize the risk of infection, ZF offers digital solutions for remote support: Every smartphone can be connected to ZF Mobile Device Management in order to install Microsoft Teams. With this solution, team calls are possible from smartphones via audio and video.

Some divisions use the Microsoft HoloLens (mixed reality glasses), which enables direct interaction with other users in a team call through extended remote assist functions.



Teamwork First!



The photos were taken before
the coronavirus pandemic.

The new HR strategy is to support the business transformation towards "Next Generation Mobility" with a highly efficient, innovative, diversified, networked and excellent HR organization.

In 2019, the rollout started with a recording of the status quo of relevant processes and methods in the regions and divisions. Thanks to the involvement of all relevant stakeholders, the new strategy reflects the current situation, customer requirements and the overall business transformation.

The focus is placed on five strategic top objectives:

- Ensure that the best employees are in the right place at the right time
- Promote leadership quality, diversity and team culture

- Support cost competitiveness

- Improve speed, simplicity and agile working

- Become truly digital

Initiatives and specific projects have been defined for all targets to make sure they are met.

In order to achieve the strategic goal "Promote leadership quality, diversity and team culture," for example, the "Improving the feedback culture" initiative was launched. It resulted in the new employee dialog, skip-level meetings

and the rollout of the 360° feedback. The motto "Team beats Silo" should be part of ZF's DNA, just like the diversity aspect when forming teams at different levels.

The extent to which the objectives of the HR strategy are achieved is measured using different KPIs: a five-star rating for products and processes; the Leadership Excellence Score; the HR Satisfaction Score; the number of cross-moves as well as the employer ranking of ZF in strategic markets.

Diversity as an Innovation Factor

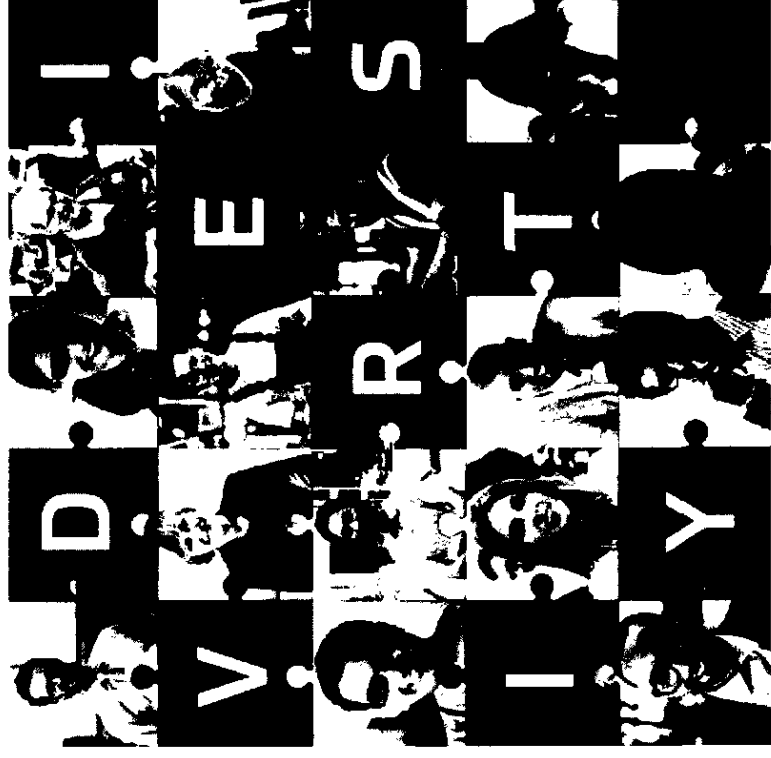
The coronavirus pandemic did not prevent ZF from pushing ahead its diversity programs.

Diversity is highly important for the whole ZF culture because only diverse talents lead to real innovation. The importance of diversity became particularly apparent during the crisis when new solutions often had to be found quickly. It is the range of ideas, thoughts, experience, training, mindset or attitudes that challenge the status quo.

ZF's diversity activities started with the Diversity Day on May 26. It included the introduction of the Diversity Guide and the "I am diverse because..." campaign. ZF locations around the world participated – despite the pandemic. The ZF Diversity Campaign pursues a clear objective: To make it clear to all employees that diversity concerns everyone. A virtual photo and video campaign was initiated worldwide for this purpose,

with employees contributing from all over the world.

The beating heart of the ZF Diversity Guide is a continuously updated online guideline with general information on the topic. Contributions to topics such as "unconscious bias," "generational conflicts" or "personality types" highlight diversity from different perspectives and create well-founded know-how for executive managers. In 2021, diversity represents a content-related focus for the entire company and is tracked with fixed KPIs. "Driving diversity to the next level" is the motto. It combines initiatives for transparency, commitment and personal responsibility. This includes the establishment of a global diversity team as well as training on diversity topics.



Diversity extends the range of ideas, thoughts, experience, training mindset and attitudes, all challenging the status quo

Management

51	— Board of Management Letter
55	— Management Bodies
57	— Our Strategy
60	— Report of the Supervisory Board

BOARD OF MANAGEMENT LETTER

WOLF-HENNING SCHEIDER

Dear Reader,

Last year, the outbreak of the coronavirus pandemic put an unusually high strain on all areas of life. The already changing vehicle markets experienced a serious decline, which is why we have taken extensive measures in our company to stay on course. The decline in the first half of the year was harsh, but we were also able to successfully turn the tables in the second half of the year. In 2020, we put all our expenditures to the test and saved money wherever possible, except for investments in our future. The high level of commitment and team spirit of our employees worldwide were also decisive for this trend reversal. During the crisis, we experienced profound solidarity throughout the company and a great willingness to adapt and be flexible.

In May, we successfully concluded the acquisition of WABCO. This very successful company ideally supplements our existing portfolio in the field of commercial vehicles. With the acquisition, we closed an important strategic gap and positioned ourselves as a global leading systems supplier in the commercial vehicle market. Numerous joint projects have already been successfully launched and underline the industrial logic of the acquisition. Combining the two ZF commercial vehicle divisions is going according to plan and will be completed early next year.

The situation of the past year has considerably accelerated the transformation in technology fields relevant to us: High-performance computing hardware, software-controlled and networked components, e-mobility and automated functions for commercial vehicles and passenger cars are the major growth drivers of the next few years. 2020 has brought us forward in all of these areas with significant new orders, confirming the path of our "Next Generation Mobility" strategy. Here, it pays off that we have continuously increased our investments in research and development over the past few years. This applies in particular to the rapidly growing demand for electric vehicles, as ZF has already established itself as a competent systems supplier in this rapidly growing market.



“The high customer demand proves that we are on the right track.”

We are also adapting our structures. With the founding of the new Electrified Powertrain Technology Division, we have merged all our activities in the field of passenger car drivelines, which opens a new chapter for ZF in the field of e-mobility. This will enable us to drive the transformation toward electromobility even faster. With flat hierarchies, cost sensitivity and new products, we are growing strongly and aligning the company with e-mobility. We are pursuing a similar approach with the Global Software Center, which started work at the beginning of 2021. Its task is the Group-wide development of software systems for future vehicle architectures and making them available to the entire company. Its structures are geared toward flat hierarchies and agile processes, like those of the tech companies, because speed, customer proximity and the anticipation of trends are fundamental in this dynamic segment.

By 2040, we want to be climate-neutral in all our activities – ten years before the target date of the Paris Agreement. I see it as our obligation to act quickly. Climate change is probably the biggest challenge of our generation. We are approaching this task with the will to make a significant contribution to reducing emissions. Our company's attractiveness and sustainability will benefit from this.

2020 was a difficult year for ZF in economic terms, with Group sales dropping to €32.6 billion. Despite massive strains and continued high investments in future technologies, we achieved an adjusted EBIT of 3.2% of sales (0.9 percentage points less than in the previous year). In the second quarter, we implemented comprehensive cost reduction programs which took effect in the second half of the year. They covered all areas – with the exception of those that require high advance payments for our future orientation. Major contributions came from the worldwide production processes, which we made more efficient through a

changed organizational structure and restructured with the help of central processes. The contribution by strictly prioritizing expenditures and analyzing necessary costs was also significant and helped us save around €1 billion alone. A project to streamline our processes and overall organizational structure also showed initial results. We generally managed to improve our competitiveness and cost position, which will relieve us for the coming years. These same measures led to free cash flow in 2020 that was clearly above the level of 2019.

At the same time, we gained additional liquidity last year. For the first time, we created a euro medium-term note (EMTN) program: It allows bonds to be issued faster and more flexibly. We were able to place bonds with a total volume of €2 billion in 2020. These successful financing transactions are also a sign of trust of the capital market in the performance and sustainability of our company.

In the current fiscal year, it is important to maintain the course and appropriately implement the measures initiated. This gives us the ability to increase ZF's profitability again – even in such extraordinary times – and continue the transformation with innovation and investments. The continued consistent digitalization of our processes and production will make us much more efficient and faster.

In uncertain times of rapid change, we are pursuing ambitious targets in order to lead ZF into a safe future. I would like to thank the shareholders' representatives and the members of the Supervisory Board for their trust and constructive support in this special year. And I would like to express my thanks to our employees for their special efforts, great team spirit and commitment. This joint effort showed us how strong our company can be – in order to find the right solutions when facing challenges. After the joint experience of the past year, I am confident that we will successfully master the tasks ahead of us.



WOLF-HENNING SCHEIDER
Chief Executive Officer



THE BOARD OF MANAGEMENT

(from the left):

Wilhelm Rehm

Dr. Holger Klein (joining us from ZF's
Shanghai location)

Dr. Martin Fischer (joining us from
ZF's Detroit location)

Wolf-Henning Scheider

Stephan von Schuckmann

Sabine Jaskula

Dr. Konstantin Sauer

MANAGEMENT BODIES

THE BOARD OF MANAGEMENT

Wolf-Henning Scheider, Chief Executive Officer Research & Development, Sales

Wolf-Henning Scheider (born in 1962) has been Chief Executive Officer of ZF Friedrichshafen AG since February 2018. After graduating in Business Administration, he started his career at Bosch in 1987 where he assumed various management functions within the Group in Germany and abroad as a member of the Board of Management and Divisional Director. From 2010 to 2015, he was a member of the Board of Management of Robert Bosch GmbH where he also became spokesman of the Automotive Technology sector in 2013. From 2015 to 2018, Wolf-Henning Scheider was Chief Executive Officer of the Mahle Group.

Dr. Konstantin Sauer, Chief Financial Officer Finance, IT, M&A

Dr. Konstantin Sauer (born in 1959) has been Chief Financial Officer of ZF Friedrichshafen AG since 2010. In this function, he is responsible for major financial transactions such as the acquisition of TRW. Having studied industrial engineering, he did his PhD at the University of St. Gallen (Switzerland) in cooperation with Daimler-Benz in Stuttgart (Germany), before he moved on to ZF Friedrichshafen AG in 1990. Here he held various management roles, taking over responsibility as a CEO for the entire Region of South America in 2000.

Dr. Martin Fischer

Passive Safety Systems, Active Safety Systems, Electronics and ADAS, North and South America Region, Quality

An electrical engineer with a PhD title, Dr. Martin Fischer (born in 1970) has been a member of the Board of

Management of ZF Friedrichshafen AG since November 2019. After completing his studies at the Technical University of Darmstadt (Germany), he joined Siemens VDO Automotive in 1998, assuming various management roles, before moving on to automotive supplier Hella in 2006. From 2014, he held various management positions at U.S. automotive supplier BorgWarner, including in the USA.

Sabine Jaskula, Director of Labor Relations Human Resources and Legal

Sabine Jaskula (born in 1967) has been a member of the Board of Management of ZF Friedrichshafen AG since January 2019. After completing her studies, the fully qualified lawyer headed the legal department of Mast-Jägermeister, before joining an international corporate law firm. From 2001, she worked at the Continental Group, where she started out as an HR officer, before assuming various management functions in Human Resources from 2005. Having worked for Continental in China for several years, she moved on to become the head of Human Resources at ContiTech in 2016.

Dr. Holger Klein

Car Chassis Technology, Aftermarket, Regions of Asia-Pacific and India, Production

As of October 2018, Dr. Holger Klein (born in 1970) was appointed to the ZF Friedrichshafen AG Board of Management, having assumed responsibility for the Car Chassis Technology Division in the previous year. After completing his industrial engineering studies with a major in mechanical engineering, and having gained a PhD title from the Technical University of Darmstadt (Germany), Dr. Holger Klein held various management positions for McKinsey in Düsseldorf (Germany) and Chicago, Illinois (USA). From 2006, he was part of the

global management team for the automotive sector. In 2014, he transferred to the ZF Group as head of Integration Management for the acquisition of TRW.

Wilhelm Rehm

Commercial Vehicle Technology, Commercial Vehicle Control Systems, Industrial Technology, Corporate Materials Management

Wilhelm Rehm (born in 1958) has been a member of the Board of Management of ZF Friedrichshafen AG since 2012. Having studied mechanical engineering, he started his career at LOKOMA, a provider of business facilities, before moving on to become head of the assembly department at the AGCO/Fendt group of companies in 1984, which is the biggest manufacturer and provider of tractors and agricultural machinery worldwide. For almost two decades, Wilhelm Rehm held various management positions at several locations of the group of companies. In 2003, he joined ZF Passau GmbH as Managing Director responsible for Production and Materials Management. In 2010, he assumed the role of chairman of the board in Passau and became a member of the Board of Management of ZF Friedrichshafen AG, responsible for the Off-Road Driveline Technology and Axle Systems Division.

Stephan von Schuckmann (as of January 1, 2021) Electrified Powertrain Technology

Stephan von Schuckmann (born in 1974) has been a member of the Board of Management of ZF Friedrichshafen AG since January 1, 2021. He heads the newly founded division, which pools all competencies in the area of electrified powertrain technology, and is responsible for expanding ZF's position in the field of electromobility. The business economist joined ZF in 2003 and held various management positions. In 2015, he moved to the Car Powertrain Technology Division as Senior Vice President for Finance, IT and Process Management before taking over as head of the division in 2018.

SUPERVISORY BOARD

Dr.-Ing. Franz-Josef Paefgen
Chairman, former Chief Executive Officer of Bentley Motors Ltd., Crewe, UK

Roman Zitzelsberger*
Deputy Chairman, District Manager of IG Metall for Baden-Württemberg, Stuttgart

Ernst Baumann (until December 31, 2020)
Former Member of the Management Board of BMW Bayerische Motoren Werke AG, Munich

Andreas Brand
First Mayor of the City of Friedrichshafen

Jürgen Bunge*
Chairman of the Lemförde location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Achim Dietrich*
Chairman of the Group Works Council of ZF Friedrichshafen AG, Friedrichshafen

Robert Friedmann
Chairman of the Central Managing Board of the Würth Group, Künzelsau

Dr. Heinrich Hiesinger (since January 1, 2021)
Former CEO of thyssenkrupp AG, Essen

Joachim Holzner*

Head of the CV Chassis Technology Business Unit of ZF Friedrichshafen AG, Friedrichshafen

Peter Kippes*

First Representative of IG Metall, Administration Center Schweinfurt

Mario Kläs*

Chairman of the Saarbrücken location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Prof. Dr.-Ing. Gisela Lanza

Director of Production Systems at the wbk Institute of Production Science, Karlsruhe Institute of Technology (KIT), Karlsruhe

Dr. Joachim Meinecke

Lawyer, Freiburg

Oliver Moll*

Chairman of the Schweinfurt location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Jürgen Otto

Former CEO of DRÄXLMAIER Group, Vilsbiburg

Vincenzo Savarino* (until July 31, 2020)

First Representative of IG Metall, Administration Center Friedrichshafen-Upper Swabia

Hermann Sicklinger*

Chairman of the Passau location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Dr. Mohsen Sohi

CEO of Freudenberg SE, Weinheim

Helene Sommer* (since October 1, 2020)

First Representative of IG Metall, Administration Center Friedrichshafen-Upper Swabia

Dagmar Steinert

CFO of Fuchs Petrolub SE, Mannheim

Axel Strotbek

Former member of the Board of Management of Audi AG, Ingolstadt

Erdal Tahta*

Chairman of the Koblenz location Works Council of ZF Active Safety GmbH, Koblenz

*Employee representative

OUR STRATEGY

In a challenging year, our “Next Generation Mobility” strategy continued to set the course. With the crisis, we have once again increased our pace of change.

The structural change in the automotive industry is taking shape. People want constantly available, affordable, clean and safe mobility – but the reality looks a little different: traffic jams, emissions and a lack of mobility services. With our “Next Generation Mobility” strategy, we are developing comprehensive solutions for these challenges. In doing so, we present ourselves as an integrated systems supplier that will play a decisive role in shaping future mobility.

Software and artificial intelligence are defining essential functions for mobility. Consequently, numerous new players from other industries are appearing in the mobility market in order to leverage growth opportunities. Competition is set to intensify between not only manufacturers but also suppliers. We are getting ready for this by expanding our digital service portfolio and linking it to ZF's enhanced core competencies.

Our approach: High advance input in technologies for the fields of future growth

With digital innovations and continuously high investments in research and development, we are among the leading electronics and software suppliers – with technology for e-mobility and semi-autonomous driving, with central control units and software. As an overall systems supplier in the commercial vehicle sector and

for passenger cars in the field of electromobility, we are already starting with power electronics – the core of these vehicles. This will result in significant growth.

The developments in 2020 have further accelerated the transformation in the vehicle market and influenced progress in the ZF Group. In the meantime, the years of advance input are paying off in the development of a central high-performance computer range that will replace the decentralized on-board electronics in the vehicles of the future. In this field, we will be among the leading suppliers in the coming years.

For passenger cars, we see great potential for intelligent assistance functions, also known as Level 2+ systems. Some commercial vehicle segments and particularly urban public transportation are more likely to be able to use fully automated systems earlier.

Autonomous driving functions used in vehicles driving in self-contained areas – such as depots and factory sites – as well as on specific routes are already paving the way. Our company is well-positioned to cater to both trends.

The trend towards e-mobility received a very strong boost in 2020. In markets with a suitable infrastructure, we expect purely electric drivelines to prevail in passenger cars and many commercial vehicles. Here,

for example, our ZF brake system can recuperate energy and contribute to increasing the range of vehicles by up to 15%.

For us, plug-in hybrid drives appear to be an efficient interim solution along the way to electrification in the vehicle market. The plug-in hybrid offers the best of both worlds: local zero-emission driving and the ability to cover long distances. This is a good prerequisite for using this technology for many years to come.

ZF will no longer pursue developments for pure combustion engines. We are preparing for the fact that in Europe, for example, hardly any vehicles with combustion engines will be sold after 2035. Solutions from the new technology fields will account for the current sales contribution of around 25%.

4 plus 1 technology fields for three customer segments

We provide our customers in the three segments of passenger cars, commercial vehicles and industrial technology with products and services that also include the aftermarket business.

For our further development, our strategic focus is placed on electrification, digital networking and automation. For this purpose, we are further developing our portfolio across 4 plus 1 technology fields, which we combine via integrated solutions:

■ **Automated Driving:** Automated driving will make mobility more comfortable and safer and make everyday life easier for people. ZF systems already enable vehicles to see, think and act as well as drive autonomously. This will also lead to innovative mobility concepts for which new suppliers are already positioning themselves. Moreover, for ZF as a systems supplier, it is creating additional opportunities across the broad spectrum of mobility.

■ **Electromobility:** Hybrid and fully electric vehicle drives have been a reality for some time and will continue to grow at a substantial rate. ZF supplies

complete systems for pure battery vehicles as well as the core components for electromobility, such as hybrid transmissions, electric motors or power electronics – across all vehicle categories from passenger cars, commercial vehicles, agricultural and construction machinery to marine or rail applications and the micro-mobility sector.

■ **Vehicle Motion Control:** The chassis, comprising intelligence and motion-related actuators, plays a major role in ensuring vehicle safety, comfort and efficiency. We can network and synchronize virtually all systems that affect longitudinal, transverse or ver-

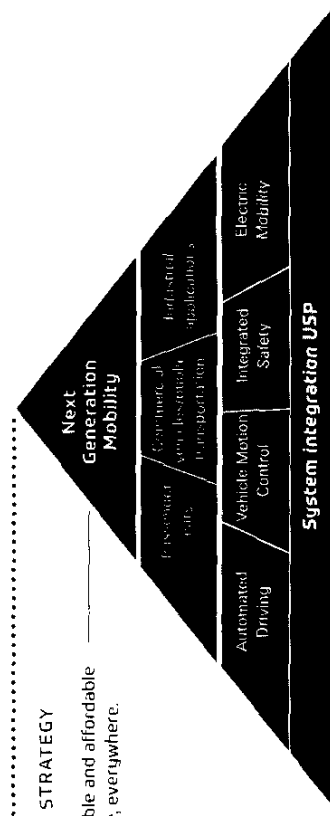
tical dynamics so that cars and commercial vehicles are quiet and safe, regardless of whether they are driven or driverless.

■ **Integrated Safety:** Autonomous driving and intelligent traffic routing will make a vital contribution to avoiding accidents. Nevertheless, occupant safety will still be paramount. ZF already has the most comprehensive safety technology in the supplier industry. It ranges from electronic control units, sensors, brakes, steering systems and seat belts as well as airbags, electronics and supercomputers with their corresponding software right up to active chassis systems equipped with the actively steering rear axle, for example.

G_01 Our “Next Generation Mobility” strategy

OUR MISSION AND STRATEGY

Clean, safe, comfortable and affordable mobility for everyone, everywhere.



■ **+1 Digitalization and Software:** Electronics and software are central basic modules for the transformation in all four technology fields: ZF will be one of the leading providers for mainframe computers. The company also presented the open middleware software platform and established a Global Software Center to develop individual approaches to customer-oriented software solutions. Individual components are networked into comprehensive systems that are able to act independently with artificial intelligence. With this approach, ZF is working on the software-defined car, using software functions in a central system. ZF's middleware seamlessly integrates these systems.

OUR OBJECTIVES

Long-term growth and financial success

Increased market share

Increased productivity

Globally attractive employer

Dynamic growth

OUR KPIs

Revenue growth and operating profit

Market share

Productivity

Employee satisfaction

Customer satisfaction

Five objectives for balanced evolution

To ensure that the company evolves holistically, we are implementing our strategy around five objectives comprising areas of relevance for the Group.

1. **Innovation and cost leadership:** We have a broad product range. This means that we are already setting standards in our markets today. We want to stabilize and enhance this position – through regular innovations and by investing plenty of money in research and development. We also secure funding for this by continuously improving our efficiency and performance. Our cost leadership is vital in safeguarding our global competitiveness. Therefore, we will save costs through various programs.
2. **Balanced market penetration:** Where our customers go, we go – worldwide. Our aim is a balanced presence in all markets. Alongside Europe and the USA, we are focusing particular attention on regions with further growth potential: China and India. There, we reach new customers from the mobility sector who opt for ZF to accelerate their market rollout.
3. **Financial independence:** We aim to make our business decisions from a position of financial stability at all times. Financial independence is the foundation we build on to further increase our company value and meet the economic interests of our owners. To secure them, we engage in active financial management. Its purpose is to ensure that the balance sheet structure data remains within our target framework and that the free cash flow gives us leeway for action to implement our projects in operations.

ZF's climate protection strategy reinforces our course

We want our solutions to help reconcile society's mobility needs with nature's ecological possibilities. To this end, we are pursuing a climate neutrality strategy with ambitious targets: By 2040, our Group aims to be climate-neutral in all three scopes of the Greenhouse Gas Protocol – consequently, across the entire supply chain through to the application of our products. As an interim target, we are striving to cut CO₂ emissions until 2030 by 80% compared to 2018.

In 2020, we included climate neutrality as a key indicator in our corporate management and strategy so that we can track our performance in this target dimension at any time.

4. **Globally attractive employer:** We want to ensure that the best employees are in the right place at the right time. We promote leadership quality, diversity and team culture. Therefore, we are using various dialog measures to improve the feedback culture. Along the lines of "team beats silo," our cooperation goes beyond department and division boundaries.
5. **Diversified for profit:** We develop our service portfolio decentrally from the business units. This means that we not only stay close to our respective customers, but can monitor the markets individually for new business opportunities and tailor our solutions to market and customer needs. Diversification provides the Group with stability and makes it easier for us to deal with temporary market fluctuations. At the same time, we are responsible for setting up new business models in the area of software and service, for example in the area of new mobility solutions.

REPORT OF THE SUPERVISORY BOARD



**DR.-ING.
FRANZ-JOSEF
PAEFGEN**

Dear Reader,

2020 was a year significantly characterized by the COVID-19 pandemic and its effects. It was a challenging year for the Supervisory Board and the Board of Management. The coronavirus has determined and continues to determine world events.

For the ZF Group, 2020 was characterized by strict cost and liquidity containment, investment reduction and loss minimization, while at the same time our markets changed at higher speed. The EU Green Deal, increasing electrification shares, digital networking and software are driving future mobility and increasingly determining our industry. The ZF "Next Generation Mobility" strategy is becoming reality.

The advancement of the transformation was not only accompanied by the pandemic risks, but also by geopolitical uncertainties, global trade conflicts and economic downturns, which triggered a massive economic crisis and partly led to significant declines in demand. ZF will continue to feel the aftermath in the coming years, which will make it more difficult to achieve the set targets.

The successful conclusion of the WABCO acquisition in spring 2020 will have a positive effect. The resulting, newly founded Commercial Vehicle Control Systems Division positions ZF as a highly qualified systems supplier in the commercial vehicle sector.

In addition to focusing on economic targets, the company also assumes its social and ecological responsibility. The formal inclusion of the climate neutrality target in the corporate strategy underlines the consistent commitment to CO₂-neutral mobility.

What 2020 also revealed: Software is shifting limits and is becoming an innovation driver. Considerable development success enables ZF to tap new business models and value chains.

Last year brought the following personnel changes to the Supervisory Board and the Board of Management:

Due to his retirement, Mr. Vincenzo Savarino resigned from the Supervisory Board as of July 31, 2020. On October 1, 2020, Ms. Helene Sommer took over his position as employee representative. At his own request, Mr. Ernst Baumann resigned from the Supervisory Board as of December 31, 2020. The shareholders of ZF Friedrichshafen AG appointed Dr. Heinrich Hiesinger as member of the Supervisory Board as of January 1, 2021.

The Supervisory Board thanks the members who have stepped down for their commitment.

The chairpersons of both committees, Dr. Franz-Josef Paefgen and Mr. Axel Strotbek, reported on the essential issues and activities in their committees at the subsequent Supervisory Board meetings.

The annual financial statements of ZF Friedrichshafen AG compiled by the Board of Management in accordance with the provisions of the German Commercial Code (HGB) and the consolidated financial statements compiled in accordance with Sec. 315e HGB on the basis of the International Financial Reporting Standards (IFRS), dated December 31, 2020, as well as the corresponding management reports, were audited by Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft. The company issued its unqualified audit opinion in each case.

The Supervisory Board extensively studied the documentation. All members of the Supervisory Board had access to the audit reports in good time. The appointed auditor explained the main audit results first to the Audit Committee and then to the Supervisory Board during the board meeting on March 17, 2021. In both cases, the results were discussed in detail. The Supervisory Board had no objections after its concluding audit result. During this board meeting, the appointed auditor's report as well as the annual financial statements of ZF Friedrichshafen AG were approved and the consolidated financial statements were adopted.

For the fiscal year 2020, the Board of Management drew up a report on the relations to affiliated companies (dependent company report) according to Sec. 312 German Stock Corporation Act (AktG). After comprehensive review of the dependent company report, the Supervisory Board had no objections. Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft audited the report and issued the following audit opinion:

"Based on our dutiful audit and assessment, we confirm that

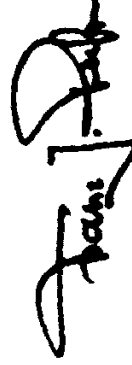
firstly, the actual statements of the report are correct; secondly, the contribution by the company with regard to the legal transactions presented in the report was not unreasonably high."

The Supervisory Board endorses the auditing results of the appointed auditor. According to its concluding audit result, it does not raise any objections with regard to the Board of Management's closing statement contained in the report.

In 2020, the Board of Management and all employees of the ZF Group worldwide showed outstanding commitment to the company despite the enormous strain. The Supervisory Board expresses its appreciation and gratitude for the work performed and the great willingness to take the necessary measures in such a difficult period.

As an act of solidarity toward the workforce, the Board of Management and executive managers agreed on a partial salary waiver in 2020. In order to underline the "We are a team" idea, the Supervisory Board also waived part of the Supervisory Board's remuneration.

Friedrichshafen, March 2021



On behalf of the Supervisory Board,
DR.-ING. FRANZ-JOSEF PAEFGEN
Chairman of the Supervisory Board

Group Management Report

Contents of Management Report

- 64** — Basic Principles of the ZF Group
- 74** — Economic Report
- 83** — Opportunities and Risks
- 93** — Forecast Report

BASIC PRINCIPLES OF THE ZF GROUP

OPERATING ACTIVITIES AND STRUCTURE

G.01 ZF worldwide

Global technology solutions provider focuses on mobility

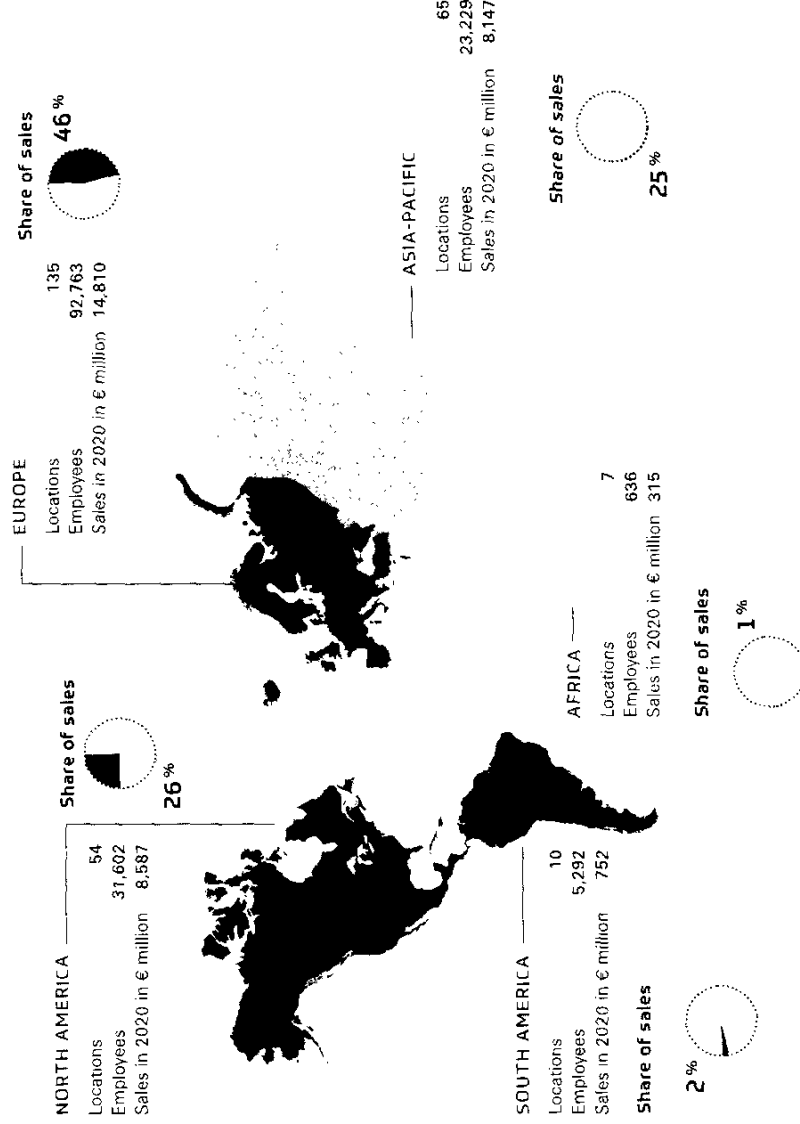
ZF is a global technology company supplying advanced mobility products and systems for passenger cars, commercial vehicles and industrial technology. Our comprehensive technology portfolio is aimed primarily at established vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. Alongside our core markets – passenger cars and commercial vehicles – we also serve market segments such as wind power, marine propulsion, aviation technology, rail drives, special drives and test systems. We sell our products under the brands of ZF, TRW, Lemförder, WABCO, Boge and Sachs.

On May 29, 2020, the acquisition of WABCO Holdings Inc. (WABCO) was successfully concluded. This transaction has enabled ZF to also position itself as a global systems supplier in the commercial vehicle market.

Our workforce worldwide comprises around 153,500 employees at 271 locations in 42 countries. Our main sales markets are Europe, North America and the Region of Asia-Pacific, with China as the core market and India as the growth market.

A focus on four technology fields

We strategically focus on four technology fields, systematically combining them through integrated solutions: Vehicle Motion Control, Integrated Safety, Automated Driving and Electromobility. These fields are supplemented by digitalization and the networking of our products with the help of software.



271 locations in **42** countries
189 production locations in **31** countries
18 main development locations in **8** countries
 Global service network with more than
10,000 workshop partners

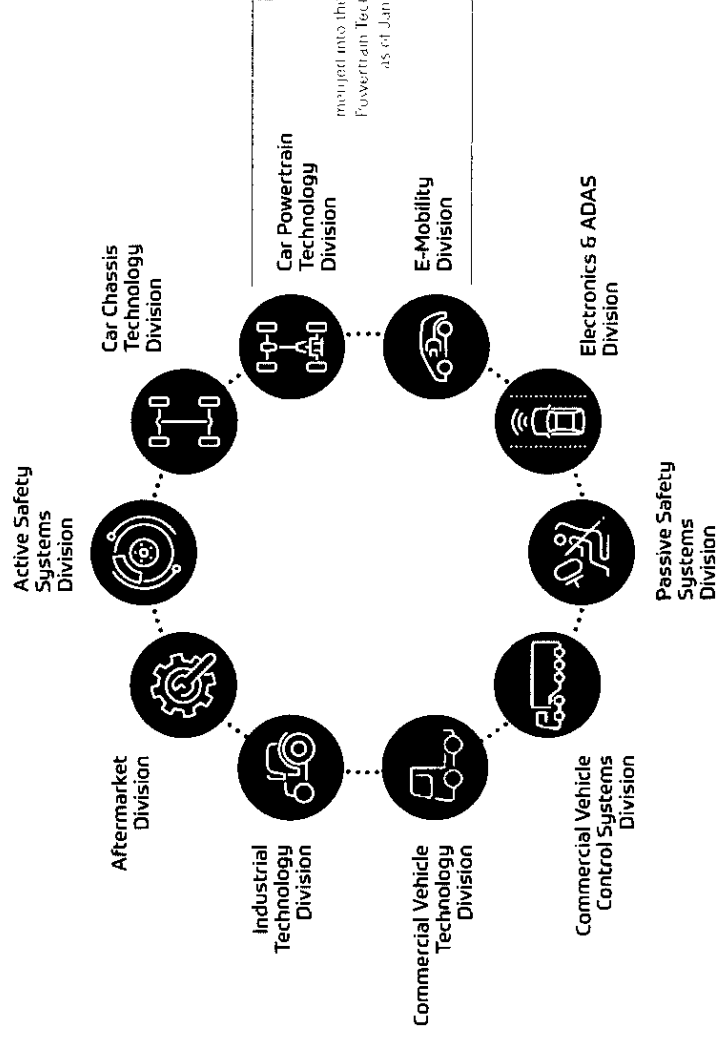
Corporate structure

ZF Friedrichshafen AG is a corporation headquartered in Friedrichshafen (Germany). The Zeppelin Foundation owns 93.8% of the company. These shares are managed by the city of Friedrichshafen. The remaining 6.2% is owned by the Dr. Jürgen and Irmgard Ulderup Foundation, Lemförde (Germany). The shareholders exercise their voting rights at the annual shareholders' meeting.

In order to manage our business activities as customer-oriented, market-specific and innovative as possible, we are working in a global network consisting of divisions, regions and corporate functions. The corporate functions and divisions are managed by the Board of Management. The same applies to the responsibilities with regard to the Regions of North America, South America, Asia-Pacific and India. The regions provide local guidelines as well as corresponding services for the business activities in their regions.

In the ZF Group, business activities by product segments are organized by divisions. The following divisions are assigned to the passenger car sector: Car Powertrain Technology, Car Chassis Technology, E-Mobility, Electronics & ADAS, Active Safety Systems as well as Passive Safety Systems. The Electrified Powertrain Technology Division was newly introduced on January 1, 2021. It combines the previously independent Car Powertrain Technology and E-Mobility divisions in order to offer customers electrified driveline solutions from a single source.

G.02 Corporate structure



After the successful conclusion of the WABCO acquisition, the company group acts independently as the Commercial Vehicle Control Systems Division, alongside the Commercial Vehicle Technology Division.

Activities in the area of industrial applications are pooled in the Industrial Technology Division and include market segments such as wind power, marine propulsion, aviation technology, rail drives, special drives and test systems.

The Aftermarket Division makes our OEM expertise available to the aftermarket, drawing on a global service network of more than 10,000 workshop partners. The offers of our divisions include services for fleets, exchange units and maintenance, as well as intelligent connectivity solutions plus upgrades and retrofits for more efficiency, comfort and safety. In addition, we develop workshop concepts that provide the technical know-how needed for diagnosis, maintenance and repair of our components.

CORPORATE MANAGEMENT

Board of Management

ZF Friedrichshafen AG and the ZF Group are led by the Board of Management, which runs the business independently and sets the company's strategic direction. The strategy is implemented in close coordination with the Supervisory Board, which monitors the Board of Management's activities and receives regular management updates concerning business performance, strategy and potential opportunities and risks.

In line with our matrix organization, in addition to strategic and functional management, the Board of Management has responsibility for the divisions and regions.

In the 2020 fiscal year, the Board of Management comprised seven members: Chief Executive Officer Wolf-Henning Scheider, Dr. Konstantin Sauer, Sabine Jaskula, Michael Hankel, Wilhelm Rehm, Dr. Martin Fischer and Dr. Holger Klein. Michael Hankel retired from the Board of Management as of December 31, 2020. On July 29, 2020, Stephan von Schuckmann was appointed to the Board of Management as of January 1, 2021.

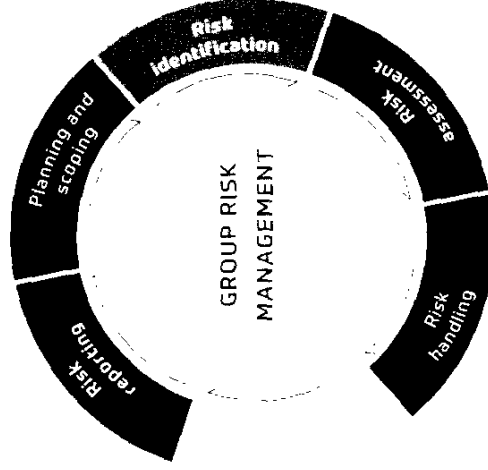
Supervisory Board

The Board of Management is overseen by the Supervisory Board, whose members are appointed with equal representation. In the fiscal year, the Supervisory Board comprised 20 members under the leadership of Dr.-Ing. Franz-Josef Paefgen. It is supported by an Executive Committee and an Audit Committee, which are both composed of members of the Supervisory Board.

Corporate Governance

The Board of Management and the Supervisory Board are committed to managing and monitoring the company responsibly in accordance with the principles of good corporate governance. These are a prerequisite for sustainable business success and the fundamental standard on which our day-to-day management is based. The Board of Management and the Supervisory Board share a firm conviction that acting according to the principles of responsible corporate management geared to sustainable value creation is an all-encompassing requirement across the whole business.

G.03 ZF Group Risk Management



Enterprise Risk Management

Over the past two years, the Group has gradually enhanced its enterprise risk management, which entails defining and regulating clear roles and responsibilities along with a standardized Group-wide risk management process. Against this backdrop, we have been designing an integrated Governance, Risk & Compliance (GRC) system since the end of 2019 that synchronizes and promotes the activities and cooperation of the core governance functions. In addition to Group Risk Management, this system includes the Compliance organization, the internal control system, and, as an independent supervisory body, Corporate Audit. Our risk situation is now more transparent. We document, monitor and manage risks in a structured way, taking account of both strategic and operational risks, and – going forward – aggregating the overall risk landscape.

Compliance

The company is committed to dealing with customers, business partners, employees and the environment in a reliable and respectful manner. This implies lawful, honest, responsible behavior at every level and in all areas as the core value of our corporate culture.

We promote professional conduct and minimize the risks of misconduct through a Group-wide compliance management system focused on preventing and detecting compliance cases as well as on responding quickly and effectively to potential violations.

ZF's Code of Conduct lays down mandatory Group-wide principles for correct, legally compliant and ethical behavior. The code requires legal compliance and fair competition, and addresses key issues such as human rights, anti-corruption activities, economic and social responsibility, product compliance, workplace safety, data privacy and transparency. The code is incorporated in our Compliance Management System and is available in more than 25 languages.

We do not tolerate violations of applicable legislation, our Code of Conduct, internal guidelines or, above all, our values.

Internal control system

ZF's internal control system (ICS) aims to guarantee that we achieve our objectives in terms of relevant business activities (effectiveness/efficiency), reliable financial reporting and compliance. Our standardized ICS method applies company-wide and is implemented accordingly throughout the Group. It is based on the tenets of transparency, the four-eyes principle and the separation of duties. The ICS helps to monitor control procedures and documentation through regular analysis and reporting to the Board of Management and Supervisory Board, and requires prompt corrective action where weaknesses come to light. The new

Commercial Vehicle Control Systems Division continues to use its ICS program. Regular consultation sessions regarding the coverage of the ICS portfolio take place. The integration of ZF's ICS method is planned for the fiscal year 2022.

Equality and equal opportunities

Equality and equal opportunities are vital for our company's success. We support the wide variety of social cultures in our company and nurture our employees regardless of their personal attributes. ZF promotes an integrative working environment and an open work culture that respect, value and encourage individual differences.

With due consideration for German legislation governing equal representation of women and men in managerial positions in the private and public sectors, ZF Friedrichshafen AG has discussed and set targets for the relevant managerial levels to be achieved by June 30, 2022.

- For vacancies regarding the Supervisory Board, a target quota of 20%¹⁾ female supervisory board members was set. The quota is currently 15%.
- For vacancies regarding the Board of Management, a minimum quota of 10% female Board of Management members is envisaged. The appointment of Sabine Jaskula as member of the Board of Management for the HR and Legal Corporate Function means that this target has been met.
- At the first managerial level (executive vice president/senior vice president) below the Board of Management and the second managerial level (vice president), the percentage of women is planned to increase to a minimum of 15% each.

¹⁾ This quota also applies to the management reports of 2017 to 2019, where accidentally a quota of 30% was stated, contrary to the grounds for a decision.

INNOVATION

Our objective: *new mobility*

Despite COVID-19-related restrictions, the Group successfully pursued the projects planned for the implementation of the Next Generation Mobility corporate strategy in 2020. To this end, the Group invested in the future sectors of new vehicle functions, software, artificial intelligence and efficient, electrified drive systems in particular.

We have defined four enablers for our path to implementing our technology strategy:

- **Vehicle System & Functions:** In the future, vehicles will be increasingly controlled by system functions. This cluster is developing the necessary architectures and software methods as well as the structure of these system functions.
- **Data Handling & Analytics:** This cluster focuses on vehicle connectivity and communication with the infrastructure, from embedded components to the platform necessary for data analysis, and algorithms including artificial intelligence.

- **Efficient energy conversion:** We are researching and developing the efficient storage and conversion of electrical energy as well as systematic algorithms for optimized vehicle control. We are working on efficient drives and efficient energy management. We see great potential for new semiconductors, especially in power electronics.

- **Advanced Base Technology:** This cluster deals with basic technologies that make complex vehicle functions possible, including modern, high-resolution sensors, artificial intelligence, powerful central electronic controls and cutting-edge materials for efficient power electronics.

Within these four technology enablers are 19 key technologies (focus topics) that we are pursuing in global research and development.

R&D expenditure remains high

In the fiscal year 2020, we invested €2,516 million (2019: €2,652 million) in research and development. This corresponds to a sales share of 7.7% (2019: 7.3%). R&D expenditure is defined as research and

development costs according to the statement of profit or loss plus capitalized development costs, less their depreciation.

T.01 Research and development figures

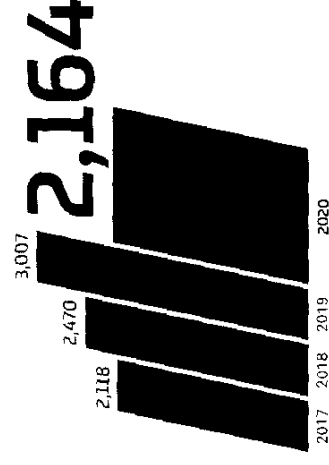
R&D expenditure in € million
R&D expenses ratio in %
Number of patent applications
Number of R&D employees

	2019	2020	Changes compared to 2019
R&D expenditure in € million	2,652	2,516	-5.1%
R&D expenses ratio in %	7.3	7.7	0.4% ppt
Number of patent applications	3,007	2,164	-28.0%
Number of R&D employees	19,409	21,797	12.3%

G.04 R&D expenditure in € billion / share of sales in %



G.05 Patent applications

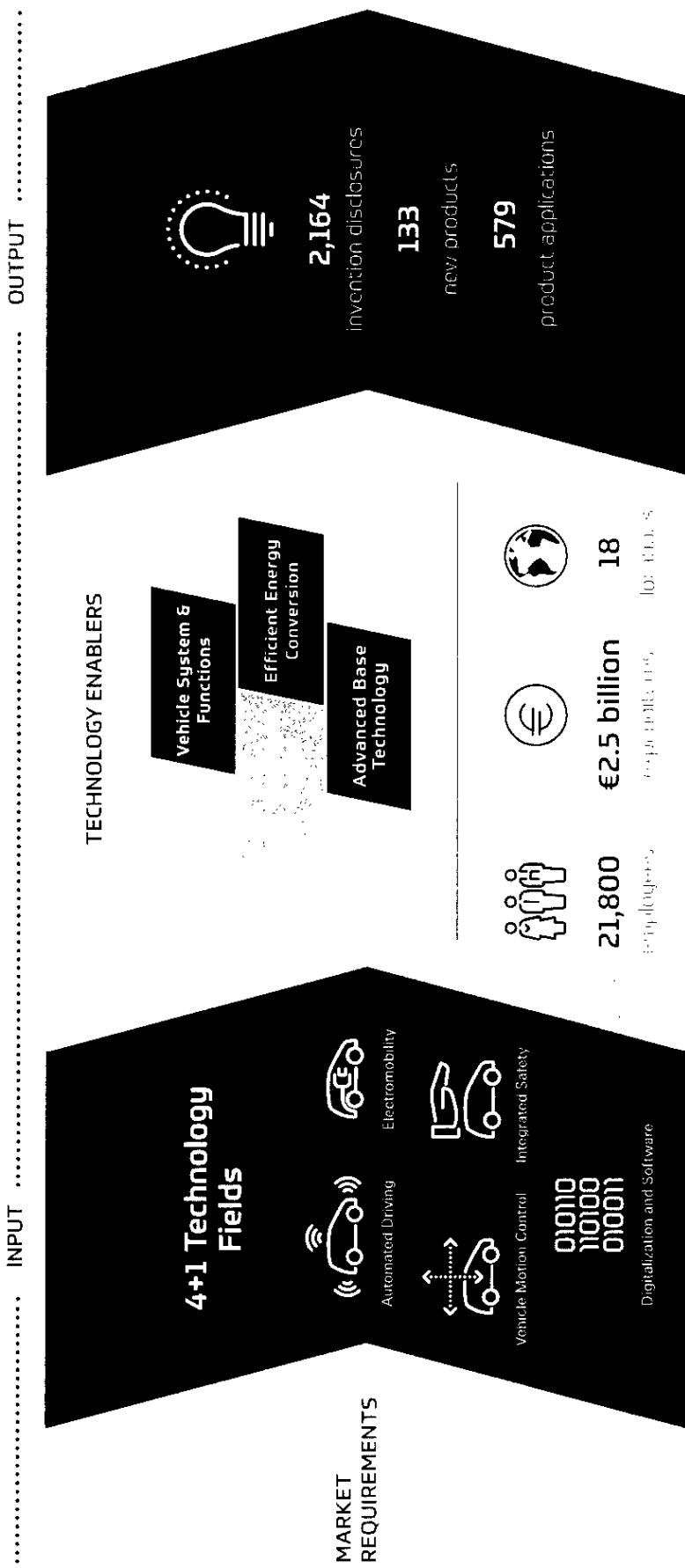


In the past fiscal year, the Group employed around 21,800 people in R&D (2019: around 19,400). The increase compared to the previous year is mainly due to the acquisition of the commercial vehicle supplier WABCO. Around 3,300 (2019: 3,100) employees work in the Group's basic research and divisional project development departments. ZF's Research and Development Department has 18 main development

locations around the world. In addition to Friedrichshafen, Koblenz, Schweinfurt, Alfdorf, Hanover, Düsseldorf, Dielingen, Passau and Auerbach in Germany, these are in Hyderabad and Chennai (India), the Detroit metropolitan area (USA), Shanghai (China), Częstochowa and Wrocław (Poland), Píseň (Czech Republic), Solihull (UK) and Yokohama (Japan).

Again numerous patent applications
In the year under review, a total of 2,164 invention disclosures were filed by the Group. 1,264 new patents were registered.

G.06 Technology strategy



Increasing R&D efficiency and accelerating the path from innovation to volume production

In the year under review, a focus was placed on anchoring and refining the technology strategy with the aim of providing further technology solutions for the requirements of electrified mobility as quickly as possible throughout the Group. Technology development is implemented in the interconnected process from trendscouting in the Innovation Factory to technology evaluation and accelerated agile advanced engineering through to initial business contact. In this context, an efficient energy conversion program was launched in 2020 to develop a fuel cell system.

The objective of R&D efficiency was supported by the PRISMA Group project. Here, the R&D Corporate Function contributes significantly with annual cost optimization in the 3-digit million euro range. This is achieved via four levers: optimized R&D footprint, improved supplier management, digitalized processes and consistent standardization.

In 2020, we also focused on digitalization and software development. Here, the course was set to further expand the business models for digital products and services as well as for pure software products. In addition, we invested in further establishing and expanding global centers for the core competencies of software development, artificial intelligence (AI), cyber security and system development.

Further digitalization in the product evolution process and the introduction of virtual validation methods with the help of digital product twins support R&D efforts. Last year, for example, we were able to reduce the number of physically driven test kilometers required for the release of ADAS functions. This resulted in time and cost savings in the validation process.

New products and applications

In 2020, we were able to integrate further innovations into products and applications in the four strategic technology fields of Vehicle Motion Control, Integrated Safety, Automated Driving and Electromobility with the help of the above-described technology enablers. The most important are described below:

■ Vehicle Motion Control

The central software control app cubiX was successfully further developed. cubiX is the networking and intelligent control of all longitudinal, transverse and vertical dynamic systems in the vehicle (e.g. steering system, brake system, etc.) – also known as Vehicle Motion Control Coordinator.

Our ADOPT (Autonomous Driving Open Platform Technology) software platform records AI-based data and converts them directly and precisely into instructions for the actuators. Thus, we combine the expertise in the field of autonomous driving with artificial intelligence.

In an initial volume production order from an Asian customer, we developed relevant features & functions and expanded the software platform architecture for the respective focus markets EMEA, Asia and North America.

■ Integrated Safety A new pre-crash safety system prototype developed by ZF uses an external side airbag deployed milliseconds before a collision. It provides an additional lateral crumple zone, which can help reduce occupant injury severity by up to 40%. To make this possible, ZF linked the airbags with the vehicle's environment sensors. Algorithms calculate the crash probability and decide whether the airbag is triggered or not.

In the Safe Human Interaction Cockpit, advanced assistance systems and automated driving functions communicate with the driver easily and effectively. The seat adjusts automatically to the driver and to different situations. Passive safety systems such as airbags and seatbelts are integrated into the seats. The innovative interior concept received the AutomotiveINNOVATIONS Award in the "Interior and Interface" category.

■ Automated Driving

Testing and safeguarding vehicle systems play a key role when introducing fully automated and autonomous driving functions. In the market, the competitive advantage goes to the OEMs and suppliers who are the first to master the verification and validation process in a time- and cost-efficient manner within the framework of legal requirements. We want to be among the first. For this reason, within the "V&V Methods" project sponsored by the German Federal Ministry for Economic Affairs and Energy, we are developing systematics and/or methods for the practical safety evidence for automated vehicles in cooperation with renowned German OEMs and universities.

Following the successful development of ADAS.AI advanced driver assistance systems for the transformation of camera images, we will use artificial intelligence for the transformation of radar signals in the "RADAR.AI" project. It will enable radar signals to be used in other applications, even if the radar position on the vehicle has changed. This reduces the data acquisition effort by around 90%.

Our driver assistance systems in the commercial vehicle sector reduce the risk of accidents as well as personnel and time efforts at the depot. The coupling assistant enables the truck to drive under the defined semitrailer in fully automated mode and to dock to it automatically. Added to this is the Advanced Reversing Assist, a further developed reverse driving assistant for trucks.

In the field of highly automated commercial vehicles, we are developing the ProAI RoboThink central computer for a fully automated Level 4 system in trucks.

■ Electromobility

In order to increase the range of battery electric vehicles, we are focusing on improving drive efficiency. We are working intensively on improving the technologies used, for example wide-band-gap semiconductors or new cooling processes. Further improvements are made by intelligently optimizing the overall system (driveline, brake, chassis, driving strategy). Calculations and initial tests have shown that energy savings of about 15% are to be expected.

For commercial vehicle applications, we are developing a new modular electric construction kit for central and axle drives. Our electrified eTrailer received the CLEPA Innovation Award 2020 in the "Environment" category. The semitrailer with integrated electric axle converts a conventional truck with combustion engine into a hybrid vehicle. This innovation can save up to 16% fuel and up to 7% on long-distance routes.

■ +1 Digitalization and software

Data will play an increasingly important role in the future and will also contribute directly to product marketing.

Corporate R&D is working intensively on how to use data, for example in the ADAS.AI project, where artificial intelligence is deployed to significantly improve the efficient usage of test data.

With ZF middleware, we are creating a central software platform for software-defined cars. It acts as a service provider for all software applications and enables them to exchange data. In the area of vehicle connectivity, our innovative telematics solution against freight theft from semitrailers in cooperation with Sioen Industries was awarded the Telematik Markt Award in the "Trailer Telematics" category.

EMPLOYEES

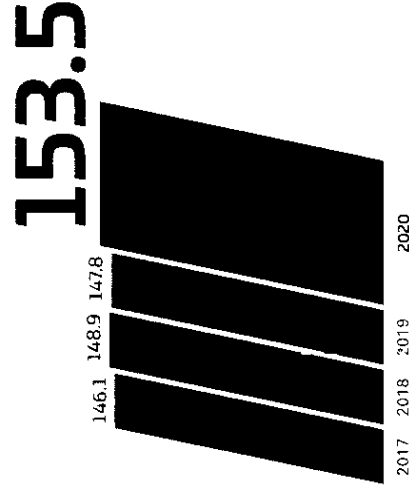
COVID-19 accelerates the transformation process

With the change in the mobility driveline types, ZF continued its restructuring efforts in 2020. Due to the COVID-19 pandemic, this process has speeded up even more. In light of the worldwide declining demand, we made capacity adjustments through termination agreements, short-term leave and the use of pre-retirement contracts. We reduced jobs worldwide. The pandemic, which began to worsen as of spring, also meant that ZF had to draw on the instrument of short-time work. The Group concluded the "Transformation Collective Agreement" with the employee representatives and the trade unions for employees covered by collective bargaining agreements in

Germany in order to mitigate consequences for the employees. The contract stipulates that ZF will not make any compulsory redundancies or close any locations in Germany until the end of 2022. In return, ZF has the opportunity to reduce the working hours of employees covered by collective bargaining agreements by up to 20% and to offer targeted severance packages and part-time work for older employees in Germany.

ZF implemented comprehensive measures in the first half of the year in order to maintain the supply chain and to ensure employee safety even during the pandemic phase. As part of the pandemic response plan, global and regional task forces were activated to manage global pandemic response. As a result, comprehensive protective and hygiene measures such as keeping distance, airing, filtering face-pieces, travel restrictions, Plexiglas protection screens as well as

G.07 Employees in thousand



SUSTAINABILITY THROUGH CLIMATE PROTECTION

Commitment to climate targets

As a technology company active in global business, ZF not only assumes comprehensive responsibility for its employees, products and services at the locations worldwide but also for the factors that can be influenced by the company along the value-added chain. Through investments in research & development, we are also essentially shaping the industry's transformation process towards sustainable mobility.

One central topic to achieve sustainable mobility is the reduction of greenhouse emissions. In order to meet this requirement, our company has acknowledged the objectives of the Paris Agreement. A total of 190 nations agreed to take appropriate measures in order to limit global warming to 1.5°C by 2050.

ZF's climate protection strategy sets the course until 2040

In order to further accelerate the transformation of our company, we have reinforced our Next Generation Mobility strategy, taken into account new developments and requirements, and anchored the goal of climate neutrality by 2040. Specifically, this means: By 2040, we are striving to achieve a neutral greenhouse gas balance across all emission categories ("Scopes"). By 2030, we set ourselves the interim target for our own locations to reduce our Scope 1 and 2 emissions by 80% compared to 2018. We will achieve this exclusively using green electricity at our locations by this time and continuously reducing our energy demand through energy efficiency projects. Moreover, we focus on the Scope 3 emissions that our company cannot directly influence, in particular the supply chain, for which we are also pursuing a neutral position by 2040.

Climate protection measures in 2020

In 2020, we anchored climate neutrality as a key performance indicator in the corporate strategy and established a steering committee for the climate neutrality program at the level of the Board of Management.

Furthermore, a cross-divisional core team was established that manages sub-projects, prioritizes initiatives and coordinates the interaction between the various Group levels and units.

At the locations, we primarily focused on improving energy efficiency and using more renewable energies. To control these measures, all locations have a certified environmental management system and the largest locations have an energy management system.

In the year under review, the upstream and downstream processes (purchased items, product utilization, etc.) were reported in the form of a corporate carbon footprint (CCF). At product level, the product carbon footprint was determined for the parts of the ZF portfolio with the highest sales in order to evaluate and define reduction scenarios.

In 2020, the sustainability criterion was introduced as a mandatory element to raise awareness in the supply chain regarding our sustainability and decarbonization expectations. A supplier self-disclosure on the essential topics such as CO₂, human rights and compliance serves as a basis for determining a sustainability score that must reach a minimum value of 25% so that products can be sourced from this supplier. Moreover, the decarbonization requirements of Materials Management were communicated to the suppliers at the Global Supplier Summit. ZF expects gradual decarbonization and sets individual supplier targets.

You can find more information in the Sustainability Report 2020.

ECONOMIC REPORT

MARKET AND INDUSTRY ENVIRONMENT

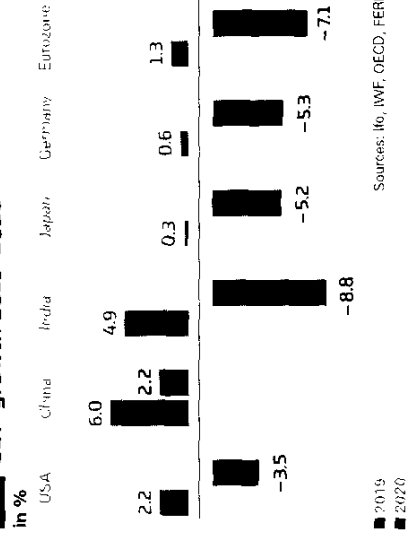
Following historic crisis, signs of recovery at the end of the year

In the wake of the COVID-19 pandemic, the global economy saw the largest crisis in decades early in 2020. Nevertheless, global economic performance dropped by just over 4% over the year. Comprehensive (partial) shutdowns of large parts of the global economy as part of various lockdowns had triggered considerably more negative forecasts in the first half of the year.

Starting in the third quarter, following the first major waves of infection in spring and summer, first signs of recovery emerged, particularly noticeable in the developed economies. The contraction of economic performance in the eurozone (slightly more than -7%) and in the USA (-3.5%) and light growth in China (2%) were more positive than feared in the course of the year. Far more severe slumps were prevented, among other things, by resolute monetary policy decisions of the central banks and the massive rescue packages launched by various governments and institutions.

Many newly industrialized countries, such as India (with -9%), Brazil (with -5%) or Russia (with -3%), were also affected by sharp declines in economic output. The combination of fewer opportunities for state intervention and the sometimes sharp increases in the number of infections – with the accompanying greater restrictions on economic activity – led to a severe strain on economic performance.

G.10 GDP growth 2019–2020



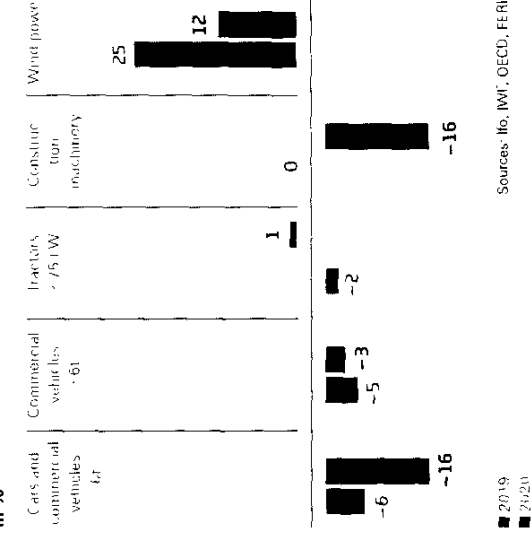
Pandemic puts ZF markets under increased pressure
The global market for passenger cars and light commercial vehicles has been in a downward trend for several years. From a peak year of 95 million vehicles in 2017, production dropped to 89 million vehicles by 2019. The outbreak of the COVID-19 pandemic led to another dramatic 16% slump in production to 74 million vehicles in 2020. This corresponds to the production level of 2010.

Worldwide, no region was spared the consequences of the pandemic: Almost all countries recorded partly massive declines in demand and, as a result, corresponding production cuts. Europe (including Germany) and North America both stayed behind – with more than 20%, compared to the prior year's volumes.

Japan fell by 16%, India by almost 25% and South America even by more than 30%. The People's Republic of China alone managed to keep the decline in the single-digit negative range. Here, production declined by only 4%, primarily because the spread of the pandemic was contained relatively quickly with strict measures so that, since spring, the vehicle market was able to move back to the prior year's level.

The market for heavy commercial vehicles over six tons also suffered massively from the more difficult conditions. The commercial vehicle markets in Europe, North America and South America all recorded negative volume developments, in the range of 20% and 30%. Indian commercial vehicle production even slumped by over 50%. Only in China was it possible to reverse the negative trend. Corresponding legal regulations ensured a thorough renewal of the fleet. As a result, the pandemic-related decline of 20% in the first quarter of 2020 was compensated very quickly. For the

G.11 Development of ZF's industries 2019–2020



overall year, production then even increased by 30%. This regionally heterogeneous development resulted in a global production decline of 3% in the market for heavy commercial vehicles in 2020.

In the year under review, developments in the industrial sector were slightly more stable than in the automotive markets. Worldwide, production of **agricultural machinery** (the range above 75 kW) remained at the prior year's level. Looking at the regions, China again stood out very positively with growth of 25%, while Europe and South America declined by 4% and 3%, respectively. North America, however, recorded moderate growth of 3%. In contrast, the production of **construction machinery** was not able to decouple itself as well from the pandemic-related recession. The industry posted losses of 16% worldwide. Here, also contrasting trends were found: In China, construction machinery volumes once again increased by 3%, while output in Europe was hit particularly hard, falling by -25%, and suffered extraordinarily in North America, declining by -35%. **Wind power business** remained on a clear growth course, though. After expanding gigawatt output by 25% in the previous year, it still increased by 12% in 2020. North America was the top growth performer with an increase of almost 50%. In contrast, the markets in Europe and China showed comparatively restrained growth of 2% and 10%, respectively.

OVERALL DEVELOPMENT OF THE GROUP

Overview of the business trend and Board of Management overall statement on business performance
The year 2020 was dominated by the largest economic crisis of the post-war period. It was triggered by the COVID-19 pandemic. In the first half of the year, global lockdowns shaped the economic development. These started in January in China and then spread in the other regions during the second quarter. This resulted in sales drops of up to 90% in individual months. From the middle of the second quarter, the markets gradually moved back towards normality until the end of the year. Here, in some cases, the level of the previous year was reached or even exceeded. For the automotive industry and ZF, this deep economic cut was also linked to the acceleration of already existing transformation processes towards future technologies.

The acquisition of WABCO also took place during this eventful year. In the commercial vehicle segment, it represents a vital component for the implementation of our strategy and the aforementioned transformation process. 2020 showed that this strategic acquisition was based on solid financing and ZF was able to successfully meet the economic challenges of the crisis year. This also applies to the company as a whole, which, despite the decline in sales, navigated well through the crisis with the help of consistently initiated measures.

At the end of the first quarter of 2020, it became apparent that ZF would not achieve the sales and adjusted EBIT margin targets set for 2020 due to the sales slump resulting from the COVID-19 pandemic. The forecast for the overall year issued in August 2020 continued to be dominated by uncertainty regarding a second pandemic wave. We therefore targeted sales

"below the previous year," "positive adjusted EBIT" and "positive adjusted free cash flow."

In a market environment dominated by the pandemic, the Group ultimately achieved full-year sales of €32.6 billion, a decrease of 10.7% compared with the prior year. After adjusting for exchange rate effects and M&A activities, sales decreased by 12.5%. This decline is significant – but still outpaces the development of the global automotive market.

Adjusted EBIT amounted to approximately €1 billion. It is essentially characterized by the decline in the markets. With the initiated countermeasures, such as adjustment of personnel capacity and reduction of investments as well as strict cost management, the decline in sales did not fully impact the result. The adjusted EBIT margin accounts for 3.2%.

Part of the measures initiated with the outbreak of the coronavirus pandemic was the launch of a long-term restructuring program, aiming at strengthening the company's competitiveness by reducing costs and adapting structures. With this program, ZF intends to further advance the transformation process towards future technologies and the digitalization of processes as well as the structural alignment of the company with the new market conditions.

The free cash flow adjusted for M&A activities amounted to around €1 billion and is thus at the upper limit of our forecast for 2020.

The forecast submit in the middle of the year was achieved for all three key figures or exceeded thanks to the strong second half of the year and the measures taken.

Another focus for coping with the crisis was to safeguard liquidity. As early as April 2020, it was possible to secure additional liquidity requirements caused by the crisis with a credit line of €1.35 billion. At the same time, we succeeded in adapting the covenant in our credit agreements with the conclusion of the credit line and thus gained sufficient headroom. Also in April, the rating agencies Moody's and Standard & Poor's adjusted ZF's rating together with other companies in the automotive industry one level downwards in the wake of the pandemic (Moody's: Ba1, Standard & Poor's: BB+). In September and November, ZF successfully placed three bonds on the capital market with a total volume of €2 billion. The proceeds from the bonds were used to promptly repay the credit line in order to secure liquidity during the crisis.

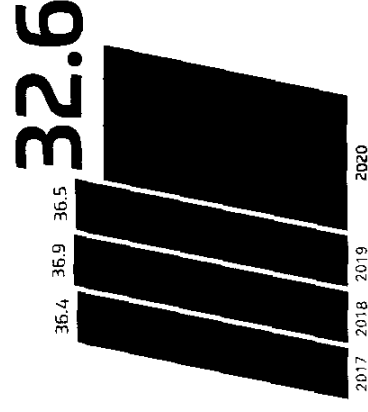
The ZF Group rests on a solid financial foundation thanks to its cash and cash equivalents of more than €2 billion as well as affirmed and unused credit lines of €3 billion at Group level.

Against the backdrop of a secured liquidity and financing basis as well as the successful crisis response, visible in the positive business trend during the second half of 2020, the Board of Management looks confidently at the future economic situation of the Group.

T.02 Statement of profit or loss

	2020	%	2019	%
in € million				
Sales	32,611	100.0%	36,518	100.0%
Cost of sales	-27,668	-84.8%	-30,768	-84.3%
Gross profit on sales	4,943	15.2%	5,750	15.7%
Research and development costs	-2,168	-6.7%	-2,270	-6.2%
Selling and administrative expenses	-2,700	-8.3%	-2,579	-7.1%
Other income and expenses	-162	-0.5%	-17	0.0%
Net result from participations	-124	-0.3%	43	0.1%
EBIT	-211	-0.6%	927	2.5%
Net financial result	-534	-1.7%	-387	-1.0%
Net profit or loss before tax	-745	-2.3%	540	1.5%
Income taxes	4		-140	
Net profit or loss after tax	-741	-2.3%	400	1.1%

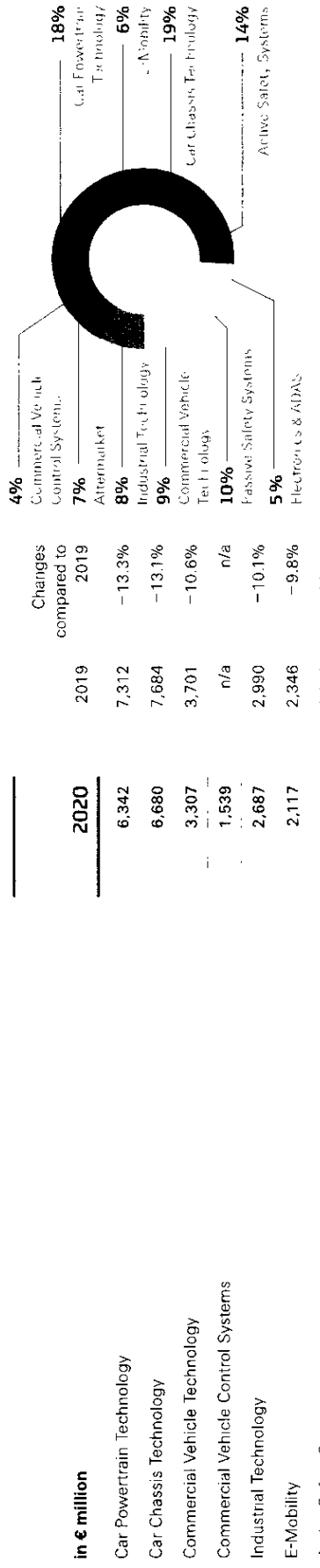
G.12 Sales development in € billion



RESULTS OF OPERATIONS, NET ASSETS AND FINANCIAL POSITION

First-time inclusion of WABCO influences ZF
The acquisition of WABCO was successfully completed on May 29, 2020. As a result of the control achieved by this, the WABCO Group was added to the basis of consolidation as of June 1, 2020. In addition to being included in the consolidated statement of profit or loss for seven months, the ZF Group's net assets and financial position were also significantly influenced. Therefore, a comparison of the figures of the fiscal year 2020 with those of 2019 is only possible to a limited extent.

T.03 Sales development by division



second half of the year led to a significantly weaker decline of 10.6% in the overall year. The launch of a joint venture in China and a higher demand for bus technology provided growth impetus. The new Commercial Vehicle Control Systems Division generated sales of €1,539 million between June and December.

In the fiscal year 2020, sales of the Industrial Technology Division amounted to €2,687 million, representing a decrease of approximately 10% (2019: €2,990 million). Despite the pandemic effect, the demand for wind power technology was high and sales even increased compared to the prior year.

Strongly influenced by the decline in production in the passenger car market, sales in the Active Safety Systems Division amounted to €4,987 million in the fiscal year 2020 (2019: €6,303 million). With 20.9%, the Active Safety Systems Division recorded the strongest decline in sales among all divisions.

The Passive Safety Systems, Electronics & ADAS and E-Mobility divisions were also unable to wall themselves off from the decline in production in the

Development of the divisions

The sales decline triggered by the pandemic is also reflected in the sales development of the individual divisions. Sales in the Car Powertrain Technology Division amounted to €6,342 million (2019: €7,312 million) in the fiscal year 2020. This constituted a decline of around €1 billion. In the Car Chassis Technology Division, sales also dropped by almost the same amount to €6,680 million (2019: €7,684 million).

Sales in the Commercial Vehicle Technology Division amounted to €3,307 million (2019: €3,701 million). It experienced fluctuations over the course of the year. Whereas the decline in the first half of the year was still around 23%, the continuous recovery in the

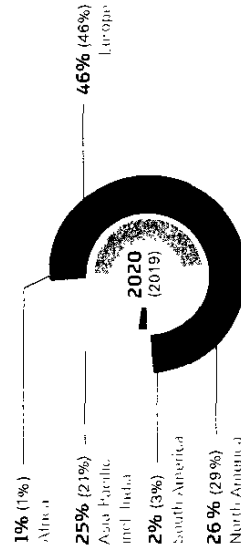
Results of operations

Group sales reduced due to pandemic

Sales in 2020 shows a differentiated development and is strongly characterized by the COVID-19 pandemic. After a sales decline of around 26% in the first half of 2020, sales in the second half of the year stabilized again with figures at or above the previous year's level in the last quarter. In the fiscal year 2020, the ZF Group achieved sales of €32,611 million (2019: €36,518 million), which represents a sales decline of around €4 billion compared to the prior year. Adjusted by M&A activities that include the WABCO acquisition as well as positive exchange rate effects, this results in an organic sales decline of 12.5%.

T.04 Sales development by region¹⁾**in € million**

	2020	2019	Changes
Europe	14,810	16,698	-11.3%
North America	8,587	10,436	-17.7%
South America	752	1,068	-29.6%
Asia-Pacific incl. India	8,147	7,847	3.8%
Africa	315	469	-32.8%
Total	32,611	36,518	-10.7%

¹⁾ Sales by target country**G.14 Sales by region¹⁾**¹⁾ Sales by target country

passenger car market. The Passive Safety Systems Division generated sales of €3,503 million, i.e. €834 million below the prior year's value of €4,337 million. With €1,561 million, sales in the Electronics & ADAS Division dropped by 15.5% compared to the prior year (2019: €1,848 million). The E-Mobility Division achieved sales of €2,117 million (2019: €2,346 million), representing a decline of 9.8%.

The lockdown also had a strong impact on production and therefore sales development in Europe. While sales there were still 28.4% below the prior year's level in the first half of the year, a noticeable recovery started in June. Viewed for the overall year, sales in Europe amounted to €14,810 million, which is 11.3% below the prior year's level.

South America and Africa experienced a similar trend. After April had reached a historical low, the recovery began in June. Sales amounted to €752 million at the end of the year in South America and €315 million in Africa.

The distribution of sales by region resulted in the following picture. The top-selling region was again Europe, accounting for 46%, followed by North America with 26% and Asia-Pacific with 25%. The Region of South America has a sales share of 2% and the Region of Africa of 1%.

Gross margin at 15.2%

Gross profit on sales amounted to €4,943 million (2019: €5,750 million), which is equivalent to a gross margin of 15.2% (2019: 15.7%). This decline is above all the result of lower sales. The quick implementation of cost adjustment measures resulted in the fact that the decline did not have a full effect on the gross margin. This led to an improvement of the earnings quality, especially in the second half of the year. Research and development expenses amounted to €2,168 million (2019: €2,270 million), representing 6.7% of sales after 6.2% in the prior year. With this, ZF highlights the consistent implementation of the corporate strategy to strengthen the defined future technologies despite the negative market development.

Sales and administrative expenses rose by 4.7% to €2,700 million (2019: €2,579 million), mainly due to

In the past fiscal year 2020, sales of the Aftermarket Division also fell by 13.9% to €2,522 million (2019: €2,929 million) due to the pandemic.

Regional distribution of sales

The effects of the pandemic and the associated lockdown on our regional sales development varied in terms of extent: Whereas the Region of Asia-Pacific was already affected by the lockdown in the first quarter, production in the other regions was cut starting from end of March and mainly in the second quarter.

Sales in the Region of Asia-Pacific, including India, were still considerably below the prior-year figure in the first quarter. Especially in the Chinese market, the recovery began already in the second quarter and quickly picked up in the second half of the year. Thus, sales in Asia-Pacific in 2020 were even slightly above the prior year's level at €8,147 million.

Sales in North America amounted to €8,587 million in the fiscal year 2020 (2019: €10,436 million), representing a decline of 17.7%.

the inclusion of WABCO, and could be adjusted to the market situation by using flexibilization instruments.

Adjusted EBIT margin of 3.2%

EBIT totaled €-211 million in the year under review (2019: €927 million). Adjusted by the net effects from the purchase price allocation for company acquisitions in the amount of €794 million, restructuring expenses in the amount of €514 million as well as the balance from M&A activities and one-off effects in the amount of €-50 million, the adjusted EBIT margin amounts to 3.2% (2019: 4.1%). This confirms the positive earnings forecast submitted at the middle of the year.

The net financial result fell from €-387 million to €-534 million, mainly due to higher interest expenses from financial liabilities and higher foreign exchange rate losses.

In the fiscal year 2020, income taxes show an income of €4 million compared to expenses of €140 million in the prior year.

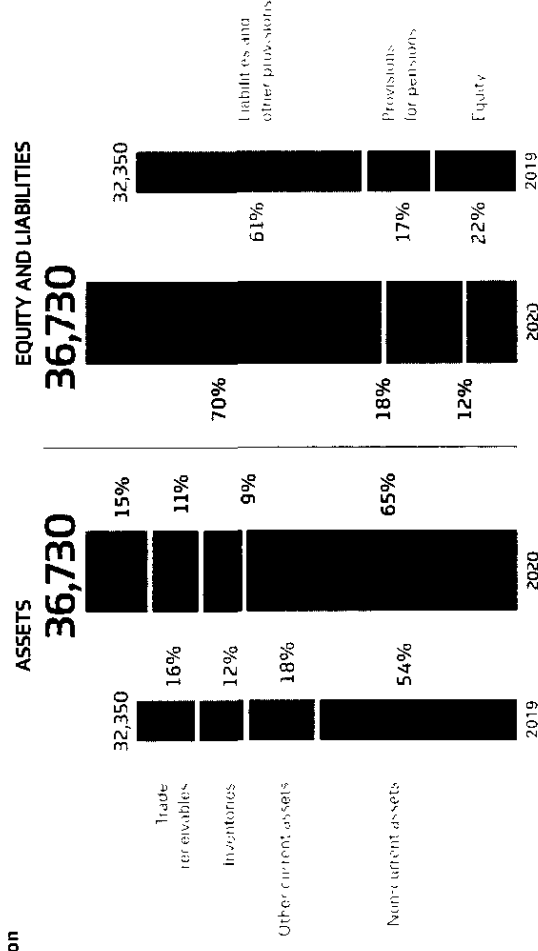
Net assets and financial position

Significant increase in total assets

Year-on-year, total assets increased by 13.5% to €36,730 million (2019: €32,350 million), mainly due to the acquisition of WABCO.

Current assets fell by €1,908 million to €12,908 million (2019: €14,816 million) primarily due to the outflow of financial assets which were reserved for the purchase price payment of WABCO and dissolved upon conclusion of the acquisition.

G.15 Consolidated statement of financial position
in € million



Trade receivables amounted to €5,481 million as of December 31, 2020 (2019: €5,041 million). Thus, they are 8.7% higher than in the previous year. The reason for this is the first-time consideration of WABCO.

Non-current assets increased by €6,288 million to €23,822 million (2019: €17,534 million), primarily as a result of the WABCO acquisition. The main driver was the increase in intangible assets to €12,735 million (2019: €6,841 million). As part of the purchase price allocation, intangible assets by WABCO were revalued and included in the consolidated financial statements with an amount of €3,202 million. In addition, the purchase price allocation resulted in an excess remaining after capital consolidation (goodwill) in the amount of €3,726 million. Property, plant and equipment rose

to €7,910 million (2019: €7,669 million). This includes property, plant and equipment from WABCO which was included in the consolidated financial statements with a value of €624 million as of the date of initial consolidation.

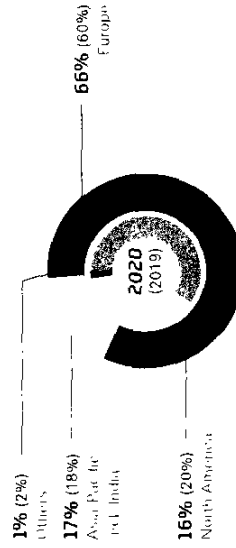
Investment ratio

In the past fiscal year, investments in property, plant and equipment amounted to €1,441 million (2019: €1,879 million). Due to the restrictive investment policy in connection with the pandemic, the investment ratio was at 4.4% of sales and thus significantly below the prior-year level of 5.2%, despite the inclusion of WABCO. Therefore, investments in property, plant and equipment were below the corresponding depreciation.

G.16 Investments and investment ratio in € million / in %



G.17 Investments by region



Of the capital expenditure, 45.9% was spent on payments in advance and construction in progress, 33.1% on technical equipment and machines, 11.5% on land and buildings, and 9.4% on other equipment, factory and office equipment.

In geographical terms, capital expenditure focused on Europe (66%), followed by Asia-Pacific including India (17%) and North America (16%).

Capital expenditure related to the expansion of capacities for existing products and the ramp-up of new productions. It also related to transmission applications (including hybridization), chassis systems, electronics, damper modules, brakes, steering systems and other safety technology as well as to new technology fields such as electromobility and autonomous driving.

Gross debt rises due to acquisition of WABCO

Current and non-current financial liabilities amounted to a total of €13,317 million as of December 31, 2020 (2019: €9,689 million). Without considering the change of derivative financial instruments, there was an increase in gross debt year-on-year by €3,635 million.

With an amount of €828 million, the inclusion of WABCO led to an increase in financial liabilities at the time of acquisition. The debt mainly consisted of a US private placement (USPP) of €440 million, a bonded loan of €300 million in total and leasing liabilities. For the USPP and the bonded loan, a mandatory offer for early repayment was submitted to the investors as part of the acquisition. Within the scope of this offer, a nominal amount of €553 million was repaid in the year under review.

To finance the WABCO purchase price, the Group's financial liabilities increased at the beginning of 2020 through the payment of forward tranches in the amount of €382 million from the bonded loans already agreed in 2019 with a nominal volume of €2.1 billion in total. The tranches have both fixed and variable interest rates with maturity periods of three, five, seven and ten years from disbursement. The bonded loans

have both fixed and variable interest rates. In addition, a credit limit at ZF's core banks of a total of €2.5 billion was used for the acquisition. The variable interest-bearing loan includes two tranches of €1.0 billion (maturity period until 2022) and €1.5 billion (maturity period until 2024). An amount of €500 million was already returned in the year under review from the tranche due in 2022. In addition to the bonded loans described above to finance the purchase price for WABCO, Euro bonds with a total volume of €2.7 billion were already issued in the fiscal year 2019. The bonds have maturity periods between 2023 and 2029 and have fixed interest rates.

In spring 2020, ZF took on a new syndicated loan of €1.35 billion with a maximum maturity period of two years to expand its liquidity provisions in connection with the pandemic. The loan was already fully repaid in 2020.

In order to increase the flexibility of borrowing funds on the capital market, ZF launched a Debt Issuance Program (DIP) for the first time in September 2020. Potential issuers are ZF Friedrichshafen AG or its 100% subsidiary ZF Finance GmbH. The DIP has a potential total volume of €7.5 billion. In September, ZF completed an emission under the DIP for the first time.

The bonds issued are divided into two fixed-interest tranches with a volume of €750 million each and have maturity periods of five and eight years. In November, another transaction followed with a fixed-rate individual tranche of €500 million and a maturity period of six and a half years. The bonds were issued by ZF Finance GmbH under the guarantee of ZF Friedrichshafen AG.

The remaining financial liabilities primarily result from financing the acquisition of TRW in 2015. In January 2020, a tranche of a bonded loan with a nominal

amount of €410 million was repaid as planned. In addition, a payable U.S. dollar-denominated bond with a residual amount of \$548 million was repaid in April 2020. The financial instruments remaining in this context are euro and U.S. dollar-denominated bonds with final maturities from 2023 to 2025 and a nominal amount outstanding as of the reporting date of €1,075 million for the euro bonds and \$1,699 million for the US dollar bonds (2019: €1,075 million and \$2,247 million, respectively) and a bonded loan with final maturity in 2022 and an outstanding nominal amount of €345 million (2019: €755 million). Both the bonds mentioned and the bonded loan bear fixed interest. In addition, a variable interest-bearing loan in the amount of €500 million was taken out at the European Investment Bank. The loan has to be repaid in 2024 at the latest. The syndicated loan that was refinanced in 2016 and had a remaining amount of €3.0 billion in the form of a revolving credit line was unused as of the reporting date. The credit line has a residual term until July 2023.

Against the backdrop of the corporate goal to be financially independent, ZF is aiming at a stable investment grade rating. As of the reporting date, ZF had company and bond ratings of Ba1 with a negative outlook from Moody's and BB+ from Standard and Poor's, also with a negative outlook. Compared to the previous reporting date, the ratings have worsened by one notch each. The reason for this was not only increased debt in connection with the acquisition of WABCO, but also the negative effects on the overall economy as well as the automotive industry caused by the COVID-19 pandemic.

Trade payables amounted to €5,626 million as of the reporting date, hence slightly above the previous year's level (2019: €5,462 million). Provisions for pensions amounted to €6,735 million as of December 31, 2020 (2019: €5,348 million). The significant increase largely resulted from the first-time inclusion of WABCO as well as the reduction of the discount rate in Germany used

for the measurement of the pensions to 0.7% (2019: 1.2%).

As of the reporting date, Group equity, including non-controlling interests, amounted to €4,443 million (2019: €7,106 million). The reduction of €2,663 million mainly resulted from the loss after tax and from foreign currency translation. In addition, actuarial losses due to the reduction in the discount rates to be applied to the measurement of pensions had an equity-reducing effect. Furthermore, the Group equity decreased as a result of the offer of shares by minority shareholders of WABCO India Ltd. as part of a mandatory offer.

Dividends paid to the shareholders of ZF Friedrichshafen AG (€63 million, 2019: €162 million) and to holders of non-controlling interests (€55 million, 2019: €37 million) also reduced equity.

Due to the described development of equity in combination with the increase in total assets to €36,730 million, the equity ratio decreased to 12.1% (2019: 22.0%).

Adjusted free cash flow at €994 million

Taking into account effects of exchange rate changes (€-105 million), the cash position was reduced in the year under review from €2,402 million to €2,341 million as of year-end.

The cash flow from operating activities decreased to €2,223 million (2019: €2,439 million). This resulted in a decline in earnings before income tax, which could partly be compensated for by non-cash changes in other assets and liabilities.

The cash flow from investing activities amounted to €-4,507 million (2019: €-4,183 million). This includes the cash outflow from the purchase of WABCO as well as the cash inflow from the sale of consolidated companies to meet antitrust law requirements in

I-05 Consolidated statement of cash flows

in € million

Cash flow from operating activities

Cash flow from investing activities

Free cash flow

Cash flow from financing activities

Net change in cash

Cash position at the beginning of the fiscal year

Changes in cash position from exchange rate effects

Cash position at the end of the fiscal year

	2020	2019
Cash flow from operating activities	2,223	2,439
Cash flow from investing activities	-4,507	-4,183
Free cash flow	-2,284	-1,744
Cash flow from financing activities	2,328	3,211
Net change in cash	44	1,467
Cash position at the beginning of the fiscal year	2,402	922
Changes in cash position from exchange rate effects	-105	13
Cash position at the end of the fiscal year	2,341	2,402

connection with the WABCO acquisition. On the one hand, the repayment of the securities amounting to €2,500 million, which represented the short-term cash inflow in special funds from the financing of the WABCO acquisition, had a positive effect just as the lower investments in property, plant and equipment and intangible assets as a measure to safeguard liquidity during the pandemic on the other.

As a result, the free cash flow amounts to €-2,284 million compared to €-1,744 million in 2019. The free cash flow, adjusted by cash inflows and outflows in connection with M&A activities amounts to €994 million (2019: €803 million).

The cash flow from financing activities amounted to €2,328 million in the past fiscal year (2019: €3,211 million). The balance from repayments and new borrowings of financial debt amounted to €2,790 million (2019: €3,718 million). In the fiscal year 2020, the interests and transaction costs paid increased from €298 million to €344 million. Lower dividend payments to the shareholders of ZF Friedrichshafen AG had a positive effect.

The net financial position increased by €6,094 million and amounted to €-10,842 million (2019: €-4,748 million) as of the reporting date. It consists of current and non-current financial liabilities excluding derivative financial instruments, less cash and cash equivalents as well as securities recorded as financial assets. The net debt in the current year under review was largely influenced by the WABCO acquisition, with a purchase price of €6,098 million and a net debt at the acquisition date of €314 million.

OPPORTUNITIES AND RISKS

OPPORTUNITY AND RISK MANAGEMENT

Opportunity and risk management system

Weighing the opportunities and immanent risks that open up in our complex and changing business environment is a central task of our corporate management, which is geared towards generating added value, by which we mean sustaining the continued existence of the Group and its business units, and increasing their value. ZF defines risks as any internally and externally occurring event or development that may result in a negative deviation from the business plan, whereas opportunities may result in a positive target deviation.

The ZF risk management system covers the whole Group and involves all operational reporting units and corporate functions via dedicated processes and contact points in order to utilize the strength of the ZF Group matrix organization. The WABCO organization acquired in May 2020 and integrated as the new Commercial Vehicle Control Systems Division was included in the scope of our ZF risk management system. The objective of this risk management system is to identify, analyze and evaluate risks and opportunities early on and to take measures to manage risks and seize the opportunities associated with them.

The structural and process organization of the risk management system, including the clear definition of responsibilities as well as the reporting structures, is anchored in a directive adopted by the Board of Management and valid throughout the Group. This directive is aimed at all employees and calls upon

them to proactively participate in the identification and handling of risks. Compliance with the directive and its regular review are ensured by Group Risk Management and Corporate Audit.

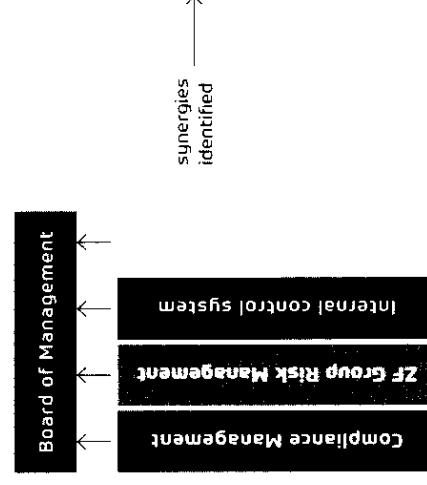
Group Risk Management provides the structure, methods and processes for the risk management process as governance and assurance function and coordinates

it at Group level. This central function was commissioned by the Board of Management to continuously adapt and improve the risk management system and is in close contact with the operational reporting units and the corporate functions. This means that the opportunity and risk management system is integrated in the strategic, planning, management and reporting

G.18 Integrated Governance, Risk & Compliance (GRC)

From ZF HOUSE OF GOVERNANCE to INTEGRATED GRC COOPERATION

Closer cooperation and exchange of information of the governance functions



processes of the operational reporting units as well as the corporate functions.

The Board of Management bears overall responsibility for the risk management system. It informs the Audit Committee and the Supervisory Board on a regular basis, promptly – at least every three months – and comprehensively about the opportunities and risks of the ZF Group and the respective control measures initiated and planned.

At Group level, the Risk Committee, chaired by the board member responsible for Finance, IT and M&A, is tasked, among other things, with regularly reviewing and evaluating ZF's risk situation on a cross-divisional and cross-functional basis, as well as ad hoc, if required. Continuous appreciation and further development of risk management governance is also part of the Risk Committee's tasks.

The effectiveness of our risk management system is checked regularly. Within the scope of its control obligation, the Supervisory Board deals at least every six months with the effectiveness of the risk management system established by the Board of Management.

Among other things, Corporate Audit is responsible for regularly checking and evaluating the implementation and efficiency of the risk management system. Within the context of the annual or consolidated financial statements audit, the auditor appointed by the Supervisory Board also assesses whether the Board of Management has set up suitable measures for the establishment of a monitoring system in order to detect early on whether there is any development that may threaten the existence of the company. Insights from these regular audits are integrated into the continuous further development of our risk management system.

Risk management process

Risk identification, assessment and reporting of operational risks are carried out by the corporate functions as well as the operational reporting units at least every three months and ad hoc, if required. The identified risks are summarized at division and Group level and tracked in coordination with the corporate functions involved. When documenting the risks, they are assigned to a risk catalog to ensure that all types of risks are recognized along the value chain. Once a year, strategic risks that have a long-term impact on ZF are assessed. Significant risks for the Group are identified by means of thresholds defined by the Board of Management with regard to probability of occurrence and potential extent of damage. We include opportunities if they have a direct material link to a risk.

Risks and their impacts are chiefly assessed using quantitative criteria differentiated according to their gross risk value (before risk treatment) and net risk value (after risk treatment). The alternative possibility of a qualitative risk assessment also covers and manages non-quantifiable or difficult-to-quantify risks in our risk landscape.

Based on the risk assessment, we strive to reduce or completely avert risks by means of appropriate countermeasures and to seize associated opportunities. For each individual risk classified as major, the risk managers in the corporate functions or operational reporting units initiate measures. These are also documented and tracked in the Group's reporting. The Board of Management and the Risk Committee continuously monitor ZF's opportunity and risk situation. Group Risk Management is tasked with continuously

tracking the development of all identified major risks and the status of the risk treatment measures initiated. This ongoing Group-wide analysis of risks and opportunities increases risk awareness inside the organization and establishes the framework for our corporate risk culture.

KEY RISKS COMMENTARY

Based on our current assessment, the risks classed as significant to the future development of the company are described below. The reporting here generally covers a whole year. Risks that are subject to regular reporting essentially arise in the areas of quality, supply chain and sales. Risks that arise out of transactions relevant under taxation law and other legislation are also reported. We also identify latent risks for the ZF Group. Major opportunities are also listed and analyzed. They are then actioned if substantiated.

Industry environment risks

As a global player we face location- and country-specific risks arising, among other things, from overall economic developments. 2020 was a year significantly characterized by the COVID-19 pandemic and its effects. The economic consequences have a significant impact on ZF's economic success.

Due to the pandemic development, negative sales effects were noticeable in almost all major markets. Although intensive government relief measures in terms of monetary and fiscal policy were implemented, not only global growth was significantly below the prior year's level, also the upcoming years will be negatively affected. By establishing specialized task forces, among other things to monitor the development of infections and protect our employees, ensure liquidity, secure customer supply and to control production, we were able to limit the pandemic effects on our value chain and the company's success. The task force structures continue to offer preventive and reactive tools beyond the turn of the year in order to deal with further "waves" of the pandemic.

Diplomatic tensions and protectionist tendencies between individual countries can lead to volatile financial markets as well as unfavorable global market developments. We continue to expect tariffs and trade barriers in connection with the United Kingdom having left the EU or the new United States-Mexico-Canada Agreement (USMCA) which enters into force as a successor to the North American Free Trade Agreement (NAFTA). We have dedicated cross-functional projects in place to continuously monitor the developments regarding Brexit and the U.S. trade policy, in order to introduce countermeasures where required.

Tariffs on vehicle and parts imports from global markets may significantly affect our value chains as well as those of our customers and suppliers and could be detrimental to our sales, profitability and financing conditions. Although a relaxation of U.S. foreign policy relations is expected due to the outcome of the U.S. election in 2020, we still see the trade conflicts between the USA and China as well as increasing trade tensions between the USA and Europe as major risks. In this context, we expect Chinese tariffs to focus on high-technology components and products and the USMCA agreement to provide reinforced "Buy American" incentives.

We are also seeing an increase in protectionist measures in individual countries trying to protect and/or improve their competitiveness on the global markets, such as the introduction and expansion of firm market access barriers, industrial policies and additional certification processes. Moreover, fiercer competition, especially in our key sales markets in Europe, the USA, India and China, may also adversely affect sales development and sales prices.

With regard to the economy as a whole, we are observing a stable low-interest rate environment despite massive borrowing from governments and companies due to the pandemic. This sustainably expansive monetary policy results in positive financing conditions. The recovery of the technology sector from the global recession is expected to be faster in China than in Europe or the Americas.

In addition to activities in the traditional markets, ZF is operating more widely in growth markets. Structural deficits and economic downturns in these countries – especially Argentina, Brazil, Russia and India – may lead to declining sales and payment defaults. Market slowdowns in individual regions and countries can be counteracted by volume shifts to other markets, for instance. The strategy of diversifying and expanding our product portfolio in the area of electric and automated or autonomous driving as well as the high number of innovations in all our products contribute to limiting market risks for ZF in this regard.

Sales risks

As described above, the global economic conditions and developments decisively determine the demand for our products and services. As a global supplier, we are furthermore subject to cyclical demand fluctuations. Generally, requirements-oriented production planning and the logistics early-warning system enable us to respond flexibly to fluctuations in demand.

For all our business units and divisions, there is a general possibility that markets or market conditions develop more favorably or unfavorably and thus lead to positive or negative deviations from operational

planning. Risks may ensue not only from the various market developments in the product segments and regions, but also from the ramp-up of new products and the breakthrough of disruptive technologies. As an automotive supplier, we are faced with high capital investments and intensive price pressure from vehicle manufacturers. Our diversified customer and product portfolio as well as our global presence contribute to addressing these market and customer risks.

In the area of mobility, we are observing changes in consumer behavior which represent a response to the stricter regulations on exhaust gas and consumption values of vehicles in the EU and Asia. Driving bans for diesel vehicles in European cities and the New Energy Vehicle quota in China, under which battery electric vehicles, plug-in hybrids and fuel cell vehicles must account for a certain share of manufacturers' new vehicle fleets, represent facets of our sales risk. We expect the share of hybrid and battery electric vehicles to continue to increase, which will have a negative impact on the sales of combustion vehicles and their components. In order to counter the loss of earnings in this field of business, ZF announced in mid-2020 that it will no longer develop driveline components that can exclusively be used in vehicles with pure combustion engines. Since January 1, 2021, the previous Car Powertrain Technology and E-Mobility divisions are being managed under the new Electrified Powertrain Technology Division that bundles all competencies for the electrification of automotive drives. The changed Group structure is intended to accelerate the change to plug-in hybrid and purely electric drives.

With the acquisition of brake specialist WABCO, we are expanding our commercial vehicle expertise as well as our technical aftermarket portfolio. WABCO

was integrated into the company as the new Commercial Vehicle Control Systems Division and contributes to positioning ZF as a system supplier in the commercial vehicle sector. It also significantly expands our portfolio to include advanced driver assistance systems and autonomous functions for commercial vehicles which will be decisive topics for the future.

Moreover, by means of structural changes, ZF is selectively reducing capacities worldwide to adjust to weaker demand and to anticipate the ever faster trend toward greater electrification of road traffic. With a network of partnerships and participations, we continue to adapt our product portfolio to the respective market conditions and expand our activities in this field relevant for the future.

In addition to the current pandemic situation, the multitude of economic factors influencing the automotive demand means that worldwide production is subject to high volatility, which makes it much more difficult for us to predict sales accurately. If markets and, consequently our sales develop differently than expected in our planning, our production facilities may be left underutilized, resulting in idle costs, impairment losses and falling sales prices. We continuously analyze the sales markets in order to identify changes in market structures and consumer behavior at an early stage and thus resolutely combat these sales risks. In addition, we conduct market research and promote the exchange with regional and local contacts.

Quality risks

For us, defective products can lead to a sales decline, customer withdrawals and loss of market acceptance, especially in light of the fact that many of our products

are important components that contribute to the overall safety, durability and performance of our customers' final products. For products that do not comply with customer specifications or (supposedly) exhibit malfunctions, ZF may incur significant costs due to warranty and product liability claims. Quality problems in our products can also be attributed to faulty or regulatory non-conforming components from our suppliers that we install in our products. This can result in technical modifications and rework and therefore also entail significant financial burdens for ZF.

Quality risks are potentially damaging, not just financially, but also as a significant threat to our reputation. We take responsibility for our products and thus for their impact on society, our business partners and the environment. In order to maintain our product quality at the highest level despite the increasing product complexity, ZF established a certified quality management system according to IATF 16949 with standardized and consistent quality controls as well as regularly optimized process workflows. Through close cooperation between our Product Safety and Regulatory Office, Quality Assurance and the Corporate Research & Development Department, relevant quality incidents can be identified and tracked as early as possible, e.g. already in the development process, and the risks associated with them can thus be promptly addressed, reported and mitigated.

Procurement risks

To produce our products, we need significant quantities of raw materials and energy. Along with highly volatile steel and aluminum prices, raw material and component price trends and delivery bottlenecks are an increasing challenge where our electronics

applications and components are concerned. The global interlacing of supply chains also poses procurement risks to ZF in exceptional situations, such as the current COVID-19 pandemic. Although our general procurement policy envisages procuring raw materials from a variety of different suppliers in different regions, we cannot always avoid the dependency on individual suppliers, including their financial stability. Delays in delivery and cancellations (e.g. due to force majeure, the current COVID-19 pandemic, capacity bottlenecks with forwarding agents, financial problems and even insolvency of subcontractors), the consequences of strikes or insufficient quality can lead to production interruptions, negative effects on our production capacities and an underutilization of our production locations. This could in turn cause delays in the delivery of products to our customers.

For example, the globally limited availability of semiconductor components resulting from the COVID-19 pandemic presents us with particular challenges that affect our supply chain and those of our customers. We meet these challenges with a task force that continuously monitors the procurement situation, initiates responses and is in close contact with the customer. A suitable bottleneck control system is intended to minimize or ideally prevent negative impacts, such as ZF or customer production downtimes.

In addition, increased protectionist measures of individual countries as well as fundamental political developments, such as Brexit, pose risks to ZF. They may become apparent in additional or increasing customs duties, resulting in costs for products and parts that we purchase or sell. Unless we compensate for this by improving productivity and establishing synergies, demand for ZF products may decline for price reasons.

Our Supplier Risk Management systematically works to avoid interruptions in deliveries due to financial instability or market introduction, quality and logistics problems at suppliers and to reduce our procurement risk position to a minimum by identifying alternative supplies. Moreover, constant market investigation, regular review of key suppliers and targeted analyses enable us to respond adequately and early to unfavorable developments on the raw materials and energy markets.

Research and development risks

The ability to anticipate technological trends and to respond early to customer needs by developing innovative solutions promptly is crucial for our business.

The automotive industry in particular and, with it, our business with OEM customers are currently subject to market trends and technical developments to which we must react. This entails operational and strategic development and technology risks.

These include stricter emission regulations combined with increasing environmental awareness on the customer side, the resulting uncertainty about the future of the traditional combustion engine in general and diesel technology in particular as well as associated unknown legal implications. We are currently achieving a significant share of our sales with products based on the combustion engine driveline. Advancing electrification in the field of passenger car and commercial vehicle drives as well as other technological changes could jeopardize our market position if we are not successful in expanding our expertise and developments in these new technology fields.

Moreover, we are seeing an increasing demand for vehicle safety and autonomous driving functions. Due to the transition from hardware to software-defined technologies, electronic architectures are currently subject to a significant change.

The vehicle mix sold by our customers and its technical characteristics have changed significantly over the past few years and will continue to do so in the future. We are at risk of potentially failing to successfully foresee and/or evaluate these changes, meaning that we might not be able to successfully adapt and implement our strategy for the future development of our company. This is particularly relevant because the development of our products and the ramp-up of new product lines require considerable time and investment expenses, including research and production costs. In times of the COVID-19 pandemic, this means particularly intensive monitoring and, if necessary, re-prioritization of our research and development activities.

In order to address these development and technology risks, we rely on a modular design concept, the establishment of strategic partnerships and the acquisition of company participations in the area of future technologies. Since 2019 we have been aligning our skills and capabilities across the Group with four technology fields. At the same time, we are operating cross-divisionally via agile system houses. This allows us to provide both established and new customers with system solutions for any application in line with their needs and market requirements.

Cyber and information technology risks

The progressing digitalization of our internal company processes and products as well as the increasing technical interconnection of machines, products, systems, services and partners lead to risks in the area of information processing and technology. Our comprehensive cyber security strategy aims at protecting people, business and personal information and data as well as our physical and intangible assets in cyberspace. Our comprehensive integrated Information Security Management System (ISMS) certified according to ISO 27001 covers not only IT but also development, production, staff security, compliance, physical safety and legal and customer requirements. Corporate Security advises and supports the business and cross-sectional functions in implementing and enhancing our ISMS.

In the ZF Group, data protection has the highest priority in all (application) areas: The aim is to effectively and comprehensively protect the personal data of our employees and partners in company-internal processes as well as in our products – from driver assistance systems and systems for autonomous or automated driving up to handling sensor and vehicle data.

Through technical and organizational measures, we protect data streams and processing in our production, development and IT infrastructures, both on-premise (on-site operation) and off-premise (e.g., in the cloud). Alongside these measures, ZF's security culture plays a key role in the company's resilience. Consequently, we perform regular, mandatory awareness-raising measures with our workforce worldwide. Partners and suppliers handling ZF information are committed to comply with our security policy. We use internal and

external sources of information to monitor the global cyber security situation. Alarm and emergency systems are in place for security incidents, enabling us to react immediately with corresponding contingency plans and clearly identified crisis response teams.

Financial risks

Liquidity, foreign currency, interest rate and counterparty risks as well as credit risks are monitored and controlled as part of central financial risk management in order to safeguard our financial stability. By using a network of task forces, we were able to limit the financial impact of the pandemic and stabilize our liquidity through active cash and cost management. In order to expand the financial leeway, ZF took out new loans in the amount of €1.35 billion in April 2020 at existing core banks, which were already fully repaid by bonds issued in September and November 2020. A revolving loan of more than €3.0 billion is still fully available as a liquidity reserve. The necessary financial flexibility is guaranteed by means of central cash pooling with sufficient cash and confirmed credit lines with matching maturities.

Risks are associated with the above-mentioned syndicated loan agreement of ZF Friedrichshafen AG and the loan agreement with the European Investment Bank. These agreements comprise not only obligations but also financial covenants which have to be complied with at all times. A breach of these financial covenants would mean that, in the event of a respective claim, the creditor could demand immediate repayment of the loan or terminate the credit line. Thanks to the measures implemented to secure liquidity and adapt the financial covenant, ZF Friedrichshafen AG was always, even in times of the pandemic, able to comply with the

financial covenant, also as of the reporting date. From a current perspective, ZF has no reason to believe that these obligations will be breached in future.

Guidelines and provisions regarding the individual risk types have been put in place which determine how to assess and manage the particular risk. Where required, we hedge financial risks using appropriate instruments. Wherever possible and expedient, we use derivative financial instruments to manage interest and currency risks in particular, also in existing underlying or planned transactions. We also use hedge accounting if the prerequisites are met. With increasing globalization also as a result of the company's acquisitions, currency risks have increased sustainably. In order to manage these risks better, we have further developed and harmonized our strategy for safeguarding them. Since the beginning of 2020, currency risks have been controlled and hedged at ZF with a standardized model to hedge underlying transactions in foreign currencies and a uniform system landscape.

We only transact with banks that have a first-class credit rating and within centrally stipulated limits in order to reduce counterparty risks within finance. The financial stability of our suppliers and customers is continually checked in order to initiate measures to safeguard the supply chain or receivables where necessary. There are risks to recognize impairments on financial assets particularly in connection with ZF's investments in equity stakes in the area of future technologies as well as their financing.

Legal and other risks

Unlawful conduct could harm the company's reputation, weaken our market position and result in a loss of earnings due to payment or other liabilities. As a global company, we must deal with being exposed to the risk of legal disputes in areas such as product liability, competition law, environmental protection and taxation. Particularly in the USA, we are involved in proceedings whose outcome may have a negative impact on our equity.

In order to ensure compliance with different regional and country-specific legislations and regulations and to minimize and control legal risks, ZF has created provisions and corresponding structures. This enables us to identify potential threats as early as possible and, if necessary, to defend our rights.

Despite diligent compliance with national laws, the company may potentially infringe applicable legislation. In the event of ongoing or future investigations, we cooperate fully with the relevant authorities. Accounting provisions for legal risks are made in accordance with the applicable accounting regulations.

In the countries in which ZF operates, we are subject to global tax audits. In current or future audits, tax laws and relevant facts or circumstances, especially in relation to acquisitions, could be interpreted and assessed in a different manner by local tax authorities than by ZF. This poses the risk of a claim for back taxes based on an adjustment to the tax base.

ZF is subject to high pension obligations, particularly in Germany. These pension obligations are covered to a varying extent completely or in part by plan assets. We invest the plan assets in a variety of asset classes that are exposed to corresponding fluctuations in value. A change in key parameters for pension obligations and plan assets, such as interest rates, could lead to negative effects on ZF's net profit or loss and equity.

If company participations do not develop in accordance with our underlying business plan, we could be forced to make balance sheet depreciations, which in turn have a negative effect on our earnings and equity.

As a result of the increased attention in civil society and correspondingly communicated demands in the climate change debate, we are exposed to fundamental risks in the context of sustainability and environmental protection, which also refer to our own processes and value chain. Relevant measures regarding legislation and regulation are further substantiated, binding regulations for the implementation of decarbonization and sustainability measures in general are rather expected in the short than medium term. Significant investments are required to improve our environmental performance and prepare for new regulations or customer expectations. ZF has been collecting and reporting non-financial information in detail for years and actively involves different stakeholders. Developments are recorded systematically and early on and taken into account when coping with the associated risks.

The further development of the COVID-19 pandemic entails significant risks for our employees and value chain, which we continuously reassess and manage accordingly. Our pandemic task force monitors the developments from a medical point of view to evaluate the situation for the health of our employees, to derive precautions and ensure that these are implemented at all locations. Our network of task forces, consisting of central functions and divisions, evaluates the pandemic's repercussions on sales, supply chain and production and launches countermeasures to mitigate the associated risks.

KEY OPPORTUNITIES COMMENTARY

Industry environment opportunities

As a globally active company in a disruptive industry, we regularly see new opportunities that we take into account for our plans and forecasts, provided they have a sufficient probability of occurrence. Systematically seizing opportunities is an essential part of ZF's sustainable growth policy. Using our market investigation and environmental analyses in a systematical way, we are continuously working on identifying opportunities and leeways with the potential to improve our products' design, production efficiency, market performance and our cost structure.

Our presence in almost all industrial markets worldwide enables us to pick up on initial growth impulses in the markets that are recovering after the pandemic and to participate in their dynamic development through increased market development. The coronavirus crisis has a noticeable accelerating effect on the transformation of the automotive industry towards electrification – but also automation and safety-relevant product solutions are gaining in importance.

Our business model and strategy are producing a raft of opportunities from different regions, customer industries and highly diversified product groups and customers.

Company-specific opportunities

Our business activities within a currently particularly dynamic market environment continuously open up performance-specific opportunities that we want to systematically identify and seize. With our Next Generation Mobility strategy, we have defined the Group's long-term orientation and formulated our goals. Within the core areas of technology transformation, our business orders have developed well in the second half of the year despite the unprecedented conditions of the COVID-19 pandemic. We were able to win a number of key awards in the areas of e-mobility, advanced driver assistance systems and the relevant connected sensors and actuators. Order intake for bus transmissions and electric bus drives as well as in the aftermarket is also showing positive trends. Our Wind Power business unit is also benefiting from strong market growth outside of Europe. Especially in view of the increasing global interest in a hydrogen economy, there are further interesting developments for this business unit.

The ever increasing pressure to meet emission standards coupled with the growing demand for clean mobility are intensifying the need for energy-efficient and low-emission drive solutions. Vehicle manufacturers are required to reduce fleet consumption through their vehicle mix. These factors are reinforcing the trend toward further electrification. If electric and hybrid drives were to become cheaper alternatives earlier than expected, we would benefit from this as a systems supplier in the area of passenger cars and commercial vehicles. We are constantly examining possible inorganic growth through acquisitions and participations in order to supplement our organic growth.

The integration of the acquired commercial vehicle brake manufacturer WABCO as the new Commercial Vehicle Control Systems Division contributes to positioning ZF as a systems supplier in the commercial vehicle sector, decisively expanding the portfolio for our customers in this segment. The integration process, which was started immediately after the closing, is running according to plan – and progressing particularly well in the areas of highly advanced driver assistance systems and autonomous functions for commercial vehicles.

Consistent cost management for materials, tracking technical savings and expanding our global value chains open up the opportunity to further improve our operational performance.

By standardizing our internal processes and reducing their complexity, we can quickly and flexibly adapt our organizational structure to market demands. Our unified Group sales structure enables focused customer orientation by more intense cooperation and coordination between the divisions and the company organization. The "dual operating system" gives us the flexibility to apply two different, mutually complementary working methods. The "Efficiency Backbone" approach enables the use of standardized processes for optimal resource utilization and high productivity for mature products. The "Agile" approach provides fast response and flexible adaptation to rapidly changing market requirements.

Research and development opportunities

Our Next Generation Mobility strategy aims at providing clean, safe, comfortable and affordable mobility for everyone and everywhere, to fit people's current and future lifestyles, bringing us closer to the customer and opening up additional sales opportunities.

With our product mix, we strive to seize opportunities in CO₂ reduction, driveline electrification, energy management and the associated technologies. Our customers are increasingly focusing on their innovative mobility portfolio and the core functions required. This includes, for example, updatable functions, personalization in the respective mobility ecosystem or software-based performance enhancements. As a result, ZF can offer manufacturers subsystems, such as safety systems that are required for Level 2+, or products and services for future software-defined cars. This includes not only pure software, but also a further developed type of smart actuators that can easily and intelligently be integrated into new architectures. The coronavirus pandemic has significantly accelerated digitalization and increased the probability of occurrence of opportunities in the software segment.

Through development partnerships, for instance for the software-defined car, we are cooperating with Micro-soft to benefit from their last five years of experience in digitalizing processes and to match them with our needs. With the cubiX project, we can offer the entire vehicle dynamics as a software package. This includes braking, steering, electric driveline, axle and vertical dynamics. As of 2023, we want to offer an initial module either as part of an overall system or as an individual software component. Additional modules are planned for the fields of active safety, advanced driver assistance systems and autonomous shuttles.

Digitalization and information technology opportunities

Digitalization and the Internet of Things (IoT) enable us to increase the connectivity between our mobility and industrial applications and to expand our services so that in the future vehicles can see, think and act independently. To achieve this goal, we are adding new digital products and services to our existing business model. To this end, we are also building on our internal resources through partnerships with start-ups.

Today, vehicles are equipped with around 100 different electronic control units (ECUs) each of which has its own integrated piece of software. This decentralized system reaches its limits in light of the challenges of automated and networked driving. Here, ZF uses its new middleware to accelerate development processes and significantly reduce the complexity of integrating hardware and software. The ZF middleware constitutes the link between a vehicle's software applications and hardware components, so that only the middleware needs to be connected to the vehicle's operating system. This approach minimizes the number of interfaces, guarantees fast communication between all system parts and helps vehicle manufacturers to significantly reduce the complexity of system integration. The same applies to hardware: Here too, middleware simplifies the integration into the vehicle. Volume production of the ZF middleware as a comprehensive platform will start in 2024. Its development is closely linked to that of applications for the technology fields of automated driving, electromobility, vehicle motion control and integrated safety.

Furthermore, ZF has established a Technology Center for Artificial Intelligence and Cybersecurity in Saarbrücken, Germany, which will be continuously expanded. From data analysis in production to the development of control algorithms, we have identified a broad field of applications for artificial intelligence (AI) both for our internal processes and for our products.

The integration of WABCO as the new Commercial Vehicle Control Systems Division supplements the component side and turns us into a systems supplier in the commercial vehicle segment. In the aftermarket sector, WABCO also has strong digitalization expertise when it comes to trailers, where we also see opportunities and synergies.

Joint development locations are strengthening our global development footprint also for commercial vehicles. We choose our development locations at places where we can win the best talents for competitive conditions. In doing so, we strive for the concentration of development expertise and a healthy "local for local" principle. This means our developments take place where our customers require them.

Moreover, the modular scalability of our mobility concepts entails further business opportunities. Depending on the manufacturer's architecture, ZF offers both a complete system approach or individual modules to supply established manufacturers as well as new players in the mobility market with comprehensive systems that include software, computer hardware (such as the ZF ProAI supercomputer), sensor hardware and networked actuators.

In order to meet the future requirements of software development, ZF will set up a Global Software Center at the beginning of 2021, which will be responsible for developing software systems for future architectures throughout the Group and making them available to the entire company. The objective is to coordinate and standardize new trends, technologies, methods, procedures, tools and functions in order to make the resulting software available to all ZF divisions on a joint platform. In addition, we expect significant improvements in productivity and result quality in our processes through new applications in the field of artificial intelligence and "Robotic Process Automation" (RPA).

OVERALL STATEMENT ON THE OPPORTUNITY AND RISK SITUATION

The ZF Group works to counter the above risks using an established risk management system. This includes the global organization and equally covers divisions and cross-sectional functions. The risk management system is integrated in our operational and strategic business activities. The risk management method is subject to a continuous improvement process. The Opportunities Report represents a consolidated observation of significant opportunities in the period under review. Wherever cost-effective and within the Group's sphere of influence, we do our best to develop these.

Based on currently available information as well as the individual risks illustrated in the financial statement and set out in this report, we can identify no additional market-related opportunities and risks which may substantially influence the ZF Group's results of operations, net assets and financial position in fiscal year 2021. The Group's financial situation is stable; the need for financial means is covered by existing liquidity and available credit lines.

Given our market position and the precautions we have taken, we are confident in our ability to control these risks and meet the resulting challenges. We can therefore state that, from our point of view, when analyzing the overall picture, no major risks can be identified which may jeopardize the company's continued existence, either alone or in combination with other risks.

FORECAST REPORT

INDUSTRY ENVIRONMENT TRENDS

Economic recovery expected, coming from low level
After the significant collapse of the global economy in 2020 due to the pandemic, the recovery trend that could already be seen in the second half of 2020 will continue in 2021. Global economic growth is expected to exceed 4%, even though the first half of the year will still be heavily affected by the effects of the second wave of the coronavirus. The main factors are global catch-up effects in private and public consumption as well as investments that are supported, among other things, by government incentives in the form of pandemic relief packages. Sufficient production and efficient distribution as well as the effectiveness of approved vaccines constitute a decisive factor for the prompt recovery of the global economy.

The prediction for 2021 is positive growth of 4% in the developed economies. This applies to both the euro zone and the USA, both of which are expected to grow on this scale. A significantly better development with growth rates of 7% or even above is apparent in China and India.

Newly industrialized countries such as Brazil and Mexico are expected to contribute to the global catch-up effects with 2 and 3%, respectively, Turkey with 6% and Thailand with 5%, provided that no strict and longer-lasting restrictions of the economy are imposed again due to further coronavirus waves.

Other aspects that will also primarily influence the medium-term global recovery include the handling of the structural challenge that productivity continues to grow only slowly, further increasing national debt and the loose monetary policy. In terms of the overall economy, increasing digitalization as well as growing investments in climate protection constitute an industrial policy opportunity.

Upward trend in the industry sectors, but repercussions of the crisis

The effects of the pandemic will also significantly impact the markets in 2021. Even before the outbreak of the crisis, the market for passenger cars and light commercial vehicles was experiencing a lull. Uncertainty around regulations, trade conflicts, customs duties and the economic situation, but also around various technologies (gas, diesel, battery, PHEV, MHEV, e-fuels, fuel cell) results in persisting consumer restraints. Although the industry is anticipating a noticeable recovery of the vehicle production for the current year, the impact of the semiconductor shortage will be noticeable particularly in the first half of the year and probably beyond. With favorable developments, a worldwide volume of around 80 million vehicles is still possible to achieve, which means that the output is around 15 million below that of 2017. It will take a few years before the pre-crisis level can be reached again.

The market for heavy commercial vehicles over six tons shows a heterogeneous picture: Vehicle production is expected to decline again by 3% worldwide. This is primarily due to China: After the preemptive effects in

2020, a significant downward correction is expected. Therefore, the volume there should decrease by more than 20% and thus move towards a normal level. All other markets should recover from the pandemic-related lows and could achieve double-digit growth rates in 2021. However, the absolute values will be significantly below the values from 2018 and 2019.

The industrial markets will also recover slowly in the current year: Moderate growth of 3% is expected for the production of agricultural tractors worldwide. All regions show slight growth rates. With an expected increase of around 8%, the outlook for the worldwide production of construction machinery is slightly more positive. The regions that were affected more severely in 2020 should also show a stronger catch-up effect, e.g. North America, which expects growth of 15% for the current year, thus recovering partly from last year's decline of 35%. The wind energy market beat the odds last year with very good growth that should continue in the current year with a cautious growth forecast of 3% worldwide. However, after the massive increase in the prior year, North America is an exception here with an expected decline of 16%. The forecasts for China are also predicting a contraction rate of 14%. The other regions partly expect clearly double-digit growth rates.

DEVELOPMENT OF THE GROUP

Sales forecast

If the market recovers as predicted and assuming stable exchange rates, ZF expects Group sales of between €37 billion and €39 billion for 2021.

The divisions are expected to develop as follows:

As of January 1, 2021, we have merged the Car Powertrain Technology and E-Mobility divisions into the new Electrified Powertrain Technology Division. This means that all competencies for increasing electrification in the field of passenger car drives are now bundled in one unit. Thanks to a positive development of new business in North America, we expect the sales increase for the newly formed division to be above the market average. The increased demand for hybrid applications as well as different product ramp-ups, including electric axles, power electronics applications and electric shift systems will drive sales growth.

In the Car Chassis Technology Division, we expect an increase in sales, in line with market development.

For the two Active Safety Technology and Passive Safety Technology divisions, we expect the sales increase to be above average. New product launches, such as integrated braking systems and steer-by-wire solutions, will boost sales.

T.06 Financial forecast figures

	2021 FORECAST	REPORTED 2020
Sales in € billion	37–39	32.6
Adjusted EBIT margin in %	4.5–5.5	3.2
Adjusted free cash flow in € million	800–1,200	994

For the fiscal year 2021, we expect a slight increase in the number of employees, especially in the growth regions of Asia-Pacific and India. In Europe, however, we expect declining headcount due to a cautious recruitment policy.

Effects on the forecast with regard to the uncertainties caused by the COVID-19 pandemic, the strictness and duration of corresponding lockdowns as well as the current delivery bottlenecks of electronic microchips cannot be ruled out.

ZF on the right track

The COVID-19 pandemic has accelerated the transformation in the automotive industry once again. At the same time, the general conditions will remain challenging in 2021. Against this backdrop, ZF is pushing investments in future-oriented technologies. Market-oriented product development will make us even stronger after the crisis so that we can return to a stable growth path.

We also envisage a sales increase above the market average for the Electronics & ADAS Division, for which we expect an higher demand for our advanced driver assistance systems.

In the commercial vehicle sector, we assume that we can expand sales for our two Commercial Vehicle Technology and Commercial Vehicle Control Systems divisions. We are counting on a market recovery in Europe and new customer business in Asia.

The growth dynamics in the Industrial Technology Division lead to an increase in sales, especially in the Off-Highway Systems and Wind Power Technology Business Units. The Wind Power Technology Business Unit is profiting from the further global expansion of wind power as an alternative to fossil fuels for generating electricity.

As a result of the general market recovery, we also expect a sales increase for the Aftermarket Division, i.e. the spare parts and service business, in all regions.

Adjusted EBIT margin

The overall positive sales expectations in conjunction with a corresponding control of the cost structures will presumably lead to an adjusted EBIT margin between 4.5% and 5.5%.

Based on the planned development of the operating business, the intended investments as well as the continuation of consistent working capital management, we assume for the current fiscal year that the free cash flow adjusted for company transactions will be between €0.8 billion and €1.2 billion.

In the current fiscal year, we will further adapt our organizational and corporate structures to market developments what will sustainably improve the quality of our company's results.

Supported by the trust of our customers, the close cooperation with our suppliers and business partners as well as our employees' commitment and willingness to change, we are convinced that ZF will successfully master the current challenges and face the future with optimism.

Friedrichshafen, March 1, 2021
ZF Friedrichshafen AG
The Board of Management

Consolidated Financial Statements

Contents

97	— Consolidated Statement of Profit or Loss
98	— Consolidated Statement of Comprehensive Income
99	— Consolidated Statement of Financial Position
100	— Consolidated Statement of Cash Flows
101	— Consolidated Statement of Changes in Equity
102	— Notes to the Consolidated Financial Statements

CONSOLIDATED STATEMENT OF PROFIT OR LOSS

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2020

in € million	Notes	2020	2019
Sales	1	32,611	36,518
Cost of sales	2	27,668	30,768
Gross profit on sales		4,943	5,750
Research and development costs	9	2,168	2,270
Selling expenses		1,333	1,267
General administrative expenses		1,367	1,312
Other income	3	608	585
Other expenses	4	770	602
Result from associates	5	-48	25
Other net result from participations	5	-76	18
EBIT		-211	927
Financial income	6	802	359
Financial expenses	7	1,336	746
Net profit or loss before tax		-745	540
Income taxes	8	-4	140
Net profit or loss after tax		-741	400
thereof shareholders of ZF Friedrichshafen AG		-825	350
thereof non-controlling interests		84	50

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2020

	Notes	2020	2019
in € million			
Net profit or loss after tax		-741	400
Line items that will be reclassified in the consolidated statement of profit or loss			
Foreign currency translation differences			
Losses arising during the year (2019: gains)		-837	151
Mark-to-market of cash flow hedges			
Gains arising during the year		143	128
Reclassification adjustments for gains/losses included in profit or loss		13	34
Amounts reclassified to acquisition costs through comprehensive income		-271	0
Income taxes		3	-10
		-949	303
Line items that will not be reclassified in the consolidated statement of profit or loss			
Mark-to-market of securities		-25	-19
Actuarial losses from pension obligations		-900	-920
Income taxes		273	273
		-652	-666
Other comprehensive income after tax	25	-1,601	-363
Total comprehensive income		-2,342	37
thereof shareholders of ZF Friedrichshafen AG		-2,409	-17
thereof non-controlling interests		67	54

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

ZF FRIEDRICHSHAFEN AG AS OF DECEMBER 31, 2020

Assets	Notes	Dec. 31, 2020	Dec. 31, 2019	Liabilities and equity in € million	Notes	Dec. 31, 2020	Dec. 31, 2019
in € million							
Current assets				Current liabilities			
Cash and cash equivalents		2,341	2,302	Financial liabilities	20	549	1,259
Financial assets	10	144	2,824	Trade payables		5,598	5,417
Trade receivables	11	5,481	5,041	Contract liabilities	21	1,321	1,039
Contract assets	12	132	113	Other liabilities	22	1,627	1,409
Other assets	13	593	558	Income tax provisions		496	334
Income tax receivables		46	30	Other provisions	23	986	696
Inventories	14	4,171	3,948			10,577	10,154
		12,908	14,816	Non-current liabilities			
Non-current assets				Financial liabilities	20	12,768	8,430
Financial assets	10	758	901	Trade payables		28	45
Associates	15	332	461	Contract liabilities	21	420	406
Contract assets	12	290	215	Other liabilities	22	134	110
Other assets	13	195	156	Income tax liabilities		100	0
Intangible assets	16	12,735	6,841	Provisions for pensions	24	6,735	5,348
Property, plant and equipment	17	7,910	7,669	Other provisions	23	845	339
Deferred taxes	8	1,602	1,291	Deferred taxes	6	680	412
		23,822	17,534			21,710	15,090
				Equity			
				Subscribed capital	25	500	500
				Capital reserve	25	386	386
				Retained earnings	25	3,218	5,935
				Equity attributable to shareholders of ZF Friedrichshafen AG		4,104	6,821
				Non-controlling interests	25	339	285
		36,730	32,350			4,443	7,106
						36,730	32,350

CONSOLIDATED STATEMENT OF CASH FLOWS

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2020

in € million	Notes	2020	2019	in € million	Notes	2020	2019
Net profit or loss before income tax		-745	540	Cash outflow from the acquisition of consolidated companies	25	-5,959	-27
Depreciation/Reversal of impairments for intangible assets and property, plant and equipment		2,141	2,039	Dividends received		9	27
Results from first-time consolidation and deconsolidation		-16	-3	Interest received		26	22
Net result from participations and net financial result		658	344	Cash flow from investing activities		-4,507	-4,183
Results from the disposal of intangible assets and property, plant and equipment		-11	3	Dividends paid to ZF Friedrichshafen AG shareholders		-63	-162
Income taxes paid		-266	-220	Dividends paid to holders of non-controlling interests		-55	-37
Changes in non-current provisions made through profit or loss		244	67	Cash paid for the acquisition of non-controlling interests		0	-17
Decrease in inventories		59	9	Proceeds from capital increases through holders of non-controlling interests		0	7
Increase (2019: decrease) in trade receivables		-271	220	Repayments of borrowings	20	-4,218	-9,084
Increase in other assets		-107	-244	Proceeds from borrowings	20	7,008	12,802
Increase (2019: decrease) in trade payables		100	-131	Interest paid and transaction costs		-344	-298
Increase (2019: decrease) in other liabilities		437	-185	Cash flow from financing activities		2,328	3,211
Cash flow from operating activities		2,223	2,439	Net change in cash		44	1,467
Expenditures for investments in intangible assets		-49	-57	Cash position at the beginning of the fiscal year		2,402	922
property, plant and equipment		-1,278	-1,681	Effects of exchange rate changes on cash		-105	13
associates and other participations		-7	-15	Cash position at the end of the fiscal year	27	2,341	2,402
financial receivables		-68	-92				
securities		0	-3,117				
Proceeds from the disposal of intangible assets		1	1				
property, plant and equipment		53	48				
associates and other participations		61	53				
financial receivables		97	14				
securities		2,480	641				
Cash inflow from the sale of consolidated companies	28	127	0				

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1, 2019 TO DECEMBER 31, 2020

in € million	Retained earnings					Equity attributable to shareholders of ZF Friedrichshafen AG		Non-controlling interests	Group equity
	Subscribed capital	Capital reserve	Other retained earnings	Foreign currency translation differences	Mark-to-market of securities	Mark-to-market of cash flow hedges	Actuarial gains and losses		
Jan. 1, 2019	500	386	7,647	-334	-50	-20	-1,115	293	7,307
Change in accounting policies			-30					-1	-31
Jan. 1, 2019 (adjusted)	500	386	7,617	-334	-50	-20	-1,115	292	7,276
Net profit or loss after tax			350					50	400
Other comprehensive income after tax			147		-19	152	-647	4	-363
Total comprehensive income	0	0	350	147	-19	152	-647	54	37
Changes in basis of consolidation			-162					3	3
Dividends paid			16					-37	-199
Acquisition of non-controlling interests								-34	-18
Capital increase in exchange for company shares								7	7
Other changes			-69	69				0	0
Dec. 31, 2019	500	386	7,752	-187	0	132	-1,762	285	7,106
Net profit or loss after tax			-825					84	-741
Other comprehensive income after tax				-820	-23	-112	-629	-17	-1,601
Total comprehensive income	0	0	-825	-820	-23	-112	-629	67	-2,342
Changes in basis of consolidation								79	79
Dividends paid			-63					-55	-118
Acquisition of non-controlling interests			-246					-37	-283
Other changes			-17	18				1	1
Dec. 31, 2020	500	386	6,601	-1,007	-5	20	-2,391	339	4,443

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

OF ZF FRIEDRICHSHAFEN AG FOR 2020

FUNDAMENTAL PRINCIPLES

Corporate structure

ZF Friedrichshafen AG is a corporation, of which 93.8% is owned by the Zeppe-
lin Foundation and 6.2% by the Dr. Jürgen and Irmgard Ulderup Foundation. The
company is headquartered in 88046 Friedrichshafen, Germany, Löwentaler Straße
20 and is listed in the commercial register of the municipal court of Ulm under the
number HRB 630206.

Further explanations on the corporate structure can be found in the management
report.

General

The line items of the consolidated statement of profit or loss, the consolidated
statement of comprehensive income, the consolidated statement of financial posi-
tion, the consolidated statement of cash flows and the consolidated statement of
changes in equity are broken down and explained in the notes to the consolidated
financial statements.

The Group's currency is the euro. Unless otherwise stated, all amounts are reported
in millions of euros (€ million).

The Board of Management of ZF Friedrichshafen AG approved these consolidated
financial statements on February 25, 2021, and forwarded them to the Supervisory
Board.

The consolidated financial statements, which were prepared as of December 31,
2020, as well as the group management report will be announced in the Federal
Gazette.

The consolidated statement of financial position is broken down by maturities. The
financial line items are divided into non-current and current assets and/or liabilities
on the basis of whether they have a residual term of more than one year or up to
one year, respectively.

Assets and liabilities included in a disposal group classified as held for sale as well
as assets held for sale are presented separately from other assets and liabilities in
the consolidated statement of financial position.

The recognition of assets and liabilities is carried out according to the historical
cost principle. This does not include derivative financial instruments, securities and
investments in participations that are recognized at fair value.

Adoption of IFRS

As a company that is not publicly traded, ZF Friedrichshafen AG has chosen the
option to draw up its consolidated financial statements on the basis of IFRS pursu-
ant to Sec. 315e para. 3 HGB (German Commercial Code).

The consolidated financial statements are in accordance with the standards and in-
terpretations valid on the reporting date and issued by the International Accounting
Standards Board (IASB), London, as adopted by the EU, and the additional require-
ments of German commercial law pursuant to Sec. 315e para. 3 in conjunction
with Sec. 315e para. 1 HGB.

On May 29, 2020, ZF acquired WABCO Holdings Inc. (WABCO). The accounting
of WABCO was previously based on the U.S. GAAP principles. As a result of the
first-time inclusion of WABCO into the consolidated financial statements of ZF, the
WABCO accounting was temporarily adjusted to conform with IFRS principles.

In the fiscal year 2020, the following new and/or amended standards were applied
for the first time:

- Amendments to IFRS 3 "Definition of a Business"
- Amendments to IAS 1 and IAS 8 "Definition of Material"
- Amendments to IFRS 9, IAS 39 and IFRS 7 "Interest Rate Benchmark Reform"
- Amendments to References to the Conceptual Framework
- Amendments to IFRS 16 "COVID-19-Related Rent Concessions"

The amendment to IFRS 16 exempts the lessee from having to consider whether rental payments that were deferred or (partially) waived within the context of the COVID-19 pandemic, represent lease contract modifications or not. When certain prerequisites are met, immediate recognition through profit or loss is possible. ZF makes use of this right of choice, but this does not result in a significant impact on the consolidated financial statements.

The first-time application of the other amendments to standards did not lead to any change in accounting within the consolidated ZF Group.

The listed standards and interpretations issued or revised by the IASB were not yet applied by ZF in the fiscal year 2020 because either the application of these standards and interpretations was not yet mandatory or the European Union had not yet endorsed them. ZF will not adopt any of these standards earlier.

Standard/ Interpretation	Title	Applicable pursuant to IFRS as of	Endorsement by EU	Expected impact
IFRS 17	Insurance Contracts	Jan. 1, 2023	No	None
IAS 1	Amendments to IAS 1 "Presentation of Financial Statements"	Jan. 1, 2023	No	In review
IAS 1	Amendments to IAS 1 "Disclosure of Accounting Policies"	Jan. 1, 2023	No	None
IAS 8	Amendments to IAS 8 "Definition of Accounting Estimates"	Jan. 1, 2023	No	None
IFRS 3	Amendments to IFRS 3 "Business Combinations"	Jan. 1, 2022	No	None
IAS 16	Amendments to IAS 16 "Property, Plant and Equipment"	Jan. 1, 2022	No	None
IAS 37	Amendments to IAS 37 "Provisions, Contingent Liabilities and Contingent Assets"	Jan. 1, 2022	No	None
Various	Improvements to IFRS 2018-2020	Jan. 1, 2022	No	None
IFRS 4	Amendments to IFRS 4 "Insurance Contracts"	Jan. 1, 2021	Yes	None
IFRS 9/IAS 39/IFRS 7/ IFRS 16	Amendments to IFRS 9, IAS 39, IFRS 7 and IFRS 16 "Interest Rate Benchmark Reform – Phase 2"	Jan. 1, 2021	Yes	None

The amendments to IAS 1 "Presentation of Financial Statements" essentially contain clarifications relating to the classification of liabilities as current or non-current and in particular affect rights to defer settlement. It is currently being investigated which effects the application of the amendments to IAS 1 will have on the consolidated financial statements.

The amendments to IFRS 9, IAS 39, IFRS 7 and IFRS 16 supplement the first phase and especially refer to hedging relationships that are affected by the reform of the IBOR interest rate benchmark. ZF has not concluded hedging transactions that are linked to IBOR as an interest rate benchmark. Therefore, ZF does not expect any effects from these amendments.

With the amendments to IAS 37, clarifications take place when it comes to the costs an entity has to consider when determining whether a contract is to be classified as a loss. Since the clarification corresponds to the procedure of the consolidated ZF Group, the amendments are not expected to affect the consolidated financial statements.

The Group currently also does not expect that the other changes in the new or amended standards in their current form will have a significant impact on the presentation of financial statements.

Basis of consolidation

In addition to ZF Friedrichshafen AG, 42 German and 305 international subsidiaries controlled by ZF Friedrichshafen AG are included in the consolidated financial statements. With the takeover of WABCO, 79 subsidiaries and two associates were acquired.

The following table shows the composition of the consolidated ZF Group (without ZF Friedrichshafen AG)

	Jan. 1, 2020	First-time consolidations	Legal changes	Deconsolidations	Dec. 31, 2020
Subsidiaries	270	90	-8	-5	347
of which German	34	10	-2	0	42
of which international	236	80	-6	-5	305
Joint ventures	6	0	0	-1	5
Associates	13	3	0	-1	15

Company acquisitions

On March 28, 2019, ZF Friedrichshafen AG signed a binding agreement regarding the purchase of all outstanding shares of WABCO Holdings Inc. listed on the New York Stock Exchange (NYSE) for a cash purchase price of \$136.50 per share. The Board of Management and the Supervisory Board of ZF as well as the Board of Directors of WABCO agreed to the planned acquisition. On June 27, 2019, 68.44% of the WABCO shareholders agreed to the transaction. The transaction was subject to a number of general closing conditions, e.g., approval by the responsible authorities. After the clearances under antitrust law were available, the acquisition of WABCO was completed on May 29, 2020.

WABCO is a leading global supplier of brake control systems, technologies and services for the improvement of the safety, efficiency and connectivity of trucks, buses and trailers. With its acquisition, ZF is strengthening its position as an integrated systems supplier of commercial vehicle technology and is expanding its portfolio by the commercial vehicle control systems segment. The purchase price of €6,098 million was paid in cash. The goodwill recognized based on the preliminary pur-

chase price allocation amounts to €3,726 million and is not tax-deductible. The excess remaining after capital consolidation results in particular from the strengthening of ZF activities in the area of commercial vehicle technology as well as synergy effects. WABCO was integrated into ZF's structure as the independent Commercial Vehicle Control Systems Division.

Within the scope of the WABCO acquisition, R.H. Sheppard Co., Inc. was sold to Bendix Commercial Vehicle Systems LLC on June 1, 2020 for €139 million.

The acquired assets and liabilities of WABCO and its subsidiaries have been recognized at the date of acquisition with the following fair values, which are based on a preliminary purchase price allocation:

in € million

Cash and cash equivalents	441
Financial assets	162
Trade receivables	415
Contract assets	2
Other assets	106
Income tax receivables	17
Inventories	444
Associates	7
Intangible assets	3,202
Property, plant and equipment	624
Assets held for sale and disposal groups	154
Financial liabilities	-828
Trade payables	-224
Contract liabilities	-43
Other liabilities	-124
Income tax liabilities	-128
Income tax provisions	-188
Other provisions	-400
Provisions for pensions	-628
Liabilities of disposal groups	-29
Deferred taxes (balanced)	-531
Acquired total net assets	2,451
Non-controlling interests	79
Purchase price	6,098
Excess remaining after capital consolidation	3,726

Receivables at a fair value of €540 million were acquired in the context of the business combination. This amount includes trade receivables of €415 million, other assets of €106 million, income tax receivables of €17 million as well as contract assets of €2 million. The gross amount of the receivables is €554 million, of which €14 million are expected to be non-recoverable. Contingent liabilities for indirect taxes are recognized in other provisions. Since the acquisition date, WABCO has contributed sales of €1,516 million, an amount of €-77 million to net profit after tax and €-63 million to other comprehensive income. If the acquisition had been effected as of January 1, 2020, the Group's sales would have amounted to €33,545 million and the Group's net profit after tax would have amounted to €-817 million.

In the course of the WABCO acquisition, a mandatory offer was submitted to the minority shareholders of WABCO India Limited. Under this mandatory offer, 18.11% of the shares in WABCO India Limited were acquired for a purchase price of €279 million. The difference between the purchase price and the carrying amount of the acquired non-controlling interest of €236 million was offset with retained earnings.

The purchase price allocation is not completed so far because there is no final asset valuation yet. Adjustments may occur, above all, in relation to the valuation of customer relations, technologies, property, plant and equipment, other provisions and the associated deferred taxes.

With a purchase contract dated August 10, 2020, assets and liabilities of Veoneer US, Inc. and Veoneer Brake Systems LLP were acquired as part of an asset deal. With this acquisition, the ZF Group is expanding its activities in the field of brake systems and is enhancing its position as a leading supplier of integrated braking control systems in the global truck and SUV market.

The purchase price of €19 million was paid in cash. The negative difference of €14 million was due to a bargain purchase and was recorded as other income.

The acquired assets and liabilities have been recognized at the date of acquisition with the following fair values, which are based on a preliminary purchase price allocation:

in € million	
Other assets	1
Inventories	1
Property, plant and equipment	52
Financial liabilities	-17
Trade payables	-4
Acquired total net assets	33
Purchase price	19
Goodwill	14

In connection with the asset deal, ZF acquired receivables at a fair value of €1 million. These were mainly other assets. There are no uncollectible receivables. Since the acquisition date, the brake systems business from this acquisition has contributed €23 million to sales and €-15 million to net profit after tax. If the asset deal had been effected as of January 1, 2020, the Group's sales would have amounted to approx. €32,611 million and the Group's net profit after tax would have amounted to €-758 million.

The purchase price allocation is not completed so far because there is no final asset valuation yet. Adjustments may arise in particular when measuring property, plant and equipment.

By way of purchase contracts dated September 30, 2020 and October 2, 2020, the remaining 36% of the shares in ZF Sachs Micro Mobility GmbH, were acquired, which led to an increase of the participation quota to 100%, thus gaining control of the company. Prior to this, there was no control in spite of the majority of voting rights due to company-contractual provisions. The object of the company is the research, development, production, sales and further development of antilock braking systems and drive systems for light electric vehicles including new vehicle segments in the "new urban mobility" sector.

In order to enter the growing market of electric micro-mobility and to set new technological impetus, ZF and other partners had operated the company ZF Sachs Micro Mobility GmbH in recent years. The acquisition of all shares is to strengthen and enhance the expertise in the growing market of micromobility.

The purchase price of €2 million was paid in cash. The goodwill recognized based on the preliminary purchase price allocation amounts to €7 million. The excess remaining after capital consolidation results in particular from the strengthening of ZF activities in the two-wheeler segment.

The acquired assets and liabilities of the company have been recognized at the date of acquisition with the following fair values, which are based on a preliminary purchase price allocation:

in € million	
Cash and cash equivalents	1
Other assets	1
Inventories	1
Intangible assets	2
Property, plant and equipment	1
Financial liabilities	-4
Trade payables	-3
Other liabilities	-1
Acquired total net assets	-2
Fair value of shares already held	3
Purchase price	2
Excess remaining after capital consolidation	7

In connection with the share deal, ZF acquired receivables at a fair value of €1 million. These were mainly other tax receivables. There are no uncollectible receivables. The return on the valuation of the shares already held at fair value of €2 million was recognized as other income. The acquisition of the company did not have a significant effect on net assets, financial position and results of operations of the ZF Group.

Company acquisitions in the prior-year period

Effective July 26, 2019, 100% of the shares in Brake Force One GmbH were acquired. The company develops, designs and sells brake systems and accessories for two-wheeled vehicles. The purpose of the acquisition was to expand ZF's business in the two-wheeler area.

The finalization of the purchase price allocation resulted in a change in the valuation of associates in the single-digit million range in the period from January 1 to July 25, 2020. As a result, the excess remaining after capital consolidation increased to €7 million.

In connection with a share deal, ZF acquired 60% of the shares of 2getthere Holding B.V. as well as its two subsidiaries effective March 19, 2019. The company offers completely automated transport systems. With the acquisition, ZF is expanding its business in the area of driverless transport systems.

Effective July 15, 2020, the remaining shares of the 2getthere Holding B.V. were acquired for a purchase price of €5 million. The difference between the purchase price and the carrying amount of the acquired non-controlling interest of €8 million was offset with retained earnings.

The finalization of the purchase price allocation resulted in changes in the valuation of intangible assets and other provisions in particular, each in the single-digit million range. This increased the excess remaining after capital consolidation to €31 million.

Consolidation principles

The consolidation of investments in subsidiaries is carried out according to the purchase method. When control was obtained, the revalued assets and liabilities of the subsidiary and contingent liabilities, if they do not depend on a future event, are offset against the fair value of the consideration paid for the shares. Contingent purchase price payments are recognized at the amount expected. Subsequent adjustments of contingent purchase price payments are recognized in profit or loss. Acquisition-related expenses are recognized in profit or loss when they are incurred.

Any excess remaining after capital consolidation is recognized as goodwill and recorded under intangible assets. The goodwill is tested for impairment as of the reporting date. An impairment test is performed during the year if there are any triggering events. Negative differences arising on the consolidation of investments in subsidiaries are recognized in profit or loss in the consolidated statement of profit or loss under other income.

If not all interests are acquired during an acquisition, the non-controlling interests can be recognized at the amount of the proportionally revalued net assets or at their proportional total company value including the applicable goodwill. This right of choice is applicable to every company acquisition. As of December 31, 2020, all non-controlling interests are reported with the proportional net assets.

In the case of a step acquisition, the already existing interests in the company to be consolidated are revalued at the fair value at the date when control is obtained. The difference to the carrying amount of the investment is recognized in profit or loss.

The acquisition of additional interests of already fully consolidated subsidiaries is recognized as an equity transaction. In this method, the difference between the cost of the investment acquired and the carrying amount of the non-controlling interest is recognized in retained earnings. The effects of a sale of interests, which does not lead to a loss of control over a subsidiary, are to be recognized in other comprehensive income with no effect on profit or loss by offsetting the capital gain or loss against retained earnings and by increasing the non-controlling interests to the amount of the proportional net assets.

The deconsolidation of subsidiaries is carried out on the date of the loss of control or the date of liquidation. The gain or loss on deconsolidation is recognized in other income or expenses, respectively. Remaining interests are recognized at fair value under investments in participations.

Consolidation of receivables, liabilities, provisions, income and expenses as well as gains or losses is effected for the companies included in the basis of consolidation. Guarantees and warranties between consolidated companies are eliminated.

Foreign currency translation

The financial statements of consolidated group companies prepared in foreign currencies are translated on the basis of the concept of functional currency by the modified closing rate method. Since the subsidiaries operate independently from a financial, economic and organizational point of view, the functional currency is generally identical with the company's local currency. Accordingly, the income and expenses in the financial statements of subsidiaries drawn up in foreign currencies are translated in the consolidated financial statements applying average rates, and assets and liabilities at the closing rate. The exchange difference resulting from the translation of equity at historical rates and the exchange differences resulting from the translation of the statement of profit or loss at the average exchange rate are recognized in other comprehensive income in equity without effect on profit or loss.

Upon initial recognition, foreign currency receivables and liabilities are measured at the rate valid on the day of transaction in the individual financial statements of ZF Friedrichshafen AG and its subsidiaries. The closing rate on the reporting date will be used for subsequent measurements. Foreign exchange gains and losses from the revaluation of trade receivables and trade payables on the reporting date are recognized in other income and expenses. Foreign exchange gains and losses from financial assets and liabilities are generally recognized within other financial income and financial expenses. To the extent that non-current financial receivables or liabilities denominated in foreign currency exist toward a foreign operation, the settlement of which is neither planned nor likely in the foreseeable future, any translation differences are not recognized in profit or loss in other financial income and expenses, but directly in equity as other comprehensive income. A transfer to the consolidated statement of profit or loss only occurs upon repayment or sale of the foreign operation.

The translation of any goodwill carried in foreign currency is based on the closing rate as of the reporting date. The differences resulting from currency translation are recognized in equity through other comprehensive income as foreign currency translation differences.

The exchange rates used for foreign currency translation with a significant influence on the consolidated financial statements changed as follows in relation to one euro:

	Closing rate		Average rate	
	Dec. 31, 2020	Dec. 31, 2019	2020	2019
U.S. dollar	1.2271	1.1234	1.1430	1.1196
British pound	0.8990	0.8508	0.8898	0.8775
Chinese renminbi	8.0225	7.8205	7.8785	7.7339
Brazilian real	6.3735	4.5157	5.8851	4.4105
Mexican peso	24.4160	21.2202	24.513	21.5587

Accounting policies

The financial statements of ZF Friedrichshafen AG and the companies included in the consolidated financial statements are drawn up as of December 31 of each fiscal year, applying uniform Group accounting principles.

Recognition of expenses and income

Sales are recognized in accordance with IFRS 15 at the date when control over the product or the service is obtained by the customer. The assessment is made separately for each type of performance promise. The amount of sales is determined by the contractual agreement. To the extent that the purchase price refers to multiple sales transactions, the transaction price is allocated appropriately to the individual sales transactions.

Sales from selling products and tools as well as the reimbursement of development expenses are recognized at a point in time, i.e., once the ownership or the risk is transferred to the customer. Income from service and license contracts are recognized either at a point in time or over a period of time, depending on the respective contractual structure. Sales are reported net of cash discounts, price reductions, customer bonuses and rebates.

Additional explanation regarding revenue recognition in accordance with IFRS 15 can be found in the notes on judgments.

Cost of sales comprises the cost of conversion of products sold as well as the purchase costs of sold merchandise. In addition to the directly attributable material and production costs, it also includes indirect production-related overheads, including depreciation on property, plant and equipment used and amortization of intangible assets. Cost of sales also includes write-downs of inventories to the lower net realizable value.

Research costs and non-capitalizable development costs are recognized in profit or loss when incurred.

Borrowing costs that are directly attributable to the acquisition or production of an asset which requires a considerable amount of time in order to be brought into the intended usable or sellable state are recognized as part of the cost of that asset. All other borrowing costs are recognized immediately as expenses.

Interest income is recognized in profit or loss when it is incurred.

Dividend income is recognized at the time the payout entitlement arises.

Hedging transactions

Derivative financial instruments are used at the consolidated ZF Group for hedging in order to reduce foreign currency and raw material price risks as well as interest rate and market price risks. IFRS 9 introduces new rules for recognition and measurement, impairment, derecognition and hedge accounting in relation to financial assets and liabilities. While ZF introduced the new rules for classification and measurement as well as for impairment as of January 1, 2018, the option was used to adopt the new hedge accounting rules as of January 1, 2020 before they become effective. The changeover of the existing cash flow hedges used for hedging currency risks from the IAS 39 rules to the IFRS 9 rules was made by reversal and redesignation. This did not lead to material effects. The other hedging relationships were continued unchanged.

If the criteria for hedge accounting are met, they are accounted for as fair value hedges or cash flow hedges. If hedge accounting is not applicable, the derivative financial instruments are measured at their fair values and changes in fair value are recognized through profit or loss in the net financial result.

Fair value hedges are used to hedge risks of changes in the value of items recognized in the statement of financial position. If the criteria are met, the results from mark-to-market of derivative financial instruments and the underlying hedged items are reflected in profit or loss.

Cash flow hedges are used to hedge exposure to variability in future cash flows. If the market value of derivative financial instruments – used for cash flow hedges – changes, the unrealized gains and losses in the amount of the effective portion are initially recognized in other comprehensive income without affecting profit or loss. Reclassification to the consolidated statement of profit or loss is effected in the same period during which the hedged transaction affects profit or loss. The ineffective part of market value changes is reflected directly in the consolidated statement of profit or loss.

The profit and loss derived from hedging in connection with hedging operating transactions is recognized under other income and expenses or as part of acquisition cost. The gains and losses from derivative financial instruments used to hedge interest rate, market price or foreign currency risks related to financial assets or liabilities are shown under other financial results.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, bank deposits available any time and short-term overnight money.

Financial assets

In general, the classification of current and non-current financial assets in accordance with IFRS 9 is based on the following three measurement categories:

- at amortized cost (AC),
- at fair value through other comprehensive income (FVtOCI) or
- at fair value through profit or loss (FVtPL).

The classification into the relevant measurement category is determined by the business model based on the management of the respective financial asset and by the contractual cash flow characteristics of the financial asset.

If the financial asset is allocated to the "Hold" business model and if the cash flows collected are solely payments of principal and interest, the asset is measured at amortized cost (AC). The initial measurement is based on the fair value including transaction costs, while subsequent measurement is based on amortized cost. This measurement category primarily includes trade receivables held to maturity as well as financial receivables.

If the financial asset can be allocated to the "Hold and Sell" business model and if the cash flows collected are solely payments of principal and interest, the asset is measured at fair value through other comprehensive income (FVtOCI). Fair value changes recognized in other comprehensive income are reclassified to the statement of profit or loss upon the disposal of the financial asset, except in the case of equity financial instruments. The initial measurement is based on the fair value including transaction costs, subsequent measurement is based on the fair value. This measurement category may be used for trade receivables to the extent that these are held to maturity or sold prior to maturity.

To avoid mismatches in terms of recognition or measurement, a financial asset that falls within the scope of one of the two measurement categories mentioned above may, alternatively, be measured at fair value through profit or loss (FVtPL). This measurement category is currently not in use.

Financial assets that do not meet the above-mentioned criteria regarding business model and cash flow characteristics are recognized at fair value through profit or loss (FVtPL). Both initial and subsequent measurement are based on the fair value. This measurement category includes investments in participations and securities.

Alternatively, if certain prerequisites are met, assets within the scope of this measurement category may also be measured at fair value through other comprehensive income (FVtOCI). ZF uses this option for equity instruments not held for trading (for example, instruments held in the portfolio for strategic reasons). Subsequently, all future changes in fair value have to be recognized in other comprehensive income; after the derecognition of the financial instrument, these changes remain within equity. Only dividend income is recorded through profit or loss. ZF exercises the option for the securities of the Nikola Corporation.

Financial instruments measured at amortized cost mainly comprise current receivables. Impairments on these receivables are determined using the simplified model for the recognition of expected credit losses (loss allowance based on creditworthiness). This results in an earlier recognition of losses since not only incurred losses are taken into account, but also losses expected for the future. For this purpose, ZF applies a rating-based model to determine loss rates of receivables and contract assets. This involves the classification of customers into four risk categories. This risk classification is based on credit metrics provided by the external rating agency (Euler-Hermes) and takes into account both past and forward-looking information. Changes in the customers' creditworthiness are recorded within the framework of a regular monitoring process. The basis for the calculation of the general credit-based loss allowances are the respective gross receivables, less credit-based specific loss allowances and the expected probability of default. Cash and cash equivalents are normally not reviewed in more detail as to a potentially existing credit risk.

A significant increase in credit risk is assumed to exist when the risk category has deteriorated.

Risk category	Risk	Probability of default	Definition of category
Risk category 1	Low risk	0.1 – 0.5%	Customers have a small credit risk and a strong ability to meet their payment obligations.
Risk category 2	Medium risk	1 – 4%	Customers have a medium credit risk and a good ability to meet their payment obligations.
Risk category 3	High risk	4 – 10%	Customers have an increased credit risk and a sufficient ability to meet their payment obligations.
Risk category 4	In default/ insolvent	18%	Customers have a high credit risk. It can be expected that the customers cannot meet their payment obligations in whole or in part.

As a rule, financial assets are capitalized as of the settlement date.

A financial asset is derecognized as of the settlement date when the contractual rights to receive cash flows from the asset have expired or substantially all risks and rewards have been transferred. A derecognition is performed once it is established that the trade receivables as well as financial receivables are uncollectible.

Inventories

As a general rule, raw materials and supplies as well as merchandise are measured at their average cost taking into consideration the lower net realizable value. Work in progress and finished goods, including development expenses to be reimbursed by customers, are recognized at cost of conversion, taking into account the lower net realizable value. The cost of conversion includes all costs directly attributable to the manufacturing process and appropriate portions of the production-related overheads. This includes production-related depreciation, prorated general administrative expenses and prorated social expenses.

Contract assets

Contract assets comprise contingent customer receivables. This mainly includes development expenses, which are being reimbursed through the component price within the framework of volume production delivery. After the transition of the development results to the customer, these expenses are derecognized from inventories and recognized as contingent customer receivables in contract assets.

Investments in associates and joint ventures

Investments in associates and joint ventures are generally recognized in accordance with the equity method with the proportionate equity. If, on the reporting date, there is objective evidence for the impairment of an investment, an impairment test is performed. The share of the consolidated ZF Group in the profit for the period of the associate or joint venture, respectively, is recognized separately in the consolidated statement of profit or loss. Income and expenses that are directly recognized in the equity of the associate or joint venture are recognized in the consolidated ZF Group without effect on profit or loss as well.

Intangible assets

Purchased or internally generated intangible assets are capitalized if a future economic benefit can be expected from the use of the asset and the costs of the assets can be reliably determined.

For recognition and measurement of goodwill, please refer to the explanations on the consolidation principles.

Development costs that are not reimbursed by the customer are capitalized at cost of conversion in as far as both technical feasibility and marketability are ensured. It must furthermore be sufficiently probable that the development activity will generate future economic benefits. Capitalized development costs comprise all costs directly attributable to the development process. Capitalized development costs are amortized from the start of production over an expected product life cycle of five years.

Other intangible assets are recognized at cost and amortized based on the following useful lives:

	in years
Software	3 to 5
Patents, trademarks and licenses	5 to 10
Customer relations	3 to 30

Property, plant and equipment

The entire property, plant and equipment is used for business purposes and is measured at cost less depreciation for wear and tear. Depreciation on property, plant and equipment is recorded on the basis of the straight-line method in accordance with its utilization and allocated to the function costs. Throughout the consolidated group, systematic depreciation is based on the following useful lives:

	in years
Buildings	9 to 33
Technical equipment and machines	2 to 14
Other equipment, factory and office equipment	2 to 13

The depreciation on machines used in multi-shift operations is increased accordingly by shift allowances.

The residual values, depreciation methods and useful lives of assets are reviewed annually and adapted, if necessary.

Leases are accounted for in accordance with IFRS 16. A lease is a contract that conveys the right to use an asset for an agreed period of time in exchange for consideration. In accordance with IFRS 16, right-of-use assets are capitalized and a corresponding lease liability is recognized at the inception of a lease in which ZF acts as the lessee. The lease liability is recognized at the present value of the future lease payments and discounted using the interest rate implicit in the lease. Normally, this rate cannot be readily determined. In these cases, ZF's incremental borrowing rate for matching maturities and currencies is used. This rate is derived from observable credit spreads and swap rates. Lease liabilities are measured at the updated carrying amount using the effective interest method.

Amounts that are expected to be paid due to a residual value guarantee as well as extension, termination and purchase options – to the extent reasonably certain – are taken into account in the measurement of future payments.

In addition to the present value of the future lease payments, the cost of the right-of-use asset is determined by taking into account any payments made before the commencement date, lease incentives and initial direct costs, if applicable. Furthermore, the estimated costs for retirement obligations assumed are included in the measurement. The capitalized right-of-use assets are depreciated on a straight-line basis over the shorter of the lease term or the expected useful life. By exercising the corresponding option, agreements with a term of up to one year and agreements regarding assets that can be used independently and are of low value are recognized directly in profit or loss, not affecting the statement of financial position. ZF does not apply IFRS 16 to transactions involving intangible assets (including software and licenses). These continue to be accounted for in accordance with IAS 38.

The capitalized right-of-use assets are reported in the statement of financial position as a part of property, plant and equipment in the respective asset classes to which the asset underlying the lease is to be allocated. Lease liabilities are included in the line item "Financial liabilities." The interest expense is part of the net financial result.

Government grants

Government grants are recognized only if there is reliable evidence that the related conditions are met and the subsidies are likely to be granted. Investment subsidies are deducted from property, plant and equipment in the period in which they were received. Expense subsidies are recognized as income during the same period in which the expenses, for which compensation was granted, are incurred. This does not include reimbursements for employer contributions to social security in the context of short-time work. These are offset against the personnel expenses.

Current market interest rates are used for the valuation of non-interest-bearing or low-interest-bearing government loans. The difference between the discounted value and the repayment value is deferred and recognized under other liabilities. The deferred amount is broken down over the duration of the loan contract and recognized in interest expenses.

Assets held for sale and disposal groups

Assets and liabilities are reported as disposal groups when these are to be disposed of by sale together as a group in a single transaction which is highly probable. Individual assets are reported in the statement of financial position as assets held for sale. The affected assets and liabilities are presented separately in the statement of financial position in current assets and liabilities as "Assets held for sale and disposal groups" and "Liabilities of disposal groups," respectively. Income and expenses of the assets and liabilities affected are included in the profit or loss from continuing operations until disposal.

The disposal group is measured upon initial recognition in accordance with the relevant IFRS standards. Subsequently, the disposal group is measured at the lower of its carrying amount or fair value less costs to sell.

Impairment tests

For investments in associates, intangible assets already in use as well as property, plant and equipment, it is verified as of the reporting date whether there are indications of potential impairment. If there are any indications, an impairment test must be performed. Intangible assets that are not yet ready to be used are subject to an annual impairment test.

To perform the impairment test, the recoverable amount is determined. This is the higher amount of the asset's or the smallest cash-generating unit's fair value less costs to sell and their value in use. The recoverable amount is determined for the individual asset or a cash-generating unit, if no cash flows can be allocated to the individual asset. The cash-generating units underlying the impairment tests are defined on the basis of the Group's business units or the regional organization of the Group. The Group's business units also represent the organizational level which is subject to regular review by management.

The value in use is the net present value of future cash flows, which are expected from the continued use of the asset (or the cash-generating unit) and its disposal at the end of its useful life. The value in use is determined by the discounted cash flow method on the basis of the current corporate planning data which refers to a three- to ten-year planning horizon. A 10-year planning horizon was recognized in the Commercial Vehicle Control Systems Division in accordance with the purchase price allocation carried out as of the acquisition date. The capital cost rates of the consolidated ZF Group, which are determined on the basis of the WACC (Weighted Average Cost of Capital) method, are used to discount the cash flows.

The forecast for cash flows is based on the current operational and strategic planning of the consolidated ZF Group, in which general economic data from external macroeconomic research as well as financial surveys is also taken into consideration. The assumptions made consider the country-specific rates of inflation for the period investigated. Cost of materials is forecast based on the individual premises at the level of each cash-generating unit. The development of personnel expenses is also forecast individually on the basis of the collective agreements in effect.

Based on these cash flow predictions, the value in use of the cash-generating units is determined assuming a discount factor before tax of 11% (2019: 10%) and a growth rate of 1% (2019: 1%). For perpetuity going beyond the planning horizon, the cash flows are extrapolated taking into account the respective sustainable expected margin of the individual cash-generating units.

Fair values less costs to sell for property, plant and equipment are estimated on the basis of discounted cash flows as well as a cost-based approach for comparable assets that are generally not based on parameters observable on the market.

An impairment loss is recognized if the recoverable amount falls below the carrying amount of the asset or the cash-generating unit.

If the reason for an impairment loss recognized in an earlier period ceases to exist, the impairment loss is reversed, however up to a maximum of the carrying amount that would have been determined (net of depreciation or amortization) if no impairment loss had been recognized. Impairment losses and reversals of impairment losses for intangible assets and property, plant and equipment are assigned to the functional areas of the consolidated statement of profit or loss.

Goodwill from business combinations is allocated to those groups of cash-generating units that derive benefit from the business combinations. In the consolidated ZF Group, these are the respective divisions and business units. An impairment test for goodwill is performed annually using the impairment test in accordance with the above-described methods. An impairment of goodwill is recognized if the recoverable amount of the corresponding cash-generating unit is below its carrying amount. Impairment losses for goodwill are reported under other expenses. Impairment losses recognized on goodwill are not reversed.

Financial liabilities and other liabilities

If financial liabilities are held for trading, the related changes in fair value are recognized through profit or loss (FVtPL). Both initial and subsequent measurement are based on the fair value.

Financial liabilities not held for trading are measured at amortized cost (AC) (if they do not fall within a special category). The initial measurement is based on the fair value less transaction costs, while subsequent measurement is based on amortized cost. This measurement category primarily comprises financial debt and trade payables.

Alternatively, to avoid mismatches in terms of recognition or measurement, the liabilities may also be measured at fair value through profit or loss (FVtPL).

The consolidated ZF Group generally dispenses with applying the fair value option to recognize financial liabilities upon initial recognition at fair value through profit or loss (FVtPL).

Contract liabilities

Contract liabilities comprise prepayments from customers received for goods or services that are yet to be delivered or provided by ZF. In addition, outstanding charges by the customer to ZF or credits not yet granted by ZF to the customer are reported in this item.

Provisions for pensions

Provisions for pensions are recognized in accordance with the projected unit credit method. Under this method, not only pensions and vested interests recognized as of the reporting date are taken into account, but also increases in pensions and current salaries and wages that are expected in the future. The calculation is based on actuarial reports, taking into account biometric calculation bases. The plan assets, which are solely used for satisfying the pension obligations and which are restricted from the access of all other creditors, are offset against provisions. If these exceed the amount of provisions, such excess is reported under non-current financial assets. The plan assets are recognized at fair value. Expenses resulting from unwinding the discount on pension obligations and expected returns on plan assets are offset and recognized in interest expenses. Actuarial gains and losses are recognized in full in other comprehensive income in the period in which they occur. All other expenses resulting from the addition to pension provisions are assigned to the affected functional areas within the consolidated statement of profit or loss.

Other provisions

Other provisions are recognized if an obligation to third parties exists, which will probably result in the outflow of resources, and if a reliable estimate can be made of the amount required.

As a general rule, all cost elements that are capitalized in inventories are reflected in the measurement of provisions relating to sales, in particular those for warranties and potential losses on pending transactions. The measurement takes place at the value of the best possible estimate of expenses which are necessary to fulfill the obligation on the reporting date. The measurement of provisions for warranty costs takes place on the basis of actual warranty expenses under consideration of warranty and goodwill periods as well as sales development over several years.

Personnel-related obligations mainly relate to semi-retirement obligations, obligations in connection with restructuring measures as well as long-service awards. The provisions for semi-retirement obligations comprise individual or pay-scale-related top-up benefits for pension insurance as well as the wages and salaries to be paid until the end of the release phase. They are accrued on a pro-rata basis when the obligation arises and according to the respective nature of the commitment, taking into account a minimum period of employment.

The major portion of the semi-retirement obligations is protected against insolvency using a trust model. The assets, which are solely used for satisfying the semi-retirement obligations and which are restricted from the access of all other creditors, are offset against provisions (plan assets). They are recognized at fair value. If the plan assets exceed the amount of provisions, such excess is reported under non-current financial assets. The return on plan assets is offset against expenses from the interest cost of provisions and reported in the statement of profit or loss.

Provisions for restructuring measures are recorded as soon as a formal plan exists and was communicated to the parties affected or when the implementation of the plan has started. In addition to the scope of the planned capacity adjustments, country- and location-specific regulations as well as the corresponding remuneration level are also taken into account in the evaluation.

Provisions for employee long-service bonuses are calculated on an actuarial basis.

Non-current provisions with a residual term of more than one year are recognized at the reporting date with their discounted settlement amount. They are discounted when the effect of the time value of money is material.

Income taxes

The actual income tax receivables and provisions for current and previous periods, which also include tax risks, are measured using the amount for which reimbursement from or payment to tax authorities is expected. The amount is calculated using the tax rates and the tax laws that are in effect on the reporting date.

Deferred tax assets and liabilities are recognized via temporary differences between the tax basis and the IFRS carrying amounts. Deferred tax assets also include tax reductions that will result from the expected utilization of existing tax loss carry-forwards and tax credits in the subsequent years. Deferred taxes are computed on the basis of the tax rates that will or are expected to apply on the realization date with sufficient probability in accordance with the current legal situation in the individual countries.

Deferred tax assets on temporary differences and on tax loss carryforwards are only recognized if there is sufficient probability that the tax reductions resulting from them will actually occur in future.

The carrying amount of deferred tax assets is reviewed on each reporting date and written down accordingly, if it is anticipated that there will not be enough taxable profit to offset the tax assets at least in part. Unrecognized deferred tax assets are reviewed on each reporting date and recognized to the extent that a future taxable income allows the utilization of deferred tax assets.

In addition, no deferred tax assets and liabilities are recognized if these result from the initial recognition of goodwill, an asset or a liability as part of a business transaction which is not a business combination, and if, through this initial recognition, neither the accounting net profit or loss before income tax nor the taxable profit is influenced.

Deferred taxes that refer to line items that are directly recognized in equity are also recognized in equity and not in the consolidated statement of profit or loss.

Deferred tax receivables and deferred tax liabilities are offset against each other if the consolidated group has a recoverable right to offsetting the actual tax refunds against actual tax liabilities and if they apply to the income taxes of the same tax subject levied by the same tax authority

Judgments and uncertainties in connection with estimates

Preparation of the consolidated financial statements requires assumptions to be made and estimates to be applied, which affect the reported amounts and disclosure of assets and liabilities, income and expenses as well as contingent liabilities.

Essential assumptions and estimates as used in the recognition and measurement of the balance sheet items are explained below.

ZF recognizes sales (Note 1) from a transaction with a customer at the date when ZF has satisfied its performance obligation and control over the product or the service is transferred to the customer. For the major part of the transactions, the transfer of control occurs on the basis of the terms of delivery agreed with the customer (Incoterms). The most commonly used Incoterms are "Ex Works" and "Free Carrier" (FCA). After the transfer of control, the payment for the items delivered or services rendered is made based on terms of payment that are common in the industry and dependent on the individual creditworthiness of the customer. To the extent that warranties with service characteristics are provided to customers that extend beyond typical warranty agreements, sales are recognized over the agreed service period.

In the case of sales not related to volume production, ZF partially receives prior to or concurrently with service provision advance payments in relation to the services to be provided. The transaction price underlying revenue recognition is measured on the basis of the payment claim contractually agreed at the date of the transaction. Any existing variable price components, such as price reductions linked to meeting specific quantity targets or to the development of material prices or exchange rates, are reviewed periodically as to their feasibility.

Contract assets (Note 12) are amortized depending on the project term and unit prices. They are reviewed regularly as to their feasibility based on orders received and sales expectations. If there are any indications that a contract asset is not recoverable, a loss allowance is recognized in the corresponding amount.

Management estimates as to technical and economic feasibility of development projects influence the decision to capitalize development costs under intangible assets (Note 16). The measurement of the capitalized development costs depends on the assumptions about the amount and timing of expected future cash flows as well as on the discount rates to be applied.

For the accounting of other intangible assets (Note 16) and property, plant and equipment (Note 17), the assumptions and estimates essentially relate to the definition of useful lives.

Measurement as well as the determination of the useful lives of assets, liabilities and contingent liabilities to be recognized in the context of acquisitions were primarily made using cash-flow-based estimates. The allocation of purchased goodwill was subject to estimates as regards the amount and the timing of future cash flows resulting from synergies.

In the context of the impairment tests (Note 19), assumptions and estimates are used in determining the future cash flows to be expected as well as for defining discount rates. This may have an influence on the values of intangible assets in particular.

The assessment of the recoverability of trade receivables (Note 11) is subject to judgment as regards the expected probability of default.

In accounting the deferred tax assets (Note 8), the assumptions and estimates essentially relate to the likelihood of expected tax reductions actually occurring in the future.

When determining the outstanding customer charges or credits to the customer as part of contract liabilities (Note 21) in the consolidated financial statements in connection with differences in prices or quantities, assumptions and estimates were made based on ongoing customer negotiations or past experience with customers.

The actuarial measurement of provisions for pensions (Note 24) requires several assumptions depending on the nature of the commitment. The assumptions regarding discount rates, future pension and salary increases as well as demographic developments have a major influence on the valuation. In 2020, employees in Germany were offered to change to new, capital-related defined benefit obligations, the implementation of which has not yet been completed. In addition to the aforementioned assumptions, the amount of deferred remuneration by the participating employees as well as their future selection with regard to payment options is also an essential estimate for the measurement of the pension provisions resulting from this commitment. Furthermore, the assumed changeover rate to this new commitment has a one-time impact on the amount of pension provisions as well as the past service cost. In order to estimate the changeover rate, the persons entitled were divided into age groups and the advantages of the new defined benefit obligations were weighed in comparison to the existing commitment in order to determine the probability of change per group. Furthermore, empirical values from

the acceptance of joining a voluntary deferred compensation commitment from the past were taken into account.

Determination of warranty provisions (Note 23) is subject to assumptions and estimates which refer to the time period between delivery date and the occurrence of the warranty event, warranty and goodwill periods as well as future warranty burdens.

The determination of provisions for onerous contracts (Note 23) is subject to judgments with respect to the interpretation of supply contracts. In this respect, the major decision criteria are the bindingly defined term of delivery as well as quantities and prices.

The measurement of the restructuring provisions (Note 23) depends to a great extent on the expected corporate development and implementation of the initiated cost reduction and structural adjustment measures.

ZF Friedrichshafen AG and its subsidiaries are exposed to various claims arising from legal disputes (Note 33), in particular in connection with warranty cases as well as antitrust proceedings and investigations by authorities. Against the backdrop of complex legal matters, the assessment of the outcome of the proceedings is subject to discretion. The probability and the amount of utilization is taken into account when recognizing provisions. The assessment is based on internal estimates, supported by external consultants and lawyers in individual cases. These estimates will be adjusted if new insights and changes in circumstances occur, and they may deviate significantly from the actual outcome of the proceedings.

Extension, termination and purchase options have to be taken into account in the recognition of right-of-use assets from leases (Note 18) as well as lease liabilities to the extent that it is reasonably certain that such options are exercised. Reasonably probable extension and purchase options lead to an increase of future payments and thus to higher right-of-use assets and, accordingly, to higher future depreciation. In contrast, reasonably probable termination options result in a decrease of the recognized right-of-use assets and to lower future depreciation. In particular, real estate rental contracts may include such options, and the exercise of such options is reviewed regularly taking into account economic aspects.

ZF has faced unusually high challenges due to the COVID-19 pandemic, negatively impacting incoming orders, sales and net profit after tax in the past fiscal year. These effects were compensated to a small extent by government grants (Note 36). With the exception of credit-based allowances for trade receivables (Note 11), the economic effects of the pandemic did not to a significant extent result in a need for impairment on inventories or property, plant and equipment or contracts classified as a loss – e.g. due to supply bottlenecks in the value added chain. Due to the continuing COVID-19 pandemic, there are still uncertainties regarding the duration and scope of the resulting effects on ZF's results of operations, net assets and financial position. Within the context of preparing the consolidated financial statements as of December 31, 2020, estimates and assumptions relevant to the financial statements were made which were based on the knowledge and information available at that time. In doing so, ZF applied a scenario with reduced effects of the COVID-19 pandemic on net assets, financial position and results of operations already in 2021, assuming these effects will not be of a long-term nature. COVID-19-related effects may include in particular the fair values and carrying amounts of assets and liabilities (Note 19), the amount and date of the realization of profit or loss (Note 1) as well as the cash inflows.

No other major judgments were made.

In individual cases, actual amounts could differ from these assumptions and estimates. Changes are recognized in profit or loss as soon as better information is available. This could have an impact on the Group's future net assets, financial position and results of operations.

NOTES TO THE CONSOLIDATED STATEMENT OF PROFIT OR LOSS

The consolidated statement of profit or loss has been drawn up in accordance with the cost of sales method.

1 Sales

Especially due to the COVID-19 pandemic, sales decreased by 11% compared to the previous year.

In the following tables, the sales based on contracts with customers are broken down into sales categories and geographical regions:

in € million	2020	2019
Volume production business sales	28,021	31,797
Aftermarket and service sales	3,266	3,274
Other sales	1,324	1,447
	32,611	36,518
in € million	2020	2019
Germany	6,431	7,052
Western Europe	5,871	6,888
Eastern Europe	2,508	2,759
North America	8,587	10,435
South America	752	1,068
Asia-Pacific	8,147	7,847
Africa	315	469
	32,611	36,518

2 Cost of sales

in € million	2020	2019
Cost of materials	20,451	22,874
Personnel expenses	4,391	4,783
Depreciation, amortization and impairment	1,473	1,545
Other	1,353	1,566
	27,668	30,768

As of the fiscal year 2020, expenses related to the inventory change of development and tooling costs capitalized in inventories (€317 million) will be allocated to the cost of materials. Previously, these costs were recorded under other expenses. For better comparability, the previous year's figures were adjusted (€342 million).

3 Other income

in € million	2020	2019
Foreign exchange gains	431	375
Income from hedging	63	77
Income from the disposal of intangible assets and property, plant and equipment	17	9
Badwill	14	3
Miscellaneous income	83	121
	608	585

4 Other expenses

in € million	2020
Foreign exchange losses	464
Expenses from hedging	73
Losses on the disposal of intangible assets and property, plant and equipment	6
Changes of allowances for receivables	48
Changes on other provisions	-8
Goodwill impairment	31
Miscellaneous expenses	156
	770

5 Net result from participations

in € million	2020
Result from at-equity valuation	2
Result from disposal of associates	16
Write-ups and write-downs on associates	-66
Result from associates	-48
Write-ups and write-downs on participations	-79
Income from participations	3
Other net result from participations	-76
Net result from participations	-124

6 Financial income

in € million	2020	2019
Interest from financial assets	18	13
Other interest	9	18
Return on plan assets	0	23
Interest income	27	54
Foreign exchange gains	555	219
Income from derivative financial instruments	202	84
Income from the disposal of securities	18	2
Other financial income	775	305
Financial income	802	359

Interest income under the effective interest method accounts for €27 million for the 2020 fiscal year (2019: €31 million).

2 Financial expenses

	2020	2019
in € million		
Interest from financial liabilities	277	194
Interest on lease liabilities	26	26
Other interest	34	27
Interest cost on pension provisions	46	62
Unwinding the discount on other non-current items	1	0
Interest expenses	384	309
Foreign exchange losses	616	209
Expenses from derivative financial instruments	196	108
Losses on the disposal of securities	29	2
Write-downs of financial receivables	57	71
Transaction costs and incidental expenses	54	47
Other financial expenses	952	437
Financial expenses	1,336	746

3 Income taxes

Income taxes are composed as follows:

	2020	2019
in € million		
Actual taxes	317	337
Deferred taxes	-321	-197
Income tax income (2019: expenses)	-4	140

Actual income tax expenses included adjustments in the amount of €75 million (2019: €26 million) for current taxes of prior fiscal years. Deferred tax income

includes tax income of approximately €260 million (2019: €203 million) in connection with the development of temporary differences.

The actual taxes in Germany were determined on the basis of an overall tax rate of 30%, derived from the corporate income tax rate of 15%, the solidarity surcharge of 5.5% and an average trade tax rate of 14.175%. The actual taxes of international subsidiaries have been determined on the basis of relevant national tax laws and the tax rate applicable in the country of incorporation. Deferred tax assets and liabilities are measured at the tax rates in Germany and abroad, respectively, which are expected to apply at the time of realizing the asset or discharging the liability.

The (current and deferred) income tax expenses expected on the basis of the German overall tax rate of 30% (2019: 30%) deviate from the reported income tax expenses as set out below:

	2020	2019
in € million		
Expected income tax expenses	-224	162
Increase/decrease of income taxes due to		
Tax effects due to different national tax rates and taxation systems	1	-66
Effects of changes in tax laws	10	6
Tax effects due to non-recognition and write-down of deferred tax assets and their reversal	57	22
Tax effects due to permanent differences ¹⁾	83	10
Tax effects due to prior-period items	76	8
Other	-7	-2
Reported income tax income (2019: expenses)	-4	140

¹⁾ Permanent differences comprise tax-reducing items such as tax credits as well as non-deductible operating expenses and withholding taxes.

The gross amounts of deferred tax assets and liabilities resulted from the following line items:

in € million	2020		2019	
	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Intangible assets	0	1,177	0	673
Other assets	340	333	229	248
Pensions	1,445	0	1,040	0
Other liabilities	424	88	477	205
Tax loss carryforwards and tax credits	311	0	259	0
Total	2,520	1,598	2,005	1,126
Netting	-918	-918	-714	-714
	1,602	680	1,291	412

The change in deferred taxes results not only from income taxes recognized in the consolidated statement of profit or loss but also from purchase price allocation, changes in line items of the consolidated statement of comprehensive income and from foreign currency effects.

For companies that showed a negative tax result in the year under review or in the previous year, a deferred tax asset of €1,112 million was capitalized because the realization of the tax claim is probable in this respect due to the tax profit planning.

At the end of the fiscal year, tax loss carryforwards are reported which are subject to offsetting restrictions. To that extent, no deferred tax assets are recognized for these since their utilization due to future positive taxable profit is not probable.

No deferred tax assets were recorded for the following matters (gross amounts):

in € million	2020	2019
Deductible temporary differences	354	381
Tax loss carryforwards and tax credits	934	846
	1,288	1,227

Of the unrecognized tax loss carryforwards, €552 million (2019: €430 million) had a limited expiration period of up to 20 years and €381 million (2019: €415 million) were unlimited. Other items in the amount of €303 million (2019: €357 million) were not taken into account because the probability of a claim is deemed to be extremely low.

Deferred taxes are to be recognized for temporary differences in relation to subsidiaries if their realization is probable. Deferred tax liabilities of €54 million (2019: €61 million) were recorded for reserves generated by subsidiaries. Apart from that, no deferred taxes have been recognized for the reserves generated by subsidiaries of €2,241 million (2019: €1,907 million), as the profits are to be reinvested for an indefinite period of time.

3 Other notes to the consolidated statement of profit or loss

The consolidated statement of profit or loss includes the following cost of materials:

in € million	2020	2019
Cost of raw materials, supplies and merchandise	20,433	22,823
Cost of purchased services	255	327
Other cost of materials	20	34
	20,708	23,184

As of the fiscal year 2020, expenses related to the inventory change of development and tooling costs capitalized in inventories (€317 million) will be allocated to the cost of materials. Previously, these costs were recorded under other expenses. For better comparability, the previous year's figures were adjusted (€342 million).

The breakdown of personnel expenses is as follows:

in € million	2020	2019
Wages and salaries	6,291	6,324
Social security and benefit expenses	1,047	1,184
Pension expenses	98	256
	7,436	7,764

Personnel expenses include expenses for defined contribution plans in the amount of €345 million (2019: €358 million). The expenses contained for the state plans amounting to €273 million (2019: €263 million) primarily comprise the employer's contribution to the state pension scheme, which is included in the social security expenses. The item "Social contributions and expenses for support" includes reimbursements for employer contributions to social security in the context of short-time work in the amount of €170 million.

Termination benefits of €403 million (2019: €45 million) were recorded in the consolidated statement of profit or loss. They affect severance pay as well as expenses from additions to restructuring provisions.

Amortization on intangible assets and property, plant and equipment is included in the following consolidated statement of profit or loss items:

	Intangible assets		Property, plant and equipment	
in € million	2020	2019	2020	2019
Cost of sales	207	295	1,253	1,250
Research and development costs	48	47	107	96
Selling expenses	306	187	24	24
General administrative expenses	24	22	130	118
	585	551	1,514	1,488

Impairment losses on property, plant and equipment amount to €6 million (2019: €1 million). The reversals of impairments the year under review amount to €1 million (2019: €0 million). There have been impairment losses on intangible assets of €37 million (2019: €0 million), and reversals of impairments amount to €1 million (2019: €1 million).

Research and development costs recorded in the fiscal year reached €2,168 million (2019: €2,270 million). This figure includes amortization for capitalized development costs of €23 million (2019: €27 million).

NOTES TO THE CONSOLIDATED STATEMENT OF FINANCIAL POSITION

10 Financial assets

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Total	Thereof current	Total	Thereof current
Investments in participations	62	0	161	0
Securities	100	76	2,576	2,576
Financial receivables	119	27	203	105
Net assets from defined benefit plans	571	0	562	0
Net assets for other performance obligations toward employees	0	0	65	0
Derivative financial instruments	50	41	158	143
	902	144	3,725	2,824

Investments in participations have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	161	205
Changes in the basis of consolidation	9	4
Changes not affecting profit or loss	0	-19
Additions	3	14
Reclassifications	-4	0
Disposals	-28	-43
Depreciation, amortization and impairment	-100	0
Reversals of impairments	21	0
Carrying amount as of Dec. 31	62	161

The financial receivables include granted loans and direct insurance claims against life insurances of €35 million (2019: €36 million).

The financial receivables also contain earmarked bank deposits and time deposit investments of €19 million (2019: €65 million).

The specific loss allowances for financial receivables have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	78	7
Additions	57	71
Utilization	-23	0
Carrying amount as of Dec. 31	112	78

The credit-based loss allowances for financial receivables remained unchanged at €1 million.

11 Trade receivables

The trade receivables have the following risk structure:

Dec. 31, 2020 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	438	8	4	1	443
2	4,001	73	31	57	4,089
3	1,042	19	18	48	1,108
4	0	0	22	0	22
Total	5,481	100	75	106	5,662

Dec. 31, 2019					
Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	1,998	40	22	8	2,028
2	2,525	50	33	36	2,594
3	516	10	10	14	540
4	2	0	12	0	14
Total	5,041	100	77	58	5,176

The specific loss allowances for trade receivables have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	77	60
Net exchange differences	-2	3
Changes in the basis of consolidation	11	0
Additions	28	29
Utilization	-5	-2
Reversals	-34	-13
Carrying amount as of Dec. 31	75	77

The credit-based loss allowances for trade receivables have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	58	53
Net exchange differences	3	1
Net additions	45	4
Carrying amount as of Dec. 31	106	58

Net additions for credit-based loss allowances are due to an increase in expected probability of default compared to the previous year.

Contract assets

	Dec. 31, 2020		Dec. 31, 2019	
in € million	Total	Thereof current	Total	Thereof current
Volume production business	264	75	179	56
Product development and application	149	48	138	46
Others	9	9	11	11
	422	132	328	113

Sales recorded in the fiscal year 2020 from performance obligations satisfied (or partially satisfied) in previous fiscal years amount to €64 million (2019: €28 million).

Contract assets have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	328	191
Additions	189	222
Allowances	-1	0
Utilization	-91	-82
Reversals	-3	-3
Carrying amount as of Dec. 31	422	328

The credit-based loss allowances for contract assets are at €2 million (2019: €1 million). The increase is due to a slight increase in expected probability of default compared to the previous year.

The contract assets have the following risk structure:

Dec. 31, 2020 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	374	89	0	2	376
2	40	9	0	0	40
3	2	1	0	0	2
4	6	1	0	0	6
Total	422	100	0	2	424

Dec. 31, 2019 Risk category	Net in € million	Risk structure in %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	309	94	0	1	310
2	18	5	0	0	18
3	0	0	0	0	0
4	1	1	0	0	1
Total	328	100	0	1	329

13 Other assets

in € million	Dec 31, 2020		Dec 31, 2019	
	Total	Thereof current	Total	Thereof current
Other tax receivables	446	396	404	376
Prepaid expenses	149	101	153	84
Sundry assets	193	96	157	98
	788	593	714	558

Other tax receivables are, for the most part, sales tax refund entitlements. Sundry assets comprise, in general, payments in advance and capitalized reimbursement claims against suppliers.

The specific loss allowances for the other assets have developed as follows:

in € million	2020
Carrying amount as of Jan. 1	0
Changes in the basis of consolidation	6
Additions	9
Carrying amount as of Dec. 31	15

The credit-based loss allowances for other assets remained unchanged at €1 million.

12 Inventories

in € million	Dec. 31, 2020	Dec. 31, 2019
Raw materials and supplies	1,650	1,537
Work in progress	1,523	1,431
Finished goods and merchandise	980	972
Payments in advance	18	8
	4,171	3,948

Compared to the prior year, write-downs of inventories increased by €35 million to €217 million.

13 Associates

in € million	Dec. 31, 2020	Dec. 31, 2019
Investments in joint ventures	85	158
Investments in associates	247	303
	332	461

The joint ventures and associates, including the shareholding, are set out in the list of shares held.

ZF PWK Mécacentre S.A.S., St. Etienne (France), is classified as an associate despite a participation quota of 50% as the company is not jointly controlled.

The total comprehensive income of the associates is as follows:

in € million	Investments in joint ventures		Investments in associates	
	2020	2019	2020	2019
Net profit or loss after tax	-65	9	17	16
Other comprehensive income	-3	0	-11	0
Total comprehensive income	-68	9	6	16

16 Intangible assets

	Goodwill	Patents, licenses, software and similar rights and assets	Development costs	Payments in advance	Total
in € million					
Cost as of Jan. 1, 2020	4,181	4,917	225	56	9,379
Changes in the basis of consolidation	36	3,208	-9	0	3,235
Net exchange differences	-312	-385	-16	-1	-714
Additions	3,726	26	11	12	3,775
Disposals	0	-35	0	0	-35
Cost as of Dec. 31, 2020	7,631	7,731	211	67	15,640
Accumulated amortization as of Jan. 1, 2020	42	2,389	107	0	2,538
Changes in the basis of consolidation	0	1	0	0	1
Net exchange differences	0	-211	-9	0	-220
Additions (amortization)	0	562	23	0	585
Additions (impairments)	31	6	0	0	37
Disposals	0	-35	0	0	-35
Reversals of impairments	0	-1	0	0	-1
Accumulated amortization as of Dec. 31, 2020	73	2,711	121	0	2,905
Carrying amount as of Dec. 31, 2020	7,558	5,020	90	67	12,735

In addition to EDP software acquired in return for payment and capitalized development costs, intangible assets primarily comprise goodwill from the acquisition of companies.

in € million	Goodwill	Patents, licenses, software and similar rights and assets	Development costs	Payments in advance	Total
Cost as of Jan. 1, 2019	4,126	4,792	208	53	9,179
Changes in the basis of consolidation	10	7	10	0	27
Net exchange differences	45	86	4	2	137
Additions	0	44	3	10	57
Reclassifications	0	8	0	-8	0
Disposals	0	-20	0	-1	-21
Cost as of Dec. 31, 2019	4,181	4,917	225	56	9,379
Accumulated amortization as of Jan. 1, 2019	41	1,855	78	0	1,974
Changes in the basis of consolidation	0	0	2	0	2
Net exchange differences	1	31	0	0	32
Additions (amortization)	0	524	27	0	551
Disposals	0	-20	0	0	-20
Reversals of impairments	0	-1	0	0	-1
Accumulated amortization as of Dec. 31, 2019	42	2,389	107	0	2,538
Carrying amount as of Dec. 31, 2019	4,139	2,528	118	56	6,841

Goodwill

The goodwill arising on the acquisition of WABCO Holdings Inc., was partially allocated to the existing divisions of the ZF Group. The allocation was based on the expected future synergies of the other divisions in the areas of materials purchasing, technology and product development, and the administrative company organization, which were determined using the discounted cash flow method. Goodwill was distributed accordingly among the divisions as follows:

in € million	2020
Active Safety Systems	132
Car Chassis Technology	52
Car Powertrain Technology	133
E-Mobility	42
Electronics & ADAS	57
Passive Safety Systems	35
Commercial Vehicle Technology	142
Industrial Technology	44
Aftermarket	34
	671

The goodwill remaining at the date of acquisition amounting to €3,055 million was allocated to the Commercial Vehicle Control Systems Division which consists of the activities of the acquired WABCO Holdings Inc.

Due to the higher relative weight of the activities of the existing ZF Group divisions in the eurozone, the goodwill allocated to these divisions is recognized in euro. In contrast, the goodwill remaining in the new Commercial Vehicle Control Systems Division is accounted for in accordance with the relative weighting of the activities of this division in the currencies of euro, U.S. dollar and Chinese yuan.

Accordingly, goodwill from the consolidation of investments in subsidiaries and from the individual financial statements is shown below:

in € million	Dec. 31, 2020	Dec. 31, 2019
Active Safety Systems	946	888
Car Chassis Technology	392	341
Car Powertrain Technology	704	571
E-Mobility	225	183
Electronics & ADAS	57	0
Passive Safety Systems	951	1,000
Commercial Vehicle Control Systems	2,944	-
Commercial Vehicle Technology	601	468
Industrial Technology	244	188
Aftermarket	494	491
Central units	0	9
	7,558	4,139

Goodwill mainly represents synergies in the areas of materials purchasing, technology development and administrative company organization.

17 Property, plant and equipment

in € million	Land and buildings	Technical equipment and machines	Other equipment, factory and office equipment	Payments in advance and construction in progress	Total
Cost as of Jan. 1, 2020	3,771	11,639	2,781	1,085	19,276
Changes in the basis of consolidation	254	266	30	117	667
Net exchange differences	-97	-275	-60	-54	-486
Additions	166	477	136	662	1,441
Reclassifications	123	571	48	-742	0
Disposals	-47	-323	-129	-5	-504
Cost as of Dec. 31, 2020	4,170	12,355	2,806	1,063	20,394
Accumulated depreciation as of Jan. 1, 2020	1,390	8,197	2,020	0	11,607
Changes in the basis of consolidation	0	-7	0	0	-7
Net exchange differences	-17	-108	-59	0	-184
Additions (depreciation)	230	1,036	248	0	1,514
Additions (impairments)	0	5	1	0	6
Reclassifications	15	-13	-2	0	0
Disposals	-31	-317	-103	0	-451
Reversals of impairments	0	-1	0	0	-1
Accumulated depreciation as of Dec. 31, 2020	1,587	8,792	2,105	0	12,484
Carrying amount as of Dec. 31, 2020	2,583	3,563	701	1,063	7,910

In the year under review, no assets from property, plant and equipment have been pledged as collateral for financial liabilities as well as for possible obligations from finance court cases (2019: €21 million).

in € million

Cost as of Jan. 1, 2019

Changes in accounting policies

Changes in the basis of consolidation

Net exchange differences

Additions

Reclassifications

Disposals

Cost as of Dec. 31, 2019**Accumulated depreciation as of Jan. 1, 2019**

Changes in the basis of consolidation

Net exchange differences

Additions (depreciation)

Additions (impairments)

Reclassifications

Disposals

Reversals of impairments

Accumulated depreciation as of Dec. 31, 2019**Carrying amount as of Dec. 31, 2019**

	Land and buildings	Technical equipment and machines	Other equipment, factory and office equipment	Payments in advance and construction in progress	Total
Cost as of Jan. 1, 2019	2,929	10,654	2,549	1,059	17,191
Changes in accounting policies	555	9	61	0	625
Changes in the basis of consolidation	17	29	2	1	49
Net exchange differences	13	49	9	11	82
Additions	175	641	227	836	1,879
Reclassifications	119	625	79	-809	14
Disposals	-37	-368	-146	-13	-564
Cost as of Dec. 31, 2019	3,771	11,639	2,781	1,085	19,276
Accumulated depreciation as of Jan. 1, 2019	1,188	7,465	1,908	0	10,561
Changes in the basis of consolidation	7	17	1	0	25
Net exchange differences	1	15	4	0	20
Additions (depreciation)	199	1,043	246	0	1,488
Additions (impairments)	0	1	0	0	1
Reclassifications	22	-8	0	0	14
Disposals	-27	-336	-139	0	-502
Reversals of impairments	0	0	0	0	0
Accumulated depreciation as of Dec. 31, 2019	1,390	8,197	2,020	0	11,607
Carrying amount as of Dec. 31, 2019	2,381	3,442	761	1,085	7,669

10 Leases

The leased assets are primarily rented properties, leased motor vehicles and forklift trucks. The rights of use from leases reported in property, plant and equipment have the following additions and depreciation:

In € million	Leased land and buildings	Leased technical equipment and machines	Other leased equipment, factory and office equipment	Total
Dec. 31, 2020				
Additions during the fiscal year	121	4	38	163
Depreciations during the fiscal year	123	11	35	169
Carrying amount	627	56	80	763

Dec 31, 2019

Additions during the fiscal year	110	34	40	184
Depreciations during the fiscal year	96	6	32	134
Carrying amount	598	36	73	707

In the fiscal year 2020, expenses for current leases amounted to €36 million (2019: €55 million) and expenses for leases of low-value assets were incurred in the amount of €11 million (2019: €10 million). Interest expenses for leases reported in the net financial result amounted to €26 million (2019: €26 million).

In the fiscal year, payments for lease liabilities in the amount of €196 million (2019: €163 million), including interest, were made.

The maturity structure of lease liabilities as of December 31, 2020, is as follows:

In € million	2020	2019
within the upcoming fiscal year	154	140
between 2 and 5 years	387	358
more than 5 years	279	263
	820	761

As of December 31, 2020, there are purchase commitments for short-term leases to the customary extent.

19 Impairment tests

The impact of the COVID-19 pandemic on the overall economic growth and on sales and procurement markets relevant to ZF provided indicators for a possible need for impairment and, acc. to IAS 36, required event-based impairment tests for the semi-annual financial statements for non-financial assets, particularly goodwill. These event-based goodwill impairment tests led to *no* need for impairment. The impairment tests are subject to judgments and estimation uncertainties which – apart from the expected future cash flows and discount rates – primarily relate to estimates regarding the further course of the COVID-19 pandemic.

In the fourth quarter of 2020, the consolidated ZF Group performed impairment tests to assess the impairment of its assets. The reason for these impairment tests was a reduced business expectation in individual sub-markets.

Inter alia, assumptions were made with regard to the development of sales in order to calculate the impairment tests. The increase in growth rates is mainly attributable to a lower sales level in the fiscal year 2020 due to the COVID-19 pandemic and the progressing transformation process in the automotive industry. The assumptions made for the average sales increase in the planning period are as follows:

in %	2020	2019
Car Powertrain Technology	10	5
Car Chassis Technology	4	2
Commercial Vehicle Technology	15	8
Industrial Technology	16	6
Active Safety Systems	9	2
E-Mobility	23	14
Passive Safety Systems	4	0
Electronics & ADAS	17	5
Aftermarket	7	3
Commercial Vehicle Control Systems	8	-

The annual impairment tests of goodwill led to an impairment loss on goodwill of €31 million in the Electronics and ADAS Division.

In addition, a sensitivity analysis regarding material measurement parameters was conducted in the context of the impairment tests. This involved an analysis to what extent, if assessed on an isolated basis, a reduction of the sustainable operating profit by 10%, a reduction of the sustainable growth rate to 0.5% or an increase in the capitalization rate by 10% would have an effect on the recoverability of goodwill. A sustained decline in operating profit by 10% would have resulted in an impairment of €24 million in the Electronics and ADAS Division. A decrease of the sustainable growth rate to 0.5% would have resulted in an impairment of €9 million in the Electronics and ADAS Division. An increase in the capitalization interest rate by 10% would have resulted in an impairment of €49 million in the Electronics and ADAS Division.

In addition, impairments were recognized for individual assets of property, plant and equipment in the following divisions:

in € million	2020	2019
Car Chassis Technology	1	0
Active Safety Systems	5	0
Passive Safety Systems	0	1
	6	1

As part of the process, the assets were measured at fair value less costs to sell.

The impairment losses are distributed by region as follows:

in € million	2020	2019
Asia-Pacific	1	1
North America	3	0
South America	2	0
	6	1

In the past fiscal year, reversals of impairments for property, plant and equipment in the Active Safety Technology Division amounted to €1 million.

Impairment losses for intangible assets were recorded in the Electronics and ADAS Division in the amount of €6 million.

Reversals of impairments on intangible assets in the amount of €1 million (2019: €1 million) were realized in the central units.

Financial liabilities

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Total	Thereof current	Total	Thereof current
Bonds	7,171	84	5,771	535
Bonded loans	2,647	156	2,456	434
Liabilities to banks	2,607	87	646	99
Other financial liabilities	38	37	13	12
Lease liabilities	820	154	761	140
Derivative financial instruments	34	31	42	39
	13,317	549	9,689	1,259

In spring 2020, ZF additionally took on a new syndicated loan of €1.35 billion to expand its liquidity provisions in connection with the COVID-19 pandemic. The loan was already fully repaid in the fiscal year 2020. As part of a newly launched debt issuance program, bonds with a total volume of €2.0 billion were issued. In addition, as of the reporting date, there was an unused revolving line of credit in the amount of €3.0 billion as well as a loan from the European Investment Bank in the amount of €500 million, which was fully drawn.

Apart from other obligations, the loans mentioned above also include a financial covenant that ZF has to comply with. It is defined as the ratio of net debt to adjusted, consolidated EBITDA. This financial key figure is tested each quarter. Due to the significant effects of the pandemic on the financial covenant, ZF has concluded agreements with all banks to adjust the upper limit for debt. Accordingly, the maximum value up to and including March 31, 2021 is 5.5. After that, the value is gradually reduced over time. As of December 31, 2023, the maximum value is 3.25. ZF met the requirement on all test dates in the past and on the reporting date.

Under current financial liabilities, non-current loans, bonded loans and bonds are recognized with their redemption installments due within one year. Moreover, current liabilities which serve short-term financing purposes are included under this item. The country-specific interest rates on these short-term loans fluctuate between 4.5% (2019: 2.5%) and 4.8% (2019: 4%). The country-specific interest rate on the loans reported in non-current financial liabilities is between 0.3% (2019: 0.3%) and 4.8% (2019: 9.7%). Most of the financial liabilities have a fixed interest rate. Most of the loans are due at the end of the contractual term.

The past fiscal year was dominated by various financing transactions in connection with the concluded acquisition of WABCO. After there had already been issues in the fiscal year 2019, a credit framework of ZF's core banks totaling €2.5 billion in particular was utilized in the past fiscal year. In 2020, €500 million of this credit framework was already cleared. Note forward tranches concluded in 2019 also added €382 million.

④ Contract liabilities

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Total	Thereof current	Total	Thereof current
Volume production business	920	892	705	678
Product development and application	788	407	702	337
Others	33	22	38	24
	1,741	1,321	1,445	1,039

Contract liabilities have developed as follows:

in € million	2020	2019
Carrying amount as of Jan. 1	1,445	1,256
Changes in the basis of consolidation	45	0
Net exchange differences	-27	0
Additions	919	860
Utilization	-613	-623
Reversals	-28	-48
Carrying amount as of Dec. 31	1,741	1,445

The expected future sales from performance obligations not satisfied (or partially not satisfied) as of December 31, 2020, are as follows:

in € million	2020	2019
1 to 5 years	1,262	1,177
> 5 years	134	53
	1,396	1,230

The performance obligations not satisfied (or partially not satisfied) mainly refer to contracts with customers in connection with development orders as well as tools.

In the current fiscal year, there were changes in the timeframe, which had an effect amounting to €71 million (2019: €0 million) to fulfill future performance obligations.

⑤ Other liabilities

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Total	Thereof current	Total	Thereof current
Liabilities to employees	643	588	651	601
Social contributions	52	52	59	59
Other tax liabilities	315	315	273	273
Prepaid expenses	24	9	22	5
Sundry liabilities	727	663	514	471
	1,761	1,627	1,519	1,409

Other tax liabilities are mainly sales tax liabilities. Sundry liabilities include, among others, deferred liabilities from sales, for legal costs and costs of litigation, as well as liabilities for licenses and commissions.

23 Other provisions

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Total	Thereof current	Total	Thereof current
Obligation from sales	1,007	666	746	509
Obligation from personnel	527	197	119	67
Other obligations	297	123	170	120
	1,831	986	1,035	696
in € million	Obligation from sales	Obligation from personnel	Other obligations	Total
	Jan 1, 2020	746	119	170
Changes in basis of consolidation	184	62	162	408
Net exchange differences	-27	-7	-13	-47
Addition	409	491	38	938
Unwinding of the discount	2	0	0	2
Utilization	-220	-41	-40	-301
Reversals	-87	-20	-20	-127
Netting of plan assets	0	-77	0	-77
Dec. 31, 2020	1,007	527	297	1,831

severance payments that will be incurred as part of a long-term program for structural adjustment.

Other obligations include, among other things, provisions for litigation and other legal risks, environmental protection measures, other punitive damages as well as tax risks.

Utilization of all current provisions is expected for the following fiscal year.

Non-current obligations from sales are expected to be utilized at a rate of 98% within the next five years. Also, about 96% of the provisions contained in the non-current obligations from personnel and about 89% of other non-current obligations will presumably be utilized in the next five years.

Expected reimbursements as of December 31, 2020, amount to €19 million (2019: €29 million), of which €19 million (2019: €29 million) was capitalized as assets.

The provisions for obligations from sales primarily include provisions for warranty, product liability and punitive damages as well as for imminent losses from delivery obligations.

The obligations from personnel mainly affect provisions for restructuring measures as well as other obligations to employees. Furthermore, the surplus of liabilities due to semi-retirement obligations remaining after offsetting with plan assets is included. The provisions for restructuring measures primarily concern expenses for

Financial assets	Provisions for pensions
Net assets	Net liability
14	6,416
15	2
524	0
18	145
571	6,563
0	172
571	6,735

Financial assets	Provisions for pensions
Net assets	Net liability
13	5,018
2	2
534	1
13	119
562	5,140
0	208
562	5,348

Provisions for pensions are set up for obligations from vested benefits and current pensions for entitled current and former employees of the consolidated ZF Group and their surviving dependents. Various retirement pension fund systems exist that depend on the legal, economic and tax situation in the respective country, which – as a rule – are based on the length of service and emoluments of the employees. A distinction has to be made in connection with company pension schemes between defined contribution plans and defined benefit plans.

Under defined contribution plans, the consolidated ZF Group does not enter into any obligations apart from the payment of contributions into earmarked funds and private pension insurance carriers.

Under defined benefit plans, the obligation of the consolidated ZF Group consists of fulfilling promised benefits to current and former employees, whereby a distinction is made between unfunded and funded pension systems.

Description of plans

The following paragraphs describe the most significant pension and post-employment medical care plans of the consolidated ZF Group. The essential risks for the company lie with the actuarial parameters, particularly interest rate and pension trend as well as mortality rates.

Germany (GER)

Until December 31, 1993, defined benefit obligations depending on time of service and salary were granted. These were frozen and have since been updated according to the development of the cost of living index. As of January 1, 1997, so-called pension modules were promised to pay-scale employees; the amount depends on the pensionable income in relation to the social security contribution ceiling of the statutory pension insurance. Since January 1, 2005, the allocated annual pension modules have been decoupled from the social security contribution ceiling. Since then, the modules' amounts have been calculated on the basis of the remuneration, the length of service, the respective classification of the position within the company hierarchy and the employee's age.

Within the scope of the acquisition of ZF TRW, ZF also acquired unfunded defined benefit plans in Germany. The plan benefits depend upon salary, length of service and the cost of living index.

A Group-internal contractual trust arrangement (CTA) was concluded in 2016 to hedge various direct defined benefit obligations. In the context of a trusteeship agreement and to have adequate capital for pension obligations, assets were transferred to ZF Asset Trust e.V., Friedrichshafen, which acts as a trustee. This created plan assets, which are settled with the pension obligations on which they are based in the consolidated statement of financial position. In Germany, there are no legal or regulatory minimum funding requirements.

In the context of the "ZF Rente" pension scheme, employee-financed pension modules are awarded. Under these modules, employees may defer between 1% and 5% of their pensionable remuneration, where deferring at least 1% is compulsory. There are two rates: The first rate includes guaranteed interests of 3.5% for established employees before December 31, 2005. The second rate does not offer guaranteed interests for new employees as of 2006. Up to and including the year 2016, this direct grant was made in form of a participation in a multi-employer plan that constitutes a defined benefit plan. Since January 1, 2017, this has been effected in the form of a direct grant. The waiver amount is transferred to the assets of ZF Asset Trust e.V., Friedrichshafen, as trust funds.

In the fiscal year 2019, employees were granted defined benefit obligations who previously had none. In 2020, these employees were able to pay monthly contributions into a benefit account from their pensionable remuneration, including one-off and special payments, by way of deferred remuneration. With this commitment, the employer also makes contributions depending on the level of the employees' contributions. It includes a retirement benefit as well as risk-based benefits in the case of reduced earning capacity and death. The employees can choose between various payout options. Both employer and employee contributions for this new company pension scheme are managed by a trust fund association, the ZF Pension Trust e.V., specifically founded for this purpose. The employer contributions were promised retroactively as of January 1, 2019, and corresponding payments were made to the trust assets in the fiscal year 2020.

Furthermore, a company agreement was concluded at the end of 2020, enabling employees who are included in the scope of other defined benefit obligations and therefore not covered by the defined benefit obligations from 2019, to transfer to the new benefit program. The implementation of this offer to transfer is to be completed by the end of 2021. The past service costs expected from the changeover is included in the 2020 consolidated financial statements.

In the course of the acquisition of WABCO, obligations for existing pension commitments in Germany were adopted. These are unfunded and, in addition to pensions after entering retirement, also provide for benefits to surviving dependants as well as for early retirement and disability. The amount of the benefit depends on the pensionable remuneration at the start of retirement as well as the length of service in the company. Some of the plans are closed for new entrants.

United States of America (USA)

Due to past acquisitions, ZF maintains defined benefit plans in the USA. These plans are closed for new entrants. Any vesting of further entitlements is normally no longer possible. The plans are mainly funded and comply with the provisions of the U.S. Employee Retirement Income Security Act (ERISA).

In addition, ZF finances several unfunded post-employment medical care plans. These plans are closed for new entrants. The level of the benefits and the contributions for pensioners differ depending on the location. The major risks for grants of medical care benefits are increasing medical care costs as well as a decreasing participation of the government in these costs. Moreover, these plans are subject to risks typical for defined benefit grants, particularly the risk from changes in discount rates.

United Kingdom (UK)

ZF maintains funded defined benefit plans that have been closed. The major part of these defined benefit plans results from acquisitions of ZF made in the past. The plans are maintained pursuant to legal provisions and are managed by trust companies. The financing is determined every three years by technical valuations in compliance with local provisions.

With the acquisition of WABCO, funded pension obligations have also been entered into in the United Kingdom. In addition to retirement pensions, these include benefits for surviving dependants as well as for cases of disability and death before the retirement age is reached. Under these statutory pension commitments in the United Kingdom, both employers and employees must make contributions to trust funds. The pension amount depends on the pensionable income as well as the period of employment. The employer guarantees a minimum pension.

Defined benefit plans

Changes in the present value of the defined benefit obligation and the fair value of the plan assets can lead to actuarial gains and losses. These can be caused, among other things, by changes in the calculation parameters, changes in estimates with regard to the risk trend of the pension obligations and differences between the actual and the expected return on plan assets.

The amount of the pension obligations was calculated in accordance with actuarial methods (present value of the defined benefit obligation) for which estimates are required. In addition to assumptions on life expectancy, fluctuation and expected salary increases, the following premises have a material effect on the amount of the obligation:

in %	2020				2019		
	GER	USA	UK		GER	USA	UK
Discount rate	0.7	2.5	1.4		1.2	3.2	2.0
			2.0				1.9
Pension increases	1.3	-	-2.6		1.3	-	-2.9

The average maturity period of the defined benefit obligations is as follows:

In years	2020				2019		
	GER	USA	UK		GER	USA	UK
Average maturity	23	12	20		22	11	18

The measurement of direct defined benefit obligations from pension plans in Germany, where additional awards may still be earned, is not based on a uniform replacement interest rate, but by applying a yield curve corresponding to the relevant term of the underlying future cash flows.

In addition, the discount rates are determined on the basis of corporate bonds with a rating of AA (or equivalent) from at least one of the three big rating agencies and are extrapolated based on the yield curve of zero coupon government bonds.

The pension obligations were measured using current mortality tables as of December 31 of the relevant fiscal year. The following mortality tables were used as of December 31, 2020:

	2020		2019	
	2020	2019	2020	2019
GER	Heubeck 2018 G mortality tables	Heubeck 2018 G mortality tables	Heubeck 2018 G mortality tables	Heubeck 2018 G mortality tables
USA	120% RP-2014 projected back to 2009 using scale MP-2014	120% RP-2014 projected back to 2009 using scale MP-2014	120% RP-2014 projected back to 2009 using scale MP-2014	120% RP-2014 projected back to 2009 using scale MP-2014
UK	2018 VITA tables (averaged) with CMI 2019	2018 VITA tables (averaged) with CMI 2019	2018 VITA tables (averaged) with CMI 2018	2018 VITA tables (averaged) with CMI 2018

A discount as regards the probability of disability according to the Heubeck 2018 G mortality tables to measure pension obligations at Group companies in Germany was applied. The discount is determined on the basis of company-owned historical data.

The effects from the application of revised mortality tables on the present value of the defined benefit obligations are recognized in other comprehensive income as actuarial gains or losses from changes in demographic assumptions.

The pension obligations resulting under the projected unit credit method are netted in the case of a funded pension system with the plan assets measured at fair value. As soon as the plan assets exceed the pension obligations, an asset is created which is recognized under non-current financial assets.

The development of the present value of the defined benefit obligations and the plan assets at fair value is presented as follows:

	GER	USA	UK	Other	2020
					Total
in € million					
Present value of the defined benefit obligations as of Jan. 1	7,049	307	1,487	212	9,055
Current service costs	223	4	1	18	246
Past service costs	-222	0	4	0	-218
Interest expenses	77	7	29	7	120
Contributions by plan participants	75	0	0	1	76
Pension payments	-171	-10	-100	-14	-295
Actuarial gains (-) and losses (+) from the change in demographic assumptions	0	-1	33	0	32
Actuarial gains (-) and losses (+) from the change in financial assumptions	1,011	26	172	4	1,213
Actuarial gains (-) and losses (+) due to experience adjustments	-13	-5	17	0	-1
Changes in the basis of consolidation	604	0	112	73	789
Net exchange differences from plans abroad	0	-27	-79	-8	-114
Present value of the defined benefit obligations as of Dec. 31	8,633	301	1,676	293	10,903
Plan assets at fair value as of Jan. 1	2,044	307	2,020	106	4,477
Expected return on plan assets	21	7	35	3	66
Actuarial gains (+) and losses (-) from the change in financial assumptions	67	37	240	4	348
Employer contributions to the plan assets	36	0	0	5	41
Employee contributions	72	0	0	1	73
Pension benefits paid	-11	-10	-100	-2	-123
Changes in the basis of consolidation	2	0	114	54	170
Net exchange differences from plans abroad	0	-27	-109	-5	-141
Plan assets at fair value as of Dec. 31	2,231	314	2,200	166	4,911

in € million	GER	USA	UK	Other	2019 Total
Present value of the defined benefit obligations as of Jan. 1	5,802	282	1,267	187	7,538
Current service costs	160	0	0	15	175
Interest expenses	99	11	34	5	149
Contributions by plan participants	74	0	0	0	74
Settlements	0	-30	0	0	-30
Pension payments	-149	-8	-93	-9	-259
Actuarial gains (-) and losses (+) from the change in demographic assumptions	-37	-1	13	-1	-26
Actuarial gains (-) and losses (+) from the change in financial assumptions	1,052	45	178	16	1,291
Actuarial gains (-) and losses (+) due to experience adjustments	48	0	20	1	69
Net exchange differences from plans abroad	0	8	68	-2	74
Present value of the defined benefit obligations as of Dec. 31	7,049	307	1,487	212	9,055
Plan assets at fair value as of Jan. 1	1,784	259	1,788	88	3,919
Expected return on plan assets	31	11	51	3	96
Actuarial gains (+) and losses (-) from the change in financial assumptions	160	51	179	9	399
Employer contributions to the plan assets	6	13	1	6	26
Employee contributions	71	0	0	0	71
Settlements	0	-25	0	0	-25
Pension benefits paid	-8	-7	-93	-2	-110
Other changes	0	0	-2	0	-2
Net exchange differences from plans abroad	0	5	96	2	103
Plan assets at fair value as of Dec. 31	2,044	307	2,020	106	4,477

The items recognized in profit or loss in connection with pension obligations are composed as follows:

in € million	GER	USA	UK	Other	2020
					Total
Current service costs	223	4	1	18	246
Past service cost	-222	0	4	0	-218
Unwinding the discount on net liabilities	56	0	-6	4	54
	57	4	-1	22	82

in € million	GER	USA	UK	Other	2019
					Total
Current service costs	160	0	0	15	175
Curtailments and settlements	0	-5	0	0	-5
Unwinding the discount on net liabilities	68	0	-17	2	53
	228	-5	-17	17	223

All components of the pension expenses recognized in profit or loss, with the exception of the interest portion, are reported in the functional areas.

The actuarial losses amounting to €896 million (2019: losses of €935 million) are recorded in other comprehensive income with no effect on profit or loss.

The plan assets consist of the following items:

in € million	2020	2019
Cash and cash equivalents	92	210
Securities		
Equity instruments	945	797
Debt instruments	2,974	2,755
Fund shares	332	300
Land and buildings	6	1
Derivative financial instruments	3	15
Other	569	399
	4,911	4,477

Securities are measured at prices quoted on active markets. The "Other" item mainly includes securities covered by receivables (asset-backed securities) as well as insurance contracts qualifying as plan assets.

Contributions to plan assets are expected to amount to €26 million (2019: €24 million) in the following year.

Pension payments for the next ten years are as follows:

in € million	2020	2019
within the upcoming fiscal year	343	307
between one to five years	1,269	1,111
after five up to ten years	1,664	1,442

The calculation presents the actual pens on payments and not just the pension modules earned by employee service rendered as of the closing date, i.e., pension modules that are to be allocated in future are also considered. In addition, it was assumed that the number of active employees remains constant. For the other

calculation assumptions, the same parameters were used as for the determination of the defined benefit obligations.

The effect of a change in significant assumptions on the defined benefit obligations is shown in the following:

in € million	GER	USA	UK	Other	2020 Total
Discount rate					
-0.25%	+530	+14	+86	+5	+635
+0.25%	-486	-13	-80	-6	-585
Pension increases					
-0.25%	-197	0	-53	0	-250
+0.25%	+207	0	+64	0	+271
Life expectancy					
-1 year	-275	-8	-67	-5	-355
+1 year	+310	+8	+67	+4	389
in € million	GER	USA	UK	Other	2019 Total
Discount rate					
-0.25%	+406	+11	+68	+7	+492
+0.25%	-374	-10	-63	-7	-454
Pension increases					
-0.25%	-151	0	-38	0	-189
+0.25%	+159	0	+50	0	+209
Life expectancy					
-1 year	-207	-7	-53	-1	-268
+1 year	+232	+7	+53	+1	+293

For the sensitivity analysis, pension obligations were re-measured. It was assumed that all other factors remain unchanged. For calculating the sensitivity of life expect-

tancy, it was assumed that the average life expectancy of a 65-year-old individual will be increased or reduced by one year.

Disclosures on medical care benefits

Certain foreign subsidiaries, particularly in the USA and Canada, grant post-retirement benefits to their employees if specific conditions as to age and period of employment are met.

The average maturity period of the defined benefit obligations is 13 years (2019: 15 years).

The development of the present value of the defined benefit obligations is presented as follows:

in € million	2020	2019
Present value of the defined benefit obligations as of Jan. 1	208	228
Current service cost	2	0
Interest expenses	7	9
Payments made	-15	-20
Settlements	-24	0
Actuarial gains (-) and losses (+) from the change in demographic assumptions	-2	-1
Actuarial gains (-) and losses (+) from the change in financial assumptions	12	-12
Actuarial gains (-) and losses (+) due to experience adjustments	-6	-2
Changes in consolidation scope	4	0
Net exchange differences from plans abroad	-14	6
Present value of the defined benefit obligations as of Dec. 31	172	208

The premises for discounting for the purpose of calculating the obligations for medical care benefits vary depending on the circumstances in the individual countries. As of December 31, 2020, the valuation factors for discounting were between 1.0% and 7.8% (2019: 1.8% and 7.6%).

The net expenses of the obligations for medical care benefits are comprised of as follows:

	2020	2019
in € million		
Current service costs	2	0
Unwinding the discount on net liabilities	7	9
	9	9

A loss of €2 million was realized from settlements. The actuarial losses amounting to €4 million (2019: gains of €15 million) are recorded in other comprehensive income with no effect on profit or loss.

The effect of a change in significant assumptions on the medical care obligations is shown in the following:

	2020	2019
in € million		
Discount rate		
- 0.25%	+4	+5
+ 0.25%	-4	-5
Life expectancy		
- 1 year	-9	-10
+ 1 year	+9	+10

25 Equity

Subscribed capital

At the end of the fiscal year, the subscribed capital still amounts to €500 million. As of December 31, 2020, the subscribed capital is divided into 500,000,000 registered shares. All shares are fully paid in.

Capital reserve

At the end of the fiscal year, the capital reserve still amounts to €386 million. The capital reserve comprises the premium on the issuance of shares. It is subject to the restrictions of Sec. 150 AktG (German Stock Corporation Law).

Other retained earnings

Other retained earnings contain the legal reserve of ZF Friedrichshafen AG and the accumulated earnings of the companies included in the consolidated financial statements to the extent that such accumulated earnings are not distributed. Asset and liability differences resulting from the capital consolidation in accordance with the book value method and the previously used accounting policies are also accounted for in this line item. Other components include the reserves from the first-time adoption of IFRS and the cumulative currency translation adjustments, which were reclassified when changing over to IFRS.

Foreign currency translation differences

The line item contains amounts not affecting profit or loss that result from the currency translation of the financial statements from foreign subsidiaries (non-euro area) recognized starting from the date of the first-time adoption of IFRS.

The change in equity resulting from foreign currency translation differences amounting to €-837 million (2019: €+151 million) is attributed to non-controlling interests in the amount of €-17 million (2019: €+4 million) as well as €-14 million to associates.

Mark-to-market of securities and cash flow hedges

This line item includes the post-tax effects of the financial instruments valuation that do not affect profit or loss.

As part of the market valuation of cash flow hedges, accumulated gains in connection with the hedging of the purchase price of the WABCO transaction in the amount of €268 million were reallocated from other comprehensive income to acquisition costs when the hedging instrument was exercised.

Actuarial gains and losses

This line item contains the actuarial gains and losses from employer pension plans after tax, with no effect on profit or loss.

Deferred taxes on equity items not affecting profit or loss

In € million	Before income tax	Income tax	After tax
2020			
Foreign currency translation differences	-837	0	-837
Mark-to-market of securities	-25	2	-23
Mark-to-market of cash flow hedges	-115	3	-112
Actuarial gains and losses	-900	271	-629
Other comprehensive income	-1,877	276	-1,601

2019

Foreign currency translation differences	151	0	151
Mark-to-market of securities	-19	0	-19
Mark-to-market of cash flow hedges	162	-10	152
Actuarial gains and losses	-920	273	-647
Other comprehensive income	-626	263	-363

Dividends

In the fiscal year, a dividend of €63 million (€0.13 per share) was paid for 2019.

26 Disclosures on capital management

The primary objective of capital management at the consolidated ZF Group is to ensure the financial stability and independence of ZF and to meet the requirements of the shareholders and lenders. Ensuring a sufficient equity ratio is an important basis for achieving this objective. Net debt and the debt-equity ratio (net debt in relation to EBITDA) are central parameters for capital management at ZF with regard to external financing. The credit rating by the commissioned rating agencies is another vital indicator. The objective is to achieve a solid Group rating at investment grade level.

In order to determine the equity ratio, the equity disclosed in the consolidated statement of financial position is used.

	Dec. 31, 2020	Dec. 31, 2019
Equity in € million	4,443	7,106
Equity ratio in %	12	22

ZF Friedrichshafen AG is not subject to by-laws-based capital requirements.

NOTES TO THE CONSOLIDATED STATEMENT OF CASH FLOWS

27 General

The consolidated statement of cash flows shows how the cash position of the consolidated ZF Group changed during the fiscal year due to the inflow and outflow of funds. A distinction is drawn between cash flows from operating, investing and financing activities.

The cash position presented in the consolidated statement of cash flows covers all cash and cash equivalents reported in the consolidated statement of financial position, i.e., cash on hand and cash at banks, available at any time for use by the consolidated ZF Group. In addition, the cash position comprises highly liquid financial investments that have a maturity of less than three months and that are subject to small fluctuations in value.

Cash is comprised as follows:

	Dec. 31, 2020	Dec. 31, 2019
in € million		
Cash and cash equivalents	2,341	2,302
Securities	0	100
	2,341	2,402

The cash flows from investing and financing activities are determined on the basis of payments. The cash flow from operating activities, on the other hand, is indirectly derived from the net profit or loss before income tax.

Dividends and interest received are assigned to the cash flow from investing activities. Interest and transaction costs paid for borrowings, including lease liabilities, are included in cash flow from financing activities. To this end, the net profit or loss before income tax in the cash flow from operating activities is adjusted by the net result from participations and the financial result.

As part of the indirect calculation, the changes in financial line items taken into account in conjunction with the operating activities are adjusted for effects from the translation of foreign currencies and changes in the basis of consolidation.

Changes in the respective financial line items can therefore not be reconciled to the corresponding values on the basis of the published consolidated statement of financial position.

28 Proceeds from the sale of consolidated companies

The divestments in assets and liabilities from the share deals relate to the following:

in € million	2020	2019
Current assets	55	0
thereof cash and cash equivalents	14	0
Non-current assets	113	0
Current liabilities	7	0
Non-current liabilities	22	0

The sales price in the amount of €139 million was paid in full.

29 Company acquisition

The assets and liabilities of consolidated companies assumed on the date of acquisition are composed as follows:

in € million	2020	2019
Current assets	1,449	63
thereof cash and cash equivalents	442	7
Non-current assets	4,566	52
Current liabilities	803	61
Non-current liabilities	2,451	18

The total purchase prices for the acquisitions of shares in the fiscal year 2020 of €6,398 million were paid in cash.

30 Changes in financial liabilities

The change in financial liabilities from financing activities due to cash and non-cash effects is as follows:

	Financial liabilities	
	Current	Non-current
in € million		
Carrying amount as of Jan. 1	1,080	7,806
Change in cash	-848	3,807
Non-cash changes		
Reclassification	157	-157
Currency effects	-	-127
Other	-25	770
Carrying amount as of Dec. 31	364	12,099

The presentation neither considers lease liabilities nor derivative financial instruments. Changes in cash involve taking on and extinguishing financial liabilities. Other non-cash changes are primarily comprised of changes in deferred interests (partly cash items) as well as the cancellation of loan-raising costs and additions resulting from the acquisition of companies.

OTHER DISCLOSURES**31 Contingent liabilities**

No provisions were set up for the following contingent liabilities, which are recognized at nominal values, because the probability of a claim is deemed to be low:

	Dec. 31, 2020	Dec. 31, 2019
in € million		
Guarantees	87	59
thereof for participations	-	53
Other	126	163
	213	222

The guarantees are due within a year when fully utilized. The other contingent liabilities essentially refer to potential liabilities from procurement and personnel as well as from litigation and other taxes. Like in 2019, there were no collaterals for contingent liabilities during the fiscal year.

32 Other financial obligations

In addition to liabilities, provisions and contingent liabilities, other financial obligations consist of investment projects launched and procurement agreements initiated.

	Dec. 31, 2020	Dec. 31, 2019
in € million		
Purchase commitments	492	797
Payment obligations on participations	58	40
	550	837

The purchase commitments can be broken down into intangible assets amounting to €8 million (2019: €10 million) and property, plant and equipment amounting to €484 million (2019: €787 million).

63 Litigation

ZF continues to be in close contact with the National Highway Traffic Safety Administration (NHTSA) in the USA in relation to the latter's investigation regarding certain vehicles that are equipped with ZF airbag control units and of which a few were subject to recalls by Toyota, FCA and HKMC. Based on the currently available investigation results, ZF does not believe to have culpably caused the recalls and is defending itself against lawsuits pending in the USA and Canada.

In 2014, the Brazilian antitrust authority, Conselho Administrativo de Defesa Economica (CADE), searched the premises of one of our Brazilian subsidiaries to investigate the suspected violation of antitrust provisions in connection with the sale of specific vehicle components. ZF is cooperating in this procedure.

In a proceeding regarding emission and consumption topics, ZF received a notice from the public prosecutor's office in Stuttgart on June 10, 2020, requesting ZF to pay a fine of €42.5 million. This fine includes a punishment of €2.5 million and skimming of excess profits of €40 million.

In general, claims for damages may be asserted even in connection with completed proceedings. Neither ZF nor any of its Group companies are involved in current or foreseeable court or arbitration proceedings which, based on facts known today, have had in the past or could have a significant impact on the economic situation of the consolidated ZF Group.

64 Disclosures on financial instruments

Carrying amounts of the financial instruments by category

The following table shows the recognized financial assets and liabilities by measurement category:

	Dec. 31, 2020	Dec. 31, 2019
in € million		
Assets		
At amortized cost	7,644	7,460
At fair value through other comprehensive income		
Debt instruments	297	86
Equity instruments	17	2
At fair value through profit or loss	159	2,745
Derivative financial instruments (hedge accounting) ¹⁾	36	148
	8,153	10,441
Liabilities		
At amortized cost	18,089	14,348
At fair value through profit or loss	21	17
Lease liabilities ¹⁾	820	761
Derivative financial instruments (hedge accounting) ¹⁾	13	25
	18,943	15,151

¹⁾ No measurement category in accordance with IFRS 9

In the fiscal year under review, there were no reclassifications of financial assets between the measurement categories.

Fair values

The fair values of the financial assets and liabilities are presented below. Provided that financial assets and liabilities are recognized at amortized cost, the fair value is compared to the carrying amount.

The following table shows the carrying amounts and the fair values of the financial assets and liabilities recognized at amortized cost. Due to short maturities, the carrying amounts of the current financial instruments recognized at cost approximate the fair values.

in € million	Dec. 31, 2020		Dec. 31, 2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Assets				
At amortized cost				
Cash and cash equivalents	2,341	2,341	2,302	2,302
Financial receivables	119	119	203	203
Trade receivables	5,184	5,184	4,955	4,955
	7,644	7,644	7,460	7,460
Liabilities				
At amortized cost				
Bonds	7,171	7,319	5,771	6,079
Bonded loans	2,647	2,719	2,456	2,485
Liabilities to banks	2,607	2,678	646	654
Other financial liabilities	38	38	13	13
Trade payables	5,626	5,626	5,462	5,462
Lease liabilities ¹⁾	820	-	761	-
	18,909	18,380	15,109	14,693

1) No measurement category in accordance with IFRS 9

In the following, the financial instruments are allocated to the three levels of the fair value hierarchy based on the input parameters used for measurement. The classification as well as the need to perform reclassifications is reviewed on the reporting date. Level 1 covers those financial instruments for which prices for identical assets and liabilities quoted on active markets are available. Allocation to level 2 occurs if input parameters are used for the measurement of financial instruments that are directly (e.g. prices) or indirectly (e.g. derived from prices) observable on the market. Financial instruments whose valuation is based on information that is not observable on the market are reported in level 3.

The following table shows the allocation of the fair values of the financial instruments recognized at amortized cost to the three levels of the fair value hierarchy:

in € million	Level 1	Level 2	Level 3	Dec. 31, 2020	
				Total	
Assets					
Cash and cash equivalents	0	2,341	0	2,341	
Financial receivables	0	119	0	119	
Trade receivables	0	5,184	0	5,184	
	0	7,644	0	7,644	
Liabilities					
Bonds	7,319	0	0	7,319	
Bonded loans	0	2,719	0	2,719	
Liabilities to banks	0	2,678	0	2,678	
Other financial liabilities	0	38	0	38	
Trade payables	0	5,626	0	5,626	
	7,319	11,061	0	18,380	

The following tables show the financial instruments recognized at fair value.

in € million	Dec. 31, 2019				Dec. 31, 2020	Dec. 31, 2019
	Level 1	Level 2	Level 3	Total		
Assets						
Cash and cash equivalents	0	2,302	0	2,302		
Financial receivables	0	203	0	203		
Trade receivables	0	4,955	0	4,955		
	0	7,460	0	7,460	15	0
Liabilities						
Bonds	6,079	0	0	6,079	297	86
Bonded loans	0	2,485	0	2,485		
Liabilities to banks	0	654	0	654	85	2,576
Other financial liabilities	0	13	0	13	60	159
Trade payables	0	5,462	0	5,462	14	10
	6,079	8,614	0	14,693	36	148
					509	2,981
Liabilities						
At fair value through profit or loss						
Derivative financial instruments					21	17
Derivative financial instruments (hedge accounting) ¹⁾					13	25
					34	42

1) No measurement category in accordance with IFRS 9

Except for bonds, the market values of assets and liabilities were calculated using the net present value method. Here, the future cash flows were discounted with the current risk-free interest rates matching the maturities plus a ZF-specific credit risk markup. Bonds were calculated using the fair value on the market.

In the following, the financial instruments recognized at fair value are allocated to the three levels of the fair value hierarchy based on the input parameters used for measurement.

in € million	Level 1	Level 2	Level 3	Dec. 31, 2020 Total
Assets				
Securities	91	9	0	100
Investments in participations	6	0	56	62
Trade receivables	0	297	0	297
Derivative financial instruments	0	50	0	50
	97	356	56	509
Liabilities				
Derivative financial instruments	0	34	0	34

in € million	Level 1	Level 2	Level 3	Dec. 31, 2019 Total
Assets				
Securities	795	1,641	140	2,576
Investments in participations	2	0	159	161
Trade receivables	0	86	0	86
Derivative financial instruments	0	79	79	158
	797	1,806	378	2,981
Liabilities				
Derivative financial instruments	0	42	0	42

In the fiscal year, no reclassification took place between levels 1 and 2 of the fair value hierarchy.

For level 1 securities, the fair value is recognized directly as the quoted price on an always active market. An active market is either the stock exchange of the respective country or a comparable trading platform offering the liquidity and transparency of the underlying asset. Level 2 includes classes whose prices can be derived or modeled from parameters which can be observed on the market. This includes in particular observable interest rates, exchange rates or comparable instruments. The level 3 securities are zero-coupon bonds for which no active market exists. The market values of level 3 securities are determined on the basis of currently available information from the funds' managers. A significant change of the underlying future cash flows and the interest rate, which implies a change of the discount factor, would influence the fair values of these securities.

Investments in participations included in level 1 and traded on an active market are recognized at share prices of the stock exchange of the respective country. The level 3 investments in participations concern investments in companies that are not listed on the stock exchange. In case of these investments in participations recognized at fair value through profit or loss, there is either not enough information available or only a vast range of possible values can be determined for the fair value by using a multiplier method. The acquisition costs are therefore used to appropriately estimate the fair value. In case of changes in the environment of the participations or in case of proof due to external transactions, the estimate is adjusted accordingly. A significant change regarding the future results and multipliers used for the multiplier method would affect the fair value of these investments in participations in the amount of €-9 million to €+21 million.

The trade receivables measured at fair value are allocated to level 2 since measurement can be derived from parameters observable on the market.

Derivative financial instruments included in level 1 refer to tradable derivatives such as futures. Their fair value corresponds to the value traded on the derivatives exchange. The level 2 derivative financial instruments concern non-tradable derivatives. Fair values are determined on the basis of fixed prices quoted on approved stock exchanges discounted for the remaining term (foreign currency exchange rates, interest rates and raw material price indexes).

With respect to hedging a material portion of the purchase price of the WABCO transaction (hedged item) in the amount of approximately \$7 billion against currency fluctuations, ZF concluded a transaction-related forward contract in the fiscal year 2019. As the forward contract is bound to the execution of the underlying transaction, this contract was classified as level 3. The fair value of this forward

contract is determined based on the two components of a premium paid only in case of execution of the underlying transaction and the market value of the forward contract. The value of the premium was ascertained on the basis of the forward price observable on the market at the time of conclusion and the tender price agreed on with the contracting party at the time of maturity of the hedged items. The market value of the forward contract was determined in line with market standards from parameters observable on the market. The transaction-related forward contract was utilized upon conclusion of the WABCO transaction.

The following table illustrates the development of financial instruments assigned to level 3 of the fair value hierarchy:

in € million	Investments in participations		Derivative financial instruments (assets)	
	2020	2019	2020	2019
As of Jan. 1	159	46	79	0
Changes in the basis of consolidation	9	0	0	0
Fair value changes – recognized through profit or loss	-81	0	3	-24
Fair value changes – recognized through other comprehensive income	0	0	165	103
Purchases	1	15	0	0
Sales	-28	0	0	0
Transfers	-4	0	0	0
Liquidation of derivative positions	0	0	-247	0
Reclassifications from level 2 to level 3	0	98	0	0
As of Dec. 31	56	159	0	79

in € million	Securities		Financial receivables	
	2020	2019	2020	2019
As of Jan. 1	140	0	0	14
Fair value changes – recognized through profit or loss	0	0	0	-14
Purchases	0	140	0	0
Sales	-104	0	0	0
Reclassifications to level 3 from level 2	54	0	0	0
Reclassifications from level 3 to level 2	-30	0	0	0
As of Dec. 31	0	140	0	0

The expenses from the measurement of participations, which had been recognized through profit or loss, are included in the net result from participations.

The fair value changes recognized through other comprehensive income in relation to derivative financial instruments are included in the item "Mark-to-market of cash flow hedges." The fair value changes recognized through profit or loss in relation to derivative financial instruments are reported in other financial income and other financial expenses, respectively.

In the fiscal year, the securities were reclassified between the levels 2 and 3 of the fair value hierarchy, which can be traced back to a higher or reduced amount of price quotas on active markets.

Net gains and losses by measurement category

in € million 2020	Interests	Impairments	Other net gains and losses	Total net gains and losses
Financial assets				
At amortized cost	21	-105	21	-63
At fair value through profit or loss	0	-79	-13	-92
Financial liabilities				
At amortized cost	-297	0	-111	-408
2019				
Financial assets				
At amortized cost	26	-77	-170	-221
At fair value through profit or loss	2	0	2	4
Financial liabilities				
At amortized cost	-211	0	165	-46

Other net gains and losses related to "Financial assets at amortized cost" primarily contain exchange rate gains and losses from foreign currency receivables.

The other net gains and losses in the "Financial assets at fair value through profit or loss (recognized at fair value)" measurement category essentially include income and losses from the disposal of securities.

The other net gains and losses from the "Financial liabilities at amortized cost" measurement category primarily contain exchange rate gains and losses from foreign currency liabilities as well as income from derecognized liabilities.

Offsetting financial assets and financial liabilities

Financial assets and liabilities which are subject to settlement agreements, enforceable master netting arrangements and similar agreements:

	Dec. 31, 2020	
in € million	Gross amount	Offsetting Net amount
Offset items		
Trade receivables (current)	5,628	147
Trade payables (current)	5,745	147
Eligible for offsetting in the event of insolvency		
Derivative financial instruments (assets)	50	21
Derivative financial instruments (liabilities)	34	21
in € million		
Offset items		
Trade receivables (current)	5,113	72
Trade payables (current)	5,489	72
Eligible for offsetting in the event of insolvency		
Derivative financial instruments (assets)	158	18
Derivative financial instruments (liabilities)	42	18

Dec 31, 2019

Gross amount

Offsetting

Net amount

The framework contracts concluded with the banks for financial futures regulate, among other things, that in the event of insolvency of a contracting party, existing contracts will have to be terminated and settled at the respective market value. Provided that several transactions are settled for a contracting party, positive and negative market values are offset and only the remaining difference is settled. As of December 31, 2020, no risk arises from this regulation due to the excellent credit rating of our banks.

Risks from financial instruments

Management of financial risks

The risk management system of ZF's Finance Department comprises counterparty and credit risks with customers and suppliers, liquidity and interest rate risks as well as currency and raw material price risks. Reports on the essential risk positions of the consolidated ZF Group are presented to the Board of Management and the Supervisory Board on a regular basis. Compliance with the guidelines is audited by the internal auditors.

The companies of the consolidated ZF Group hedge their foreign currency risks in a standardized manner at prevailing market conditions either internally through the responsible ZF Treasury Hubs or directly with banks. In general, derivative financial instruments with plain vanilla character are used. These are used exclusively to hedge existing hedged items or forecast transactions. Hedge accounting is applied if the IFRS criteria are met. The Commercial Vehicle Control Systems Division largely independently safeguards its risks within the framework of comparable directives. Integration into ZF's hedging strategy will take place by the end of 2021. Interest rate and raw material price risks are hedged on a case-by-case basis.

Risk items of ZF Cash Management are hedged externally at banks with excellent credit rating taking into account prescribed risk limits. Hedging transactions are concluded in accordance with uniform corporate policies and in line with bank regulations on the operating of trading business. They are subject to stringent monitoring, which is ensured in particular by the strict separation of duties between trading, settlement and control.

Credit and counterparty risk

Credit risk is the risk that contractual partners in the areas of financial investments, financial receivables and trade receivables will not meet their payment obligations. This risk is defined based on calculated probabilities of default or information about the insolvency to contracting parties.

In order to reduce the counterparty risk for financial investments and derivatives, all financial transactions are carried out only with banks with a first-class credit rating within the framework of defined limits. These limits are reviewed monthly and adjusted, if necessary. Input parameters for taking into account counterparty risk are Credit Default Swaps (CDS) observable on the markets that are issued by the financial institutions participating in the respective transaction.

The financial assets of the consolidated Group lead to a maximum credit risk if one counterparty defaults, amounting to the carrying amount of the respective financial line item without considering collaterals received (plus the maximum utilization for financial guarantees as well as loan commitments to third parties).

The amount of outstanding trade receivables mainly concerns passenger car, commercial vehicle, off-road machinery and wind turbine manufacturers worldwide.

The creditworthiness of our strategic suppliers is constantly monitored in order to secure our value added chain. By concentrating new contract awarding decisions on creditworthy suppliers, the portfolio quality of our suppliers is continuously improved.

In order to reduce the credit risk, the creditworthiness of customers as well as our receivables are subject to continuous monitoring in the context of an SAP-based credit management. In some instances, credit risks are reduced by appropriate hedging measures such as trade credit insurances. The carrying amount of trade receivables covered by trade credit insurances is €46 million (2019: €164 million). In addition, trade receivables are sold on a case-by-case basis. The major risks are transferred to the purchaser upon the assignment of such receivables, and the receivables are therefore derecognized.

The following table illustrates the credit risk existing per risk category for trade receivables and contract assets as of the reporting date:

Dec. 31, 2020 in € million	Trade receivables	Contract assets
Risk category		
1	443	376
2	4,089	40
3	1,108	2
4	22	6
Receivables (gross)	5,662	424
Specific loss allowances	-75	0
Credit-based loss allowances	-106	-2
Receivables (net)	5,481	422

Dec. 31, 2019 in € million	Trade receivables	Contract assets
Risk category		
1	443	376
2	4,089	40
3	1,108	2
4	22	6
Receivables (gross)	5,662	424
Specific loss allowances	-75	0
Credit-based loss allowances	-106	-2
Receivables (net)	5,481	422

A specific loss allowance on receivables is recognized if there is an existing credit risk. The amount of the allowance mainly depends on the risk category and how long the receivable is overdue, and may be up to 100% in individual cases. A distinction is made between credit risk and business risk in assessing the recoverability of receivables.

Liquidity risk

The expected future outflow of funds due to principal and interest payments for financial liabilities and trade payables is contained in the medium-term liquidity planning.

The following table lists the maturity structure of principal and interest payments for the financial liabilities and trade payables:

in € million	Carrying amount as of Dec. 31, 2020			
	Total	2021	2022 to 2026	2027 and beyond
Bonds	7,171	231	5,414	2,698
Bonded loans	2,647	178	2,452	150
Liabilities to banks	2,607	117	2,582	0
Other financial liabilities	38	40	0	0
Trade payables	5,626	5,598	28	0
	18,089	6,164	10,476	2,848

in € million	Carrying amount as of Dec. 31, 2019			
	Total	2020	2021 to 2025	2026 and beyond
Bonds	5,771	647	3,727	2,332
Bonded loans	2,456	453	1,528	614
Liabilities to banks	646	100	565	7
Other financial liabilities	13	13	1	0
Trade payables	5,462	5,417	45	0
	14,348	6,630	5,866	2,953

The solvency and the liquidity reserves within the consolidated ZF Group are managed on the basis of short-, medium- and long-term liquidity and financing planning. Due to the pandemic, the liquidity planning processes were further expanded and the frequency increased considerably. A sufficient amount of cash and cash equivalents as well as securities that can be converted to cash and confirmed credit lines is held so that the solvency of the consolidated ZF Group is ensured at all times. Cash and cash equivalents amounted to €2,341 million as of the reporting date. The carrying amount of short-term securities was €76 million. The syndicated loan refinanced in 2016 with a remaining amount of €3,000 million in the form of a revolving credit line was unused. The credit line has a residual term until July 2023. In spring 2020, ZF additionally took on a new syndicated loan of €1.35 billion to expand its liquidity provisions in connection with the COVID-19 pandemic. The loan was already fully repaid in 2020.

Market price risk from securities

The market price risk is the risk that the fair value of securities decreases. Due to the low portfolio of securities, the risk from market price fluctuations is considered immaterial. Therefore, a sensitivity analysis is dispensed with.

Foreign currency risk

The foreign currency risk is the risk that the fair values or future cash flows of monetary items are negatively influenced due to exchange rate changes. As a result of its international orientation, the ZF Group carries out transactions in different currencies.

As of fiscal year 2020, the ZF Group has standardized its approach to managing currency risks, eliminating the previous differences between the approaches of ZF and TRW. The new hedging approach pursues a central and systematic currency risk assessment and strategy that includes regular survey rounds for expected risk items, risk assessment and the implementation of multi-layered hedging for a hedging period of 24 months.

Planned foreign currency sales from the volume production business are hedged within the framework of prescribed hedging ranges and within defined maximum limits. The net principle applies to foreign currency hedging, i.e., hedging takes place for the net items from bilateral cash flows. Foreign currency hedging is carried out mainly via forward exchange options. The intended hedging relationship between the designated amount of the hedged item and the designated amount

of the hedging instrument in the case of foreign currency sales from the volume production business amounts to 80%.

Individual hedging is generally carried out for the project business (gross principle). As a rule, the hedged item of project-related individual hedges is hedged in the full amount. In the current fiscal year, hedging the WABCO acquisition was such a project business.

Fair value hedges are primarily used to hedge foreign currency loans. The hedged items are hedged against foreign currency risks in the full amount.

The translation risk from the measurement of line items is not hedged – the risks thereof will be controlled and gradually reduced via consistent localization of our main activities.

The economic relationship between the hedging instrument and the hedged item can be determined in terms of quality and quantity, and ZF assesses the effectiveness of this hedging relationship using the hypothetical derivatives method. Ineffectiveness is largely expected to occur through changes in credit risk or from timing adjustments regarding the hedged item. In the current fiscal year, gains from ineffective hedging relationships of €3 million were derecognized from the cash flow hedge reserve.

The expected cash outflow from derivative financial instruments results from the following presentation:

in € million	Market values as of Dec. 31, 2020	Cash outflow			Market values as of Dec. 31, 2019	Cash outflow	
		Nominal value	Within a year	1 to 5 years		Within a year	1 to 5 years
Derivatives excl. hedge accounting							
Assets	14	1,003	986	17	10	873	14
Liabilities	-21	882	865	17	-17	1,012	2
Cash flow hedge							
Assets	36	1,134	899	235	148	7,492	499
Liabilities	-13	509	359	150	-22	490	124
Fair value hedge							
Assets	0	0	0	0	0	0	0
Liabilities	-3	93	93	0	-3	93	0

For the purposes of hedging foreign currency risk, the hedging rates for the material currency pairs are as follows: 1.20 EUR/USD; 0.91 EUR/GBP; 21.77 USD/MXN; 5.31 USD/BRL.

in € million	Change in value of	
	hedging instrument	hedged item
Dec. 31, 2020		
Cash flow hedge	23	- 23

Dec. 31, 2019		
Cash flow hedge	127	- 151
Fair value hedge	- 3	3

The hedged items from the fair value hedges of the previous year are primarily reported in the line item "Trade receivables."

Financial liabilities**Dec. 31, 2020**

USD

	Change in base points	Effect on net profit or loss before income tax (in € million)
	+ 160	- 29
	- 60	+ 11

Dec. 31, 2019

USD

	+ 100	- 1
	- 100	+ 1

With financial liabilities denominated in euros, neither an increase nor a decrease by 40 base points would have a material effect on the net profit or loss before income taxes.

The sensitivity analysis was drawn up under the assumption that the amount of loans from banks and of financial investments as well as the ratio of fixed and variable interest rates will remain at the same level.

36 Government grants

In the fiscal year 2020, €212 million (2019: €27 million) in government grants were received. They were divided as follows:

	2020	2019
Investment grants	21	18
Expense subsidies	191	9

Investment grants were basically received for investments at various locations in China, Serbia, Hungary, India and Germany.

In the context of effects of the COVID-19 pandemic, expense subsidies of €170 million were received and recognized in the consolidated statement of profit or loss as reduction of personnel expenses under function costs. Furthermore, state research subsidies as well as subsidies for personnel expenses were received.

Sensitivity analysis

With regard to the sensitivity to exchange rate fluctuations, ZF considers the potential effects of an appreciation or devaluation of the euro on the outstanding cash flow hedging portfolio as well as the effects on non-hedged financial assets and liabilities, such as loans or cash in foreign currencies, as relevant. For this purpose, the sensitivity for the portfolio of the financial instruments was determined for an appreciation or depreciation of 10% compared to the foreign currencies in the portfolio.

The following table shows the hypothetical effects on equity and profit or loss (in both cases excluding tax effects) within the scope of the aforementioned parameters:

In € million	Effect on equity	Effect on profit or loss
Appreciation of the euro by +10%	-48	-29
Devaluation of the euro by -10%	49	29

Raw material price risk

The raw material price risk is the risk that the acquisition cost from the purchase of production equipment and operational materials will change. No hedging transactions were entered into in the fiscal year 2020.

Interest rate risk

The interest rate risk is the risk that the fair values or future cash flows of financial instruments will fluctuate due to changes in the market interest rate. The interest rate risk is hedged on a case-by-case basis. No hedging transactions were entered into in the current fiscal year.

The following tables indicate the effect on net profit or loss before income tax in the event of an increase or decrease in the average interest rate on financial investments as well as on financial liabilities with variable interest rates that are not supported by interest hedging transactions in the corresponding currency:

Investment of funds

Dec. 31, 2020	Change in base points	Effect on net profit or loss before income tax (in € million)
EUR	+40 -40	+3 -3
USD	+160 -160	+4 -4
CNY	+30 -30	+2 -2

Dec. 31, 2019

EUR	+30 -30	+1 -1
USD	+100 -100	+1 -1
CNY	+20 -20	+1 -1

57 Related party transactions

In accordance with IAS 24, persons or companies that control or are controlled by the consolidated ZF Group have to be disclosed to the extent that they are not already included in the consolidated financial statements of ZF Friedrichshafen AG as a consolidated company. Here, control is exercised if a shareholder holds more than half of the voting rights or is able, by virtue of terms in the by-laws or contractual agreements, to govern management's financial and operating policies. In addition, the disclosure obligations under IAS 24 extend to transactions with associates and transactions with persons who exercise a significant influence over the financial and operating policies, including close members of the family or interposed companies. A significant influence on the financial and operating policies of the consolidated ZF Group can be based on a shareholding of 20% or more in ZF Friedrichshafen AG, a seat on ZF Friedrichshafen AG's Board of Management or Supervisory Board, or another key position in management.

Accordingly, the related parties of ZF Friedrichshafen AG include joint ventures, associates and enterprises in which ZF Friedrichshafen AG holds at least 20% of the shares, the Zeppelin Foundation as a special fund of the City of Friedrichshafen, the Dr. Jurgen and Irmgard Ulderup Foundation as well as its affiliated companies.

Transactions with related companies and the receivables and liabilities existing on the reporting date result without exception from the ordinary business activities and are displayed as follows:

2020 in € million	2020			
	Joint Ventures	Associates	Other participations	
Supplies and services rendered				
Sale of goods	9	4		7
Services	0	3		2
Other services	0	6		1
Supplies and services received				
Sale of goods	16	62		5
Services	0	12		64
Other services	0	10		10
Receivables	7	4		10
Liabilities	1	25		4
2019				
in € million				
	Joint Ventures	Associates	Other participations	
Supplies and services rendered				
Sale of goods	70	1		13
Services	2	4		0
Other services	0	7		15
Supplies and services received				
Sale of goods	16	105		6
Services	1	21		68
Other services	0	3		5
Receivables	6	31		21
Liabilities	0	29		5

63 Board of Management and Supervisory Board compensation

The current emoluments of the active members of the Board of Management for the fiscal year 2020 amount to €10.2 million (2019: €8.5 million). Payments for pension rights acquired in the fiscal year for the active members of the Board of Management total €3.7 million (2019: €3.7 million). The claim to contingent other long-term benefits attributable to the year under review amounts to €2.8 million (2019: €4.1 million).

Total emoluments thus amount to €16.7 million (2019: €16.3 million) and are based on long- and short-term remuneration components based on binding key figures as well as the current composition of the ZF Board of Management.

The emoluments of former members of the Board of Management and their surviving dependents amount to €4.8 million (2019: €4.8 million). The pension provisions for former members of the Board of Management and their surviving dependents amount to €104.7 million (2019: €93.0 million).

The emoluments of the Supervisory Board for the fiscal year 2020 amount to €2.2 million (2019: €2.5 million).

Moreover, the companies of the consolidated ZF Group have not carried out any reportable transactions whatsoever with members of the Board of Management or the Supervisory Board of ZF Friedrichshafen AG and other members of management in key positions, or with companies in whose management or supervisory bodies these persons are represented. This also applies to close family members of this group of persons.

63 Personnel

The annual average number of employees was 155,502 (2019: 149,046), of whom 76,594 were direct employees (2019: 76,289) and 78,908 were indirect employees (2019: 72,757). The annual average figure includes the Commercial Vehicle Control Systems Division with 11,716 employees. At the end of the year, the consolidated ZF Group had 153,522 (2019: 147,797) employees. Of these, 12,176 employees are assigned to the Commercial Vehicle Control Systems Division. Direct employees are employees whose activities depend on the production volume and can be allocated directly to the products.

64 Appointed auditor fees

Fees of the consolidated Group's auditing firm, Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft, recorded in the consolidated statement of profit or loss amount to €3 million for auditing services. The total consolidated Group-wide fees of Ernst & Young amount to €12 million for auditing services, €1 million for tax advisory services as well as €1 million for other consulting services. Apart from Ernst & Young, other auditing companies work for the consolidated Group.

④ Listing of the shares held as of December 31, 2020

Consolidated subsidiaries

National	Share of capital in %	National	Share of capital in %
Brake Force One GmbH, Tübingen, Germany	100.0	ZF Automotive Safety Germany GmbH, Aschaffenburg, Germany	100.0 ¹⁾
FTU Beteiligungsverwaltung GmbH, Auerbach, Germany	100.0	ZF Automotive Safety Germany Grundstücksverwaltungs AG & Co. KG, Aschaffenburg, Germany	100.0 ¹⁾
GAT - Gesellschaft für Antriebstechnik mbH, Alsdorf, Germany	100.0 ¹⁾	ZF Car eWallet GmbH, Berlin, Germany	98.0
Lemförder Electronic GmbH, Espelkamp, Germany	100.0 ¹⁾	ZF Cassiopeia GmbH, Friedrichshafen, Germany	100.0 ¹⁾
Lucas Automotive Grundstücksverwaltungs AG & Co. KG, Koblenz, Germany	100.0 ¹⁾	ZF Europa Beteiligungs GmbH, Friedrichshafen, Germany	100.0 ¹⁾
Lucas Varsity Grundstücksverwaltungs AG & Co. KG, Koblenz, Germany	100.0 ¹⁾	ZF Finance GmbH, Friedrichshafen, Germany	100.0 ¹⁾
Transics Deutschland GmbH, Hanover, Germany	100.0	ZF Gastronomie Service GmbH, Friedrichshafen, Germany	100.0 ¹⁾
TRW Automotive Holding Verwaltungs GmbH, Alfdorf, Germany	100.0	ZF Getriebe Brandenburg GmbH, Brandenburg, Germany	100.0 ¹⁾
TRW Deutschland Holding GmbH, Koblenz, Germany	100.0 ¹⁾	ZF Gusstechnologie GmbH, Nuremberg, Germany	100.0 ¹⁾
TRW Receivables Finance GmbH, Eschborn, Germany	100.0 ¹⁾	ZF Industrieantriebe Witten GmbH, Witten, Germany	100.0 ¹⁾
WABCO Vertriebs GmbH, Hanover, Germany	100.0	ZF Luftfahrttechnik GmbH, Calden, Germany	100.0 ¹⁾
WABCO GmbH, Hanover, Germany	100.0	ZF Mobility Solutions GmbH, Munich, Germany	100.0
WABCO Holding GmbH, Hanover, Germany	100.0	ZF NewCo II GmbH, Friedrichshafen, Germany	100.0
WABCO Logistik GmbH, Hanover, Germany	100.0	ZF Nürnberg Trading and Asset GmbH & Co. KG, Nuremberg, Germany	100.0 ¹⁾
WABCO Radbremsen GmbH, Mannheim, Germany	100.0	ZF Pegasus GmbH, Friedrichshafen, Germany	100.0 ¹⁾
WABCO Testbahn GmbH, Hanover, Germany	100.0	ZF RACE ENGINEERING GmbH, Schweinfurt, Germany	100.0 ¹⁾
ZF Active Safety GmbH, Koblenz, Deutschland	100.0 ¹⁾	ZF Sachs Micro Mobility GmbH, Ravensburg, Germany	100.0
ZF Airbag Germany GmbH, Aschau am Inn, Germany	100.0 ¹⁾	Zukunft Ventures GmbH, Friedrichshafen, Germany	100.0 ¹⁾
ZF Airbag Germany Grundstücksverwaltungs AG & Co. KG, Aschau am Inn, Germany	100.0 ¹⁾		
ZF Asia-Pacific Holding GmbH, Friedrichshafen, Germany	100.0 ¹⁾		
ZF Aurelia GmbH, Friedrichshafen, Germany	100.0 ¹⁾		
ZF Auslandsverwaltungs GmbH, Friedrichshafen, Germany	100.0		
ZF Automotive Germany GmbH, Alfdorf, Germany	100.0 ¹⁾		
ZF Automotive Germany Grundstücksverwaltungs AG & Co. KG, Alfdorf, Germany	100.0 ¹⁾		

1) The company lays claim to exemptions in part or in full according to Art. 264 Section 3 HGB (German Commercial Code) or Art. 264b HGB.

International	Share of capital in %	International	Share of capital in %
Transics Telematica España SL, Madrid, Spain	100.0	TRW International Holdings B.V., Amsterdam, Netherlands	100.0
TRW (Suzhou) Automotive Electronics Co., Ltd., Suzhou, China	74.2	TRW Occupant Restraints de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Aftermarket Asia Pacific Pte Ltd., Singapore, Singapore	100.0	TRW Odyssey Mexico LLC, Reynosa, Mexico	100.0
TRW Airbag Systems SRL, Roman, Romania	100.0	TRW Paris SAS, Paris, France	100.0
TRW Asiatic (M) SDN BHD, Selangor, Malaysia	51.0	TRW Safety Systems Mexico LLC, Reynosa, Mexico	100.0
TRW Asiatic Co., Ltd., Bangkok, Thailand	51.0	TRW Sistemas de Direcciones S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW Australia Holdings Pty Ltd., Zetland, Australia	100.0	TRW Sistemas de Frenado S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW Australia Pty Ltd., Zetland, Australia	100.0	TRW Steering & Suspension Co., Ltd., Rayong, Thailand	100.0
TRW Auto B.V., Amsterdam, Netherlands	100.0	TRW Steering Wheel Systems de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Automotive (LV) Corp., Livonia, USA	100.0	TRW Vehicle Safety Systems de Mexico, S. de R.L. de C.V., Reynosa, Mexico	100.0
TRW Automotive Bonneval SAS, Bonneval, France	100.0	Verona Holding Corp., Wilmington, USA	100.0
TRW Automotive China Holdings Ltd., Ebene, Mauritius	100.0	WABCO (Schweiz) GmbH, Bern, Switzerland	100.0
TRW Automotive Components Technical Service Shanghai Co., Ltd., Shanghai, China	100.0	WABCO (Shanghai) Management Co., Ltd., Shanghai, China	100.0
TRW Automotive Distribution France SAS, Paris La Défense, France	100.0	WABCO (Thailand) Ltd., Rayong, Thailand	100.0
TRW Automotive España S.L.U., Pamplona, Spain	100.0	WABCO Araç Kontrol Sistemleri Destek ve Pazarlama Limited Şirketi, Istanbul, Turkey	100.0
TRW Automotive Holding Mexico LLC, Reynosa, Mexico	100.0	WABCO Asia Private Ltd., Singapore, Singapore	100.0
TRW Automotive Holdings (France) SAS, Paris La Défense, France	100.0	WABCO Australia Pty Ltd., Melbourne, Australia	100.0
TRW Automotive India Private Limited, Haryana, India	100.0	WABCO Austria GesmbH, Vienna, Austria	100.0
TRW Automotive Portugal Lda., Santos Domingos de Rana, Portugal	100.0	WABCO Automotive AB, Gothenburg, Sweden	100.0
TRW Automotive Research and Development (Shanghai) Co., Ltd., Shanghai, China	100.0	WABCO Automotive B.V., Capelle aan den IJssel, Netherlands	100.0
TRW Automotive Safety Systems SRL, Timișoara, Romania	100.0	WABCO Automotive Control Systems Inc., Auburn Hills, USA	100.0
TRW China Holdings Ltd., Grand Cayman, Cayman Islands	100.0	WABCO Automotive Italia S.r.l., Torino, Italy	100.0
TRW Delplas, S. de R.L. de C.V., El Marqués, Mexico	100.0	WABCO Automotive Products Ltd., Grand Cayman, Cayman Islands	100.0
TRW FAWER Automobile Safety Systems (Changchun) Co., Ltd., Changchun, China	60.0	WABCO Automotive UK Limited, Leeds, United Kingdom	100.0
TRW FAWER Commercial Vehicle Steering (Changchun) Co., Ltd., Changchun, China	55.0	WABCO Belgium B.V., Brussels, Belgium	100.0
TRW Intellectual Property Corp., Livonia, USA	100.0	WABCO Brzdy K Vozidium spol s.r.o., Brno, Czech Republic	100.0

International	Share of capital in %	International	Share of capital in %
WABCO Centro de Distribuição de Peças Automotivas Ltda, Campinas, Brazil	100.0	WABCO Middle-East & Africa FZCO, Dubai, United Arab Emirates	100.0
WABCO China Co. Ltd., Qingdao, China	100.0	WABCO North America LLC, Auburn Hills, USA	100.0
WABCO China Co. Ltd., Jinan Branch, Qingdao, China	100.0	WABCO Polska Spółka z o.o., Wrocław, Poland	100.0
WABCO Comercial México S. de R. L. de C. V., Mexico City, México	100.0	WABCO Polska Sprzedaz Spółka z o.o., Wrocław, Poland	100.0
WABCO Compressor Manufacturing Company, Charleston, USA	70.0	WABCO RUS LLC, Moscow, Russia	100.0
WABCO Digital Solutions Private Limited, Bangalore, India	100.0	WABCO Services SAS, Jossigny, France	100.0
WABCO do Brasil Ind.Com. Freios LTDA, Campinas, Brazil	100.0	WABCO South Africa Proprietary Limited, Germiston, South Africa	100.0
WABCO España, S.L.U., Madrid, Spain	100.0	WABCO USA LLC, Auburn Hills, USA	100.0
WABCO Europe BVBA, Brussels, Belgium	100.0	WABCO Vehicle Control Systems LLC, Auburn Hills, USA	100.0
WABCO Europe Holdings B.V., Capelle aan den IJssel, Netherlands	100.0	WABCO Vostok LLC, Moscow, Russia	100.0
WABCO Europe Holdings LLC, Auburn Hills, USA	100.0	WBC C.V., Capelle aan den IJssel, Netherlands	100.0
WABCO Expats Inc., Auburn Hills, USA	100.0	ZF (China) Investment Co., Ltd., Shanghai, China	100.0
WABCO Financial Services BVBA, Brussels, Belgium	100.0	ZF (Guangzhou) Technologies Co., Ltd., Guangzhou, China	100.0
WABCO Foundation Brakes Private Limited, Chennai, India	99.8	ZF (Thailand) Limited, Bangkok, Thailand	100.0
WABCO France SAS, Jossigny, France	100.0	ZF Active Safety and Electronics US LLC, Livonia, USA	100.0
WABCO Global GmbH, Bern, Switzerland	100.0	ZF Active Safety France SAS, Bouzonville, France	100.0
WABCO Group Inc., Auburn Hills, USA	100.0	ZF Active Safety Slovakia s.r.o., Nove Mesto nad Vahom, Slovakia	100.0
WABCO Group International Inc., Auburn Hills, USA	100.0	ZF Active Safety US Holding Company, Livonia, USA	100.0
WABCO Holdings B.V., Capelle aan den IJssel, Netherlands	100.0	ZF Active Safety US Inc., Livonia, USA	100.0
WABCO Holdings Inc., Auburn Hills, USA	100.0	ZF Aftermarket Iberica S.L.U., Pamplona, Spain	100.0
WABCO Hongkong Limited, Hong Kong, China	100.0	ZF Aftermarket Japan Co., Ltd., Tokyo, Japan	100.0
WABCO India Limited, Chennai, India	93.1	ZF Aftermarket Malaysia Sdn. Bhd., Senai, Malaysia	100.0
WABCO International LLC, Auburn Hills, USA	100.0	ZF ANSA Lemförder S.L. (Sociedad Unipersonal), Burgos, Spain	100.0
WABCO IP Holdings LLC, Auburn Hills, USA	100.0	ZF AP Holdings Inc., Livonia, USA	100.0
WABCO Japan Inc., Tokyo, Japan	90.0	ZF Argentina S.A., San Francisco, Argentina	100.0
WABCO Korea Ltd., Suwon, Korea (Republic)	100.0	ZF Asia B.V., Amsterdam, Netherlands	100.0
WABCO Logistics (Qingdao) Co., Ltd., Jinan, China	100.0	ZF Asia Pacific Group Co., Ltd., Shanghai, China	100.0

International	Share of capital in %	International	Share of capital in %
ZF Asia Pacific Pte. Ltd., Singapore Central, Singapore	100.0	ZF Chassis System (Rayong) Co., Ltd., Rayong, Thailand	100.0
ZF Auto Holdings US Inc., Livonia, USA	100.0	ZF Chassis Systems (Beijing) Co., Ltd., Beijing, China	100.0
ZF Automotive Brasil Ltda., Limeira, Brazil	100.0	ZF Chassis Systems Chicago, LLC, Chicago, USA	100.0
ZF Automotive Canada Limited, Woodstock, Canada	100.0	ZF Chassis Systems Duncan, LLC, Duncan, USA	100.0
ZF Automotive Components & Systems (Shanghai) Co., Ltd., Shanghai, China	100.0	ZF Chassis Systems Sdn. Bhd., Padang Serai, Malaysia	100.0
ZF Automotive Czech s.r.o., Jablonec nad Nisou, Czech Republic	100.0	ZF Chassis Systems Tuscaloosa, LLC, Tuscaloosa, USA	100.0
ZF Automotive Holding Italia S.r.l., Torino, Italy	100.0	ZF Chassis Systems Zatec s.r.o., Plzeň, Czech Republic	100.0
ZF Automotive Holdings (UK) Limited, Shirley, United Kingdom	100.0 ²⁾	ZF Chassis Technology S.A. de C.V., Toluca, Mexico	100.0
ZF Automotive Italia S.r.l., Torino, Italy	100.0	ZF Chassis Tech Commercial Vehicles (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Automotive J.V. US LLC, Livonia, USA	100.0	ZF Commercial Vehicle Technology (Jiaxing) Co., Ltd., Jiaxing, China	100.0
ZF Automotive Japan Co., Ltd., Yokohama, Japan	100.0	ZF Danmark ApS, Tåstrup, Denmark	100.0
ZF Automotive Korea Co., Ltd., Ansan, Korea (Republic)	71.0	ZF do Brasil Ltda., Sorocaba, Brazil	100.0
ZF Automotive Malaysia Sdn Bhd., Bukit Beruntung, Malaysia	100.0	ZF Dongfang Automotive Safety Technology (Xian) Co., Ltd., Xian, China	90.0
ZF Automotive Systems (Shanghai) Co., Ltd., Shanghai, China	100.0	ZF Dongfeng Shock Absorber Shiyuan Co., Ltd., Shiyuan, China	51.0
ZF Automotive Systems (Wuhan) Co., Ltd., Wuhan, China	100.0	ZF Driveteck (Hangzhou) Co., Ltd., Hangzhou, China	100.0
ZF Automotive Systems Poland Sp. z o.o., Czeszochowa, Poland	100.0	ZF Driveteck (Jiaxing) Co., Ltd., Jiaxing, China	100.0
ZF Automotive Technologies (Shanghai) Co., Ltd., Shanghai, China	100.0	ZF Driveteck (Suzhou) Co., Ltd., Suzhou, China	100.0
ZF Automotive Technologies (Zhangjiagang) Co., Ltd., Zhangjiagang, China	100.0	ZF Electric Mobility Technologies (Shenyang) Co., Ltd., Shenyang, China	100.0
ZF Automotive UK Limited, Solihull, United Kingdom	100.0 ²⁾	ZF Electronic Systems Juárez, S.A. de C.V., Juárez, Mexico	100.0
ZF Automotive US Inc., Livonia, USA	100.0	ZF Electronic Systems Pleasant Prairie, LLC, Pleasant Prairie, USA	100.0
ZF Automotive Vietnam Co., Ltd., Haiphong, Vietnam	100.0	ZF Electronics (Zhuhai) Co., Ltd., Zhuhai, China	100.0
ZF Axle Drives Marysville, LLC, Marysville, USA	100.0	ZF Electronics Klášterec s.r.o., Klášterec nad Ohří, Czech Republic	100.0
ZF Boge Elastmetall Espana S.A.U., Santa Perpètua de Mogoda, Spain	100.0	ZF Engineering Plzeň s.r.o., Plzeň, Czech Republic	100.0
ZF Bouthéon SAS, Andrézieux-Bouthéon, France	100.0	ZF Europe B.V., Amsterdam, Netherlands	100.0
ZF Braking Systems Poland Sp. z o.o., Gliwice, Poland	100.0	ZF Europe Finance B.V., Amsterdam, Netherlands	100.0
ZF Brazil US LLC, Livonia, USA	100.0	ZF Faster Propulsion Systems Co., Ltd., Kaohsiung, Taiwan	100.0
ZF Chassis Components, LLC, Newton, USA	100.0	ZF FAWER Automotive Chassis Systems (Changchun) Co., Ltd., Changchun, China	60.0

International	Share of capital in %	International	Share of capital in %
ZF LAWER Chassis Technology (Changchun) Co., Ltd., Changchun, China	51.0	ZF Lemförder TVA, S.A.U., Ermua, Spain	100.0
ZF FOTON Automated Transmission (Jiaxing) Co., Ltd., Jiaxing, China	51.0	ZF Lemförder UK Limited, Darlaston, United Kingdom	100.0
ZF Gamesville, LLC, Gainesville, USA	100.0	ZF Marine Kimpert B.V., Krimpen aan de Lek, Netherlands	100.0
ZF Heji Drivtech (Hefei) Co., Ltd., Hefei, China	51.0	ZF Marine Propulsion Systems Miramar, LLC, Miramar, USA	100.0
ZF Holding Austria GmbH, Steyr, Austria	100.0	ZF Mexico, S.A. de C.V., Guadalajara, Mexico	100.0
ZF Holdings Australia Pty. Ltd., Dingley Village, Australia	100.0	ZF Middle East FZE, Dubai, United Arab Emirates	100.0
ZF Holdings B.V., Amsterdam, Netherlands	100.0	ZF North America Capital, Inc., Northville, USA	100.0
ZF Hungária Ipari és Kereskedelmi Korlátolt Felelősségű Társaság, Eger, Hungary	100.0	ZF North America, Inc., Northville, USA	100.0
ZF India Holdings B.V., Amsterdam, Netherlands	100.0	ZF Occupant Safety Systems de la Laguna, S. de R.L. de C.V., Durango, Mexico	100.0
ZF India Pvt. Ltd., Pune, India	100.0	ZF OPENMATICs s.r.o., Pízeň, Czech Republic	100.0
ZF Inmobiliaria S.A. de C.V., Saltillo, Mexico	100.0	ZF Österreich Gesellschaft m.b.H., Vienna, Austria	100.0
ZF International B.V., The Hague, Netherlands	100.0	ZF Overseas Inc., Livonia, USA	100.0
ZF International Holdings Inc., Livonia, USA	100.0	ZF Padova S.r.l., Selvazzano Dentro, Italy	100.0
ZF International UK Limited, Shirley, United Kingdom	100.0 ¹⁾	ZF Passive Safety Czech s.r.o., Stara Boleslav, Czech Republic	100.0
ZF Italia Holding S.p.A., Selvazzano Dentro, Italy	100.0	ZF Passive Safety Korea Co., Ltd., Ansan, Korea (Republic)	100.0
ZF Italia S.r.l., Assago, Italy	100.0	ZF Passive Safety South Africa Inc., Livonia, USA	100.0
ZF Japan Co., Ltd., Tokyo, Japan	100.0	ZF Passive Safety Systems US Inc., Washington, USA	100.0
ZF Lemförder (Thailand) Co., Ltd., Rayong, Thailand	100.0	ZF Passive Safety US Inc., Livonia, USA	100.0
ZF Lemförder Achssysteme Ges.m.b.H., Lebring, Austria	100.0	ZF Pension Sponsor UK Limited, Shirley, United Kingdom	100.0 ²⁾
ZF Lemförder Aks Modulleri Sanayi ve Ticaret Anonim Şirketi, Izmir, Turkey	100.0	ZF Philippines, Inc., Manila, Philippines	100.0
ZF Lemförder Australia Pty. Limited, Edinburgh, Australia	100.0	ZF Powertrain Modules (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Lemförder Automotive Systems (Shenyang) Co., Ltd., Shenyang, China	100.0	ZF Powertrain Modules Saltillo, S.A. de C.V., Ramos Arizpe, Mexico	100.0
ZF Lemförder Chassis Technology Korea Co., Ltd., Gumi, Korea (Republic)	50.3	ZF Powertrain Systems (Beijing) Co., Ltd., Beijing, China	100.0
ZF Lemförder Merial France SAS, Florange, France	100.0	ZF Restraints US Inc., Livonia, USA	100.0
ZF Lemförder SA (Pty.) Ltd., Rosslyn, South Africa	100.0	ZF Sachs España S.A.U., Bilbao, Spain	100.0
ZF Lemförder Shanghai Chassisteck Co., Ltd., Shanghai, China	75.0	ZF Sachs Italia S.p.A., Candiolo, Italy	100.0
ZF Lemförder TUM Dij Ticaret Limited Şirketi, Izmir, Turkey	100.0	ZF Sachs Korea Co., Ltd., Changwon, Korea (Republic)	91.5

	Share of capital in %	International	Share of capital in %
ZF Sachs South Africa Proprietary Limited, Alberton, South Africa	100.0	ZF Taiwan Ltd., Taipei, Taiwan	100.0
ZF Sachs Suspensionsystemer Sanayi ve Ticaret A.Ş., Gebze, Turkey	100.0	ZF Test Track Sweden AB, Arvidsjaur, Sweden	100.0
ZF Sales and Service (Malaysia) Sdn. Bhd., Petaling Jaya, Malaysia	100.0	ZF Transmissions Gray Court, LLC, Gray Court, USA	100.0
ZF Serbia d.o.o., Pancevo, Serbia	100.0	ZF Transmissions Shanghai Co., Ltd., Shanghai, China	51.0
ZF Services (China) Co., Ltd., Shanghai, China	100.0	ZF TRW Automotive Holdings Corp., Livon a, USA	100.0
ZF Services (Shanghai) Co., Ltd., Shanghai, China	100.0	ZF Wind Power (Tianjin) Co., Ltd., Tianjin, China	100.0
ZF Services Australia Pty. Ltd., Sydney, Australia	100.0	ZF Wind Power Antwerpen NV, Lommel, Belgium	100.0
ZF Services Belgium N.V.- SA, Brussels, Belgium	100.0	ZF Wind Power Coimbatore Private Limited, Coimbatore, India	100.0
ZF Services España, S.L.U., Sant Cugat del Vallès, Spain	100.0	ZF Wind Power Singapore Pte. Ltd., Singapore Central, Singapore	100.0
ZF Services France SAS, Antony, France	100.0	ZF YTO (Luoyang) Axle Co., Ltd., Luoyang, China	51.0
ZF Services Hong Kong Limited, Hong Kong, China	100.0	2) In accordance with Section 479C of the Companies Act 2006, ZF Friedrichshafen AG has provided a guarantee to the subsidiary. This guarantee has exempted the subsidiary from the requirement of having an audit of their individual financial statements in accordance with Section 475A of the Companies Act 2006	
ZF Services Korea Co., Ltd., Incheon, Korea (Republic)	100.0	3) 100 % voting rights	
ZF Services Middle East Limited Liability Company, Dubai, United Arab Emirates	49.0 ³⁾		
ZF Services Nederland B.V., Delfgauw, Netherlands	100.0		
ZF Services Schweiz AG, Volketswil, Switzerland	100.0		
ZF Services South Africa (Proprietary) Ltd., Johannesburg, South Africa	100.0		
ZF Services Türk San. ve Tic. A.Ş., Istanbul, Turkey	100.0		
ZF Services UK Limited, Nottingham, United Kingdom	100.0 ²⁾		
ZF Services, LLC, Vernon Hills, USA	100.0		
ZF Services, S.A. de C.V., Guadalajara, Mexico	100.0		
ZF Slovakia a.s., Trnava, Slovakia	100.0		
ZF South America Holdings B.V., Amsterdam, Netherlands	100.0		
ZF Staňkov s.r.o., Stankov, Czech Republic	100.0		
ZF Steering Active Safety US Inc., Livonia, USA	100.0		
ZF Steering Systems Poland Sp. z o.o., Czechowice-Dziedzice, Poland	100.0		
ZF Steyr Präzisionstechnik GmbH, Steyr, Austria	100.0		
ZF Suspension Technology Guadalajara, S.A. de C.V., Guadalajara, Mexico	100.0		

Consolidated companies accounted for using the equity method

National

ASAP Holding GmbH, Gamersheim, Germany
 doubleSlash Net-Business GmbH, Friedrichshafen, Germany
 e. GO MOOVE GmbH, Aachen, Germany
 Ibeo Automotive Systems GmbH, Hamburg, Germany
 WABOWURTH Workshop Services GmbH, Hanover, Germany

Share of capital in %
 35.0
 40.0
 40.0
 49.2
 50.0

Management bodies

The members of the Supervisory Board and the Board of Management are listed on the pages 55, 56 of the Annual Report. As of January 1, 2021, Stephan von Schuckmann has been appointed member of the Board of Management of ZF Friedrichshafen AG. Furthermore, Michael Hankel stepped down from the ZF Friedrichshafen AG Board of Management effective from December 31, 2020.

Friedrichshafen, March 01, 2021

ZF Friedrichshafen AG
 The Board of Management

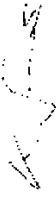
Share of capital in %

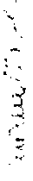
International

2getthere Asia Pte. Ltd., Singapore Central, Singapore
 2gr Mechanical Equipment LLC, Abu Dhabi, United Arab Emirates
 Brakes India Private Limited, Chennai, India
 CSG TRW Chassis Systems Co., Ltd., Chongqing, China
 Evercast, S.A. de C.V., Saltillo, Mexico
 FOTON ZF LCV Automated Transmission (Jiaxing) Co., Ltd., Jiaxing, China
 Rane TRW Steering Systems Private Limited, Chennai, India
 Shanghai G7 WABCO IOT Technology Co Ltd, Shanghai, China
 S.M. Sistemas Modulares Ltda., Taubate, Brazil
 SOMIC ZF Components Private Limited, New Delhi, India
 TRW Sun Steering Wheels Private Limited, New Delhi, India
 Walong ZF Automotive Electric Motors Co., Ltd., Shaoxing, China
 ZF Fondene Lorraine S.A.S., Grosbiedestroff, France
 ZF Hero Chassis Systems Private Limited, New Delhi, India
 ZF PWK Méacentre S.A.S., Saint-Étienne, France

Share of capital in %
 49.0
 49.0
 49.0
 50.0
 30.0
 40.0
 50.0
 50.0
 50.0
 50.0
 49.0
 25.0
 49.0
 50.0
 50.0


 Wolf-Henning Scheider
 (CEO)


 Dr. Konstantin Sauer


 Sabine Jaskula


 Stephan von Schuckmann


 Wilhelm Rehm


 Dr. Martin Fischer


 Dr. Holger Klein

Further Information

172 — Independent Auditor's Report

175 — Imprint

INDEPENDENT AUDITOR'S REPORT

To ZF Friedrichshafen AG

Report on the audit of the consolidated financial statements and of the group management report

Opinions

We have audited the consolidated financial statements of ZF Friedrichshafen AG, Friedrichshafen and its subsidiaries (the Group), which comprise the consolidated statement of profit or loss and consolidated statement of comprehensive income for the fiscal year January 1 to December 31, 2020, consolidated statement of financial position as at December 31, 2020, the consolidated statement of cash flows and the consolidated statement of changes in equity for the fiscal year from January 1 to December 31, 2020, and notes to the financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of ZF Friedrichshafen AG for the fiscal year from January 1 to December 31, 2020. The opinion does not comprise the information of the Company that is not included in its annual financial statements, which is referred to in section "sustainability through climate protection" of the management report (Sustainability Report).

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to Sec. 315a HGB and, in compliance with these requirements, give a true and fair view of the assets, liabilities and financial position of the Group as at December 31, 2020 and of its financial performance for the fiscal year from January 1 to December 31, 2020, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with

German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to Sec. 322 (3) Sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Sec. 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the *Institut der Wirtschaftsprüfer* [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's responsibilities for the audit of the consolidated financial statements and of the group management report" section of our auditor's report. We are independent of the Group entities in accordance with the requirements of German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the group management report.

Other information

The supervisory board is responsible for the "report of the supervisory board" included in the annual report. In all other respects, the executive directors are responsible for the other information. The other information comprises the other parts of the annual report, with the exception of the audited consolidated financial statements and group audit report as well as our auditor's report. A version of the other information has been provided until the date of our auditor's report.

Our opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an opinion or an other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the executive directors and the supervisory board for the consolidated financial statements and the group management report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec 315e (1) HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position and financial performance of the Group. In addition, the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting, unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's responsibilities for the audit of the consolidated financial statements and of the group management report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sec. 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit

IMPRINT

This Report is available in English and German; both versions can also be downloaded from www.zf.com.
In cases of doubt, the German version of this Report is binding.

Published by

ZF Friedrichshafen AG
88038 Friedrichshafen
Germany

Investor Relations

investor.relations@zf.com
zf.com/ir

Corporate Communications

presse@zf.com
zf.com/press

Photos

ZF; Cover, pages 12, 16, 17, 32, 35, 49; ZF (design by OSK);
pages 6, 8, 39, 40, 52, 54; Markus Altmann; pages 21, 22: 2getthere;
pages 5, 11, 47: Shutterstock; pages 36, 37: Unsplash

Concept and layout

Berichtsmanufaktur GmbH, Hamburg
Oliver Schrott Kommunikation GmbH, Cologne

ZF Friedrichshafen AG
Bilder und Texte bleiben
Urheber-
rechtlich geschützt