ZF ANNUAL REPORT 2018

NEXT GENERATION

MOBILITY

FOR THE NEXT GENERATION

See – think – act: A Zeppelin made it impossible for visitors of the International Motor Show IAA in Hanover, Germany, to ignore this ZF claim.

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. In 2018, ZF achieved sales of €36.9 billion. The company has a global workforce of 149,000 with approximately 230 locations in 40 countries. Founded in 1915, ZF has evolved from a supplier specializing in aviation technology to a global technology company. Every year, the company spends more than 6 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.

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€36,929 million
Sales

80 %
Cars and light commercial vehicles <6t

€2,470 million
Expenditure on research and development

12 %
Commercial vehicles >6t

148,969
Employees

8 %
Construction and agricultural machinery, marine craft, aircraft and wind power

KEY FIGURES

	2018	2017
Sales	€36,929 million	€36,444 million
Adjusted EBIT	€2,065 million	€2,339 million
Adjusted EBIT margin	5.6%	6.4%
Net profit or loss before tax	€1,225 million	€1,409 million
in % of sales	3.3%	3.9%
Net profit or loss after tax	€965 million	€1,167 million
Adjusted free cash flow[1]	€891 million	€1,818 million
Investment in property, plant and equipment	€1,586 million	€1,350 million
Equity ratio (end of the year)	27.5%	24.4%
Dividends	€195 million	€50million
Employees[2]	148,969	146,148

1) Cash flow from operating activities less cash flow from investing activities, adjusted for company acquisitions and disposals.

2) Direct and indirect employees without temporary workers, apprentices and vacation workers as of December 31, 2018.

SALES DEVELOPMENT BY REGIONS

Europe 47%

North America 28%

Asia-Pacific 21%

South America 3%

Africa 1%

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"TODAY, WE ARE SHAPING THE MOBILITY OF THE NEXT GENERATION."

Dear Reader,

Despite an increasingly difficult market environment, ZF continues to stay its course to summarize the year 2018. Thanks to its strong market position in driveline and chassis technology as well as in active and passive safety technology, the Group can present a positive economic statement of financial position. We have our sights set firmly on the future: Our new strategic focus on "Next Generation Mobility" has manifested itself in a variety of market-ready innovations that are viable for the future. We are therefore continuing to write our success story with new products and services that will simultaneously impact the mobility of the next generation. We are attractive to existing as well as new customers because our unique selling propositions in our specialty areas of vehicle motion control, integrated safety, automated driving as well as electric mobility give us a clear profile.

Our financial base remains strong with sales rising to €36.9 billion in 2018. The adjusted EBIT of €2.1 billion is slightly below the prior year's level. ZF was able to generate this figure despite higher spending on research and development and a rise in material prices. The Group invested €2.5 billion in research and development and €1.6 billion in property, plant and equipment and intangible assets in order to guarantee its future viability with new products, services and capacities.

In all, ZF therefore generated a free cash flow of €0.9 billion adjusted for corporate sales and acquisitions. We have stayed on track regarding debt reduction and lowered the company's gross debt resulting from the takeover of TRW in 2015 by a further €1.4 billion.

The prospects for the coming fiscal year are characterized by uncertain macroeconomic development. We are aiming for Group sales of between €37 and 38 billion, an adjusted EBIT margin between 5.0 and 5.5% as well as a free cash flow of roughly €1 billion adjusted for corporate sales and acquisitions. We will continue investing in future fields of mobility. We want to hold onto our leading positions in the market worldwide as a technological leader in our four areas of expertise.

I'd like to take this opportunity to thank all ZF employees for their commitment in the past year. After all, they will continue to be an essential factor of success for our company in the coming years. I'd also like to thank our customers and business partners for their trust in ZF.

A very special thank you also goes to the representatives of the shareholders and members of the Supervisory Board for their intensive support as the company continues to evolve. We will continue to write the success story of ZF.

WOLF-HENNING SCHEIDER
CHIEF EXECUTIVE OFFICER

BOARD OF MANAGEMENT

Dr. Franz Kleiner Quality, Electronics and ADAS, Passive Safety Systems, Active Safety Systems, North and South America Region
Dr. Holger Klein Car Chassis Technology, Aftermarket, Asia-Pacific Region and India **Dr. Konstantin Sauer** Finance, IT, M&A
Wolf-Henning Scheider Chief Executive Officer, Research & Development, Sales **Sabine Jaskula** HR and Legal, Director of Labor Relations
Wilhelm Rehm Materials Management, Commercial Vehicle Technology, Industrial Technology **Michael Hankel** Production, Car Powertrain Technology and E-Mobility

REPORT OF THE SUPERVISORY BOARD

Dr.-Ing. Franz-Josef Paefgen
Chairman of the Supervisory Board

Once again, the business and the result saw solid development at ZF in 2018. Thanks to this strong base, the company was able to continue pressing ahead with a focus on electromobility, autonomous driving and digitalization. The corporate strategy, which was further developed in summer 2018, is now even more geared to moving away from a pure component business and toward system solutions, thus accelerating all the measures driving this change.

Under the banner "Next Generation Mobility", ZF is leveraging the current industry transformation as a strategic opportunity. The core aspects of this are four clearly demarcated fields of activity on which the Group is focused: vehicle motion control, integrated safety, automated driving and electric mobility.

However, 2018 was also characterized by some important personnel changes:

The annual shareholders' meeting on March 21, 2018 closed the term of office of the existing members of the Supervisory Board. At the new Supervisory Board elections, shareholder representatives Dr. Margarete Haase, Prof. Dr. Dr. Claudia Eckert and Weidong Xu, and works council representatives Jörg Ammon, Matthias Beuerlein and Wolfgang Schuler stepped down. The Supervisory Board wishes to thank all former members for their constructive involvement in the company's further development. Particular thanks goes to Dr. Margarete Haase for her many years of outstanding leadership of the ZF Friedrichshafen AG Audit Committee. Shareholder representatives Axel Strotbek, Prof. Dr.-Ing. Gisela Lanza and Dr. Mohsen Sohi, as well as works council representatives Joachim Holzner, Matthias Scherer and Erdal Tahta were newly elected to the Supervisory Board.

Wolf-Henning Scheider was appointed chief executive officer of ZF Friedrichshafen AG effective February 1, 2018. Prior to this, CFO Dr. Konstantin Sauer had taken interim charge of the Group along with the R&D Corporate Function as well as the Aftermarket Division. After Jürgen Holeksa resigned his mandate as a member of the Board of Management on September 30, 2018, Wolf-Henning Scheider took interim charge of Corporate HR and as director of labor relations alongside his other responsibilities, effective as of October 1, 2018. On September 30, 2018, Peter Lake retired and stepped down as a member of the Board of Management. Dr. Holger Klein was appointed member of the Board of Management effective October 1, 2018.

The Supervisory Board wishes to thank both of the previous members of the board for their service, especially as regards the successful integration of TRW.

The Supervisory Board performed the duties incumbent upon it under the law and the by-laws with great diligence. We continually monitored the Board of Management's work and assisted it in the execution of its managerial tasks, the strategic further development of the company and other important individual matters. Outside of the board meetings, the chairman of the Supervisory Board also received regular reports from the chief executive officer about current and important developments in the company. The Supervisory Board also undertook an efficiency review in 2018 by means of a comprehensive self-evaluation in the interest of continuous improvement in teamwork and effectiveness.

During 2018, the Supervisory Board met for four regular meetings during which the Board of Management reported on the company's situation and all essential current and strategically important issues. The Supervisory Board also held one constituent and two extraordinary meetings in 2018.

The purpose of the extraordinary meeting in January 2018 was to appoint the new chief executive officer. The constituent meeting of the Supervisory Board in April 2018 saw the election of the chairman and vice chairman of the Supervisory Board, and the reformation of the Permanent Committee, Executive Committee and Audit Committee. In addition, a new code of procedure was adopted for the Supervisory Board, the Executive Committee and the Audit Committee. The extraordinary meeting in June 2018 concerned the appointment for the Corporate HR Function.

At the respective meetings, the Supervisory Board discussed both the progress made and the challenges involved in implementing the strategy drawn up by the Board of Management. Core elements include, among other things, the further balanced global market penetration, product innovations and the focus on strategically and financially appealing new business. The common objective of the Supervisory Board and the Board of Management is to further the long-term development of the ZF Group in increasingly uncertain export conditions, whether due to the rising protectionism associated with safeguard duties, raw material price increases and the threat of a trade war, or to new emissions standards or Brexit while requirements for new technologies are increasing. At its last regular meeting of 2018, the Supervisory Board approved the company's operational planning for the next year, reaffirming the revised strategy and the pace of implementation.

The Supervisory Board pays special attention to the Board of Management's presentation of key activities in the framework of strategic and operational planning, which are to further improve operational performance and profitability as well as help to achieve the planned net debt reduction and a higher equity ratio. The Supervisory Board will make sure it is kept up to date about how implementation of the actions is progressing. Faster repayment of interest-bearing debt capital is a particularly positive aspect. The Board of Management also presented the Compliance Report and reported about the significant individual risks within the context of risk management. No risks were identified which were a threat to continued existence.

At its meetings, the Executive Committee of the Supervisory Board addressed, in particular, the strategic focus of the ZF Group, personnel issues of the Board of Management and division management, promoting young talents and succession planning.

During the meeting on March 20, 2018, the appointed auditor reported to the Audit Committee in detail on the results of the annual financial statements and the consolidated financial statements, and discussed these as well as ZF's challenges in Finance with the Board of Management. At the other two meetings, the Board dealt with the compliance organization, the risk management system, the internal audit system and operational planning. The chairpersons of both committees, Dr. Franz-Josef Paefgen and Dr. Margarete Haase and – after her departure – 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, 2018, 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 to do this. In addition, the appointed auditor explained the main audit results first to the Audit Committee and then to the Supervisory Board during the board meeting on April 3, 2019. In both cases, the results were discussed in detail in the presence of the auditor. The Supervisory Board raised no objections, accepted the financial statement audit results and adopted the annual financial statements of ZF Friedrichshafen AG as well as the consolidated financial statements. The Supervisory Board advised the shareholders to approve the annual financial statements, adopt the consolidated financial statements and accept the recommendation of the Board of Management for the appropriation of the net profit.

For the fiscal year 2018, the Board of Management drew up a report on the relations to affiliated companies (dependence report) according to Sec. 312 German Stock Corporation Act (AktG). The Supervisory Board audited this report; no objections were raised. 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 agrees to the audit result of the appointed auditor. According to the concluding audit result by the Supervisory Board, no objections are to be raised with regard to the Board of Management's closing statement contained in the report. Despite facing obstacles at times, the Board of Management, the management, the employee representatives and the entire workforce of the ZF Group did an outstanding job in 2018. The Supervisory Board would like to take this opportunity to express its appreciation and thank everyone for the work they have done, the high level of commitment to the company as well as the objective and constructive teamwork.

Friedrichshafen, April 2019

On behalf of the Supervisory Board
Dr.-Ing. Franz-Josef Paefgen
Chairman of the Supervisory Board

MANAGEMENT BODIES

BOARD OF MANAGEMENT

Wolf-Henning Scheider
Chief Executive Officer (since February 1, 2018), Research & Development, Sales, Human Resources and Legal / Director of Labor Relations (from October 1, 2018 to December 31, 2018)

Dr. Konstantin Sauer Finance, IT, M&A, Chief Executive Officer (from December 8, 2017 to January 31, 2018)

Michael Hankel Car Powertrain Technology, E-Mobility, Production, Key Account Management, Passenger Car Customers Europe & North America

Jürgen Holeksa Human Resources and Legal / Director of Labor Relations (until September 30, 2018)

Sabine Jaskula Human Resources and Legal / Director of Labor Relations (since January 1, 2019)

Dr. Holger Klein Car Chassis Technology, Aftermarket, Asia-Pacific Region, India Region, Key Account Management, Passenger Car Customers Asia-Pacific & India (since October 1, 2018)

Dr. Franz Kleiner Electronics and ADAS, Passive Safety Systems, Active Safety Systems, Corporate Quality, North and South America Region

Peter Lake Sales, Asia-Pacific Region, South America Region (until September 30, 2018)

Wilhelm Rehm Commercial Vehicle Technology, Industrial Technology, Corporate Materials Management

SUPERVISORY BOARD

Dr.-Ing. Franz-Josef Paefgen Chairman of the Supervisory Board, former Chief Executive Officer of Bentley Motors Ltd., Crewe, Great Britain

Frank Iwer* Deputy Chairman of the Supervisory Board, Head of Staff Position Political and Strategic Planning of the Board of Management of IG Metall, Frankfurt

Jörg Ammon* former Head of ZF Friedrichshafen AG Projects, Friedrichshafen (until March 21, 2018)

Ernst Baumann former Member of the Management Board of BMW AG, Munich

Matthias Beuerlein* Team Leader of Non-Production Materials Purchasing, Schweinfurt location of ZF Friedrichshafen AG, Friedrichshafen (until March 21, 2018)

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

Prof. Dr. Dr. Claudia Eckert Chair for IT Security, Technical University of Munich, Munich (until March 21, 2018)

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

Dr. Margarete Haase former Member of the Management Board of DEUTZ AG, Cologne (until March 21, 2018)

Joachim Holzner* Head of the CV Chassis Technology Business Unit of ZF Friedrichshafen AG, Dielingen (since March 21, 2018)

Peter Kippes* First Representative of IG Metall, Administration Center Schweinfurt

Prof. Dr.-Ing. Gisela Lanza Director of Production Systems at the wbk Institute of Production Science, Karlsruhe Institute of Technology (KIT), Karlsruhe (since March 21, 2018)

Dr. Joachim Meinecke MCL Lawyer

Oliver Moll* Chairman of the Schweinfurt location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Jürgen Otto CEO of DRÄXLMAIER Group, Vilsbiburg

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

Matthias Scherer* Chairman of the Saarbrücken location Works Council of ZF Friedrichshafen AG, Friedrichshafen (since March 21, 2018)

Wolfgang Schuler* former Chairman of the Saarbrücken location Works Council of ZF Friedrichshafen AG, Friedrichshafen (until March 21, 2018)

Hermann Sicklinger* Chairman of the Passau location Works Council of ZF Friedrichshafen AG, Friedrichshafen

Dr. Mohsen Sohi CEO of Freudenberg SE, Weinheim, Speaker of the Board of Management (since March 21, 2018)

Dagmar Steinert Member of the Executive Board and CFO of Fuchs Petrolub SE, Mannheim

Axel Strotbek former Member of the Board of Management of Audi AG, Ingolstadt (since March 21, 2018)

Erdal Tahta* Chairman of the Koblenz location Works Council of ZF Active Safety GmbH, Koblenz (since March 21, 2018)

Weidong Xu Managing Director of Kelvion Heat Exchangers (China) Co. Ltd. (until March 21, 2018)

* Employee representative

NEXT GENERATION MOBILITY

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Combining Competencies

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Solutions for Mobility in Change

17 On the Road to Tomorrow
Answers to the Global Megatrends

19 Releasing the Spirit of Creativity
Gaining Inspiration from Employees

FOCUSED ON NEW SOLUTIONS

ZF has the ability to link technological competencies with one another. Connected solutions make it possible to offer customers and mobility users added value. ZF is pursuing the goal of clean and safe mobility that is automated, comfortable, affordable and accessible to everyone, everywhere: The “Next Generation Mobility” strategy.

The hub of the mobility revolution: The ZF ProAI RoboThink is the most powerful supercomputer that the automotive industry currently has to offer. ZF is also deploying the AI-capable supercomputer in its connected system solutions.

ZF ProAI enables the following vehicles to be operated autonomously (from the left): The ZF Innovation Forklift, the Terminal Yard Tractor, the Level 4 Test Vehicle and the ZF Ride Hailing Concept. All of them are signs of what is to come in the future of mobility.

Autonomous ride hailing, micromobility, mobility-as-a-service – these are just a few of the many new terms that clearly demonstrate what is happening in the mobility market. The field of applications continues to expand. Urban centers require different traffic solutions than rural areas. Conventional forms of individual vehicle ownership are being complemented to include special tailor-made services. Technologies that support highly automated and autonomous driving are now available to make these new traffic concepts a reality, but will also define new safety requirements. The "Next Generation Mobility" that ZF has placed at the center of its strategy is taking shape. This is also true of the users who define demand due to added needs and social changes, thereby helping to impact additional market opportunities.

This diverse range has a major advantage for ZF because it is becoming increasingly important to connect technologies. That is an area of expertise that ZF owns like no other technology company in the mobility industry. ZF technology enables vehicles of all kinds to see, think and act.

Attractive for all markets

Hardly any other new ZF product makes this focus on the modern world of transport and mobility clearer than the ZF ProAI RoboThink. It is the most powerful AI-capable supercomputer that the mobility industry currently has to offer. The flagship model of this flexibly scalable supercomputer can process up to 600 trillion calculations per second (600 Tera-OPS). This enables it to connect and process the data flow between internal and external sensors as well as cloud-based input and car-to-X communication in real time – to precisely control actuators in the drive and chassis. This is exactly what autonomous vehicles starting at Level 4 will need in order to operate safely in public traffic.

With its systems expertise and its innovative product portfolio, ZF is attractive for all markets. There is a growing number of new vehicle manufacturers whose internal depth in development is minimal. They are in need of a one-stop supplier for the electric drive, steering system, brakes and sensors as well as automated driving know-how, so ZF is the right partner. Established automakers have similar needs because their own development capacities are no longer sufficient to meet the growing emissions and vehicle safety requirements and simultaneously develop marketable e-mobility and autonomous driving systems.

ZF has worked hard on its market appeal over the past decades. Now the company has to expand it. With its "Next Generation Mobility" strategy, ZF is playing out its unique selling proposition in two ways. It is utilizing sales opportunities and at the same time acquiring new customers and entering markets in which considerable sales shares can be earned, if not yet today or tomorrow, then probably the day after tomorrow.

COMPUTING POWER À LA CARTE

Customers don't always have to go with the maximum solution. The four models featured in the ZF ProAI product family can be optimally configured for any purpose – from basic ADAS functions to autonomous functions for vehicles and industrial applications.

Link to the online article

MOBILITY IN ALL ITS FACETS

Sales of passenger cars and commercial vehicles remain high. Innovative types of vehicles will soon become part of the streetscape. Additional players will conquer the mobility market, establishing additional business models centered on the automobile. Will this create even more confusion? Not for ZF. With its comprehensive areas of expertise, the company has got the entire mobility market covered.

CUSTOM-MADE SOLUTIONS FOR URBAN MOBILITY

Major cities worldwide are going down very different roads to reduce daily traffic and emissions. A plea for technological openness.

Link to the online article

We are one of the world's largest mobility technology companies. The fact that the industry is currently undergoing dramatic change is both a challenge and an opportunity for ZF. The Group has long been working on solutions for clean and safe mobility. We are focusing our activities on four technology fields in which we have gained many years of expertise. Customers are benefiting from this competitive edge because we can deliver the most modern components or integrate them to create complete systems, depending on the requirements. We are already a leader in these four technology fields. We apply our expertise to passenger cars as well as trucks, buses and even industrial applications, like autonomous forklift trucks or special vehicles for depots. Doing so generates synergy effects for ZF and additional benefits for our customers.

Vehicle Motion Control

The chassis, comprising all motion-related actuators, plays a major role in ensuring vehicle safety, comfort and efficiency. ZF can connect and align to one another all systems that impact longitudinal, transverse or vertical acceleration, so that cars and commercial vehicles can glide along quietly and safely regardless of whether they are being operated by a driver or autonomously.

Integrated Safety

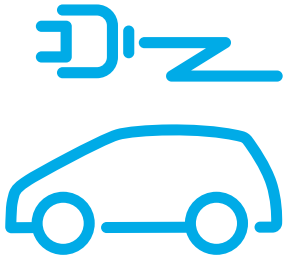
One day, autonomous driving and intelligent traffic routing will make accidents a thing of the past. Until that time, occupant safety is critical, though. ZF already has the most comprehensive safety technology portfolio in the supplier industry. It ranges from sensors, brakes, steering systems and seat belts to airbags, electronics and active chassis that are equipped with systems such as the active adaptive rear axle (AKC).

Automated Driving

Automated driving will make mobility safer and everyday life easier for people. Systems from ZF like sensors, central computers and actuators are already enabling cars 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, it is creating additional opportunities for ZF as a system supplier.

Electric Mobility

Zero local emissions mobility is gaining ground worldwide – hybrid drives as well as pure electric drives for vehicles have long been a reality. ZF supplies both the core components for electric mobility such as electric motors, rectifiers or power electronics as well as complete systems, covering all vehicle types, from e-scooters and passenger cars to 40-ton trucks.



INNOVATION AS CORE COMPETENCY

From fully connected to autonomous, from low-emission to all-electric, ZF is anticipating the future of mobility. With its products, the company is electrifying anything that moves on wheels, from scooters to 40-ton trucks. And with its technology portfolio, ZF can help any type of vehicle to see, think and act. This is no ambitious target for the future, rather already a reality in many passenger cars, commercial vehicles and industrial applications.

Following the delivery driver on foot, the Innovation Van with Level-4 driving functions shows how goods delivery can be made more efficient and comfortable.

EVplus is the name ZF has given to vehicles that can offer an all-electric range of 100 kilometers in addition to longer distances using a combustion engine.

What do a 250-kilowatt motor in a Formula E race car, the hybrid drive of a truck tractor and the motor of a pedelec all have in common? They are all produced and supplied by ZF. After all, the company has in its portfolio everything that vehicle manufacturers need for electrifying the drive – from components such as the electric motor and power electronics to complete systems. ZF drives are advancing micromobility with e-scooters equally as much as they are advancing public transit with e-buses and goods transport with autonomous truck trailers or vans along the "last mile" to the city center.

When it comes to connectedness and autonomous driving, ZF innovations have also proven to be pioneering. In addition to sensor technology, software and computing power on board are gaining in importance because many driving functions can only be implemented in the vehicle using artificial intelligence. ZF technology plays to its strengths when it comes to enabling vehicles to see, think and act.

Yet even the traditional ZF competencies are gaining in importance in the age of automated driving. Using its connectivity solution cubiX, ZF is connecting all active and semi-active actuators in the car to create a complete system – made up of steering, shock absorbers, brakes and drive. This will generate a harmonious driving feel that may be particularly important when autonomous driving becomes more established. Then, all of us as passengers can – at least part of the time – focus less on the road and more on doing other things during the drive.

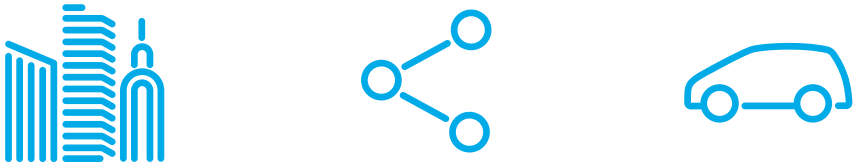
Automated helpers for logistics

The trend toward highly automated and autonomous driving will give birth to entirely new kinds of vehicles. Passenger transport in cities will soon be handled by "people movers". In the future, people will be using their cars less to get from A to B. They will use a variety of transport modes instead, such as trains, robotaxis, people movers, which will all be an inherent part of what is called a modal split. In a joint venture with the company e.GO Mobile AG, ZF is working on producing these vehicles for which experts are forecasting a global demand numbering in the millions.

The same vehicles will also be used as "cargo movers" and will shape how goods are transported in the future. The ZF Innovation Van 2018, which is rated Level 4, demonstrates how package deliveries along the last mile can be optimized by automated driving functions, for example, to enable them to maneuver independently through an urban environment. Remote control is particularly helpful for delivery drivers. If the next address is so close that it makes more sense to walk there, the Innovation Van moves as if it were on a virtual leash. If there is no parking available in front of an address, the driver can send the vehicle ahead to the next stop where it will look for a parking space on its own.

ON THE ROAD TO TOMORROW

How will we be mobile in the future? In what vehicles? How will the growing megacities worldwide be supplied with goods? ZF is already working on the answers to these questions. The "Next Generation Mobility" that ZF is promoting meets the essential needs and trends of tomorrow's society and will thus become a mobility for the next generation.



Thanks to connectedness, various means of transport can be intelligently combined with one another in what's called a modal split – and not only in cities.

For the new generations, mobility will no longer exclusively mean owning a car. The autonomous e.GO Mover is an electric minibus that will expand city passenger transport and private transport.

Maybe the most important realization regarding progress is that there is not only one type of progress. Instead, it will occur on different roads at entirely different speeds, sometimes quickly, sometimes at a snail's pace, but there will never be any turning back. Today, we can already foresee much of what will be keeping us and those after us busy in the 21st century.

A rise in **urbanization**: Rapid city growth is already being observed in many areas of the world today. By 2050, two-thirds of the world's population will be living in big cities, which means mobility has to be restructured. Left up to city planners, this will occur by combining public transit with autonomous transport systems. After all, only intelligent complete control systems can reduce the frequency of traffic jams.

What is quality of life? And how can it be increased? Many people have already answered this question for themselves, launching measurable trends which indicate greater value being placed on **safety and the environment**. This not only changes specialized disciplines like medicine or the food industry, but also mobility. ZF's strategic goal of helping to create a mobile world with zero accidents and zero emissions contributes to this.

At the same time, the living environment of people is becoming more and more **individual**. This is also noticeable in consumer behavior. The fact that people wait patiently in lines to purchase standard goods to meet daily needs will soon be mentioned only in history books. The trend is heading toward individualized products that are meant to be delivered within one day. Production and also logistics processes are already adapting. And mobility will also become more individualized. Vehicle ownership will soon become less significant than access to mobility – through the use of app-supported ride-hailing services, for example.

Connectivity makes this possible – another trend that is already shaping our media behavior. It has long been an integral component of mobility and enables autonomous vehicles to communicate with one another so that they can transport their passengers to the desired destination more safely and efficiently.

All these developments are having an impact on the world of tomorrow, on the mobility of people and, ultimately, on "Next Generation Mobility", as promoted by ZF.

RELEASING THE SPIRIT OF CREATIVITY

The working world is rapidly changing. Digitalization is bringing with it new agile methods that are finding their way into large corporations. For ZF employees, this creates additional options of sharing their expertise and working connectedly across national and organizational borders as a way of releasing a new spirit of creativity.

Agile work methods promote ideas and commitment from employees on a daily basis.

The working world is becoming more digital. But what does that mean? At ZF it means two things. First, there is the continuously optimized, well-established production system that has been in place for decades and features accurate planning processes that are streamlined to achieve zero-error quality from the development phase onwards. Secondly, and just as important, is the spirit of creativity, entrepreneurship and agility. These are key words that stand for a new working world with flat hierarchies, characterized by fast working styles and the courage to take new and innovative paths. ZF has started to bring into line with one another the different working worlds along with their respective speeds. This "dual operating system", as it is called, is helping ZF to better tap into current as well as new customer segments, which include traditional vehicle manufacturers, on the one hand, and young start-ups, on the other. That is why both operating modes have their place at ZF and do not compete with one another.

Award-winning ideas from employees

The expertise and commitment of the individual employees are important for both. Just how heavily ZF also relies on the creativity of its workforce was demonstrated in 2018. For the second consecutive year, the company held its internal idea competition, the "ZF Innovation Challenge." Proposals for digitalizing existing products were requested as well as entirely new approaches. At the same time, the company focused on greater value for existing and new customers.

Also, the high number of patent applications and the over 776 projects that were submitted for the ZF Excellence Award, a global idea competition established in 2015, prove just how effective it is to give the creative spirit of ZF employees free rein.

ZF EXCELLENCE AWARD

776 projects were submitted for the ZF Excellence Award Group-wide. The event is intended to promote entrepreneurship within the ZF workforce at all functional areas. The ideas that come from our employees create a competitive advantage for the Group.

Link to the online article

During the opening of the "Digital Convention" 2018 in Friedrichshafen, the internal idea competition called the "Digital Innovation Challenge" was also launched.

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BASIC PRINCIPLES OF THE ZF GROUP

Operating Activities and Corporate Structure

ZF Friedrichshafen AG is a corporation, of which 93.8% is owned by the Zeppelin Foundation and 6.2% by the Dr. Jürgen and Irmgard Ulderup Foundation. The company is headquartered in Friedrichshafen. As of December 31, 2018, the Group's workforce worldwide comprised 148,969 employees in around 40 countries.

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 manufactures, 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 Group's product portfolio comprises the four major technological areas of vehicle motion control, integrated safety, automated driving, and electric mobility. The Group provides innovative products from these areas of expertise for passenger cars and commercial vehicles. In addition, there are market segments such as wind power, marine propulsion, aviation technology, rail drives, special drives and test systems for industry with a focus on the automotive sector. ZF Aftermarket is responsible for spare parts from the ZF, Boge, Lemförder, Sachs and TRW product brands as well as maintenance and repair services. The main sales markets of the company are Europe, North America and the Region of Asia-Pacific, with China as the core market and India as the growth market.

A matrix organization links the Group-wide competencies of the corporate functions with the global business responsibility of the divisions and business units. The headquarters are managed by the Board of Management. The divisions are assigned directly to the members of the Board of Management. The same applies to the responsibilities with regard to the Regions of North America, South America and Asia-Pacific. As of 2018, both China and India are managed as discrete market regions.

In the course of the strategic realignment, the Corporate Structure was organized in new divisions as of October 1, 2018. To this end, the Active & Passive Safety Technology Division was split into three divisions: Electronics and ADAS (Advanced Driver Assistance Systems), Passive Safety Systems and Active Safety Systems. The following business units were reallocated as of January 1, 2018: The Axle Drives Business Unit of the Car Powertrain Technology Division was incorporated into the E-Mobility Division. The Wind Power Technology service business, which had previously been part of the Aftermarket Division, is now the responsibility of the Industrial Technology Division. The systems business and the CV Steering Systems Business Unit of the Active & Passive Safety Technology Division were transferred to the Car Chassis Technology Division and the Commercial Vehicle Technology Division, respectively. In addition, the Global Body Control Systems Business Unit was sold as of April 27, 2018.

CORPORATE STRUCTURE ZF FRIEDRICHSHAFEN AG

Shareholders: 93.8% Zeppelin Foundation and 6.2% Dr. Jürgen and Irmgard Ulderup Foundation

Active Safety Systems[2]
Passive Safety Systems[2]
Electronics and ADAS[2]

Car Powertrain Technology	Car Chassis Technology	Commercial Vehicle Technology	Industrial Technology	E-Mobility	Aftermarket	Active & Passive Safety Technology
Automatic Transmissions	Chassis Systems	Truck & Van Driveline Technology	Off-Highway Systems	Electronic Systems	Independent Aftermarket	Braking Systems
Manual Transmissions/Dual Clutch Transmissions	Chassis Components	Axle & Transmission Systems for Buses & Coaches	Industrial Drives	Electric Traction Drive	Original Equipment Service/ Specific Original Equipment	Steering Systems
Powertrain Modules	Suspension Technology	CV Chassis Technology	Marine & Special Driveline Technology	Axle Drives	Manufacturing	Occupant Safety Systems
		CV Powertrain Modules	Test Systems	Electronic Interfaces	Services	Body Control Systems[1]
		CV Steering Systems	Aviation Technology	System House	Friction Materials Group	
			Wind Power Technology			

Corporate Functions / Regions

[1] The Global Body Control Systems Business Unit was sold as of April 27, 2018 [2] Start of the new corporate structure as of October 1, 2018, which is the basis of reporting as of January 1, 2019

Corporate Management

The shareholders, the Zeppelin Foundation and the Dr. Jürgen and Irmgard Ulderup Foundation exercise their voting rights at the annual shareholders' meeting.

ZF Friedrichshafen AG and the ZF Group are led by the Board of Management, which manages the company, and by the Supervisory Board, which monitors the Board of Management. For the most part, the activities of the Board of Management are strategic in nature and comprise responsibility for the corporate functions, the divisions and the regions. In this context, particular importance is placed on close networking and cooperation within the Group. Operational topics are mainly addressed in the divisions and business units.

On January 31, 2018, Wolf-Henning Scheider was appointed chief executive officer effective February 1, 2018, succeeding Dr. Konstantin Sauer, who alongside his responsibility as CFO had taken interim charge of the company along with the R&D Corporate Function and the Aftermarket Division. After Jürgen Holeksa resigned his mandate as a member of the Board of Management on September 30, 2018, Wolf-Henning Scheider was appointed director of labor relations effective October 1, 2018. On January 1, 2019, Sabine Jaskula was appointed to the Board of Management, taking charge of the HR and Legal Corporate Function. On September 30, 2018, Peter John Lake took retirement and left the Group, stepping down as a member of the Board of Management. Dr. Holger Klein was appointed as a member of the Board of Management effective as of October 1, 2018.

He assumes responsibility for the Car Chassis Technology and Aftermarket Divisions as well as the Regions of Asia-Pacific and India and the Key Account Management of passenger car customers in these regions.

Wolf-Henning Scheider was appointed chief executive officer effective February 1, 2018

The supervision of the Board of Management by the Supervisory Board, whose members are appointed with equal representation, is supported by an Executive Committee and an Audit Committee which are both composed of members of the Supervisory Board. Under the leadership of its chairman Dr. Ing. Franz-Josef Paefgen, the Supervisory Board comprised 20 members as of year-end 2018.

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

- At the first managerial level (executive vice president/senior vice president) and the second managerial level (vice president) below the Board of Management, the percentage of women is planned to increase to 15.0% each.
- For vacancies regarding the Board of Management, a quota of 10.0% 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 already been met.
- For vacancies regarding the Supervisory Board, a quota of 30.0% was set. The quota is currently 10.0%.

Research & Development

Last year, ZF spent €2.5 billion on research and development (R&D), which is 6.7% of Group sales. This significant increase in research and development expenses underlines the Group's focus on forward-looking technologies.

Worldwide, 17,100 employees were working on R&D projects. Of that number, around 2,520 engineers and technicians work for the ZF Group's Corporate Research and Development Departments at the locations in Friedrichshafen (Germany), Pilsen (Czech Republic), Shanghai (China), Yokohama (Japan), Hyderabad (India) and Northville, Michigan (USA). Last year, the Engineering Centers in Shanghai, Hyderabad, Pilsen and Yokohama underwent considerable expansion that manifested itself in additional square meters as well as more staff. ZF has a further 13 main development locations where the Group can tailor its innovations to the needs of the market.

Next Generation Mobility

ZF has readjusted its strategy for 2018 and has thus given R&D work a clear end goal. It will now be focusing on next generation mobility; in other words, on innovative system solutions for the future of mobility. That means the company is augmenting its claim of enabling vehicles to see, think and act thanks to ZF technology. For this purpose, ZF is bundling its competencies across the organization in the technology areas of vehicle motion control, integrated safety, automated driving and electric mobility. The company has all applications in mind for these areas, ranging from scooters and bicycles to passenger cars and industrial applications. Digitalization represents a further primary area of expertise.

For more information on „Next Generation Mobility", please visit zf.com

In 2018, the Group presented with various concepts and test vehicles some groundbreaking system solutions for the future of the logistics industry. In this context, ZF played on its unique selling proposition regarding integration and connectedness. One example is its Innovation Van which demonstrates the benefits of autonomous driving on the last delivery mile. The all-electric vehicle moves independently through city traffic while the package delivery driver prepares the delivery. Being connected to the package delivery service's routing system, the delivery sequence can be modified at any time and at short notice to the current traffic situation or to the delivery needs and accessibility of the package recipient. This makes for much greater efficiency.

ZF further expands its development capacities and strategic partnerships in the area of autonomous driving

Two other concepts introduced by ZF, the Innovation Truck 2018 and the Terminal Yard Tractor, both equipped with autonomous driving functions, illustrate how ZF is contributing to more fluid and efficient workflows in a terminal yard. For example, the Innovation Truck can maneuver to the loading ramp right down to the last millimeter without human intervention; the automated Terminal Yard Tractor moves trailers to different parking places – error-free and without transport damage. Even for intralogistics, ZF presented an appealing concept in 2018 with its Innovation Forklift, which will pave the way toward autonomous materials handling vehicles of the future. This highly automated forklift truck completes work orders by independently going to the storage location, picking up the goods and delivering them to the customer. By establishing strategic partnerships and company shareholdings under the umbrella of Zukunft Ventures GmbH, ZF continues to expand its development capacities in the area of autonomous driving. In addition, in fiscal year 2018, ZF bought a 35% shareholding in ASAP Holding GmbH, located in Gaimersheim near Ingolstadt (Germany). The engineering services provider with 1,100 employees at eleven locations has special expertise in the fields of testing and validation.

Culture of innovation and patents

External partners are important for ZF to be able to maintain the high speed at which it is developing product-relevant technologies. The number of inventions and patents that ZF produced and filed last year is another proof that research and development is a high priority for the Group. ZF engineers submitted a total of 2,206 invention disclosures in 2018 – this is a new ZF record. Of these inventions, around 1,350 first-time patent applications worldwide were filed and 250 of those were directly associated with the automated and autonomous driving areas of expertise. Two important factors in the ZF culture of innovation include a high level of dedication on the part of the engineers as well as the Group's modern development methods. A Group-wide ZF intellectual property team pools, organizes and protects the company's intellectual property, which is an essential element of ZF innovations across all world regions. Additionally, ZF reinforces its culture of innovation by applying Engineering Excellence methods, which are firmly anchored in the Group's processes and its divisions, especially in product development.

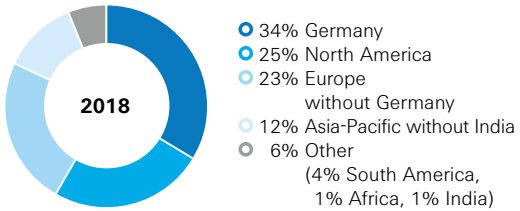
Virtual testing of autonomous driving functions

ZF is expanding its organizational models to meet the agile innovation requirements of the market. A dual operating system enables the Group to work at different speeds and with different organizational modes. The building of a new high-performance computer cluster (HPC), a project spearheaded by the Corporate Research and Development Department in close collaboration with the company's IT Department and other relevant expert departments is aiming at greater speed and improved efficiency in the area of development. The HPC is designed to accelerate the development and testing of advanced driver assistance systems as well as autonomous driving functions by completing several million virtual test kilometers on a daily basis. Overall, virtual testing in all product areas is gaining in importance, which is why Corporate Research & Development is pushing for it in numerous projects.

Real test benches also continue to play a decisive role in many application areas. At the beginning of 2019, ZF celebrated the grand opening of a new test center at the Friedrichshafen location. It will enable the Group to expand its test capacity for e-mobility products and cover the demand for more complex system test benches and higher outputs. Furthermore, ZF has continued to broaden its expertise in software development over the past few years. In the future, software will account for the significant properties of ZF products and thus optimize their added value, such as safety, efficiency and sustainability. The company's current software-related capabilities were particularly highlighted in 2018 with its concept vehicles. The Innovation Truck, the Innovation Van and the Innovation Forklift are all stand-out products due to their attractive and innovative functions that support autonomous driving, system connectedness and Cloud connection all "made by ZF".

Software development is also highly important for product and application development within the ZF divisions. This is provided, inter alia, by the India Technology Center (ITC), which is continuously expanding its capacities. As a part of the global development network of ZF, the ITC supports the Group with electronics and software solutions for automotive applications or relevant technology sectors. In 2018, ZF continued to successfully implement its digital master plan, whose objective is to further the Group's innovation culture and intensify collaboration with partners within a "ZF ecosystem". An important step in this direction was the operational launch of ZF's IoT platform in cooperation with Microsoft. It gives ZF additional latitude in the development of its own digital services, enabling the company to use cross-industry big data analyses as a basis for innovations.

EMPLOYEES BY REGIONS



Employees

As of December 31, 2018, ZF employees worldwide numbered 148,969 (2017: 146,148). Compared to the previous year, the number of employees rose in almost all regions, with the highest increases in North America and Asia-Pacific. This includes the disposal of the Global Body Control Systems Business Unit as of April 2018 with around 4,500 employees worldwide. In 2018, ZF Friedrichshafen AG once again ranked among Germany's major providers of training and apprenticeship opportunities. At the end of 2018, ZF's workforce in Germany included approximately 2,100 apprentices and work-study students.

Digital processes and agile cooperation

ZF is continuing to drive the digital transformation of its products, services, technologies and corporate culture. Its aim is to deliver solutions for the future of mobility even faster, thus ensuring the Group's success in the era of digitalization. Agile methods of working are paramount among all employees. In the year under review, the internal international congress "ZF Digital Convention" supported the cultural shift necessary for a successful transformation. The methods presented during the convention, such as "working out loud" or "design thinking" are producing a creative and innovative working environment that encourages employees to think like entrepreneurs and to develop their own proposals for new products or business models. With the internal idea contest called the "Digital Innovation Challenge," an additional format was established to better leverage this entrepreneurial potential. Furthermore, management development was expanded to include modular programs on agile or virtual management and the "ZF Global Leaders" program, which was launched in 2017 to identify potential executive managers.

An important step toward digitalization was the introduction of the new social intranet "Zoom." This communication, information and collaboration platform offers employees and teams the option of sharing ideas and working together efficiently across locations and time zones. It encourages a rapid and uncomplicated flow of information and job-specific knowledge as well as a virtual employee network – decisive resources for the success of ZF. Moreover, the introduction of additional digital tools like a Group-wide uniform platform for Human Resources and a mobile travel management system do their part to support lean, standardized and efficient processes.

Focus on employee qualifications

The increasingly digital product and production landscape requires new qualifications, skills and areas of expertise. Employees and graduates specializing in software and IT are becoming increasingly important for the automotive industry. In order to develop and manufacture intelligent mechanical products, ZF needs workers not only from traditional occupations, but also employees who can meet fundamentally new job specifications. A global qualification program based on the corporate strategy offers subjects such as artificial intelligence, electromobility and autonomous driving functions, thus ensuring that employees are equipped to work with the technologies and challenges of tomorrow's mobility.

Digitalization and connectedness are also changing requirements in vocational and professional training. As a result of the "Training 4.0" project, ZF integrated new content into its vocational training programs, particularly in the fields of IT and electronic engineering. Moreover, the Group has expanded its current training portfolio to include new professions. In order to meet changing requirements in the global

"Industry 4.0" environment, ZF is continuously looking for relevant universities – as part of its personnel recruiting and university marketing efforts – with research programs that focus on artificial intelligence, electromobility and autonomous driving. At the same time, ZF is also cooperating with the Femtec network, an international career platform for women in the fields of IT and engineering sciences, in order to further promote diversity in the Group.

Digitalization and connectivity are also changing requirements regarding vocational and professional training

On this basis, ZF is presenting itself as a technology company by exhibiting more often at trade shows and other internal and external events that focus on IT. By holding special "Action Weeks" for students or design contests like the "Formula 1 in School" and "Formula Student," ZF is supporting the skilled workers of tomorrow in learning to develop electrified and autonomous race cars. Even in the ZF Global Trainee Program or when awarding external grants, ZF is placing greater importance on information technology and electrical engineering. In fact, this shift in focus enabled the company to climb considerably in the employee rankings for the IT industry.

Sustainability

Sustainability management

ZF achieved two important milestones regarding its sustainability management in the year under review: A new materiality analysis was conducted and the sustainability program was overhauled based on the results. The first step for the materiality analysis involved preparing a list of all sustainability topics potentially relevant for ZF. An industry analysis as well as general sustainability standards were used as the basis. In the next step, an external expert panel assessed the list using qualitative telephone interviews and an online survey. Moreover, ZF's options for exerting influence and details regarding the opportunities and risks were analyzed. During a workshop held for the Sustainability Steering Committee, topics were prioritized in terms of business relevance, relevance from the shareholders' perspective as well as the consequences resulting from ZF's business activities. For example, issues regarding the supply chain and emissions from upstream and downstream activities were once again addressed. The individual topics support not only better reporting, but also strategic further development. Ultimately, the results of the materiality analysis were confirmed by the Board of Management. They are presented in the current Sustainability Report.

Using the updated list of essential topics as a basis, the sustainability program was completely overhauled at the end of 2018 and the more clearly defined topics restructured. The company continues to pursue its corporate non-financial targets such as reducing specific CO_2 emissions in production, lowering the negative environmental footprint in logistics and continuously improving work safety, diversity and ZF's appeal as an employer.

In addition, ZF's other activities during the expired fiscal year focused on the systematic handling of customer requests, participation in stakeholder discussions, involvement in studies and cooperative work on association initiatives concerning sustainability in the supply chain.

The Sustainability Report is released at the same time as the Annual Report and meets the GRI standard – the guideline of the Global Reporting Initiative (GRI) recognized worldwide. At the same time, it is a progress report for the United Nations Global Compact (UNGC), which ZF is a member of.

Environmental protection, occupational health and safety

Responsibility for environmental protection and the health and safety of employees and partners are among the corporate values of ZF. This is reflected in the Environment, Health and Safety (EHS) Policy approved by the Board of Management in 2018 as well as the corresponding targets: ZF has committed to making sustainable improvements in its occupational health and safety as well as environmental protection performance. This is also supported by the implementation of Vision Zero, a mobile world with zero accidents and zero emissions.

The Sustainability Report is available online at our website.

In the year under review, the Board of Management updated its environmental/CO_2 and occupational safety policies, approved new environmental targets and defined the necessary actions to implement them. One focus in this process is the climate protection, which takes into account the Paris Agreement. In conjunction with this, a new environmental, energy and health protection management standard was drawn up and introduced. It is scheduled to be rolled out at all ZF locations worldwide by 2020.

Environmental protection is integrated in the ZF Group on all levels and in all processes. Through innovative products and state-of-the-art production technologies, ZF has succeeded in sustainably reducing the unfavorable environmental impacts resulting from its business activities and the use of ZF products. High technical environmental standards have been implemented at all production plants. Product-related environmental issues are gaining in importance and we guarantee that environmental protection procedures are integrated into product development processes as part of overall development.

ZF is helping to improve CO_2 emissions transparency in vehicle manufacturing

Systematic environmental management according to ISO 14001 is the standard for all production and main development locations. In the year under review, the changeover to audits using the ISO 14001:2015 Environmental Management Standard was successfully completed. In the ZF Group, a total of 246 certificates were issued up to 2018. These external expert audits confirm that the participating locations conform to current environmental, occupational health and safety legislation as well as certification standards.

Once again, in 2018, actions focused on improving the company's environmental footprint, saving energy and reducing greenhouse gas emissions. To this end, the Group established a cross-functional steering committee intended to proactively support collaboration between the technical functions regarding this topic. Different programs were initiated on the Group level in order to tap into additional energy efficiency potentials. The individual locations carried out numerous projects to reduce CO_2 emissions and costs, as well. These projects included, for example, establishing minimum energy standards, retrofitting lights with energy-saving LEDs or harmonizing energy measurement concepts. As part of the globally recognized Carbon Disclosure Project (CDP), ZF was able to report on progress in reducing greenhouse gas emissions in the year under review. The Group is thus helping to improve CO_2 emissions transparency in vehicle manufacturing. As part of the CDP, ZF also had positive news to report on projects for conserving water at production locations suffering from water shortages, like South Africa.

In China, as part of its efforts to implement the 13th five-year plan, stricter overall regulations regarding emissions and emission limits went into effect. For the automotive sector, the specific implementation of the plan required that the ZF locations in China adapt their plant approvals and process engineering procedures to comply with these regulations.

Various ZF customers are continuing to drive the trend toward occupational health and safety management certification based on, e.g., the OHSAS standard from the USA. To continue to ensure that ZF meets the requirements of certifiability, certification projects were completed at the relevant locations. More projects will follow in the next few years. Today, 89 ZF locations already have the relevant certification.

Since 2017, and especially true in 2018, ZF has been focusing on behavior-related workplace safety and the role executive managers play in influencing the behavior of employees. A workshop concept was designed on this topic and rolled out at all locations. In 2018, ZF held 346 workshops at 136 locations with 4,223 employees. Last but not least, these efforts helped ZF to significantly reduce (-18%) the frequency of accidents in LTAR (Lost Time Accident Rate).

As standard, ZF carries out environmental due diligence audits to assess the potential environmental protection and occupational health and safety risks for each major investment and divestiture project. In fiscal year 2018, corresponding audits were conducted for 14 projects. ZF manages all remediation projects as of a volume of €40,000 at a central level. In the year under review, €8 million were spent on remediation projects.

Up-to-date figures on emissions and resource consumption as well as occupational health and safety can be found in the Sustainability Report.

Compliance

Responsible and sustainable management of the Group's business is the top priority at ZF. This helps us preserve the trust we enjoy in society in general, and in particular from our customers, shareholders and business partners. ZF must continue to earn this trust each and every day. To do so, the company must base its actions on the highest business and ethical standards as well as applicable laws and ZF policies.

For further information on the Carbon Disclosure Project, please visit the CDP website.

The Compliance Management System (CMS) established the prerequisites to meet these standards. One of the main objectives of the CMS is to ensure compliance with internal and external regulations. To this end, in cooperation with other expert departments, the CMS is concentrating on preventing and investigating violations related, e.g., to corruption, antitrust laws, fraud and damage to the company's reputation. The basic requirements are the independence and effectiveness of the Compliance Organization, the integration of compliance in business processes as well as transparent decision-making processes.

To reasonably stay abreast of continuous sociopolitical and legal developments, the CMS must be constantly revised, adapted and developed further; this is one of the essential tasks of the Compliance Organization. The Corporate Compliance Department is responsible for the global use of the CMS. Compliance officers and compliance delegates work in all operational units. Moreover, compliance officers reinforce the implementation of compliance on the function level in the corporate company functions as well as in the divisions. The expert network regularly shares experiences regarding current challenges and discusses these so that the knowledge can be used throughout the company.

As a core element of the CMS, the ZF Code of Conduct defines mandatory principles for correct, legally compliant and ethical behavior. That is why, in the year under review, the rollout of the new ZF Code of Conduct was quite significant. In addition to a new layout and to expand the governance system, "Product Compliance" was added as an essential element. Additional topics include complying with the law, fair competition, anti-corruption activities, economic and social responsibility, workplace safety, data privacy as well as transparency in all business processes. The global rollout of an online training course, that all executive managers were required to take, accompanied the release of the CMS. As part of this training course, the Board of Management also emphasized the special role of executive managers as well as the great value of the ZF Code of Conduct as a cornerstone of the CMS. ZF has made different channels available for reporting on compliance violations. In addition to personally contacting supervisors, the HR department and the Compliance Organization, the "ZF Trustline" is also available. It enables employees, customers and business partners to submit anonymous tips on potentially serious compliance violations. These reports help ZF to identify improper behavior early on and to stop it, thereby reducing risks. ZF promotes a culture of compliance as well as a working environment that makes employees comfortable in expressing their concerns and thoughts openly. This includes the confidential handling of reports as well as rejecting any form of discrimination or retaliation against those persons that report compliance violations to ZF in good faith. The electronic platform "ZF Trustline" is available on an external server that is provided by a certified service provider, thus making it impossible to trace the reports submitted from outside ZF over the internet.

In the year under review, the "LeanRegulations" Board of Management project was also initiated. The subject of this project is a critical review of all existing Group and corporate function regulations to be conducted by the respective corporate function, with the goal of harmonizing, standardizing and aligning these sets of rules to the demands of efficiency and agility. All project activities are aligned with the "ZF Policy Management System," which was released by the Board of Management in December.

Corporate social responsibility

ZF is aware of its corporate social responsibility and supports education, culture, the community and the arts as well as environmental and nature conservation. Such projects and events range from funding endowment chairs at universities to the ZF Art Foundation, which supports artists and musicians, festivals and non-profit organizations. In addition to top volleyball players from the VfB Friedrichshafen team, ZF also sponsors many recreational sports.

For more information on Compliance at ZF and „ZF Trustline", please visit zf.com

The non-profit organization "ZF hilft." collects donations for sustainable relief projects all over the world

The non-profit organization "ZF hilft." collects donations for sustainable relief projects all over the world. The organization raised a total of €520,000 in donations for disaster relief, some of which went to support earthquake victims in Mexico; for example, to finance the construction of a temporary school as well as earthquake-proof houses. After the two devastating hurricanes in the Caribbean and in Central America, donations helped to rebuild schools in Puerto Rico as well as to organize a sustainable farming project in Haiti. In the Asia-Pacific region, "ZF hilft." supported initiatives in India and the Philippines in the wake of severe monsoon flooding. These initiatives are intended to improve prevention and disaster management and thereby help schools to reopen quickly after natural disasters.

For more information on „ZF hilft.", please visit zf.com

ECONOMIC REPORT

The Business Environment

In terms of gross domestic product (GDP), after solid global growth of 3.6% in 2017, the current economic cycle reached its peak in 2018 at 3.7% (IMF) – the highest expansion rate in eight years. Growth rates were positive both in the advanced economies and in emerging markets, in particular China at 6.6%, India at 7.6% and the USA at 2.9%, but slower in the eurozone at 1.8%, Japan at 0.7% and Brazil at 1.2%. Alongside continued stable domestic demand, the main growth drivers were high global employment and – despite the background noise – a good political environment.

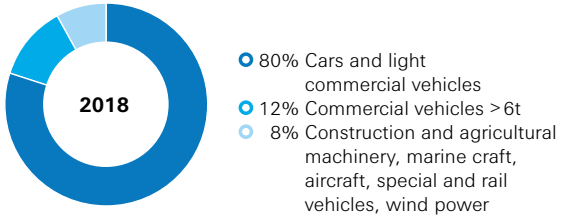
Notwithstanding this positive development, a slowdown in industrial production, incoming orders and retail sales held back global economic growth, especially in the second half of the year. Furthermore, in the course of the year but especially in the fourth quarter, growth in China slowed slightly in the face of tighter regulations in the finance sector. In Europe, the increasing uncertainty around Italy's future political orientation led to a decline in the price of Italian government bonds, increasing the susceptibility of banks whose portfolios include a high share.

In addition, trade wars intensified, pushing global trade growth below 4%. In particular, the increasing introduction of trade barriers between China and the USA reduced global trade volumes in 2018 and led to price rises in the consumer and industrial goods affected. The ongoing threat of escalating trade wars and the lack of resolution on Brexit even in early 2019 are also having an impact on global economic growth. Furthermore, rising demand for petroleum and uncertainty over Venezuela and Iran's ability to supply it drove up prices in 2018, with medium-term implications for global trade volumes.

Development of the industry once again inconsistent

In ZF's core industries – passenger cars and light commercial vehicles below six tons, trucks and buses above six tons, agricultural and construction machinery and wind turbine gearboxes – development varied by sector and region.

SALES DISTRIBUTION BY SECTORS
(prior to consolidation)



Following an upswing by 5% in 2016 and 2% in 2017, **global production of passenger cars and light commercial vehicles** could not be increased any further, decreasing slightly to 94 million vehicles. Only a few smaller markets achieved growth. In particular, having overcome the crisis, South America and Russia saw production bounce back at 4% and 13%, respectively. India also gained significant ground with a production increase of 6%. In contrast, the high-volume markets were sluggish. While North America managed to sustain the relatively high level of the previous year, vehicle production in Europe fell by 1%.

The WLTP standard (Worldwide Harmonized Light Vehicle Test Procedure) introduced on September 1, 2018, aimed at determining more realistic fuel consumption data, caused significant market upheaval. The transition to engines compliant with the WLTP had led to some production shortfalls since the summer. In China, a variety of factors such as the expiry of tax breaks and, in the last few months of the year, an emerging slowdown in the general economic climate, prompted a considerable decline in the vehicle market. Accordingly, vehicle production in China fell (by 4%) for the first time in many years.

In the year under review, the **production of commercial vehicles above six tons** increased again by 2% after two years of healthy gains at 5% and 16% and stood at 3.7 million vehicles worldwide.

Further information on the WLTP standard is available online.

China dominates the global commercial vehicle market with a share of almost 40%. In the second half of the year, as expected, the country's recent boom in this segment gave way to a downward correction. As a result, China produced 8% fewer vehicles during the year as a whole. Vehicle production in Europe was relatively high, up another 2%. The upbeat economic climate in North America prompted a substantial increase of 12%. Production reports from the emerging commercial vehicle markets in South America and India were very positive, with buoyant, high double-digit growth rates.

In the **non-automotive** sector, the **agricultural machinery** market above 75 kW saw a further production decline of 3% after the 6% reduction in volumes in 2017. Nevertheless, despite market uncertainties, Europe and North America saw moderate increases of 1% and 2%, respectively. In contrast, China experienced a further sharp decline of 25% after the 29% slump seen in the previous year, fueled by shaky investor confidence on the back of perpetual changes in the regulations on government subsidies. However, the South American agricultural machinery sector grew by a further 6%, maintaining some of its post-recession momentum.

News in the **construction-machinery industry** was positive, with global production up by a further 10% compared to 21% in 2017. Accelerated infrastructural expansion in China as well as rising exports have triggered a veritable boom in agricultural machinery, with production up 19% compared to 47% in the previous year. India and South America also achieved respectable growth rates at 12% and 26%.

In the USA, the market profited from business tax reform alongside improved investment conditions, with production again up by 10%. In Europe, a healthy economy, the ongoing recovery in the construction industry and an increase in deep and opencast mining activity drove up production by a further 2% on top of its already high level.

As regards the other **industrial technology** markets, **marine propulsion systems** gained only slight but positive momentum in the pleasure craft sector, especially in Europe and North America. Meanwhile, the commercial craft sector moved sideways. Growth in the **rail drives** markets was also subdued. The **wind turbine gearboxes** market was giving off positive signals although it is under heavy price pressure from auction systems. Falling energy costs and rising solar energy capacities remain key drivers in this.

Although Europe reported increased offshore volumes, the market was down 17% after the boom of the prior year (up 34%). Repowering (replacing obsolete facilities with new, more efficient turbines) and maintenance on ageing facilities are gaining importance. As regards other major markets, China, Brazil and the USA all achieved high double-digit growth rates. The exception was India, where the market saw a temporary slump of almost 50%. However, the first signs of recovery are emerging.

The above-mentioned information is based on the analyses of various economic research institutes and international organizations as well as on internal market analyses.

Overview of the Business Trend and Board of Management Overall Statement on Business Performance

In 2018, under its new Chief Executive Officer Wolf-Henning Scheider, ZF established a new strategy, "Next Generation Mobility," based on the core objectives of the "ZF 2025" Strategy and augmenting them with medium- and long-term targets. The strategy is designed to position ZF and its systems expertise in the passenger car, commercial vehicle and industrial applications sectors in terms of technologies for vehicle motion control, integrated safety, automated driving and electric mobility. ZF's strategic approach is to ensure it can meet both historical and future challenges by continuing to develop existing technology while also entering completely new markets and fields, thus serving both existing and new customers.

In line with this strategic alignment, ZF significantly increased research and development expenditure in the fiscal year 2018, and on April 27, 2018, sold the Global Body Control Systems Business Unit, which was not among the core technologies in the strategy.

Despite challenging market conditions in the automotive industry, the ZF Group achieved the 2018 sales figure of around €36.5 billion that was forecast at the start of the fiscal year. Sales increased by 1.3% from €36.4 billion to €36.9 billion. After adjusting for exchange rate influence and M&A activities, sales increased by 6% generating stronger growth than the market.

The adjusted EBIT of €2.1 billion is largely attributable to the increases in research and development costs and material prices as well as negative exchange rate effects. ZF's adjusted EBIT margin of 5.6% is slightly below forecast (around 6%). The free cash flow adjusted for company acquisitions and disposals of €1 billion targeted in the previous year could not be achieved in full, but amounted to €0.9 billion. The reduction in gross debt by around €1.4 billion to €5.1 billion as of December 31, 2018, marks another step toward strengthening ZF's financial independence.

The year 2018 focused on stabilizing earnings against the backdrop of a weakening economy, higher material prices and R&D costs, and on continuing to reduce the debts incurred as a result of acquiring TRW. The resulting reduction in the total assets together with the net profit after tax fed through to a higher equity ratio of 28% at the end of the fiscal year, up 3 percentage points. The ZF Group rests on a solid financial foundation thanks to its long-term oriented and diversified financing, as well as cash and cash equivalents of almost €1 billion and an unused credit line of €3.0 billion at Group level. The rating agencies Moody's and Standard & Poor's assess these developments of the ZF Group as positive, and in March 2018, Standard & Poor's was the second rating agency to upgrade the ZF Group into the investment grade rating. Against the backdrop of a stable liquidity and financial basis as well as stable business performance, the economic situation of the consolidated ZF Group is considered to be positive on the whole.

Results of Operations, Net Assets and Financial Position

Preliminary remark

The sale of the Global Body Control Systems Business Unit, that was contractually agreed with Luxshare Limited on August 30, 2017, was successfully completed as of April 27, 2018. As of December 31, 2017, the related assets and liabilities had been classified as held for sale and were reported separately in the consolidated statement of financial position. In addition, the sales and earnings of the Global Body Control Systems Business Unit were included for the full 12-month period in 2017, while only the first four months were included in 2018.

The Electronics and ADAS, Passive Safety Systems and Active Safety Systems divisions newly established as of October 1, 2018, continued to be combined and reported under the Active & Passive Safety Technology Division until December 31, 2018.

Moreover, the first-time application of the financial reporting standard IFRS 15 (Revenue from Contracts with Customers) resulted in additional effects that had an impact especially on the presentation of the statement of profit or loss, the statement of financial position and the statement of cash flows.

STATEMENT OF PROFIT OR LOSS

in € million	2018	%	2017	%
Sales	36,929	100.0%	36,444	100.0%
Cost of sales	−30,836	−83.5%	−29,895	−82.0%
Gross profit on sales	**6,093**	**16.5%**	**6,549**	**18.0%**
Research and development costs	−2,158	−5.9%	−2,230	−6.1%
Selling and administrative expenses	−2,593	−7.0%	−2,615	−7.2%
Other income and expenses	39	0.1%	19	0.0%
Operating profit or loss	**1,381**	**3.7%**	**1,723**	**4.7%**
Net result from participations	147	0.4%	48	0.2%
EBIT	**1,528**	**4.1%**	**1,771**	**4.9%**
Financial income	267	0.7%	313	0.9%
Financial expenses	−570	−1.5%	−675	−1.9%
Net financial result (without net result from participations)	**−303**	**−0.8%**	**−362**	**−1.0%**
Net profit or loss before tax	**1,225**	**3.3%**	**1,409**	**3.9%**
Income taxes	−260	−21.2%	−242	−17.2%
Net profit or loss after tax	**965**	**2.6%**	**1,167**	**3.2%**

Results of operations

In the fiscal year 2018, the ZF Group succeeded once again in increasing its sales compared to the previous year. Sales in the amount of €36,929 million in fiscal year 2018 represent an increase of €485 million over €36,444 million in the prior year. This corresponds to a growth rate of 1.3%. Organic sales growth amounts to approximately 6% after adjusting for effects from M&A activities and exchange rate effects.

As part of the year-on-year comparison of the sales development, it has to be taken into account at division level that the strategic further development resulted in structural changes and, hence, to reclassifications of business units between the divisions. This effect is mainly reflected in the Active & Passive Safety Technology Division and has to be taken into account accordingly for the comparison of the prior-year figures.

Sales of the Active & Passive Safety Technology Division in the fiscal year 2018 amounted to €12,121 million (2017: €13,970 million). Adjusted for the disposal of the Global Body Control Systems Business Unit on April 27, 2018, the spin-off of the systems business and the CV Steering Systems Business Unit as well as currency effects, sales grew organically by approximately 5%.

SALES DEVELOPMENT BY DIVISIONS AND BUSINESS UNITS

in € million	2018	2017	Changes compared to 2017
Car Powertrain Technology	7,775	8,725	−10.9%
Car Chassis Technology	7,876	6,484	21.5%
Commercial Vehicle Technology	3,720	3,172	17.3%
Industrial Technology	2,782	2,530	10.0%
E-Mobility	2,195	924	137.6%
Active & Passive Safety Technology	12,121	13,970	−13.2%
Aftermarket	2,975	3,007	−1.1%
Corporate R&D, Corporate Headquarters and Service Companies	321	468	−31.4%
− Consolidation	−2,836	−2,836	0.0%
Total	**36,929**	**36,444**	**1.3%**

Sales in the Car Powertrain Technology Division amounted to €7,775 million (2017: €8,725 million) in fiscal year 2018. Taking into account the reclassification of the Axle Drives Business Unit and currency effects, organic growth amounted to approximately 5%. The main driver for this growth was the continued high demand for automatic passenger car transmissions also in the hybrid technology area.

Sales in the Car Chassis Technology Division were €7,876 million (2017: €6,484 million). The systems business of the Active & Passive Safety Technology Division was allocated to the Car Chassis Technology Division as of January 1, 2018. Taking into account structural and currency effects, the division grew organically by almost 5%. The rise in sales is based on a disproportionately high increase in the Region of Asia-Pacific, which was partially offset by the sales development in North America as well as currency effects.

Sales of the Commercial Vehicle Technology Division grew by approximately 17% to €3,720 million (2017: €3,172 million) in nominal terms. The sales increase is primarily attributable to organic growth of around 12%. Growth drivers mainly were the high demand from European and Chinese customers as well as the continued positive trend in Russia and Brazil. In addition, the Commercial Vehicle Steering Systems Business Unit of the Active & Passive Safety Technology Division was incorporated into the Commercial Vehicle Technology Division.

In the fiscal year 2018, sales of the Industrial Technology Division amounted to €2,782 million, representing an increase by 10% (2017: €2,530 million). The sales growth in the Off-Highway Systems and Wind Power Technology Business Units was the main driver. Moreover, the Industrial Technology Division was expanded by the service business of the Wind Power Technology Business Unit, which previously had been a part of the Aftermarket Division.

Since the beginning of 2018, the E-Mobility Division includes the Axle Drives Business Unit, which had previously been allocated to the Car Powertrain Technology Division. Sales amounted to €2,195 million (2017: €924 million). This sales growth primarily results from the reallocation of the Axle Drives Business Unit and the high demand for hybrid modules, control systems for automatic passenger car transmissions as well as electric axle drives.

In the past fiscal year 2018, the sales of the Aftermarket Division amounted to €2,975 million (2017: €3,007 million). Adjusted for structural and currency effects, organic growth amounted to approximately 3% in comparison to the previous year. The structural changes referred to the service business of the Wind Power Technology Business Unit, which has been part of the Industrial Technology Division since the beginning of the year.

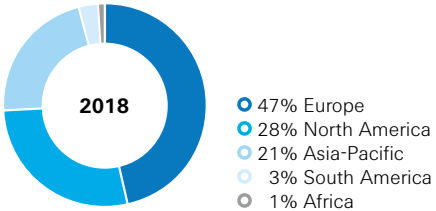
ZF was able to achieve sales growth in all regions which, however, was impacted by negative exchange rate effects. Due to the stable market development in Europe, sales in 2018 amounted to €17,390 million across all divisions (2017: €17,394 million), almost reaching the prior year level. The Region of North America was heavily influenced by the currency development of the US dollar. Sales amounted to €10,264 million in 2018 (2017: €10,010 million), representing an organic growth by almost 11%.

Sales in the Region of Asia-Pacific grew by €233 million to €8,008 million (2017: €7,775 million). Above-average organic growth of more than 6% was offset by negative currency effects owing to the development of the Renminbi exchange rate versus the euro. Sales in South America came in slightly below the previous year's level, amounting to €1,034 million (2017: €1,066 million); sales rose organically by 18%. The recovery of the markets, especially in Brazil, led to a positive organic growth in this region.

The distribution of sales by region only showed minor changes compared to the sales in 2017. Top-selling region was again Europe, accounting for 47% (2017: 48%) of sales, followed by North America with 28% (2017: 27%) and Asia-Pacific with 21% (2017: 21%). The Region of South America with a sales share of 3% and the Region of Africa with a share of 1% remained unchanged from the prior year.

SALES DEVELOPMENT BY REGIONS

in € million (consolidated)	2018	2017	Changes compared to 2017
Europe	17,390	17,394	0.0%
North America	10,264	10,010	2.5%
South America	1,034	1,066	−3.0%
Asia-Pacific	8,008	7,775	3.0%
Africa	233	199	17.1%
Overall	**36,929**	**36,444**	**1.3%**



The financial reporting standard IFRS 15 (Revenue from Contracts with Customers), which is required to be applied for the first time as of January 1, 2018, primarily leads to a change in the presentation of development expenses in the statement of profit or loss. These are reported under cost of sales to the extent that they relate to revenue from development projects. Previously, they had been included in research and development costs. The prior-year figures were not adjusted to the change in accounting treatment so that the comparability with the previous year is limited. The changes are explained in the notes to the consolidated financial statements in the "Accounting policies" section in the paragraph "Changes in accounting policies". The statement of profit or loss is presented after IFRS 15 adjustments.

Gross profit on sales amounted to €6,093 million (2017: €6,549 million), which is equivalent to a gross margin of 16.5% (2017: 18%). This decline is influenced by the above-mentioned change in accounting for development costs which had an effect of 0.9 percentage points. Further effects came from higher material prices and negative exchange rate effects. Research and development costs amounted to €2,158 million in the fiscal year 2018 (2017: €2,230 million). This represents 5.8% (2017: 6.1%) in proportion to sales. In reverse, the changed accounting for development costs led to a reduction of the proportion of research and development costs to sales by 0.9 percentage points. This proportion would amount to 6.7% if the change in accounting was not taken into account. In absolute terms, this represents an increase in expenses to €2,470 million by approximately 10.8% compared to the prior year and highlights the implementation of the corporate strategy to strengthen the defined future technologies.

Selling and administrative expenses in proportion to sales decreased over the previous year's level and are now at 7.0% (2017: 7.2%) of sales.

The net result from participations amounts to €147 million in the reporting year (2017: €48 million). Among other things, this improvement is attributable to the measurement of participations at fair value.

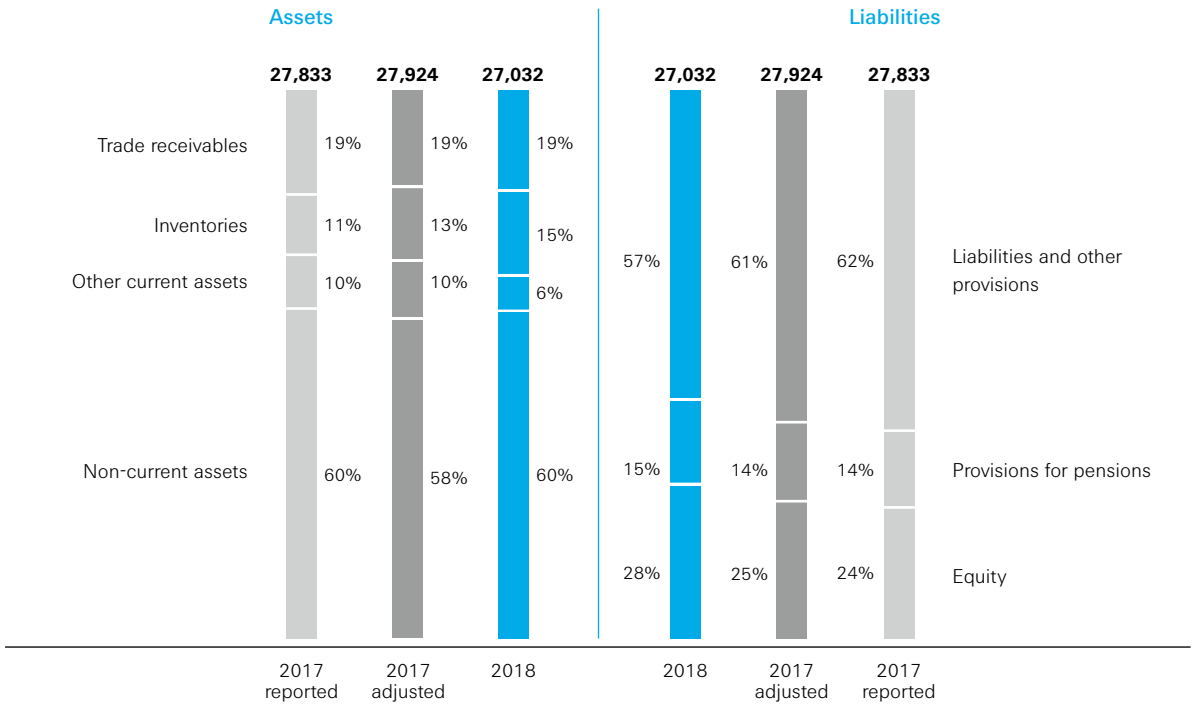
Thus, EBIT totaled €1,528 million in the reporting year (2017: €1,771 million). Adjusted by the extraordinary items relating to the purchase price allocation from the TRW acquisition in the amount of €624 million as well as the capital gains of €87 million, mainly from the sale of the Global Body Control Systems Business Unit, the adjusted EBIT margin was 5.6% (2017: 6.4%). Therefore, as a result of increased research and development expenditure, higher material prices as well as unfavorable exchange rate effects, the adjusted EBIT margin was slightly below the expected range of around 6%.

Financial income amounted to €267 million in the past fiscal year (2017: €313 million). This is offset by financial expenses in the amount of €570 million (2017: €675 million). The lower financial expenses are substantially a consequence of lower interest expenses attributable to the reduction of financial debt.

Tax expenses amounted to €260 million in 2018, compared with €242 million in the previous year. This corresponds to an income tax rate of 21.2% (2017: 17.2%). The low tax rate in the previous year primarily results from the U.S. tax reform in 2017.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

in € million



Net assets position

In terms of accounting, the financial reporting standard IFRS 15 (Revenue from Contracts with Customers), which is required to be applied for the first time as of January 1, 2018, primarily leads to a change in the presentation of tooling expenses and associated customer reimbursements as well as to a capitalization of development expenses under inventories. The change in the accounting method is explained in the notes to the consolidated financial statements in the "Accounting policies" section in the paragraph "Changes in accounting policies."

Against this backdrop, the major developments compared to the adjusted opening statement of financial position are explained in the following. In 2018, the ZF Group's total assets declined to €27,032 million (2017 adjusted: €27,924 million). This reduction in assets is primarily attributable to the disposal of the Global Body Control Systems Business Unit as of April 27, 2018, as well as write-downs of undisclosed reserves identified in the context of the purchase price allocation from the TRW acquisition.

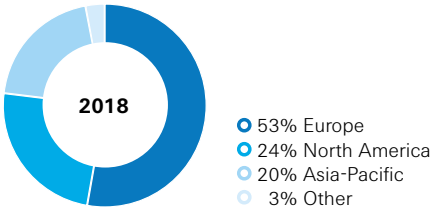
Current assets declined by €1,124 million to €10,735 million (2017 adjusted: €11,859 million), largely due to the disposal of the "Assets held for sale and disposal groups" item. Trade receivables amounted to €5,161 million as of December 31, 2018, thus slightly below the value reported in the adjusted opening statement of financial position of €5,251 million. This was offset by the increase in inventories by €199 million to €3,915 million (2017 adjusted: €3,716 million).

Non-current assets decreased by €232 million to €16,297 million (2017 adjusted: €16,065 million). This decline mainly resulted from the reduction of intangible assets from €7,330 million (adjusted previous year figure) to €7,205 million due to write-downs of undisclosed reserves identified in the context of the purchase price allocation from the TRW acquisition.

Investments in property, plant and equipment

In the past fiscal year, investments in property, plant and equipment amounted to €1,586 million. The investment ratio of 4.3% of sales was above the prior-year level of 3.7%.

INVESTMENTS BY REGIONS



Of the capital expenditure, 52.6% was spent on payments in advance and construction in progress, 32.4% was spent on technical equipment and machines, 10.7% on other equipment, factory and office equipment, and 4.3% on land and buildings.

In geographical terms, the capital expenditures focused on Europe (53%), followed by North America (24%) and Asia-Pacific (20%).

The capital expenditure mainly related to the expansion of capacities for existing products and the ramp-up of new products. To this end, capital expenditure went into transmission applications (including hybridization), electric traction drives, electronics, chassis systems, damper modules, brakes and steering systems as well as occupant safety. In addition, capital was spent on the construction or the expansion of production and development buildings in existing locations (e.g. Eger (Hungary), Levice (Slovakia) and Klasterec (Czech Republic)) as well as in new locations (e.g. Pancevo (Serbia)).

Capital structure and financing

Financial liabilities amounted to €5,070 million as of December 31, 2018 (2017: €6,446 million). Without considering the change of derivative financial instruments, there was a reduction in gross debt by €1,370 million, which reflects the continuation of the consistent deleveraging strategy in the past fiscal year. The remaining financial liabilities derive primarily from the financing of the TRW acquisition in May 2015 and are largely fixed interest-bearing. The financial instruments issued in this context are euro and US dollar-denominated corporate bonds with final maturities from 2020 to 2025 and a nominal amount as of the reporting date of €1,075 million for the euro bonds and $2,247 million for the US dollar bonds (2017: €2,225 million and $2,247 million) and bonded loans with final maturities from 2019 to 2022 and a nominal amount of €894 million (2017: €1,218 million).

The reduction of the euro-denominated corporate bonds results from a termination made in November 2018 of a tranche with a nominal amount of €1,150 million originally maturing in 2019. A tranche of the bonded loans amounting to €325 million was repaid in the past fiscal year. The syndicated loan was refinanced in 2016 and had a remaining amount of €3.0 billion in form of a revolving credit line, which was completely unused as of the reporting date. A contractually agreed extension option was exercised, so that the credit line now has a residual term until July 2023. In addition, a variable interest-bearing loan in the amount of €500 million was taken out at the European Investment Bank in the past fiscal year. The loan has to be repaid in 2024 at the latest.

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 has company and bond ratings of Baa3 with a stable outlook from Moody's and BBB- from Standard and Poor's, also with a stable outlook. Standard & Poor's raised the rating by one notch compared to the previous reporting date. Accordingly, ZF received an investment grade rating from both rating agencies.

Trade payables amount to €5,507 million (2017 adjusted: €5,591 million) as of the reporting date.

Within the framework of the corporate goal to be financially independent, ZF is aiming at a stable investment grade rating

Apart from prepayments received from customers for development projects and tools, current and non-current contract liabilities amounting to €1,256 million (2017 adjusted: €1,002 million) mainly include outstanding customer credits. The liabilities of the Global Body Control Systems Business Unit that were previously reported under liabilities of disposal groups are no longer included in the statement of financial position since the disposal was completed on April 27, 2018. Provisions for pensions amount to €4,065 million as of December 31, 2018 (2017: €3,851 million). The increase is largely attributable to the changed interest rates in Germany and the use of new mortality tables.

As of December 31, 2018, Group equity, including non-controlling interests, amounted to €7,441 million, compared to €6,890 million in the adjusted opening statement of financial position. The equity ratio improved to 27.5% (2017 adjusted: 24.7%). Equity mainly increased due to the net profit after tax in the amount of €965 million. Dividends paid to the shareholders of ZF Friedrichshafen AG (€195 million, 2017: €50 million) and to holders of non-controlling interests (€66 million, 2017: €72 million) reduced equity.

Financial position

The first-time application of IFRS 15 (Revenue from Contracts with Customers) resulted in a reduction of the cash flow from operating activities by approximately €200 million due to the changed accounting of customer tools. In addition, there was a corresponding decrease of expenditures in the cash flow from investing activities. The effects on the statement of cash flows for the year 2018 are presented in the notes to the consolidated financial statements in the "Accounting policies" section in the paragraph "Changes in accounting policies."

Taking into account effects of exchange rate changes in a total amount of €7 million, the cash position was reduced in the year under review from €1,324 million to €922 million as of year-end.

A positive effect came from the cash flow from operating activities of €2,389 million which declined over the previous year. Material influencing factors were higher expenditures for research and development as well as higher material prices and an overall lower working capital contribution.

The cash flow from investing activities amounted to €-842 million. In 2017, this figure amounted to €-1,644 million. In the current fiscal year 2018, the figure includes the cash inflow from the sale of the Global Body Control Systems Business Unit. As a result, the free cash flow amounts to €1,547 million compared to €1,787 million in 2017. The free cash flow adjusted for company acquisitions and disposals of €656 million reached €891 million (2017: €1,818 million).

CASH FLOW STATEMENT

in € million	2018	2017
Cash flow from operating activities	2,389	3,431
Cash flow from investing activities	– 842	– 1,644
Free cash flow	**1,547**	**1,787**
Cash flow from financing activities	– 1,942	– 1,950
Change in cash position	**– 395**	**– 163**
Cash position at the beginning of the fiscal year	1,324	1,627
Changes in cash position from exchange rate effects	– 7	– 140
Cash position at the end of the fiscal year	**922**	**1,324**

The cash flow from financing activities amounted to €-1,942 million in the past fiscal year (2017: €-1,950 million). The cash outflow in fiscal year 2018 is attributable, in particular, to the redemption of financial debt within the context of the de-leveraging strategy. The balance from repayments and new borrowings of financial debt amounted to €-1,458 million (2017: €-1,451 million). Of that amount, €-1,150 million refers to the early repayment of a euro bond as well as €325 million to the redemption of a tranche of a bonded loan. Interest paid and transaction costs declined from €377 million to €230 million in the fiscal year 2018, primarily due to the reduced debt level.

The net financial position was €-4,098 million (2017: €-5,076 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. Thus, the net financial position improved by €978 million compared to the prior year.

FORECAST, OPPORTUNITIES AND RISK REPORT

Risk management system

ZF's opportunities and risks culture is focused on sustaining the Group's continued existence and increasing its value. Our risk management system aims to identify and take opportunities as early as possible while preempting risks that could adversely affect the value of our activities by identifying them early, assessing them appropriately and initiating suitable management measures. ZF defines risk as any event that may result in a negative deviation from the business plan. In contrast, opportunities are events that may result in the Group exceeding its targets.

The Board of Management is responsible for the risk management system and reports to the Supervisory Board and the Audit Committee about the identified opportunities and risks on a regular basis but also on an ad hoc basis as situations arise. The Supervisory Board is responsible for monitoring the Board of Management and therefore oversees the effectiveness of the risk management system. The implementation of the ZF risk management system is regularly audited in terms of compliance by Corporate Audit. In addition, the external auditors check ZF's early risk detection system as part of the annual Group audit.

ZF's risk management system is set out in a ZF Group directive which can be accessed by all employees. The directive describes responsibilities and processes of the risk management system. The directive is subject to regular review and updating and is binding for all ZF Group companies.

The ZF Friedrichshafen AG risk management system established by the Board of Management and implemented across all ZF companies lays down a Group-wide methodology that is integrated in the planning, management and reporting processes of all operational reporting units and corporate function departments. Weighing up opportunities and risks is an integral part of all corporate decisions and therefore of the day-to-day management in the ZF Group's operational reporting units.

Risks are captured, assessed and tracked quarterly by the reporting units worldwide. The identified risks are summarized at division and Group level and tracked in coordination with the responsible corporate function department.

The ZF risk management system takes account of risks in terms of their probability of occurrence and potential financial impact in relation to the internal profit indicators in the business plan, where these risks exceed a threshold defined by the Board of Management. Opportunities are included if they have a direct material link to a risk.

Risks that could jeopardize the continued existence of the Group or one of its companies and major risks that exceed a defined threshold are immediately brought to the attention of the responsible person at division and Group level via an ad-hoc reporting process. This process enables ZF to initiate effective risk control measures in a timely manner. Timely reporting and the risk management system are established, continuous tasks within the Group. The ongoing analysis of identified risks and opportunities increases risk awareness inside the organization and enables continuous improvement.

Based on our current assessment, the risks classed as significant to the future development of the ZF Group are described below. Risks that are subject to regular reporting essentially arise in the areas: quality, procurement and sales. Risks that arise out of transactions relevant under taxation law and other legislation are also reported. Group risk management also identifies latent risks for the ZF Group.

Major opportunities are also listed and analyzed. They are then actioned if substantiated. Risks and opportunities are not set off against each other.

Risk Report

External risks

External risks to the ZF Group arise in connection with external developments over which the company has no influence. General economic conditions are vital to the Group's commercial success. Potential turbulence on the financial markets, political upheaval and structural weaknesses in individual countries can lead to unfavorable global market developments. Two such examples are the potential impact of Brexit and of the NAFTA negotiations. This is exacerbated by protectionist measures taken by individual countries trying to protect or improve their competitiveness on the global markets. Obvious examples of this are increased market access barriers, such as higher import duties or more complicated certification processes in order to reduce imports. These risks to economic development can have a negative impact on our sales, profitability and financing conditions, especially in Europe, the USA and China, which are among our key sales markets. Fiercer competition may also adversely affect sales development and sales prices.

In addition to activities in the traditional markets, ZF is also operating more widely in growth markets. Economic downturns in these countries may lead to declining sales and payment defaults. If necessary, market slowdowns in individual regions and countries can be counteracted by volume shifts to other markets. Moreover, the fierce competitive environment poses a latent risk to the global development of the industry, especially in the Asian market, which is vital to ZF. ZF decisively limits these kinds of market risks by specifically promoting a broader, more diverse product portfolio.

Sales risks

Risks to the economic development of ZF's various customer industries, particularly the automotive markets, are mainly influenced by the global economic situation described above. In principle, all ZF Group business units and divisions are at risk from changing market conditions or from markets where the scenario improves or deteriorates in relation to our operational planning. Risks may ensue from the various market developments in the product segments and regions as well as from the ramp-up of new products. Disruptive technologies constitute further potential risk areas alongside price and competitive pressure.

Uncertainties about the future of the traditional combustion engine – especially diesel technology and its unknown legal implications – are shifting end-customer demand in a way that may affect sales in this business area, with a resulting decline in ZF's earnings. Furthermore, outstanding authorizations according to the new WLTP (Worldwide Harmonized Light Vehicle Test Procedure) test cycle may pose a potential risk to volumes of automotive manufacturers.

Low growth rates in the Chinese market are among the risks in the Car Powertrain Technology, Car Chassis Technology and Active & Passive Safety Technology Divisions. A fall in orders due to insourcing coupled with increasing price pressure call for the systematic implementation of cost-cutting measures in the Commercial Vehicle Technology Division. In the spare parts business, more mergers and the associated increase in the market share of certain wholesalers is intensifying the already high price pressure. This applies especially to merchandise.

ZF resolutely combats these risks through proactive risk management by continuously monitoring sales markets, conducting market research and exchanging information with the regional contacts. Requirements-oriented production planning and the logistics early-warning system also help us respond flexibly to fluctuations in demand.

Quality risks

In the case of very high-volume ZF products such as the 8HP and 9HP automatic transmissions, faulty products may translate into substantial financial losses on account of warranty obligations. ZF is also exposed to this risk in the field of safety-related products such as seat belt anchorage systems and airbags. Quality issues with supplied parts installed in our products may also require modifications and reworking, which in turn may entail significant costs. Any claims which might ensue from risks such as these are checked, and product-specific measures are introduced if required. Despite the increasing complexity of its products, the company continually strives to maintain and deliver the best possible quality. ZF should succeed in this endeavor with the aid of the certified ZF quality management system and by means of consistent quality checks and optimized process workflows.

Procurement risks

Procurement in automotive business areas is specifically exposed to risks from fluctuations in raw material and energy prices. In this regard, volatile steel and aluminum prices represent a particular challenge for ZF. Increasing raw material prices lead to a significant rise in material costs. Systematic market investigation and targeted analyses help ZF respond early to unfavorable index developments on the raw materials and energy markets. In addition, risks may arise due to financial problems affecting key suppliers, capacity shortages caused by supply disruptions, and the underutilization of supplier production capacity. Sophisticated supplier risk management aims to prevent any hiatus in supplies due to a supplier's financial instability or market launch, quality and logistics problems, to provide supply alternatives and thus to minimize ZF's general risk position in relation to suppliers.

Research and development risks

Due to ever-increasing technical complexity, stringent emissions, consumption and safety regulations, and the ZF Group's high quality requirements, product introduction and manufacture, especially in the automotive sector, always involves development and technology risks. In addition, ZF currently generates a substantial proportion of its sales with products based on the combustion engine driveline. The rapid progressive electrification in the passenger car and commercial vehicle drive segment may jeopardize the current strong market position. ZF combats this long-term development through the targeted expansion of forward-looking technologies and a consistent focus on investment measures in both these and interface technologies.

Digitalization and information technology risks

Information technology (IT) risks ensue from ongoing digitalization and the associated increasing technical complexity in terms of connectivity between machines, locations, products and systems. To provide appropriate protection for people, commercial and personal information and data, and tangible and intangible assets, ZF has an integrated security policy. This is put into practice through a Corporate Security Management System. In addition, data protection and security requirements have increased significantly since the General Data Protection Regulation came into force in May 2018. Data protection is a top priority for the ZF Group, including sensor and vehicle data such as those captured from driver assistance systems and autonomous driving.

Unauthorized access to IT systems, cybercrime, product piracy, industrial espionage or social engineering may cause ZF huge losses. ZF aims to avert these risks with preventive technologies and by raising awareness in order to safeguard its products and IT infrastructures. A picture of the current situation relevant for ZF is drawn by permanently monitoring the security situation using internal tools and external sources of information. For any security-relevant events, respective alarm and emergency tools are implemented which allow for an immediate reaction to emergency cases 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, controlled and, if necessary, hedged as part of central risk management in order to safeguard the ZF Group's financial stability. Guidelines and provisions regarding the individual risk types have been put in place which determine how to assess the particular risk. Wherever possible and expedient, derivative financial instruments to hedge existing underlying or planned transactions are used to manage interest and currency risks in particular. Derivative financial instruments with plain vanilla character are used. Only hedges that refer to a specific underlying transaction are allowed. If the prerequisites of hedge accounting are met, they will be actively used. The financing of the acquisition of TRW Automotive Holdings Corp. in 2015 and the resulting cash flows between the eurozone and US dollar area in particular may lead to risks that cannot be hedged in their entirety. In order to manage these risks more effectively, a new Group strategy was developed in 2017 to hedge currency risks and has been implemented gradually since 2018.

In order to reduce counterparty risks within finance, all transactions are carried out only with banks having a first-class credit rating and within centrally stipulated limits. The necessary financial flexibility is guaranteed by means of central cash pooling with sufficient cash and confirmed credit lines with matching maturities. The financial stability of our suppliers and customers is continually checked; if necessary, measures are initiated to safeguard the supply chain or receivables.

Risks are also associated with the 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 syndicated loan or terminate the credit line. ZF Friedrichshafen AG has complied with the financial covenants at all times, including as of the reporting date. From a current perspective, ZF has no reason to believe that these obligations will be breached in future.

Compliance, legal and tax risks

The automotive industry is subject to comprehensive national regulation worldwide. Political and legal framework conditions have a significant influence on our result. We make every effort to minimize and control the legal risks. However, in the context of its operational activities, ZF is always exposed to the risk of legal disputes and possibly also investigations by authorities.

Unlawful conduct could harm the company's image, weaken our strong market position and result in financial losses in the form of payment or other liabilities. In particular, national antitrust authorities are increasingly focusing on investigating infringements of competition rules, which may result in fines. ZF minimizes these risks through a comprehensive Group-wide compliance management system. Prevention, detection and response in relation to potential breaches are key components of this.

Back taxes might be claimed as a consequence of regular audits by the tax authorities in the various countries in which our reporting units operate. Tax laws and circumstances relevant to tax, especially in relation to acquisitions, could be interpreted and assessed in a different manner by local tax authorities than by ZF.

Opportunities Report

Industry environment opportunities

Our global activities in a disruptive industry are always opening up new opportunities. Systematically identifying and leveraging these is a key element of ZF's sustainable growth policy.

Megatrends such as digitalization, electrification and urbanization are changing the mobility industry even faster than expected, raising new challenges for ZF. Consequently, we adjusted our "Next Generation Mobility" strategy. Our wide range of products and services ensures that we are as fit as possible in the technology fields of vehicle motion control, integrated safety, automated driving and electric mobility to respond in good time and appropriately to the associated challenges and thus reap the benefits. We are a systems supplier, and as such we play a role in shaping the next generation of mobility. ZF has already demonstrated its comprehensive systems expertise with the e.GO Mover project. This autonomous people und cargo mover for the urban mobility needs of the future will start operating in two German cities in 2019 as part of a new joint venture. ZF supplies electric drive systems, steering systems and brakes as well as automated driving functions, which are controlled by the ZF ProAI central computer, using artificial intelligence and ZF sensors.

The ZF Group's global presence in almost every industrial market in both developed and developing countries means that we also benefit from growth trends. Positive economic developments over and above general expectations in our key sales markets would result in additional Group sales potential. We intend to play a part in the dynamic development of these markets. In order to capitalize on the resulting opportunities, ZF aims to grow where the customer base is expanding. In particular, ZF is expanding its market presence in the growth markets in Asia. 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

Above-market organic sales growth, ambitious working capital management, the systematic implementation of cost engineering projects, improved material price structures and the expansion of global structures will drive further improvements in our operational performance.

Equally, organizational change is a source of opportunity. ZF's organizational structure is aligned with market developments in order to reduce complexity, standardize internal processes and thus make the Group more responsive and flexible. The new, unified sales structure across the Group aims to boost cooperation and coordination between the divisions and the organization, making the company more customer-oriented. The reorganization of the Passive & Active Safety Technology Division into three strong, agile new divisions that report directly to the Board of Management presents some specific opportunities. ZF expects this restructuring to strengthen its strategic position by both deepening and widening its technology and product portfolio in active safety systems, passive safety systems, electronics and ADAS.

Research and development opportunities

New technology trends such as the connected car and ADAS are becoming increasingly ready for market and open up new opportunities, as do the advancing developments in electrification of the driveline. Consequently, over the next five years, ZF will invest over €12 billion in electric mobility and autonomous driving as well as other interface and forward-looking technologies, underlining the strategic importance of these areas of expertise for the Group.

ZF will invest more than €12 billion in electric mobility and autonomous driving within the next five years

The upgrading of testing capacities bears testimony to these trends. For example, test tracks are being built and converted in order to provide the optimum conditions in which to test and validate autonomous driving features. In order to compile complex, real data for subsequent simulation, in 2018, ZF joined forces with the institute of training, knowledge and technology transfer (IWT) at Ravensburg University of Cooperative Education and with the city of Friedrichshafen, to operate a test track for automated driving through downtown Friedrichshafen.

Opportunities also arise from continuously developing new and existing products, extending development expertise and setting up new locations both at home and abroad, which can, in turn, further improve our competitiveness on the global market.

Digitalization and information technology opportunities

Advancing digitalization and Industry 4.0 with its intelligent networking between machinery and factories via the Internet of Things (IoT), present opportunities for ZF and its customers to streamline processes and therefore increase efficiency, make more intensive use of data, and network intelligent systems. The "North Star" project is designed to drive forward the digital transformation of the ZF Group including all its divisions and central functions, and to enable a culture of open innovation.

Digitalization and the IoT make it possible for ZF to use its technologies in all mobility and industrial applications. Given the increasing importance of digital add-ons in vehicle and industry applications, ZF is expanding its existing business model with digital products and services so as to provide intelligent mechanical solutions. In addition, opportunities will arise from scaling up our mobility concepts and services.

Board of Management overall statement on the opportunity and risk situation

In order to successfully tackle the current opportunities and risk situation, ZF's risk management system is subject to continuous further improvements.

The Opportunities Report represents a consolidated observation of significant opportunities in the period under review. In as far as economically and technically feasible and within the sphere of influence of the ZF Group, we do our utmost to seize said opportunities.

An established risk management system is used to combat the aforementioned risks at ZF.

Based on information available at present as well as the individual risks illustrated in the financial statement and set out in this report, no additional market-related opportunities and risks can be identified which may substantially influence the ZF Group's results of operations, net assets and financial position, or jeopardize its continued existence in fiscal year 2019. The Group's financial situation is stable; the need for financial means is covered by existing liquidity and available credit lines.

Forecast Report

The future-related statements made in the following sections of the forecast report are based on ZF's current assumptions and expectations.

This also includes market data and analyses from external service providers that are reliable according to ZF. The existing opportunities and risks as explained in detail in the opportunities and risk report were taken as a basis for the following assessments and forecasts. ZF has no influence on many of these factors, so the actual business development may deviate from the forecast.

Slowing global economic momentum

Key economic indicators show that 2018 exceeded the previous peak in the current economic cycle. At the end of 2018, the quarterly ifo World Economic Climate indicator fell noticeably for the third consecutive time. In particular, expectations for the next six months have deteriorated considerably. Global GDP growth hit 3.7% – the highest rate in eight years. Business development is expected to cool slightly with forecast growth of 3.5% in 2019 and 2020, a trend that was already apparent by the fourth quarter of 2018.

Escalating trade conflicts may afflict the global business climate over the next few years

In the short term, high global employment and the favorable political environment will continue to drive growth via domestic demand. However, escalating trade conflicts, more restrictive conditions on the financial markets and rising oil prices may have a negative impact on the global business climate over the next few years. In particular, if the trade conflict between China and the USA intensifies, prices may rise and global trade growth may suffer a slowdown. Furthermore, high risks are threatening certain newly industrialized countries, primarily Turkey and Argentina, which have significant holdings of liabilities denominated in foreign currencies. Falling industrial production, incoming orders and retail sales also point to an impending slowdown in current economic growth.

Industry climate moves sideward

As regards the global production of **passenger cars and light commercial vehicles**, expectations for 2019 are somewhat cautious. Output is expected to slightly decrease compared to 2018. Production in Europe and North America is anticipated to weaken, but to remain at a relatively high level. Production has been sluggish in China, more so since September 2018 with double-digit monthly falls. As a result, the 2019 production forecast was significantly downgraded. After the downturn seen in 2018, further decline remains a risk.

Unless the Chinese government reintroduces tax breaks, the outlook for the next few years may be far more muted than of late. However, on a positive note, the Russian and Brazilian markets, both of which are emerging from their respective crises, should continue to grow, while India is set to maintain the upward trend of previous years.

Global production of **heavy commercial vehicles** is expected to fall slightly by 2%. In particular, production in Europe, the USA and China is expected to slow compared to 2018. In Europe, it appears that the commercial vehicle boom has topped out, with expectations of a slight production decline of 2%.

In China, the downward correction goes further. After a strong 2017, a year-on-year fall of 6% is likely. However, the "Blue Sky" campaign to replace Euro-3 and Euro-4 engines with newer technologies is lending momentum to the declining market. The USA market, after a production upswing of 12% in the previous year, has further potential of growth in the first half of the year, but a decline is expected for the second half.

In **agricultural machinery** the market is still contracting, with a 3% fall in global production. In particular, a significant production downturn of 12% or more is expected in China, while Europe is estimated to witness a slight decline of 3% and North America is basically moving sideways. Brazil in the post-crisis period will stay on the growth path. The outlook for **construction machinery** is similar. Growth has stalled but all markets are largely stable, except for China, where a downward correction of 5% is expected after the sharp production increases of the previous years. The **marine transmissions** markets should pick up slightly, while **economic activity in rail drives** continues to stagnate.

In contrast, the **wind turbine gearbox** market is giving off very positive signals. Market expectations for 2019 have climbed by double digits based on pent-up demand and postponements from the previous year, an upward trend in offshore installations, pressure to modernize ageing facilities in order to reduce energy costs, and repowering. While only moderate growth is expected in the Chinese market, some of the other market forecasts are more than acceptable.

Future corporate development

Assuming the above-mentioned market developments and stable currency exchange rates, ZF is expecting Group sales of around €37–38 billion for 2019. The increase in sales is based on stable development in markets relevant to the Group and on expanding our business with existing and new customers and products.

In line with the forecast, the Car Powertrain Technology Division expects to maintain last year's sales level in the fiscal year 2019. This is attributable to consistently high demand from existing and new customers for 8HP and 9HP transmission applications.

DIVISIONAL STRUCTURE AS OF JANUARY 1, 2019

Car Powertrain Technology	Car Chassis Technology	Commercial Vehicle Technology	Industrial Technology	E-Mobility	Aftermarket	Electronics and ADAS	Passive Safety Systems	Active Safety Systems

The outlook for the Car Chassis Technology Division is also cautiously optimistic. Sales of chassis components and damper modules are expected to outperform the market, primarily in Europe and North America.

Contrary to overall market expectations, the Commercial Vehicle Technology Division is also forecasting a considerable boost in sales for 2019 in Asia and South America due to ongoing intense customer interest in product solutions for automated manual transmissions.

Industrial Technology Division forecasts increasing sales again for the 2019 fiscal year, mainly in Asia and India. This dynamic growth is being driven particularly by the Off-Highway Systems and the Wind Power Technology Business Units. In the process, the Wind Power Technology Business Unit is profiting from the further expansion of wind power as an alternative to fossil fuels for generating electricity.

The growth seen in the E-Mobility Division reflects the rising demand for products in conjunction with electrification of the driveline. Different product ramp-ups, including electric axles, power electronics applications and electric shift systems are the drivers behind the dynamic sales growth.

The Aftermarket Division anticipates that sales of spare parts and services will match last year's level in all regions.

Since January 1, 2019, following the Group's strategic realignment, the three divisions: Electronics and ADAS, Passive Safety Systems and Active Safety Systems will be considered separately in reporting. The strongest growth drivers are brake controls product solutions and steering wheel systems. Integral vehicle safety applications, such as airbag and seatbelt systems, are also showing signs of highly dynamic growth. ADAS applications such as camera and radar systems are expected to show double-digit sales growth.

In addition to improving operating profit quality and concentrating on core business, the focus will be on expanding technologies for autonomous driving, e-mobility and integrated safety.

Against this backdrop, ZF aims for an adjusted EBIT margin of between 5.0 and 5.5%. In 2019, ZF expects to invest approximately 6% of sales in property, plant and equipment. Based on the planned development of the operating business, the intended investments as well as the continuation of consistent working capital management, the aim is to achieve free cash flow adjusted for company acquisitions and disposals of around €1 billion for 2019.

The headcount at ZF is set to rise slightly in line with forecast corporate growth and the further expansion of development activities.

Given the different development of the regional markets and divisions, ZF demonstrates sound organic growth, which is above average compared with the rest of the market, in the short and medium term when analyzing the overall picture. The Group is tapping into new markets, rolling out new future-oriented products and underpinning its technology leadership through sustainable investment in research and development.

Taking into account the aforementioned factors, the trust of customers, suppliers and business partners in the collaboration with ZF as well as the committed, qualified employees willing to deliver outstanding performance and embrace change, ZF can rise to the upcoming challenges and look into the future with optimism.

Friedrichshafen, March 8, 2019
ZF Friedrichshafen AG
The Board of Management

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CONSOLIDATED STATEMENT OF PROFIT OR LOSS

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2018

in € million	Notes	2018	2017
Sales	1	36,929	36,444
Cost of sales	2	30,836	29,895
Gross profit on sales		**6,093**	**6,549**
Research and development costs	8	2,158	2,230
Selling expenses		1,290	1,289
General administrative expenses		1,303	1,326
Other income	3	651	494
Other expenses	4	612	475
Result from associates	5	43	49
Other net result from participations	5	104	−1
EBIT		**1,528**	**1,771**
Financial income	6	267	313
Financial expenses	6	570	675
Net profit or loss before tax		**1,225**	**1,409**
Income taxes	7	260	242
Net profit or loss after tax		**965**	**1,167**
thereof shareholders of ZF Friedrichshafen AG		902	1,084
thereof non-controlling interests		63	83

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2018

in € million	Notes	2018	2017
Net profit or loss after tax		**965**	**1,167**
Line items that will be reclassified in the consolidated statement of profit or loss			
Foreign currency translation differences			
Gains arising during the year (2017: losses)		103	−716
Reclassification adjustments for gains/losses included in profit or loss		−16	0
Mark-to-market of securities			
Losses arising during the year		–	−30
Mark-to-market of cash flow hedges			
Losses arising during the year (2017: gains)		−15	62
Reclassification adjustments for gains/losses included in profit or loss		4	17
Income taxes		4	−22
		80	**−689**
Line items that will not be reclassified in the consolidated statement of profit or loss			
Mark-to-market of securities		−19	–
Actuarial losses (2017: gains) from pension obligations		−319	393
Income taxes		92	−85
		−246	308
Other comprehensive income after tax	25	**−166**	**−381**
Total comprehensive income		**799**	**786**
thereof shareholders of ZF Friedrichshafen AG		737	717
thereof non-controlling interests		62	69

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

ZF FRIEDRICHSHAFEN AG AS OF DECEMBER 31, 2018

Assets in € million	Notes	Dec. 31, 2018	Dec. 31, 2017
Current assets			
Cash and cash equivalents		922	1,315
Financial assets	9	84	66
Trade receivables	10	5,161	5,303
Other assets	11	482	531
Contract assets	12	82	–
Income tax receivables		89	28
Inventories	13	3,915	3,058
		10,735	**10,301**
Assets held for sale and disposal groups	24	0	904
		10,735	**11,205**
Non-current assets			
Financial assets	14	945	960
Associates	15	454	417
Other assets	11	102	246
Contract assets		109	–
Intangible assets	16	7,205	8,039
Property, plant and equipment	17	6,630	6,194
Deferred taxes	7	852	772
		16,297	**16,628**
		27,032	**27,833**

Liabilities and equity in € million	Notes	Dec. 31, 2018	Dec. 31, 2017
Current liabilities			
Financial liabilities	19	606	1,396
Trade payables		5,467	5,936
Other liabilities	20	1,494	1,867
Contract liabilities	21	899	–
Income tax provisions		294	338
Other provisions	22	812	690
		9,572	**10,227**
Liabilities of disposal groups	24	0	215
		9,572	**10,442**
Non-current liabilities			
Financial liabilities	19	4,464	5,050
Trade payables		40	74
Other liabilities	20	98	396
Contract liabilities	21	357	–
Provisions for pensions	23	4,065	3,851
Other provisions	22	511	613
Deferred taxes	7	484	622
		10,019	**10,606**
Equity			
Subscribed capital	25	500	500
Capital reserve	25	386	386
Retained earnings[1]	25	6,262	5,600
Equity attributable to shareholders of ZF Friedrichshafen AG		**7,148**	**6,486**
Non-controlling interests		293	299
	25	**7,441**	**6,785**
		27,032	**27,833**

[1] Assets held for sale and disposal groups account for €0 million (2017: €8 million).

CONSOLIDATED STATEMENT OF CASH FLOWS

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1 TO DECEMBER 31, 2018

in € million	Notes	2018	2017
Net profit or loss before income tax		1,225	1,409
Depreciation/Reversal of impairments for intangible assets and property, plant and equipment		1,817	2,092
Results from deconsolidation		−83	0
Changes in non-current provisions made through profit or loss		66	−109
Income taxes paid		−563	−539
Results from the disposal of intangible assets and property, plant and equipment		−9	6
Net result from participations and net financial result		156	314
Increase in inventories		−264	−391
Decrease (2017: increase) in trade receivables		93	−478
Increase in other assets		−95	−92
Decrease (2017: increase) in trade payables		−94	994
Increase in other liabilities		140	225
Cash flow from operating activities		**2,389**	**3,431**
Expenditures for investments in			
intangible assets		−62	−356
property, plant and equipment		−1,586	−1,350
associates and other participations		−43	−36
financial receivables		−47	−7
Proceeds from the disposal of			
intangible assets		10	6
property, plant and equipment		46	35
associates and other participations		5	0
financial receivables		3	16
Cash inflow from the sale of consolidated companies	28	766	0
Dividends received		47	18
Interest received		19	30
Cash flow from investing activities		**−842**	**−1,644**

in € million	Notes	2018	2017
Dividends paid to ZF Friedrichshafen AG shareholders		−195	−50
Dividends paid to holders of non-controlling interests		−40	−72
Repayments of borrowings	29	−4,800	−2,810
Proceeds from borrowings	29	3,315	1,359
Proceeds from capital increases through holders of non-controlling interests		7	0
Interest paid and transaction costs		−229	−377
Cash flow from financing activities		**−1,942**	**−1,950**
Net change in cash		**−395**	**−163**
Cash position at the beginning of the fiscal year		1,324	1,627
Effects of exchange rate changes on cash		−7	−140
Cash position at the end of the fiscal year	27	**922**	**1,324**

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

ZF FRIEDRICHSHAFEN AG FOR THE PERIOD DATING JANUARY 1, 2017 TO DECEMBER 31, 2018

			Retained earnings							
in € million	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	Equity attributable to shareholders of ZF Friedrichshafen AG	Non-controlling interests	Group equity
Jan. 1, 2017	**500**	**386**	**5,887**	**280**	**−2**	**−69**	**−1,166**	**5,816**	**299**	**6,115**
Net profit or loss after tax			1,084					1,084	83	1,167
Other comprehensive income after tax				−702	−29	56	308	−367	−14	−381
Total comprehensive income	**0**	**0**	**1,084**	**−702**	**−29**	**56**	**308**	**717**	**69**	**786**
Dividends paid			−50					−50	−72	−122
Changes in the basis of consolidation			3					3	3	6
Dec. 31, 2017	**500**	**386**	**6,924**	**−422**	**−31**	**−13**	**−858**	**6,486**	**299**	**6,785**
Jan. 1, 2018	**500**	**386**	**6,924**	**−422**	**−31**	**−13**	**−858**	**6,486**	**299**	**6,785**
Change in accounting policies			107					107	−2	105
Jan. 1, 2018 (adjusted)	**500**	**386**	**7,031**	**−422**	**−31**	**−13**	**−858**	**6,593**	**297**	**6,890**
Net profit or loss after tax			902					902	63	965
Other comprehensive income after tax				88	−19	−7	−227	−165	−1	−166
Total comprehensive income	**0**	**0**	**902**	**88**	**−19**	**−7**	**−227**	**737**	**62**	**799**
Changes in the basis of consolidation								0	7	7
Dividends paid			−195					−195	−66	−261
Acquisition of non-controlling interests			8					8	−8	0
Capital increase in exchange for company shares								0	7	7
Other changes			5					5	−6	−1
Dec. 31, 2018	**500**	**386**	**7,751**	**−334**	**−50**	**−20**	**−1,085**	**7,148**	**293**	**7,441**

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

OF ZF FRIEDRICHSHAFEN AG FOR 2018

Fundamental Principles

Corporate structure

ZF Friedrichshafen AG is a corporation, of which 93.8% is owned by the Zeppelin 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 position, 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 March 8, 2019, and forwarded them to the Supervisory Board.

The consolidated financial statements, which were prepared as of December 31, 2018, 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 pursuant to Sec. 315e para. 3 HGB (German Commercial Code).

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

In the fiscal year 2018, the following new and/or amended standards were applied for the first time:

- IFRS 15 „Revenue from Contracts with Customers"
- Clarification of IFRS 15 „Revenue from Contracts with Customers"
- IFRS 9 „Financial Instruments"
- Amendments to IFRS 4 „Applying IFRS 9 Financial Instruments With IFRS 4 Insurance Contracts"
- Amendments to IAS 40 „Transfers of Investment Property"
- IFRIC 22 „Foreign Currency Transactions and Advance Consideration"
- Improvements to IFRS 2014 – 2016

The objective of IFRS 15 is to aggregate the revenue recognition rules included in various standards and interpretations and, on the basis of a uniform five-step revenue recognition model, define basic principles applicable to all industries and all types of sales transactions.

IFRS 9 contains new provisions for the classification and measurement of financial assets and financial liabilities and replaces the previous IAS 39. In addition, the standard includes new provisions for hedge accounting and comprises revised provisions in relation to the impairment of financial instruments.

The impact of IFRS 15 and IFRS 9 on accounting within the consolidated ZF Group is presented in the „Changes in accounting policies" section.

The publication of IFRIC 22 clarifies which date is to be used to determine the exchange rate for the translation of foreign currency transactions that involve the receipt or the payment of advance consideration. The clarification affects transactions of the ZF Group only to a minor extent and therefore does not significantly influence the presentation of 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.

Standard/ Interpretation	Title	Applicable pursuant to IFRS as of	Endorsement by EU	Expected impact
IFRS 3	Amendments to IFRS 3 "Definition of a Business"	Jan. 1, 2020	No	None
IFRS 9	Amendments to IFRS 9 "Prepayment Features With Negative Compensation"	Jan. 1, 2019	Yes	None
IFRS 16	Leases	Jan. 1, 2019	Yes	Detailed description below tabular overview
IFRS 17	Insurance Contracts	Jan. 1, 2021	No	None
IAS 1/IAS 8	Amendments to IAS 1 and IAS 8 "Definition of Material"	Jan. 1, 2020	No	Under review
IAS 19	Amendments to IAS 19 "Plan Amendment, Curtailment or Settlement"	Jan. 1, 2019	No	None
IAS 28	Amendments to IAS 28 "Long-Term Interests in Associates and Joint Ventures"	Jan. 1, 2019	Yes	None
IFRIC 23	Uncertainty over Income Tax Treatments	Jan. 1, 2019	Yes	None
Various	Improvements to IFRS 2015 – 2017	Jan. 1, 2019	No	None
	Amendments to References to the Conceptual Framework	Jan. 1, 2020	No	None

The listed standards and interpretations issued or revised by the IASB were not yet applied by ZF in the fiscal year 2018 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.

IFRS 16 replaces and changes the previous provisions of IAS 17 in relation to the accounting for leases by lessees. The distinction previously made pursuant to IAS 17 regarding the lessee between recognized obligations from finance leases and unrecognized obligations from operating leases is revoked and replaced by an accounting model for lessees that introduces mandatory recognition. The procedure set out in IAS 17 for finance leases is largely followed. Accordingly, as per IFRS 16, a liability in the amount of the present value of the future lease payment and a corresponding asset in form of a right-of-use asset have to be recognized. Pursuant to IAS 17, the future obligations from operating leases were subject to requirements as regards a disclosure in the notes. IFRS 16 only introduces exceptions for agreements with a term of up to one year and for assets that can be used independently, that are of low value and also in future do not affect the financial statements, similarly to the operating lease set out in IAS 17, and that are recognized directly in profit or loss. Accordingly, depreciation expense for the asset has to be presented separately from the interest expense on the liability for the right of use, with interest expenses being recognized as a component of the net financial result.

Based on the implementation of IFRS 16, the following material effects are expected:

- In contrast to the previous disclosure of the payment obligations from operating leases in the notes, the rights of use and the related liabilities have to be recognized in the balance sheet in future. The initial application of the standard is expected to result in an increase in financial liabilities and an increase in non-current assets in a similar amount.
- Expenses from operating leases were previously recognized in their full amount as part of the operating profit. In future, only the depreciation and amortization of recognized right-of-use assets are recorded in the operating profit, while the interest portion is recorded in the net financial result. This will result in an improvement of the EBIT, in an increase of the cash flow from operating activities as well as in a reduction of the cash flow from financing activities.
- Pursuant to IAS 17, non-exercised renewal options only had to be taken into account in the measurement of the financial liability from finance leases in specific cases. In contrast, IFRS 16 requires that periods covered by options are taken into account if certain prerequisites are met.
- ZF will not apply IFRS 16 for intangible assets (including software and licenses). These continue to be accounted for in accordance with IAS 38.

The transitional provisions of IFRS 16 permit both a fully retrospective and a modified retrospective initial application. Pursuant to the modified retrospective approach, lessees are not required to adjust comparative information for leases that were previously classified as operating leases. Instead, they have to recognize the cumulative effect from the first-time application of the new standard as an adjustment of the opening value of retained earnings in the statement of financial position at the date of first-time application. ZF will apply the modified retrospective method for the transition to IFRS 16 and will, to a great extent, make use of the practical expedients.

The application of IFRS 16 will result in an increase in total assets by an expected 2-3% in the opening statement of financial position for 2019.

The future application of the IFRIC 23 standard is not expected to have an impact on the net assets, financial position and results of operations of the consolidated ZF Group. The probable application has already been recognized in tax receivables and liabilities.

With the amendments to IAS 1 and IAS 8, the IFRS now provides a standardized and clearer definition of ‚material' with regard to information contained in financial statements. It is currently being investigated which effects the application of the amendments to IAS 1 and IAS 8 will have on the consolidated financial statements.

The Group currently 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, 34 German and 229 international subsidiaries controlled by ZF Friedrichshafen AG are included in the consolidated financial statements.

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

	Jan. 1, 2018	First-time consolidations	Legal changes	Deconsolidations	Dec. 31, 2018
Subsidiaries	289	8	−3	−31	263
of which German	35	3	−1	−3	34
of which international	254	5	−2	−28	229
Joint ventures	10	0	0	0	10
Associates	10	3	0	−2	11

Company disposals

On August 30, 2017, ZF concluded an agreement with Luxshare Limited to sell its Global Body Control Systems Business Unit after the Supervisory Board of ZF Friedrichshafen AG had granted its consent. The full transfer of the business unit was successfully completed on April 27, 2018. The transfer was implemented partly as a share deal and partly as an asset deal. In connection with the share deal, five companies left the Consolidated Group. The disposal led to a deconsolidation income of €83 million that was recognized under other income. The Global Body Control Systems Business Unit with its headquarters in Radolfzell (Germany) employs 6,000 people worldwide at 16 locations in eleven countries.

Other changes in the basis of consolidation

In the fiscal year 2018, the following companies were included in the consolidated financial statements of ZF Friedrichshafen AG for the first time:

in %	Share in capital
ASAP Holding GmbH, Gaimersheim, Germany	35
e.GO MOOVE GmbH, Aachen, Germany	46
ZF AP Holdings Inc., Livonia, USA	100
ZF Automotive Vietnam Co., Ltd., Haiphong, Vietnam	100
ZF Car eWallet GmbH, Berlin, Germany	98
ZF Europe Finance B.V., Amsterdam, Netherlands	100
ZF Gastronomie Service GmbH, Friedrichshafen, Germany	100
ZF Heli Drivetech (Hefei) Co., Ltd., Hefei, China	51
ZF Pegasus GmbH, Friedrichshafen, Germany	100
ZF Sachs Micro Mobility GmbH, Tübingen, Germany	48
ZF Serbia d.o.o., Pancevo, Serbia	100

The companies included for the first time in the basis of consolidation are primarily newly founded companies.

Furthermore, 28 companies were deconsolidated in 2018 as a result of merger or liquidation.

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, 2018, 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 towards 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, 2018	Dec. 31, 2017	2018	2017
US dollar	1.1450	1.1993	1.1808	1.1298
British pound	0.8945	0.8872	0.8847	0.8768
Chinese renminbi	7.8751	7.8044	7.8097	7.6290
Brazilian real	4.4440	3.9729	4.3015	3.6044
Mexican peso	22.4921	23.6612	22.6997	21.3294

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

Up to and including the fiscal year 2017, **sales** from the sale of products were recognized in accordance with IAS 18 and IAS 11, respectively, at the time of transfer of ownership or risk to the customer, when a price was agreed or could be determined and when payment was probable. Income from services was recognized according to the stage of completion if it was possible to reliably measure the amount of income and to reasonably expect an economic benefit from the business. From fiscal year 2018, 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 services and licenses 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 and changes in accounting policies.

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 Group will apply the new hedge accounting rules only at a later date. If the criteria for hedge accounting are met, they are accounted for as fair value hedge or cash flow hedge. If hedge accounting is not applicable, the derivative financial instruments are measured at their fair values and changes in fair value are reflected in profit or loss.

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.

Impacts on profit or loss resulting from hedging transactions that have been concluded in order to hedge risks relating to raw material price changes are shown under cost of sales. The profit and loss derived from foreign currency 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.

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.

Risk category	Risk	Probability of default (from ... to)	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.

Financial instruments measured at amortized cost mainly comprise current financial 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 – as previously under IAS 39 – 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 an external rating agency (Euler-Hermes). 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.

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 primarily 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 and presented separately in the consolidated statement of comprehensive income.

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. 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.

In accordance with the provisions on accounting for leases, economic ownership is attributed to the lessee if it bears substantially all of the risks and rewards associated with ownership. Lease agreements which meet these requirements are classified as finance leases. Leased assets are recognized at the commencement of the lease term at fair value or the lower present value of the minimum lease payments. The assets are depreciated on a straight-line basis over the expected useful life or the shorter term of the lease.

The discounted payment obligations resulting from the future leasing installments are recognized under financial liabilities.

In subsequent periods, leasing payments are divided into principal and interest payments. The interest portion is recognized through profit or loss in the net financial result. The principal payments reduce financial liabilities.

Lease and rent payments resulting from **operating lease** contracts are recognized as expenses in the consolidated statement of profit or loss on a straight-line basis over the duration of the lease term. The future burdens under operating lease relationships are disclosed under other financial obligations.

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.

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-year planning horizon. 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 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 10% (2017: 11% to 12%) and an unchanged growth rate of 1.5%. For perpetuity going beyond the three-year 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 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 affect long-service awards and semi-retirement obligations in particular. Provisions for employee long-service bonuses are calculated on an actuarial basis. 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 during the release phase. They are accrued on a pro-rata basis when the obligation arises.

Semi-retirement obligations are 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.

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 carryforwards 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** 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 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 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** and **property, plant and equipment,** 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 18), 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 10) is subject to judgment as regards the expected probability of default.

In accounting the **deferred tax assets** (Note 7), 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** (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 valuation of **provisions for pensions** (Note 23) is particularly based on assumptions as to discount rates, future pension developments and age shifts.

Determination of **warranty provisions** (Note 22) 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 22) 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.

Classification of assets and liabilities as **Assets held for sale and disposal groups as well as liabilities of disposal groups** (Note 24) is subject to judgments as regards the probability of successful sale of assets or business units.

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.

When preparing the consolidated financial statements, the underlying estimates were not subject to any major risks; therefore, no major adjustments to the assets and liabilities recognized in the consolidated statement of financial position are expected during the subsequent fiscal year.

Changes in accounting policies

ZF elected to apply the modified retrospective method for the first-time application of IFRS 15 and IFRS 9, which means that the cumulative effect from the first-time application of IFRS 15 and IFRS 9 as of January 1, 2018, was reported in retained earnings. The prior year's comparative figures, including the disclosures in the notes to the consolidated financial statements, were not adjusted and are therefore comparable only to a limited degree.

The reasons for the material changes from the application of IFRS 15 and IFRS 9 as well as the adjustments of the amounts as of January 1, 2018, are detailed below. In addition, the consolidated statement of financial position as of December 31, 2018, and the consolidated statement of cash flows and the consolidated statement of profit or loss for the fiscal year 2018 are presented after adjustments due to the effects from the application of IFRS 15.

The first-time application of **IFRS 15** results in a change of the rules for revenue recognition. The core principle is that revenue is recognized upon the transfer of goods or services in an amount that reflects the expected consideration.

Development activities financed by customers

As a result of the application of IFRS 15, current development expenses for which a reimbursement by the customer was agreed are capitalized under inventories. Advance payments made by the customer are recognized as a contract liability. Development expenses reimbursed through the component price within the framework of volume production delivery are capitalized as contract assets. Expenses are capitalized under inventories or contract assets, respectively, if there is a contractually agreed claim against the customer.

As a result, within the framework of the adjustment of the opening statement of financial position as of January 1, 2018, there were increases in inventories (€412 million), in contract assets (€96 million) as well as in contract liabilities (€405 million). Any previously deferred expenses in this context were reclassified from other assets to inventories (€146 million).

Accounting of tools

Until the year 2017, the decisive criterion for the accounting of tools at ZF was economic ownership. In accordance with IFRS 15, a general distinction between tools owned by customers and tools owned by ZF is necessary. Expenses for tools transferred to the customer's ownership will be capitalized initially under inventories in future. Any revenue is recognized upon the transfer of control. Previously, these tools were capitalized as non-current assets and depreciated, while the reimbursement by the customer was recognized as a liability and amortized over the contract term. Accordingly, the capitalized tools as well as the deferred customer reimbursements were derecognized against retained earnings in the opening statement of financial position. Therefore, the application of the control concept set out in IFRS 15 for tools owned by customers leads to a reduction of total assets and to an earlier revenue recognition at a specific point in time in relation to tool revenue. Tools owned by ZF that were previously reported under intangible assets will be reported in property, plant and equipment in future.

Tools owned by ZF in the amount of €490 million were reclassified from intangible assets to property, plant and equipment as of January 1, 2018. The adjustments in relation to tools owned by customers led to a reduction in intangible assets by €219 million and in property, plant and equipment by €228 million. In contrast, inventories increased by €53 million. Tooling subsidies carried on the equity and liabilities side in the amount of €-512 million were derecognized from other liabilities not affecting profit or loss.

Presentation of contract assets and contract liabilities

The new line items "Contract assets" and "Contract liabilities" are shown as separate items in the consolidated statement of financial position since January 1, 2018, and mainly result from the above-mentioned adjustments. Moreover, advance payments made by customers as well as outstanding customer charges and credits were primarily reclassified from trade payables to contract liabilities.

In addition, the first-time application of **IFRS 9** results in a reclassification and remeasurement of financial assets and financial liabilities as well as a changed procedure for the determination of impairments on financial instruments.

Impairments

In accordance with IFRS 9, impairments on financial instruments were determined for expected customer defaults using the simplified model for the recognition of expected credit losses. An impairment allowance based on creditworthiness in the amount of €54 million was recognized on the balance of trade receivables, contract assets and financial assets as of January 1, 2018.

The adjustments to the opening statement of financial position as of January 1, 2018, are shown in the following table:

Assets in € million	Dec. 31, 2017 published	Adjustments IFRS 15	Adjustments IFRS 9	Jan. 1, 2018 adjusted
Current assets				
Cash and cash equivalents	1,315			1,315
Financial assets	66			66
Trade receivables	5,303		−52	5,251
Other assets	531	−7	−1	523
Contract assets	–	56		56
Income tax receivables	28			28
Inventories	3,058	658		3,716
	10,301	**707**	**−53**	**10,955**
Assets held for sale and disposal groups	904			904
	11,205	**707**	**−53**	**11,859**
Non-current assets				
Financial assets	960		−1	959
Associates	417			417
Other assets	246	−154		92
Contract assets	–	70		70
Intangible assets	8,039	−709		7,330
Property, plant and equipment	6,194	215		6,409
Deferred taxes	772		16	788
	16,628	**−578**	**15**	**16,065**
	27,833	**129**	**−38**	**27,924**

Liabilities and equity in € million	Dec. 31, 2017 published	Adjustments IFRS 15	Adjustments IFRS 9	Jan. 1, 2018 adjusted
Current liabilities				
Financial liabilities	1,396			1,396
Trade payables	5,936	−389		5,547
Other liabilities	1,867	−328		1,539
Contract liabilities	–	633		633
Income tax provisions	338			338
Other provisions	690	−12		678
	10,227	**−96**	**0**	**10,131**
Liabilities of disposal groups	215			215
	10,442	**−96**	**0**	**10,346**
Non-current liabilities				
Financial liabilities	5,050			5,050
Trade payables	74	−30		44
Other liabilities	396	−320		76
Contract liabilities	–	369		369
Provisions for pensions	3,851			3,851
Other provisions	613			613
Deferred taxes	622	63		685
	10,606	**82**	**0**	**10,688**
Equity				
Subscribed capital	500			500
Capital reserve	386			386
Retained earnings	5,600	143	−38	5,705
Equity attributable to shareholders of ZF Friedrichshafen AG	**6,486**	**143**	**−38**	**6,591**
Non-controlling interests	299			299
	6,785	**143**	**−38**	**6,890**
	27,833	**129**	**−38**	**27,924**

The following tables show the effect from the application of IFRS 15 on items of the financial statements affected by the changes as of December 31, 2018. In the table, the values after application of IFRS 15 (column 1) are compared with the values without application of IFRS 15 (column 2). The first-time application of IFRS 15 did not result in any material effects on other comprehensive income.

Consolidated statement of profit or loss in € million	2018 Including IFRS 15	2018 Excluding IFRS 15	2017 Excluding IFRS 15
Sales	36,929	36,881	36,444
Cost of sales	30,836	30,492	29,895
Gross profit on sales	**6,093**	**6,389**	**6,549**
Research and development costs	2,158	2,470	2,230
EBIT	**1,528**	**1,512**	**1,771**
Net profit or loss before tax	**1,225**	**1,209**	**1,409**
Income taxes	260	255	242
Net profit or loss after tax	**965**	**954**	**1,167**
thereof shareholders of ZF Friedrichshafen AG	902	891	1,084
thereof non-controlling interests	63	63	83

The change in sales results from the differences in the recognition of revenue in connection with reimbursement of development costs (€-75 million) and tooling expenses (€+27 million) by the customer. Expenses for reimbursed development costs were previously recorded in the full amount in research and development costs. The change in accounting results in a shift from research and development costs to cost of sales.

Assets in € million	Dec. 31, 2018 Including IFRS 15	Dec. 31, 2018 Excluding IFRS 15	Dec. 31, 2017 Excluding IFRS 15
Current assets			
Other assets	482	522	531
Contract assets	82	–	–
Inventories	3,915	3,173	3,058
	10,735	**9,951**	**11,205**
Non-current assets			
Other assets	102	405	246
Contract assets	109	–	–
Intangible assets	7,205	7,877	8,039
Property, plant and equipment	6,630	6,549	6,194
	16,297	**17,082**	**16,628**
	27,032	**27,033**	**27,833**

Liabilities and equity in € million	Dec. 31, 2018 Including IFRS 15	Dec. 31, 2018 Excluding IFRS 15	Dec. 31, 2017 Excluding IFRS 15
Current liabilities			
Trade payables	5,467	5,936	5,936
Other liabilities	1,494	2,017	1,867
Contract liabilities	899	–	–
Other provisions	812	819	690
	9,572	**9,672**	**10,442**
Non-current liabilities			
Trade payables	40	58	74
Other liabilities	98	560	396
Contract liabilities	357	–	–
Deferred taxes	484	416	622
	10,019	**10,074**	**10,606**
Equity	7,441	7,287	6,785
	27,032	**27,033**	**27,833**

The changes on the assets side mainly refer to the development costs reimbursable by the customer and capitalized under inventories (€585 million) as well as expenses for tools (€157 million) to be transferred to customer ownership. The changes in intangible assets and property, plant and equipment refer to the changed accounting of tools owned by customers (€591 million) that are no longer recognized as non-current assets. Tools owned by ZF (€453 million) will be reported in property, plant and equipment. The change in contract assets primarily refers to development costs that will be reimbursed through component prices of future deliveries.

The changes on the equities and liabilities side refer to deferred tooling subsidies received (€488 million) that were previously reported under other liabilities and that, in future, will be recognized through profit or loss immediately upon the sale of the tools. In contrast, the prepayments received from customers for development projects (€284 million) are recognized only after service provision. Another change refers to the outstanding customer credits (€500 million) and prepayments received for volume production deliveries (€50 million) reported under contract liabilities which had previously been recognized, above all, under trade payables.

The major change in the consolidated statement of cash flows refers to the changed accounting of customer tools. Previously, cash payments were included in the expenditures for investments in property, plant and equipment based on a corresponding correction in depreciation/impairment. From fiscal year 2018, these cash payments are reported in the cash flow from operating activities.

Consolidated statement of cash flows in € million	**2018 Including IFRS 15**	**2018 Excluding IFRS 15**	**2017 Excluding IFRS 15**
Net profit or loss before income tax	1,225	1,209	1,409
Depreciation/Reversal of impairments for intangible assets and property, plant and equipment	1,817	1,961	2,092
Increase in inventories	−264	−179	−391
Increase in other liabilities	140	128	225
Cash flow from operating activities	**2,389**	**2,590**	**3,431**
Expenditures for investments in			
intangible assets	−62	−231	−356
property, plant and equipment	−1,586	−1,618	−1,350
Cash flow from investing activities	**−842**	**−1,043**	**−1,644**

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

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

in € million	2018
Volume production business sales	32,057
Aftermarket and service sales	3,288
Other sales	1,584
	36,929

in € million	2018	2017
Germany	7,405	7,692
Western Europe	7,297	7,360
Eastern Europe	2,688	2,342
North America	10,264	10,010
South America	1,034	1,066
Asia-Pacific	8,008	7,775
Africa	233	199
	36,929	**36,444**

2 Cost of sales

in € million	2018	2017
Cost of materials	22,668	21,916
Personnel expenses	4,761	4,669
Depreciation, amortization and impairment	1,432	1,692
Other	1,975	1,618
	30,836	**29,895**

The item "Depreciation, amortization and impairment" comprises impairment losses for property, plant and equipment in the amount of €1 million (2017: €3 million) as well as reversals of previously recognized impairment losses of €1 million (2017: €2 million).

3 Other income

in € million	2018	2017
Foreign exchange gains	349	310
Income from hedging	91	72
Compensation payment and reimbursement of costs	3	26
Income from the disposal of intangible assets and property, plant and equipment	19	3
Income from rentals and lease payments	2	4
Income from deconsolidations	83	0
Miscellaneous income	104	79
	651	**494**

4 Other expenses

in € million	2018	2017
Foreign exchange losses	367	340
Expenses from hedging	90	105
Changes of allowances for receivables	15	−2
Losses on the disposal of intangible assets and property, plant and equipment	9	9
Miscellaneous expenses	131	23
	612	**475**

5 Net result from participations

in € million	2018	2017
Income from deconsolidations	–1	0
Result from at-equity valuation	44	49
Result from associates	**43**	**49**
Income from participations	23	2
Expenses from loss assumption	0	–1
Write-ups on participations	77	0
Write-downs of participations	0	–2
Income from the disposal of participations	6	0
Expenses from the disposal of participations	–2	0
Other net result from participations	**104**	**–1**
Net result from participations	**147**	**48**

6 Net financial result

in € million	2018	2017
Interest from current financial investments	5	27
Interest from non-current financial investments	4	3
Other interest	25	55
Return on plan assets	0	8
Interest income	**34**	93
Foreign exchange gains	137	72
Income from derivative financial instruments	96	148
Other financial income	**233**	**220**
Financial income	**267**	**313**

in € million	2018	2017
Interest on financial liabilities	–200	–343
Other interest	–11	0
Interest cost on pension provisions	–56	–65
Unwinding the discount on other non-current items	–16	0
Interest expenses	**–283**	**–408**
Foreign exchange losses	–139	–89
Expenses from derivative financial instruments	–111	–134
Write-downs of financial receivables	–5	–1
Transaction costs and incidental expenses	–32	–43
Other financial expenses	**–287**	**–267**
Financial expenses	**–570**	**–675**
Net financial result	**–303**	**–362**

Interest income under the effective interest method accounts for €33 million for the 2018 fiscal year.

7 Income taxes

Income tax expenses are comprised as follows:

in € million	2018	2017
Actual taxes	460	520
Deferred taxes	−200	−278
Income tax expenses	**260**	**242**

Actual income tax expenses included adjustments in the amount of €58 million (2017: €68 million) for current taxes of prior fiscal years. Deferred tax income includes tax income of approximately €261 million (2017: €300 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 are 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% (2017: 30%) deviate from the reported amounts as set out below:

in € million	2018	2017
Expected income tax expenses	367	423
Increase/decrease of income taxes due to		
Tax effects due to different national tax rates and taxation systems	−109	−80
Effects of changes in tax laws	11	−138
Tax effects due to non-recognition and write-down of deferred tax assets and their reversal	11	−21
Tax effects due to permanent differences [1]	−54	10
Tax effects due to prior-period items	37	57
Other	−3	−9
Reported income tax expenses	**260**	242

[1] Permanent differences comprise tax-reducing items such as tax credits as well as non-deductible operating expenses.

The gross amounts of deferred tax assets and liabilities resulted from the following line items:

	2018		2017	
in € million	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Intangible assets	0	786	0	948
Other assets	307	204	184	295
Pensions	566	0	471	0
Other liabilities	283	63	506	94
Tax loss carryforwards and tax credits	265	0	326	0
Total	1,421	1,053	1,487	1,337
Netting	−569	−569	−715	−715
	852	**484**	**772**	**622**

The change in deferred taxes results not only from income taxes recognized in the consolidated statement of profit or loss but also from the transition to IFRS 9 and IFRS 15, change in line items of the consolidated statement of comprehensive income, and from foreign currency effects.

At the end of the fiscal year, the company reported tax loss carryforwards which were subject to offsetting restrictions. To that extent, no deferred tax assets were 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	2018	2017
Deductible temporary differences	332	349
Tax loss carryforwards and tax credits[1]	772	732
	1,104	**1,081**

[1] Prior-year figure adjusted

Of the unrecognized tax loss carryforwards, €368 million (2017: €362 million) had a limited expiration period of up to 20 years and €404 million (2017: €370 million) were unlimited. Other items in the amount of €340 million (2017: €340 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 €97 million (2017: €104 million) were recorded for reserves generated by subsidiaries. Apart from that, no deferred taxes have been recognized for the reserves generated by subsidiaries, as the profits are normally not subject to any considerable further taxation or are to be reinvested for an indefinite period of time.

8 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	2018	2017
Cost of raw materials, supplies and merchandise	22,609	21,851
Cost of purchased services	320	310
Other cost of materials	32	30
	22,961	**22,191**

The breakdown of personnel expenses is as follows:

in € million	2018	2017
Wages and salaries	6,262	6,045
Social security and benefits expenses	1,144	1,119
Pension expenses	232	250
	7,638	**7,414**

Personnel expenses include expenses for defined contribution plans in the amount of €351 million (2017: €358 million). The expenses contained for the state plans amounting to €277 million (2017: €289 million) primarily comprise the employer's contribution to the state pension scheme, which is included in the social security expenses.

Termination benefits and other long-term employee benefits of €13 million (2017: €18 million) were recorded in the consolidated statement of profit or loss. They affect severance pay as well as expenses from additions to restructuring provisions.

Impairment losses on intangible assets in the amount of €2 million (2017: €1 million) are included in the research and development costs and in the amount of €0 million (2017: €2 million) in general administrative expenses.

Impairment losses on property, plant and equipment in the amount of €1 million (2017: €3 million) are included under selling expenses and in the amount of €1 million (2017: €4 million) in general administrative expenses in the consolidated statement of profit or loss.

Research and development costs include full or partial reversals of impairment losses on intangible assets in the amount of €0 million (2017: €1 million) as well as reversals of impairment losses for property, plant and equipment in the amount of €0 million (2017: €1 million).

Explanations on the impairments and the reversals of impairment losses are given under Note (18).

Amortization on intangible assets is included in the following consolidated statement of profit or loss items:

in € million	2018	2017
Cost of sales	290	578
Research and development costs	34	35
Selling expenses	183	201
General administrative expenses	21	28
	528	**842**

Depreciation on property, plant and equipment is included in the following consolidated statement of profit or loss items:

in € million	2018	2017
Cost of sales	1,142	1,113
Research and development costs	68	61
Selling expenses	9	9
General administrative expenses	65	58
	1,284	**1,241**

Research and development costs recorded in the fiscal year reached €2,158 million (2017: €2,230 million). This figure includes amortization for capitalized development costs of €17 million (2017: €19 million).

In the fiscal year, payments from operating leases or rental agreements in the amount of €247 million (2017: €211 million) were recognized in the consolidated statement of profit or loss.

Notes to the Consolidated Statement of Financial Position

9 Current financial assets

in € million	Dec. 31, 2018	Dec. 31, 2017
Financial receivables	51	25
Derivative financial instruments	33	41
	84	**66**

The financial receivables contain earmarked bank deposits of €19 million (2017: €8 million).

The specific loss allowances for the financial receivables have developed as follows:

in € million	2018	2017
Carrying amount as of Jan. 1	2	2
Utilization	– 1	0
Carrying amount as of Dec. 31	**1**	**2**

As far as the current financial receivables are concerned which are neither impaired nor overdue there have, as of the closing date, been no indications that the debtors would not meet their payment obligations.

10 Trade receivables

The trade receivables have the following risk structure:

	Trade receivables				
Dec. 31, 2018 Risk category	Net in € million	Risk structure %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	2,449	48	4	5	2,458
2	2,237	43	41	32	2,310
3	455	9	14	13	482
4	20	0	1	3	24
Total	**5,161**	**100**	**60**	**53**	**5,274**

				Not impaired and overdue for			
in € million	Carrying amount	Thereof current	Neither impaired nor overdue	1 to 30 days	31 to 60 days	61 to 360 days	more than 360 days
Dec. 31, 2017	5,303	5,303	4,920	307	24	35	17

The specific loss allowances for trade receivables have developed as follows:

in € million	2018	2017
Carrying amount as of Jan. 1	48	56
Net exchange differences	–1	–4
Additions	26	8
Utilization	–1	–2
Reversals	–12	–10
Carrying amount as of Dec. 31	**60**	**48**

The credit-based loss allowances for trade receivables have developed as follows:

in € million	2018
Carrying amount as of Jan. 1 (adjusted)	52
Changes due to balance of trade receivables	1
Carrying amount as of Dec. 31	**53**

As far as the trade receivables are concerned which – in addition to the consolidated loss allowance in accordance with IFRS 9 – are neither subject to (specific) allowances due to credit rating nor overdue, there have, as of the closing date, been no indications that the debtors would not meet their payment obligations.

11 Other assets

	Dec. 31, 2018		Dec. 31, 2017	
in € million	Total	Thereof current	Total	Thereof current
Other tax receivables	326	320	386	351
Prepaid expenses	113	66	122	74
Receivables from employees	8	8	13	13
Sundry assets	137	88	256	93
	584	**482**	**777**	**531**

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.

As in the previous year, there were no specifically impaired receivables as of the end of the fiscal year.

12 Contract assets

in € million	Dec. 31, 2018 Total	Dec. 31, 2018 Thereof current
Volume production business	62	26
Product development and application	113	40
Other contract assets	16	16
	191	**82**

Sales recorded in the fiscal year 2018 in relation to performance obligations satisfied (or partially satisfied) in previous periods amount to €5 million.

Contract assets have developed as follows:

in € million	2018
Carrying amount as of Jan. 1 (adjusted)	126
Additions	115
Utilization	–49
Reversals	–1
Carrying amount as of Dec. 31	**191**

The contract assets have the following risk structure:

Dec. 31, 2018 Risk category	Contract assets Net in € million	Risk structure %	Specific loss allowances in € million	Credit-based loss allowances in € million	Gross in € million
1	188	98	0	1	189
4	3	2	0	0	3
Total	**191**	**100**	**0**	**1**	**192**

The credit-based loss allowances for contract assets remained unchanged at €1 million.

13 Inventories

in € million	Dec. 31, 2018	Dec. 31, 2017
Raw materials and supplies	1,560	1,428
Work in progress	1,285	559
Finished goods and merchandise	1,050	1,058
Payments in advance	20	13
	3,915	3,058

Write-downs of inventories increased by €7 million (2017: decrease by €15 million) to €182 million (2017: €175 million) in the fiscal year 2018.

14 Non-current financial assets

in € million	Dec. 31, 2018	Dec. 31, 2017
Investments in participations	205	138
Financial receivables	132	66
Net assets from defined benefit plans	542	674
Net assets for other performance obligations toward employees	58	68
Derivative financial instruments	8	14
	945	**960**

Investments in participations have developed as follows:

in € million	2018	2017
Carrying amount as of Jan. 1	138	52
Changes in the basis of consolidation	0	−6
Changes not affecting profit or loss	−19	−15
Additions	11	16
Disposals	−2	0
Write-downs	0	−2
Reversals of impairments	77	0
Reclassifications	0	93
Carrying amount as of Dec. 31	**205**	**138**

The financial receivables include granted loans and direct insurance claims against life insurances of €36 million (2017: €37 million).

The financial receivables also contain non-current earmarked bank deposits and time deposit investments of €39 million (2017: €1 million).

The specific loss allowances for the financial receivables have developed as follows:

in € million	2018	2017
Carrying amount as of Jan. 1	1	0
Additions	5	1
Carrying amount as of Dec. 31	**6**	**1**

As far as the non-current financial receivables are concerned which are neither impaired nor overdue, there have, as of the closing date, been no indications that the debtors would not meet their payment obligations.

The credit-based loss allowances for non-current financial assets remained unchanged at €1 million.

15 Associates

in € million	Dec. 31, 2018	Dec. 31, 2017
Investments in joint ventures	172	181
Investments in associates	282	236
	454	**417**

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 associate despite a participation quota of 50%, as the company is not jointly controlled.

The total comprehensive income of the associates is as follows:

	Investments in joint ventures	
in € million	2018	2017
Net profit or loss after tax	19	16
Other comprehensive income	−1	0
Total comprehensive income	**18**	**16**

	Investments in associates	
in € million	2018	2017
Net profit or loss after tax	25	33
Other comprehensive income	1	0
Total comprehensive income	**26**	**33**

16 Intangible assets

in € million	Goodwill	Patents, licenses, software and similar rights and assets	Development costs	Payments in advance	Total
Cost as of Jan. 1, 2017	4,576	6,866	245	108	11,795
Net exchange differences	−345	−684	−25	−4	−1,058
Additions	0	201	0	155	356
Reclassifications	−209	−279	−11	−107	−606
Disposals	0	−245	0	−1	−246
Cost as of Dec. 31, 2017	**4,022**	**5,859**	**209**	**151**	**10,241**
Accumulated amortization as of Jan. 1, 2017	**41**	**1,809**	**52**	**0**	**1,902**
Net exchange differences	0	−175	−5	0	−180
Additions (amortization)	0	823	19	0	842
Additions (impairments)	0	3	0	0	3
Reclassifications	0	−121	−3	0	−124
Disposals	0	−240	0	0	−240
Reversals of impairments	0	−1	0	0	−1
Accumulated amortization as of Dec. 31, 2017	**41**	**2,098**	**63**	**0**	**2,202**
Carrying amount as of Dec. 31, 2017	**3,981**	**3,761**	**146**	**151**	**8,039**

in € million	Goodwill	Patents, licenses, software and similar rights and assets	Development costs	Payments in advance	Total
Cost as of Jan. 1, 2018	**4,022**	**5,859**	**209**	**151**	**10,241**
Changes in accounting policies	0	−1,395	−5	−102	−1,502
Net exchange differences	104	196	8	3	311
Additions	0	43	1	19	63
Reclassifications	0	111	0	−2	109
Disposals	0	−22	−5	−16	−43
Cost as of Dec. 31, 2018	**4,126**	**4,792**	**208**	**53**	**9,179**
Accumulated amortization as of Dec. 31, 2018	**41**	**2,098**	**63**	**0**	**2,202**
Changes in accounting policies	0	−793	0	0	−793
Net exchange differences	0	52	3	0	55
Additions (amortization)	0	511	17	0	528
Additions (impairments)	0	2	0	0	2
Disposals	0	−15	−5	0	−20
Accumulated amortization as of Dec. 31, 2018	**41**	**1,855**	**78**	**0**	**1,974**
Carrying amount as of Dec. 31, 2018	**4,085**	**2,937**	**130**	**53**	**7,205**

In addition to EDP software acquired in return for payment and capitalized development costs, intangible assets primarily comprise goodwill from the acquisition of companies.

Trademarks included at €395 million (2017: €416 million) were classified as intangible assets with indefinite useful lives until 2017. In fiscal year 2018, trademarks were given a useful life of ten years due to a change in brand strategy.

Goodwill

Goodwill from the consolidation of investments in subsidiaries and from the individual financial statements is shown above.

Goodwill mainly represents synergies in the areas of materials purchasing and administrative company organization.

in € million	Dec. 31, 2018	Dec. 31, 2017
Car Powertrain Technology	571	700
Car Chassis Technology	341	320
Commercial Vehicle Technology	466	354
Industrial Technology	187	186
Active & Passive Safety Technology	1,853	2,235
E-Mobility	183	54
Aftermarket	484	132
	4,085	**3,981**

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, 2017	**2,731**	**8,849**	**3,135**	**861**	**15,576**
Net exchange differences	−74	−423	−92	−47	−636
Additions	49	204	204	893	1,350
Reclassifications	122	250	11	−760	−377
Disposals	−28	−264	−207	−16	−515
Cost as of Dec. 31, 2017	**2,800**	**8,616**	**3,051**	**931**	**15,398**
Accumulated depreciation as of Jan. 1, 2017	**1,003**	**5,759**	**2,187**	**1**	**8,950**
Net exchange differences	−18	−280	−72	0	−370
Additions (depreciation)	94	833	314	0	1,241
Additions (impairments)	4	4	2	0	10
Reclassifications	25	−158	−17	0	−150
Disposals	−18	−254	−202	0	−474
Reversals of impairments	−1	0	−1	−1	−3
Accumulated depreciation as of Dec. 31, 2017	**1,089**	**5,904**	**2,211**	**0**	**9,204**
Carrying amount as of Dec. 31, 2017	**1,711**	**2,712**	**840**	**931**	**6,194**

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, 2018	**2,800**	**8,616**	**3,051**	**931**	**15,398**
Changes in accounting policies	0	1,099	0	−91	1,008
Changes in the basis of consolidation	1	5	2	1	9
Net exchange differences	−14	−51	−7	11	−61
Additions	68	514	170	834	1,586
Reclassifications	95	789	−372	−621	−109
Disposals	−21	−318	−295	−6	−640
Cost as of Dec. 31, 2018	**2,929**	**10,654**	**2,549**	**1,059**	**17,191**
Accumulated depreciation as of Jan. 1, 2018	**1,089**	**5,904**	**2,211**	**0**	**9,204**
Changes in accounting policies	0	793	0	0	793
Changes in the basis of consolidation	0	3	1	0	4
Net exchange differences	−14	−99	−10	0	−123
Additions (depreciation)	93	980	211	0	1,284
Additions (impairments)	0	2	1	0	3
Reclassifications	31	196	−227	0	0
Disposals	−11	−314	−278	0	−603
Reversals of impairments	0	0	−1	0	−1
Accumulated depreciation as of Dec. 31, 2018	**1,188**	**7,465**	**1,908**	**0**	**10,561**
Carrying amount as of Dec. 31, 2018	**1,741**	**3,189**	**641**	**1,059**	**6,630**

As in the previous year, no assets from property, plant and equipment were pledged as collateral for financial liabilities as well as for possible obligations from finance court cases.

The details on the minimum lease payments under the respective leasing contracts for buildings, technical equipment and machines as well as factory and office equipment are as follows:

in € million	Dec. 31, 2018	Dec. 31, 2017
Total future minimum lease payments		
due within a year	8	5
due after one to five years	15	17
due after more than five years	20	10
	43	**32**
Interest portion included in the future minimum lease payments		
due within a year	1	0
due after one to five years	4	3
due after more than five years	3	4
	8	**7**
Present value of the future minimum lease payments		
due within a year	7	5
due after one to five years	11	14
due after more than five years	17	6
	35	**25**

Property, plant and equipment includes rented buildings in the amount of €20 million (2017: €10 million) that, due to the content of the leasing contracts (finance lease), are considered the economic property of the Group.

18 Impairment tests

In the fourth quarter of 2018, the consolidated ZF Group performed impairment tests to assess the impairment of its assets. These impairment tests were triggered by the macroeconomic environment in individual economies. There was no need identified regarding impairment of cash-generating units.

In addition, impairments were recognized for individual assets of property, plant and equipment in the following divisions:

in € million	2018	2017
Car Powertrain Technology	0	4
Car Chassis Technology	1	1
Industrial Technology	1	1
Active & Passive Safety Technology	1	2
Central units	0	2
	3	**10**

As part of the process, the assets were measured at fair value less costs to sell.

The impairment losses are distributed by regions as follows:

in € million	2018	2017
Europe	1	9
Asia-Pacific	1	1
North America	1	0
	3	**10**

In the fiscal year 2018, the Industrial Technology Division recorded reversals of impairment losses in the amount of €1 million. In the previous year, the Car Chassis Technology and Industrial Technology Divisions as well as central units recorded reversals of impairment losses in the amount of €1 million each.

Impairment losses for intangible assets were recorded in the Aftermarket Division in the amount of €2 million. In the prior year, impairment losses were recorded in the Industrial Technology Division in the amount of €2 million and in the Aftermarket Division in the amount of €1 million.

In the previous year, the Aftermarket Division recorded reversals of impairment losses for intangible assets in the amount of €1 million.

Inter alia, assumptions were made with regard to the development of sales in order to calculate the impairment tests. The assumptions made for the average sales increase in the three-year planning period are as follows:

in %	2018	2017
Car Powertrain Technology	8	8
Car Chassis Technology	5	4
Commercial Vehicle Technology	7	6
Industrial Technology	7	9
Active & Passive Safety Technology	4	2
E-Mobility	22	14
Aftermarket	4	4

As in the previous year, the annual impairment tests of goodwill led to no impairments. In addition, a sensitivity analysis regarding material measurement parameters was conducted in the context of these 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 1.0% or an increase in the capitalization rate by 10% would have an effect on the recoverability of goodwill. Even in all of the scenarios analyzed, this sensitivity analysis would not have led to an impairment of goodwill.

19 Financial liabilities

	Carrying amount as of Dec. 31, 2018		Carrying amount as of Dec. 31, 2017	
in € million	Total	Thereof current	Total	Thereof current
Bonds	3,067	35	4,133	52
Bonded loans	916	64	1,249	354
Liabilities to banks	965	422	970	930
Other financial liabilities	37	37	14	14
Liabilities from finance leases	35	7	25	5
Derivative financial instruments	50	41	55	41
	5,070	**606**	**6,446**	**1,396**

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 0.3% (2017: 2.1%) and 10.3% (2017: 12.5%).

The country-specific interest rate on the loans reported in non-current financial liabilities is between 0.4% (2017: 1.25%) and 9.7% (2017: 4.75%). Most of the financial liabilities have a fixed interest rate. Most of the loans are due at the end of the contractual term.

In July 2016, ZF entered into a new syndicated financing with an initial total volume of €3.5 billion. As of the reporting date, the loan still existed in form of a fully unused revolving credit line in the amount of €3.0 billion. Apart from other obligations, the loan agreement also includes a financial covenant that ZF has to comply with. It is defined as the ratio of net financial debt to adjusted, consolidated EBITDA. This financial covenant is tested quarterly and provides for an upper limit of indebtedness of 3.0. ZF met the requirement on all test dates in the past and on the reporting date.

20 Other liabilities

in € million	Dec. 31, 2018 Total	Dec. 31, 2018 Thereof current	Dec. 31, 2017 Total	Dec. 31, 2017 Thereof current
Liabilities to employees	795	743	777	733
Social contributions	58	58	52	52
Other tax liabilities	236	236	259	259
Tooling subsidies received	0	0	579	274
Prepayments received	0	0	83	68
Professional association	5	5	6	6
Deferred income	20	5	25	7
Sundry liabilities	478	447	482	468
	1,592	**1,494**	**2,263**	**1,867**

Other tax liabilities are mainly sales tax liabilities. Sundry liabilities include, among others, deferred liabilities for legal costs and costs of litigation, as well as liabilities for licenses and commissions.

21 Contract liabilities

in € million	Dec. 31, 2018 Total	Dec. 31, 2018 Thereof current
Volume production business	602	577
Product development and application	592	278
Other contract liabilities	62	44
	1,256	**899**

Contract liabilities have developed as follows:

in € million	2018
Carrying amount as of Jan. 1 (adjusted)	1,002
Additions	685
Utilization	−425
Reversals	−6
Carrying amount as of Dec. 31	**1,256**

The expected future sales from performance obligations not satisfied (or partially not satisfied) as of December 31, 2018, are as follows:

in € million	2018
1 to 5 years	1,347
> 5 years	13
	1,360

The performance obligations not satisfied (or partially not satisfied) mainly refer to contracts with customers in connection with development costs as well as tools.

22 Other provisions

in € million	Dec. 31, 2018 Total	Dec. 31, 2018 Thereof current	Dec. 31, 2017 Total	Dec. 31, 2017 Thereof current
Obligations from sales	726	466	791	504
Obligations from personnel	236	49	214	43
Other obligations	361	297	298	143
	1,323	**812**	**1,303**	**690**

in € million	Jan. 1, 2018	Changes in accounting policies	Net exchange	Addition	Unwinding of the discount	Utilization	Reversals	Netting of plan assets	Dec. 31, 2018
Obligations from sales	791	−12	6	258	2	−220	−99	0	726
Obligations from personnel	214	0	1	60	4	−31	−10	−2	236
Other obligations	298	0	5	154	0	−87	−9	0	361
	1,303	−12	12	472	6	−338	−118	−2	1,323

The provisions for obligations from sales primarily include provisions for warranty, product liability and punitive damages as well as for potential losses from delivery obligations.

The obligations from personnel mainly include provisions for long-service expenses and restructuring measures. Provisions for restructuring measures, above all, contain expenses for severance pay which will arise within the context of plant closures and relocations.

Other obligations include, among other things, provisions for litigation and other legal risks, environmental protection measures, other punitive damages as well as other 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 44% of the provisions contained in the non-current obligations from personnel and about 88% of other non-current obligations will presumably be utilized in the next five years.

Expected reimbursements as of December 31, 2018, amount to €43 million (2017: €53 million), of which €43 million (2017: €53 million) was capitalized as assets.

23 Provisions for pensions

The provisions for pensions are broken down as follows:

in € million	Present value of defined benefit plans					Financial assets	Provisions for pensions
2018	**Present value**	**Funded**	**Total**	**Plan assets**	**Net value**	**Net assets**	**Net liability**
Germany	3,604	1,874	5,478	−1,784	3,694	8	3,702
United States of America	3	279	282	−259	23	0	23
United Kingdom	1	1,266	1,267	−1,788	−521	523	2
Other	98	89	187	−88	99	11	110
	3,706	**3,508**	**7,214**	**−3,919**	**3,295**	**542**	**3,837**
Obligations from medical care benefits	228	0	228	0	228	0	228
Balance sheet disclosure						542	4,065
2017							
Germany	3,368	1,751	5,119	−1,748	3,371	64	3,435
United States of America	4	292	296	−248	48	0	48
United Kingdom	87	1,344	1,431	−2,013	−582	599	17
Other	83	88	171	−87	84	11	95
	3,542	**3,475**	**7,017**	**−4,096**	**2,921**	**674**	**3,595**
Obligations from medical care benefits	256	0	256	0	256	0	256
Balance sheet disclosure						674	3,851

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 (D)

Until December 31, 1993, defined benefit obligations depending on time of service and salary were granted. These were frozen and since then, they have been further developed according to 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 TRW, ZF also acquired unfunded defined benefit plans in Germany. The plans are only open for new entries of executive managers as of a certain grade. 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 form of a direct grant. The waiver amount is transferred to the assets of ZF Asset Trust e.V., Friedrichshafen, as trust funds.

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 (GB)

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. These 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.

Defined benefit plans

Changes in the present value of the defined benefit obligation and the fair value of the plan assets can be based on 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 unavoidable. 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:

	2018		
in %	**D**	**USA**	**GB**
Discount rate	2.0	4.3	2.9
Pension increases	1.3	–	2.1 – 3.2

	2017		
in %	**D**	**USA**	**GB**
Discount rate	2.1	3.6	2.6
Pension increases	1.3	–	2.1 – 3.1

The average maturity period of the defined benefit obligations is as follows:

	2018		
in years	**D**	**USA**	**GB**
Average maturity	19	13	19

	2017		
in years	**D**	**USA**	**GB**
Average maturity	20	14	22

For the first time, direct defined benefit obligations from pension plans where additional awards may still be earned were not measured using a uniform deemed interest rate for the discounting of any future cash flows. Instead, future cash flows were discounted using the interest rate of the underlying yield curve corresponding with the relevant term.

In addition, the discount rates are determined on the basis of high-quality 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 in the significant countries as of December 31, 2018:

	2018
D	Heubeck 2018 G mortality tables
USA	120% RP-2014 projected back to 2009 using Scale MP-2014
GB	2018 VITA Tables (averaged) with CMI 2017

The following mortality tables were used in the significant countries as of December 31, 2017:

	2017
D	Heubeck 2005 G mortality tables
USA	Modified RP-2014 tables
GB	2015 VITA Tables (averaged) with CMI 2016

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:

in € million	D	USA	GB	Other	2018 Total
Present value of the defined benefit obligations as of Jan. 1	**5,119**	**296**	**1,431**	**171**	**7,017**
Current service costs	117	0	0	12	129
Interest expenses	86	11	37	7	141
Contributions by plan participants	73	0	0	0	73
Past service costs	12	0	15	0	27
Additions (+)/disposals (–)	1	0	0	–2	–1
Pension payments	–144	–6	–155	–8	–313
Other changes	0	0	0	–5	–5
Actuarial gains (–) and losses (+) from the change in demographic assumptions	68	–3	–21	–2	42
Actuarial gains (–) and losses (+) from the change in financial assumptions	104	–27	–69	9	17
Actuarial gains (–) and losses (+) due to experience adjustments	42	–2	39	9	88
Net exchange differences from plans abroad	0	13	–10	–4	–1
Present value of the defined benefit obligations as of Dec. 31	**5,478**	**282**	**1,267**	**187**	**7,214**
Plan assets at fair value as of Jan. 1	**1,748**	**248**	**2,013**	**87**	**4,096**
Expected return on plan assets	31	9	50	3	93
Actuarial gains (+) and losses (–) from the change in financial assumptions	–76	–14	–102	–3	–195
Employer contributions to the plan assets	31	13	1	6	51
Employee contributions	71	0	0	0	71
Pension benefits paid	–21	–7	–155	–3	–186
Other changes	0	–2	–5	1	–6
Net exchange differences from plans abroad	0	12	–14	–3	–5
Plan assets at fair value as of Dec. 31	**1,784**	**259**	**1,788**	**88**	**3,919**
Financing status as of Jan. 1	**3,371**	**48**	**–582**	**84**	**2,921**
Financing status as of Dec. 31	**3,694**	**23**	**–521**	**99**	**3,295**

in € million	D	USA	GB	Other	2017 Total
Present value of the defined benefit obligations as of Jan. 1	**5,218**	**329**	**1,572**	**177**	**7,296**
Current service costs	140	0	1	13	154
Interest expenses	94	13	43	5	155
Contributions by plan participants	69	0	0	0	69
Past service costs	14	0	0	3	17
Settlements	0	−41	−4	0	−45
Pension payments	−139	−7	−133	−6	−285
Other changes	−38	0	0	−4	−42
Actuarial gains (−) and losses (+) from the change in demographic assumptions	0	0	−20	0	−20
Actuarial gains (−) and losses (+) from the change in financial assumptions	−252	19	6	−8	−235
Actuarial gains (−) and losses (+) due to experience adjustments	13	15	15	3	46
Net exchange differences from plans abroad	0	−32	−49	−12	−93
Present value of the defined benefit obligations as of Dec. 31	**5,119**	**296**	**1,431**	**171**	**7,017**
Plan assets at fair value as of Jan. 1	**1,591**	**270**	**2,092**	**86**	**4,039**
Expected return on plan assets	29	10	57	3	99
Actuarial gains (+) and losses (−) from the change in financial assumptions	67	35	71	2	175
Employer contributions to the plan assets	15	14	4	9	42
Employee contributions	69	0	0	0	69
Settlements	0	−39	−4	0	−43
Pension benefits paid	−20	−7	−133	−4	−164
Other changes	−3	−3	−2	0	−8
Net exchange differences from plans abroad	0	−32	−72	−9	−113
Plan assets at fair value as of Dec. 31	**1,748**	**248**	**2,013**	**87**	**4,096**
Financing status as of Jan. 1	**3,627**	**59**	**−520**	**91**	**3,257**
Financing status as of Dec. 31	**3,371**	**48**	**−582**	**84**	**2,921**

The pension obligations result in expenses recognized through profit or loss of €204 million (2017: €225 million), which are made up of the following components:

in € million	D	USA	GB	Other	2018 Total
Current service costs	117	0	0	12	129
Past service costs	12	0	15	0	27
Unwinding the discount on net liabilities	55	2	−13	4	48
	184	**2**	**2**	**16**	**204**

in € million	D	USA	GB	Other	2017 Total
Current service costs	140	0	1	13	154
Past service costs	14	0	0	3	17
Curtailments and settlements	0	−2	0	0	−2
Unwinding the discount on net liabilities	65	3	−14	2	56
	219	**1**	**−13**	**18**	**225**

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 €342 million (2017: gains of €384 million) are recorded in other comprehensive income with no effect on profit or loss.

The plan assets consist of the following items:

in € million	2018	2017
Cash and cash equivalents	104	139
Securities		
Equity instruments	719	570
Debt instruments	3,021	3,015
Fund shares	301	911
Land and buildings	20	18
Derivatives	−15	−99
Other	−231	−458
	3,919	**4,096**

Securities are measured at prices quoted on active markets. The "Others" item is basically comprised of obligations from current repurchase agreements in the United Kingdom.

Contributions to plan assets are expected to amount to €31 million in the following year.

Pension payments for the next ten years are as follows:

in € million	2018	2017
within the upcoming fiscal year	299	215
between 2 and 5 years	1,145	864
between 5 and 10 years	1,455	1,328

The calculation presents the actual pension 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:

For the sensitivity analysis, pension obligations were re-measured. It was assumed that all other factors remain unchanged. For calculating the sensitivity of life expectancy, it was assumed that the average life expectancy of a 65-year-old individual will be increased or reduced by one year.

in € million	D	USA	GB	Other	2018 Total
Discount rate					
−0.25%	+273	+9	+60	+6	+348
+0.25%	−253	−8	−56	−5	−322
Pension increases					
−0.25%	−126	0	−42	0	−168
+0.25%	+132	0	+45	0	+177
Life expectancy					
−1 year	−156	+6	−43	−8	−201
+1 year	+175	−6	+43	+6	+218

in € million	D	USA	GB	Other	2017 Total
Discount rate					
−0.25%	+252	+11	+79	+4	+346
+0.25%	−234	−10	−73	−4	−321
Pension increases					
−0.25%	−122	0	−47	0	−169
+0.25%	+128	0	+56	0	+184
Life expectancy					
−1 year	−192	−7	−40	−1	−240
+1 year	+191	+7	+40	+1	+239

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 14 years (2017: 9 years).

The development of the present value of the defined benefit obligations is presented as follows:

in € million	2018	2017
Present value of the defined benefit obligations as of Jan. 1	**256**	**310**
Current service costs	0	1
Interest expenses	8	9
Contributions by plan participants	0	1
Pension payments	−20	−23
Actuarial gains (−) and losses (+) from the change in demographic assumptions	−3	0
Actuarial gains (−) and losses (+) from the change in financial assumptions	−14	−6
Actuarial gains (−) and losses (+) due to experience adjustments	−6	−3
Net exchange differences from plans abroad	7	−33
Present value of the defined benefit obligations as of Dec. 31	**228**	**256**

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, 2018, the valuation factors for discounting were between 2.5% and 9.4% (2017: 2.2% and 3.5%).

The net expenses of the obligations for medical care benefits are comprised of as follows:

in € million	2018	2017
Current service costs	0	1
Unwinding the discount on net liabilities	8	9
	8	**10**

The actuarial gains amounting to €23 million (2017: gains of €9 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:

in € million	2018	2017
Discount rate		
−0,25%	+5	+6
+0,25%	−5	−6
Life expectancy		
−1 year	−9	−14
+1 year	+10	+14

24 Assets held for sale and disposal groups

The assets and liabilities reported in this item in the prior year refer to the held-for-sale Global Body Control Systems Business Unit, with its registered office in Radolfzell (Germany). On August 30, 2017, ZF concluded an agreement with Luxshare Limited to sell the business unit after the Supervisory Board of ZF Friedrichshafen AG had granted its consent. The full transfer of the business unit was successfully completed on April 27, 2018.

in € million	2018	2017
Current assets		
Cash and cash equivalents	0	9
Trade receivables	0	125
Other assets	0	9
Inventories	0	43
Non-current assets		
Financial assets	0	0
Other assets	0	1
Intangible assets	0	528
Property, plant and equipment	0	181
Deferred taxes	0	8
Assets of disposal groups	0	904
Current liabilities		
Trade payables	0	91
Other liabilities	0	43
Income tax provisions	0	2
Other provisions	0	4
Non-current liabilities		
Other liabilities	0	28
Provisions for pensions	0	40
Other provisions	0	2
Deferred taxes	0	5
Liabilities of disposal groups	0	215

25 Equity

Subscribed capital

At the end of the fiscal year, the subscribed capital still amounts to €500 million. As of December 31, 2018, 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 €87 million (2017: €-716 million) is attributed to non-controlling interests with €-1 million (2017: €-14 million).

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.

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.

Dividends

ZF Friedrichshafen AG has proposed a dividend payout of €162 million for the fiscal year 2018 (€0.32 per share). In the fiscal year, a dividend of €195 million (€0.39 per share) for 2017 was paid.

Deferred taxes on equity items not affecting profit or loss in € million	2018			2017		
	Before income tax	Income tax	After tax	Before income tax	Income tax	After tax
Foreign currency translation differences	87	0	87	−716	0	−716
Mark-to-market of securities	−19	0	−19	−30	1	−29
Mark-to-market of cash flow hedges	−11	4	−7	79	−23	56
Actuarial gains and losses	−319	92	−227	393	−85	308
Other comprehensive income	−262	96	−166	−274	−107	−381

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. The net financial position 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.

To achieve the named objectives, ZF seeks a further redemption of the financial liabilities borrowed in connection with the acquisition of TRW.

In order to determine the equity ratio, the equity disclosed in the consolidated statement of financial position is used.

	Dec. 31, 2018	Dec. 31, 2017
Equity in € million	7,441	6,785
Equity ratio in %	28	24

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.

Cash is comprised as follows:

in € million	Dec. 31, 2018	Dec. 31, 2017
Cash and cash equivalents	922	1,315
Cash and cash equivalents of asset groups held for sale	0	9
	922	**1,324**

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 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	2018	2017
Current assets	208	0
thereof cash and cash equivalents	12	0
Non-current assets	724	0
Current liabilities	163	0
Non-current liabilities	74	0

The sales price in the amount of €778 million was paid in full.

29 Changes of financial liabilities

The change in financial liabilities from financing activities due to cash and non-cash effects is as follows:

The presentation does neither consider liabilities from finance lease contracts 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 cancelation of loan-raising costs.

			Non-cash changes			
in € million	Carrying amount as of Jan. 1	Change in cash	Reclassification	Currency effects	Other	Carrying amount as of Dec. 31
Current financial liabilities	1,350	−872	65	0	15	558
Non-current financial liabilities	5,016	−613	−65	88	1	4,427

Other Disclosures

30 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:

in € million	Dec. 31, 2018	Dec. 31, 2017
Guarantees	27	24
thereof for participations	13	1
Other	130	148
	157	**172**

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 2017, there were no collaterals for contingent liabilities during the fiscal year.

31 Other financial obligations

In addition to liabilities, provisions and contingent liabilities, other financial obligations result in particular from rental and leasing agreements, investment projects launched and procurement agreements initiated.

in € million	Dec. 31, 2018	Dec. 31, 2017
Rental and leasing payments	718	678
Purchase commitments	908	776
Payment obligations on participations	22	17
	1,648	**1,471**

The purchase commitments can be broken down into intangible assets amounting to €8 million (2017: €211 million) and property, plant and equipment amounting to €900 million (2017: €565 million).

The total future minimum lease payments from non-cancelable rental agreements and operating leases by maturities are as follows:

in € million	Dec. 31, 2018	Dec. 31, 2017
Nominal total future minimum lease payments		
due within a year	150	157
due in one to five years	348	378
due after more than five years	220	143
	718	**678**

The major rental agreements refer to production, warehousing and office buildings. Besides price adjustment clauses that provide for an annual fixed percentage increase, some contracts also contain agreements that are aligned with a change in the defined consumer price indexes. Most agreements include extension options or automatic contract extensions. For some leased objects, the option to acquire them is part of the agreement. Additional leasing contracts refer to fleet, machines, computer hardware and software as well as other factory and office equipment.

For some of these contracts, extension options or automatic contract extensions exist, as well as options to acquire the object leased at market value at the end of the contractual period.

32 Litigation

In 2011, the European Commission initiated an investigation against TRW concerning alleged collusive tendering in the passive safety systems area (incl. airbags and seatbelt systems). On March 5, 2019, the European Commission informed about the result of said investigation. Accordingly, ZF has to pay an amount of €189 million, which has been taken into account in the consolidated financial statements.

In 2014, the Brazilian antitrust authority, Conselho Administrative de Defensa 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 cooperates in this procedure.

In addition, various German ZF locations were searched by the German Federal Cartel Office, Bundeskartellamt, in 2016 in the context of an investigation in relation to agreements regarding steel purchasing that violate antitrust law. ZF again cooperates with the investigating authorities in this procedure. The duration and outcome of the procedure are uncertain.

In a pending action in the USA against several companies from the automotive industry, ZF is mentioned together with other OEMs and suppliers. The pending action is not directed against ZF, though.

In connection with recalls of airbags by Hyundai, KIA and FCA, ZF submitted a notification to the National Highway Traffic Safety Administration (NHTSA) in the USA. At the same time, ZF is of the opinion that it is not responsible for any grounds of the recalls and will defend itself against potential claims.

In an arbitration that had been ongoing since 2016, the past fiscal year saw an agreement regarding the economic cornerstones of a settlement. The result of this agreement had already been taken into account in the Group interim financial statement as of June 30, 2018.

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.

33 Disclosures on financial instruments

The following table compares the originally used measurement categories and carrying amounts of the financial assets and liabilities in accordance with IAS 39 to the new measurement categories and carrying amounts in accordance with IFRS 9:

in € million	Measurement categories in accordance with IAS 39[1]	Measurement categories in accordance with IFRS 9[2]	Carrying amounts in accordance with IAS 39 as of Dec. 31, 2017	Carrying amounts in accordance with IFRS 9 as of Jan. 1, 2018	Allowances
Assets					
Cash and cash equivalents	LaR	AC	1,315	1,315	
Financial receivables	LaR	AC	91	90	
Investments in participations	AfS	FVtOCI	80	80	
Investments in participations	AfS	FVtPL	58	58	
Trade receivables	LaR	AC	5,285	5,233	−52
Trade receivables	LaR	FVtOCI	18	18	
Derivative financial instruments					
excl. hedge accounting	HfT	FVtPL	24	24	
Hedge accounting	No IAS 39 category	No IFRS 9 category	31	31	
			6,902	**6,849**	**−52**
Liabilities					
Financial liabilities					
Bonds	FLAC	AC	4,133	4,133	
Bonded loans	FLAC	AC	1,249	1,249	
Liabilities to banks	FLAC	AC	970	970	
Other financial liabilities	FLAC	AC	14	14	
Trade payables	FLAC	AC	6,010	6,010	
Liabilities from finance leases	No IAS 39 category	No IFRS 9 category	25	25	
Derivative financial instruments					
excl. hedge accounting	HfT	FVtPL	25	25	
Hedge accounting	No IAS 39 category	No IFRS 9 category	30	30	
			12,456	**12,456**	

[1] LaR: loans and receivables, AfS: available for sale, HfT: held for trading, FLAC: financial liabilities at amortized cost
[2] AC: at amortized cost, FVtOCI: fair value through other comprehensive income, FVtPL: fair value through profit or loss

Carrying amounts of the financial instruments by categories

The following table shows the recognized financial assets and liabilities by measurement categories:

Carrying amounts of the financial instruments by measurement categories in accordance with IFRS 9:

in € million	Dec. 31, 2018
Assets	
At amortized cost	6,058
At fair value through other comprehensive income	255
At fair value through profit or loss	165
Derivative financial instruments (hedge accounting) [1]	34
	6,512
Liabilities	
At amortized cost	10,492
Liabilities from finance lease [1]	35
At fair value through profit or loss	7
Derivative financial instruments (hedge accounting) [1]	43
	10,577

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

Carrying amounts of the financial instruments by measurement categories in accordance with IAS 39:

in € million	Dec. 31, 2017
Assets	
Loans and receivables	6,709
Available for sale	138
Held for trading	24
Derivative financial instruments (hedge accounting) [1]	31
	6,902
Liabilities	
Loans and receivables	12,376
Liabilities from finance leases [1]	25
Held for trading	25
Derivative financial instruments (hedge accounting) [1]	30
	12,456

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

In the fiscal year under review, there were no reclassifications of financial assets between the IFRS 9 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.

Carrying amounts and fair values of the financial instruments recognized at amortized cost in accordance with IFRS 9:

in € million	Dec. 31, 2018 Carrying amount	Dec. 31, 2018 Fair value
Assets		
At amortized cost		
Cash and cash equivalents	922	922
Financial receivables	169	169
Trade receivables	4,967	4,967
	6,058	6,058
Liabilities		
At amortized cost		
Bonds	3,067	3,069
Bonded loans	916	972
Liabilities to banks	965	964
Other financial liabilities	37	37
Trade payables	5,507	5,507
Liabilities from finance leases [1]	35	37
	10,527	**10,586**

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

Carrying amounts and fair values of the financial instruments recognized at amortized cost in accordance with IAS 39:

in € million	Dec. 31, 2017 Carrying amount	Dec. 31, 2017 Fair value
Assets		
Loans and receivables		
Cash and cash equivalents	1,315	1,315
Financial receivables	91	91
Trade receivables	5,303	5,303
	6,709	6,709
Liabilities		
Financial liabilities at amortized cost		
Bonds	4,133	4,412
Bonded loans	1,249	1,337
Liabilities to banks	970	970
Other financial liabilities	14	14
Trade payables	6,010	6,010
Liabilities from finance leases [1]	25	25
	12,401	12,768

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

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, 2018 Total
Assets				
Cash and cash equivalents	0	922	0	922
Financial receivables	0	169	0	169
Trade receivables	0	4,967	0	4,967
	0	**6,058**	**0**	**6,058**
Liabilities				
Bonds	3,069	0	0	3,069
Bonded loans	0	972	0	972
Liabilities to banks	0	964	0	964
Other financial liabilities	0	37	0	37
Trade payables	0	5,507	0	5,507
Liabilities from finance leases [1]	0	37	0	37
	3,069	**7,517**	**0**	**10,586**

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

in € million	Level 1	Level 2	Level 3	Dec. 31, 2017 Total
Assets				
Cash and cash equivalents	0	1,315	0	1,315
Financial receivables	0	91	0	91
Trade receivables	0	5,303	0	5,303
	0	**6,709**	**0**	**6,709**
Liabilities				
Bonds	4,412	0	0	4,412
Bonded loans	0	1,337	0	1,337
Liabilities to banks	0	970	0	970
Other financial liabilities	0	14	0	14
Trade payables	0	6,010	0	6,010
Liabilities from finance leases [1]	0	25	0	25
	4,412	**8,356**	**0**	**12,768**

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

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.

Financial liabilities from finance lease contracts are recognized considering the contractually agreed interest rate. The fair value was determined according to the standard market interest rate.

The following tables show the financial instruments recognized at fair value.

Fair values of the financial instruments by measurement categories in accordance with IFRS 9:

in € million	Dec. 31, 2018
Assets	
At fair value through other comprehensive income	
Investments in participations	61
Trade receivables	194
At fair value through profit or loss	
Investments in participations	144
Financial receivables	14
Derivative financial instruments	7
Derivative financial instruments (hedge accounting) [1]	34
	454
Liabilities	
At fair value through profit or loss	
Derivative financial instruments	7
Derivative financial instruments (hedge accounting) [1]	43
	50

[1] No measurement category in accordance with IFRS 9 and/or IAS 39

Fair values of the financial instruments by measurement categories in accordance with IAS 39:

in € million	Dec. 31, 2017
Assets	
Available for sale	
Investments in participations	80
Held for trading	
Derivative financial instruments	24
Derivative financial instruments (hedge accounting)[1]	31
	135
Liabilities	
Held for trading	
Derivative financial instruments	25
Derivative financial instruments (hedge accounting)[1]	30
	55

[1]No measurement category in accordance with IFRS 9 and/or IAS 39

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, 2018 Total
Assets				
Investments in participations	61	98	46	205
Financial receivables	0	0	14	14
Trade receivables	0	194	0	194
Derivative financial instruments	2	39	0	41
	63	**331**	**60**	**454**
Liabilities				
Derivative financial instruments	3	47	0	50

in € million	Level 1	Level 2	Level 3	Dec. 31, 2017 Total
Assets				
Investments in participations	80	0	0	80
Derivative financial instruments	0	55	0	55
	80	**55**	**0**	**135**
Liabilities				
Derivative financial instruments	0	55	0	55

In the fiscal year, no reclassification took place between levels 1 and 2 of the fair value hierarchy.

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. 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.

With level 2 investments in participations measured at fair value, measurement is based on transactions that can be observed in the market. Furthermore, a part of the trade receivables, whose measurement can be derived from parameters observable in the market, has been assigned to this category. 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).

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 €–20 million to €+17 million.

The measurement of level 3 financial receivables is based on information not observable on the market and for which there are not comparable transactions with market values to be derived from such transactions.

The following table illustrates the development of financial instruments assigned to level 3 of the fair value hierarchy:

in € million	Investments in participations
As of Jan. 1	58
Fair value changes recognized through profit and loss	77
Purchases	11
Sales	–2
Reclassifications from level 3 to level 2	–98
As of Dec. 31	46

During the fiscal year, investments in participations from level 3 of the fair value hierarchy in the amount of €98 million were reclassified to level 2 as a result of the improved market availability of the relevant investments in participations in the current fiscal year compared to the prior year. The income from the measurement of participations was recognized through profit or loss in the net result from participations.

Net gains and losses by measurement categories

In accordance with IFRS 9

in € million	Interests	Impairments	Other net gains and losses	2018 Total net gains and losses
Financial assets				
At amortized cost	31	−15	−76	−60
At fair value through other comprehensive income	0	0	−19	−19
At fair value through profit or loss	2	0	97	99
Financial liabilities				
At amortized cost	−203	0	49	−154

In accordance with IAS 39

in € million	Interests	Impairments	Other net gains and losses	2017 Total net gains and losses
Financial assets				
Loans and receivables	29	2	−40	−9
Available for sale				
recognized at fair value	0	0	−30	−30
recognized at cost	0	−2	1	−1
Financial liabilities				
Loans and receivables	−343	0	−13	−356

Other net gains and losses related to "Financial assets at amortized cost" primarily contain exchange rate gains and losses from foreign currency receivables as well as expenses derived from the derecognition of receivables.

The other net gains and losses in the "Financial assets at fair value through profit or loss" measurement category include unrealized fair value losses. The gain or loss recognized in other comprehensive income during the reporting period as well as the amount reclassified from equity to profit or loss is shown in the consolidated statement of comprehensive income.

The other net gains and losses in the "Financial assets at fair value through profit or loss" measurement category essentially include the dividend income from participations as well as a write-up on one participation recognized in profit or loss.

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:

in € million	Gross amount	Offsetting	Net amount
	Dec. 31, 2018		
Offset items			
Trade receivables (current)	5,274	113	5,161
Trade payables (current)	5,580	113	5,467
Eligible for offsetting in the event of insolvency			
Derivative financial instruments (assets)	41	23	18
Derivative financial instruments (liabilities)	50	23	27
		Dec. 31, 2017	
Offset items			
Trade receivables (current)	5,396	93	5,303
Trade payables (current)	6,029	93	5,936
Eligible for offsetting in the event of insolvency			
Derivative financial instruments (assets)	55	41	14
Derivative financial instruments (liabilities)	55	41	14

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, 2018, no risk arises from this regulation due to the excellent credit rating of our banks.

34 Risks from financial instruments

Management of financial risks

The risk management system of ZF's Finance Department covers 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 foreign currency risk is measured based on a value-at-risk analysis. The value-at-risk indicates only the potential risk of loss, which with defined probability will not be exceeded within a specifically determined time frame (holding period). However, the method does not provide any information as to the time such a threshold might be crossed or the amount of the expected loss in case the value-at-risk is exceeded. As a result, the actual development may deviate from the result of the value-at-risk analysis.

The companies of the consolidated ZF Group (excluding TRW companies) hedge their interest rate, foreign currency and raw material price risks at prevailing market conditions either through ZF Cash Management at ZF Friedrichshafen AG or directly with banks. Derivative financial instruments with plain vanilla character are used. These are used exclusively to hedge existing hedged items or forecast transactions. At the TRW companies, the above-mentioned risks are hedged with banks via the responsible treasury hub based on predetermined rules. Only derivative financial instruments with plain vanilla character are used here as well.

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.

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 €378 million (2017: €279 million). In addition, trade receivables are sold to a small extent. 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, 2018 in € million Risk category	Trade receivables	Contract assets
1	2,458	189
2	2,310	0
3	482	0
4	24	3
Receivables (gross)	5,274	192
Specific loss allowances	−60	0
Credit-based loss allowances	−53	−1
Receivables (net)	5,161	191

In addition, a specific loss allowance on receivables is recognized if there is an existing credit risk. 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, 2018	Cash outflow		
	Total	2019	2020 to 2024	2025 and beyond
Bonds	3,067	119	2,529	963
Bonded loans	916	66	895	0
Liabilities to banks	965	441	61	501
Other financial liabilities	37	37	3	0
Trade payables	5,507	5,467	40	0
Liabilities from finance leases	35	8	15	20
	10,527	**6,138**	**3,543**	**1,484**

in € million	Carrying amount as of Dec. 31, 2017	Cash outflow		
	Total	2018	2019 to 2023	2024 and beyond
Bonds	4,133	141	3,719	962
Bonded loans	1,249	356	961	0
Liabilities to banks	970	938	40	1
Other financial liabilities	14	18	0	0
Trade payables	6,010	5,936	72	2
Liabilities from finance leases	25	5	17	10
	12,401	**7,394**	**4,809**	**975**

The remaining financial liabilities derive primarily from the financing of the TRW acquisition in May 2015 and are largely fixed interest-bearing. The financial instruments issued in this context are euro and US dollar-denominated corporate bonds with final maturities from 2020 to 2025 and a nominal amount as of the reporting date of €1,075 million in euro bonds and $2,247 million in USD bonds, respectively (2017: €2,225 million and $2,247 million), and bonded loans with final maturities from 2019 to 2022 and a nominal amount of €894 million (2017: €1,218 million). The reduction of the euro-denominated corporate bonds results from a termination made in November 2018 of a tranche with a nominal amount of €1,150 million originally maturing in 2019. A tranche of the bonded loans amounting to €325 million was repaid in the past fiscal year on the planned maturity date. In addition, gross debt was reduced as a result of the redemption of loans from banks. The syndicated loan was refinanced in 2016 and had a remaining amount of €3.0 billion in form of a revolving credit line, which was completely unused as of the reporting date. A contractually agreed extension option was exercised, so that the credit line now has a residual term until July 2023.

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. Hedging measures for planned foreign currency sales from the volume production business are carried out in the consolidated ZF Group 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 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 does not exceed 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. There were no project-related hedging measures in the current fiscal year.

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 expected cash outflow from derivative financial instruments results from the following presentation:

			Cash outflow	
in € million	**Market value**	**Nominal value**	**Within a year**	**1 to 5 years**
Dec. 31, 2018				
Derivatives excl. hedge accounting				
Assets	7	403	393	10
Liabilities	–7	348	347	1
Cash flow hedge				
Assets	31	1,234	797	437
Liabilities	–41	1,423	1,031	392
Fair value hedge				
Assets	3	154	154	0
Liabilities	–2	102	102	0

			Cash outflow	
in € million	**Market value**	**Total**	**Within a year**	**1 to 5 years**
Dec. 31, 2017				
Foreign currency hedging contracts				
Assets	55	1,604	1,246	358
Liabilities	–55	1,510	1,094	416

Cash flow hedge

Derivative financial instruments are reported under financial assets and liabilities. Changes in the market value of €-7 million are recognized in the cash flow hedge reserve, which amounts to €-20 million as of December 31, 2018 (2017: €-13 million). In the year under review, an amount of €4 million (2017: €17 million) was reclassified from the cash flow hedge reserve to other income and expenses in the statement of profit or loss. In the year under review, there were no effects from ineffectiveness of hedging transactions.

As of December 31, 2018, there are derivative financial instruments held as assets in the amount of €31 million (2017: €29 million) and derivative financial instruments held as liabilities in the amount of €41 million (2017: €30 million) that are used to hedge future cash flows. The hedged cash flows will come into effect between 2019 and 2023. If the prerequisites of hedge accounting are met, market value changes recognized with no effect on profit or loss are reclassified to profit or loss for the period and/or are recognized in the acquisition costs.

Fair value hedge

For fair value hedges, changes in value from hedging transactions amount to €2 million (2017: €2 million) as well as changes in value from underlying hedged items of €–2 million (2017: €–2 million). The nominal amount of the hedged items is €256 million. The hedged items are recognized in financial assets and/or financial liabilities as well as trade receivables.

Sensitivity analysis

In the ZF Group, the currency risk is currently monitored using a value-at-risk analysis, without taking into account TRW. At the end of the fiscal year 2018, the largest amount of the hedging volume was allocated to the US dollar, so the value at risk analysis is limited to exchange rate fluctuations of the US dollar as a substantial currency risk.

With no change in relation to the prior year, the value-at-risk is calculated based on a variance-covariance method under the assumption of a confidence level of 84.1% with a holding period of twelve months. Based on the analysis available as of the reporting date, the potential maximum risk of loss amounts to €5 million (2017: €29 million). The calculation was based on an average exchange rate volatility of 7.6% (2017: 7.33%) as well as a target price of $1.20 per euro. The method applied does not account for effects from favorable exchange rate changes and assumes a uniform open US dollar position. Deviating from the maximum potential risk of loss as of the reporting date, the average maximum potential risk of loss in fiscal year 2018 amounted to €20 million.

The maximum risk of loss is calculated taking into account the average exchange rate volatility of the past twelve months in relation to the open US dollar position from operational business. The open US dollar position is calculated based on the amount of cash and loans in US dollars as of the closing date that are administered by ZF Cash Management and net incoming payments expected to be received in the following twelve months based on current corporate planning, taking into account the hedged amounts. To limit the risk of loss, an upper limit was agreed upon with the Board of Management.

Since the open US dollar positions include, as of the reporting date, the net incoming payments expected based on the current corporate planning, the analysis is not representative for the US dollar balance as of the reporting date.

The Active & Passive Safety Technology Division follows a central and systematic approach to hedge foreign currency sales using defined hedging targets based on a quarterly rolling 2-year forecast of foreign currency cash flows.

The following table shows the hypothetical effects on equity and profit or loss (in both cases excluding tax effects) if the US dollar increases or decreases in value by 10% against the division's major currencies:

in € million	Effect on equity	Effect on profit or loss
Appreciation of the US dollar by +10%	–88	0
Devaluation of the US dollar by –10%	+88	0

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.

Derivative financial instruments are used to a minor extent at the consolidated ZF Group to reduce raw material price risks. The risk from these hedging transactions can be rated as insignificant for the fiscal year. Therefore, a sensitivity analysis for such derivative financial instruments is dispensed with.

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. The market values of the interest swaps can be rated as insignificant for the fiscal year.

An increase by 70 (2017: 60) base points in the average interest rate for financial liabilities in US dollars on a floating rate basis, which are not covered by interest hedging transactions, would influence the net profit or loss before income tax in the amount of €-3 million

(2017: €-11 million). A decrease of the average interest rate by 70 (2017: 60) base points would raise the net profit or loss before income tax by €3 million (2017: €11 million). With financial liabilities denominated in euro, an increase of 30 (2017: 30) base points of the average interest rate would have an effect on the net profit or loss before income tax in the amount of €-4 million (2017: €0 million). A decrease of the average interest rate by 30 (2017: 30) base points would raise the net profit or loss before income tax by €4 million (2017: €0 million).

Both in case of an increase in the average interest rate for financial investments in euro by 30 (2017: 30) base points and in case of a decrease by 30 (2017: 30) base points, the interest rate for financial investments in euro would be below 0%. As ZF did not have to pay any negative interest for financial investments in the past, both the interest rate increase and the interest rate reduction would not have any material effect on net profit or loss before income tax due to the contractual arrangements.

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. Due to the most recent interest rate development, the base points used for the calculation were changed compared to the previous year for financial liabilities in US dollars with variable interest rates.

35 Government grants

In the fiscal year 2018, €42 million (2017: €18 million) in government grants were received. They were divided as follows:

in € million	2018	2017
Investment grants	31	10
Expense subsidies	11	8

Investment grants were basically received for investments at various locations in Germany, the Czech Republic, Hungary and China.

Expense subsidies mainly comprise research subsidies and subsidies for education and vocational training.

36 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. Jürgen 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:

2018 in € million	Joint venture	Associates	Other participations
Supplies and services rendered			
Sale of goods	98	0	12
Services	6	2	4
Other services	5	5	23
Supplies and services received			
Sale of goods	19	149	11
Services	0	12	55
Other services	0	4	7
Receivables	21	64	12
Liabilities	0	23	9

2017 in € million			
Supplies and services rendered			
Sale of goods	95	3	7
Services	8	4	11
Other services	4	0	0
Supplies and services received			
Sale of goods	18	108	5
Services	0	3	49
Other services	0	0	4
Receivables	28	22	13
Liabilities	2	17	12

37 Board of Management and Supervisory Board compensation

The current emoluments of the active members of the Board of Management for the fiscal year 2018 amount to €9.7 million (2017: €10.3 million). Payments for pension rights acquired in the fiscal year for the active members of the Board of Management total €2.4 million (2017: €2.4 million). The claim to contingent other long-term benefits attributable to the year under review amounts to €8.9 million (2017: €6.4 million).

Total emoluments thus amount to €21.0 million (2017: €19.1 million).

The emoluments of former members of the Board of Management and their surviving dependents amount to €9.3 million (2017: €14.1 million). The pension provisions for former members of the Board of Management and their surviving dependents amount to €79.8 million (2017: €77.3 million).

The emoluments of the Supervisory Board for the fiscal year 2018 amount to €2.5 million (2017: €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.

38 Personnel

The annual average number of employees was 147,332 (2017: 142,857), of whom 78,461 were direct employees (2017: 75,863) and 68,871 were indirect employees (2017: 66,994). At the end of the year, the consolidated ZF Group had 148,969 (2017: 146,148) employees. Direct employees are employees whose activities depend on the production volume and can be allocated directly to the products.

39 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 €11 million for auditing services and €5 million for tax advisory services. Apart from Ernst & Young, other auditing companies work for the consolidated Group.

40 Listing of the shares held as of December 31, 2018

Consolidated subsidiaries

Germany	Share in capital in %
FTU Beteiligungsverwaltung GmbH, Auerbach, Germany	100.0
GAT - Gesellschaft für Antriebstechnik mbH, Alsdorf, Germany	100.0 [1]
Lemförder Electronic GmbH, Espelkamp, Germany	100.0 [1 2]
Lucas Automotive Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
Lucas Varity Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
TRW Airbag Systems GmbH, Aschau am Inn, Germany	100.0 [1 2]
TRW Airbag Systems Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
TRW Automotive GmbH, Alfdorf, Germany	100.0 [1 2]
TRW Automotive Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
TRW Automotive Holding Verwaltungs GmbH, Alfdorf, Germany	100.0
TRW Automotive Mexico GmbH, Alfdorf, Germany	100.0
TRW Automotive Safety Systems GmbH, Aschaffenburg, Germany	100.0 [1 2]
TRW Automotive Safety Systems Grundstücksverwaltungs AG & Co. KG, Friedrichshafen, Germany	100.0 [1]
TRW Deutschland Holding GmbH, Koblenz, Germany	100.0 [1 2]
TRW KFZ Ausrüstung GmbH, Neuwied, Germany	100.0 [1 2]
TRW Logistics Services GmbH, Überherrn, Germany	100.0 [1 2]
TRW Receivables Finance GmbH, Eschborn, Germany	100.0 [1 2]
ZF Active Safety GmbH, Koblenz, Germany	100.0 [1 2]
ZF Asia-Pacific Holding GmbH, Friedrichshafen, Germany	100.0 [2]
ZF Aurelia GmbH, Friedrichshafen, Germany	100.0 [1 2]
ZF Auslandsverwaltungs GmbH, Friedrichshafen, Germany	100.0
ZF Car eWallet GmbH, Berlin, Germany	98.0
ZF Cassiopeia GmbH, Friedrichshafen, Germany	100.0 [1 2]
ZF Europa Beteiligungs GmbH, Friedrichshafen, Germany	100.0 [2]
ZF Gastronomie Service GmbH, Friedrichshafen, Germany	100.0 [1 2]
ZF Getriebe Brandenburg GmbH, Brandenburg, Germany	100.0 [1 2]

Germany	Share in capital in %
ZF Gusstechnologie GmbH, Nuremberg, Germany	100.0 [1 2]
ZF Industrieantriebe Witten GmbH, Witten, Germany	100.0 [1 2]
ZF Luftfahrttechnik GmbH, Calden, Germany	100.0 [1 2]
ZF NewCo II GmbH, Friedrichshafen, Germany	100.0
ZF Nürnberg Trading and Asset GmbH & Co. KG, Nuremberg, Germany	100.0 [1]
ZF Pegasus GmbH, Friedrichshafen, Germany	100.0 [2]
ZF RACE ENGINEERING GmbH, Schweinfurt, Germany	100.0 [1 2]
Zukunft Ventures GmbH, Friedrichshafen, Germany	100.0 [1 2]

[1] The company lays claim to exemption from disclosing the annual financial statements according to § 264, Section 3, and § 264b HGB (Commercial Code).
[2] There is a profit and loss transfer agreement.
[3] 100% voting rights.
[4] Control is exercised through influence-dependent management.

International	Share in capital in %
Alfaro Brakes S.L.U., Corella, Spain	100.0
Autocruise S.A.S., Plouzane, France	100.0
Automotive Holdings (Spain) S.L.U., Vigo, Spain	100.0
Automotive Holdings (UK) Limited, Shirley, Great Britain	100.0
Compagnie Financière de ZF SAS, Andrézieux-Bouthéon, France	100.0
Dalphi Metal España, S.A., Vigo, Spain	78.4
Dalphi Metal Internacional, S.A., Madrid, Spain	40.0 [4]
Dalphi Metal Portugal, S.A., Vila Nova de Cerveira, Portugal	40.0 [4]
Dalphi Metal Seguridad, S.A., Vigo, Spain	40.0 [4]
DalphiMetal Tunisie S.A.R.L., Ben Arous, Tunisia	78.4
Eurofren Investment, S. de R.L. de C.V., Cienega de Flores, Mexico	100.0
Eurofren Systems S.L.U., Mutliva Baja, Spain	100.0
Fortuna Assurance Company, Burlington, USA	100.0

International	Share in capital in %
Frenos y Mecanismos, S. de R.L. de C.V., Santa Rosa de Jarequi, Mexico	100.0
Friction Materials Group North America, Inc., Livonia, USA	100.0
HANSEN DRIVES LIMITED, Hong Kong, China	100.0
ID Information Systems Limited, Shirley, Great Britain	100.0
Kelsey-Hayes Company, Livonia, USA	100.0
Kelsey-Hayes Holdings Inc., Livonia, USA	100.0
Kelsey-Hayes Mexico LLC, Reynosa, Mexico	100.0
KH Holdings, Inc., Livonia, USA	100.0
Liuzhou ZF Machinery Co., Ltd., Liuzhou, China	51.0
Lucas Automotive SDN. BHD., Senai, Malaysia	100.0
Lucas Industries Limited, Shirley, Great Britain	100.0
LucasVarity, Shirley, Great Britain	100.0
LucasVarity (M) SDN. BHD., Bukit Beruntung, Malaysia	100.0
LucasVarity (Thailand) Co., Ltd., Rayong, Thailand	100.0
LucasVarity Langzhong Brake Company Limited, Langfang, China	70.0
LucasVarity Automotive Holding Company, Livonia, USA	100.0
TRW Airbag Systems S.R.L., Roman, Romania	100.0
Mercant Comércio e Serviços Ltda., Sorocaba, Brazil	100.0
Midwest Lemförder Limited, Darlaston, Great Britain	100.0
OOO ZF Kama, Naberezhnye Chelny, Russia	51.0
OOO ZF Russia, Saint Petersburg, Russia	100.0
Openmatics s.r.o., Plzeň, Czech Republic	100.0
PT. ZFAG Aftermarket Jakarta, Jakarta, Indonesia	100.0
Qingdao FMG Asia Pacific Co., Ltd., Qingdao, China	100.0

International	Share in capital in %
Revestimientos Especiales de México, S. de R.L. de C.V., Cienega de Flores, Mexico	100.0
Roadster Automotive B.V., Amsterdam, Netherlands	100.0
Roadster Holdings (Canada), ULC, Toronto, Canada	100.0
Sachs Automotive Components & Systems Shanghai Co., Ltd., Shanghai, China	100.0
Safebag - Indústria Componentes de Seguranca Automovel S.A., Ponte de Lima, Portugal	78.4
Safe-Life - Indústria de Componentes de Seguranca Automovel S.A., Ponte de Lima, Portugal	78.4
Shanghai Sachs Huizhong Shock Absorber Co., Ltd., Shanghai, China	60.0
SISTEMAS DE CHASSIS IRACEMÁPOLIS LTDA., Iracemápolis, Brazil	100.0
TRW (Suzhou) Automotive Electronics Co., Ltd., Suzhou, China	74.2
TRW Aftermarket Asia Pacific PTE LTD., Singapore, Singapore	100.0
TRW Aftermarket Japan Co., Ltd., Tokyo, Japan	100.0
TRW Asia Pacific Co., Ltd., Shanghai, China	100.0
TRW Automotive (Slovakia), s.r.o., Nove Mesto nad Vahom, Slovakia	100.0
TRW Asiatic (M) SDN BHD, Selangor, Malaysia	51.0
TRW Asiatic Co., Ltd., Bangkok, Thailand	51.0
TRW Australia Holdings Pty Ltd, Zetland, Australia	100.0
TRW Australia Pty Ltd, Zetland, Australia	100.0
TRW Auto B.V., Amsterdam, Netherlands	100.0
TRW Auto Holdings Inc., Livonia, USA	100.0
TRW Automotive (LV) Corp., Livonia, USA	100.0
TRW Automotive Components (Shanghai) Co., LTD., Shanghai, China	100.0
TRW Automotive Bonneval S.A.S., Bonneval, France	100.0
TRW Automotive China Holdings Ltd., Ebene, Mauritius	100.0
TRW Automotive Czech s.r.o., Jablonec nad Nisou, Czech Republic	100.0

International	Share in capital in %
TRW Automotive Components Technical Service Shanghai Co. Ltd., Shanghai, China	100.0
TRW Automotive España S.L.U., Pamplona, Spain	100.0
TRW Automotive Distribution France S.A.S., Paris, France	100.0
TRW Automotive Holding Company, Livonia, USA	100.0
TRW Automotive Holding Italia S.r.l., Torino, Italy	100.0
TRW Automotive Holding Mexico LLC, Reynosa, Mexico	100.0
TRW Automotive Holdings (France) S.A.S., Paris, France	100.0
TRW Automotive Inc., Livonia, USA	100.0
TRW Automotive India Private Limited, Haryana, India	100.0
TRW Automotive Italia S.r.l, Torino, Italy	100.0
TRW Automotive J.V. LLC, Livonia, USA	100.0
TRW Automotive Japan Co. Ltd., Yokohama, Japan	100.0
TRW Automotive Korea Co. Ltd., Ansan, Korea (Republic)	100.0
TRW Automotive LLC, Moscow, Russia	100.0
TRW Automotive Ltda., Limeira, Brazil	100.0
TRW Automotive Portugal Lda., Santos Domingos de Rana, Portugal	100.0
TRW Automotive Research And Development (Shanghai) Co. Ltd., Shanghai, China	100.0
TRW Automotive Safety Systems SRL, Timisoara, Romania	100.0
TRW Automotive Sweden AB, Arvidsjaur, Sweden	100.0
TRW Automotive Safety Technologies (Zhangjiagang) Co., Ltd., Zhangjiagang, China	100.0
TRW Automotive Technologies (Shanghai) Co., Ltd., Shanghai, China	100.0
TRW Automotive U.S. LLC, Livonia, USA	100.0
TRW Brazil LLC, Livonia, USA	100.0
TRW Braking Systems Polska Sp. z o.o., Gliwice, Poland	100.0

International	Share in capital in %
TRW China Holdings Ltd., Grand Cayman, Cayman Islands	100.0
TRW Coöperatief W.A., Amsterdam, Netherlands	100.0
TRW Delplas, S. de R.L. de C.V., El Marqés, Mexico	100.0
TRW Canada Limited/TRW Canada Limitee, Woodstock, Canada	100.0
TRW Dongfang (Xi'an) Airbag Inflator Co., Ltd., Xi'an, China	90.0
TRW FAWER Commercial Vehicle Steering (Changchun) Co., Ltd., Changchun, China	55.0
TRW Intellectual Property Corp., Livonia, USA	100.0
TRW International Holdings B.V., Amsterdam, Netherlands	100.0
TRW FAWER Automobile Safety Systems (Changchun) Co., Ltd., Changchun, China	60.0
TRW LucasVarity Limited, Shirley, Great Britain	100.0
TRW Limited, Shirley, Great Britain	100.0
TRW Occupant Restraints de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Occupant Restraints South Africa Inc., Livonia, USA	100.0
TRW Odyssey Inc., Livonia, USA	100.0
TRW Odyssey Mexico LLC, Reynosa, Mexico	100.0
TRW Otomotiv Dagitim ve Ticaret A.S., Istanbul, Turkey	99.7
TRW Overseas Inc., Livonia, USA	100.0
TRW Paris S.A.S., Paris, France	100.0
TRW Polska Sp. z o.o., Czestochowa, Poland	100.0
TRW Safety Systems Inc., Livonia, USA	100.0
TRW Safety Systems Mexico LLC, Reynosa, Mexico	100.0
TRW Sistemas de Direcciones, S. de R.L. de C.V., El Marqés, Mexico	100.0
TRW Sistemas de Frenado S. de R.L. de C.V., El Marqués, Mexico	100.0
TRW Steering & Suspension Co., Ltd., Rayong, Thailand	100.0

International	Share in capital in %
TRW Steering Co. Ltd., Ansan, Korea (Republic)	71.0
TRW Steering Systems Poland Sp. z o.o., Czechowice-Dziedzice, Poland	100.0
TRW Steering Wheel Systems de Chihuahua, S. de R.L. de C.V., Chihuahua, Mexico	100.0
TRW Systèmes de Freinage S.A.S., Bouzonville, France	100.0
TRW Systems Limited, Solihull, Great Britain	100.0
TRW U.K. Limited, Shirley, Great Britain	100.0
TRW Vehicle Safety Systems de Mexico, S. de R.L. de C.V., Reynosa, Mexico	100.0
TRW Vehicle Safety Systems Inc., Washington, USA	100.0
TRW-Carr s.r.o., Stara Boleslav, Czech Republic	100.0
ZF (China) Investment Co., Ltd., Shanghai, China	100.0
ZF (Thailand) Limited, Bangkok, Thailand	100.0
ZF ANSA Lemförder S.L. (Sociedad Unipersonal), Burgos, Spain	100.0
ZF AP Holdings Inc., Livonia, USA	100.0
ZF Argentina S.A., San Francisco, Argentina	100.0
ZF Asia B.V., Amsterdam, Netherlands	100.0
ZF Asia Pacific Pte. Ltd., Singapore Central, Singapore	100.0
ZF Automotive Vietnam Co., Ltd., Haiphong, Vietnam	100.0
ZF Axle Drives Marysville, LLC, Marysville, USA	100.0
ZF Boge Elastmetall España S.A. (Sociedad Unipersonal), Santa Perpètua de Mogoda, Spain	100.0
ZF Bouthéon SAS, Andrézieux-Bouthéon, France	100.0
ZF Chassis Components, LLC, Newton, USA	100.0
ZF Chassis System (Rayong) Co., Ltd., Rayong, Thailand	100.0
ZF Chassis Systems (Beijing) Co., Ltd., Beijing, China	100.0
ZF Chassis Systems Chicago, LLC, Chicago, USA	100.0

International	Share in capital in %
ZF Chassis Systems Duncan, LLC, Duncan, USA	100.0
ZF Chassis Systems Sdn. Bhd., Padang Serai, Malaysia	100.0
ZF Chassis Systems Tuscaloosa, LLC, Tuscaloosa, USA	100.0
ZF Chassis Systems Zatec s.r.o., Plzeň, Czech Republic	100.0
ZF Chassis Technology S.A. de C.V., Toluca, Mexico	100.0
ZF Chassistech Commercial Vehicles (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Danmark ApS, Tåstrup, Denmark	100.0
ZF do Brasil Ltda., Sorocaba, Brazil	100.0
ZF Dongfeng Shock Absorber Shiyan Co., Ltd., Shiyan, China	51.0
ZF Drivetech (Hangzhou) Co., Ltd., Hangzhou, China	100.0
ZF Drivetech (Suzhou) Co., Ltd., Suzhou, China	100.0
ZF Electronic Systems Juárez, S.A. de C.V., Juárez, Mexico	100.0
ZF Electronic Systems Pleasant Prairie, LLC, Pleasant Prairie, USA	100.0
ZF Electronics (Zhuhai) Co., Ltd., Zhuhai, China	100.0
ZF Electronics Klášterec s.r.o., Klásterec nad Ohrí, Czech Republic	100.0
ZF Engineering Plzeň s.r.o., Plzeň, Czech Republic	100.0
ZF Europe B.V., Amsterdam, Netherlands	100.0
ZF Europe Finance B.V., Amsterdam, Netherlands	100.0
ZF Faster Propulsion Systems Co., Ltd., Kaohsiung, Taiwan	100.0
ZF FAWER Chassis Technology (Changchun) Co., Ltd., Changchun, China	51.0
ZF FOTON Automated Transmission (Jiaxing) Co., Ltd., Jiaxing, China	51.0
ZF Gainesville, LLC, Gainesville, USA	100.0
ZF Heli Drivetech (Hefei) Co., Ltd., Hefei, China	51.0
ZF Holding Austria GmbH, Steyr, Austria	100.0

International	Share in capital in %
ZF Holdings Australia Pty. Ltd., Dingley Village, Australia	100.0
ZF Holdings B.V., Amsterdam, Netherlands	100.0
ZF Hungária Ipari és Kereskedelmi Korlátolt Felelősségú Társaság, Eger, Hungary	100.0
ZF India Pvt. Ltd., Pune, India	100.0
ZF Inmobilaria S.A. de C.V., Saltillo, Mexico	100.0
ZF International B.V., Den Haag, Netherlands	100.0
ZF Italia Holding S.p.A., Selvazzano Dentro, Italy	100.0
ZF Italia S.r.l., Assago, Italy	100.0
ZF Japan Co., Ltd., Tokyo, Japan	100.0
ZF Lemforder (Thailand) Co., Ltd., Rayong, Thailand	100.0
ZF Lemförder Achssysteme Ges.m.b.H., Lebring, Austria	100.0
ZF Lemförder Aks Modülleri Sanayi ve Ticaret Anonim Sirket, Izmir, Turkey	100.0
ZF Lemforder Australia Pty. Limited, Edinburgh, Australia	100.0
ZF Lemforder Automotive Systems (Shenyang) Co., Ltd., Shenyang, China	100.0
ZF Lemförder Chassis Technology Korea Co., Ltd., Gumi, Korea (Republic)	59.3
ZF Lemförder Métal France S.A.S., Florange, France	100.0
ZF Lemförder SA (Pty.) Ltd., Rosslyn, South Africa	100.0
ZF Lemforder Shanghai Chassistech Co., Ltd., Shanghai, China	76.0
ZF Lemförder TLM Dış Ticaret Limited Şirketi, Izmir, Turkey	100.0
ZF Lemförder TVA, S.A.U., Ermua, Spain	100.0
ZF Lemforder UK Limited, Darlaston, Great Britain	100.0
ZF Marine Krimpen B.V., Krimpen aan de Lek, Netherlands	100.0
ZF Marine Propulsion Systems Miramar, LLC, Miramar, USA	100.0
ZF México, S.A. de C.V., Guadalajara, Mexico	100.0
ZF Middle East FZE, Dubai, United Arab Emirates	100.0

International	Share in capital in %
ZF North America Capital, Inc., Northville, USA	100.0
ZF North America, Inc., Northville, USA	100.0
ZF Occupant Safety Systems de la Laguna, S. de R.L. de C.V., Durango, Mexico	100.0
ZF Österreich Gesellschaft m.b.H., Vienna, Austria	100.0
ZF Padova S.r.l., Selvazzano Dentro, Italy	100.0
ZF Philippines, Inc., Manila, Philippines	100.0
ZF Powertrain Modules (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Powertrain Modules Saltillo, S.A. de C.V., Ramos Arizpe, Mexico	100.0
ZF Powertrain Systems (Beijing) Co., Ltd., Beijing, China	100.0
ZF Sachs España S.A. (Sociedad Unipersonal), Bilbao, Spain	100.0
ZF Sachs Italia S.p.A., Candiolo, Italy	100.0
ZF Sachs Korea Co., Ltd., Changwon, Korea (Republic)	91.5
ZF Sachs South Africa Proprietary Limited, Alberton, South Africa	100.0
ZF Sachs Süspansiyon Sistemleri Sanayi ve Ticaret A.Ş., Gebze, Turkey	100.0
ZF Sales and Service (Malaysia) Sdn. Bhd., Petaling Jaya, Malaysia	100.0
ZF Serbia d.o.o., Pancevo, Serbia	100.0
ZF Services (China) Co., Ltd., Shanghai, China	100.0
ZF Services (Shanghai) Co., Ltd., Shanghai, China	100.0
ZF Services Australia Pty. Ltd., Arndell Park, Australia	100.0
ZF Services Belgium N.V.- SA, Brussels, Belgium	100.0
ZF Services España, S.L.U., Sant Cugat del Vallès, Spain	100.0
ZF Services France S.A.S., Antony, France	100.0
ZF Services Hong Kong Limited, Hong Kong, China	100.0
ZF Services Korea Co., Ltd., Incheon, Korea (Republic)	100.0
ZF Services Middle East Limited Liability Company, Dubai, United Arab Emirates	49.0 [3]

International	Share in capital in %
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, Great Britain	100.0
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 Steyr Ges.m.b.H., Steyr, Austria	100.0
ZF Steyr Präzisionstechnik GmbH, Steyr, Austria	100.0
ZF Suspension Technology Guadalajara, S.A. de C.V., Guadalajara, Mexico	100.0
ZF Taiwan Ltd., Taipei, Taiwan	100.0
ZF Transmissions Gray Court, LLC, Gray Court, USA	100.0
ZF Transmissions Shanghai Co., Ltd., Shanghai, China	51.0
ZF TRW Automotive Holdings Corp., Livonia, USA	100.0
ZF Wind Power Antwerpen NV, Lommel, Belgium	100.0
ZF Wind Power Coimbatore Private Limited, Coimbatore, India	100.0
ZF Wind Power Singapore Pte. Ltd., Hong Kong, China	100.0
ZF Wind Power (Tianjin) Co., Ltd., Tianjin, China	100.0
ZF YTO (Luoyang) Axle Co., Ltd., Luoyang, China	51.0

[1] The company lays claim to exemption from disclosing the annual financial statements according to § 264, Section 3, and § 264b HGB (Commercial Code).
[2] There is a profit and loss transfer agreement.
[3] 100% voting rights.
[4] Control is exercised through influence-dependent management.

Consolidated companies accounted for using the equity method

Germany	Share in capital in %
ASAP Holding GmbH, Gaimersheim, Germany	35.0
Astyx GmbH, Ottobrunn, Germany	44.5
doubleSlash Net-Business GmbH, Friedrichshafen, Germany	40.0
e.GO MOOVE GmbH, Aachen, Germany	46.4
Ibeo Automotive Systems GmbH, Hamburg, Germany	40.0
Sachs Micro Mobility Solutions GmbH, Tübingen, Germany	60.0

International	Share in capital in %
Brakes India Private Limited, Chennai, India	49.0
CSG TRW Chassis Systems Co., Ltd., Chongqing, China	50.0
Evercast, S.A. de C.V., Saltillo, Mexico	30.0
FOTON ZF LCV Automated Transmission (Jiaxing) Co. Ltd., Jiaxing, China	40.0
Rane TRW Steering Systems Private Limited, Chennai, India	50.0
S.M. Sistemas Modulares Ltda., Taubate, Brazil	50.0
Shanghai Sachs Powertrain Components Systems Co., Ltd., Shanghai, China	50.0
Shanghai TRW Automotive Safety Systems Company Ltd., Shanghai, China	50.0
SOMIC ZF Components Private Limited, New Delhi, India	50.0
TH Braking Company S.A.S., Puteaux, France	50.0
TRW Sun Steering Wheels Private Limited, New Delhi, India	49.0
ZF Fonderie Lorraine S.A.S., Grosbliederstroff, France	49.0
ZF Hero Chassis Systems Private Limited, New Delhi, India	50.0
ZF Liuzhou Axle Co., Ltd., Liuzhou, China	50.0
ZF PWK Mécacentre S.A.S., Saint-Étienne, France	50.0

41 Company bodies

The members of the Supervisory Board and the Board of Management are listed on page 9.

Friedrichshafen, March 8, 2019

ZF Friedrichshafen AG
The Board of Management

Wolf-Henning Scheider

Michael Hankel

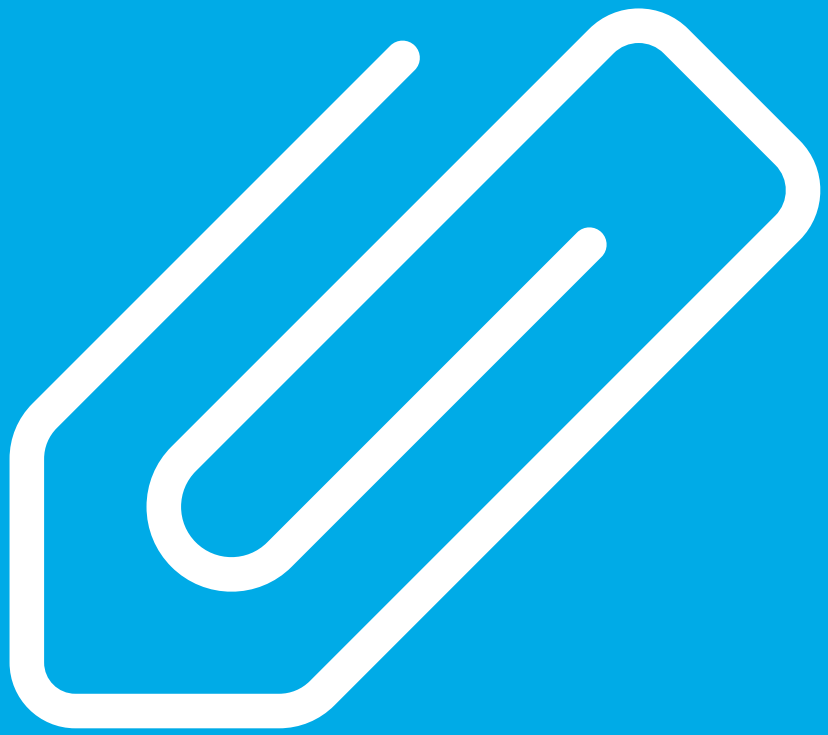
Sabine Jaskula

Dr. Holger Klein

Dr. Franz Kleiner

Wilhelm Rehm

Dr. Konstantin Sauer



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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, 2018, consolidated statement of financial position as at December 31, 2018, the consolidated statement of cash flows and the consolidated statement of changes in equity for the fiscal year from January 1 to December 31, 2018, 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, 2018.

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. 315e 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, 2018 and of its financial performance for the fiscal year from January 1 to December 31, 2018, 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 any 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 procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.

- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec. 315e (1) HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with [German] law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Stuttgart, March 11, 2019

Ernst & Young GmbH
Wirtschaftsprüfungsgesellschaft

Meyer	Scheufele
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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.

If the male form is used, this always refers to both genders.

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 and illustrations
ZF

Concept, layout, text
HGB Hamburger Geschäftsberichte GmbH & Co. KG, Hamburg
Oliver Schrott Kommunikation GmbH, Köln
Die Wortwerkstatt GmbH, Kusterdingen

Print
Eberl Print GmbH, Immenstadt

ZF Friedrichshafen AG
88038 Friedrichshafen
Germany
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